

**JULY 1999
VOLUME 41
NUMBER 7**

Storm Data



**AND UNUSUAL WEATHER PHENOMENA
WITH LATE REPORTS AND CORRECTIONS**



noaa NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE,
DATA AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NC

Cover: This house was damaged by an F1 tornado that touched down in Lewiston, Minnesota on July 8, 1999. There were no deaths and only a few minor injuries. Several million dollars in damage resulted as the tornado moved directly through the town limits. See Page 4 for details. (*Photograph courtesy of Todd Shea, Warning Coordination Meteorologist, National Weather Service, La Crosse, Wisconsin*)

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STORM DATA contains all confirmed information on storms available to our staff at the time of publication. Late reports and corrections will be printed in each edition.

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Note: "None Reported" means that no severe weather occurred and "Not Received" means that no reports were received for this region at the time of printing.

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The editors of **STORM DATA** solicit your help in acquiring photographs (prints or slides; black and white, or color), maps, clippings, etc. of significant or severe weather events (past or present) for use in the "Outstanding Storms of the Month" section of **STORM DATA**. We request our subscribers or other interested persons to mail such items to:

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Asheville, NC 28801

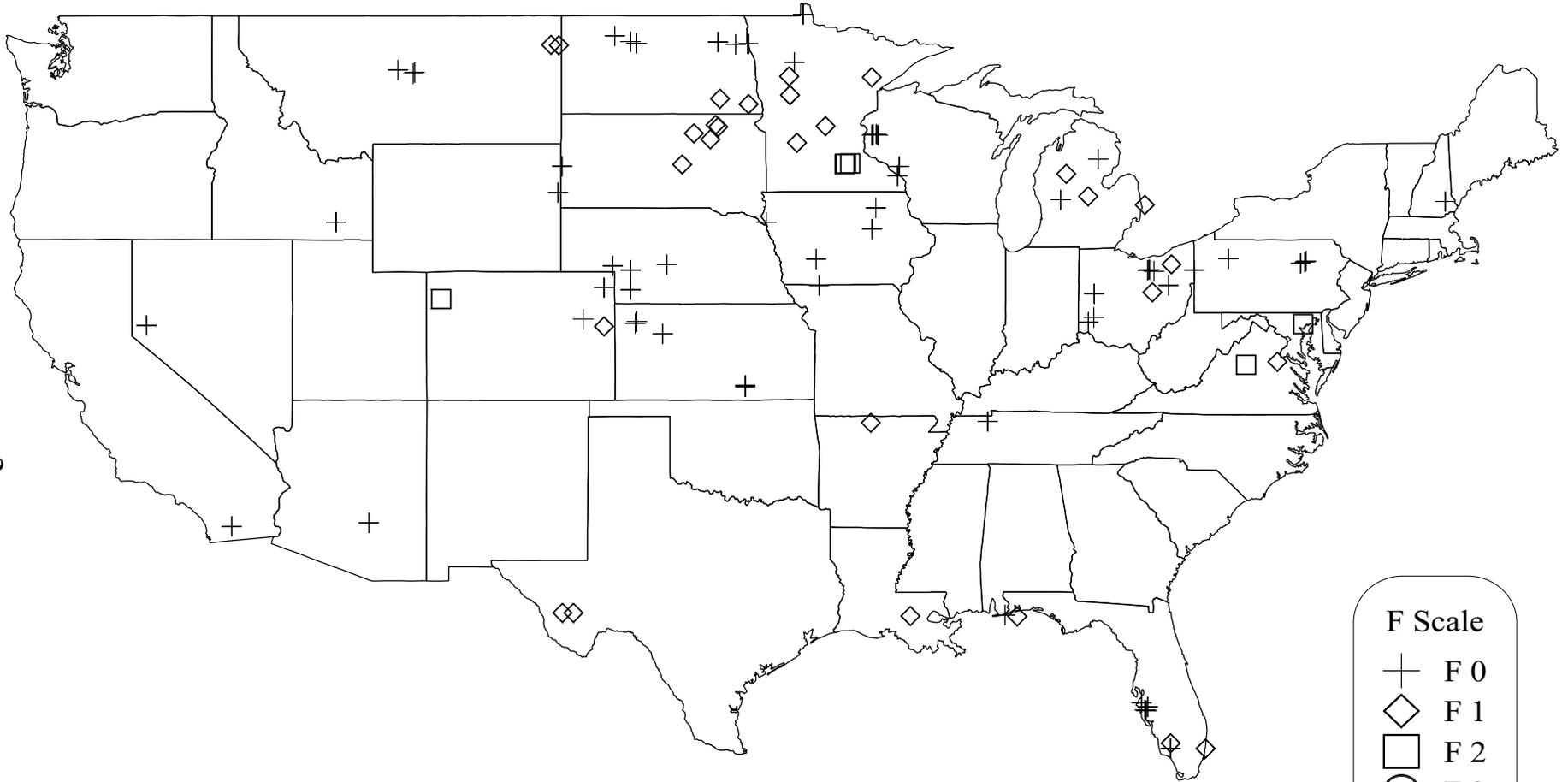
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Thomas R. Karl
Director,
National Climatic Data Center

July 1999 Confirmed Tornadoes



3

F Scale	F0	F1	F2	F3	F4	F5	Total
Number	65	28	6	0	0	0	99

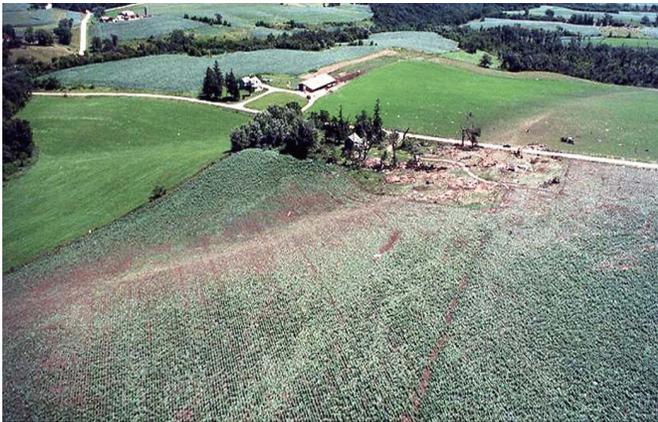
F Scale

- + F 0
- ◇ F 1
- F 2
- F 3
- △ F 4
- * F 5

OUTSTANDING STORMS OF THE MONTH

1. Lewiston, Minnesota Tornado

During the evening of July 8, 1999, a tornado touched down in the northwest side of Lewiston, Minnesota, damaging several homes. The tornado intensified as it moved into the center of town and tracked right down Main Street. Many homes along of Main Street suffered extensive damage with broken windows, damaged roofs and downed trees. One home had the entire roof removed. Four cars were damaged from airborne debris. The tornado also damaged several homes in southeast Lewiston. After moving through town, the tornado continued for another 2 miles through a rural area of corn fields. Every building on one farm, except the house, was destroyed. The tornado track was clearly visible through the corn fields. The tornado lifted just before the intersection of county roads 23 and 25 in rural Winona County. There were two minor injuries, four homes destroyed and 26 damaged. The 3.5 mile tornado track was about 100 yards wide. Peak damage suggests an F2 tornado, but most of the damage was F0 and F1 intensity.



Above Left: An aerial view of a damaged corn field clearly shows the tornado path.

Above Right: F-2 damage along Main Street in Lewiston, Minnesota. This home lost the entire roof and sustained major damage to its west and south sides. No one was home when the storm struck.



Left: An aerial view of a damaged warehouse and nearby homes on Main Street in Lewiston, Minnesota.

(Photographs courtesy of Todd Shea, Warning Coordination Meteorologist, National Weather Service, La Crosse, WI)

(Special Thanks to the KSTP Television station for supplying the helicopter for the aerial photographs)

2. The Cedar River Flood of July 1999

Severe river flooding occurred across northeast Iowa when 10 - 12 inches of rain fell in several northern Iowa locations from July 19 - 21. The Cedar River, which winds from Southeast Minnesota through north-central Iowa, crested at record levels and severely impacted Charles City and Nashua, Iowa. Approximately 100 homes in Charles City sustained damage. Several businesses closed due to rising water. Water levels



rose to record or near record levels, making several bridges impassable. Property and crop damage is estimated near \$10 Million.

Left: This bridge near downtown Charles City, IA was the last to remain open after the Cedar River crested at 22.8 feet.

Right: Near the center of town, rock bridges and levees failed as the Cedar River crested at record levels. Hundreds of homes were damaged.



Left: The Cedar River crested at Charles City on July 20, 1999 severely impacting businesses. Highway 218 was closed as flood waters spread into one of the business districts.

(Photographs courtesy of Todd Shea, Warning Coordination Meteorologist, National Weather Service, La Crosse, WI)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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ALABAMA, North Central

Morgan County

Decatur

01 1230CST 0 1 10K 0 Lightning

Lightning struck a metal awning at a large home supply store and traveled down a metal pole into the parking lot shocking a man who was loading lumber under the awning. The man was temporarily blinded by the lightning strike but was able to transport himself to a nearby hospital. Doctors kept him overnight but he displayed no serious injuries other than a small exit wound on his left ear. The telephone system in the store was damaged by the lightning strike.

Etowah County

Countywide

02 1515CST 0 0 10K 0 Flash Flood
1630CST

Heavy rainfall of two to three inches fell across parts of Etowah County in less than one hour. The heavy rainfall caused several streets, highways, and yards around Gadsden to flood. The City of Gadsden Street Department put up temporary barricades around the city. Several locations in Attalla also reported similar flooding. Significant cloud to ground lightning strikes caused over 2000 customers to be without power for a large part of the afternoon and early evening.

Etowah County

Gallant

02 1600CST 0 1 1K 0 Lightning

A Gallant man was struck by lightning according to newspaper reports. He was working at a home when lightning apparently ran through a power cord on the saw he was using. He received only a minor shock and was not seriously injured. Another lightning strike ran down a tree and into a house, blowing a hole through the wall.

Autauga County

Autaugaville

06 2241CST 0 0 5K 0 Thunderstorm Wind (G50)

Trees and power lines were blown down in Autaugaville. Pea size hail was also reported.

Jefferson County

Leeds

07 1420CST 0 0 50K 0 Thunderstorm Wind (G50)

Brief heavy rain, small hail, and damaging wind occurred in Leeds. The wind collapsed a roof at Ron's Automotive in Leeds. The collapsed roof damaged three cars inside the building and nine cars that were in the outside car lot. The storm also knocked down trees and produced minor damage to several mobile homes in Leeds Park.

Hale County

8 SSE Greensboro

07 1624CST 0 0 3K 0 Thunderstorm Wind (G50)

Several trees were blown down near Newbern.

Marengo County

Countywide

07 1700CST 0 0 20K 0 Thunderstorm Wind (G50)
1725CST

Several trees were blown down throughout Marengo County. One tree fell through the roof of a home in Demopolis and caused major damage to the home.

Etowah County

Mountainboro

07 1712CST 0 0 2K 0 Thunderstorm Wind (G50)

One barn sustained minor wind damage and a few trees were blown down near Mountainboro. Around the same time, the EOC at Gadsden reported wind gusts of 53 miles an hour.

Dekalb County

Geraldine

07 1717CST 0 0 2K 0 Thunderstorm Wind (G50)
1722CST

Numerous trees and power lines were knocked down in Geraldine and in other locations in southwest Dekalb County.

Etowah County

Sardis City

07 1727CST 0 0 5K 0 Thunderstorm Wind (G50)

Numerous trees and power lines were blown down in Sardis City.

Marshall County

Boaz

07 1730CST 0 0 5K 0 Thunderstorm Wind (G50)

Several trees and power lines were blown down in Boaz. A few homes received minor damage when parts of trees fell on them.

Madison County

9.4 SSE Huntsville

07 1800CST 0 0 3K 0 Lightning

Lightning struck a tree in the southern section of Huntsville at Bailey Cove Road and Shadow Ridge causing a small fire in the attic of one house and damaging electronic and telephone equipment in several homes. Lightning apparently first struck a tree blowing bark off the tree. After striking the tree, lightning entered one house starting a small fire in the attic that was extinguished before fire equipment arrived.

Talladega County

Talladega

11 1900CST 0 0 75K 0 Thunderstorm Wind (G60)
1915CST

Two large mobile homes were ripped in half when damaging winds moved along SR 21 in Talladega. A large tent was blown over damaging four automobiles. A few vehicles were also blown off the road while moving. No injuries were reported.

Chilton County

Thorsby

16 1500CST 0 0 12K 0 Flash Flood
1800CST

Radar estimated that two to four inches of rain fell across parts of Chilton County in less than three hours. This caused many roads in Thorsby to become flooded.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ALABAMA, North Central									
Clay County									
Ashland	16	1600CST			0	0	50K	0	Lightning
									Lightning apparently struck a home causing a fire. The fire virtually destroyed everything inside the home. No injuries were reported.
Montgomery County									
Montgomery	16	1630CST 1800CST			0	0	25K	0	Flash Flood
									Radar estimated that two to four inches of rain fell in just over one hour in northern Montgomery County. Numerous roads in the city of Montgomery were flooded and several homes in the Southlawn Subdivision were also flooded.
Autauga County									
Prattville	16	1710CST			0	0	10K	0	Lightning
									The Autauga County 911 building was apparently struck by lightning causing damage to computers, radios, and other electronic equipment in the office.
Madison County									
5.7 NNW Owens Xrds	19	1720CST			0	0	150K	0	Thunderstorm Wind (G65)
									What may have been an intense traveling microburst felled many trees and numerous large tree limbs in Big Cove. One two-story house under construction was collapsed by the wind and a mobile home being used as a sales office was demolished (it was not tied down). Several roofs of homes in the area sustained damage.
Madison County									
Meridianville	21	1454CST			0	0	3K	0	Thunderstorm Wind (G50)
									Trees were blown down and minor street flooding was reported in Meridianville.
Dekalb County									
Ft Payne	22	1420CST			0	0	0	0	Thunderstorm Wind (G50)
									Trees were blown down blocking the road near the Dekalb County Courthouse in Fort Payne.
Madison County									
Huntsville	22	1600CST			0	0	10K	0	Thunderstorm Wind (G50)
									A few trees were blown down in Huntsville. One automobile was damaged when a tree fell on it.
Marshall County									
Boaz	24	1230CST			0	0	5K	0	Thunderstorm Wind (G50)
									Seven power poles were blown down near Boaz.
Dekalb County									
Crossville	24	1410CST			0	0	100K	0	Lightning
									Lightning struck A1 Cabinets in Crossville. The lightning strike caused an explosion and the subsequent fire totally destroyed the entire business.
Marshall County									
Guntersville	24	1440CST			0	0	5K	0	Lightning
									Lightning struck a home in Guntersville and ignited a small fire. The home only received minor damage because the fire was put out quickly by the fire department.
Madison County									
Huntsville	24	1700CST 1715CST			0	0	2K	0	Lightning
Madison County									
Huntsville	24	1700CST 1715CST			0	0	8K	0	Thunderstorm Wind (G55)
									One mobile home was blown off its foundation with no injuries reported. A few large tree limbs were snapped and several power lines were knocked down across the area. Lightning strikes caused damage to the warning siren activation computers at the 911 office and to a power substation. One to two thousand customers were without power.
Coosa County									
Stewartsville	24	1715CST			0	0	3K	0	Thunderstorm Wind (G50)
									Trees were knocked down in the city of Stewartville.
Morgan County									
Hartselle	24	1730CST			0	0	0	0	Thunderstorm Wind (G50)
									Trees were blown down near Hartselle.
Lawrence County									
Hatton	24	1800CST			0	0	5K	0	Lightning
									Lightning struck a home in Hatton producing a fire that caused minor damage to the structure. Pea size hail was also reported with the passage of the thunderstorm.
Lauderdale County									
4 N Florence	24	1813CST			0	0	3K	0	Thunderstorm Wind (G50)
									Trees were reported down just north of the city of Florence.
Lauderdale County									
Green Hill	24	1830CST			0	0	4K	0	Thunderstorm Wind (G50)
									Numerous trees were blown down in Green Hill. One structure had its metal roof ripped off.
Tuscaloosa County									
Tuscaloosa	24	1955CST			0	0	5K	0	Thunderstorm Wind (G50)
									Several large tree limbs were snapped off and a few landed on vehicles underneath. The vehicles sustained minor damage.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>ALABAMA, North Central</u>									
Randolph County									
Roanoke	25	1735CST			0	0	0	0	Hail (0.88)
			Dime to nickel size hail was reported in Roanoke.						
Jackson County									
Rosalie	29	1417CST			0	0	2K	0	Thunderstorm Wind (G50)
			Trees were blown down in Rosalie.						
Dekalb County									
Fyffe	29	1615CST			0	0	1K	0	Thunderstorm Wind (G50)
			Windows were blown out at the Fyffe Police Department.						
Madison County									
8 NE Huntsville	29	1645CST			0	0	8K	0	Thunderstorm Wind (G50)
			Trees were reported down about 8 miles northeast of Huntsville in Moores Mill. In addition, a tree fell onto some power lines 2 miles north of Gurley in Killingsworth Cove. Both locations reported numerous power outages.						
Madison County									
Huntsville	29	1715CST 1722CST			0	0	15K	0	Thunderstorm Wind (G55)
			Numerous reports of trees and power lines down were received from across the city of Huntsville. Power outages were widespread across the area and many roads were blocked because of downed trees.						
Etowah County									
Countywide	29	1725CST 1750CST			0	0	75K	0	Thunderstorm Wind (G55)
			Numerous trees and power lines were blown down across the county. The hardest hit areas included Gadsden, Attalla, Hokes Bluff, Rainbow City and Glencoe. The Etowah County EOC measured a wind gust of 62 miles an hour at 1735. Several homes received damage from the fallen trees. One home was severely damaged. Alabama Power estimated that over 12 thousand customers were without power into the next morning.						
Colbert County									
Tuscumbia	29	1750CST			0	0	25K	0	Thunderstorm Wind (G50)
			Numerous trees and power lines were knocked down by thunderstorm winds. Several trees fell onto houses and mobile homes in the southern part of Tuscumbia. Numerous customers were temporarily without power.						
Cullman County									
2 S Hanceville	29	1835CST			0	0	0	0	Thunderstorm Wind (G50)
			Trees were reported down between Hanceville and Garden City.						
Shelby County									
Helena	29	1900CST			0	0	0	0	Thunderstorm Wind (G50)
			A few trees were reported down in the Dearing Downs Subdivision in Helena.						
ALZ038									
	30	1600CST			1	0	0	0	Excessive Heat
			An 84 year old woman was found dead in her home in Lafayette. The coroner determined that the death was heat related. The home was furnished with air conditioning but was apparently not operating. The afternoon temperatures were in the upper 90s with heat indices near 110 degrees. F84PH						
<u>ALABAMA, Southeast</u>									
Houston County									
Gordon	06	2225EST			0	0			Hail (1.00)
			Quarter size hail reported by Houston County EMA.						
Houston County									
Dothan Arpt	23	1820EST			0	1			Lightning
			A man was injured by lightning as he stood next to an aircraft.						
<u>ALABAMA, Southwest</u>									
Baldwin County									
Orange Beach	02	0955CST			0	0			Waterspout
			A dissipating waterspout was reported near Ono Island, east of Orange Beach.						
Baldwin County									
Gulf Shrs	04	1600CST			1	0			Rip Currents
			A thirty-three year old male drowned in heavy surf while swimming with friends on West Beach in Gulf Shores. The body was found the next day. Red flags, which warn of dangerous surf conditions, were flying at the time of the drowning. M33IW						
Clarke County									
Morvin	07	1800CST 1802CST			0	0	4K		Thunderstorm Wind (G50)
			High winds blew trees down along State Highway 69 near Morvin.						
Choctaw County									
Lavaca	07	1836CST 1841CST			0	0	4K		Thunderstorm Wind (G55)
			Trees and power lines were blown down.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated	Crops	Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage		
ALABAMA, Southwest									
Mobile County Mobile	08	0800CST			0	0	5K		Lightning
									Lightning struck the Mobile county sewage treatment plant. The lightning damaged a pump which caused sewage to spill into a creek.
Baldwin County Point Clear	12	0910CST 0915CST			0	0			Waterspout
									A waterspout was observed over Mobile Bay just offshore of Point Clear. The waterspout moved ashore near Point Clear and quickly dissipated causing no damage.
Baldwin County Point Clear	12	0915CST 0916CST	0.1	50	0	0			Tornado (F0)
									A waterspout moved ashore near Point Clear and quickly dissipated over land. No damage was found.
Baldwin County Ft Morgan	12	1010CST 1030CST			0	0			Waterspout
									EMA officials reported a waterspout on the Gulf side of Fort Morgan. The waterspout soon dissipated and was no threat to land.
Baldwin County Fairhope	17	1220CST 1235CST			0	0			Waterspout
									A waterspout was reported over Mobile Bay, approximately 9 miles southwest of Fairhope. The waterspout soon dissipated.
Covington County Rose Hill	18	1605CST 1607CST			0	0	4K		Thunderstorm Wind (G50)
									High winds blew several trees and power lines down near County Road 43 just west of Rose Hill.
Escambia County Brewton	23	1800CST 1805CST			0	0	15K		Thunderstorm Wind (G60)
									Strong straight line winds damaged the roof of the 911 building at US Hwy 31 north. Across the street at a mobile home sales park, several mobile homes were damaged. The strong winds also blew a car into another car and downed a few trees in the area.
Baldwin County Bon Secour	23	1815CST 1830CST			0	0			Waterspout
									A waterspout was reported over Bon Secour Bay. The waterspout dissipated and did not affect land.
Covington County River Falls	25	1230CST 1235CST			0	0	4K		Thunderstorm Wind (G50)
									High thunderstorm winds blew numerous trees down.
Conecuh County Evergreen	25	1450CST 1530CST			0	0	2K		Flash Flood
									Heavy rains caused water to rise rapidly over US Hwy 84 east of Evergreen. The water was nearly a foot deep over the road in spots.
Covington County 4 SW Red Level to 3 W River Falls	25	1450CST 1530CST			0	0	1K		Flash Flood
									Heavy rains caused temporary flooding along US Highway 84 from south of Red Level to west of River Falls. Several dirt roads leading off of Highway 84 had to be temporarily closed due to high water.
Washington County Yarbo	25	1640CST 1642CST			0	0	4K		Thunderstorm Wind (G50)
									High winds blew trees down along County Road 15 just southwest of Yarbo.
Baldwin County Loxley	30	1330CST 1332CST			0	0			Hail (0.75)
									Dime size hail was reported along US Highway 90 just west of Loxley.
Mobile County Tillmans Corner	30	1407CST 1409CST			0	0			Hail (0.88)
									Nickel size hail was reported.
Baldwin County Loxley	30	1432CST			0	0	5K		Lightning
									A barn on US Hwy 59 in Loxley was reported struck by lightning.
Mobile County Semmes	30	1450CST 1452CST			0	0	1K		Thunderstorm Wind (G50)
									High winds blew several large limbs down along US Highway 98 near Semmes.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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ALABAMA, Southwest

Baldwin County

Little River	30	1455CST 1457CST			0	0	4K		Thunderstorm Wind (G50)
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High winds blew several trees down off of State Highway 59 just south of Little River.

Baldwin County

Rosinton	30	1517CST			0	0	3K		Lightning
----------	----	---------	--	--	---	---	----	--	-----------

A shed was struck by lightning and caught fire.

Baldwin County

Belforest	30	1517CST			0	0	5K		Lightning
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A house was reported struck by lightning and caught fire.

Baldwin County

Silverhill	30	1517CST			0	0	5K		Lightning
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A house was reported struck by lightning and caught fire.

Baldwin County

Daphne	30	1740CST			0	0	3K		Lightning
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Lightning struck a tree in the Lake Forest subdivision and travelled through a nearby house. The lightning knocked out many appliances in the home.

ALASKA, Northern

Koyukuk / Upr Kobuk

Vly

Northeast Portion	17	1400AST			0	0	10K		Flood
	21	1400AST							

N. Slopes Of Brooks

Range

Central Portion	17	1400AST			0	0	10K		Flood
	21	2100AST							

Frequent rains over the Brooks Range produced rises to bankfull on many rivers draining north toward the Arctic Ocean, as a few rivers Draining on the south side. The Dalton Highway was reported washed out at the Holden Creek Bridge near milepost 363, as well as a washout at milepost 260 between Atigun Pass and Galbraith Lake. Rainfall amounts
Anaktuvuk Pass AWOS: 1 inch
BLM/NPS Remote Automated Weather System sites:
MUY 2.4 inches
AGN 1.5 inches
CXF 2.20 inches

ALASKA, Southeast

NONE REPORTED.

ALASKA, Southern

AKZ018

Kodiak Island-Eastern Alaska Peninsula

02	1800AST			0	0		High Wind (G50)
03	0600AST						

Brisk northwest wind gusts reached 58 mph as reported by the tug "Western Ranger" late Friday and early Saturday near Wide Bay. This anomalous area is known for strong northwest winds.

AKZ011-019

Kuskokwim Delta - Western Alaska Peninsula

19	0500AST			0	0		High Wind (G59)
	2000AST						

A moderate low that moved through the central Aleutians, deepened and moved northeastward toward Nome early Tuesday. Brisk south to southwest winds developed along the southwest semicircle of the low. Gusts reached 64 mph at Bethel Monday evening as the low moved toward Nome.

The front preceding the low was responsible for brisk southeasterly winds. ASOS adjusted gusts reached 68 mph at Cold Bay just prior to frontal passage at 7pm Monday, when winds abruptly dropped to less than 15 mph. Additionally, a water spout was reported just west southwest of Cold Bay.

AKZ019

Western Alaska Peninsula

28	1427AST			0	0		High Wind (G56)
	2200AST						

Brisk southeast winds preceded a moderate front, which moved northeast through the Bering Sea Wednesday and early Thursday. Gusts reached 64 mph at Cold Bay prior to frontal passage at 10 pm Wednesday. Strongest winds were recorded between 3pm and 4pm ADT Wednesday.

AKZ020

Aleutian Islands

29	1558AST			0	0		High Wind (G60)
	1615AST						

A vigorous low, spawned southwest of the Kamchatka Peninsula Wednesday, moved into the western Aleutians Thursday. Brisk southerly winds were reported ahead of the front. Gusts reached 69 mph at Adak Thursday afternoon.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ALASKA, Southern

Susitna Valley
Talkeetna

	29	2200AST			0	0			Heavy Rain
	30	1000AST							

Heavy rains moved into the Upper Susitna Valley late Thursday, associated with a stalled front across the area. Rain ended Friday.

Reported rainfall amounts at the Talkeetna ASOS reached 1.95 inches for the 24 hour period ending at 10 am Friday...most of which fell in less than 12 hours. A flash flood watch was issued for streams and rivers east of the Parks Highway and in the Upper Susitna Basin early Friday, then cancelled late Friday afternoon.

Reports indicated cottonwood trees flowing down Clear Creek Friday morning. Wiggle Creek was reported to be at bankfull.

AMERICAN SAMOA

NOT RECEIVED.

ARIZONA, Central and Northeast

Gila County
10 N Payson

	05	1436MST			0	0	120K	0	Lightning
		1440MST							

Lightning started a house fire on East Flowing Springs Road. The home burned to the ground.

Coconino County
10 SW Tuba City

	07	1310MST			0	0	0	0	Funnel Cloud
		1311MST							

Law enforcement officials reported a funnel cloud at the intersection of highways 89 and 160.

Coconino County
Flagstaff

	08	1430MST			0	0	0	0	Urban/Sml Stream Fld
		1600MST							

Thunderstorms dropped nearly one inch of rain in 60 minutes over downtown Flagstaff. Storm runoff pooled in several intersections in town to a depth of two feet.

Coconino County
Supai

	11	1429MST			0	0	0	0	Flash Flood
		1630MST							

Heavy rains produced flash flooding of Cataract Creek in the Supai village. Campgrounds in the drainage were evacuated before the flood waters hit.

Gila County
10 N Payson

	11	1540MST			0	1	0	0	Flash Flood
		1815MST							

Flash flooding along the East Verde River in the Washington Park area produced a 5 foot wall of water that swept one woman 100 yards downstream. She was rescued with minor injuries.

Coconino County
5 N Grand Canyon Arpt

	14	1143MST			0	4	2.5M	0	Flash Flood
		1730MST							

Repeat thunderstorms over the Grand Canyon National Park produced some of the worst flash flooding seen in years. Severe damage was done to the Bright Angel and North Kaibab hiking trails, forcing their closure for nearly two weeks. Flood waters also undermined a major water supply line to the South Rim. Conservative damage and repair amounts are \$2.5 million. The injuries included one broken leg, and three with lacerations. In addition 26 campers were airlifted out of the canyon due to the trail washouts.

Yavapai County
5 NE Cordes

	14	1515MST			0	0	0	0	Flash Flood
		1630MST							

The normally low flowing Big Bug Creek rose to bank full levels at Cordes Junction after an estimated 2 to 4 inches of rain fell in a two hour period in the upper basin.

Coconino County
10 N Grand Canyon Arpt

	15	0350MST			0	0	0	0	Flash Flood
		0530MST							

Nocturnal thunderstorms renewed flash flooding along Bright Angel Creek in the Grand Canyon National Park. The Cottonwood and Phantom Ranch campgrounds were evacuated.

Gila County
10 N Payson

	21	1339MST			0	0	0	0	Flash Flood
		1630MST							

Heavy rainfall including a burst of one inch in 20 minutes produced rapid rises on the East Verde River near Washington Park. Weather spotters reported large trees floating down the river and several low water crossings were flooded.

Yavapai County
4 E Mc Guireville

	21	1544MST			0	0	0	0	Thunderstorm Wind (G50)
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A weather spotter in Lake Montezuma measured thunderstorm outflow winds at 58 mph.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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ARIZONA, Central and Northeast

Yavapai County

Clarkdale	25	1305MST			0	0	0	0	Flash Flood Thunderstorm rains filled the normally dry Bitter Creek. Junk automobiles that were being stored in the creek bed were moved several feet downstream.
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Coconino County

4 N Sedona	25	1350MST 1600MST			0	0	0	0	Flash Flood Doppler radar estimates of 2 plus inches of rain per hour caused flash flooding and mudslides in Oak Creek Canyon. A 4 foot tall slab of mud was left on Highway 89A in the Indian Gardens section of the canyon. Nearby, the Schnebly Hill underpass was flooded with water three feet deep and debris across the road.
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Coconino County

Supai	25	1732MST 1934MST			0	0	0	0	Flash Flood Members of the Supai Police Dept. reported Cataract Creek rose 6 feet, overtopping several bridges and forcing the evacuation of the Supai campground.
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Navajo County

Pinetop	25	1830MST 2000MST			0	0	0	0	Urban/Sml Stream Fld An estimated three inches of rainfall produced local flooding in east Pinetop with water entering two homes. Erosion ditches two feet wide and seven feet deep were produced by the runoff.
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Coconino County

Page	27	1730MST 1830MST			0	0	1K	0	Urban/Sml Stream Fld
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Coconino County

Page Arprt	27	1740MST			0	0	0	0	Thunderstorm Wind (G50) A severe thunderstorm produced wind gusts of 58 mph at the Page Airport. Heavy rainfall in downtown Page produced minor flooding of the public library and county jail.
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Navajo County

Holbrook	27	2120MST 2250MST			0	0	0	0	Flash Flood Thunderstorms producing heavy rainfall forced the Porter Tank Draw to leave its banks and flood McClaws Road to a depth of three feet.
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ARIZONA, Northwest

Mohave County

Dolan Spgs	09	1145MST			0	0			Flash Flood The Dolan Springs Fire Department reported washes filled with water and some roadways blocked. The water quickly receded however.
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Mohave County

Dolan Spgs	11	1335MST 1530MST			0	0			Flash Flood Heavy rain producing thunderstorms produced flash flooding around Dolan Springs for a couple hours during the early afternoon. The Dolan Springs Fire Department reported some boulders washing across a secondary road and several roads around town were impassable. No significant damage was reported.
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Mohave County

4 NE Dolan Spgs	12	0720MST			0	0			Urban/Sml Stream Fld Minor flooding from thunderstorms was reported around Dolan Springs with water flowing across some roads.
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Mohave County

Kingman	15	0030MST			0	0	15K		Thunderstorm Wind The Mohave County Sheriff's Office reported a roof was torn from a house in Kingman by thunderstorm winds.
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Mohave County

Kingman to Lake Havasu City	15	0040MST 0200MST			0	0			Flash Flood Heavy rain producing thunderstorms, some severe, formed along a line in southwest Mohave County extending from Kingman to Lake Havasu City. The storms formed in the vicinity of Kingman and Golden Valley then quickly spread to the southeast dumping heavy rain across the entire area. The Mohave County Sheriff's Office reported widespread street flooding in Kingman, Golden Valley, Mohave Valley and Lake Havasu in roughly the same period of time. Local washes were flowing almost at full capacity and Interstate 40 near Topock was blocked for a short period by two feet of water and mud flowing over the road. No significant flood damage was reported.
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Mohave County

20 NE Dolan Spgs	25	1535MST			0	0			Flash Flood The Mohave County Sheriff reported three feet of water carrying mud and boulders over Pierce Ferry Road between Dolan Springs and Meadowview. There were no reports of significant damage.
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Mohave County

Oatman to 15 SW Oatman	28	1515MST 1800MST			0	0			Flash Flood
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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ARIZONA, Northwest

Mohave County

18 S Bullhead City	28	1545MST			0	0	500K		Thunderstorm Wind Severe thunderstorms unleashed damaging winds and torrential rain from Mohave Valley to near Oatman along Route 66. Flood waters blocked Route 66 around 3:15 p.m. MST, but the height of the storm struck around 3:45 p.m. producing winds which damaged 45 residential properties and tore the roof completely off a duplex. Several carports and numerous trees and power lines were blown down. The roofless duplex was quickly drenched by the heavy downpour and was condemned by authorities. Streets were filled with water and many were impassable until around 6:00 p.m. MST.
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ARIZONA, South

Pima County

Tuscon Ryan Fld Arpt	02	1713MST 1725MST			0	0	20K		Thunderstorm Wind (G60)
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Cochise County

13 W Douglas Arpt	03	1155MST			0	0	0.50K		Hail (0.75)
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Pima County

Tucson	05	1505MST 1545MST			0	0	100K		Thunderstorm Wind (G55)
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Pima County

Tucson	05	1530MST			0	1			Lightning Winds in the area also blew down small trees and power lines resulting in a few power outages. Lightning strikes were reported to have struck houses, trees, and injured a man talking on the telephone.
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Pima County

Tucson	06	2200MST 2245MST			0	0	20K		Flash Flood Eleven people needed to be rescued from their cars after flood waters engulfed them.
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Pima County

Davis Monthan Afb	07	1550MST			0	0			Thunderstorm Wind (G73)
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Pima County

Tucson	07	1600MST 1650MST			0	0	200K		Thunderstorm Wind (G58) Strong winds in the Tucson area caused extensive roof damage and knocked out power to a large section of north and northeast Tucson.
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Cochise County

10 NW Willcox	09	1940MST 2000MST			0	0			Flash Flood Flooding on many urban and rural roads in the Willcox area.
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Pima County

Tucson	10	1400MST 1445MST			0	0			Thunderstorm Wind (G56)
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Pima County

Davis Monthan Afb	10	1410MST 1446MST			0	0			Thunderstorm Wind (G53)
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Pima County

Tucson	10	1411MST			0	0	100K		Lightning
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Pima County

Oro Vly	10	1510MST 1545MST			0	0			Flash Flood
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Wind damage in the Tucson area downed numerous power lines. Some street flooding reported in Tucson as well as Oro Valley. Storm damage is unknown except for house fire caused by lightning strike.

Pima County

Tucson	13	2150MST 2215MST			0	0	10K		Flash Flood
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Several main streets closed.

Pima County

20 NE Tucson	15	0700MST 0900MST			0	0	10M		Flash Flood
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Six to Seven inches of rain fell in the headwaters of Sabino and Bear Canyons on the south slopes of the Catalina mountains early in the morning. At one point 2 inches of rain in 20 minutes was recorded by a remote rain gage. Most of the rain fell over a three hour period between 3 am and 6am. The river gage on Sabino Creek where the creek comes out of the mountains rose from 214 CFS at 6:15 AM to a peak flow of 10,600 CFS at 8:30 AM. The flow of 10,600 is the highest summer flow recorded by this rain gage which has a history back to 1932. The resulting food washed out much of the recreational facilities along the creek at the Sabino Canyon Recreation area. Between 10 and 20 people were evacuated by helicopter after being trapped when the water rose after they had entered the canyon. A large section of the Catalina Highway was washed out where the highway crosses the headwaters of Bear Canyon. The highway was closed for 2 weeks after being washed away. The only other road to the top of the Catalina Mountains is a back country road suitable for 4 wheel drive only. Several hundred campers were trapped on themountain due to the main road being closed including about 170 boy and girl scouts. Arrangements were made to smooth the back country road to allow residents and visitors alike access off the mountain. Several residence along Bear and Sabino Creek were flooded as the water filled the flood plain when leaving the mountains. Property

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ARIZONA, South									
Property damage included washing out several horse corrals.									
Cochise County San Simon	23	1930MST 2000MST			0	0			Flash Flood
Several roads flooded and impassable.									
Pima County Davis Monthan Afb	24	1558MST 1620MST			0	0	10K		Thunderstorm Wind (G82)
Pima County South Tucson	24	1620MST 1700MST			0	0			Flash Flood
Street flooding and roads closed in South Tucson.									
Cochise County 5 W Portal	25	1310MST 1410MST			0	0			Flash Flood
Three inches of rain in themountains near Portal caused creeks in the area to rise rapidly. A campground became flooded forcing the evacuation of several campers.									
Pima County Tucson	26	1500MST 1615MST			0	0	40K		Flash Flood
Many roads impassable with several houses flooded.									
Cochise County 8 S Sierra Vista	26	1730MST 1800MST			0	0	20K		Flash Flood
Boulders washed onto road due to flash flooding. Many roads impassable south of Sierra Vista.									
Pima County Tucson	27	1650MST 1750MST			0	0			Flash Flood
Several roads impassable during sush hour on the north side of Tucson.									
Pima County 13 N Tucson to Tucson	27	1700MST			0	1			Lightning
An eleven year old boy was struck while talking on a pay phone, only receiving minor injuries.									
Cochise County Sierra Vista	27	1817MST			0	0			Thunderstorm Wind (G60)
ARIZONA, Southwest									
Maricopa County 20 NE Carefree	05	1800MST			0	3			Lightning
Three U.S. Forest Service firefighters were stunned or paralyzed for a few minutes as lightning hit the ground near them. They also suffered some burns on the feet and shoulders.									
Pinal County Florence Jct to 5 W Florence Jct	06	1518MST 1525MST	8	20	0	0			Tornado (F0)
Numerous sightings from Florence and Florence Jct as considerable dust and debris was carried aloft.									
Maricopa County Fountain Hills to Queen Creek	06	1530MST 1540MST			0	0	100K		Thunderstorm Wind (G60)
Very strong winds downed trees and power poles. Although no injuries were reported, 20 wooden power poles supporting 69,000 volt power lines snapped in Fountain Hills, according to SRP crews.									
AZZ024	06	1610MST			1	14			Dust Storm
The widespread dust storm sharply reduced visibility along Interstate 10, about 7 miles northeast of Casa Grande. One motorist was killed as a series of wrecks were reported in a 25-mile section of the freeway. M38VE									
Maricopa County Mesa to Phoenix	06	1615MST 1620MST			0	0	50K		Thunderstorm Wind (G60)
Winds blew down trees, power lines and traffic lights in parts of the East Valley. Blowing dust cut the visibility at Sky Harbor airport, delaying up to 50 flights. Many streets flooded and 3 motorists in Sun City were rescued. SRP reported 20 power poles down.									
Maricopa County Mesa	06	1626MST			0	0			Hail (0.75)
Maricopa County Scottsdale	06	2000MST			0	0	5K		Lightning
Lightning triggered a house fire in the 8300 block of N. Via Mia.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ARIZONA, Southwest									
Pinal County									
Maricopa to Stanfield	07	1825MST 1840MST			0	0			Thunderstorm Wind (G60)
									Trees uprooted in Stanfield, dust storm with near zero visibility in dust and rain near Stanfield.
Maricopa County									
Phoenix	07	1950MST 2008MST			0	0	70K		Thunderstorm Wind (G60)
									Widespread area of very strong winds, damaged homes and cut power to at least 11,500 customers around the metropolitan area. Trees and limbs were downed. Official winds to 57 mph were clocked at 43rd Ave and lower Buckeye Road. President Clinton, arrived in Phoenix just before the blinding dust storm moved in. There were delays of up to 90 minutes at the airport. Numerous streets were flooded including streets in Scottsdale, Laveen, Ahwatukee, and Tatum Blvd. No serious injuries reported.
Maricopa County									
Scottsdale	07	2030MST 2055MST			0	0	50K		Thunderstorm Wind (G60)
									An entire line of power poles down along McDowell Road between Longmore and Dobson roads.
La Paz County									
Quartzsite	08	1400MST 1500MST			0	0			Urban/Sml Stream Fld
									Very heavy rains left washes running in parts of the county.
La Paz County									
Quartzsite	09	1430MST			0	0			Tstm Wind/Hail
									Power lines down.
La Paz County									
Parker	09	1615MST			0	0	10K		Thunderstorm Wind (G60)
									Power lines down.
Pinal County									
Coolidge to Casa Grande	10	1755MST			0	0	60K		Thunderstorm Wind (G60)
									Winds and dense blowing dust moved through the area. About 12 power poles were downed along highway 87 just north of Coolidge. Homes were damaged in Hidden Valley, west of Casa Grande.
Maricopa County									
Buckeye	10	1930MST 1945MST			0	0	30K		Thunderstorm Wind (G65)
									High winds tore off a portion of a roof and pushed over a camper on Van Buren Street east of Palo Verde Road. In addition, power poles were blown down just outside of Buckeye.
Yuma County									
25 E Yuma	12	1400MST 1530MST			0	0			Urban/Sml Stream Fld
Maricopa County									
10 SE Mesa	14	1147MST			0	0			Thunderstorm Wind (G67)
									The peak gust of 67 mph occurred at Williams Gateway Airport at 1147 MST.
Maricopa County									
Glendale	14	1530MST			0	0			Thunderstorm Wind (G65)
									Small trees and branches down.
Maricopa County									
Mesa	14	1545MST 1800MST			0	0	80K		Urban/Sml Stream Fld
									Major storm hit most of the Phoenix metropolitan area with numerous reports of street flooding. At least a half-dozen swift-water rescues, including a dramatic rescue by MCSO helicopter covered by local TV. No major injuries. Freeways and other major roads flooded. Three elderly south Phoenix women momentarily were trapped when their mobile home collapsed in driving rain. The roof of a major business collapsed in Phoenix.
Pinal County									
Florence to Casa Grande	14	1620MST 1835MST			0	0			Flash Flood
									Very heavy rainfall, up to 2.25 per hour hit this area. Widespread damage due to high water in many areas of Northwest Pinal County.
Maricopa County									
Mesa	14	1627MST 1655MST			0	0			Thunderstorm Wind (G60)
									Trees and power poles downed.. Numerous reports of street flooding.
Maricopa County									
Mesa	14	1627MST			0	0	15K		Tstm Wind/Hail
									Power poles down.
Maricopa County									
Gilbert	14	1630MST			0	0	10K		Lightning
									A home in the 3800 block of East San Remo in east Gilbert was struck by lightning causing a 2 foot hole in the concrete shingles on the

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ARIZONA, Southwest									
Gila County Roosevelt to Globe	14	1700MST 1800MST			0	0			Flash Flood
roof. No fire was involved but most electrical appliances were damaged.									
Maricopa County Wickenburg to Phoenix	15	0430MST 0700MST			0	0			Urban/Sml Stream Fld
Much of southern Gila County hit by torrential rains. Numerous people stranded around the county.									
Gila County 15 S Globe	18	1600MST 1700MST			0	0			Flash Flood
Very heavy rain caused rock slides and mud slides in El Capitan Canyon along route 77.									
Yuma County Tacna	18	1638MST			0	0			Hail (0.75)
Dime size hail reported by spotter.									
Gila County Miami	22	1622MST			0	0			Thunderstorm Wind (G60)
Power lines and power poles down in Miami.									
Maricopa County Mesa to Phoenix	23	1800MST 2000MST			0	0			Urban/Sml Stream Fld
Widespread street flooding led to several water rescues.									
Pinal County Apache Jct	23	1800MST 1820MST			0	0	50K		Thunderstorm Wind (G65)
Six power poles down, mobile home demolished. The winds ripped the roof off the mobile home and threw it into the muddy street, in the 4600 block of Delaware Street. About 2,500 homes in Apache Junction and Queen Creek lost power during the height of the storm. Additional damage was reported in the 4700 block of North Gold Drive.									
Maricopa County Gilbert	23	1808MST			0	0			Thunderstorm Wind (G60)
Maricopa County Phoenix	23	1834MST 1900MST			0	0	30K		Thunderstorm Wind (G60)
Power poles damaged at 7th Ave and Fillmore. Numerous water rescues due to flooded streets and washes running. Flights at Sky Harbor airport were delayed about a half hour.									
Pinal County 5 N Casa Grande	23	1930MST			0	0			Thunderstorm Wind (G60)
Power lines snapped.									
Maricopa County Palo Verde	25	2230MST			0	2			Thunderstorm Wind (G70)
Buildings damaged or destroyed. One mobile home was tossed about 30 feet down an embankment.									
Gila County Globe to Miami	27	1750MST 1830MST			0	0	100K		Tstm Wind/Hail
Dime sized hail, very high winds and torrential downpours hit this area. Numerous reports of damage and power outages. Most damage was in the Claypool-Lower Miami area., and to the north of Globe.									
Gila County Globe to Midland City	27	1828MST 1930MST			0	0	100K		Flash Flood
Widespread damage due to 3 inches of rainfall in about one hour. Washes flooded in most areas, with one swift-water rescue of a motorist in the Central Heights area. State route 88 to Roosevelt Lake at Wheatfields was closed due to high water going over the road.									
Gila County Roosevelt	27	1918MST			0	1			Lightning
Man suffered minor injuries from a lightning bolt.									
Maricopa County 15 NE Fountain Hills	27	2200MST			1	1			Lightning
Lightning struck and killed a motorcyclist and injured another near Bartlett Dam. M45OU									
Yuma County Yuma to Gadsden	28	1920MST 1950MST			0	0	30K		Thunderstorm Wind (G65)
Unknown number of power poles and lines down.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ARIZONA, Southwest									
Yuma County									
Yuma	28	1950MST 2050MST			0	0	10K		Urban/Sml Stream Fld
									Streets and roads flooded with rains of an inch per hour.
Maricopa County									
Scottsdale	29	1030MST 1130MST			0	0			Urban/Sml Stream Fld
									Streets and roads flooded with about 1.5 inches of rain per hour.
Pinal County									
Superior	29	1500MST 1600MST			0	0			Flash Flood
									Rainfall of 2.26 inches reported at Boyce Thompson arboretum near Superior. Silver King wash flooded. Pea size hail also reported. Highway 60 briefly closed at MP 232 due to rock slide. Water covered route 60 near Queen Valley.
ARKANSAS, Central and North Central									
Marion County									
Peel	01	1110CST			0	0			Hail (0.75)
White County									
Bald Knob	06	1421CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds downed trees, power lines and power poles at Bald Knob.
Faulkner County									
Conway	06	1635CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds were estimated around 58 mph at Conway.
ARZ033									
		White							
	09	1800CST			1	0			Excessive Heat
	11	1800CST							Excessive heat claimed the life of an elderly woman in the Searcy area. She had been living in a mobile home with no air conditioning. She was discovered when her church bus arrived to pick her up, and she did not answer the door. F73MH
Cleburne County									
Heber Spgs	10	1445CST			0	0			Flash Flood
									Excessive rain flooded Highway 110 just east of Heber Springs.
Johnson County									
South Portion	10	1633CST			0	0			Flash Flood
									Excessive rain flooded several roads in the southern half of Johnson County including the Clarksville area.
Stone County									
Mountain View	10	1655CST			0	0			Flash Flood
									Excessive rain covered several roads with water in the Mountain View area.
Stone County									
2 SE Mountain View	10	1655CST			0	0			Flash Flood
									Excessive rain flooded a low water crossing about 2 miles southeast of Mountain View.
Pike County									
Murfreesboro	10	1715CST			0	0			Flash Flood
									Excessive rain caused some street flooding in Murfreesboro.
Independence County									
3 NE Oil Trough	10	1715CST			0	0			Flash Flood
									Excessive rain caused some flooding on a few county roads about 3 miles northeast of Oil Trough.
Pope County									
8 N Dover	10	1730CST			0	0			Flash Flood
									Excessive rain covered a road with water about 8 miles north of Dover.
ARZ056									
		Jefferson							
	23	1800CST			1	0			Excessive Heat
									Excessive heat claimed the life of a man in Pine Bluff. He was found dead in his home. M31PH
Fulton County									
6 S Mammoth Spg	24	1325CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds downed large tree limbs and power lines about 6 miles south of Mammoth Spring.
Stone County									
Allison	24	1555CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds blew down several trees at Allison, with one tree on a trailer.
Baxter County									
4 N Bigflat	24	1620CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds downed several trees along Highway 341 about 4 miles north of Big Flat.
Boone County									
4.6 N Lead Hill to 4.2 N Lead Hill	24	1730CST 1732CST			0	0			Waterspout
									A severe thunderstorm developed over Bull Shoals Lake in Boone County, or about 4 to 5 miles north of Lead Hill. As the storm moved

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ARKANSAS, Central and North Central									
southwest, a waterspout was spawned and tracked toward Lead Hill Park. A witness at the park reported seeing a pontoon boat lifted into the air in a spiraling motion and then dropped. Several boat docks and boats were damaged or destroyed as the waterspout neared land.									
Boone County 4.2 N Lead Hill to 3.9 N Lead Hill	24	1732CST 1733CST	0.4	100	0	26			Tornado (F1)
A waterspout that developed over Bull Shoals Lake moved southwest into Lead Hill Park in Boone County, or about 4 miles north of Lead Hill. As it moved ashore, its classification changed to a tornado. The tornado was weak, but caused considerable damage to several camping trailers. Trees were also downed or snapped. Twenty six people were injured, with 5 people injured seriously. The tornado tracked roughly four tenths of a mile before dissipating.									
Boone County 4 N Lead Hill	24	1732CST			0	0			Hail (0.88)
White County Pangburn	26	1245CST			0	0	7K		Thunderstorm Wind (G50)
Thunderstorm winds damaged the roof of a home and also destroyed a shed near Pangburn.									
Jackson County 8 SE Denmark	26	1315CST			0	0	2K		Thunderstorm Wind (G50)
Thunderstorm winds damaged the back porch of a home, removed part of the roof, and downed 25 trees about 8 miles southeast of Denmark.									
Garland County Hot Spgs	26	1350CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed several trees at Hot Springs.									
Garland County 1 N Mountain Vly	26	1355CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed some trees about 1 mile north of Mountain Valley.									
Garland County Fountain Lake	26	1358CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked down a few trees at Fountain Lake.									
Conway County 4 N Hattieville	26	1520CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked down some large tree limbs about 4 miles north of Hattieville.									
Faulkner County 3 E Conway	26	1527CST			0	0			Thunderstorm Wind (G70)
Thunderstorm winds were estimated around 80 mph about 3 miles east of Conway. The winds destroyed a metal canopy at a small airport, with the canopy falling on and damaging a plane.									
Faulkner County Conway	26	1530CST			0	2			Thunderstorm Wind (G70)
Thunderstorm winds were estimated around 80 mph at Conway. The winds caused damage at a car wash, gas station and lumber yard. At the lumber yard, a board was thrown through a windshield and injured a woman. A bowling alley also sustained major roof damage. Several trees, power lines and signs were blown down as well, with some trees leaning on houses.									
Lonoke County Cabot	26	1555CST			0	0			Hail (0.75)
Lonoke County 3 S Cabot	26	1600CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds blew over a large trailer about 3 miles south of Cabot.									
Faulkner County Conway	26	1600CST			0	0			Flash Flood
Three to four inches of rain in less than an hour flooded several streets in and around Conway.									
Pope County Pottsville	26	1615CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed several large tree limbs at Pottsville.									
Baxter County Mountain Home	26	1800CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed trees and power lines at Mountain Home.									
Baxter County 3 NE Norfolk	26	1800CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed trees and power lines about 3 miles northeast of Norfolk, or near Salesville.									
ARZ044 Pulaski	26	1800CST			1	0			Excessive Heat
Excessive heat claimed the life of a man in North Little Rock. He was found dead on a local street. M390U									
Van Buren County 2 S Scotland	27	1245CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked down some large tree limbs about 2 miles south of Scotland.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ARKANSAS, Central and North Central

Pulaski County									
North Little Rock	27	1550CST			0	0	25K		Thunderstorm Wind (G50)
Thunderstorm winds toppled a 30-ton crane in North Little Rock.									
Marion County									
Peel	27	1623CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed large trees at Peel.									
Boone County									
Valley Spgs	27	1723CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed some power lines at Valley Springs.									
Monroe County									
Holly Grove	27	1755CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked over a large tree at Holly Grove.									
ARZ045									
Lonoke									
	28	0800CST			1	0			Excessive Heat
Excessive heat claimed the life of a woman in the England area. She was found unconscious in her home and died the next morning. F77OT									
ARZ068									
Bradley									
	30	1800CST			1	0			Excessive Heat
Excessive heat claimed the life of an elderly woman in Warren. She was found in her one bedroom apartment with no air conditioning, a single fan and the windows shut. F95PH									
ARZ053									
Clark									
	30	2100CST			1	0			Excessive Heat
Excessive heat claimed the life of an elderly man at Gurdon. He was found in his mobile home. There was an air conditioner, but it was not running. M84MH									
ARZ044									
Pulaski									
	31	2100CST			1	0			Excessive Heat
Excessive heat claimed the life of a man in Little Rock. He was found unconscious on a city street and died later at the hospital. M24OT									

ARKANSAS, East

ARZ028									
Mississippi									
	26	1200CST			2	0			Excessive Heat
Two persons were found dead in their homes in Blytheville due to the heat. F73PH, F75PH									
Poinsett County									
Fisher	26	1600CST			0	0	10K		Thunderstorm Wind
Two homes suffered minor damage. A few trees were uprooted.									
Randolph County									
Countywide	27	1415CST			0	0	10K		Thunderstorm Wind
Several trees and power lines were knocked down across the county.									
Lawrence County									
Countywide	27	1440CST			0	0	20K		Thunderstorm Wind
Some trees and power lines were blown down. Two cars were damaged by fallen trees.									
Clay County									
Rector	27	1515CST			0	0	25K		Thunderstorm Wind
A crop duster flipped over at the Rector airport. Several trees were knocked down.									
Craighead County									
Jonesboro	27	1530CST			0	0	10K		Thunderstorm Wind
A few trees and power lines were blown down.									
Randolph County									
Pocahontas	28	1515CST			0	0	10K		Thunderstorm Wind
Several large trees were knocked down. One tree fell on a car.									

ARKANSAS, Northwest

ARZ019-029									
Crawford - Sebastian									
	01	0000CST			0	0			Flood
	03	0000CST							
The Arkansas River at Van Buren rose above its flood stage of 22 feet at 1100 AM CDT on June 30. The river crested at a level of 24.6 feet at 800 AM CDT on July 1 before falling back below flood stage at 100 AM CDT on July 3.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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ARKANSAS, Northwest

Benton County

Cave Spgs **01** **0930CST** **0** **0** **5K** **Thunderstorm Wind**
 Several trees and tree limbs were blown down in Cave Springs. One of the trees was blown down onto a police car.

Benton County

Rogers **01** **1000CST**
 1030CST **0** **0** **Urban/Sml Stream Fld**
 There was minor street flooding in Rogers.

Carroll County

Eureka Spgs **01** **1045CST**
 1115CST **0** **0** **Flash Flood**

There was street flooding in Eureka Springs.
 A solid line of thunderstorms moved south out of Missouri and into far northwest Arkansas on the morning of July 1. At the time that the storms moved into Arkansas, the line was weakening but still had enough strength to produce one marginally severe wind report. The slow movement of the line also caused local runoff problems. The line had weakened further by the time it made it south to Washington and Madison Counties.

ARKANSAS, Southeast

NONE REPORTED.

ARKANSAS, Southwest

Miller County

8 SE Texarkana **07** **1800CST** **0** **0** **Thunderstorm Wind (G54)**
 Several large trees down across Hwy 71.

Nevada County

Emmet **25** **1720CST** **0** **0** **245K** **Thunderstorm Wind (G64)**
 Two homes suffered heavy roof damage and two large barns were blown down. Also, numerous trees were toppled and broken.

CALIFORNIA, Extreme Southeast

Imperial County

El Centro **08** **1300PST**
 1310PST **0** **0** **Thunderstorm Wind (G60)**
 Trees and power lines down. Brief heavy rain and lightning also struck most of the city.

Imperial County

El Centro to Niland **12** **1508PST**
 1700PST **0** **0** **Thunderstorm Wind (G60)**
 About 50 power poles knocked down in parts of the county, leaving at least 2,000 customers without power.

Imperial County

Westmoreland **14** **1738PST**
 1750PST **0** **0** **Thunderstorm Wind (G65)**
 Power poles and lines down. Roof from a house blown onto a road.

Imperial County

El Centro **28** **1555PST** **0** **0** **Thunderstorm Wind (G59)**
 Peak wind gust of 59 mph reported at El Centro Naval Air Station. Nearby wind damage included power lines and poles down and a roof blown off a house in Brawley.

CALIFORNIA, North Central

CAZ015>019

Northern Sacramento Valley - Central Sacramento Valley - Southern Sacramento Valley - Carquinez Strait And Delta - Northern San Joaquin Valley

11 **1200PST** **0** **0** **Excessive Heat**
13 **1800PST**

Afternoon high temperatures averaged 10 to 20 degrees above normal across the central and northern interior. High temperature records were set in Red Bluff on the 11th and 12th as the mercury climbed to 113 and 115 degrees F. Redding also set a high temperature record on the 11th with the mercury topping out at 115 degrees F. On the 12th, Redding's high temperature climbed to 114 degrees F, but was not a record. No fatalities or severe heat related injuries were noted by area hospitals, although there was an increase in lesser heat related illnesses caused by prolonged dehydration. Area utilities indicated that facilities were stressed during the event and the voluntary brown out program had to be utilized. SMUD also indicated they broke an all-time record on the 12th for electrical production and distribution.

CALIFORNIA, Northeast

Sierra County

Sattley **13** **1540PST**
 1640PST **0** **0** **0** **Heavy Rain**

Hail and heavy rain from thunderstorm produced over an inch of rain in about an hour. Estimated 0.5" to 0.75" hail reported with rain. 40 degree temperature drop in 1 hour.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

CALIFORNIA, Northwest

NONE REPORTED.

CALIFORNIA, South Central

Kern County Tehachapi	11	1330PST 1338PST			0	0			Lightning
Kern County Rosamond	11	1415PST 1430PST			0	0	20K		Gusty Wind/Hail
Kern County 2.5 W Tehachapi	11	1434PST 1830PST			0	0			Urban/Sml Stream Fld
Kern County Rosamond	11	1445PST 1830PST			0	0			Urban/Sml Stream Fld
Kern County 5 N Inyokern	11	1535PST 1540PST			0	0	2K		Dry Microburst
Kern County 1 N Cantil	11	1650PST 2240PST			0	0	10K		Flash Flood

Widespread thunderstorm activity in the Kern County Deserts brought numerous instances of heavy rain, water run-off, and gusty wind. Heavy rainfall began around midday in the Tehachapi Mountains around the town of Tehachapi and in the Mojave Desert near Rosamond. One spotter in Tehachapi reported 5" of rain in the time period from 1100 until 1434 PST. Several lightning strikes occurred around Tehachapi at approximately 1330 PST. Urban and Small Stream Flooding subsequently occurred from the thunderstorms in Tehachapi and Rosamond. In addition, 1/2" hail was reported in Rosamond at 1405 PST along with estimates of 45 Knot wind and a rainfall rate of 1/2" in 15 minutes prior to 1415 PST. Trees and powerlines were reported downed from the thunderstorm. Heavy rainfall in the Kern County Mojave Desert also led to Flash Flooding over the Redrock-Randsburg Road just north of Cantil in the early evening hours...crossing the road at approximately 1650 PST. Late in the afternoon, high wind from the thunderstorm lasted for about 5 minutes and downed powerpoles and lines north of Inyokern.

CAZ020>021

12	1100PST			0	0				Excessive Heat
13	1800PST								

Despite July being the 4th coldest July on record for Bakersfield, CA, in the Southern San Joaquin Valley, the 12th and 13th of the month were exceptionally warm. On the 12th, the mercury dropped to only 80 degrees F. overnight eclipsing the old mark of 79 set in 1990...and on the 13th the minimum dropped only to 85 degrees F. shattering the old record of 81 in 1990. In the Central Valley, Fresno set a new high minimum temperature of 81 degrees F. on the 12th. Along with the high minimum temperatures, dew points well into the 60s with daytime highs over 105 degrees F. pushed heat indices over 115 deg.F. for the afternoon hours. Fresno's high temperature was 106 deg.F. on the 12th...and 107 deg.F. on the 13th. Bakersfield peaked at 105 deg.F. on the 13th.

Kern County 5 S Edison	12	1248PST			0	0			Funnel Cloud
Kern County Mettler	12	1306PST			0	0	110K		Lightning
Kern County 4 W Arvin to 2 S Mettler	12	1320PST 1340PST			0	0	40K		Thunderstorm Wind (G50)
Kern County 5 S Mettler	12	1405PST			0	0			Funnel Cloud

A severe thunderstorm moved southwestward across the far Southern San Joaquin Valley during the early to mid-afternoon hours of July 12th. Numerous reports of downed powerlines due to gusty wind were received in the vicinity of Arvin and Lamont shortly after 1300 PST along with an unofficial report of a funnel cloud. At the latter stages of the storm passage lightning caused a structural fire and the accompanying gusty wind overturned a tractor-trailer rig on Interstate Highway #5 around 1320 PST. Visibility reportedly dropped to only 1/2 mile in heavy rain along with 1/4" hail by 1405 PST. The thunderstorm activity also led to a lightning strike that touched off a fire in a packing shed destroying a crop of peppers and equipment.

Tulare County 6 N Giant Forest to 6.2 N Giant Forest	13	1415PST			0	0			Flash Flood
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Thunderstorm activity over the higher terrain of Tulare County resulted in a mudslide over "The General's Highway" within Sequoia National Park. The slide resulted in road closure for about an hour with minimal damage but cleanup necessary for a couple of weeks.

Kern County 2 E Inyokern to Ridgecrest	13	1430PST 1510PST			0	0	5K		Lightning
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Numerous lightning strikes in the vicinity of Inyokern and Ridgecrest. A pole fire resulted as early as 1430 PST from a lightning strike with another report as late as 1510 PST in Ridgecrest.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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CALIFORNIA, South Central

Fresno County

Sanger	13	1716PST 1730PST			0	0	10K		Gusty Wind
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Nearby thunderstorm activity along the Southern Sierra Nevada foothills spawned a gust front over the Fresno County East portion of the San Joaquin Valley floor in the vicinity of Sanger during the afternoon hours of the 13th. While no specific ag damage was listed by the Ag Commissioner, there were reports of downed tree limbs and downed fruit from gusty wind. The reported wind from the east at 26 MPH was measured at the Fresno Air Terminal which was 8 miles northwest of the Sanger area.

CALIFORNIA, Southeast

San Bernardino County

5 W Nipton	09	1325PST			0	0	5K		Flash Flood
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The California Highway Patrol reported that the Nipton Road was flooded out between Interstate 15 and the town of Nipton. Nearby Cima Road was also closed with a car trapped in a wash. There were no injuries.

San Bernardino County

Joshua Tree	10	2038PST 2200PST			0	0			Urban/Sml Stream Fld
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San Bernardino County

Joshua Tree	10	2120PST			0	0	3K		Tstm Wind/Hail
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Thunderstorms dumped moderate to heavy rain for a little more than an hour around Joshua Tree. The runoff caused some road closures, but no significant damage. The storms also produced gusty winds which destroyed a large (30' X 20') sun porch at one residence.

San Bernardino County

40 E Barstow	11	1438PST			0	0			Heavy Rain
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The California Highway Patrol reported heavy rain with near zero visibility contributed to a traffic accident along Interstate 40 east of Barstow. The extent of damage and injuries was unknown.

San Bernardino County

5 N Twenty Nine Palms	11	1517PST 1615PST			0	0	5K		Flash Flood
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Flash flooding at the Twentynine Palms Marine Corps Base eroded some roads as 1.60 inches of measured rain fell in 45 minutes.

San Bernardino County

5 N Twenty Nine Palms	11	1517PST			0	0	15K		Tstm Wind/Hail
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A weather observer at the Twentynine Palms Marine Corps Base reported thunderstorm wind gusts measured at 55 mph with power poles down and two buildings damaged.

San Bernardino County

Barstow to 10 E Dagget	11	1555PST			0	0			Flash Flood
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The California Highway Patrol reported flooding on Interstate 15 near Barstow and zero visibility along Interstate 40 near Newberry Springs.

A line of strong thunderstorms extending to the east from Barstow, moved slowly to the south producing heavy rain and gusty winds across the San Bernardino County desert. Travel along Interstates 15 and 40 were significantly affected as heavy rain reduced visibility to near zero in some spots and runoff covered sections of road.

San Bernardino County

Lucerne Vly to Joshua Tree	12	2100PST 2200PST			0	0	30K		Flash Flood
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San Bernardino County

10 N Twenty Nine Palms	12	2122PST			1	0			Flash Flood
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M21VE

Thunderstorms formed in a southwest to northeast band during the evening from the Lucerne Valley through the northwest part of the Twentynine Palms Marine Corps Training Center and across I-40 into the Devils Playground. Estimated rainfall amounts ranged from 1.5 to 2.5 inches across the area. Law enforcement officials reported sections of road swept away along State Route 247 between Lucerne Valley and Landers. State Route 62 in the vicinity of Joshua Tree was also flooded in places as were other secondary roads.

The most significant event occurred at approximately 10:20 p.m. PDT when flash flood waters caught a light armored vehicle on the Marine Corps training grounds and one man was thrown from the vehicle and swept away by the swift current. His body was found shortly thereafter and he was later pronounced dead at the base hospital.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

CALIFORNIA, Southeast

San Bernardino

County

Barstow	13	1800PST 2030PST			0	0			Flash Flood
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Thunderstorms rolled into the Barstow area from the northwest dumping up to 1.4 inches of rain which quickly filled washes and inundated streets with water and mud. More than 5,000 people lost electricity for an hour or two and I-15 was blocked by mud near Highway 58 for a short period.

San Bernardino

County

Twenty Nine Palms	28	1435PST 1600PST			0	0	100K		Flash Flood
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Intense rainfall in the vicinity of Joshua Tree and Twentynine Palms turned roads into rivers and filled washes to capacity for a couple hours during the afternoon. Highway 62 was partially washed out and three motorists had to be rescued after their vehicles were caught in flood waters. Twelve homes in Twentynine Palms were damaged before the water began to recede between 5 and 6 p.m. PDT.

San Bernardino

County

3 E Twenty Nine Palms	28	1525PST			0	0	10K		Thunderstorm Wind
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Strong wind gusts from nearby thunderstorms ripped a roof off a house just east of Twentynine Palms.

San Bernardino

County

Needles	28	1445PST 1700PST			0	0	10K		Flash Flood
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San Bernardino

County

Needles	28	1445PST			0	0	75K		Thunderstorm Wind
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In what was described by local residents as the worst flooding in 14 years, severe thunderstorms pounded Needles with damaging winds and torrential rain. Rainfall estimates between 2 and 3 inches in less than one hour inundated and damaged part of Highway 95 and made many local roads impassable. The strong wind gusts destroyed some car ports and downed numerous trees and power lines, further blocking traffic. No injuries were reported.

San Bernardino

County

Cadiz	28	1800PST 2000PST			0	0			Flash Flood
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Radar rainfall estimates of up to three inches were confirmed by the California Highway Patrol which reported flooded roads in the vicinity of Cadiz, including Historic Route 66.

CALIFORNIA, Southwest

San Diego County

Pacific Beach	04	2305PST			1	0			Rip Currents
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A 19 year old male, visiting from Tucson, AZ, entered the water after being warned by friends not to, was caught in a rip current and drowned.
M19IW

San Bernardino

County

11 S Hesperia to 4.5 S Hesperia	06	1315PST 1945PST			0	0	100K		Wild/Forest Fire
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A 2576 acre wild fire destroyed one mobile home and two sheds. Residents of Oak Hills and Summit Valley were forced to evacuate. Highway 138 was closed as the fire crossed from the west side of the Highway and moved north across Summit Valley.

Riverside County

Rancho Mirage to Cathedral City	08	0640PST 1000PST			0	0	20K		Urban/Sml Stream Fld
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Heavy rains from thunderstorms flooded four apartments in Cathedral City with 3 inches of water, and streets and sidewalks in Palm Desert and Rancho Mirage with several inches to two feet of water. Lightning also caused power outages to over 10,000 customers throughout the Coachella Valley.

San Diego County

Fallbrook to Camp Pendleton	08	0730PST 0900PST			0	0			Urban/Sml Stream Fld
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Riverside County

Hemet to Corona	08	1000PST 1115PST			0	0			Urban/Sml Stream Fld
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Heavy rain from thunderstorms caused standing water on Interstates 15 and 5 and flooded intersections in Hemet and San Jacinto with a half to two feet of water. Several motor vehicle accidents then occurred resulting in one death, four injuries, and \$125,000 property damage.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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CALIFORNIA, Southwest

San Bernardino

County

Adelanto to Yucca Vly	10	1635PST 2035PST			0	0	120K		Urban/Sml Stream Fld
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Six homes in Yucca Valley and several roads were flooded between Adelanto and Yucca Valley.

San Bernardino

County

3 N Hesperia	10	1730PST			0	0			Funnel Cloud
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San Bernardino

County

7 SE Sugarloaf to 6 S Wrightwood	11	0903PST 1242PST			0	0	20K		Urban/Sml Stream Fld
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Thunderstorms during the morning hours washed rocks and mud across Highway 38 and the road leading to Mount Baldy.

San Diego County

Palomar Mtn to Warner Spgs

	11	1230PST 1245PST			0	0			Urban/Sml Stream Fld
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Water washed across the highway.

San Diego County

Warner Spgs

	11	1300PST 1330PST			0	0	5K		Flash Flood
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Heavy rains from a thunderstorm destroyed one foot bridge, damaged another, washed rocks and mud onto a golf course, and undercut a paved parking lot.

San Bernardino

County

5 NW Apple Vly to 4 NW Hesperia	11	1420PST 1700PST			0	0	1M		Flash Flood
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Nearly an inch of rain in less than 45 minutes flooded a one mile section of Highway 18, stranding several motorists. Fifty homes and businesses were flooded in the same area with a half foot to two feet of water and mud.

San Bernardino

County

2 N Victorville	11	1420PST 1421PST			0	0	5K		Thunderstorm Wind (G50)
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A thunderstorm downburst knocked over two large trees within a half mile radius, one landing on top of a parked vehicle. The same storm later contributed to flash flooding just east of the wind damage area.

San Bernardino

County

4 NE Forest Falls to 2 W Forest Falls	11	1518PST 1700PST			1	5	6M		Flash Flood
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F36PH

San Bernardino

County

2 W Forest Falls to 4 SE San Bernardino Arprt	11	1625PST 1900PST			0	0			Urban/Sml Stream Fld
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Thunderstorms redeveloped during the afternoon and moved slowly west southwest down the valley. Rainfall rates were high with over an inch of rain falling in less than a half hour. Radar rainfall estimates were near three inches. As a result creeks and streams feeding into Mill Creek rapidly filled and created a 25 foot high wall of water, rocks, and mud. Seven homes were destroyed, 11 sustained moderate to severe damage, and 35 others had minor damage. Roads were covered with 10 feet of rocks, mud, and debris. Flash flood waters continued to move down Mill Creek and into the Santa Ana River, causing road flooding in Redlands.

San Bernardino

County

8 E Yucaipa to 2 SE Yucaipa	11	1539PST 1605PST			0	0	1.5M		Flash Flood
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Riverside County

Calimesa to Banning

	11	1605PST 1656PST			0	0	500K		Flood
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Thunderstorms redeveloped along the mountains to the south of Forest Falls/Mill Canyon and moved down the south slopes across Oak Glen, Cherry Valley, Beaumont, and Banning. Radar rainfall estimates in the Oak Glen area were near 4 inches. Flash flooding there caused heavy damage to a mile of water lines, ponds, roads, culverts, and a Prison Camp. As the flood waters moved south down the Little San Geronio Creek and the San Geronio River, the thunderstorms also moved south, dropping additional heavy rain. Beaumont reported 1.36 inches of rain in less than an hour. Power lines and poles were knocked down and mud, tree limbs, rocks, and other debris were washed onto local streets and major roadways in Cherry Valley, Beaumont, and Banning. Several accidents along Interstate 10 in the Banning Pass were also attributed to the poor visibility and cars hydroplaning in the heavy rain. Minor flooding was reported in southeast Yucaipa and Calimesa along Wildwood Creek.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
CALIFORNIA, Southwest									
Riverside County Idyllwild to Hemet	11	1640PST 1735PST			0	0			Flash Flood
Over an inch of rain fell in 45 minutes. Flooding was observed along with wind gusts to 50 mph and pea size hail.									
San Diego County 2 E Alpine to 3 E Alpine	12	1300PST 2200PST			0	0			Wild/Forest Fire
Lightning ignited a 350 acre brush fire. Several aircraft and over 100 firefighters responded and kept the fire from reaching the Viejas Casino.									
Orange County Sunset Beach	12	1600PST			0	0			Rip Currents
Two men in their 20's were rescued after being caught in a rip current.									
Riverside County Idyllwild to Beaumont	12	1714PST 1830PST			0	0			Urban/Sml Stream Fld
Thunderstorms accompanied by heavy downpours caused street flooding in Idyllwild and San Jacinto. Also several motor vehicle accidents on Highway 79, between Beaumont and San Jacinto, were attributed to heavy rain.									
San Diego County Borrego Spgs to Ocotillo Wells	12	1730PST 2020PST			0	0			Urban/Sml Stream Fld
Near Borrego Springs, 1.30 inches of rain fell in 60 minutes at an Alert gage. Fish Creek and Coyote Canyon Creek overflowed and washed water, dirt and debris across roads.									
San Diego County 6 E Julian	12	1745PST 1749PST	0.1	30	0	0	25K		Tornado (F0)
A building under construction and a 15 foot water tower were destroyed. Shingles were torn off and a chimney damaged on four other buildings. Several shallow rooted trees were pushed over. A nearby anemometer recorded wind speeds of 40 and 43 mph between 1730 and 1800 PST.									
San Bernardino County 2 E Moonridge to 3 NW Big Bear City	12	1755PST 2000PST			0	0	1M		Flash Flood
Thunderstorms moved slowly northwest across the area causing flooding in the communities of Moonridge, Sugarloaf, and Big Bear City. Spotters reported over 1.57 inches of rain in 20 minutes. Ten homes and a church were flooded. A land slide piled lumber, debris, and 2 feet of mud against an apartment complex located 150 feet below the Big Bear Mountain Ski resort.									
San Bernardino County Lucerne Vly to Yucca Vly	12	1900PST 2200PST			0	0	250K		Flash Flood
Heavy flooding was reported along Highways 18 and 247, and the roads were washed out in several sections. Many streams were reported flowing over their banks.									
Riverside County Beaumont to Cabazon	12	1910PST 2250PST			1	4	50K		Urban/Sml Stream Fld
Heavy rain reduced visibility to less than 30 feet and flooded Highway 70 and Interstate 10, causing several vehicles to lose control and spin out. F45VE									
Riverside County 4 NW (Psp)Palm Spgs A 1.7 SE (Psp)Palm Spgs Arpt	12	1945PST 2100PST			0	0	500K		Urban/Sml Stream Fld
Thunderstorms dropped about 3 inches of rain in two hours over Palm Springs. This caused the Whitewater River Storm Channel, the Mesquite Wash, the Palm Canyon Wash, the Tahquitz Creek, and several other washes and flood control channels to rapidly fill. Water, mud, and rocks washed over roads and bridges crossing these washes. Several motorists who crossed these roads before barricades were erected became stuck. One vehicle was rolled five times but the driver was uninjured. One home, ten businesses, and several golf courses were flooded. These were all located near and just downstream of the convergence of these washes. Lightning also knocked out power to the runway and building lights at Palm Springs International Airport.									
San Diego County Tecate to Potrero	13	1215PST 1320PST			0	0			Hail (0.75)
Hail 1.75 inch diameter, heavy rain, and wind gusts to 40 mph were observed.									
San Bernardino County Big Bear Lake to Big Bear City	13	1300PST 1320PST			0	0	500K		Flash Flood
Thunderstorms caused severe flooding in Big Bear Lake and flooded streets in Big Bear City. Several fires were started by lightning and									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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CALIFORNIA, Southwest

pea size hail was observed.

**San Bernardino
County
Forest Falls**

13	1505PST 1645PST				0	0	2.0M		Flash Flood
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**San Bernardino
County
Forest Falls**

13	1640PST 1645PST				0	0			Hail (0.75)
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Thunderstorms moved over the same area that had experienced flash flooding the previous two days. Four creeks overflowed as the area received 1.8 inches of rain in 25 minutes. A 10 foot wall of mud and debris washed across roads. Four homes were destroyed, 10 sustained major damage, and 16 sustained minor damage. Hail, 0.75 inch diameter, was reported as the heavy rain ended.

**Riverside County
Pine Cove**

13	1555PST 1700PST				0	0			Flash Flood
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Thunderstorms dropped over an inch of rain in 45 minutes. Flooding was reported by a spotter.

**Riverside County
Banning to
Cabazon**

13	1630PST 1700PST				0	3			Flash Flood
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Water and debris washed across Interstate 10 forcing two cars to careen off the freeway.

**San Bernardino
County
Phelan to
Apple Vly**

14	1030PST 1113PST				0	0	40K		Urban/Sml Stream Fld
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Streets, yards, and garage floors were flooded in parts of Phelan, Hesperia, Victorville, and Apple Valley as a thunderstorm moved northeast down the mountains and across the valley. Small hail, wind gusts to 30 mph, and a temperature drop of 25 degrees in a half hour also accompanied this thunderstorm.

**San Bernardino
County
8.5 SE Phelan to
.5 S Phelan**

25	1145PST				0	2	500K		Wild/Forest Fire
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A wild fire that began near Highway 138, traveled north and consumed 4035 acres due to hot dry weather and erratic 20 mph winds. Twenty eight sheep and goats were killed; 2 firefighters injured; 250 residents forced to evacuate; 2 mobile homes, a garage, a barn, 2 sheds, and several cars were destroyed. Ten air tankers, seven helicopters, and 1001 firefighters fought to bring the fire under control.

**San Diego County
9 S Borrego Spgs to
10 SE Borrego Spgs**

28	1440PST 1650PST				0	0	100K		Flash Flood
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Heavy rain accompanying a slow moving thunderstorm caused rock slides along County Highway S3 south of Borrego Springs, and the San Felipe Creek to flood and overflow over Highway 78 between S3 and Borrego Springs road. Pea size hail and wind gusts to 50 mph were also reported by spotters.

CALIFORNIA, Upper

CAZ011>012

03	1400PST				0	0			Extreme Cold
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See below.

A Frost Warning was issued for Eastern Siskiyou and Modoc counties. Although no frost was reported, numerous low temperature readings in the 30s indicate that frost probably did develop. Frost was probable over western Siskiyou county as well, although no warning was issued for this area.

CAZ011>012

03	1400PST				0	0			Extreme Cold
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See below.

A Frost Warning was issued for Modoc county and eastern Siskiyou county. Reported low temperatures were mostly in the 30s, so frost probably did occur, although it was not reported. Additionally, lows in the 30s were reported from western Siskiyou county, but no warning was issued for that area.

CAZ011>012

04	1400PST				0	0			Extreme Cold
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See below.

A Frost Warning was issued for Modoc and eastern Siskiyou counties. Although no frost was reported, numerous low temperature readings in the 30s indicate that frost probably did develop.

CAZ011>012

04	1400PST				0	0			Extreme Cold
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See below.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

CALIFORNIA, Upper

A Frost Warning was issued this night for Modoc and eastern Siskiyou counties. No frost was reported, but low temperatures in the area were in the middle to upper 30s, so frost probably did develop this night.

Modoc County
Alturas Muni Arpt 13 2012PST 0 0 **Thunderstorm Wind (G69)**
See below.

Modoc County
Alturas 13 2100PST 0 0 **Thunderstorm Wind (G60)**
See below.

Modoc County
Alturas Muni Arpt 13 2120PST 0 0 16K **Thunderstorm Wind (G60)**
See below.

The Klamath Falls Herald and News reported that strong winds struck Alturas around 2100 LDT on 07/13/99. The winds, probably caused by a microburst associated with a thunderstorm, damaged the roofs of the Alturas Middle School and the Alturas Municipal swimming pool. Numerous downed trees and power lines were also reported.

Additionally, the HNX WCM reported damage that he observed when visiting Alturas. He reported that roof damage to a shed at the airport. The debris from the roof damaged a cyclone fence, and he estimated that the damaging winds were from the northwest at greater than 60 mph. This same gust broke three 4"x4" posts that were supporting a balcony at a residence 5 miles northwest of the airport.

The Alturas ASOS reported a peak wind of 69 mph from 300 degrees at 2112 LDT. The two-minute average winds was 51 mph from 300 degrees.

CAZ011
16 0350PST
0939PST 0 0 **Extreme Cold**
See below.

A short-lived Frost Warning was issued for Eastern Siskiyou county in the morning, but it was cancelled before the event transpired. Observed low temperatures were mostly in the 40s, so little frost probably occurred.

CALIFORNIA, West South Central

Los Angeles County
2 N Azusa 11 1245PST
1445PST 0 0 **Flash Flood**

Heavy thunderstorm rains produced flash flooding along the San Gabriel River, just north of Azusa. One hundred hikers had to be rescued when the river overflowed its banks.

Los Angeles County
Palmdale 11 1705PST
1750PST 0 0 **Flash Flood**

Strong thunderstorms produced heavy rain and flash flooding in the community of Palmdale. A spotter reported flash flooding near the intersection of 5th Street East and Avenue R4 as well as along Highway 14.

Los Angeles County
Palmdale 12 1709PST
1810PST 0 0 **Flash Flood**

Strong thunderstorms produced heavy rain and flash flooding in the Antelope Valley. California Highway Patrol reported flash flooding on Highway 138, near 165th Street East.

Ventura County
North Portion 13 1110PST
1445PST 0 0 **Flash Flood**

Santa Barbara County
East Portion 13 1328PST
1515PST 0 0 **Flash Flood**

Los Angeles County
Palmdale 13 1405PST
1455PST 0 0 **Flash Flood**

Los Angeles County
Palmdale 13 1405PST 0 0 **Tstm Wind/Hail**

Los Angeles County
Palmdale 13 1430PST 0 1 **Lightning**

Los Angeles County
Llano 13 1706PST
1755PST 0 0 **Flash Flood**

Strong thunderstorms produced heavy rain, strong winds and dangerous lightning across the Antelope Valley and the mountains of Santa Barbara, Ventura and Los Angeles Counties. In Palmdale, lightning struck a steam-roller operator while strong thunderstorm winds snapped small trees. Heavy rain resulted in many reports of flash flooding across the area. In the Antelope Valley, flash flooding was reported in both Palmdale and Lancaster. In northern Ventura County, flash flooding was reported in Quatal and Apache Canyons. In Santa Barbara County, flash flooding was reported across the Dick Smith Wilderness Area.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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CALIFORNIA, West South Central

Ventura County

East Central Portion	14	1420PST 1515PST			0	0			Flash Flood
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Strong thunderstorms produced flash flooding in Mutau Canyon. The Forestry Service reported flash flooding along Mutau Road and in some campgrounds.

Santa Barbara County

18 W Cuyama	18 26	0900PST 1800PST			0	0			Wild/Forest Fire
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A wildfire burnt 14,537 acres in the Los Padres National Forest in Santa Barbara County. The fire was ignited by sparks from a bulldozer.

CALIFORNIA, Western

NONE REPORTED.

COLORADO, Central and Northeast

Morgan County

Ft Morgan	02	1500MST			0	0			Thunderstorm Wind (G50)
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Washington County

15 NE Last Chance	04	1503MST 1505MST	0.1	25	0	0	0	0	Tornado (F0)
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A small tornado touched down briefly but did no damage.

Logan County

Crook	19	1445MST			0	0			Hail (1.75)
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Logan County

Crook	19	1445MST			0	0			Thunderstorm Wind (G53)
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Weld County

Mead	19	1500MST 1630MST			0	0			Flash Flood
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Heavy rain, up to 4 inches in less than 2 hours, caused flash flooding in Mead. Although no residents were evacuated, several basements were flooded with water and mud. Most of the streets in town were covered with up to 5 inches of standing water.

Logan County

3 E Crook	19	1510MST	0.1	25	0	0	0	0	Tornado (F0)
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A small tornado touched down briefly, but did no damage.

Arapahoe County

Littleton	19	1630MST			0	0		0	Lightning
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Lightning struck two residences in Littleton, but caused only minor damage.

Arapahoe County

Cherry Hills Vlg to Englewood	19	1656MST			0	0	30K	0	Lightning
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Lightning triggered a fire at a residence in Cherry Hills. A small portion of the roof and ceiling were damaged before the fire could be extinguished.

Morgan County

21 NW Ft Morgan	19	1745MST			0	0			Hail (1.75)
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Washington County

11 WNW Akron	19	1930MST			0	0			Thunderstorm Wind (G70)
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Violent thunderstorm winds destroyed a barn and flattened crops near Midway.

Washington County

10 NW Akron	19	1935MST			0	0			Hail (0.75)
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Larimer County

13 WNW Estes Park	21	1137MST			1	2	0	0	Lightning
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Lightning killed a 35-yr old man and seriously injured his wife and young daughter. The family was hiking near the Gore Range Overlook along Trail Ridge Road when the thunderstorm developed, at an elevation of 11,700 feet. M35OU

Morgan County

3.5 N Ft Morgan to Brush	24	1740MST 1750MST			0	10			Thunderstorm Wind (G70)
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Intense straight-line winds associated with a wet microburst blew 6 vehicles off Interstate 76, including a pickup pulling a horse trailer. Several windows were blown out of homes and vehicles in the Fort Morgan and Brush areas. As a result, 10 people were treated at area hospitals for cuts and bruises. In addition to the damage to property, numerous crops were reportedly flattened by the combination of heavy rain, hail and damaging winds.

Washington County

16 NE Akron	26	1515MST 1530MST			0	0			Hail (1.00)
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Weld County

Hudson	27	1700MST			0	0	100K	0	Lightning
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Lightning was suspected of igniting a fire which caused substantial damage to a farm in Hudson. The blaze destroyed at 10-ft by 60-ft

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

COLORADO, Central and Northeast

metal pole barn, a pickup truck, a GMC Jimmy 4X4 vehicle, a boat and trailer, three four-wheeler vehicles and other farm equipment.

Clear Creek County
6 W Georgetown

28 1613MST 0 0 0 **Heavy Rain**
Heavy rainfall, up to 3 inches in an hour, triggered a massive rock and mudslide along Interstate 70 near Bakerville. The slide area was approximately 200 feet wide and 20 feet deep. Several other smaller slides were also reported along the interstate. As a result, Interstate 70 was closed for nearly 25 hours in both directions until the debris could be cleared from the roadway. The 25-hr blockage of I-70 was one of the longest of the interstate's history in Colorado.

Arapahoe County
12 SW Byers

29 1636MST 0 0 **Thunderstorm Wind (G52)**

COLORADO, East Central

Kit Carson County
5 S Stratton

01 0135MST 0 0 **Thunderstorm Wind (G70)**

Kit Carson County
12 NNE Burlington

02 1612MST 0 0 **Hail (0.88)**
1618MST

Kit Carson County
16 NE Burlington

02 1639MST 0 0 **Hail (2.50)**

Cheyenne County
Cheyenne Wells

02 1645MST 0 0 **Thunderstorm Wind (G54)**
Power Line poles down at highway intersection in Cheyenne Wells.

Cheyenne County
14 N Arapahoe

02 1650MST 0 0 **Thunderstorm Wind (G50)**

Kit Carson County
Burlington

02 1710MST 0 0 **Thunderstorm Wind (G52)**
Thunderstorm Winds blew down signs on Interstate 70 at a Burlington exit.

Yuma County
18 N Wray

02 1820MST 0 0 **Thunderstorm Wind (G50)**
3 Inch tree limbs broken.

Yuma County
Yuma to
1 N Yuma

14 2220MST 0 0 **Thunderstorm Wind (G55)**
2225MST
Large Tree and Horse Trailer blown over.

Kit Carson County
14 N Vona

26 1928MST 0.5 200 0 0 **Tornado (F0)**
1940MST

COLORADO, South Central and Southeast

Kiowa County
Towner

01 0200MST 0 0 **Hail (2.00)**
0205MST

Prowers County
12 N Holly

01 0216MST 0 0 **Hail (0.88)**
0221MST

Pueblo County
Pueblo West

01 1739MST 0 0 **Hail (0.88)**
1745MST

Prowers County
2 S Granada

02 1613MST 0 0 **Thunderstorm Wind (G50)**
1618MST

Prowers County
Holly

02 1613MST 0 0 **Thunderstorm Wind (G50)**
1618MST

Baca County
4 SW Pritchett

02 1645MST 0 0 **Hail (1.00)**
1650MST

Baca County
Pritchett

02 1700MST 0 0 **Hail (0.75)**
1705MST

Baca County
Pritchett

02 1721MST 0 0 **Hail (0.75)**
1726MST

Baca County
10 S Pritchett

02 1739MST 0 0 **Hail (1.00)**
1744MST

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>COLORADO, South Central and Southeast</u>									
Baca County Springfield	02	1743MST 1748MST			0	0			Hail (0.75)
Prowers County 18 S Granada	02	1743MST 1748MST			0	0			Hail (0.75)
Baca County Campo	02	1800MST 1805MST			0	0			Hail (0.75)
Baca County 12 SW Pritchett	05	1529MST 1534MST			0	0			Hail (1.00)
Baca County Pritchett	05	1605MST 1610MST			0	0			Hail (1.00)
Baca County 4 W Springfield	05	1635MST 1640MST			0	0			Hail (0.75)
Baca County 4 NW Two Buttes	05	1646MST 1651MST			0	0			Hail (1.50)
Baca County 8 NE Campo	05	1844MST 1849MST			0	0			Hail (0.75)
Las Animas County 11 S Trinidad	05	2010MST 2015MST			0	0			Hail (0.75)
Prowers County 5 NE Lamar	17	1133MST 1138MST			0	0			Funnel Cloud
Otero County 5 NW Rocky Ford	17 18	2200MST 0100MST			0	0			Flash Flood
			Very heavy rain fell in a few hours time from just south of Manzanola to about five miles northwest of Rocky Ford near U.S. Highway 50. The resulting flood closed highway 50 for six hours Saturday morning. Widespread flooding occurred from county roads 11 to 16. Many road washouts were reported and damage occurred to two irrigation canals. A residence was destroyed by two foot deep flood waters. The railroad just south of highway 50 was undermined when the trestle abutments washed away. No firm damage amounts were available as of late September.						
Pueblo County 7 SE Boone	17 18	2200MST 0030MST			0	2			Flash Flood
			Heavy rain caused the low water crossing on Highway 96 at Kramer Creek to flood. Four people were rescued...two were hospitalized.						
Huerfano County 5 E Cuchara	24	1045MST			0	3			Lightning
			Three people were injured by a lightning flash approximately 100 yards west of the summit of West Spanish Peak. A 44-year old male experienced a direct hit, while his 41-year old male companion felt the side flash and was thrown against some rocks, suffering a skull fracture. A 7-year old boy also experienced the side flash and was thrown down and suffered facial cuts.						
El Paso County 4 S Rush	24	1555MST 1600MST			0	0			Hail (0.75)
Lake County Leadville	25	1439MST			0	0	3K		Lightning
			A lightning flash struck in the front yard of a house, traveled a wire fence to the front of the house, and onto the aluminum siding. A window was broken on the house, and two tires on a car were flattened. The solar energy system of the house was also damaged.						
Saguache County 10 WNW Saguache to 5 WNW Saguache	25	1715MST 2030MST			0	0	65K	10K	Flash Flood
			Heavy rainfall flooded Saguache Creek and its tributaries both north and south of highway 114. County roads and a few bridges were washed out. Property adjacent to the creeks was inundated, washing out driveways to ranch houses and destroying some hay fields.						
Baca County 2 NE Stonington	26	1813MST 1818MST			0	0			Hail (0.75)
Mineral County 8 NW Spar City	30	1155MST 1205MST			0	0			Funnel Cloud

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
<u>COLORADO, South Central and Southeast</u>									
El Paso County									
Palmer Lake	30	1455MST 1500MST			0	0			Hail (0.88)
Pueblo County									
6 S Pueblo	30	1725MST			0	0			Thunderstorm Wind (G52)
El Paso County									
4 NE Calhan	31	1504MST 1509MST			0	0			Funnel Cloud
A reported funnel cloud caused nearly 6000 people attending the El Paso County Fair to be evacuated and sheltered in nearby school buildings.									
El Paso County									
Colorado Spgs to Calhan	31	1630MST 2000MST			0	0			Flash Flood
Slow moving thunderstorms produced heavy rain amounts from southwest Colorado Springs to Ramah. This rainfall occurred over already saturated ground and caused many low spots to flood. Along U.S. 24...near Ramah...the Big Sandy Creek overflowed its banks...flooding nearby pasture land. In addition to the street flooding in the Colorado Springs area...many basements and crawl spaces became flooded...which forced some residents to be evacuated due to the potential for electrical problems.									
<u>COLORADO, West</u>									
COZ006									
Grand Valley/Grand Junction And Vicinity									
24		1430MST 1530MST			0	0	30K		Flood
One to two inches rain fell in the Orchard Mesa and Clifton areas within a one hour period, which resulted in widespread street flooding. Many residences were also flooded with at least several inches of water inside the dwellings. The largest measured rainfall amount from the storm was 2.01 inches in Clifton.									
Pitkin County									
8 NNE Redstone to 8.5 NNE Redstone	28	1200MST 1300MST			0	0	150K		Flash Flood
Heavy rain resulted in two flash floods up to 6 feet deep across State Highway 133. It took road crews about three hours to remove the rocks and mud off the road.									
Pitkin County									
6 NNE Redstone	28	1225MST 1230MST			0	0			Hail (1.00)
Pitkin County									
6 NNE Redstone	28	1230MST 1315MST			0	0	30K		Flash Flood
A photographer was out of his vehicle taking pictures on the flanks of Mount Sopris and became trapped by a flash flood which inundated his van with water and mud. The flash flood also washed out the road. The initial wall of water was 10 feet high, while the crest of the flash flood was about 15 feet high. The water and debris crashed into several culverts, causing them to explode; eight-inch steel I-beams were twisted like straws.									
Eagle County									
1 WNW Gypsum to 6 W Gypsum	28	1300MST 1430MST			0	0	350K		Flash Flood
Flash flooding between Gypsum and Dotsero resulted in large amounts of mud and rock being deposited on all four lanes of Interstate 70 as well as a frontage road which parallels the interstate. Boulders up to 3 feet in diameter rolled across the traffic lanes. Traffic on Interstate 70 was backed up for more than four miles. It took road crews about two hours just to clear the eastbound lanes of Interstate 70. Miraculously, no vehicles were hit by the flash flood waters or debris flows.									
Ouray County									
2 SSE Ouray to 2.5 SSE Ouray	28	1330MST 1400MST			0	0	50K		Flash Flood
Flash flooding across US Highway 550 deposited a large amount of rocks and other debris on the road. A section of the road shoulder was washed down the cliffs to the river 400 feet below the road. A crib wall along the cliff which is used to reinforce the road was partially washed out.									
San Juan County									
6 NW Silverton	28	1400MST 1500MST			0	0			Flash Flood
A flash flood brought down a large volume of rocks and debris onto US Highway 550 at the southern base of Red Mountain Pass. The highway was closed for several hours to allow the road to be cleared.									
Moffat County									
2 E Dinosaur to 3 NNE Dinosaur	30	1400MST 1600MST			0	0			Flash Flood
Heavy rain in the area resulted in flash flooding in Dinosaur National Monument. Flood waters were running across park service roads, US Highway 40, and the visitors center parking lot. Only minor damage was reported to the park service roads.									
Moffat County									
Blue Mtn	30	1405MST 1410MST	0.2	50	0	0			Tornado (F0)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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COLORADO, West

A weak tornado touched down over open country near Blue Mountain.

Montrose County Montrose

31	1300MST 1400MST				0	0	10K		Flash Flood
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Heavy rainfall resulted in flash flooding which damaged a culvert and washed out a road. A mudslide washed out part of the road on Ashenfeller Hill. Numerous streets in residential and business areas were filled to overflowing, though only resulting in minor damage.

San Miguel County East Portion

31	1400MST 2000MST				0	0	50K		Flood
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Heavy rains resulted in widespread flash flooding, mudslides, and turned Leopard Creek into a raging torrent which overflowed its banks and washed across State Highway 62, undercutting the roadbed. Eyewitnesses reported trash cans, canoes, trees, and other debris floating down the swollen San Miguel River which parallels State Highway 145. The flash floods and mudslides filled up the lower floors of some houses up to 4 feet deep, tore down fences, washed out driveways, washed away elevated gasoline and propane tanks, and floated some vehicles. In addition to the mudslides and rockslides on State Highways 62 and 145, eight county roads were damaged; ten mudslides occurred on Fall Creek Road, three mudslides covered South Fork Road above Ames, and additional mudslides were reported at Silver Pick, Sawpit Hill, Ophir Pass, Tomboy Road, and on Deep Creek Road. Flood damage occurred in the communities of Fall Creek, Placerville, and Sawpit. Pea-sized hail accumulated up to 8 inches deep on State Highway 62 atop Dallas Divide.

Ouray County 8 W Ridgeway to 4 N Ridgeway

31	1400MST 1900MST				0	0	1.3M		Flash Flood
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Heavy rainfall at the headwaters of Dallas Creek and Pleasant Valley Creek resulted in flash flooding all the way downstream to Ridgway Reservoir. In some areas the rushing water was nearly 20 feet higher than the normal stream flow. The flash flooding damaged or destroyed several county bridges, destroyed a foot bridge, damaged about two miles of County Road 24, flooded a few residences, damaged a number of outbuildings, and carried away or flooded several vehicles. The water also flooded part of a golf course. A family was rescued from the loft of a barn from which they were trapped by the rising flood waters. Miraculously, the only livestock fatalities were a chicken and an ostrich. The USGS stream gage on Dallas Creek was washed away and never found. The estimated peak flow of water in Dallas Creek was 2300 cubic feet per second (cfs), which is more than double the previous record flow of 1120 cfs previously set in August of 1923. Rainfall measurements in the area ranged from 1.84 inches in Ridgway to 3.77 inches in Pleasant Valley, most of which came within a two hour period.

CONNECTICUT, Northeast

CTZ002

Hartford

05	0600EST 1500EST				0	0			Record Heat
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Bermuda high pressure brought a southwest flow of hot and humid air to Connecticut during the July 4th holiday weekend. The high temperature of 99 degrees on July 5th at Bradley International Airport in Windsor Locks broke the previous record high for the date of 98 degrees, which was set in 1955. The low temperature of 77 degrees set a new record high minimum temperature for the date. The previous record was 74 degrees which was set in 1919.

CTZ002

Hartford

06	0600EST 1800EST				0	0			Record Heat
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For the second day in a row, record high temperatures were set at Bradley International Airport in Windsor Locks. The high of 99 degrees broke the previous record high temperature of 98 degrees, which was set in 1911.

Tolland County Herbron

06	2150EST				0	0			Thunderstorm Wind (G50)
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Thunderstorms moved across northern Connecticut in advance of a strong cold front. For the fourth day in a row, temperatures soared well up into the 90s along with high humidity. Although most of the severe weather moved across adjacent parts of Massachusetts, one severe thunderstorm in Hebron downed power lines and large tree limbs.

CTZ002

Hartford

17	1426EST				0	0			Record Warmth
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The high temperature of 97 degrees at Bradley International Airport in Windsor Locks broke the previous record high for the date of 96 degrees, which was set in 1982 and earlier years.

Hartford County Simsbury to Bloomfield

18	1605EST 1610EST				0	0			Thunderstorm Wind (G55)
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Tolland County Columbia

18	1710EST				0	0			Thunderstorm Wind (G55)
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Windham County Willimantic

18	1715EST				0	0			Thunderstorm Wind (G55)
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Hartford County Marlborough

18	1805EST				0	0			Thunderstorm Wind (G50)
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Tolland County Herbron

18	1805EST				0	0			Thunderstorm Wind (G50)
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Severe thunderstorms moved across northern Connecticut ahead of a cold front. The storms developed over the Farmington Valley, knocking down trees in Simsbury and Bloomfield, before racing southeast across Tolland and Windham Counties. Hebron, in southern Tolland County, received the brunt of the storms, where several trees were downed and some houses were struck by lightning. A

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

CONNECTICUT, Northeast

portion of Route 85 was closed for more than 6 hours after a tree fell, taking down power lines and blocking the road. Just over 21,000 customers throughout the state lost power due to the storms.

Tolland County Coventry	19	1235EST			0	0			Thunderstorm Wind (G55)
Windham County Ashford to Windham	19	1250EST 1253EST			0	0			Thunderstorm Wind (G55)
Tolland County Storrs to Stafford	19	1255EST 1300EST			0	0			Thunderstorm Wind (G50)
Windham County Canterbury	19	1314EST			0	0			Thunderstorm Wind (G50)
Windham County Plainfield	19	1335EST			0	0			Lightning
Hartford County Granby to Windsor Locks	19	1539EST 1545EST			0	0			Thunderstorm Wind (G52)
Windham County Woodstock	19	1630EST			0	0			Thunderstorm Wind (G50)

Severe thunderstorms moved through northern Connecticut for the second day in a row, producing wind gusts over 60 mph. Some of the hardest hit areas had just begun to recover from the previous day's storms, including Coventry where there were many trees and power lines downed from thunderstorm winds. Bradley International Airport, in Windsor Locks, reported a wind gust to 60 mph as the storms moved through. Just over 1,000 customers in Hartford, Tolland, and Windham Counties were without power at the height of the storms. Lightning struck a house in Plainfield, causing some damage.

Windham County Moosup to Sterling	23	1835EST 1840EST			0	0			Thunderstorm Wind (G55)
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An isolated severe thunderstorm in Windham County downed trees and power lines, and snapped utility poles, cutting power to about 2,000 customers. The Moosup section of Plainfield was hardest hit. In nearby Sterling, thunderstorm winds toppled a tree into the roof of the post office.

Windham County Eastford	24	1402EST			0	0			Hail (0.75)
Hartford County New Britain to Manchester	24	1520EST 1543EST			0	0			Hail (1.50)
Hartford County New Britain to Manchester	24	1520EST 1549EST			0	0			Thunderstorm Wind (G55)
Tolland County Bolton to West Willington	24	1555EST 1613EST			0	0			Hail (1.75)
Tolland County Andover to Coventry	24	1607EST			0	0			Thunderstorm Wind (G55)
Windham County Pomfret	24	1644EST			0	0			Hail (1.00)

Severe thunderstorms ahead of a cold front brought damaging winds and large hail to northern Connecticut. Hartford and Tolland Counties experienced the most damage, with many reports of downed trees, large tree limbs, and power lines, as well as hail as large as golf balls. Newington, in Hartford County, was especially hard hit. Just over 10,000 customers lost power during the height of the storms. A large tree fell onto the roof of a parked van, light poles were damaged, and the steeple of a church was knocked down. Many streets were temporarily impassable due to fallen branches and trees.

CONNECTICUT, Northwest

CTZ001 Litchfield	04	1200EST			0	0			Excessive Heat
	06	1400EST							

An intense Bermuda high became established over the mid Atlantic region during the Independence Day weekend. This high pumped heat along with very high humidity across Northwest Connecticut, especially on July 5 and 6. Temperatures soared well past 90 most everywhere while dewpoints climbed well into the 70s. At the Dutchess County airport near Poughkeepsie, the temperature crested at 99 degrees both days. On July 5, the dewpoint reached 79 to produce a heat index of 119 degrees! The heat index peaked around 110 degrees on July 6.

Litchfield County New Milford	06	2100EST			0	0	5K		Thunderstorm Wind
Litchfield County Litchfield	06	2106EST			0	0	3K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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CONNECTICUT, Northwest

Litchfield County

Bethlehem	06	2108EST			0	0	2K		Thunderstorm Wind
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A cold front moved from the Great Lakes eastward across New York State and then into Northwest Connecticut late on July 6. This front produced powerful thunderstorms across Litchfield county. Wind gusts from the storms brought down trees in New Milford, Litchfield and Bethlehem.

Litchfield County

Norfolk	19	1515EST			0	0	1K		Thunderstorm Wind
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Litchfield County

Woodbury	19	1527EST			0	0	3K		Thunderstorm Wind
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Scattered thunderstorms developed along a cold front during the afternoon of July 19 over northwest Connecticut. One of the cells became severe as it moved across Litchfield county. The wind from the storm felled trees and power lines in the towns of Norfolk and Woodbury.

Litchfield County

Cornwall	29	1925EST			0	0			Hail (0.75)
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Litchfield County

Litchfield	29	2035EST			0	0	0.50K		Flash Flood
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Litchfield County

Litchfield	29	2035EST			0	0			Hail (0.75)
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A strong warm front and favourable wind shear aloft allowed for some thunderstorms to become strong to locally severe across northwestern Connecticut on the evening of July 29. Thunderstorms deposited dime size hail at Cornwall and Litchfield in Litchfield County. In addition the storms produced torrential rainfall which resulted in six to eight inches of water that rapidly covered roadways in the town of Litchfield.

CONNECTICUT, Southern

CTZ005>012

Northern Fairfield - Northern New Haven - Northern Middlesex - Northern New London - Southern Fairfield - Southern New Haven - Southern Middlesex - Southern New London

04	1600EST				0	0			Excessive Heat
06	1600EST								

An extremely hot and humid airmass covered the region from July 4th through July 6th.

On Sunday July 4th, temperatures soared into the mid 90s. The combination of high temperatures and moderate humidity caused most heat indices to range from 100 to 105 degrees.

On Monday July 5th, many new maximum temperature records were set. At Bridgeport Airport, the temperature reached 100 degrees, which set a new record high. At New Haven Airport, the temperature also reached 100 degrees. High temperatures ranged from 96 degrees at Danbury Airport to 100 degrees at both Bridgeport and New Haven. Heat indices peaked from 110 to 115 degrees.

On July 6th, new record high temperatures were set again. At Bridgeport Airport, the temperature reached 96 degrees, which set another new record high. Temperatures ranged from 95 at New Haven to 97 degrees at Meriden. Heat indices peaked from 105 to 110 degrees. Scattered power outages occurred across the region during the afternoon and evening hours. Nearly 95 percent of the city of New London was without power around 4:30 pm. Significant power outages also occurred in the city of New Haven during the evening.

New London County

Lebanon to Franklin	18	1720EST			0	0			Thunderstorm Wind (G52)
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New London County

Lebanon	18	1750EST			0	0			Thunderstorm Wind (G50)
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Middlesex County

East Hampton	18	1826EST			0	0			Thunderstorm Wind (G52)
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As a cluster of severe thunderstorms moved southeast from Hartford County, they produced high winds that downed trees across Route 207 in Lebanon and Route 32 in Franklin as well as wires around 6:20 pm EDT. Numerous large tree limbs were downed again from high winds in Lebanon around 6:50 pm EDT.

As a severe thunderstorm moved southeast across Northern Middlesex County, it produced high winds that downed trees and wires in East Hampton.

New London County

Colchester	19	1535EST			0	0			Thunderstorm Wind (G50)
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As a "pulse" severe thunderstorm moved east across northwest New London County, it produced high winds that downed trees in front of the Fire House in Colchester. It also produced torrential rain that caused "localized" flooding of low-lying and poor drainage areas.

New Haven County

Waterbury	24	1450EST			0	0			Thunderstorm Wind (G50)
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As a severe thunderstorm moved east across Northern New Haven County, it produced high winds that downed trees and power lines in Waterbury.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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DELAWARE

DEZ001>004

New Castle - Kent - Inland Sussex - Delaware Beaches

01	0000EST				0	0			Drought
31	2359EST								

The drought intensified throughout July across Delaware. For the fourth consecutive month, below normal precipitation continued. On a county weighted average for the month of July, only 1.2 inches of rain fell in New Castle County, 1.7 inches in Kent County and 1.8 inches in Sussex County. The normal July monthly rainfall is around 4 inches.

The effects of the increased as July wore on. The unseasonably hot July 4th weekend did not help. United Water of Delaware that weekend had to buy emergency water from the city of Wilmington and take every gallon of water it could from the White Clay Creek. But water supply streams in northern Delaware were already at or near record low streamflows for the time of year. Low streamflow rates along the White Clay Creek forced the City of Newark to shut down its water plant and left it dependent on wells and water from United Water of Delaware. Groundwater supplies were also reaching record lows. Later in July Newark asked citizens to voluntarily avoid all unnecessary water use. It was the first restrictions since 1995. On July 23rd Governor Thomas Carper declared a drought warning and set a goal of 15 percent water reduction throughout the state. The governor asked citizens to stop watering lawns and conserve water by fixing leaks and doing only full loads of dishes and laundry. If the goals were not met, mandatory restrictions were to follow. By the end of the month all of the three northern Delaware major water supply streams broke all time (50 year) records for low streamflow. The record low streamflow on the 29th helped the salt line creep inland beyond United Water of Delaware's intake lines along the White Clay Creek. The salt concentration exceeded federal standards. The brackish water was also affecting the operations of other industrial plants along the creek. United Water asked the Delaware River Basin Commission permission to dam the fresh water flowing on the White Clay Creek.

The drought coincided with the growing season. The April 1st through July 31st four month period was the driest on record over the past 105 years in the state of Delaware. Farmers in Delaware were feeling a double pinch. Irrigation, if possible, was driving up the costs of farming. Meanwhile, ideal growing conditions elsewhere in the country kept crop prices low. By the end of the month nearly 100 percent of the topsoil and subsoil moisture level was rated as either short or very short. About sixty-six percent of all pastures and thirty-four percent of the corn crop was rated as either poor or very poor. The corn crop was fading fast at month's end. Farmers cut the corn early for silage to salvage the crop. The strawberry picking season lasted only half as long. Many soybean fields had to be replanted. Even if they were, the new seedlings withered in the blistering heat. Many farmers had to feed livestock hay normally reserved for the winter. The worsening drought could prompt the federal Farm Service Agency to seek a disaster declaration for Maryland and Delaware farmers as early as August. This would be the third straight year that a dry growing season has cut crop production deeply enough to trigger federal assistance in the region.

DEZ001>004

New Castle - Kent - Inland Sussex - Delaware Beaches

04	0800EST				4	10			Excessive Heat
06	2000EST								

A very strong and oppressive high pressure system that extended from the surface to aloft gave Delaware a brutal heat wave that included the entire Independence Day weekend. There were four heat related deaths, two in New Castle County, two in Sussex County. There were also about 10 heat related injuries reported. High temperatures reached the 90s for the first time on the 3rd, but sweltering humidity and record breaking maximum temperatures of around 100 degrees occurred from Independence Day through the 6th. The combination of the temperature and humidity produced heat indices of around 110 degrees during the afternoon of each day. A cold front moved through the region early in the morning on the 7th. While high temperatures continued to reach the 90s from the 7th through the 9th, humidity levels were lower. A stronger cold front moved through the region during the morning and afternoon of the 10th and brought in an even cooler and drier air mass. So after some places in central and southern Delaware had high temperatures in the 90s on the 10th, the run of 90 degree highs ended everywhere on the 11th.

The heat related deaths occurred in Laurel (2) (Sussex County), Townsend (New Castle County) and Wilmington (New Castle County). In all instances the persons were found indoors without any air conditioning. One person's internal body temperature reached 108 degrees. About half of the reported heat related injuries occurred along the shore in Bethany Beach and Rehoboth Beach. Offshore winds kept the beaches as hot as inland locations. Several heat related injuries also occurred to the workers of the annual Wilmington fireworks display at Rockford Park. It was postponed after they became ill. The heat killed tens of thousands of chickens throughout the Delmarva Peninsula. One company alone lost 33,000 chickens. About twenty sections of highway in Kent and Sussex Counties experienced heat related buckling. Hardest hit was U.S. Route 113 with buckling in around a dozen places. The city of Wilmington distributed fans to the elderly to help them combat the heat. All summer school classes on the 6th were cancelled.

The record heat led to record demand for electricity. Every local utility broke records. Conectiv Energy reported a record power usage of 3,418 megawatts within an hour on the 5th. The PJM Interconnection, a power pool that links electric utilities throughout the area churned out a record 52,000 megawatt hours of power on the 6th. The excessive demand for electricity strained electrical systems. Conectiv Energy instituted rolling blackouts to 40 percent of its 1.1 million customers in Maryland, Delaware and New Jersey at 1040 a.m. EDT on the 6th. A generator at Conectiv's Indian River Power Station failed. The blackouts affected 20,000 customers for 20 minutes at a time and included the city of Wilmington during the afternoon of the 6th. The Delaware Electric Co-Op also cycled off 15,000 air conditioning and water heater units to lighten the electrical load. Area wide, PJM reduced voltage by 5 percent at 2 p.m. EDT on the 6th to deal with the huge demand that was straining the electrical system.

The highest temperatures during this hot spell occurred mainly on the 5th. They included 100 degrees in Georgetown (Sussex County), Milford (Kent County) and Salisbury (Wicomico County) MD, and 99 degrees at the New Castle County Airport. Many daily record high temperature records were either tied or set on the 5th and the 6th.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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DELAWARE

F89PH, F50PH, M52PH, F79PH

DEZ001>003

New Castle - Kent - Inland Sussex

16	0900EST	0	0	
19	2000EST			Excessive Heat

Another strong and oppressive ridge of high pressure gave Delaware four days of excessive heat and humidity and in the northern part of the state five consecutive days with high temperatures in the 90s. Unlike the previous hot spell, onshore winds kept shore areas a bit cooler. High temperatures reached the 90s again on the 15th in the northern part of the state and everywhere on the 16th through the 19th. The air mass on the 15th was still relatively dry. Southwest winds continued to increase humidity levels. The combination of the temperature and humidity produced heat indices of around 100 degrees during the afternoon of the 16th and around 105 degrees during each afternoon from the 17th through the 19th. The hottest part of this air mass passed over northern parts of the Middle Atlantic States. The most oppressive conditions were experienced in the northern parts of the state and coincided with the more highly urbanized parts of New Castle County. A weak backdoor cold front moved south through the region during the evening of the 19th. While the air mass was not considerably drier on the 20th, skies were cloudy as the front stalled near the area. As a high pressure system built into New England on the 21st, some dry air briefly filtered southward.

The excessive heat and the lack of rain continued to decimate non-irrigated farms across the state. The high temperatures again put a strain on electrical utilities. For the second time this month, on Monday July 19th the PJM Interconnection Association called for a 5 percent reduction in voltage from 115 p.m. EDT through 210 p.m. EDT.

The highest temperatures during this hot spell were scattered from the 17th through the 19th. They included 100 degrees at the New Castle County Airport, 99 degrees in Milford (Kent County) and 94 degrees in Georgetown (Sussex County) and Salisbury, MD. Due to higher historical daily maximum temperature records, fewer daily high temperature records were set. But, the high of 100 degrees at the New Castle County Airport set a new daily record high for the 19th. It was also the first time the thermometer reached 100 degrees at the airport since June 19, 1994.

DEZ001>003

New Castle - Kent - Inland Sussex

23	0900EST	0	10	
31	2359EST			Excessive Heat

A run of consecutive days with high temperatures in the 90s started in Delaware on July 23rd. It lasted as long as 16 days in some areas through August 7th. Dispersed within this run were two periods of both excessive heat and humidity: from July 23rd through July 25th and again from July 29th through August 1st. A cold front moved through the area on the 25th and brought in drier air. High temperatures still reached into the 90s from the 26th through the 28th. The humidity and even higher temperatures returned on the 29th. A strong cold front moved through the region the afternoon and evening of August 1st. This brought in considerably drier air, the driest air since mid July. Because of the extremely dry ground conditions, high temperatures kept reaching around 90 degrees through the 7th. That day a stronger cold front brought in a cooler air mass from Canada into the northeastern United States.

Delmarva hospitals reported a few cases of heat related injuries. The continued excessive heat and lack of rain parched non-irrigated farms across the state.

For most places the highest temperatures during this hot spell occurred on the 23rd and 31st. They included 99 degrees in Milford (Kent County), 98 degrees at the New Castle County Airport and 96 degrees in Georgetown (Sussex County). Shore areas had some relief from the heat as seabreezes developed along the shore. The hottest days along the shore were the 25th, 28th and August 1st.

**Sussex County
Gumboro**

24	1325EST	0	0	
				Thunderstorm Wind (G50)

A severe thunderstorm produced damaging winds, frequent lightning and heavy rain across southern Sussex County. Gumboro was hardest hit with numerous large tree limbs knocked down. Scattered power outages were reported in the region. The thunderstorm also dropped heavy rain across the area with between 1.5 and 3.0 inches of rain between Laurel and Millsboro. This produced some poor drainage flooding, but no serious damage.

DEZ001>004

New Castle - Kent - Inland Sussex - Delaware Beaches

31	2359EST	0	0	
				Unseasonably Warm And Dry

July 1999 continued the trend of extremely warm and dry weather across Delaware. The state mean average temperature of 79.1 degrees for July 1999 was the third warmest July on record dating back to 1895. It also was the third warmest July on record at the New Castle County Airport with a monthly mean temperature of 80.0 degrees. July 1999 was also dry. The state average rainfall total of 2.06 inches was the 14th driest July on record as only 52 percent of the normal rainfall fell. The driest conditions were across New Castle County. The New Castle County Airport's July monthly total of 0.89 inches was the second driest July on record. On a county weighted average monthly rainfall totals ranged from 1.2 inches in New Castle County to 1.8 inches in Sussex County.

DISTRICT OF COLUMBIA

DCZ001

District Of Columbia

01	0000EST	0	0	
31	2359EST			Drought

High pressure was the dominant weather feature during the month. This forced most rain producing storm systems to steer north of the area and resulted in the continuation of the climatological, meteorological, and hydrological drought that has plagued the region since last summer. This was the 2nd warmest July on record, with an average temperature of 82.9 degrees. Record high temperatures were set on the 5th and 6th, and temperatures rose above 90 degrees on 22 of the 31 days. By the last week of July the Palmer Drought Index, a measure of long term drought conditions, indicated the Washington D.C. metropolitan area was in an extreme drought. July was the 10th month in the past 12 months that precipitation was below normal. From August 1998 through July 1999 precipitation was

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

DISTRICT OF COLUMBIA

a staggering 14.5 inches below average, the 2nd driest 12 months on record. Reagan National Airport reported a monthly rainfall total of only 1.01 inches, 2.79 inches below normal. Measureable rain only fell on 8 days during the month. The lack of precipitation affected water reserves. The flow of water past Washington D.C. has been below average for the last 11 months. During July, the average daily flow of the river was only 18% of the long term average. Many upstream tributaries also reported extremely low water levels. For the first time, water was released from the Randolph and Little Seneca reservoirs near the Potomac headwaters on July 11th and 15th respectively to help maintain a safe water level for wildlife and human consumption.

DCZ001

District Of Columbia

04	0800EST	3	140	Excessive Heat
07	1200EST			

High pressure sat off the Mid-Atlantic coast from the 4th through the 7th, acting like a heat pump drawing extremely warm and humid air into the region. Temperatures on the 4th through early on the 7th were oppressively hot, and extremely humid conditions added to the misery. These conditions continued until a cold front swept through the area during the afternoon of the 7th, ushering in cooler and much less humid air. The mercury soared into the upper 90s to lower 100s during the period. Dew points were in the lower to middle 70s and heat index values ranged from 85 to 90 degrees. New record highs were recorded at Washington National Airport on the 5th and 6th. The high temperature at National Airport was 99 degrees on the 4th, 102 degrees on the 5th, and 103 degrees on the 6th. As DuPont Circle in Northwest the mercury rose to 100 degrees on the 4th, 103 degrees on the 5th, and 104 degrees on the 6th.

Because of the 4th of July holiday weekend, many people were inconvenienced by the oppressive conditions. Those who spent considerable time outdoors or in non-airconditioned buildings were subject to heat related illnesses. Over 525 people, including many tourists in Washington for the Independence Day festivities, were treated for mild heat related illnesses. One hundred forty people had to be taken to area hospitals suffering from more serious complications. District officials set up free water stations and first aid stations on the Mall to assist visitors and participants. During the late evening fireworks displays, spectators had to brave temperatures in the upper 80s and heat index values in the middle 90s. City officials also opened 5 cooling centers and offered 13 fire hydrants with sprinkler heads for permanent city residents without air conditioning. Over 700 district residents took advantage of the shelters. Even with the available resources, three people succumbed to heat related illnesses. The heat forced the city to cancel summer school classes on the 6th. PEPCO reported record high energy consumption during the late afternoon of the 5th and 6th. The high demand for electrical power blew old transformers, leading to power outages for 1,900 district customers. ??PH, ??PH, ??PH

FLORIDA, East Central

Orange County

Apopka	09 1410EST	0	0	Thunderstorm Wind (G50)
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Thunderstorm winds blew down large tree limbs near Apopka.

Seminole County

Winter Spgs	09 1435EST	0	0	10K Thunderstorm Wind (G50)
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Thunderstorm winds blew down trees in Winter Springs damaging the roof on a house.

Lake County

Sorrento	09 1600EST	0	0	Hail (1.75)
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Volusia County

2 W Ormond Beach	09 1720EST	0	0	Thunderstorm Wind (G50)
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Thunderstorm winds blew down a few trees west of Ormond Beach.

Orange County

Orlando	12 1308EST	0	3	Lightning
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Three construction workers were injured by lightning in Orlando. One worker was hospitalized. The other two were treated and released.

Okeechobee County

Basinger	12 1617EST	0	0	Hail (0.75)
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Okeechobee County

Ft Drum	12 1632EST	0	0	Hail (0.75)
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Orange County

Apopka	12 1800EST	0	0	Thunderstorm Wind (G50)
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Thunderstorm winds blew down a tree and rolled over three boats on Bear Lake.

Orange County

Orlando	13 1742EST	0	0	Hail (0.75)
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Besides the hail in Orlando, a large tree was blown down in Lockhart.

Osceola County

Kissimmee	13 1825EST	0	0	Thunderstorm Wind (G50)
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Thunderstorm winds blew down trees in the Mill Run area of Kissimmee.

Osceola County

Kissimmee	14 1620EST	0	0	Thunderstorm Wind (G50)
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Thunderstorm winds blew down two small trees in Kissimmee. A spotter measured a 56 MPH wind gust.

Orange County

Orlando	14 1645EST	0	0	Hail (1.00)
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
FLORIDA, East Central									
Orange County									
Orlando	14	1700EST			0	0			Urban/Sml Stream Fld
									Heavy thunderstorm rains produced considerable street flooding in the eastern part of Orlando.
Volusia County									
Osteen	20	1445EST			0	0			Hail (0.75)
Seminole County									
1 S Oviedo	20	1530EST			0	0			Thunderstorm Wind (G60)
									Thunderstorm winds snapped off a 30 foot oak tree and damaged the roof of a house just south of Oviedo.
Orange County									
Orlando Intl Arpt	22	1300EST			0	3			Lightning
									Three workers on a taxiway at Orlando International Airport were standing near a crane when they were struck by lightning. One worker was hospitalized. The other two were treated and released.
Orange County									
Zellwood	24	1737EST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds blew down trees in the Zellwood area.
Lake County									
Mt Plymouth	24	1752EST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds blew down trees and power lines in Mt. Plymouth.
Brevard County									
Titusville	26	1450EST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds blew down a few trees and power lines in Titusville.
Okeechobee County									
Okeechobee	27	1930EST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds blew the roof off a mobile home in Okeechobee.
FLORIDA, Extreme Southern									
Monroe County									
(Eyw)Key West Inl Ar	15	1535EST 1544EST			0	0			Waterspout
									Waterspout observed 2 miles north of EYW
Monroe County									
(Eyw)Key West Inl Ar	15	1540EST 1550EST			0	0			Waterspout
									Waterspout observed 3 miles northwest of EYW
Monroe County									
(Eyw)Key West Inl Ar	21	1119EST 1125EST			0	0			Waterspout
									Waterspout observed 2 miles south of EYW
Monroe County									
(Eyw)Key West Inl Ar	21	1130EST 1138EST			0	0			Waterspout
									Waterspout observed 1 mile south of EYW
Monroe County									
Key West	21	1150EST 1207EST			0	0			Waterspout
									Waterspout observed 1 miles south of Higgs Beach in Key West
Monroe County									
(Eyw)Key West Inl Ar	21	1722EST 1728EST			0	0			Waterspout
									Waterspout observed 2 miles northwest of EYW
Monroe County									
(Eyw)Key West Inl Ar	21	1729EST 1732EST			0	0			Funnel Cloud
									Funnel cloud observed 2 miles northwest of EYW
Monroe County									
Key West	26	1115EST 1126EST			0	0			Waterspout
									Waterspout observed 5 miles southwest of Key West
Monroe County									
(Nqx)Key West Nas	27	1158EST 1210EST			0	0			Waterspout
									Waterspout observed 4 miles northeast of Boca Chica

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Extreme Southern									
Monroe County (Eyw)Key West Inl Ar	28	0735EST 0743EST			0	0			Waterspout
		Waterspout observed 6 miles north of EYW							
Monroe County (Eyw)Key West Inl Ar	28	0735EST 0740EST			0	0			Waterspout
		Waterspout observed 5 miles north of EYW							
Monroe County (Eyw)Key West Inl Ar	28	0735EST 0739EST			0	0			Waterspout
		Waterspout observed 4 miles north of EYW							
Monroe County Big Pine Key	31	1100EST 1115EST			0	0			Waterspout
		Waterspout observed 2 miles east of Big Pine Key							
Monroe County (Eyw)Key West Inl Ar	31	1156EST 1202EST			0	0			Waterspout
		Waterspout observed 4 miles west of EYW							
FLORIDA, Northeastern									
Flagler County 5 W Bunnell	08	1500EST			0	0	1.5K		Thunderstorm Wind
		Large trees and power lines were blown down.							
Marion County Ocala	08	1630EST			0	0			Hail (0.88)
Duval County Mandarin	08	1705EST			0	0	2K		Thunderstorm Wind
		Large trees and power lines were blown down.							
Putnam County Hollister	08	1720EST			0	0	2K		Thunderstorm Wind
		Large trees and power lines were blown down.							
Marion County Ocala	08	1745EST			0	0			Hail (0.75)
Baker County 3 S Sanderson	08	1810EST			0	0	3K		Thunderstorm Wind
		Large trees and power lines were blown down.							
Duval County Arlington	09	1435EST			0	0	5K		Thunderstorm Wind
		Large trees and power lines were blown down.							
Flagler County 2 E Flagler Beach to 3 ENE Flagler Beach	09	1650EST			0	0			Waterspout
Flagler County 10 N Bunnell to 10 NNE Bunnell	09	1650EST			0	0	2K		Thunderstorm Wind
		Large trees and power lines were blown down.							
Flagler County Bunnell Flagler Arpt	09	1708EST			0	0			Funnel Cloud
Marion County Ocala	11	1600EST			0	0			Hail (0.75)
Putnam County East Palatka	11	1650EST			0	0	2.5K		Thunderstorm Wind
		Large trees and power lines were blown down.							
Duval County 2 S Jacksonville to 1 S Jacksonville	13	1700EST			0	0			Waterspout
		Waterspout was on the St. Johns River near Ortega.							
Duval County Jacksonville	13	1721EST			0	0	0.50K		Thunderstorm Wind
		Large trees were blown down.							
Nassau County Fernandina Beach	13	1730EST			0	0	15K		Thunderstorm Wind (G100)
		Light poles snapped. One boat damaged.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Northeastern									
Clay County									
Green Cove Spgs	14	1630EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Marion County									
Citra	14	1700EST			0	0	15K		Thunderstorm Wind
			Large trees were uprooted. Car port damaged.						
Alachua County									
Archer	14	1746EST			0	0	3.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Nassau County									
Hilliard	14	1800EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Duval County									
Arlington	14	1805EST			0	0			Hail (0.88)
Alachua County									
Alachua	22	2000EST			0	0	1K		Thunderstorm Wind
			Large trees were uprooted.						
Suwannee County									
3 N Wellborn	22	2200EST			0	0	0.50K		Thunderstorm Wind
			Large trees were blown down.						
Alachua County									
Gainesville	23	1730EST			0	0	5K		Thunderstorm Wind
			Large trees and power lines were blown down. Apartment building damaged.						
Hamilton County									
Jennings	23	1740EST			0	0	1K		Thunderstorm Wind
			Large trees were blown down.						
Alachua County									
Rochelle	23	1745EST			0	0			Hail (1.00)
Hamilton County									
Jennings	23	1755EST			0	0	8K		Thunderstorm Wind
			Large trees and power lines were blown down. One vehicle damaged.						
Flagler County									
Countywide	26	1600EST 1800EST			0	0	5K		Lightning
			Several brush fires.						
Flagler County									
3 S Bunnell	26	1640EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Flagler County									
Bunnell	26	1645EST 1830EST			0	0	3.5K		Flood
			Flooding in SR 100.						
Baker County									
Sanderson	31	1700EST			0	1			Lightning
Baker County									
Sanderson to Glen St Mary	31	1700EST			0	0	4K		Thunderstorm Wind
			Large trees and power lines were blown down.						
FLORIDA, Northwest									
Bay County									
Southport	15	1630EST			0	0	15K		Lightning
			Lightning triggered a fire which destroyed a work shed and its contents.						
Washington County									
Chipley	16	1530EST			0	0	75K		Lightning
			Lightning sparked a fire which destroyed a residence on Brickyard Rd.						
Bay County									
Panama City	26	1000EST			0	2			Lightning
			Two men working at Coastal Systems Station were slightly injured when a nearby lightning strike knocked them to the ground.						
Madison County									
Madison	17	1800EST 2000EST			0	0			Urban/Sml Stream Fld
			A slow-moving thunderstorm dumped up to three inches of rain within a two-hour period. The Madison P.D. reported minor flooding of several streets, intersections and low-lying areas.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Southern									
Collier County 5 N Marco	01	1510EST			0	0			Funnel Cloud
					A SKYWARN spotter sighted a funnel cloud between Naples and Marco Island.				
Hendry County 5 S La Belle	02	1430EST			0	0			Funnel Cloud
					Emergency Management reported a funnel cloud.				
Palm Beach County 1 E Riviera Beach	06	1250EST			0	0			Waterspout
					Boater reported a waterspout in the Atlantic just east of Riviera Beach.				
Broward County Sunrise Golf Vlg	08	1550EST			0	0			Funnel Cloud
					Public reported several funnel clouds near Sawgrass Mills Shopping Mall.				
Broward County Oakland Park	08	1555EST			0	0			Hail (1.00)
					Sheriff's Office reported quarter-size hail.				
Dade County 10 W Miami	08	1800EST			0	0			Funnel Cloud
					A SKYWARN spotter sighted a funnel cloud in the everglades west of Miami.				
Dade County 20 W Sweet Water	08	1835EST			0	0			Funnel Cloud
					Everglades Park Ranger reported several funnel clouds near 40-mile bend.				
Hendry County Clewiston	14	1332EST			0	0			Funnel Cloud
					Sheriff's Office sighted a funnel cloud.				
Palm Beach County 1 E Palm Beach	18	1119EST			0	0			Waterspout
					A waterspout was sighted in the Atlantic just offshore Palm Beach.				
Palm Beach County Palm Beach Gardens	18	1145EST			0	0			Funnel Cloud
					Several reports of funnel clouds near PGA Boulevard and I-95.				
Dade County 1 E Miami Beach	19	0815EST			0	0			Waterspout
					A waterspout was seen in the Atlantic just offshore Miami Beach at 46th Street.				
Collier County 1 N Golden Gate	19	1656EST	0.1	5	0	0			Tornado (F0)
					A brief tornado touchdown north of Golden Gate caused no damage.				
Collier County North Naples	19	1800EST			0	0	20K		Lightning
					A lightning strike caused a large hole in the roof and started a fire that did \$20000 damage to an unoccupied home in Pelican Marsh.				
Palm Beach County 5 W Loxahatchee	20	1440EST			0	0			Funnel Cloud
					Public reported a funnel cloud.				
Hendry County La Belle	21	1915EST			0	0	1K		Thunderstorm Wind (G50)
					Severe thunderstorm wind gust blew down a utility pole.				
Collier County Golden Gate	22	1450EST			0	0	10K		Thunderstorm Wind (G65)
					Severe thunderstorm wind gusts damaged a house roof, uprooted an 18-inch diameter tree and blew down a utility pole.				
Glades County 2 W Moore Haven	22	1715EST			0	0			Funnel Cloud
					Emergency Manager reported a funnel cloud.				
Palm Beach County 15 W West Palm Beach	23	1522EST			0	0			Funnel Cloud
					Emergency Management reported funnel clouds near Wellington, west of highway U.S. 441.				
Broward County 2 NW Oakland Park to 1.8 NW Oakland Park	28	1315EST	0.2	10	0	0	25K		Tornado (F0)
Broward County Pompano Beach	28	1320EST			0	0			Thunderstorm Wind (G70)
					A small tornado touched down at Fort Lauderdale Executive Airport flipping a small plane. The tornado then destroyed a tree at a residence near Commercial Boulevard and 45th Street. Severe thunderstorm wind gusts uprooted large trees in Pompano Beach.				
Collier County 10 S Marco	29	0837EST			0	0			Waterspout
					A pilot saw a waterspout in the Gulf of Mexico 10 miles south of Marco Island.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Southern									
Glades County 20 NE Lakeport	30	1345EST			0	0			Waterspout
									A pilot sighted a waterspout over the north portion of Lake Okeechobee.
Broward County Pembroke Pines	30	1805EST			0	0			Funnel Cloud
									The public reported a funnel cloud.
FLORIDA, West Central									
De Soto County Ft Ogden to Arcadia	01	1500EST 2000EST			0	0	25K	0	Urban/Sml Stream Fld
									Six to eight inches of heavy rain fell in less than five hours and caused localized flooding of roads and low lying areas along the U.S. Highway 17 corridor from Arcadia to Ft Ogden. A few vehicles incurred water damage while travelling through flooded intersections along U.S. Highway 17.
Pinellas County Pinellas Park to St Petersburg	01	1600EST 1800EST			0	0	50K	0	Urban/Sml Stream Fld
									Four to five inches of heavy rainfall in less than two hours caused localized flooding of urban low lying streets from Pinellas Park to St Petersburg. A few automobiles incurred water damage while traversing flooded intersections across southern portions of Pinellas County.
Pinellas County Largo	01	1700EST			0	1	0	0	Lightning
									Lightning struck and injured a female while outdoors on the 1000 block of 4th Avenue in Largo.
Pinellas County 2.4 SE Clearwater	01	1700EST			0	0	150K	0	Lightning
									Lightning struck and burned to the ground, a four bedroom home on the 1400 block of Dexter Drive in Clearwater.
Pinellas County .5 N Clearwater	01	1700EST			0	0	25K	0	Thunderstorm Wind
									Thunderstorms winds removed part of an aluminum canopy from a commercial buildings roof, smashed a store front sign and snapped the jib of a sailboat along the 100 block of Seminole Street in Clearwater.
Charlotte County Port Charlotte to Punta Gorda	01	1730EST 2100EST			0	0	75K	0	Urban/Sml Stream Fld
Lee County North Ft Myers to Lehigh Acres	01	1730EST 2100EST			0	0	150K	0	Urban/Sml Stream Fld
									Localized heavy rainfall of four to six inches in less than three hours caused urban and small stream flooding along and east of Interstate 75 corridor from Port Charlotte in Charlotte County south to Lehigh Acres in Lee County. Four piglets were drowned by floodwaters in North Fort Myers and several vehicles incurred water damage in Punta Gorda and Port Charlotte.
Charlotte County Englewood to Punta Gorda	02	1545EST 1800EST			0	0	50K	0	Urban/Sml Stream Fld
Lee County North Ft Myers to Cape Coral	02	1545EST 1800EST			0	0	25K	0	Urban/Sml Stream Fld
Sarasota County Sarasota to North Port	02	1545EST 1800EST			0	0	25K	0	Urban/Sml Stream Fld
									Localized heavy rainfall of three to five inches in less than three hours caused flooding of urban roadways and low lying areas from Sarasota south to Cape Coral. A few vehicles and low lying homes incurred water damage from the localized floodwaters.
Pinellas County Tierra Verde	06	1952EST			0	0	0	0	Hail (0.75)
									Dime sized hail was reported in Tierre Verde by a Skywarn Spotter.
Hillsborough County 4 NE Ruskin	07	2030EST			0	0	6.4K	0	Lightning
									Lightning struck and damaged a moving vehicle on Interstate 75 two miles south of County Road 672 (exit 47) in southern Hillsborough County. The lightning bolt struck the driver side mirror and damaged the electrical system of the vehicle which rendered it inoperable. The electrical charge of the lightning bolt travelled through the tires of vehicle which were blown out and partially melted. The occupants of the vehicle were not injured by the lightning strike.
Hillsborough County Brandon	07	2045EST			0	0	0	0	Hail (0.75)
									Dime sized hail was reported in Brandon by the Hillsborough County Emergency Management.
Charlotte County 3 SW Port Charlotte	07	2100EST			0	0	5K	0	Tstm Wind (G40)
									Thunderstorm winds of up to 45 mph tore a small section of light weight sheet metal from the roof overhang of Charlotte County Stadium.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm	
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops		
FLORIDA, West Central										
Hillsborough County										
Tampa	07	2112EST			0	0	0	0	Hail (0.75)	Dime sized hail was reported in Tampa by a Skywarn Spotter.
Pinellas County										
7 ESE Clearwater	09	1140EST			0	0	0	0	Waterspout	A short-lived waterspout touched down in Old Tampa Bay near County Road 611 (Bayshore Bridge).
Pinellas County										
.5 W Clearwater to 1 SW Clearwater	09	1153EST 1202EST			0	0	0	0	Waterspout	A well defined and long-lived waterspout was observed to develop approximately 50 yards south of the Memorial Causeway Bridge (State Road 60) in Clearwater Harbor. The waterspout was visible for nearly 20 miles and lasted nearly 10 minutes. Northerly downburst winds from the parent thunderstorm pushed the waterspout south across Clearwater Harbor before it dissipated approximately one mile southwest of Clearwater.
Pinellas County										
1 N Dunedin	09	1200EST			0	0	0	0	Hail (1.00)	Quarter sized hail was reported on Mira Vista Drive near Alternate U.S. Highway 19 by a Hillsborough County Emergency Coordinator.
Pinellas County										
1 N Dunedin	09	1200EST			0	0	2K	0	Thunderstorm Wind	Thunderstorm winds downed two large trees and several large branches along Mira Vista Drive near Alternate U.S. Highway 19 in Dunedin.
Pinellas County										
3 W Oldsmar	09	1300EST			0	0	5K	0	Thunderstorm Wind	Thunderstorm winds downed two large trees and several large branches along Quail Hollow Drive and Turtle Brook near the Countryside Country Club north of State Road 580 and west of County Road 611.
Pinellas County										
8 N St Petersburg	09	1310EST			0	0	0	0	Hail (0.88)	Nickel sized hail was reported near the Howard Franklin Bridge (Interstate I-275) in Pinellas County by WTSP-TV of St Petersburg.
Pinellas County										
7 N St Petersburg	09	1329EST			0	0	0	0	Hail (0.75)	Dime sized hail was reported by a Skywarn Spotter along State Road 687 (4th Street N.) between Interstate 275 and U.S. Highway 92.
Manatee County										
5 E Bradenton	09	1330EST	0.1	5	0	0	0	0	Tornado (F0)	A tornado briefly touched down without damage near the intersection of Interstate 75 and State Road 64.
Manatee County										
1 N Palmetto	09	1330EST	0.1	5	0	0	0	0	Tornado (F0)	A tornado briefly touched down without damage along the 1500 block of U.S. Highway 301 in Palmetto.
Manatee County										
Ellenton	09	1340EST 1345EST	0.5	10	0	0	50K	0	Tornado (F0)	A tornado touched down in the Tideview Estates Mobile Home Park and damaged the roof of one home, destroyed a carport and removed three porch enclosures. The tornado proceeded to strike the Blackburn Elementary School and caused minor siding and awning damage to the building before it lifted and dissipated.
Hillsborough County										
3 ESE Ruskin	09	1343EST			0	0	10K	0	Lightning	Lightning struck the National Weather Service Office near the intersection of 14th Avenue SE and 27th Street SE and caused considerable electrical damage to several pieces of telecommunication equipment.
Hillsborough County										
Riverview	09	1405EST 1410EST			0	0	5K	0	Thunderstorm Wind (G57)	A 60 to 65 mph thunderstorm wind gust was reported in Riverview by an off-duty NWS meteorologist. The thunderstorm winds downed several large tree branches which damaged a lanai in the McMullen Loop area of Riverview.
Hillsborough County										
Riverview	09	1500EST			0	0	2K	0	Lightning	Bay News Nine Cable of Tampa reported that lightning struck and burned to the ground a shed on the 8200 block of Alafia Ridge Loop in Riverview.
Sarasota County										
6 SE Sarasota	13	1430EST			0	1	0	0	Lightning	An adult male was struck and injured by the sideflash of lightning which struck a nearby tree while attempting to exit his vehicle. Reported by WWSB-TV of Sarasota.
Pasco County										
Wesley Chapel	13	1600EST			0	0	1K	0	Tstm Wind (G45)	A thunderstorm wind gust of up to 50 mph caused minor damage to a screened lanai, front aluminum siding, soffit, shingles and a satellite dish of a mobile home on McKendree Road in Wesley Chapel.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, West Central									
Hillsborough County									
5 S Ruskin	13	1614EST			0	0	0	0	Hail (0.75)
					Dime sized hail was reported along Interstate 75 by the public through Bay News Nine Cable.				
Hillsborough County									
3 SE Ruskin	13	1620EST	0.2	10	0	0	25K	0	Tornado (F0)
					A tornado briefly touched down over rural south Hillsborough County on the 2900 block of 24th Street, south of 21st Avenue SE. The tornado uprooted one large tree, removed one quarter of a barns metal roof and snapped large branches off two additional trees before it lifted and dissipated.				
Polk County									
Auburndale	14	1630EST			0	0	1K	0	Tstm Wind (G45)
					Thunderstorm wind gusts of up to 50 mph caused minor damage to a lanai in Auburndale.				
Hillsborough County									
Dover to Riverview	14	1740EST 1747EST			0	0	0	0	Hail (0.88)
					Nickel to dime sized hail was reported from Dover to Riverview by the public through WTVT-TV and Bay News Nine Cable of Tampa.				
Manatee County									
Bradenton	14	1750EST			0	0	0	0	Hail (0.75)
					Dime sized hail was reported by the public in Bradenton through Bay News Nine Cable.				
Manatee County									
5 NW Palmetto	15	1541EST			0	0	0	0	Waterspout
					A waterspout was reported by the public south of the Sunshine Skyway Bridge.				
Manatee County									
3 SW Bradenton	15	1544EST			0	0	0	0	Hail (0.88)
					Nickel sized hail was reported along Cortez Road in Bradenton by the public through Bay News Nine Cable.				
Pinellas County									
South Pasadena to Largo	15	1655EST 1715EST			0	0	100K	0	Hail (1.75)
					Golfball to dime sized hail was reported by Skywarn Spotters from South Pasadena north across Kenneth City, Seminole and Largo. Hail covered the ground up to one inch deep at the intersection of Alternate U.S. Highway 19 and State Road 693 (66th Street) in Pasadena, and up to two inches deep along Alternate U.S. Highway 19 and County Road 1 (Park) in Kenneth City. Several vehicles incurred paint and body damage from the golfball sized hail.				
Pinellas County									
2 SE Largo to .3 NE Largo	15	1715EST	1.9	5	0	0	100K	0	Tornado (F0)
					National Weather Service damage survey concluded that a F0 tornado (gustnado) along the leading edge of a thunderstorm, sporadically touched down along a narrow path and caused minor roof, lanai, carport and window damage to at least sixteen mobile homes in Largo.				
					The weak tornado first touched down in the Four Seasons Mobile Home Park along State Road 688 (Ulmerton Road) east of Alternate U.S. Highway 19. The tornado moved north northwest and touched down briefly in the Oak Crest, Buckeye and Lincolnshire Mobile Home Parks where most of the residential damage occurred.				
					Eyewitnesses watched the tornado briefly touch down and topple a few trees near the intersection of 7th Street SE and 5th Avenue SE along Lake Alison. The tornado continued north northwest over a mixed commercial, residential and wooded area of Largo and caused minor sign and tree branch damage before it lifted near the intersection of 4th Avenue NE and 4th Street NE.				
Pinellas County									
2.5 ENE Clearwater	17	1600EST			0	0	50K	0	Lightning
					Lightning struck, ignited and destroyed a stationary Cessna 152 aircraft that had landed prior to the onset of a thunderstorm at the Clearwater Executive Airport on Hercules Avenue (C.R. 425).				
Pinellas County									
Safety Harbor	17	1610EST			0	0	0	0	Thunderstorm Wind (G52)
					Thunderstorm winds gusts of 60 mph were estimated by Bay News Nine Cable.				
Pinellas County									
5 NE Clearwater	17	1610EST			0	0	0	0	Hail (1.75)
					Golfball sized hail was reported at the Countryside Mall near the intersection of U.S. Highway 19 and State Road 580 (Main Street) by the public through WTSP-TV.				
Pinellas County									
.3 E Belleair Shrs to Belleair Shrs	17	1635EST			0	0	50K	0	Thunderstorm Wind
					Thunderstorm winds snapped several utility poles and downed a few large trees along and near the intersection of County Road 416 (Belleair Beach Causeway) and Harbor and Bay Drives. Two homes and a vehicle incurred damage from the toppled trees. Reported by Skywarn Spotters and Bay News Nine Cable.				
Pinellas County									
20 W St Petersburg Beach	18	1600EST			0	0	0	0	Waterspout
					The public reported a waterspout 20 miles west of St Petersburg Beach.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, West Central									
Sarasota County									
Venice	18	1635EST			0	0	5K	0	Thunderstorm Wind
The Venice Police Department reported that thunderstorm winds downed several power lines on South Harbor Drive in Venice.									
Hernando County									
Spring Hill	18	1805EST			0	0	10K	0	Tstm Wind (G45)
Thunderstorm winds downed one large tree which fell atop and severely damaged a van. Reported by WFTS-TV of Tampa.									
Pasco County									
New Port Richey	18	1810EST			0	0	0	0	Thunderstorm Wind (G60)
A 60 mph wind gust was reported by a Skywarn Spotter near Ridge Road in New Port Richey.									
Pinellas County									
Palm Harbor	18	1820EST			0	0	0	0	Hail (0.88)
Nickel sized hail was reported at the intersection of U.S. Highway 19 and Tampa Road by the public through Bay News Nine Cable.									
Lee County									
12 NW Cape Coral	19	1800EST			0	0	50K	0	Lightning
Lightning struck and damaged the roof and second floor of a home on the 11000 block of Tawas Court on Pine Island.									
Sumter County									
1 E Bushnell	20	1543EST			0	0	0	0	Hail (0.75)
Dime sized hail was reported by Sumter County Emergency Management on the 1000 block of County Road 48.									
Sumter County									
Bushnell	20	1545EST			0	0	2K	0	Thunderstorm Wind
Thunderstorm winds downed a few large trees, several large limbs and a couple power lines along U.S. Highway 301 in Bushnell.									
Pinellas County									
6 WNW St Petersburg	21	1231EST			0	0	0	0	Hail (1.00)
Quarter sized hail was reported near the intersection of Alternate U.S. Highway 19 and State Road 693 (66th Street) in St Petersburg by a Skywarn Spotter.									
Lee County									
1 W Sanibel	21	2030EST			0	0	250K	0	Lightning
Lightning struck and burned to the ground a three story home along the 4000 block of West Gulf Drive on Sanibel Island.									
Lee County									
17 SE Ft Myers	22	1530EST 1531EST	0.1	5	0	0	0	0	Tornado (F0)
A tornado was observed by tower personnel to briefly touch down seven miles southeast of the Southwest Florida Regional Airport.									
Lee County									
Lehigh Acres	22	1533EST			0	0	0	0	Hail (1.75)
Golfball sized hail was reported in Lehigh Acres by the broadcast media.									
Polk County									
Lakeland to 7 N Lakeland	22	1620EST 1635EST			0	0	10K	0	Thunderstorm Wind
Thunderstorm winds caused sporadic and minor wind damage over northern portions of Lakeland. The public reported that two mobile homes incurred damage from thunderstorm winds on Martin Drive and N. Socrum Loop Road in the Martin Estates Mobile Home Park in North Lakeland. Also, thunderstorm winds downed a large tree, several large branches and lifted a dog pen along Old Polk City Highway in Lakeland.									
Citrus County									
Beverly Hills	22	2000EST			0	0	1K	0	Thunderstorm Wind
The Citrus County Emergency Management reported that thunderstorm winds downed a few large trees in Beverly Hills.									
Charlotte County									
6 SW Grove City to 5 S Grove City	23	0625EST 0642EST			0	0	0	0	Waterspout
A long-lived waterspout was reported by the Charlotte County Emergency Management which dissipated one mile west of Cape Haze.									
Sarasota County									
2 S Venice	23	0816EST			0	0	0	0	Waterspout
A waterspout was reported by a airplane pilot and the Sarasota County Emergency Management two miles south of Venice.									
Hernando County									
7 W Brooksville	23	1519EST			0	0	5K	0	Thunderstorm Wind
The Hernando Sheriffs Department reported that thunderstorm winds downed a few large trees and power lines near the intersection of County Road 493 (Sunshine Grove Road) and State Road 50.									
Hernando County									
7 W Brooksville	23	1519EST			0	0	0	0	Hail (1.00)
Quarter sized hail was reported by the Hernando County Sheriffs Department near the intersection of County Road 493 (Sunshine Grove Road) and State Road 50.									
Hernando County									
4 NE Brooksville	23	1530EST			0	0	2K	0	Thunderstorm Wind
The Hernando County Sheriffs Department reported that thunderstorm winds downed a few large trees and branches near the intersection of Croom and Weatherly Roads.									

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FLORIDA, West Central

Levy County

**2 NE Williston to
1 SE Williston** 23 1700EST 0 0 25K 0 **Thunderstorm Wind**

The Williston Police Department reported that several power poles, large trees and numerous branches were downed and a convenience store roof damaged by thunderstorm winds along and near U.S. Highway 27.

Polk County

Winter Haven 26 1255EST 0 0 20K 0 **Tstm Wind (G45)**

Thunderstorm winds, estimated at 50 mph by the public, caused minor damage to carports and screen porches of ten manufactured homes in the Four Lakes Golf Club Manufactured Home Park of Winter Haven.

Hillsborough County

**4 WNW Appollo Beach to
2.5 N Appollo Beach** 26 1325EST
1335EST 0 0 0 0 **Waterspout**

A pencil thin waterspout was reported four miles west northwest of Appollo Beach in Tampa Bay by WFLA-TV and Skywarn Spotters.

Hillsborough County

**6 WSW Plant City to
4 WSW Plant City** 26 1340EST 0 0 5K 0 **Thunderstorm Wind**

The Hillsborough County Sheriffs Department reported that thunderstorm winds downed several large trees that blocked Dover and Forbes Roads near Plant City.

Hardee County

5 N Wauchula 26 1413EST 0 0 15K 0 **Thunderstorm Wind**

A Skywarn Spotter reported that thunderstorm winds downed several large tree limbs at the Paynes Creek State Historical Site.

Levy County

7 NW Bronson 27 1640EST
1647EST 0 0 0 0 **Hail (0.75)**

Dime to mothball sized hail was reported to fall for seven minutes near the intersection of County Roads 339 and 320 by the Levy County Emergency Management.

Levy County

**4 NW Bronson to
7 NW Bronson** 27 1640EST
1647EST 0 0 5K 0 **Thunderstorm Wind**

The Levy County Emergency Management reported that thunderstorm winds downed several large trees and destroyed a shed along and near the intersection of County Roads 339 and 320.

Manatee County

8 NW Bradenton 30 0725EST 0 0 0 0 **Waterspout**

A waterspout was reported on the south side of the Sunshine Skyway Bridge (I-275) at the mouth of Tampa Bay by the public through WFLA-TV of Tampa.

Pinellas County

7 NE St Petersburg 31 1225EST 0 0 0 0 **Waterspout**

A waterspout was reported south of the Gandy Bridge (I-275) in Old Tampa Bay by the public.

FLORIDA, West Panhandle

Okaloosa County

Ft Walton Beach 12 1945CST
1947CST 0 0 **Hail (1.75)**

Weather spotters reported golfball size hail which did some minor damage to a mailbox.

Santa Rosa County

4 N Gulf Breeze 23 1745CST 0.1 20 0 0 10K **Tornado (F0)**
1748CST

Storm damage occurred near Garcon Point, northeast of Gulf Breeze. A 12X24 section of tin roof on a home was damaged along with power lines down. The damage was caused by a possible waterspout moving inland off of Pensacola Bay.

Santa Rosa County

Pace 29 1630CST 0 0 5K **Lightning**

Lightning struck an outdoor shed near a home. The shed caught fire and burned down.

GEORGIA, East Central

NONE REPORTED.

GEORGIA, Lower

Atkinson County

Willacoochee 06 1930EST 0 0 1.5K **Thunderstorm Wind**

Large trees and power lines were blown down.

Glynn County

Jekyll Is 12 1400EST 0 0 **Thunderstorm Wind (G60)**

Camden County

St Marys 12 1800EST 0 0 30K **Lightning**

Three house fires.

Storm Data and Unusual Weather Phenomena

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Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
GEORGIA, Lower									
Glynn County									
Sterling	14	1525EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Wayne County									
Gardi	24	2030EST			0	0	0.50K		Thunderstorm Wind
			Large trees were blown down along US-341.						
GEORGIA, North and Central									
Cherokee County									
2 N Canton	06	1445EST			0	0			Hail (1.00)
			The public reported quarter size hail.						
Jackson County									
Jefferson	06	1500EST			0	0			Hail (1.00)
			Jackson county 911 relayed a report of quarter size hail.						
Lumpkin County									
Dahlonega	06	1500EST			0	0	1K		Thunderstorm Wind
			The public reported several trees were uprooted.						
Fulton County									
4 E Alpharetta to Alpharetta	06	1525EST 1530EST			0	0			Hail (1.00)
			Several reports from the public indicated hail from dime to quarter size fell in north Fulton county.						
Hall County									
Gainesville	06	1530EST			0	0			Hail (1.00)
			The public reported quarter size hail.						
Hall County									
Gainesville	06	1530EST			0	0	50K		Lightning
			A bolt of lightning ignited a fire that gutted a house on the south side of Gainesville.						
Fulton County									
Sandy Spgs to 4 N Atlanta	06	1545EST 1612EST			0	0			Hail (1.25)
			The public reported hail ranging from dime size to as big as half dollars in the Sandy Springs and Buckhead areas.						
Emanuel County									
10 NW Swainsboro	06	1555EST			0	0			Hail (0.75)
Johnson County									
1 E Kite	06	1555EST			0	0			Hail (0.75)
			The Emanuel and Johnson county 911 reported dime size hail on the county line.						
Fulton County									
5 N Atlanta	06	1600EST 1620EST			0	0	5K		Thunderstorm Wind (G57)
			A newspaper article reported roof damage to a food mart at Peachtree Road and Peachtree Hills. A TV meteorologist estimated wind gusts to 60 mph and a report from the public indicated a measured wind gust to 66 mph.						
Fulton County									
Sandy Spgs to Atlanta	06	1600EST 1630EST			0	0	1M		Lightning
			Lightning ignited a fire that gutted a 56 unit building in the Post Terrace Apartments complex. Lightning set the roof of one building afire, then flames quickly spread throughout the four-story structure. Tremendous amounts of lightning also caused fires to break out in at least a dozen locations in the Atlanta area.						
Cobb County									
Mableton	06	1605EST			0	0			Hail (0.88)
			Cobb county 911 reported nickel size hail.						
Warren County									
Warrenton	06	1615EST			0	0	1K		Thunderstorm Wind
			Warren county 911 reported several trees blown down.						
White County									
Cleveland	06	1620EST			0	0	2K		Thunderstorm Wind
			White county 911 reported trees and power lines were knocked down.						
De Kalb County									
Clarkston to Decatur	06	1630EST			0	0	200K		Lightning
			Lightning sparked fires at the Highland Villa apartments on Brockett Way and at the Park on Candler apartments. Two firemen were injured when the building collapsed on them at the Candler Road fire. At least 2 other fires in DeKalb county were caused by lightning strikes.						
De Kalb County									
Tucker to Decatur	06	1630EST			0	0	2K		Thunderstorm Wind
			Several trees were knocked down in the Tucker, Decatur, and Lithonia areas.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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GEORGIA, North and Central

Fulton County

5 N Atlanta

06 1630EST

0 0

Flash Flood

Thunderstorms dumped around 3 inches of rain in 1 to 2 hours over central Fulton county. Some roads became impassable in a few areas, but there was no damage reported.

Gwinnett County

Duluth

06 1630EST

0 0

200K

Lightning

Fire caused by lightning destroyed 4 upstairs units and damaged 4 downstairs units of a 16 unit building at the Falls Apartments.

Gwinnett County

Lilburn

06 1630EST

0 0

Hail (1.00)

The public reported quarter size hail.

Spalding County

Griffin

06 1700EST

0 0

3K

Thunderstorm Wind

A newspaper reported tree limbs and at least one large tree were knocked down on power lines, causing power outages.

Butts County

Indian Spgs

**06 1710EST
1720EST**

0 0

5K

Thunderstorm Wind

A newspaper account indicated thunderstorm winds knocked trees down at the Indian Springs State Park. The trees damaged a bridge and playground equipment.

Henry County

Mc Donough

**06 1710EST
1715EST**

0 0

Hail (1.75)

Henry county 911 reported dime size hail and the public reported quarter to golfball size hail.

Henry County

Mc Donough

**06 1710EST
1715EST**

0 0

10K

Thunderstorm Wind

The local newspaper reported a severe thunderstorm toppled trees and snapped power lines. There was also spot flooding throughout the county. One tree fell on top of a van. A store was flooded and the police department had several inches of water in it due to a backed up sewer drain.

Laurens County

Dublin

06 1710EST

0 0

1K

Thunderstorm Wind

Laurens county 911 reported several trees blown down.

Floyd County

Rome

**06 1712EST
1727EST**

0 0

Hail (0.75)

Floyd County

Rome

06 1712EST

0 0

2K

Thunderstorm Wind

Floyd county 911 reported dime size hail and trees down. According to newspaper reports, some trees fell on power lines, knocking out power along highway 27 north.

Monroe County

Bolingbroke

06 1720EST

0 0

1K

Thunderstorm Wind

Thunderstorm winds knocked several trees down.

Hancock County

Sparta

06 1730EST

0 0

2K

Thunderstorm Wind

Hancock county 911 reported several trees were down on power lines.

Bibb County

Macon

06 1740EST

0 0

Hail (1.00)

The public reported quarter size hail.

Jones County

2 N Haddock

06 1752EST

0 0

Hail (0.75)

A HAM radio operator reported dime size hail and trees down.

Fayette County

Fayetteville

06 1753EST

0 0

1K

Thunderstorm Wind

Fayette county 911 reported several trees blown down.

Bibb County

Macon

06 1755EST

0 0

10K

Thunderstorm Wind

A HAM radio operator reported trees down on houses near the Bibb/Jones county line. A newspaper report said trees fell on power lines, which knocked out traffic lights.

Jones County

Gray

06 1757EST

0 0

20K

Thunderstorm Wind

A newspaper reported many trees and power lines down. One fell on a home on Joycliff Road, crushing the carport and damaging the rear of the house. Another brick foundation was damaged by a falling tree.

Chattooga County

**Trion to
Summerville**

06 1800EST

0 0

1K

Thunderstorm Wind

Chattooga county 911 reported trees were blown down.

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GEORGIA, North and Central									
Clayton County									
Morrow	06	1800EST			0	0	50K		Lightning
									Lightning started a fire at the Lake Harbin Apartments, causing significant damage to the roof and attic.
Jasper County									
Monticello	06	1800EST			0	0	1K		Thunderstorm Wind
									Jasper county 911 reported trees down around the county.
Monroe County									
Bolingbroke	06	1800EST			0	0	1K		Thunderstorm Wind
									Monroe county 911 reported power lines were blown down.
Whitfield County									
5 NE Dalton to 5 E Dalton	06	1800EST			0	0	2K		Thunderstorm Wind
									A HAM radio operator reported trees and power lines down in the northeast and east part of the county.
Troup County									
La Grange	06	1805EST			0	0	1K		Thunderstorm Wind
									Troup county 911 reported trees blown down.
Bibb County									
Macon	06	1815EST			0	0			Hail (0.88)
									The public reported nickel size hail.
Laurens County									
Dublin	06	1830EST			0	0	2K		Thunderstorm Wind
									Laurens county 911 reported trees down on power lines.
Macon County									
4 E Montezuma	06	1835EST			0	0	30K		Thunderstorm Wind
									Public and newspaper reports indicated thunderstorms winds tore the roofs off a calf barn and a dairy barn.
Heard County									
4 E Franklin	06	1918EST 1930EST			0	0	2K		Thunderstorm Wind
									The public and Heard county 911 reported that thunderstorm winds knocked trees down along highway 34 both east and west of Franklin.
Fannin County									
Mineral Bluff	07	1500EST			0	0	0.50K		Thunderstorm Wind
									Fannin county 911 reported trees down.
Douglas County									
Lithia Spgs to Douglasville	07	1600EST 1630EST			0	0	3K		Thunderstorm Wind
									Greystone EMC reported trees down in Lithia Springs and power lines down on highway 5.
Forsyth County									
Cumming to 4 SW Big Creek	07	1630EST 1700EST			0	0	5K		Thunderstorm Wind
									Forsyth county 911 reported trees were knocked down along Atlanta Highway. A couple of them fell on power lines, and one fell on a house.
Haralson County									
Buchanan to Tallapoosa	07	1630EST 1635EST			0	0	3K		Thunderstorm Wind
									Haralson county 911 reported trees and power lines down throughout the county, mainly in Buchanan, Breman, and Tallapoosa.
Paulding County									
Dallas	07	1723EST			0	0	2K		Thunderstorm Wind
									Greystone EMC reported trees were knocked down and a power pole was broken in half.
Cobb County									
Smyrna	07	1730EST			0	0	0.50K		Thunderstorm Wind
									The Smyrna police reported trees down on power lines.
Carroll County									
6 NE Carrollton	07	1909EST			0	0	1K		Thunderstorm Wind
									Greystone EMC reported trees down on power lines.
Forsyth County									
Cumming	10	1600EST			0	0	50K		Lightning
									Fire caused by lightning severely damaged the roof and upper floor of a home on Lakeridge Drive.
Cobb County									
Marietta	10	1700EST			0	0	5K		Thunderstorm Wind
									Cobb county 911 reported trees down. One home was hit by a falling tree.
Fulton County									
Alpharetta	10	1700EST			0	0	1K		Thunderstorm Wind
									The Fulton county fire department reported trees down and flooded streets.

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		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage		
GEORGIA, North and Central									
Gwinnett County									
Buford	10	1730EST			0	0	30K		Lightning
									A newspaper reported lightning sparked a fire that heavily damaged a church at the intersection of Island Ford and Buford Dam roads.
Gwinnett County									
Lilburn	10	1730EST			0	0	1K		Thunderstorm Wind
									Gwinnett county 911 reported trees and power lines blown down.
Cherokee County									
Canton	10	1843EST			0	0			Hail (0.88)
									The public reported nickel size hail.
Forsyth County									
Cumming	11	1400EST			0	0	25K		Lightning
									Lightning started a fire that destroyed half of a 4200 square foot storage building.
Fannin County									
Blue Ridge	11	1600EST 1800EST			0	0			Flash Flood
									One to two inches of rain in a 2 hour period and a 24 hour total of around 4 inches caused the Toccoa river to go out of its banks.
Madison County									
Colbert to Comer	11	1600EST 1800EST			0	0	25K		Flash Flood
									A newspaper reported that heavy rain caused the roof at the Comer Medical Clinic to collapse. Basements of homes were flooded in the Colbert area. A culvert was washed out on the Shoal Creek Road. Around 4 inches of rain fell during the afternoon, causing the damage.
Meriwether County									
Rocky Mt	11	1630EST			0	0	1K		Thunderstorm Wind
									Lamar EMC reported large tree limbs were blown down onto power lines, causing power outages.
Emanuel County									
Swainsboro	11	1650EST			0	0			Hail (0.75)
									The public reported dime size hail.
Telfair County									
Mc Rae	15	2105EST			0	0			Urban/Sml Stream Fld
									Telfair county 911 reported numerous roads were flooded or had high water on them.
Laurens County									
Minter	15	2130EST			0	0			Urban/Sml Stream Fld
									Laurens county 911 reported flooding of streets and low areas, particularly Georgia Highway 19 and US Highway 441.
Laurens County									
Dublin	16	1405EST			0	0			Hail (1.50)
									Laurens county 911 relayed a report from the Dublin police of ping pong ball size hail.
Washington County									
Riddleville to Tennille	16	1515EST 1530EST			0	0	1K		Thunderstorm Wind
									Washington EMC reported trees down on power lines in Riddleville, Sandersville, and Tennille.
Wilkinson County									
3 W Mc Intyre to Gordon	16	1605EST 1620EST			0	0	1K		Thunderstorm Wind
									Wilkinson county 911 and Gordon police reported trees were knocked down.
Bibb County									
Macon	16	1729EST			0	0	1K		Thunderstorm Wind
									Macon 911 reported trees down on power lines.
Twiggs County									
Dry Branch	16	1730EST			0	0	1K		Thunderstorm Wind
									Oconee EMC reported trees and power lines down.
Crawford County									
3 NE Knoxville	16	1745EST			0	0	1K		Thunderstorm Wind
									Flint EMC reported trees down on power lines at Sandy Point.
Crawford County									
Roberta	16	1800EST			0	0	10K		Lightning
									Crawford county 911 reported lightning set a barn on fire.
Gordon County									
Ranger to Fairmount	17	1408EST 1415EST			0	0	1K		Thunderstorm Wind
									Thunderstorm winds knocked trees down.
Gordon County									
Fairmount	17	1410EST 1415EST			0	0			Hail (0.88)

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GEORGIA, North and Central									
Walker County									
Rossville	17	1615EST			0	0	2K		Thunderstorm Wind
									Thunderstorm winds knocked trees and power lines down.
Dodge County									
Eastman	18	1400EST			0	0	10K		Lightning
									Lightning struck the chimney on a new home on Friendship Church Road. Falling brick caused damage to the roof and deck. There was also water damage inside the house.
Monroe County									
7 NE Forsyth to 2 SE Forsyth	19	1730EST			0	0	5K		Thunderstorm Wind
									Thunderstorm winds knocked trees and power lines down. A large tree fell on a funeral home chapel, causing damage.
GAZ001>009-011>016-019>025-027-030>039-041>062-066>076-078>086-091>098-103>113									
	20	0800EST			2	0			Excessive Heat
	31	2359EST							High temperatures in the 90s to low 100s combined with high relative humidities to produce heat indices of 100 to 110 degrees over north and central Georgia the last 10 days or so of July. Only on the 24th was there any significant rainfall during this stretch. There were 2 deaths attributed to the heat. Both were elderly persons who did not have air conditioning in their homes. One was in Coweta county and the other was in Barrow county M77PH, F79PH
Dawson County									
Dawsonville	21	1530EST			0	0	0.20K		Thunderstorm Wind
									Dawson county 911 reported trees blown down.
Lumpkin County									
Dahlonega to 8 SE Dahlonega	21	1530EST 1545EST			0	0	0.20K		Thunderstorm Wind
									Lumpkin county 911 reported a couple of trees blown down.
Jackson County									
3 SE Jefferson	21	1540EST			0	0	0.50K		Thunderstorm Wind
									Jackson county 911 reported trees blown down.
Cherokee County									
8 NE Canton	21	1600EST			0	0	0.50K		Thunderstorm Wind
									The Cherokee county EMA director reported trees blown down.
Henry County									
Stockbridge	21	1653EST			0	0	1K		Thunderstorm Wind
									Henry county 911 reported power lines blown down.
Fayette County									
8 N Peachtree City	21	1714EST			0	0			Hail (0.75)
Cobb County									
Acworth	21	1720EST			0	0	0.50K		Thunderstorm Wind
									The public reported trees blown down.
Fayette County									
Peachtree City	21	1740EST			0	0	1K		Thunderstorm Wind
									Fayette county 911 reported trees blown down in the south part of the county.
Cobb County									
Kennesaw	21	1745EST			0	0	0.50K		Thunderstorm Wind
									The public reported trees blown down on Pine Mountain Road.
Fayette County									
Peachtree City	21	1745EST			0	0			Hail (0.75)
White County									
Helen	22	1520EST			0	0	2K		Thunderstorm Wind
									The police radio tower in Helen was bent over due to thunderstorm winds.
Lumpkin County									
Dahlonega	22	1530EST			0	0	0.20K		Thunderstorm Wind
									Lumpkin county 911 reported trees were blown down.
Lumpkin County									
2 E Dahlonega	22	1552EST			0	0	0.20K		Thunderstorm Wind
									Lumpkin county 911 reported trees were blown down.

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GEORGIA, North and Central									
Dawson County									
Juno	22	1635EST			0	0	1K		Thunderstorm Wind
			Dawson county 911 reported trees were blown down.						
Cobb County									
Marietta	22	1714EST			0	0	50K		Lightning
			A newspaper reported a fire started by lightning damaged several apartments at the Falls of Bells Ferry apartments.						
Cobb County									
2 N Marietta	22	1725EST			0	0			Hail (0.88)
			The public reported nickel size hail.						
Gwinnett County									
Lawrenceville	24	1300EST			0	0			Hail (1.75)
Gwinnett County									
Lawrenceville	24	1302EST			0	0	0.20K		Thunderstorm Wind
			The public reported hail from small up to golf ball size. There was also a report of large limbs blown down.						
Troup County									
West Pt	24	1345EST 1400EST			0	0			Hail (0.75)
Whitfield County									
Dalton	24	1359EST			0	0			Hail (0.75)
Whitfield County									
Dalton	24	1400EST			0	0	0.20K		Thunderstorm Wind
			Dalton public works reported trees down.						
Troup County									
10 W La Grange to Jones Xrds	24	1401EST 1410EST			0	0	10K		Thunderstorm Wind
			Reports from Troup county 911 and the public indicated trees and power lines were knocked down at several locations in the county, but mainly in the southern part. A newspaper reported an old rotten oak tree fell on a country store at Bartley and Jarrell Hogg Roads. Another report said there was a possible funnel cloud.						
Harris County									
Smiths Xrds	24	1410EST			0	0	2K		Thunderstorm Wind
			Troup EMC received a report of 30 pine trees twisted and uprooted near the Troup/Harris county line.						
Cobb County									
Marietta	24	1430EST			0	0			Hail (1.00)
			A couple of public reports indicated dime to quarter size hail.						
Forsyth County									
Cumming	24	1430EST 1500EST			0	0	300K		Lightning
			Lightning set a fire which destroyed a two-story home in Hampton Forest subdivision. Four firemen were injured while fighting the fire. Another lightning strike caused a fire at a home on Zinfandel Court and Old Atlanta Club parkway. The fire was contained to the attic and one bedroom.						
Fulton County									
Alpharetta	24	1430EST 1530EST			0	0	200K		Lightning
			A newspaper reported lightning strikes triggered at least 8 house fires in North Fulton county.						
Fulton County									
Alpharetta	24	1433EST 1440EST			0	0			Hail (0.75)
Cobb County									
3 N Kennesaw	24	1445EST			0	0	5K		Lightning
			A fire started by lightning damaged the roof of a home on Wade Green Road.						
Fulton County									
Alpharetta	24	1446EST			0	0	0.50K		Thunderstorm Wind
			The public reported dime size hail and trees down.						
Cobb County									
Marietta	24	1450EST 1510EST			0	0	10K		Hail (2.00)
			Several public reports indicated large hail fell in the Marietta and Dobbins AFB area. It ranged from dime to larger than golf ball size. A newspaper indicated there was severe damage from the hail.						
Cobb County									
Marietta	24	1500EST 1515EST			0	0	50K		Thunderstorm Wind (G64)
			Thunderstorm winds knocked down trees in the Marietta area. One was a 4 foot diameter oak tree. Another public report indicated a couple of buildings were destroyed on Windy Hill Road. A CNN meteoroloist reported a wind gust to 64 knots.						
Polk County									
Cedartown	24	1500EST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
GEORGIA, North and Central									
Polk County Cedartown	24	1500EST 1515EST			0	0	1K		Thunderstorm Wind
									Polk county 911 reported several trees were knocked down.
Bartow County Cartersville to 4 SE Emerson	24	1512EST 1525EST			0	0			Hail (1.75)
									Several public reports indicated hail from dime size to golf ball size fell across southern Bartow county.
Bartow County 4 SE Emerson	24	1512EST			0	0	0.30K		Thunderstorm Wind
									Trees were knocked down at the Army Recreation Center.
Gwinnett County 3 W Centerville	24	1532EST			0	0	1K		Thunderstorm Wind
									A spotter reported trees down and street flooding.
Cherokee County Woodstock to Cherokee	24	1535EST 1550EST			0	0			Hail (0.75)
Cherokee County Woodstock to Cherokee	24	1535EST 1550EST			0	0	0.20K		Thunderstorm Wind
									The public reported dime size hail and limbs and trees blown down.
Forsyth County Cumming	24	1535EST			0	0	0.30K		Thunderstorm Wind
									The public reported trees down.
Cobb County Marietta to 7 SW Marietta	24	1540EST 1545EST			0	0	5K		Thunderstorm Wind
									Public reports indicated lots of trees were knocked down along Windy Hill Road, Terrell Mill Road and Paper Mill Road.
Fayette County Fayetteville	24	1540EST 1550EST			0	0			Hail (1.00)
Fayette County 1 N Fayetteville to Fayetteville	24	1540EST 1550EST			0	0	1K		Thunderstorm Wind (G52)
									The public reported hail ranging from dime to quarter size and a few trees down. A retired NWS meteorologist estimated winds up to 60 mph.
Gwinnett County Snellville	24	1540EST			0	0			Hail (0.75)
Newton County Oxford to Covington	24	1540EST 1550EST			0	0	0.20K		Thunderstorm Wind
									The public reported trees down.
Newton County Oxford	24	1550EST			0	0			Hail (1.00)
									The public reported quarter size hail.
Oconee County 2 E Watkinsonville	24	1550EST			0	0			Hail (0.75)
									The public reported dime size hail and a tree down blocking the road.
Clayton County Jonesboro	24	1555EST 1600EST			0	0			Hail (1.00)
Oglethorpe County Arnoldsville to Lexington	24	1602EST			0	0	10K		Thunderstorm Wind
									Oglethorpe county 911 reported trees and power lines down. Two chicken houses were also damaged.
Fayette County Fayetteville	24	1605EST 1610EST			0	0	0.20K		Thunderstorm Wind
									The public reported trees and limbs blown down.
Clayton County Jonesboro to Morrow	24	1610EST			0	0			Hail (1.00)
									The public reported dime to quarter size hail. There was also a report of a tree and limbs down.
Forsyth County 3 E Cumming	24	1610EST			0	0			Hail (0.75)
									The public reported dime size hail on Lake Lanier.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
GEORGIA, North and Central									
Rockdale County									
Conyers	24	1621EST 1635EST			0	0			Hail (1.00)
			The public reported large hail from dime to quarter size in the Conyers area.						
Carroll County									
Whitesburg	24	1630EST			0	0	1K		Thunderstorm Wind
			Carroll county 911 reported trees and power lines down.						
De Kalb County									
3 E Panthersville	24	1630EST			0	0	0.20K		Thunderstorm Wind
			The public reported trees down near I-285.						
Newton County									
Covington	24	1640EST 1653EST			0	0			Hail (1.75)
			The public reported penny and golf ball size hail.						
Coweta County									
10 NE Newnan	24	1653EST			0	0			Hail (0.75)
			A spotter reported dime size hail at exit 11 on I-85.						
Newton County									
5 W Covington	24	1700EST			0	0	0.20K		Thunderstorm Wind
			The public reported trees down on Salem Road.						
Newton County									
Stewart	24	1707EST			0	0			Hail (1.00)
			The public reported quarter size hail near the intersection of highways 36 and 212.						
Jasper County									
6 W Maxwell	24	1726EST			0	0			Hail (0.75)
			The public reported dime size hail near Eudora.						
Clayton County									
Forest Park to Morrow	24	1730EST			0	0	0.20K		Thunderstorm Wind
			Clayton county 911 reported a few small trees down in Forest Park and Morrow.						
Morgan County									
Bostwick to Madison	24	1735EST 1742EST			0	0	2K		Thunderstorm Wind
			Morgan county 911 reported trees and power lines down.						
Harris County									
Waverly Hall to Ellerslie	25	1837EST			0	0	3K		Thunderstorm Wind
			Harris county 911 reported trees and power lines down in Waverly Hall and Ellerslie.						
Toombs County									
2 E Lyons	25	1839EST			0	0	1K		Thunderstorm Wind
			Toombs county 911 reported power lines down on highway 86.						
Troup County									
La Grange	25	1845EST			0	0	15K		Thunderstorm Wind
			A newspaper reported thunderstorm winds took part of the roof off of a flea market on West Point Road. A large sign and a fence were also blown down. Troup county 911 reported power lines blown down.						
Sumter County									
Americus	26	1533EST			0	0	15K		Thunderstorm Wind
			The Americus sheriff and a newspaper report indicated thunderstorm winds damaged an irrigation pivot. The winds picked up over 800 feet of a 1200 foot length, and threw it 30 to 40 feet across a field onto a fence. Trees were uprooted and a power line was torn down by a tree limb. There was an unconfirmed report of a tornado.						
Crawford County									
Roberta	29	1430EST			0	0	20K		Lightning
			Fire started by lightning destroyed 2 storage sheds and damaged a mobile home on Hardison Church Road.						
Cherokee County									
15 NW Canton	29	1540EST			0	0			Hail (0.75)
Cherokee County									
15 NW Canton to Woodstock	29	1540EST			0	0	0.50K		Thunderstorm Wind
			Cherokee county 911 reported dime size hail and trees down						
Carroll County									
Carrollton	29	1555EST			0	0	1K		Thunderstorm Wind
			Carroll county 911 reported trees and power lines down.						
Coweta County									
Dresden	29	1559EST			0	0	0.50K		Thunderstorm Wind
			Coweta county 911 reported trees down west of Newnan.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>GEORGIA, North and Central</u>									
Bartow County									
White	29	1600EST			0	0	5K		Thunderstorm Wind
									A newspaper reported thunderstorm winds knocked down several trees and broke off large limbs. The top of a baseball dugout was torn off, and some fences were also blown down.
Coweta County									
Newnan	29	1600EST 1630EST			0	0	150K		Lightning
									Fires started by lightning damaged homes on Pintail Drive, Mallard Drive and Alder Drive. All 3 were in the Newnan area.
Cobb County									
Kennesaw	29	1618EST			0	0			Hail (0.75)
Fannin County									
Mineral Bluff	29	1630EST			0	0	1K		Thunderstorm Wind
									Fannin county 911 reported trees down on power lines.
Cobb County									
Marietta	29	1705EST			0	0	1K		Thunderstorm Wind
									The public reported trees down. Large limbs were knocked onto a deck.
Paulding County									
Dallas	29	1730EST			0	0	1K		Thunderstorm Wind
									Paulding county 911 reported trees down. One fell on a car.
Haralson County									
Buchanan to Tallapoosa	29	1800EST			0	0	2K		Thunderstorm Wind
									A paramedic reported lots of trees and some power lines down between Buchanan and Tallapoosa, and between Bremen and Waco. He also reported small hail.
Haralson County									
Tallapoosa	29	1802EST			0	0			Hail (0.88)
									The public reported nickel size hail.
Warren County									
Camak to Barnett	31	1628EST 1640EST			0	0	2K		Thunderstorm Wind
									Warren county 911 reported trees and power lines down on highway 80 between Camak and Warrenton. Trees were also knocked down on power lines near Barnett.
Greene County									
5 SW Veazey	31	1830EST			0	0	0.50K		Thunderstorm Wind
									Rayle EMC reported trees down on a power line.
<u>GEORGIA, Northeast</u>									
Habersham County									
Clarksville	11	1240EST			0	0			Hail (0.75)
									A severe thunderstorm produced dime size hail.
GAZ010-017>018-026-028>029									Rabun - Habersham - Stephens - Franklin - Hart - Elbert
	15	0000EST			0	0			Drought
	31	2359EST							A long term dry spell became a drought in July as no organized rainfall events affected the region. The lack of rain and temperatures well into the 90s to 100 degrees, combined to cause significant damage to crops. Dollar amounts of the damage were unavailable at the time of this writing.
Elbert County									
Bowman	24	1645EST			0	0			Thunderstorm Wind (G50)
Elbert County									
7 NNE Elberton	24	1700EST			0	0			Thunderstorm Wind (G65)
									Downbursts from a severe thunderstorm produced a considerable amount of wind damage. Trees were blown down on roads outside of Bowman, leading to Elberton. A few miles north of Elberton, a 2 ton utility building was blown into power lines and into a mobile home. Another home sustained roof damage and numerous trees in the same area had their tops torn off or were downed completely.
<u>GEORGIA, Southeast</u>									
Screven County									
Sylvania	06	1520EST 1525EST			0	0			Hail (1.75)
Tattall County									
Cobbtown	25	1815EST			0	0			Thunderstorm Wind (G50)
									Trees and powerlines down.
<u>GEORGIA, Southwest</u>									
Colquitt County									
Northeast Portion	06	1845EST			0	0	2K		Thunderstorm Wind
									Storm spotter reported downed trees and power lines.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

HAWAII

Island of Hawaii									
Hilo Airport			3.53	9.7	36		72.03		96
Pahala			0.04	2.1	2		12.38		37
Honaunau			2.41	7.3	33		13.71		35
Kamuela (Upper)			5.49	4.4	125		36.63		101
Glenwood			5.84	9.9	59		128.03		129
Laupahoehoe			2.52	10.0	25		64.63		69

The Maui Board of Water Supply declared a drought emergency for Upcountry Maui and ordered residential customers to cut water use by 25 percent. Farmers, however, were exempted from the cutback for 60 days to give them time to harvest their crops. Governor Cayetano signed an emergency declaration for Upcountry Maui--to last for 60 days--because of the prolonged drought. By signing the declaration, the governor waived environmental and procurement regulations to allow the Board of Water Supply to tap two wells at Hamakuapoko that have pesticide contamination. The emergency water supplies from the wells will have to be passed through activated charcoal to remove the pesticides.

Farmers in Upcountry Maui, though exempt from water restrictions for the time being, are taking losses from the drought nonetheless. Some are planting certain crops only every other week, instead of planting every week on different land. Others are concentrating on more valuable plants and not planting ones less valuable, such as short-term flower crops like sunflowers and gladiolus.

The summer drought continued to affect the island of Hawaii, especially five rural communities. People in Kapulena and Kukuihaele in Hamakua were under a 25 percent water reduction order, while those in Keokea, Makapala, and Niulii were under a 10 percent restriction. Also, six locations on the Big Island were facing extreme fire risk--Waikoloa, Waimea, the South Kohala Coast, North Kohala, Hawaiian Ocean Estates, and Pahala.

Farmers on the island of Hawaii were suffering as well. For example, MacFarms of Hawaii, a 4000-acre South Kona macadamia nut farm, has had 50 percent less rainfall in the last two years; the company had a 15 percent smaller crop this year and predicts a 30 percent loss next year, President Rick Vigden said.

HIZ001>003-005>008 **Kauai - Oahu - Maui - Molokai - Lanai - West Hawaii Including Leeward Kohala And Kona - South Hawaii Including Kau**

04	2200HST	0	0	High Surf
05	2300HST			

Storm low east of New Zealand generated surf of 4 to 7 feet along south shores of all Hawaiian islands.

HIZ001>008 **Kauai - Oahu - Maui - North And East Hawaii Including Windward Kohala / Hamakua / Hilo / Puna - Molokai - Lanai - West Hawaii Including Leeward Kohala And Kona - South Hawaii Including Kau**

26	2130HST	0	0	Wind Advisory
27	1500HST			

Winds gusted to over 50 mph as a high pressure cell north of the Hawaiian islands strengthened over the two-day period. The strong winds knocked down trees and cut out power to 2000 homes and businesses in Mililani on Oahu and also caused smaller power outages in Manoa, St. Louis Heights, Round Top and Kaimuki. The winds caused dust storms in drought-stricken parts of the island of Hawaii as well, creating hazardous driving conditions for motorists.

HIZ003 **Maui**

26	2200HST	0	0	High Wind (G63)
	2215HST			

Winds gusted to over 70 mph for a short time in the Maalaea area of Maui. A strengthening high pressure cell to the north of the Hawaiian islands caused the high winds.

IDAHO, Extreme Southeast

NONE REPORTED.

IDAHO, North

Clearwater County **Ahsahka**

20	2043MST	0	0	Thunderstorm Wind (G52)
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60 mph wind gust at Ahsahka.

IDAHO, Northwest

Kootenai County **Athol**

07	1545PST	0	0	30K	Tstm Wind/Hail
	1548PST				

Thunderstorm winds to 45 mph and half inch size hail caused damage to the roofs of two homes and a RV.

IDAHO, Southeast

Teton County **6.5 SE Driggs**

18	1800MST	0	0	21K	Lightning
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Lightning struck a lone tree, killing all 15 head of cattle which had gathered about it.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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IDAHO, Southeast

Power County

4 W Pocatello Arpt	20	1204MST 1214MST	2.5	15	0	0	50K		Tornado (F1)
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The tornado was observed by NWS personnel on duty at the weather office as it touched down at the Bannock Peak Trading Post off Interstate 86. The tornado caused a tractor-trailer to tip onto its side, blow windows out of the truck and a motor home as well as damaging four other vehicles. As the tornado skipped along its path it was readily seen by hundreds of people in the city of Pocatello some 13 miles to the east.

Bingham County

Atomic City	20	1300MST			0	0			Wild/Forest Fire
	23	2000MST							

Butte County

15 SE Arco	20	1300MST			0	0			Wild/Forest Fire
	23	2000MST							

Lightning sparked a wild fire that scorched 36,000 acres of sagebrush and range land. The Cedar Butte fire forced the evacuation of the residents from the small community of Atomic City, although no structures were lost. State highways 20 and 26 were temporarily closed when wind driven fire crossed them. Cost to contain the blaze was estimated at \$270,000.

Minidoka County

Rupert	20	2110MST 2130MST			0	0	200K		Thunderstorm Wind (G68)
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Thunderstorm winds caused extensive damage to property in Rupert. Flying debris and downed trees damaged numerous vehicles and one home. The most extensive damage was a car dealership that lost part of its roof, which damaged or destroyed a number of vehicles. Power outages were widespread.

Bingham County

4 N Ft Hall to Shelley	24	0005MST 0045MST			0	0	60K		Dry Microburst
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High based dry thunderstorms produced microburst winds sustained to 60 mph and gusting at 75-90 mph through central Bingham county. The damaging wind followed a path from near Fort Hall along the I-15 corridor, through Blackfoot to Shelley. Numerous trees, with diameters up to 30 inches, snapped causing damage to a few cars, houses and businesses. Power lines were downed causing some small fires and leaving thousands of residents without power for most of the day. Sporadic shingle damage occurred. One building under construction collapsed after its roof was lifted off. One fatality resulted from the power outage which caused a home based oxygen machine to fail.

Bannock County

Pocatello	27	1355MST 1510MST			0	0	30K		Flash Flood
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A thunderstorm brought intense rainfall and flash flooding to the city of Pocatello. Accumulation of 1.5 to 1.7 inches were reported for downtown Pocatello, with the suburbs reporting from 0.80 to 2.75 inches. Streets, underpasses and basements were flooded in downtown Pocatello. Some vehicles were stalled trying to drive through water up to a foot deep on city streets. Some 2000 residents suffered power outages for several hours.

IDAHO, Southwest

Canyon County

Greenleaf	20	1630MST 1645MST			0	0			Thunderstorm Wind (G50)
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Thunderstorm winds uprooted 2 1/2 foot diameter tree.

Washington County

Weiser	20	1630MST 1650MST			0	3			Thunderstorm Wind (G69)
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Thunderstorm downburst winds of up to 80 mph damaged several homes and businesses in downtown Weiser. Numerous trees were downed on homes, with 2 people sustaining broken bones and a third sustaining a minor shoulder injury. The roofs of several businesses were damaged or blown off. The damaged area was two miles wide and 5 miles in length.

ILLINOIS, Central

Clay County

Clay City	01	1530CST 1700CST			0	0			Flash Flood
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Richland County

Olney	01	1600CST 1730CST			0	0			Flash Flood
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Lawrence County

Bridgeport	01	1630CST 1830CST			0	0	12K		Flash Flood
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Strong thunderstorms producing heavy rainfall trained across the area for several hours. Some NWS cooperative observer reports include Clay City, 6.00 inches; Olney, 4.17 inches; and Lawrenceville with 3.57 inches. This heavy rainfall occurred within 4 hours. Numerous county roads were reported underwater across southern portions of Clay, Richland and Lawrence Counties. The most structural damage occurred in Lawrence County. Fifty homes and 5 businesses were damaged. Most of which occurred in the town of Bridgeport. Two persons were also rescued from their vehicles in Richland County.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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ILLINOIS, Central

Cumberland County

Toledo **09 1520CST** **0** **0** **0** **Thunderstorm Wind**
Thunderstorm winds blew down a couple of trees in Toledo.

Crawford County

Oblong **09 1620CST** **0** **0** **0** **Thunderstorm Wind**
Thunderstorm winds blew a utility shed on top of a car in Oblong.

ILZ027>031-036>038-040>057-061>063-066>068-071>073 **Knox - Stark - Peoria - Marshall - Woodford - Fulton - Tazewell - Mclean - Schuyler - Mason - Logan - De Witt - Piatt - Champaign - Vermilion - Cass - Menard - Scott - Morgan - Sangamon - Christian - Macon - Moultrie - Douglas - Coles - Edgar - Shelby - Cumberland - Clark - Effingham - Jasper - Crawford - Clay - Richland - Lawrence**

20 1000CST **4** **0** **Excessive Heat**
26 1500CST

The excessive heat wave began on the 20th of July and continued for most of the area through the 26th. Temperatures were in the lower to middle 90s with heat index values in the 105 to 110 degree range each day. Northern sections of the area did cool down some by the 25th as a front moved through the area...so the heat advisory was cancelled in those areas. During this time period four heat related deaths were reported in Central Illinois. In Atlanta (Logan County), two young boys (2 1/2 and 1 1/2 years old) wandered away on the afternoon of the 20th and were found about an hour later in their parents car. Both were reported dead shortly thereafter. In West Peoria (Peoria County), an elderly woman was found in her apartment on the 24th. All of the windows were closed and the air conditioner was broken. In Springfield (Sangamon County), a 62 year old woman was found in her home on the 25th. Again all of the windows were closed and there were no fans or air conditioning. M3VE, M2VE, F82PH, F62PH

Peoria County

Peoria **23 1830CST** **0** **0** **0** **Thunderstorm Wind**
Thunderstorm winds blew down numerous trees in Peoria. One tree crushed a fence and another one broke a street light. Several power lines were knocked down by fallen trees.

Knox County

Galesburg **27 2355CST** **0** **0** **0** **Thunderstorm Wind**
Several power lines were blown down in Galesburg.

Peoria County

Elmwood **28 0020CST** **0** **0** **0** **Thunderstorm Wind**
Several large tree limbs were blown down in Elmwood.

Stark County

Toulon **28 0025CST** **0** **0** **Thunderstorm Wind (G52)**

Tazewell County

Pekin to Morton **28 0110CST** **0** **0** **Thunderstorm Wind (G52)**
0120CST
Several large tree limbs were blown down in Pekin.

McLean County

Normal **28 0206CST** **0** **0** **0** **Thunderstorm Wind**
Several power lines were blown down in Normal.

ILZ027>031-036>038-040>057-061>063-066>068-071>073 **Knox - Stark - Peoria - Marshall - Woodford - Fulton - Tazewell - Mclean - Schuyler - Mason - Logan - De Witt - Piatt - Champaign - Vermilion - Cass - Menard - Scott - Morgan - Sangamon - Christian - Macon - Moultrie - Douglas - Coles - Edgar - Shelby - Cumberland - Clark - Effingham - Jasper - Crawford - Clay - Richland - Lawrence**

28 1000CST **1** **0** **Excessive Heat**
31 1500CST

The heat returned to Central Illinois after a two day break. Temperatures rose into the lower to middle 90s again with heat index values in the 105 to 110 degree range. One heat related death occurred during this time. A 50 year old woman in Danville (Vermilion County) died on the 30th. She was found in her apartment. By the 30th a cold front began to move through the area, so the heat advisory was cancelled for northern sections of the area, but the excessive heat persisted in the rest of Central Illinois through the 31st. F50PH

ILLINOIS, Northeast

Winnebago County

Rockton to Roscoe **20 1515CST** **0** **0** **Thunderstorm Wind (G52)**
1600CST

Trees and utility poles were blown down by 60mph wind gusts. A mobile home was blown across Illinois Route 251.

ILZ005>006-012>014-020-022 **Mchenry - Lake - Kane - Du Page - Cook - Kendall - Will**

21 1100CST **13** **0** **Excessive Heat**
25 2000CST

A moderate heat wave began in the Chicago metropolitan area on July 21 and continued through July 25. A weak lake breeze moderated temperatures along the immediate lakefront on the 21st and 22nd, but the intense heat spread inland through the entire metro area on the 23rd through the 25th. Daily high temperatures were mostly in the lower to middle 90s at both O'Hare and Midway airports through the episode, with a peak of 98 at Midway on the 25th. Maximum heat indices were 103 to 111. In 4 of the fatalities, heat stress or heat stroke was the primary cause of death, it was the secondary cause in the other fatalities. M56VE, F73OU, F79PH, M56VE,

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ILLINOIS, Northeast

M47PH, M60OU, M64OU, F67PH, F91PH, F55PH, F91PH, M77PH, M39BU

Cook County Oak Lawn	21	1700CST			0	0			Thunderstorm Wind (G55)
Thunderstorm winds tore the roof off a three-story apartment building.									
De Kalb County De Kalb	21	1720CST			0	0			Thunderstorm Wind (G52)
Kane County Central Portion	21	1800CST			0	0			Thunderstorm Wind (G50)
Several trees and tree limbs were blown down by thunderstorm winds.									
Kendall County Oswego	21	2001CST			0	0			Thunderstorm Wind (G50)
Trees blown down from thunderstorm winds.									
Grundy County Minooka	21	2030CST			0	0	50K		Thunderstorm Wind (G55)
Two miles west of Minooka downed trees destroyed three manufactured homes, damaged several other homes, and caused extensive damage to a number of vehicles.									
Boone County Central Portion	23	1615CST			0	0			Thunderstorm Wind (G50)
Tree limbs down from thunderstorm winds.									
Mchenry County Central Portion	23	1630CST			0	0			Thunderstorm Wind (G50)
Several trees down from thunderstorm winds.									
Kane County Carpentersville	23	1638CST			0	0			Thunderstorm Wind (G59)
Kane County Sugar Grove	23	1706CST			0	0			Thunderstorm Wind (G55)
Thunderstorm winds tore the roof off of a building.									
Kankakee County Herscher to Kankakee	23	1724CST			0	0			Thunderstorm Wind (G50)
Trees down south of Illinois Route 17 in the vicinity of Herscher and Kankakee.									
De Kalb County De Kalb	23	1655CST			0	0			Thunderstorm Wind (G50)
A well defined gustnado associated with thunderstorm outflow was reported by meteorology students at Northern Illinois University. The event occurred in an open field. No damage was reported.									

ILZ005>006-012>014-020-022 Mchenry - Lake - Kane - Du Page - Cook - Kendall - Will

	28	1100CST			99	0			Excessive Heat
	31	0700CST							
An intense heat wave began in the Chicago metropolitan area July 28th and continued through the morning of July 31st. High temperatures on the 28th were in the lower to middle 90s with heat indices 100 to 105. On the 29th the temperatures soared to the middle and upper 90s with heat indices 110 to 120. The heat peaked on the 30th with high temperatures over 100 and heat indices around 115 to 120. Chicago set an all-time dew point record of 82 at Midway airport on the morning of the 30th. The minimum heat index in downtown Chicago was 100. Of the 99 fatalities, 93 were in Cook County, 3 were in Will County and 3 were in Lake County.									
F60PH, F70PH, M52PH, M48PH, F85PH, M57PH, F86PH, M46PH, M59PH, F70PH, M87PH, M72PH, F77PH, F86PH, F82PH, M72PH, M84PH, M88PH, M75PH, M92PH, F92PH, M82PH, M73PH, M54PH, F88PH, F72PH, M64PH, M70PH, F41PH, F82PH, M89PH, F71PH, F57PH, M46PH, M51PH, F42PH, F80PH, M64PH, F82PH, M80PH, M65PH, F48PH, F75PH, F81PH, F87PH, F76PH, M49PH, M80PH, F64PH, F70PH, F50PH, F77PH, M63PH, M68PH, M81PH, M72PH, M72PH, M53PH, F73PH, M71PH, M84PH, F49PH, F68PH, F81PH, F86PH, M42PH, M85PH, M60PH, F81PH, F67PH, M72PH, M52PH, M79PH, F55PH, M60PH, M47PH, M51PH, M57PH, M56PH, F80PH, F79PH, F56PH, F77PH, F86PH, M41PH, M70PH, M79PH, M51PH, F59PH, F60PH, M77PH, M51PH, M40PH, M90PH, F30PH, F71PH, M66PH, F66PH, M82PH									

ILLINOIS, Northwest

ILZ001>002-007-009-015>018-024>026-034>035 Jo Daviess - Stephenson - Carroll - Whiteside - Rock Island - Henry - Bureau - Putnam - Mercer - Henderson - Warren - Hancock - McDonough

	19	0400CST			1	0			Excessive Heat
	31	2000CST							
A strong ridge of high pressure over the central U.S. produced very hot and humid conditions over the midwest from mid to late July. Heat advisories and warnings were issued for portions of western Illinois during the period. Temperatures around the 100 degree mark combined with dewpoints in the 70s produced heat indices of 105 to as high as 125 degrees. The Henry County (Illinois) Coroner cited heat-related factors as the cause of death of an elderly Kewanee man on July 28th. Newspaper accounts indicate at least 19 people in Illinois, and 27 in Missouri, died from heat-related factors since July 19th. M74PH									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ILLINOIS, Northwest									
Whiteside County									
Countywide	21	1845CST 1945CST			0	0	15K		Thunderstorm Wind
									According to a newspaper account, thunderstorm winds blew the roofs off some cabins and damaged some mobile homes along the Rock River near Prophetstown. Thunderstorm winds also damaged Montmorency School south of Rock Falls, and downed trees and power lines, which blocked several roads throughout the county.
Jo Daviess County									
Countywide	23	1600CST 2100CST			0	0			Urban/Sml Stream Fld
									Thunderstorms produced rainfall amounts of 3 to 4 inches, which produced urban and small stream flooding.
Stephenson County									
Countywide	23	1600CST 2100CST			0	0			Urban/Sml Stream Fld
									Thunderstorms produced rainfall amounts of 3 to 4 inches, which caused urban and small stream flooding.
Rock Island County									
Countywide	23	1800CST 2000CST			0	0			Urban/Sml Stream Fld
									Heavy rains caused urban and small stream flooding in Rock Island County.
Stephenson County									
Freeport	23	1800CST			0	0			Hail (0.75)
									Law enforcement reported 3/4 inch hail in Freeport.
Stephenson County									
Orangeville	23	1850CST			0	0			Lightning
									A NWS spotter reported trees downed by lightning in Orangeville.
Henry County									
1 E Annawan	23	2008CST			0	0			Urban/Sml Stream Fld
									A NWS spotter reported six inches of standing water on Interstate 80 just east of Annawan. Summary for 7/23/99: (For additional details, see individual reports for the date.) A moist and unstable environment produced conditions ripe for severe weather, as clusters of intense thunderstorms moved over western Illinois during the late afternoon and evening hours. One storm produced a 70 mph wind gust at the Quad City Airport in Moline. Hail to 3/4 inch and damaging lightning were reported in Stephenson County. Urban and small stream flooding occurred over four counties in northwest Illinois. Torrential rain produced six inches of standing water on Interstate 80 east of Annawan.
Hancock County									
Countywide	26	1900CST 2000CST			0	0	12K		Thunderstorm Wind
									Thunderstorm winds downed large trees and power lines over much of the county, including the communities of Basco, Carthage, Hamilton and Warsaw.
Rock Island County									
Reynolds	27	2325CST			0	0	1K		Thunderstorm Wind
									Thunderstorms produced downburst winds which downed large trees just north of Reynolds.
Mercer County									
Viola	27	2330CST			0	0	0.50K		Thunderstorm Wind
									Thunderstorms produced downburst winds which downed power lines in Viola.
ILLINOIS, South									
White County									
Central Portion	01	1145CST 1300CST			0	0			Flash Flood
									Thunderstorms produced heavy rain over ground that was very moist from heavy June rains. The storms tended to regenerate over the same areas, causing estimated rainfall rates of 1 to 2 inches per hour. The heaviest rain fell from the Carmi area east to the Wabash River.
Edwards County									
Countywide	01	1345CST 1645CST			0	0			Flash Flood
Wabash County									
Countywide	01	1345CST 1645CST			0	0			Flash Flood
Wayne County									
Countywide	01	1345CST 1645CST			0	0			Flash Flood
									A large area of slow-moving thunderstorms over saturated ground caused flooding problems. Rainfall estimates ranged upwards of 2 inches in 2 hours. Sheriff personnel reported some flooding of secondary roads in Wabash County, as well as State Route 15 a few miles west of Mt. Carmel.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ILLINOIS, South

ILZ076

Wayne

03 0200CST
04 0600CST

0 0

Flood

The Skillet Fork River slightly exceeded the flood stage of 15 feet at Wayne City. It crested at 16.7 feet, which caused some minor flooding of low-lying agricultural areas. The flooding was caused by thunderstorms associated with a slow-moving cold front. The ground was already nearly saturated from heavy June rains.

Wayne County North Portion

09 1800CST
2030CST

0 0

5K

Flash Flood

Persistent thunderstorm activity produced heavy rainfall, with estimates up to 2 inches per hour northwest of Fairfield. This rain fell on very moist ground, causing some runoff problems. A secondary road was closed near the Clay County line due to high water. Route 45 north of Cisne and Route 161 near Johnsonville also had water over them, but they were not closed.

ILZ075>078-080>094

Jefferson - Wayne - Edwards - Wabash - Perry - Franklin - Hamilton - White - Jackson - Williamson - Saline - Gallatin - Union - Johnson - Pope - Hardin - Alexander - Pulaski - Massac

18 1300CST
31 2359CST

4 0

Excessive Heat

Prolonged heat and humidity during the latter half of July took its toll on the unprepared. Four fatalities were blamed on the heat, including two in Wayne County. Near Fairfield, a 78-year-old man died after driving his riding lawn mower to a trucking firm to gather landscape rocks. The man was found near a pile of rocks he had been gathering in 95-degree heat. Near Mount Erie, an 85-year-old man was found dead in his home. The windows were closed, and there was no air conditioning. Elsewhere in southern Illinois, a 53-year-old migrant worker died while laboring in a field near Shawneetown in Gallatin County. The man died at an Evansville hospital after suffering a heat stroke. The fourth death occurred in the Ohio River city of Metropolis, where an 82-year-old woman was found dead in her bathroom. This was the first time in his tenure as Massac County coroner that the cause of death was ruled as heat exhaustion. The woman did not use a fan in the house, and the indoor temperature was measured at 98 degrees. Daily highs were near 100 degrees on the 29th and 30th, with afternoon heat indices from 110 to 115 degrees. At Paducah, Kentucky, across the Ohio River from Metropolis, this was the fifth warmest July on record. M53OU, F82PH, M78OU, M85PH

Wayne County Countywide

24 0400CST
0530CST

0 0

Urban/Sml Stream fld

An area of thunderstorms continually regenerated over the county, producing an extended period of heavy rain lasting 3 to 4 hours. Rainfall estimates ranged up to 2.5 inches in 4 hours. Standing water and runoff problems occurred, mainly from Fairfield northwest to Zenith and Enterprise.

ILLINOIS, Southwest

Marion County Countywide

01 1530CST
2230CST

0 0

Urban/Sml Stream fld

Rainfall of 2 - 3 inches caused considerable ponding of water on county roads. A few small creeks in the southern part of the county also flooded closing a couple of roads.

Bond County Greenville

06 1630CST
1830CST

0 0

Urban/Sml Stream fld

Heavy rain caused some street and road flooding in the Greenville area. Water was reported over Route 140 just east of Greenville.

Jersey County Dow

09 1520CST

0 0

Thunderstorm Wind (G52)

Thunderstorm wind gusts downed some trees on routes 3 and 109.

St. Clair County Caseyville

09 1805CST

0 0

Thunderstorm Wind (G52)

St. Clair County Cahokia

09 1810CST

0 0

Thunderstorm Wind (G52)

St. Clair County Venice

09 1810CST

0 0

5K

Thunderstorm Wind (G52)

Thunderstorm wind gusts downed some trees in Caseyville and Venice. One home in Venice was damaged after being hit by large tree limbs. Power lines were downed in Cahokia.

Madison County Highland

09 1835CST

0 0

50K

Thunderstorm Wind (G55)

Thunderstorm wind gusts downed trees and power lines across much of Highland. A couple of homes had roof damage from falling trees and some vehicles were also damaged by falling trees and large limbs. One business lost a 20 x 40 section of its roof.

ILZ058>060-064>065-069>070-074-079-095>102

Greene - Macoupin - Montgomery - Bond - Fayette - Clinton - Marion - Washington - Randolph - Adams - Brown - Pike - Calhoun - Jersey - Madison - St. Clair - Monroe

18 1200CST
31 1800CST

8 119

Excessive Heat

A heat wave gripped the region the last 2 weeks of July. Temperatures remained in the middle to upper 90s with a few days topping 100 degrees. The Heat Index ranged from 105 to near 115 degrees. Most of the deaths and injuries occurred in the Metro East area of St. Louis, primarily Madison and St. Clair counties. F86PH, M76MH, F88PH, F52PH, M74PH, M68PH, M80PH, F72PH

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ILLINOIS, Southwest									
Madison County									
Granite City	27	0605CST			0	0	600K		Thunderstorm Wind (G60)
Madison County									
Wood River	27	0605CST			0	0			Thunderstorm Wind (G55)
An early morning microburst caused damage in the Granite City/Wood River areas. Most of the damage occurred at a marine dealership in Granite City. The roof was torn off, windows broken and a two story brick storage building was also destroyed. Damage was estimated at \$500,000. Trees and power lines were also downed across the area.									
Randolph County									
Prairie Du Rocher	31	2010CST			0	0	15K		Thunderstorm Wind (G55)
Thunderstorm wind gusts blew off the roof of a double wide mobile home.									
INDIANA, Central									
Delaware County									
Muncie	06	1400EST 1402EST			0	1			Thunderstorm Wind (G50)
Marion County									
2 N Ind Eagle Creek Ar	06	1500EST 1502EST			0	0			Thunderstorm Wind (G50)
Marion County									
Speedway	06	1525EST 1527EST			0	0			Hail (0.88)
Marion County									
(Ind)Indnpls Intl Ar	06	1604EST 1606EST			0	0			Thunderstorm Wind (G59)
Johnson County									
Greenwood	06	1630EST 1632EST			0	0			Thunderstorm Wind (G50)
Jackson County									
Vallonia	06	1815EST 1817EST			0	0			Thunderstorm Wind (G50)
A line of thunderstorms produced isolated wind and hail damage as it dropped south across central Indiana. One person was injured in a shopping center at Muncie as a tent was blown down.									
Johnson County									
12 SSE Franklin	09	1810EST 1812EST			0	0			Thunderstorm Wind (G50)
Law enforcement reported trees down.									
Shelby County									
Shelbyville	09	1815EST 1817EST			0	0			Thunderstorm Wind (G50)
Law enforcement reported a line of thunderstorms produced downed trees.									
Marion County									
15 NE Indianapolis	17	1416EST 1418EST			0	0			Thunderstorm Wind (G50)
Marion County									
10 E Indianapolis	17	1430EST 1432EST			0	0	1K		Thunderstorm Wind (G50)
A line of thunderstorms downed several trees and damaged shutters and gutters.									
Parke County									
Howard	19	1920EST 1922EST			0	0			Thunderstorm Wind (G75)
Law enforcement reported 0.75 inch hail.									
Delaware County									
Muncie	26	1424EST 1426EST			0	0			Hail (0.75)
Law enforcement reported 0.75 inch hail.									
Henry County									
Dunreith	26	1530EST 1532EST			0	0			Thunderstorm Wind (G50)
Law enforcement reported trees down in Dunreith.									
Clinton County									
Frankfort	28	0530EST 0540EST			0	0			Thunderstorm Wind (G50)
Numerous trees and power lines were down across town.									
Madison County									
Elwood	28	0715EST			0	0	50K		Lightning
Lightning caused extensive damage to a home.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
INDIANA, Central									
Madison County									
Anderson	31	1615EST 1617EST			0	0			Thunderstorm Wind (G50)
			Trees and road signs were down on the southeast side of Anderson.						
Henry County									
2 SE Middletown	31	1640EST 1642EST			0	0			Thunderstorm Wind (G50)
			2 trees blown down between Middletown and HoneyCreek. A farm wagon was also blown around.						
INDIANA, Northeast									
Adams County									
5 SE Decatur	09	1515EST			0	0	0.50K		Thunderstorm Wind
			Trees downed.						
La Porte County									
Michigan City	21	1852EST			0	0			Hail (0.75)
La Porte County									
Kingsford Hgts	23	1805EST			0	0			Thunderstorm Wind (G70)
Starke County									
Bass Lake	23	1815EST			0	0	0		Thunderstorm Wind
			Power lines downed.						
La Porte County									
Michigan City	23	1915EST			0	0	0		Thunderstorm Wind
			Trees blown down.						
La Porte County									
La Porte to La Crosse	23	1925EST			0	0	0		Thunderstorm Wind
			Several trees were blown down.						
St. Joseph County									
Countywide	23	1950EST			0	0	0		Thunderstorm Wind
			Numerous trees were blown down across the county.						
De Kalb County									
Garrett	25	0130EST			0	0	0		Thunderstorm Wind
			Several trees blown down.						
Allen County									
New Haven	26	1535EST			0	0	0		Thunderstorm Wind
			Power lines downed.						
Allen County									
Monroeville	26	1545EST			0	0	30K		Thunderstorm Wind
			Numerous trees and several semi trailers knocked over.						
La Porte County									
La Porte	27	2240EST			0	0			Hail (1.00)
Elkhart County									
2 NE Elkhart	28	2010EST			0	0			Hail (0.88)
Marshall County									
Tyner	28	2045EST			0	0	10K		Thunderstorm Wind
			Several trees and power lines were blown down in town.						
Elkhart County									
Millersburg	28	2055EST			0	0	20K		Thunderstorm Wind
			Many trees and power lines were blown down in town.						
Noble County									
Kimmell	28	2100EST			0	0	0		Thunderstorm Wind
			Several trees were downed.						
Kosciusko County									
Etna Green to Atwood	28	2130EST			0	0	25K		Thunderstorm Wind
			Power lines were downed from Etna Green to Atwood.						
Marshall County									
2 NW Inwood to Inwood	28	2140EST			0	0	10K		Thunderstorm Wind
			Several trees were blown down in and northwest of Inwood.						
Wabash County									
5 S North Manchester	28	2335EST			0	0	0		Thunderstorm Wind
			Trees blown down along CR 700 N.						
La Porte County									
Rolling Prairie	30	1538EST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>INDIANA, Northwest</u>									
Lake County (Gyy)Gary Muni Arpt	21	1910CST			0	0			Thunderstorm Wind (G61)
Newton County Lake Vlg	23	1700CST			0	0			Thunderstorm Wind (G50)
		Several trees down south of Indiana Route 10 due to thunderstorm winds.							
Lake County Lowell	31	1557CST			0	0			Hail (1.75)
<u>INDIANA, South Central</u>									
Scott County Blocher	26	1542EST			0	0			Thunderstorm Wind (G50)
		Numerous trees and power lines down							
Scott County Lexington	26	1552EST			0	0			Hail (1.25)
Clark County New Washington	26	1600EST			0	0			Thunderstorm Wind (G50)
		Trees and power lines down							
<u>INDIANA, Southeast</u>									
Wayne County Milton	06	1625EST 1630EST			0	0	5K		Thunderstorm Wind (G50)
		Trees and power lines knocked down.							
Wayne County Centerville	09	1758EST 1800EST			0	0			Hail (1.00)
Franklin County Buena Vista	09	1920EST 1925EST			0	0	5K		Thunderstorm Wind (G50)
		Trees and power lines down.							
Dearborn County Guilford	09	1955EST 2000EST			0	0	5K		Thunderstorm Wind (G50)
		Trees and power lines knocked down.							
INZ050-058>059-066-073>075-080		Wayne - Fayette - Union - Franklin - Ripley - Dearborn - Ohio - Switzerland							
	20	0000EST			0	0			Excessive Heat
	31	2359EST							
		The latter part of the month was extremely hot with highs above 90 nearly every day and a few days with readings above 100. Dewpoints and overnight low were in the 70s. No known heat related deaths occurred in southeastern Indiana.							
Wayne County Hagerstown	26	1535EST 1540EST			0	0	3K		Thunderstorm Wind (G50)
		Trees downed.							
Fayette County Countywide	26	1610EST 1630EST			0	0	5K		Thunderstorm Wind (G50)
		Trees downed across the county.							
Union County Kitchell	26	1630EST 1635EST			0	0	3K		Thunderstorm Wind (G50)
		Trees knocked down.							
Franklin County 3 W Brookville	26	1850EST 1855EST			0	0	3K		Thunderstorm Wind (G50)
		Numerous trees down.							
Dearborn County Lawrenceburg	26	1915EST 1920EST			0	0	3K		Thunderstorm Wind (G50)
		Trees downed.							
Ohio County Rising Sun	26	2000EST 2005EST			0	0	3K		Thunderstorm Wind (G50)
		Numerous trees downed.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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INDIANA, Southeast

Wayne County

Hagerstown	31	1703EST 1705EST			0	0	5K		Thunderstorm Wind (G59)
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Trees were knocked down by a 70 mph wind gust.

INDIANA, Southwest

Gibson County

Countywide	01	1145CST 1645CST			0	0	5K		Flash Flood
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Thunderstorms produced heavy rain over ground that was very moist from heavy June rains. The storms tended to regenerate over the same areas, causing estimated rainfall rates of 1 to 2 inches per hour. Sheriff personnel reported flooding on numerous secondary roads and State Route 64 east of Princeton. Two feet of water was over U.S. Highway 41 just south of Princeton. The heaviest rain fell over central and southern portions of the county.

Posey County

North Portion	01	1230CST 1400CST			0	0			Flash Flood
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Vanderburgh County

North Portion	01	1230CST 1400CST			0	0			Flash Flood
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Warrick County

Northwest Portion	01	1230CST 1400CST			0	0			Flash Flood
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A large area of slow-moving thunderstorms produced locally torrential rainfall. Estimates of up to 2 inches in 2 hours were noted. The storms remained concentrated over the northern half of Posey County, far northern Vanderburgh County, and the northwest corner of Warrick County.

Pike County

Countywide	01	1230CST 1645CST			0	0			Flash Flood
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A large area of slow-moving thunderstorms produced heavy rainfall, estimated up to 2 inches in 2 hours. This heavy rain fell on ground that was nearly saturated from heavy June rains. Along Highway 64 between Winslow and Oakland City, water was reported overflowing ditches and reaching road level. The heaviest rain fell over southern and central parts of the county.

INZ081>082-085>088

Gibson - Pike - Posey - Vanderburgh - Warrick - Spencer

18	1200CST				0	0			Excessive Heat
31	2200CST								

Prolonged heat and humidity set in around mid month and continued through the latter half of July. High temperatures were in the 90s for the last 14 days of the month, including a 98-degree reading on the 30th. High humidity sent afternoon heat indices to between 105 and 115 degrees. A Heat Advisory was in effect for over a week. Power usage approached or exceeded record levels. There was a slight increase in emergency room visits for heat exhaustion.

IOWA, Central

Crawford County

3 NW Dow City	02	1019CST			0	0	5K		Thunderstorm Wind (G55)
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Crawford County

Denison Muni Arpt	02	1032CST			0	0	5K		Thunderstorm Wind (G57)
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Crawford County

Dow City	02	1032CST			0	0	25K	15K	Hail (1.75)
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Crawford County

Dow City	02	1032CST			0	0	10K		Thunderstorm Wind (G55)
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Crawford County

Denison	02	1037CST			0	0	5K	10K	Hail (1.00)
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Crawford County

Denison	02	1037CST			0	0	10K		Thunderstorm Wind (G55)
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Crawford County

Vail	02	1045CST			0	0	25K	20K	Hail (1.75)
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Crawford County

Vail	02	1045CST			0	0	5K		Thunderstorm Wind (G52)
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Carroll County

6 SW Carroll	02	1104CST			0	0	5K	15K	Hail (1.75)
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Carroll County

10 SW Carroll	02	1115CST			0	0	5K	20K	Hail (1.75)
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Carroll County

Carroll	02	1125CST			0	0	10K	15K	Hail (1.25)
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Audubon County

5 NE Audubon	02	1130CST			0	0	2K	10K	Hail (1.00)
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Guthrie County

3 NW Bayard	02	1151CST			0	0	5K	15K	Hail (1.75)
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>IOWA, Central</u>									
Guthrie County 3 NW Bayard	02	1156CST			0	0	5K	20K	Hail (2.00)
Guthrie County Jamaica	02	1228CST			0	0	5K	20K	Hail (2.00)
Dallas County 8 W Perry	02	1238CST			0	0	5K	15K	Hail (1.75)
Dallas County 7 W Perry	02	1248CST			0	0	1K	15K	Hail (1.00)
Audubon County 10 N Audubon	02	1302CST			0	0	1K	15K	Hail (1.00)
Audubon County 2 W Hamlin	02	1310CST	0.5	30	0	0	2K	1K	Tornado (F1)
Audubon County 5 NW Audubon	02	1318CST			0	0	1K	15K	Hail (1.00)
Audubon County Audubon	02	1320CST			0	0	15K	20K	Hail (1.75)
Audubon County 2 E Hamlin	02	1324CST			0	0	5K	20K	Hail (2.00)
Guthrie County 13 W Guthrie Center	02	1334CST			0	0	5K	20K	Hail (1.75)
Audubon County 2 E Audubon	02	1335CST			0	0	5K	20K	Hail (1.75)
Guthrie County 10 SW Guthrie Center	02	1342CST			0	0	10K	25K	Hail (2.75)
Adair County 3 N Adair	02	1347CST			0	0	10K	25K	Hail (2.75)
Guthrie County Casey	02	1410CST			0	0	10K	25K	Hail (2.50)
Guthrie County Menlo	02	1410CST			0	0	10K	25K	Hail (2.50)
Guthrie County 2 E Casey	02	1420CST			0	0	30K	20K	Hail (4.50)
Adair County 13 N Greenfield to 5 E Greenfield	02	1428CST			0	0	30K	15K	Hail (3.50)
Dallas County Dexter	02	1428CST			0	0	25K	25K	Hail (2.75)
Adair County Adair	02	1430CST			0	0	10K	20K	Hail (2.75)
Hardin County 2 S New Providence	02	1430CST			0	0	5K		Thunderstorm Wind (G52)
Madison County Earlham	02	1430CST			0	0	10K	15K	Hail (1.75)
Webster County Gowrie	02	1430CST			0	0		10K	Hail (0.75)
Madison County Earlham	02	1435CST			0	0	25K	25K	Hail (2.75)
Dallas County 12 N Adel	02	1438CST			0	0	1K	15K	Hail (1.00)
Dallas County 12 SW Adel	02	1438CST			0	0	1K	15K	Hail (1.00)
Guthrie County Stuart	02	1438CST			0	0	1K	15K	Hail (1.00)
Adair County Adair	02	1443CST			0	0	1K	15K	Hail (1.00)
Dallas County Dexter	02	1443CST			0	0	15K	20K	Hail (2.75)
Guthrie County Stuart	02	1445CST			0	0	15K	20K	Hail (2.75)
Calhoun County Farnhamville	02	1545CST			0	0		10K	Hail (0.75)
Webster County Harcourt	02	1550CST			0	0	10K	15K	Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<u>IOWA, Central</u>									
Webster County									
Gowrie	02	1557CST			0	0	5K	10K	Hail (1.25)
Webster County									
Duncombe	02	1602CST			0	0	5K	15K	Hail (1.25)
Hamilton County									
Webster City	02	1610CST			0	0	10K	15K	Hail (1.75)
Story County									
Ames	02	1625CST			0	0	25K	10K	Hail (2.50)
Webster County									
Dayton	02	1626CST			0	0	10K	15K	Hail (1.75)
Webster County									
4 SE Harcourt	02	1626CST			0	0	1K	15K	Hail (1.00)
Boone County									
12 NNW Boone	02	1630CST			0	0	5K	15K	Hail (1.75)
Boone County									
Pilot Mound	02	1630CST			0	0	3K		Thunderstorm Wind (G52)
Hamilton County									
14 S Stratford	02	1631CST			0	0	1K	10K	Hail (1.00)
Boone County									
Pilot Mound	02	1635CST			0	0	50K	15K	Hail (2.75)
Webster County									
Dayton	02	1638CST			0	0	15K	15K	Hail (1.75)
Boone County									
Boxholm	02	1640CST			0	0	20K	20K	Hail (2.75)
Boone County									
Fraser	02	1640CST			0	0	5K	15K	Hail (1.75)
Boone County									
Fraser	02	1645CST			0	0	10K	20K	Hail (2.50)
Hamilton County									
Webster City	02	1645CST			0	0	2K	10K	Hail (1.00)
Hamilton County									
14 S Webster City	02	1645CST			0	0	5K	15K	Hail (1.75)
Boone County									
Boone	02	1650CST			0	0	5K	15K	Hail (1.75)
Boone County									
Boone	02	1655CST			0	0	5K	15K	Hail (1.50)
Boone County									
Boone	02	1658CST			0	0	5K	15K	Hail (1.75)
Boone County									
Jordan	02	1700CST			0	0	10K	15K	Hail (1.75)
Hamilton County									
Stanhope	02	1700CST			0	0	10K	15K	Hail (1.75)
Boone County									
1 S Boone	02	1708CST			0	0	3K	10K	Hail (1.50)
Boone County									
Boone	02	1708CST			0	0	7K	10K	Hail (1.50)
Story County									
Ames	02	1715CST			0	0		5K	Hail (0.75)
Story County									
Ames	02	1716CST			0	0		5K	Hail (0.75)
Franklin County									
Popejoy	02	1730CST			0	0	3K	15K	Hail (1.00)
Story County									
1 N Mc Callsburg	02	1730CST			0	0	5K	20K	Hail (2.75)
Hamilton County									
2 NW Randall	02	1800CST			0	0	5K		Thunderstorm Wind (G56)
Hardin County									
Radcliffe	02	1810CST			0	0	2K		Thunderstorm Wind (G50)
Hardin County									
Hubbard	02	1830CST			0	0	2K		Thunderstorm Wind (G50)
Story County									
Ames	02	2025CST			0	0	10K		Thunderstorm Wind (G56)
		Downburst							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
IOWA, Central									
Butler County									
1 S Aplington to 1.5 S Parkersburg	02	2045CST 2054CST	4.5	35	0	0	25K	1K	Tornado (F2)
Grundy County									
5.5 WNW Stout to 3 E Stout	02	2054CST 2107CST	8.5	50	0	0	75K	3K	Tornado (F2)
Black Hawk County									
Waterloo	02 03	2100CST 0100CST			0	0	1M	250K	Flash Flood
Butler County									
Parkersburg	02 03	2100CST 2100CST			0	0	350K	200K	Flash Flood
Black Hawk County									
Cedar Falls	02	2115CST			0	0	5K		Thunderstorm Wind (G52)
Grundy County									
Stout	02 03	2130CST 0015CST			0	0	75K	100K	Flash Flood
Hardin County									
Iowa Falls	02 03	2130CST 0015CST			0	0	50K	50K	Flash Flood

A very active weather pattern was in place over the central U.S. A strong west-northwest wind flow was in place over the state. Meanwhile a warm front was lifting north from the southern Plains. The warm front separated the cooler and dry air to the north from very humid air to the south. Dew point temperatures in the air to the south of the front were in the mid 70s to low 80s. Precipitable water values were near 2 inches as well. A meso scale convective system formed over north central Nebraska and south central South Dakota during the previous night. The remains of this system drifted into west central Iowa during the predawn hours. One cell became severe during the morning. This was to be the pattern for much of the rest of the day as the cells that formed became super cellular, with each supercell lasting about 2 hours. By the early afternoon hours, surface based CAPE values were approaching 6000 J/kg just to the south of the thunderstorm genesis region. Once the storms formed they became supercells quickly. Very strong shear was in place with strong southeast surface winds veering to westerly winds in the mid levels. Even though freezing levels were in excess of 15,000 feet, the storms were prolific hail producers. WSR-88D VIL values with many of the supercells exceeded 90 kg/m/m. There was also some high winds with the storms at times as many of the cells were rotating as was seen with WSR-88D imagery. The first high winds occurred early in the severe event as 64 MPH winds blasted into the Dow City area of Crawford County. Winds of 66 MPH were recorded at the Denison Municipal Airport as the storm moved through. Damage was reported in many areas of the county. During the day there were also other spotty reports of wind damage, however most of the were were in the 40 to 50 MPH range. A few other cells did produce severe criteria winds as they moved into the central and northeast counties of the state with wind damage reported in Hardin, Hamilton, and Boone Counties. These storms developed during the period of time the weather system was changing from a supercell type system into more of a multi-cell system. The main severe weather event of the day was the hail. Hail reports of one inch up to golf ball size were too numerous to mention. Some of the hail was larger than tennis balls. Baseball size hail fell in Guthrie County, into Adair and Dallas Counties as one of the cells advanced east-southeast. The largest hail actually fell east of Casey in Guthrie County. Softball size hail fell there, smashing windshields on numerous cars. Needless to say, crop damage was widespread from west central into central Iowa along the paths of the two to three supercells that moved through the area. Scattered crop damage occurred with the multi-cellular storms over central into northeast Iowa as well. An example of the damage caused by the hail came by way of a report from Crawford County. Reports indicated hail damaged 80,000 to 100,000 acres of crops with widespread damage. Roads and ditches sustained between \$150,000 and \$200,000 in damage. Tree removal in the county was \$30,000, with \$100,000 damage to homes and businesses in the county. By the early evening, the weather system had made a transition from severe weather to heavy rain. Intense rainfall occurred over northeast Iowa. Flash flooding was widespread over northern Grundy, southern Butler, southern Bremer, and most of Black Hawk Counties. A large swath of 6 to 8 inch rainfall occurred over the Beaver Creek basin, causing flash flooding in the area and an eventual flood of near record proportions. County officials reported the flooding as very serious with countless roads and highways under water. Cars were stranded and thousands of basements were flooded by the onslaught of heavy rain. One report indicated several head of cattle lost as they were drown by the flood waters in Grundy County. No doubt, this was not the only case of livestock loss due to the flooding. Another report from the Dewar area, east of Waterloo, indicated about a block of railroad was washed out. Damage there was reported to 33 houses, a car repair shop, and a tavern. Rainfall was in excess of three inches per hour in many areas. The heaviest rainfall officially was around 9 inches. Some unofficial reports in the Cedar Falls area included up to 9 inches of rainfall in a 90 minute period. The observer at Parkersburg picked up 6.55 inches of rain in under 3 hours. A bucket survey in the area showed rainfall of 11 to 14 inches at a few locations in Butler County. The heavy rain occurred as a series of storms formed and trained over the same areas. The complex of thunderstorms that developed was a back developing complex. Late in the life of the system, one of the storms became severe. This storm displayed a meso circulation on the WSR-88D in Johnston, IA, though it was not all that well formed. The storm was the last in the series of storms and layed down a path of damage. The swath was about 13 miles long, extending across southern Butler and northern Grundy Counties. The damage path looked to be more downburst in nature, though there were reports of a tornado imbedded in the flow pattern. The situation was not all that different from the meso cyclone/tornado system that moved through Boone, Dallas, and Polk Counties about a year earlier on 29 June 1998. The tornado caused damage to several farmsteads along the road. The worst hit was on farmstead where all of the farm buildings were destroyed and only the superstructure of the farmhouse remained. Debris was wrapped up in trees for many miles along the path. One other tornado did occur earlier in the day. The tornado came from one of the supercells over western Iowa. A relatively small tornado touched down in Audubon County west of Hamlin. There was little damage reported with this tornado.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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IOWA, Central

IAZ017-026>027-039-045>046-057>059 Cerro Gordo - Franklin - Butler - Black Hawk - Carroll - Greene - Audubon - Guthrie - Dallas

02	2100CST				0	0	1.7M	900K	Flood
07	0900CST								

In years to come, July 1999 will be remembered in northeast Iowa for the "Floods of '99". Record to near record river flooding affected much of this area through the month. Within the Des Moines HSA, the major rivers most affected were the Cedar, Shell Rock, and Beaver Creek. However, numerous tributaries and smaller streams saw severe flooding and flash flooding due to repeat heavy rainfall events. Much of the month featured strong ridging both surface and aloft anchored over the southeastern U.S. and an anomalously deep trough over the western U.S. This pattern was conducive to the creation of a major drought over the eastern states, but lead to very heavy rain over northern Iowa. Southern Iowa had a month more typical of the drought areas, with well below normal rains. Northeastern Iowa became a favored area for mesoscale convective system formation, as very warm, humid air was repeatedly drawn into slow-moving boundaries with resultant torrential rains. The first major event to affect the area was during the afternoon and nighttime hours of July 2. What began as a severe weather event ended up as a flooding rainfall in northeast Iowa. The heaviest rains fell in a tight east to west band, widening to the east, through the extreme southern parts of Franklin, Butler, and Floyd Counties and the extreme northern parts of Hardin, Grundy, and Black Hawk Counties. Initially, flash flood warnings were issued for parts of these counties. WSR-88D estimates of 5 to 8 inches of rain fell in these areas in only a few hours. Parkersburg, in southern Butler County, measured 6.55 inches of rain in a 24 hour period, although most of it fell in a much shorter time. Waterloo picked up 5.60 inches for the 24 hours. The result was widespread flooding and flash flooding. According to FEMA, over 2500 homes were damaged in four counties, all of which received a Presidential Disaster Declaration made on July 22. Butler and Black Hawk Counties in the Des Moines HSA were both part of the this disaster declaration. Flooding was extensive along Beaver Creek, primarily affecting the town of New Hartford. The creek reached the 5th highest crest of record on the 3rd. Due to the limited areal extent of the rains, there was little river flooding outside of the Beaver Creek basin. Also with this event, the only flooding of significance to affect central Iowa also took place. The flooding took place along the Raccoon River as a result of heavy rains from the same system. The river near Van Meter crested slightly above flood stage late on the 3rd. The passage of an active cold front which dropped 1 to 3 inches of rain, caused another minor flooding event along the mainstem Raccoon on the 6th as Van Meter crested a little over three quarters of a foot above flood stage. The Raccoon River in Des Moines did not reach flood stage from either of these events, but rather crested just below flood stage.

Dallas County Waukee

05	2045CST				0	0	2K		Thunderstorm Wind (G52)
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A cold front entered northwest Iowa during the afternoon hours. The airmass it moved into was very unstable with CAPE values near 7000 J/kg ahead of the front. Dew point temperatures were in the mid to upper 70s with surface temperatures in the mid 90s. Thunderstorms erupted in a very narrow line just ahead of the front. There was intense lightning with the storms and heavy rainfall, but generally no severe weather. Hail with the storms was generally pea size or smaller and winds generally under 30 MPH. One storm produced a downburst in Waukee, causing some damage as trees were knocked down in the town. The other problem with the storms was over the central into southwest counties as 2 to 5 inches of rain fall in a few hours time causing local urban and small stream flooding.

Crawford County Vail

08	2000CST				0	0	94K		Thunderstorm Wind (G65)
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Story County Ames

08	2025CST				0	0	10K		Thunderstorm Wind (G52)
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A very warm and humid airmass was in place over Iowa with surface temperatures in the low to mid 90s and dew point temperatures between 70 and 75. A cold front moved southeast into the state from South Dakota. The airmass over the state was capped and thunderstorms did not develop until the late afternoon hours. A line of thunderstorms developed just ahead of the front. The storms were initially severe west of the Des Moines County Warning Area, though by the time they reached the Des Moines area they had fallen below severe levels. Winds of 30 to 40 MPH were common, along with some small hail and brief heavy rain. One rogue cell moved into the Ames area. The cell weakened as it moved through the city. As it did, a downburst of strong winds swept across the northern part of the city. Trees and power poles were knocked down by the winds. The damage area was fairly small and the storm weakened rapidly after moving through northern Ames. Farther west in Crawford County, thunderstorms rumbled through the Vail area. Though most of the storms were not severe. A strong downburst or outflow from one of the storms in the line derailed three cars of an eastbound intermodal train. The train was near Vail, on the Boone Subdivision. The cars carried 14 empty containers, eight of which were lost off the platforms and damaged. Minimal track damage was reported. Damage was placed at \$94,400.

Adams County 2 SW Corning

16	1625CST	0.1	25		0	0			Tornado (F0)
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A weak cold front moved into Iowa from the northwest during the afternoon of the 16th. Thunderstorms formed along the cold front during the late afternoon. Though most of them were not severe, the airmass was very unstable. As a result, one cell produced a brief spin-up tornado southwest of Corning in Adams. No damage was reported as it touched down in open country.

Kossuth County

7 SE Irvington

18	1619CST				0	0	1K		Thunderstorm Wind (G50)
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Butler County

Dumont

18	1922CST				0	0	7K		Thunderstorm Wind (G61)
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Mahaska County

Fremont

18	2115CST				0	0	7K		Thunderstorm Wind (G56)
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Cerro Gordo County

Mason City

19	0230CST				0	0	1M	100K	Flash Flood
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

IOWA, Central
Worth County
Manly

19	0230CST			0	0	1.1M	250K	Flash Flood
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A nearly stationary frontal boundary was draped across Iowa during the afternoon of the 18th into the night. Thunderstorms erupted in the vicinity of the front as dew point temperatures in the mid 70s to around 80 pooled just south of front. Most of the storms produced heavy rain and gusty winds with very few producing severe weather. Two distinct mesoscale convective systems moved across northern Iowa. The first one produced some wind damage as it moved across. Trees were downed in Kossuth County southeast of Irvington. Another cell ripped shingles from a home in Dumont in Butler County. The main problem was flash flooding over north central Iowa. Near Manly in Worth County. 5.75 inches of rain was recorded in a 4 hour period just after midnight. Numerous basements were flooded and roads overtopped by water. Heavy rains also fell over northeast Cerro Gordo County, overtopping many roads with 1 to 2 feet of water. The heaviest rainfall occurred over Worth County. A bucket survey indicated spot 9 to 12 inch rainfall amounts northeast of Manly, with the highest unofficial measurement at 13.5 inches, though there was one report of an incredible 20 inches of rain. The county Emergency Manager reported that 25% of the county was covered by water with at least 75 washouts. It was reported that 550 of the buildings in town, or about half, had water in the basement. A 54 car train was derailed in the area just southwest of Grafton and at least 3 major highways were closed, Iowa Highway 9, U.S. Highway 18, and U.S. Highway 65. Flooding hit a campground southeast of Manly near the town of Rock Falls. One hundred and fifty people were evacuated in the town of Rock Falls itself. The water flooded the campground and debris was recovered three miles downstream of the campground. Flooding affected the town of Greene where half of the businesses in town were flooded. There was also several other evacuations. One of the larger was along the Winnebago River in the Mason City area where 400 homes along the river were ordered evacuated. Some of the totals in property damage include 2 homes destroyed in Worth County, 56 suffered major damage, and 249 sustained minor damage. In Bremer County, 24 homes suffered major damage, while 104 sustained minor damage. Highway and bridge damage in Cerro Gordo County topped \$750,000, with \$300,000 in road damage in Worth County. Governor Vilsack declared 8 counties in Iowa disaster areas. In the Des Moines CWA, these included Bremer, Butler, Cerro Gordo and Worth. Crop damage was also quite extensive in these two counties with many fields under water. It will be some time before the true extent of the damage is known however. Farther to the south, an isolated thunderstorm moved through Mahaska County and produced high winds. The winds tore the roof off of a mobil home in the town of Fremont.

IAZ004>007-016>017-026>028-039

Emmet - Kossuth - Winnebago - Worth - Hancock - Cerro Gordo - Franklin - Butler - Bremer - Black Hawk

19	0600CST			0	0	2.8M	1.7M	Flood
26	1800CST							

A Mesoscale Convective Complex developed over north central and northeast Iowa during the overnight and early morning hours of the 18th and 19th of July. The first flash flood warnings were issued during the wee hours after midnight. The most intense rainfall, estimated by WSR-88D radar at 6 to 10 inches, fell over a relatively small area of Cerro Gordo and southern Worth Counties. The hardest hit area was around Manly, where unofficial rainfall totals of at least 13 inches were received from within the town. There was extensive flooding of homes, roads, and businesses from small streams and creeks. A tragedy was barely averted in the town of Rock Falls, when a sudden rise in flood waters on the Shell Rock River swept a number of camping vehicles downstream, requiring rescues from atop the campers. In the town of Nora Springs, downstream from Rock Falls, there was a small earthen dambreak on the Shell Rock River, which may have increased flows downstream. The dam was already being significantly overtopped at the time of failure, so it was difficult to determine the exact impact on the flows downstream. A flash flood watch was issued early on the 19th for much of western, central, and north central Iowa. Significant storms did develop overnight, but the heaviest rains fell in the western parts of the Des Moines HSA and fortunately there was only scattered light activity over northeast Iowa. Urban and small stream advisories were issued for Emmet and northern Palo Alto Counties, where radar estimated 2 to 4 inches of rainfall. The heaviest 24-hour gage report however was in Carroll, in the Middle Raccoon basin, with 2.96 inches. Another flash flood watch was issued early on the 20th for roughly the north half of Iowa. Factors cited in discussions about the potential for heavy rainfall included the presence of a very slow moving cold front, combined with 30 to 45 MPH low level winds feeding abundant moisture into the boundary. The forecasts for extreme rainfall were verified by tremendous rains which began late on the afternoon of the 20th. A flash flood warning was already issued by the early evening hours for southern Worth County, with radar estimated rainfall at 2 inches per hour. Storms continued to develop and train over the same areas during the evening hours, causing additional flash flood warnings in both Bremer and Butler Counties. Rainfall was heaviest in the cedar and Shell Rock River basin, as the band of intense rainfall sank slowly southward with the frontal boundary. Unofficial reports of 7 to 8 inches of rain were reported near Clarksville, located along the Cedar River in Butler County. River flood warnings were issued before midnight, late on the 20th, for the Cedar River from the Bremer County line southward into the Waterloo area. As additional rainfall reports were received early on Wednesday the 21st, the extent and degree of possible river flooding became evident. Radar estimated rainfall indicated a large area of greater than 6 inches of rainfall centered over Floyd County, with a center of 8 to 11 inches stretching from just south of Charles City westward to Rockford. The highest 24-hour gage report within the Cedar basin was at Charles City, with 6.65 inches. According to the Rainfall Frequency Atlas of the Midwest (Midwestern Climate Center - 1992), the 100-year, 24-hour rainfall in this part of northeast Iowa is around 6 inches, meaning that 2 out of 3 nights the rain gage at Charles City had rains at or in excess of the 100-year frequency at 2 hours. Consider that this rain fell in much less time than 24 hours, and it was likely NOT at the most intense rainfall center! With all of this new rain falling within the same basins as the two nights previous, new flood warnings for yet higher crests were issued for the Winnebago, Shell Rock, and Cedar Rivers. Forecasts predicted several record flood levels along these rivers, with lead times to crest from 8 hours to several days. Near record flooding occurred along the Shell Rock River at Marble Rock with the 2nd highest crest on record, while record floods occurred further downstream at Shell Rock and on the cedar River at Janesville. At Waterloo, rainfall over the West Fork Cedar River, Beaver Creek, and Black Hawk basin was much lower than in the Shell Rock and Cedar basins, reducing the inflows to the Cedar in Waterloo. Local officials in Cedar Falls, just upstream of Waterloo, stated that the crest exceeded the 1961 flood. The return frequency data for these river floods presents some interesting numbers. The most extreme flood in terms of return frequency was on the Cedar River at Janesville, where the discharge of 41,000 cubic feet per second (cfs) on July 22 made this about a 75-year flood (.015 exceedance

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

IOWA, Central

probability). The stage at Janesville reached the highest stage on record. At Waterloo on the Cedar, the peak discharge of 65,700 cfs on July 23 was about a 20-year flood event (.05 exceedance probability). This stage was the 3rd highest on record. This highlights the importance of contributions from other tributaries to produce a major flood at Waterloo. On the Shell Rock River at Shell Rock, the peak discharge of 28,500 cfs on July 22 represented about a 25-year return frequency (.04 exceedance probability). Impacts from the flooding were extensive in terms of damaged infrastructure such as bridges and roads, flooded homes, and disruptions to normal life. There were no injuries or deaths in the Des Moines HSA, although several rescues and many evacuations were performed. Extensive sandbagging efforts saved important facilities in some towns, but others lost the battle. Some of the worst flooding took place in Waverly on the Cedar River, where about 1500 people were evacuated. A total of at least 600 homes in the town of Waverly had to be evacuated due to the high water. Extensive flooding also occurred in Rockford and Greene on the Shell rock River. Part of the downtown area and several neighbourhoods in Cedar Falls were saved from flooding only by the emergency completion of a levee which was already in the process of being built by the U.S. Army Corps of Engineers. In addition, the Presidential Disaster Declaration for the July 2-3 Flooding was extended to include the July 18-22 flooding.

IAZ057>062-070>075-081>086-092>097 **Audubon - Guthrie - Dallas - Polk - Jasper - Poweshiek - Cass - Adair - Madison - Warren - Marion - Mahaska - Adams - Union - Clarke - Lucas - Monroe - Wapello - Taylor - Ringgold - Decatur - Wayne - Appanoose -**

Davis

20	1200CST								
30	1200CST			0	0	109.9M		Drought	

The most intense hot and dry weather to affect Iowa in the last four years occurred during the last half of July. A large sub-tropical ridge of high pressure developed over the central U.S. as the drought that was widespread over the southern and eastern U.S. expanded northwest. Temperatures warmed into the mid to upper 90s, and occasionally over 100 degrees, for a 10 day period. Overnight low temperatures were in the mid to upper 70s for the most part. It was fortunate for the crops in the state that the dew point temperatures during the heat were unusually high. Dew point temperatures held in the mid 70s to low 80s during much of the period of hot weather. Rainfall was very scattered with most of it falling to the north of the affected area. Though the entire state was affected by the hot and dry conditions, most of the damage occurred over the south third of the state. The unfortunate thing was that the heat occurred during the critical pollination period. Typically, temperatures in excess of 95 degrees hinder the pollination process. This was the case this year with many reports of partial ear fill being reported. Losses over the south third of the state were near 20%. Total losses due to the heat were in the area of \$110,000,000 in lost production. Fortunately for Iowa, there were no deaths directly attributed to the hot and dry conditions, though there were several occurrences that the heat may have played a role.

Worth County

Manly	20	1730CST 2045CST				100K	50K	Flash Flood
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Cerro Gordo County

Mason City	20	1830CST				3K		Lightning
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Bremer County

3 NE Waverly	20	1900CST 0030CST				75K	25K	Flash Flood
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Butler County

Clarksville	20	1900CST 1900CST				500K	200K	Flash Flood
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Tama County

Tama	20	2250CST				10K		Thunderstorm Wind (G55)
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The weather situation once again was set up for a heavy rain event as had been the case during the previous several nights. During the late afternoon a weak low pressure was centred over northeast Nebraska with a stationary front extending through Sioux City through Fort Dodge to Dubuque. During the afternoon significant convergence took place along the frontal boundary. Surface dew point temperatures climbed into the upper 70s to low 80s by late afternoon. CAPE values reached 8000 j/kg by the mid to late afternoon hours. Thunderstorms erupted over the northeast third of Iowa during the late afternoon hours. Initially these storms were scattered, but as the evening progressed they developed into a mesoscale convective complex. Repeat development to the west of the area fueled the heavy rainfall. By the time the night was over, a total of three systems passed over the area, however the heaviest rainfall came with the first round. Rainfall was very heavy over Butler County with 7.9 inches reported in the town of Clarksville between 1600 CST and 2130 CST. Another nearby location received 5.5 inches of rain in a two hour period from 2000 CST to 2200 CST. WSR-88D radar estimates indicated as much as 11.5 inches of rain fell in nearby Floyd and Chickasaw Counties. Based on ground truth from around the area, the WSR-88D estimates appeared to be fairly close to the truth. A very serious flooding situation took place. Nearly every road in counties just to the east of the Des Moines CWA were reported under water. Flooding was very serious across Butler and Bremer Counties, where Governor Vilsack declared a state disaster. Serious flooding also reported in Worth County. Numerous State and U.S. Highways were closed due to high water. Many of the rivers and streams in the area were likely to crest at or near all time record levels. Details on the crests will be covered in the flooding section of this reports instead of the flash flood section however. Flooding of homes and agricultural lands was extensive. Needless to say, by any measure this event was a disaster. The seriousness of the situation was brought on by repeated rainfall on completely saturated soils. As the storms moved across Cerro Gordo County, lightning struck the Iowa Lottery offices in Mason City. Computers were knocked off line, but otherwise damage was minimal. A bit later in the evening, the area of thunderstorms spread southeast into Tama County. As the storms moved through the Tama area, winds were recorded at 64 MPH by the South Tama County High School. Some damage occurred in the area, but it was not extensive.

Lucas County

Williamson	23	1430CST				5K		Thunderstorm Wind (G52)
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Lucas County

Lucas	23	1525CST				15K	2K	Thunderstorm Wind (G70)
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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IOWA, Central

An upper level disturbance moved southeast across Iowa during the day on the 23rd. The combination of the upper level system combined with the monsoonal flow over the state allowed thunderstorms to erupt during the afternoon hours. Though most of the storms fired up east of the Des Moines CWA, the southeast part of the CWA was clipped by some strong thunderstorms. A couple of cells moved through Lucas County. One produced high winds near Williamson causing tree damage there. Another moved into Lucas County a short time later. The storm built rapidly and at one point had a VIL of 72 kg/m/m. The freezing level was near 15,000 feet, thus hail was not a major player with the storms. The storm did produce a downburst near the Lucas area that downed several power poles. Little other damage occurred with the storm.

Webster County Ft Dodge

26 0300CST 0 0 3K Lightning

Thunderstorms moved through the Webster County area. Though they were not severe, Lightning struck a tree just outside of the the American Legion Post in Fort Dodge. A branch fell into the building breaking a large double pane window and damaged the frame around the window. Replacement costs were estimated around \$3,000.

Dallas County

Van Meter

27 1803CST 0 0 5K Hail (0.75)

Dallas County

Waukee

27 1820CST 0 0 10K 10K Hail (1.50)

Polk County

Johnston

27 1830CST 0 0 10K Lightning

Marion County

2 S Knoxville

27 1930CST 0 0 10K 10K Hail (1.75)

A warm, moist, and very unstable airmass was in place over Iowa with surface temperatures around 90 degrees and dew point temperatures in the mid 70s. A small area of thunderstorms erupted over central and south central Iowa. The storms became severe quickly and dropped hail up to golf ball in size and produced gusty winds. The event was short lived as the storms dissipated rapidly around sunset. Lightning struck a house in Johnson causing a fire. Damage was not severe and the fire was extinguished fairly rapidly.

Bremer County

3 NE Waverly

27 2200CST 0 0 25K 20K Flash Flood

28 0030CST

Cerro Gordo County

Mason City Arpt

27 2222CST 0 0 1K Thunderstorm Wind (G50)

A weak upper air feature moved east-southeast into Iowa out of eastern South Dakota and southern Minnesota. The airmass was very unstable with CAPE values around 7000 J/kg and lifted indices near -12 degrees C. Thunderstorms formed northwest of Iowa and moved southeast into the state. Though most of them were not severe, one storm produced a 58 MPH wind gust at the Mason City Airport. The main problem with the storms was the heavy rainfall. Precipitable water values were around 2 inches. As a result, rainfall was heavy with two to three and one half inches of rain falling in a few hours time. In Bremer County, 3.5 inches fell in a 4 hour period northeast of Waverly. This caused some flash flooding as soil conditions were very saturated by repeated heavy rainfall over the previous weeks.

IAZ027-039

Butler - Black Hawk

28 0100CST 0 0 50K 20K Flood

30 1200CST

Another round of significant rainfall fell over parts of northeast Iowa during the overnight and early morning hours of July 27 and 28. Radar indicated rainfall of 2 to 3 inches from just north of Waterloo to south of Mason City. The bulk of the rains fell in the Beaver Creek and West Fork Cedar River basins. Initial forecasts called for significant flooding near Finchford on the West Fork Cedar River, however these conditions failed to develop as seriously as expected. There was minor flooding along parts of Beaver Creek in Butler and Black Hawk Counties.

Winnebago County

2 N Forest City

30 1810CST 0 0 2K 1K Thunderstorm Wind (G61)

Worth County

Manly

30 1835CST 0 0 1K Thunderstorm Wind (G52)

Worth County

Northwood

30 1835CST 0 0 1K Thunderstorm Wind (G52)

Winnebago County

Forest City

30 2009CST 0 0 5K Hail (0.75)

Boone County

Boone

30 2312CST 0 0 5K Thunderstorm Wind (G52)

Taylor County

Bedford

30 2315CST 0 0 30K 10K Urban/Sml Stream Fld

31 0915CST

Boone County

Napier

30 2320CST 0 0 40K 5K Thunderstorm Wind (G61)

Story County

Ames

30 2320CST 0 0 150K 5K Thunderstorm Wind (G87)

Story County

Ames Arpt

30 2323CST 0 0 1K Thunderstorm Wind (G52)

Story County

Ames

30 2325CST 0 0 100K Thunderstorm Wind (G65)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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IOWA, Central

Story County Ames	30	2325CST			0	0	1K		Thunderstorm Wind (G52)
Story County Ames	30	2330CST			0	0	6K		Lightning
Story County Ames	30	2330CST			0	0	2K		Thunderstorm Wind (G52)
Story County 1 SW Ames	30	2330CST			0	0	3K	1K	Thunderstorm Wind (G50)
Story County Kelley	30	2330CST			0	0	30K	3K	Thunderstorm Wind (G65)
Story County Ames	30	2335CST			0	0	10K		Thunderstorm Wind (G52)
Story County Cambridge	30	2335CST			0	0	4K	1K	Thunderstorm Wind (G52)
Story County Colo	30	2335CST			0	0	3K	1K	Thunderstorm Wind (G52)
Story County Ames Arpt	30	2340CST			0	0	2K		Thunderstorm Wind (G57)

A very hot and humid airmass was in place over Iowa. Surface temperatures were in the mid 90s to low 100s with dew point temperatures in the low to mid 70s. CAPE values were in the 7000 to 9000 J/kg range over most of the state. The upper air soundings were in the form of an inverted V sounding as thunderstorms developed over an approaching cold front from the northwest. The airmass was capped over Iowa. As a result, thunderstorm development was quite limited over the state. A large area formed to the north of the state over Minnesota and became an MCC. During the early evening hours, the southwest tail of the MCC developed into north central Iowa. With the inverted V sounding, the main weather feature with these storms was high winds. As the line sunk into Iowa, 70 MPH winds were reported north of Forest City. As the line moved east, 60 MPH winds were reported in Worth County from Northwood south to Manly. The storms moved out of the Des Moines CWA after that. Another cell developed a short time later and dropped dime size hail in Forest City. This was an isolated event from a pulse severe storm. The thunderstorms continued into the evening and remained fairly well behaved. There were spotty reports of hail west of the Des Moines CWA but nothing within the CWA. Around midnight a line of thunderstorms developed in central Iowa. Though most of the storms were not severe, one storm did become a pulse severe storm over Boone and Story Counties. The storm produced high winds as a microburst developed in the storm and lasted about 30 minutes. High winds initially occurred in the Boone area as trees were downed on the west side of town at the Boone Golf and Country Club. High winds destroyed a barn in Boone County at Napier. High winds also blew 15 mobile homes over in Ames, destroying three of them, and 3 in the town of Kelley, just south of Ames. Six people, including one family of four, was left homeless. Power poles were snapped across a half mile wide area by the high winds with estimates of wind speeds around 100 MPH from the microburst. There were numerous reports of trees and power lines downed and one car was crushed in Ames. Two newly constructed, but unoccupied, homes were destroyed by winds in Ames as well. Following the storm, a Presidential Disaster Declaration was made for Story County to aid in cleanup. Of the 15 counties in Iowa to receive federal disaster aid so far this summer, Story County was the only one that received aid for damage other than flooding. Lightning struck two houses in Ames as well, causing some minor damage. Damage stopped from the storm as quickly as it began with the high winds never reaching the next county downstream. Rainfall from the storms was spotty, but some areas did receive very heavy rainfall. Rainfall of 4 to 6 inches fell over a several hour period over Taylor County as repeat thunderstorms moved over the county. The rain caused urban and small stream flooding, and eventually resulted in the 102 River jumping its banks by later in the morning.

IAZ081>084-092>095

Adams - Union - Clarke - Lucas - Taylor - Ringgold - Decatur - Wayne	31	0600CST 2100CST			0	0	200K	80K	Flood
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The active month of July ended with one more flooding event, fortunately this time in southern Iowa. Heavy convective rains in advance of a cold front pushing through the state, brought scattered heavy rainfall to parts of northern, central, and southern Iowa. Very heavy rains fell in Taylor County early on the 31st, prompting the issuance of an urban and small stream flooding advisory for the county shortly after sunrise. The 24-hour coop rainfall report for Bedford was 3.71 inches and this was followed by another 2 to 3 inches, according to radar estimates. A very rapid rise in river levels on the 102 River at Bedford ensued, resulting in a crest of 22.60 feet shortly after noon on the 31st. This was the 3rd highest crest ever recorded at this site, although records only extend back to 1983. Statewide precipitation statistics for July 1999 present a study in contrasts. The highest precipitation totals were found over the northeast, with sharp decreases further south. State Climatologist Harry Hillaker reports that all 3 northern agricultural districts had above normal rainfall, while all 3 southern districts were below normal. Central districts were about normal. The greatest positive departures were in the northeast district, where average rainfall was 9.96 inches, more than twice the 30-year average. The southeast district received the least with only 2.24 inches, less than half of the average. Statewide, the 5.00 inches ranked the 27th wettest July in the past 127 years. Waterloo had its wettest July ever with 12.97 inches, eclipsing the record of 12.60 inches set in 1968. Even 1993 had only 11.26 inches for the 3rd highest total ever. With 33.86 inches of precipitation through July, Waterloo has now exceeded its average annual rainfall of 33.70 inches. Des Moines, by contrast, received only 3.58 inches for the month, some 0.20 of an inch below normal. July 1999 was also hot in Iowa, with the 77.7 degree average temperature for the month ranking as the 8th warmest in 127 years and some 3.2 degrees above normal. Highest departures from normal were over the southern part of the state, but all districts were above average.

Taylor County 2 S Gravity

2 S Gravity	31	1000CST			0	0	10K		Lightning
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As an area of thunderstorms moved through the area, lightning from the anvil tops presented a problem from the weakening storms.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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IOWA, Central

Lightning struck several homes in Taylor County, causing appliance damage. One home south of Gravity was struck and a small fire started in the attic of the home. Damage was minor and the fire was extinguished quickly by the fire department.

IOWA, East Central and Southeast

Buchanan County Countywide

02	1900CST								
03	0000CST				0	0			Urban/Sml Stream Fld

Heavy rain caused urban and small stream flooding across the county.

Jones County Anamosa

02	1900CST								
03	0000CST				0	0			Urban/Sml Stream Fld

Thunderstorms dumped 3 to 4 inches of rain on the city of Anamosa, which caused flooding on Therese Avenue. Residences had water and sewage coming through basements, toilets and showers.

Jones County Anamosa to Amber

02	2200CST								
	2300CST				0	0			Hail (0.88)

Nickel-sized hail produced a mile-wide swath of crop damage from Anamosa to Amber. Corn was stripped and knocked down.

Bentley County Garrison

02	2230CST								
					0	0	7K		Thunderstorm Wind

Thunderstorm winds blew a roof off a garage, destroyed two small sheds, and downed many trees and power lines.

Cedar County Mechanicsville

02	2245CST								
					0	0			Hail (0.75)

Emergency management reported 3/4 inch hail in Mechanicsville.

Linn County Mt Vernon

02	2300CST								
03	0000CST				0	0	8K		Thunderstorm Wind

Thunderstorm winds destroyed many large trees and damaged two cars at residences in Mt. Vernon.

Linn County Palo

02	2330CST								
					0	0			Thunderstorm Wind (G51)

A Cedar Rapids television station reported a 60 mph thunderstorm gust at a residence near Palo.

IAZ065>068-078-089

Cedar - Clinton - Muscatine - Scott - Louisa - Des Moines

03	1900CST								
10	1800CST				0	0			Flood

Very heavy rains...with local amounts up to 8 inches...fell from July 2nd through the 3rd and resulted in flooding on the Wapsipinicon, Iowa and Cedar rivers. Flooding was minor to moderate on the Wapsipinicon and Cedar rivers, and minor on the Iowa River.

Clayton - Buchanan - Delaware - Dubuque - Benton - Linn - Jones - Jackson - Iowa - Johnson - Cedar - Clinton - Muscatine - Scott - Keokuk - Washington - Louisa - Jefferson - Henry - Des Moines - Van Buren - Lee

IAZ030-040>042-051>054-063>068-076>078-087>089-098>099

19	0400CST								
31	2000CST				0	0			Excessive Heat

A strong ridge of high pressure over the central U.S. produced very hot and humid conditions over the midwest from mid to late July. Heat advisories and warnings were issued for portions of eastern Iowa during the period. Temperatures around the 100 degree mark combined with dewpoints in the 70s produced heat indices of 105 to as high as 125 degrees. Newspaper accounts indicate at least 19 people in Illinois, and 27 in Missouri, died from heat-related factors since July 19th.

Buchanan County Countywide

20	1700CST								
	2300CST				0	0			Urban/Sml Stream Fld

A stationary front was the focus for re-developing thunderstorms which dumped four to five inches of rain over the county. Law enforcement reported standing water in ditches and over some roads.

Jackson County Preston

21	1600CST								
	1900CST				0	0			Urban/Sml Stream Fld

Slow-moving thunderstorms produced four to five inches of rainfall, which flooded streets and ditches in Preston.

Jackson County 3 W Bellevue

21	1635CST								
	1900CST				0	0			Hail (1.00)

Law enforcement reported quarter-sized hail in rural Bellevue.

Jackson County 3 W Bellevue

21	1635CST								
					0	0			Thunderstorm Wind (G51)

Law enforcement reported a 60 mph thunderstorm gust in rural Bellevue.

Clinton County 2 S Charlotte

21	1715CST								
	1815CST				0	0	1.5K		Thunderstorm Wind

Thunderstorm winds downed several large trees, destroyed a large wooden playhouse and dislodged a concrete slab at a farm south of Charlotte.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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IOWA, East Central and Southeast

Clinton County

Clinton

21	1715CST				0	0	2K		Lightning
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Lightning struck a transformer, which resulted in a power outage for several hours at a factory.

Clinton County

3 NW Andover

21	1735CST				0	0			Hail (0.75)
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Law enforcement reported 3/4 inch hail in rural Andover.

IAZ040-051>053-064>068-078-089

Buchanan - Benton - Linn - Jones - Johnson - Cedar - Clinton - Muscatine - Scott - Louisa - Des Moines

23	0700CST				0	0			Flood
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Heavy rains fell across northern Iowa into southern Wisconsin and extreme northwest Illinois the evenings of July 18-21. As much as 8 to 10 inches fell in the Cedar and Wapsipinicon river basins the nights of July 20 and 21.

Major flooding occurred on the Cedar, Wapsipinicon and Iowa rivers.

On the Cedar River, Cedar Rapids experienced major flooding. The crest of 18.31 feet (5.31 ft above flood stage) on July 26th was the 6th highest crest on record there. Due to advance warning the city prepared well for the flooding and experienced minor problems due to the flooding. Major flooding also occurred near Conesville, with some homes affected. The crest near Conesville was 16.68 feet (4.68 ft above flood stage) on July 28th. A small levee break along the river near Nichols, IA, during the evening of July 26 resulted in heavy flooding of 30 homes. One farmer lost 160 acres of farmland as a result of the levee break.

Major flooding occurred on the Wapsipinicon River as well. The communities of Independence, Littleton, Anamosa and DeWitt all experienced flooding problems as waters rose. At Independence, the river crested at 18.8 feet (6.8 ft above flood stage) on July 24th. According to a Red Cross report, 71 homes in Independence and 47 in the nearby town of Littleton received major water damage, with at least two feet of water on the first floor. At Anamosa, the river crested at 13.3 feet (4.3 ft above flood stage) on July 26th. Flooding affected some unprotected businesses and homes near the river. Near DeWitt, the Wapsipinicon crested at 12.97 feet (2.97 ft above flood stage) on July 30th. Some homes and businesses near the river were affected.

The Iowa River was the third tributary to experience major flooding during this event. At Wapello, the river crested at 25.09 feet (5.09 ft above flood stage) on July 29th. Flooding of low-lying agricultural lands near the river occurred, and most islands in the river's flood plain were inundated.

All rivers fell below flood stage by August 5th.

Buchanan County

Countywide

23	1400CST				0	0			Urban/Sml Stream Fld
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Urban and small stream flooding across Buchanan County resulted in the closing of a portion of U.S. Highway 150 and other county roads.

Cedar County

Tipton

23	1435CST				0	0	5K		Thunderstorm Wind
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Thunderstorm winds downed large tree limbs and power lines in Tipton, which resulted in a power outage in the community.

Henry County

New London

23	1520CST				0	0			Thunderstorm Wind (G51)
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60 mph thunderstorm wind gust reported in New London.

Cedar County

Stanwood

23	1724CST				0	0			Thunderstorm Wind (G51)
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Law enforcement reported a 60 mph thunderstorm wind gust in Stanwood.

Louisa County

Columbus Jct

23	1740CST				0	0			Thunderstorm Wind (G51)
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Law enforcement reported a 60 mph thunderstorm wind gust in Columbus Junction. High winds downed large trees and power lines.

Scott County

Countywide

23	1800CST				0	0			Urban/Sml Stream Fld
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Torrential rains produced street flooding in Davenport. Heavy rain in Eldridge leaked through latches on the roof of the high school auditorium, and dripped onto the stage.

Scott County

Davenport

23	1835CST				0	0			Hail (0.75)
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Penny-sized hail fell in Davenport.

Scott County

Davenport Arpt

23	1835CST				0	0			Thunderstorm Wind (G50)
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A 58 mph thunderstorm wind gust was recorded at the Davenport Airport.

Scott County

Eldridge

23	1835CST				0	0			Thunderstorm Wind (G51)
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A 60 mph thunderstorm gust downed power lines in Eldridge, which resulted in a power outage in the community.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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IOWA, East Central and Southeast

Scott County

Davenport **23** **1843CST** **0** **0** **Thunderstorm Wind (G51)**
 A NWS spotter reported a 60 mph thunderstorm wind gust in Davenport. The high winds damaged a large tarp covering the Government Bridge in the Quad Cities.
 Summary for 7/23/99: (For additional details, see individual entries for the date.) A moist and unstable environment produced conditions ripe for severe weather, as clusters of intense thunderstorms moved over eastern Iowa during the afternoon and evening hours. Thunderstorm wind gusts up to 60 mph occurred over the area, with hail up to 3/4 inch. High winds damaged a large tarp covering the Government Bridge in the Quad Cities, and downed large trees and power lines. Very heavy rainfall also produced urban and small stream flooding over Scott and Buchanan counties.

Lee County

Keokuk **26** **1925CST** **0** **0** **5K** **Thunderstorm Wind**
 Thunderstorms winds downed trees and power lines in Keokuk.

Iowa County

North English **27** **2138CST** **0** **0** **10K** **Thunderstorm Wind**
 Downburst winds blew the roof off a farrowing house in rural North English and snapped large tree limbs in North English proper.

Iowa County

Williamsburg **27** **2138CST** **0** **0** **1K** **Thunderstorm Wind**
 Thunderstorm downburst winds downed trees in Williamsburg.

Washington County

Ainsworth **27** **2215CST** **0** **0** **10K** **Thunderstorm Wind**
 Thunderstorm downburst winds tore the roof off a house in Ainsworth.

Louisa County

1 E Morning Sun **27** **2244CST** **0** **0** **Thunderstorm Wind (G51)**
 A thunderstorm gust of 60 mph blew a Sheriff's squad car into the opposite lane of traffic in rural Morning Sun.

Lee County

Ft Madison **28** **0400CST** **0** **0** **Thunderstorm Wind (G51)**
 A line of thunderstorms produced 60 mph winds, which downed tree limbs in Ft. Madison.

IOWA, Northeast

IAZ008>011-018>019- Mitchell - Howard - Winneshiek - Allamakee - Floyd - Chickasaw - Fayette - Clayton

029>030

04 **0700CST** **0** **0** **Excessive Heat**
05 **1900CST**
 High humidity combined with afternoon temperatures of 95 to 100 to produce heat indices of 105 to 115. There were no deaths directly related to the excessive heat and humidity.

Chickasaw County

Countywide **18** **2255CST** **0** **0** **500K** **250K** **Flash Flood**
19 **0530CST**

Floyd County

Countywide **19** **0200CST** **1** **0** **750K** **400K** **Flash Flood**
0730CST
 M85VE

Mitchell County

Countywide **19** **0200CST** **0** **0** **600K** **350K** **Flash Flood**
0730CST

As much as 8 inches of rain caused flash flooding over portions of northeast Iowa. Hardest hit were Rockford and Nora Springs (Floyd County) where an earthen dike washed away and a dam was breached. Both communities suffered extensive damage to homes and businesses due to what was described as the worst flooding in years. Numerous rural roads throughout the area were washed out, while corn and soybean fields were underwater. A man died when his car was swept away, attempting to cross a flooded bridge near Rudd (Floyd County).

IAZ008>009-018>019

Mitchell - Howard - Floyd - Chickasaw

19 **0730CST** **0** **0** **1.6M** **465K** **Flood**
22 **1100CST**

The Cedar River experienced record flooding due to excessive rainfall amounts. On the 19th, the river crested at 18.26 feet at Charles City (Floyd County). Two days later on the 21st, the river had an all-time record crest at Charles City of 22.80 feet. Cooperative observer rainfall reports from the 19th through the 21st included 11.81 inches at Charles City, 10.75 inches at Osage (Mitchell County) and 11.85 inches at New Hampton (Chickasaw County).

Nearly every creek, stream and river in Chickasaw and Floyd Counties was bankfull or flooding during the National Weather Service storm survey. Many roads were impassable. There was extensive evidence of flash flooding from heavy rains that fell the night before. On the Cedar River, approximately 100 homes in Charles City had some type of flood damage. Only the Main street bridge was passable and flood waters had crossed onto sections of Highway 218, closing businesses. The river level was so high, it peaked the river gauge there, but had started to slowly fall as of early afternoon on the 21st.

Downstream in Nashua (Chickasaw County), water had topped the dam at Cedar Lake, flooding nearby homes. Some water was crossing Highway 346, but had backed up along the train bridge there, allowing water to rise into the downtown area. Sand bagging

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

IOWA, Northeast

efforts were in full swing as the river crested. Sections of the Wapsipinicon and Little Wapsipinicon River were nearly a mile wide, flooding nearby fields and closing sections of Highways 18, 346 and 63. Mitchell, Howard, Floyd and Chickasaw counties were declared federal disaster areas.

Floyd County Floyd	20	1601CST			0	0	15K	20K	Hail (1.75)
Floyd County Charles City	20	1618CST			0	0	35K	25K	Hail (2.75)
Floyd County 1 SE Carrville	20	1620CST			0	0	10K	15K	Thunderstorm Wind (G60)
Floyd County Charles City	20	1620CST			0	0	25K	15K	Hail (1.75)
Floyd County 1 SE Carrville	20	1630CST 1631CST	0.1	60	0	0		15K	Tornado (F1)

Tornado continued into Chickasaw County.

Chickasaw County 3.5 NW Nashua to 4 NE Nashua	20	1631CST 1636CST	2	80	0	0	120K	15K	Tornado (F1)
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Tornado began in Floyd County

A tornado touched down on the Floyd-Chickasaw County line north of Nashua, and moved northeast for 2 miles. Two farms had extensive damage, including a blown down silo, several damaged barns and outbuildings, sheared off trees, damaged crops and downed utility poles. Hail the size of golfballs and baseballs was also reported by law enforcement officials and a local television station.

Floyd County Countywide	20	1750CST 2230CST			0	0	225K	100K	Flash Flood
Chickasaw County Countywide	20	1802CST 2245CST			0	0	350K	100K	Flash Flood
Mitchell County Countywide	20	1900CST 2255CST			0	0	350K	120K	Flash Flood
Howard County Countywide	20	1945CST 2255CST			0	0	275K	90K	Flash Flood
Fayette County West Portion	20	2000CST 2255CST			0	0	50K	40K	Flash Flood
Clayton County West Portion	20	2030CST 2230CST			0	0	25K	20K	Flash Flood

Thunderstorms dropped torrential rains on northeast Iowa, which caused a second round of flash floods in as many days. Numerous highways were either closed or remained closed due to high water.

IAZ008>011-018>019-029>030

Mitchell - Howard - Winneshiek - Allamakee - Floyd - Chickasaw - Fayette - Clayton	23 25	1000CST 2300CST			0	0			Excessive Heat
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Excessive heat and humidity affected northeast Iowa for three consecutive days. Afternoon highs reached into the 90s, producing afternoon heat indices of 105 to 115. No deaths directly related to the heat were reported.

IAZ008>011-018>019-029>030

Mitchell - Howard - Winneshiek - Allamakee - Floyd - Chickasaw - Fayette - Clayton	28 30	1000CST 2000CST			0	0			Excessive Heat
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Yet another period of excessive heat and humidity affected northeast Iowa. Afternoon highs reached the middle 90s to 100, while heat indices of 110 to 120 were common. No deaths directly related to the oppressive heat and humidity were reported.

IOWA, Northwest

Plymouth County Akron	02	0717CST			0	0			Hail (0.75)
Sioux County Hawarden	02	0815CST			0	0	200K		Thunderstorm Wind (G61)
Woodbury County Sioux City to Sergeant Bluff	02	0850CST 0915CST			0	0			Hail (1.75)

Large hail damaged vehicles and crops. The amount of damage was unknown. The hail drifted to 1 to 2 feet just east of Sioux City.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated	Crops	Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage		
<u>IOWA, Northwest</u>									
Woodbury County Sioux City to Bronson	02	0900CST 1130CST			0	2	8M		Flash Flood
A flash flood was caused by 3 or more inches of rain in less than an hour. Many basements were flooded and left with mud and debris. Some foundations and basement walls collapsed, mainly in Sioux City. Many roads were flooded, at one intersection to a depth of eight feet, damaging vehicles by the water and debris. The flooding brought down some trees, and damaged some of the flooded streets as water undercut them. A motorist caught in the flooding and the firefighter who rescued him were treated at a hospital for hypothermia. The flooding caused crop damage in the countryside, but the amount of crop damage was not determined.									
Woodbury County Salix	02	0905CST 0915CST			0	0			Hail (0.75)
Woodbury County Bronson	02	0910CST			0	0	500K		Hail (2.75)
Large hail broke windows in cars and homes, and otherwise dented vehicles and siding. The hail caused major crop damage in the area, but the amount of crop damage was unknown.									
Woodbury County Sloan	02	0915CST			0	0	200K		Thunderstorm Wind (G70)
Thunderstorm winds blew down power lines and poles, damaged structures, and caused widespread tree damage.									
Woodbury County Hornick	02	0917CST			0	0	10K		Thunderstorm Wind (G57)
Thunderstorm winds caused tree damage, including 8 inch diameter limbs blown down.									
Woodbury County Sioux City to Merville	08	1638CST 1705CST			0	0	50K		Thunderstorm Wind (G61)
Thunderstorm winds blew down power lines and poles, and caused tree damage.									
Plymouth County 5 NW Kingsley	08	1650CST			0	0			Thunderstorm Wind (G52)
Cherokee County 6 W Quimby	08	1715CST			0	0			Hail (0.75)
Ida County 4 W Galva	08	1740CST			0	0			Thunderstorm Wind (G52)
Sioux County Sioux Center	20	0520CST			0	0			Flood
Heavy rain caused flooding of creeks in the area. There was no estimate of damage.									
Lyon County 2 W Rock Rapids	23	0135CST			0	0	5K		Thunderstorm Wind (G57)
Thunderstorm winds blew over a flag pole, caused tree damage, and flattened a crop of corn.									
Woodbury County 2 S Correctionville	23	0655CST			0	0			Hail (0.75)
IAZ001>003-012>014- 020>022-031>032	28	0800CST			0	10			Excessive Heat
Excessive heat occurred with heat indices above 120 degrees. Several cattle were reported lost, and several people were treated for heat exhaustion.									
Buena Vista County Marathon to 1 N Marathon	30	1837CST 1840CST			0	0			Hail (0.88)
<u>IOWA, Southwest</u>									
Monona County 8 W Mapleton	02	0949CST			0	0			Thunderstorm Wind (G52)
Large limbs downed.									
Monona County 5 NW Moorhead	02	1105CST			0	0			Thunderstorm Wind (G57)
Large tree limbs broken off.									
Shelby County Defiance	02	1210CST			0	0			Hail (1.00)
Shelby County Earling	02	1210CST			0	0			Thunderstorm Wind (G52)
Shelby County Irwin	02	1245CST			0	0			Hail (1.00)
IAZ090 Fremont	10	0200CST 1700CST			0	0			Flood
Minor flooding along the Nishnabotna River near Hamburg. The river crested at 24.7 feet in the morning of the 10th, flood stage is 23									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

IOWA, Southwest

feet.									
IAZ043-055>056-069-079>080-090>091	Monona - Harrison - Shelby - Pottawattamie - Mills - Montgomery - Fremont - Page								
	19	0001CST			0	0			Excessive Heat
	30	2359CST							
From July 19th through the 30th high temperatures over eastern Nebraska and southwest Iowa reached 90 degrees or better for all but a day or two, and even then highs were well into the 80s. In addition...overnight lows stayed mostly above 70 degrees. The high temperatures were accompanied by high humidities which caused afternoon heat indices to reach between 105 and 120 degrees many of the days in this time period. The excessive heat was directly responsible for killing 2 people in eastern Nebraska, and while no information was available on cattle loss in southwest Iowa, the heat killed over 5000 head of cattle worth over \$3 million in eastern Nebraska.									
Harrison County	19	1823CST			0	0	5K		Thunderstorm Wind
Modale	Thunderstorm wind damaged some farm equipment.								
Harrison County	19	1900CST			0	0			Flash Flood
4 NW Modale to Missouri Vly	Two to 3.7 inches of rain in 40 minutes flooded county roads and town streets from Missouri Valley to northwest of Modale.								
Mills County	27	1535CST			0	0			Hail (1.00)
6 S Silver City									
Monona County	30	1935CST			0	0			Hail (0.88)
4 NW Soldier									
Fremont County	30	1940CST			0	0			Thunderstorm Wind (G52)
Hamburg	Large tree limbs downed.								
Fremont County	30	1940CST			0	0			Thunderstorm Wind (G52)
Sidney	Estimated 60 mph thunderstorm gusts downed power lines.								
Fremont County	30	2200CST			0	0			Thunderstorm Wind (G52)
Shenandoah	Large tree limbs and power lines downed.								
Page County	30	2210CST			0	0			Thunderstorm Wind (G52)
Essex	Winds estimated at least 60 mph did unspecified damage and knocked electrical power out.								
Shelby County	30	2250CST			0	0			Hail (0.75)
6 NNW Panama									

KANSAS, East

KSZ008>012-020>024-026-034>040-054>056-058>059	Republic - Washington - Marshall - Nemaha - Brown - Cloud - Clay - Riley - Pottawatomie - Jackson - Jefferson - Ottawa - Dickinson - Geary - Morris - Wabaunsee - Shawnee - Douglas - Lyon - Osage - Franklin - Coffey - Anderson								
	15	1200CST			1	0			Excessive Heat
	30	2100CST							
Excessive heat occurred over the area throughout the month. But an approximate 2 week string of days during the last half of the month seemed to be the worst. Temperatures during this two week period exceeded 100 degrees in many areas on many days. The excessive heat was also accompanied by very high heat indices that exceeded 110 degrees at times. A Lyon county man in his 20's suffered dehydration and died from heat stroke. M25OU									
Douglas County	26	1530CST			0	0	2K		Thunderstorm Wind (G50)
2 W Baldwin	Strong winds blew down a power line a pole and a transformer.								
Douglas County	26	1535CST			0	0	2K		Thunderstorm Wind (G55)
3 E Vinland	Strong winds blew down a 45 inch diameter tree on a porch. Five young trees were uprooted as well. A wooded porch roof was torn off.								
Douglas County	26	1545CST			0	0	3K		Thunderstorm Wind (G60)
2 NE Vinland	Fiberglass roofs over a porch and car port were torn off. A 28 foot fifth wheel mobile home was blown off cement blocks and moved from 3 to 5 feet.								
Douglas County	26	1555CST			0	0	2K		Thunderstorm Wind (G60)
5 ENE Vinland	Strong winds destroyed a wooden storage barn.								
Ottawa County	30	2030CST			0	0			Thunderstorm Wind (G50)
Bennington									
Ottawa County	30	2030CST			0	0			Thunderstorm Wind (G55)
1 S Bennington	Three semi tractor trailer rigs were blown off a road.								

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

KANSAS, East

Dickinson County

Abilene	30	2140CST			0	0			Thunderstorm Wind (G50)
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KANSAS, Extreme Southeast

Cherokee County

1 N Scammon	01	0830CST			0	0	0		Thunderstorm Wind (G52)
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Thunderstorm winds blew a patrol officers car off the road. Trees were also downed.

Crawford County

Mc Cune	01	0830CST			0	0	0		Thunderstorm Wind
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Thunderstorm winds blew down trees.

Crawford County

Pittsburg	01	0850CST			0	2	30K		Thunderstorm Wind
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Thunderstorm winds damaged a motel and injured 2 persons slightly. Numerous trees and power lines were also downed.

KSZ073-097-101

Bourbon - Crawford - Cherokee

23	0600CST			0	0				Excessive Heat
31	1900CST								

A prolonged period of excessive heat occurred in southeast Kansas with afternoon high temperatures reaching up to around 100 degrees with heat index values of over 105 degrees.

KANSAS, North Central

Smith County

9 N Athol	05	1712CST			0	0	0	0	Hail (0.75)
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Phillips County

15 NE Phillipsburg	05	1720CST			0	0	0	0	Hail (0.75)
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Smith County

8 W Smith Center	05	1744CST			0	0	0	0	Hail (0.88)
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Rooks County

8 N Stockton	05	1753CST			0	0	0	0	Hail (0.75)
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Phillips County

Kirwin	05	1825CST			0	0	0	0	Hail (0.88)
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Jewell County

Burr Oak	05	1830CST			0	0	0	100K	Hail (1.25)
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Rooks County

9 SE Stockton	05	1850CST			0	0	0	0	Hail (0.75)
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Rooks County

2 N Palco	05	1910CST			0	0	0	0	Hail (0.88)
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Scattered severe thunderstorms along a stalled frontal boundary dumped hail across parts of north-central Kansas during the evening hours. The hail ranged in size from dimes to quarters.

KANSAS, Northeast

KSZ025-103

Atchison - Leavenworth

01	0000CST			0	0				Flood
04	2359CST								

Minor river flooding that began in June continued into July on the Missouri River at Atchison and Leavenworth and Stranger Creek near Tonganoxie.

KSZ025-057-060-

102>105

Atchison - Miami - Linn - Doniphan - Leavenworth - Wyandotte - Johnson

18	0000CST			1	0				Excessive Heat
31	0000CST								

Oppressive heat and humidity gripped northeast Kansas for nearly 2 weeks in late July. Temperatures exceeded 90 degrees across the area on 14 consecutive days, and flirted with the 100 degree mark on eight of those days, from July 23-30. High humidity levels pushed afternoon heat indices over 100, and even as high as 115 at the peak of the heat wave on July 29 and 30. An 86 year old Paola woman died of heat-related causes. F86PH

KANSAS, Northwest

Greeley County

Tribune	01	0020MST			0	0			Hail (1.75)
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Greeley County

12 SW Tribune	01	0030MST			0	0			Thunderstorm Wind (G52)
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Wichita County

2 S Selkirk	01	0035CST			0	0			Hail (1.00)
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Greeley County

13 NNE Tribune	01	0037MST			0	0			Hail (2.75)
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Wallace County

4 SW Weskan	01	0040MST			0	0			Hail (0.75)
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
KANSAS, Northwest									
Wichita County									
14 SW Leoti	01	0125CST			0	0			Hail (2.75)
Sherman County									
4 N Kanorado	02	1631MST 1650MST			0	0			Hail (1.75)
Sherman County									
23 NW Goodland	02	1734MST			0	0			Hail (2.75)
Sherman County									
2 S Goodland Arpt	02	1755MST			0	0			Thunderstorm Wind (G54)
Cheyenne County									
16 SW St Francis	02	1830CST			0	0			Hail (0.88)
Cheyenne County									
8 SSE Bird City	02	1850CST	0.2	200	0	0			Tornado (F0)
Tornado also spotted by public.									
Rawlins County									
3 SSW Mc Donald	02	1910CST 1915CST	0.7	250	0	0			Tornado (F1)
Two small grain bins were blown away and a shed was destroyed on farmstead.									
Rawlins County									
3 W Atwood	02	1920CST			0	0			Hail (1.00)
Wichita County									
13 ENE Leoti	05	1620CST			0	0			Hail (0.75)
Greeley County									
5 SE Whitelaw	05	1645MST			0	0			Hail (1.25)
Wichita County									
Leoti	05	1719CST			0	0			Hail (0.88)
Gove County									
Grainfield	05	1725CST	0.2	200	0	0			Tornado (F0)
Brief tornado spotted just outside of Grainfield.									
Graham County									
Morland	05	1725CST			0	0			Hail (1.00)
Logan County									
11 S Russell Spgs	05	1744CST			0	0			Hail (0.75)
Gove County									
1 E Grainfield	05	1745CST			0	0			Hail (0.75)
Gove County									
4.5 SE Grinnell	05	1800CST			0	0			Hail (1.00)
Graham County									
1 W St Peter	05	1850CST			0	0			Hail (0.75)
Decatur County									
5 SW Oberlin	08	1900CST 1915CST			0	0			Thunderstorm Wind (G60)
Thunderstorm winds resulted in tree damage, a shed blown down, and shattered windows on a farmstead.									
Decatur County									
16 NE Oberlin to 17 NE Oberlin	08	1935CST 1940CST			0	0			Hail (0.75)
Rawlins County									
15 SW Atwood	15	1705CST			0	0			Hail (1.00)
Rawlins County									
15 SW Atwood	15	1726CST			0	0			Hail (1.00)
Rawlins County									
10 S Mc Donald	15	1747CST			0	0			Hail (0.75)
Thomas County									
11 N Brewster	15	1820CST			0	0			Hail (1.00)
Rawlins County									
6 SW Atwood to 8 SSE Atwood	15	1830CST 2130CST			0	0			Flash Flood
Flash Flooding mainly south of Atwood. Many roads were covered with water along with a report of water in resident's basement.									
Thomas County									
4 W Colby to Colby	15	2015CST 2130CST			0	0			Flash Flood
Some reports of over 3 inches of rain in a very short period of time near Colby. Water was running up to entrances of downtown businesses and over many roads.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>KANSAS, Northwest</u>									
Wallace County 14 SSE Wallace	15	2105MST			0	0			Hail (0.75)
Logan County Page City	15	2115CST			0	0			Thunderstorm Wind (G52)
Logan County 21 S Mc Allaster	15	2215CST			0	0			Hail (1.00)
Wichita County 12 N Selkirk	15	2227CST			0	0			Hail (0.88)
Cheyenne County 5 NW Bird City	20	2115CST			0	0			Hail (0.75)
Thomas County Colby Muni Arpt	21	1934CST			0	0			Thunderstorm Wind (G56)
Wichita County 6 S Leoti	24	1810CST			0	0			Thunderstorm Wind (G60)
Wichita County Leoti	24	1830CST			0	0			Thunderstorm Wind (G52)
		Some wind damage reported around Leoti. Loss amounts unknown.							
Gove County Quinter	25	1520CST			0	0			Hail (0.75)
Rawlins County 10 NW Atwood	25	1530CST			0	0			Hail (1.00)
Gove County Quinter	25	1602CST			0	0			Hail (0.75)
Gove County Quinter	25	1645CST			0	0			Thunderstorm Wind (G60)
		TREE LIMBS BROKEN.							
Gove County Quinter	25	1705CST 2100CST			0	0	75K		Flash Flood
		Numerous reports of flash flooding in vicinity of Quinter. Several houses suffered flood damage in basements.							
Cheyenne County 10 NNW Bird City	25	1715CST			0	0			Hail (0.88)
Gove County 1 S Quinter	25	1715CST			0	0			Hail (0.75)
Cheyenne County 18 N Bird City	25	1745CST			0	0			Thunderstorm Wind (G53)
Thomas County 14 NNE Brewster	25	1755CST			0	0	3K		Thunderstorm Wind (G70)
		Strong winds uprooted trees and blew over tower.							
Sheridan County Hoxie	25	2009CST			0	0	200K		Thunderstorm Wind (G79)
		Strong winds destroyed airport hanger and 2 aircraft.							
Wichita County Leoti	25	2235CST			0	0	10K		Thunderstorm Wind (G60)
		Door blown in on west end of building. Numerous windows broken at school.							
Gove County 5 S Quinter	25	2300CST			0	0			Thunderstorm Wind (G70)
		Strong winds ripped off tin roof on building.							
Wallace County 6 E Wallace	30	1740MST			0	0			Thunderstorm Wind (G52)
Logan County 5 WNW Mc Allaster	30	1853CST			0	0			Hail (0.88)
Gove County 30 SW Quinter	30	1900CST			0	0			Thunderstorm Wind (G52)
Logan County 3 N Mc Allaster	30	1930CST 1945CST			0	0			Tstm Wind/Hail
Sheridan County 2 E Angelus	30	1930CST			0	0			Thunderstorm Wind (G52)
		3 to 6 inch limbs down.							
Sheridan County 12 SW Hoxie	30	1945CST			0	0			Tstm Wind/Hail
		Winds estimated at 70 MPH.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
<u>KANSAS, Southeast</u>									
KSZ049		Saline							
	01	0001CST			0	0			Flood
		0800CST							
		Very heavy rains induced flooding along the Gupsum Creek.							
Harper County	01	0427CST			0	0			Hail (0.75)
Harper County	01	0500CST			0	0			Hail (1.25)
Anthony									
Sumner County	01	0530CST			0	0			Thunderstorm Wind (G52)
3 S Milan									
		Tree limbs blown down.							
Sumner County	01	0548CST			0	0			Flash Flood
Argonia to		0630CST							
South Haven									
		Torrential rains flooded many roads including Highway 81 which was closed.							
Harper County	01	0600CST			0	0			Flash Flood
5 NW Harper to		0700CST							
8 W Anthony									
		Torrential rains flooded Highway 2. A trained spotter also reported the flooding of secondary roads.							
Cowley County	01	0641CST			0	0			Thunderstorm Wind (G52)
Winfield									
Cowley County	01	0700CST			0	0			Flash Flood
Arkansas City		0735CST							
		Torrential rains caused widespread street flooding.							
Chautauqua County	01	0738CST			0	0			Thunderstorm Wind (G52)
2 NE Elgin									
Chautauqua County	01	0740CST			0	0			Thunderstorm Wind (G52)
Peru									
Chautauqua County	01	0750CST			0	0			Thunderstorm Wind (G52)
Niotaze									
Montgomery County	01	0758CST			0	0			Thunderstorm Wind (G52)
Independence									
		Trees and tree limbs blown down throughout town.							
Chautauqua County	01	0800CST			0	0			Flash Flood
Sedan to		1200CST							
Cedar Vale									
		Torrential rains caused widespread flooding, especially in and around Cedar Vale where the flooding reached some homes, the hospital, and nursing home. The flooding was reported by both law enforcement officials and co-operative observers.							
Montgomery County	01	0803CST			0	0			Thunderstorm Wind (G50)
Coffeyville									
		Measured at Coffeyville Airport.							
Labette County	01	0808CST			0	0			Thunderstorm Wind (G52)
Edna									
Montgomery County	01	0820CST			0	0			Thunderstorm Wind (G52)
4 N Coffeyville									
		Trees blown down.							
Labette County	01	0825CST			0	0			Flash Flood
Edna		0900CST							
		Major street flooding.							
Montgomery County	01	0830CST			0	0			Flash Flood
Elk City to		0900CST							
Coffeyville									
		Torrential rains caused flooding of many rural areas across the county.							
Sedgwick County	06	1650CST	0.5	55	0	0			Tornado (F0)
5 N Wichita		1655CST							
		Brief touchdown in open country.							
Sedgwick County	06	1655CST			0	0			Thunderstorm Wind (G63)
Maize									
Sedgwick County	06	1657CST	0.5	55	0	0			Tornado (F0)
Wichita		1700CST							
		Brief touchdown in North Wichita.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
KANSAS, Southeast									
Sedgwick County									
Wichita	06	1657CST			0	0			Thunderstorm Wind (G65)
		Occurred at Mid-Continent Airport.							
Sedgwick County									
Wichita	06	1710CST	0.5	55	0	0			Tornado (F0)
		Brief touchdown in Northwest Wichita.							
Butler County									
2 W Leon	06	1750CST			0	0			Hail (0.75)
Reno County									
Hutchinson	06	1827CST			0	0			Hail (1.75)
Harper County									
Attica	07	1432CST			0	0			Hail (1.00)
Harper County									
Anthony	07	1535CST			0	0			Hail (0.75)
Chase County									
2 NE Strong City	09	1426CST			0	0			Hail (0.75)
Marion County									
4 W Lincolnville	09	1443CST			0	0			Hail (0.88)
Marion County									
Peabody	09	1550CST 1650CST			0	0			Hail (0.75)
Harvey County									
3 W Newton	09	1605CST			0	0			Thunderstorm Wind (G52)
Sedgwick County									
2 E Valley Center	09	1635CST			0	0			Thunderstorm Wind (G52)
Reno County									
1 SW Partridge	09	1637CST			0	0			Thunderstorm Wind (G52)
Sedgwick County									
Wichita	09	1652CST			0	0			Thunderstorm Wind (G52)
Butler County									
Benton	09	1655CST			0	0			Thunderstorm Wind (G52)
Sedgwick County									
Park City	09	1704CST			0	0			Thunderstorm Wind (G52)
Sedgwick County									
Valley Center	09	1714CST			0	0			Flash Flood
		Street flooding.							
Sedgwick County									
Wichita to 5 S Wichita	09	1800CST 2230CST			0	0			Flash Flood
		Slow-moving thunderstorms drenched the Wichita metropolitan area with 2-3 inch rains. Widespread street flooding resulted with water as much as 4 feet deep leaving many vehicles stalled in downtown Wichita. As the thunderstorms drifted south, the flash flooding spread into South Wichita where high water covered most county roads.							
Sumner County									
6 W Wellington to 3 W Wellington	09	1810CST 1818CST			0	0			Thunderstorm Wind (G52)
		Affected Wellington Lake.							
Rice County									
1 S Sterling to 10 N Little River	16 17	1905CST 1700CST			0	0			Flash Flood
		Slow-moving thunderstorms produced rainfalls of 2-3 inches across most of Rice County. Excessive runoff occurred well into the afternoon that resulted in the closure of many roads, especially across east and northeast Rice County.							
Reno County									
Hutchinson	16 17	1930CST 0930CST			0	0			Flash Flood
		Widespread thunderstorms covering most of Reno County produced rainfalls up to 7 inches in and around Hutchinson within a 3-hour period. The torrential rains caused major flash flooding across Hutchinson that inundated many homes, businesses and streets. Flood waters reached depths of 4 feet in some locations that resulted in the closures of many streets.							
Russell County									
Bunker Hill	30	1737CST			0	0			Thunderstorm Wind (G52)
Russell County									
5 N Dorrance	30	1749CST			0	0			Hail (0.75)
Russell County									
5 N Dorrance	30	1749CST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>KANSAS, Southeast</u>									
Russell County 5 N Dorrance	30	1818CST			0	0			Thunderstorm Wind (G61)
Russell County 5 N Dorrance	30	1840CST			0	0			Thunderstorm Wind (G61)
Rice County Saxman	30	2040CST			0	0	0.20K		Thunderstorm Wind (G52)
		Window blown out of minivan.							
Rice County Saxman	30	2110CST			0	0			Thunderstorm Wind (G52)
Saline County 5 NE New Cambria	30	2120CST			0	0			Thunderstorm Wind (G52)
Rice County Saxman	30	2125CST			0	0			Thunderstorm Wind (G52)
Reno County 20 W Hutchinson to 4 N Plevna	30	2306CST 2315CST			0	0			Thunderstorm Wind (G52)
		Tree damage.							
<u>KANSAS, Southwest</u>									
Ness County 5 NNW Beeler	01	0000CST			0	0			Hail (0.75)
Lane County 4 E Pendennis	01	0015CST			0	0			Hail (0.75)
Ness County 6 SW Bazine	01	0040CST			0	0			Hail (0.75)
Pawnee County 7 NNE Rozel	01	0105CST			0	0			Hail (0.75)
Finney County Garden City	01	0115CST			0	0			Hail (0.88)
Finney County Garden City	01	0115CST			0	0			Hail (2.75)
Kearny County 8 N Lakin	01	0115CST			0	0			Hail (1.75)
		Poked holes in siding of house.							
Scott County 14 N Scott City	01	0115CST			0	0			Hail (0.75)
Finney County Garden City	01	0126CST			0	0			Hail (1.25)
Finney County Garden City	01	0130CST			0	0	10K		Flash Flood
		Leaves stripped from trees during the hail storm clogged sewer drains and drainage ditches allowing water to back up into several houses. Low spots also had ponding of water from over 3 inches of rain that fell in less than 1 hour. Thirty-one windows were broken out at the hospital.							
Finney County Garden City	01	0130CST			0	0	53M		Hail (4.00)
		Widespread golfball to softball size hail produced a tremendous amount of damage but miraculously there were no injuries. Almost every house in Garden City sustained damage and all vehicles left in the elements received hail dents or broken windows. Several stories of hail bouncing through rooms were received. The severity of the storm was also unique in that it occurred well after midnight.							
Finney County Garden City	01	0130CST			0	0			Hail (1.00)
Lane County 2 ENE Alamota	01	0130CST			0	0			Hail (1.00)
Lane County 2 ENE Alamota	01	0130CST			0	0			Thunderstorm Wind (G52)
Finney County Garden City	01	0133CST			0	0			Hail (2.75)
Finney County Garden City	01	0140CST			0	0			Hail (1.00)
Finney County Garden City Arpt	01	0142CST			0	0			Thunderstorm Wind (G56)
Finney County 6 SSE Pierceville	01	0145CST			0	0			Thunderstorm Wind (G52)
Finney County Garden City	01	0150CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>KANSAS, Southwest</u>									
Gray County 9 S Charleston	01	0200CST			0	0			Thunderstorm Wind (G52)
Hamilton County 12 N Kendall	01	0200CST			0	0			Hail (0.75)
Finney County Garden City	01	0207CST			0	0			Hail (1.75)
Haskell County 19 NNE Sublette	01	0213CST			0	0			Thunderstorm Wind (G78)
			Eight inch diameter tree limbs blown down.						
Kearny County 1 N Lakin	01	0215CST			0	0			Hail (1.50)
Finney County 8 S Garden City	01	0230CST			0	0			Thunderstorm Wind (G87)
			Pivot sprinkler irrigation overturned.						
Kearny County 14 W Lakin	01	0230CST			0	0			Hail (0.75)
Hamilton County 4 N Kendall	01	0240CST			0	0			Thunderstorm Wind (G61)
Grant County 7 N Ulysses	01	0245CST			0	0			Hail (0.88)
Ford County Wright	01	0250CST			0	0			Thunderstorm Wind (G52)
			Also had 3.20 inches of rain in a short time.						
Ford County 3 S Bellefont	01	0255CST			0	0			Thunderstorm Wind (G52)
			Rolled dog house across the yard. No reports of injuries to fido.						
Edwards County 7 S Offerle	01	0300CST			0	0			Thunderstorm Wind (G61)
			Three inch diameter limbs blown down.						
Haskell County 11 N Sublette	01	0300CST			0	0			Thunderstorm Wind (G52)
Gray County 11 N Copeland	01	0310CST			0	0			Hail (0.88)
Finney County 4 SE Garden City	01	0320CST			0	0			Thunderstorm Wind (G69)
			Three inch diameter limbs blown down.						
Hamilton County 8 N Coolidge	01	0330CST			0	0			Hail (1.75)
Kearny County 17 NW Lakin	01	0330CST			0	0			Hail (0.75)
Kearny County 17 NW Lakin	01	0330CST			0	0			Thunderstorm Wind (G63)
Kiowa County 10 W Greensburg	01	0330CST			0	0			Hail (0.75)
Barber County 10 S Sun City	01	0340CST			0	0			Thunderstorm Wind (G56)
			Three inch diameter limbs blown down.						
Comanche County 14 E Coldwater	01	0340CST			0	0			Thunderstorm Wind (G69)
			Six to eight inch diameter limbs blown down.						
Barber County 3 E Deerhead	01	0345CST			0	0			Hail (0.75)
Barber County 3 E Deerhead	01	0345CST			0	0			Thunderstorm Wind (G61)
Ford County 4 NE Bucklin	01	0345CST			0	0			Thunderstorm Wind (G61)
			Six inch diameter tree limbs blown down.						
Hamilton County 11 SSE Syracuse to 1 SSE Syracuse	01	0350CST			0	0			Hail (0.75)
Kiowa County 2 NW Greensburg	01	0350CST			0	0	1.5K		Thunderstorm Wind
			Power poles blown down.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
KANSAS, Southwest									
Kiowa County 5 WSW Greensburg	01	0350CST			0	0	70K		Thunderstorm Wind (G78)
					Pivot sprinkler overturned...siding stripped off a house and a shed was destroyed.				
Kiowa County 5 SE Greensburg	01	0355CST			0	0	30K		Thunderstorm Wind
					All out buildings destroyed.				
Barber County Hazelton	01	0410CST			0	0			Thunderstorm Wind (G61)
					Four inch diameter limbs blown down.				
Comanche County 2 NW Wilmore	01	0410CST			0	0			Hail (1.00)
Comanche County 2 NW Wilmore	01	0410CST			0	0			Thunderstorm Wind (G52)
Comanche County 2 SE Wilmore	01	0415CST			0	0			Hail (2.00)
Kiowa County 2 ENE Belvidere	01	0415CST			0	0			Hail (1.00)
Kiowa County 2 ENE Belvidere	01	0415CST			0	0			Thunderstorm Wind (G61)
					Four inch diameter limbs blown down.				
Barber County 1 S Hazelton	01	0420CST			0	0			Thunderstorm Wind (G61)
					Four inch diameter limbs blown down.				
Pratt County 4 W Coats	01	0430CST			0	0			Thunderstorm Wind (G52)
Barber County 3 SE Deerhead	01	0445CST			0	0			Hail (1.75)
					Three inches of rain with the storm.				
Barber County 5 E Hardtner	01	0445CST			0	0	0.50K		Thunderstorm Wind
					Power pole blown down.				
Barber County Medicine Lodge	01	0445CST			0	0			Hail (1.75)
Barber County Medicine Lodge	01	0451CST			0	0			Hail (0.75)
Comanche County 6 E Wilmore	01	0458CST			0	0			Heavy Rain
					Four and one half inches of rain in a few hours.				
Barber County 2 N Kiowa	01	0511CST			0	0			Thunderstorm Wind (G52)
Barber County 1 W Sharon	01	0659CST			0	0			Flash Flooding
					Water over highway 160.				
Comanche County 14 E Coldwater	01	0700CST			0	0			Flash Flood
					Three 1/2 inches of water over the road and fences washed out.				
Hamilton County Syracuse	02	1622CST			0	0			Thunderstorm Wind (G52)
					Fireworks stand overturned onto a car. No injuries.				
Hamilton County 17 N Syracuse	02	1647CST			0	0			Thunderstorm Wind (G52)
Hamilton County 3 W Kendall	02	1822CST			0	0			Hail (0.75)
Kearny County 13 NW Lakin	02	1830CST			0	0			Hail (0.75)
Scott County 8 W Scott City	02	1845CST			0	0			Hail (0.75)
Hamilton County 8 N Coolidge	02	1900CST			0	0			Thunderstorm Wind (G56)
Finney County 6 SW Pierceville	02	1920CST			0	0			Thunderstorm Wind (G52)
Kearny County 13 NW Lakin	02	1920CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>KANSAS, Southwest</u>									
Stanton County									
14 NNW Manter	02	1935CST			0	0			Hail (0.75)
Kearny County									
13 NW Lakin	02	2005CST			0	0			Hail (0.75)
Grant County									
8 WNW Ulysses	02	2012CST			0	0			Hail (1.00)
Finney County									
Holcomb	02	2020CST			0	0			Thunderstorm Wind (G52)
Grant County									
13 NE Ulysses	02	2100CST			0	0			Hail (0.75)
Ness County									
3 NW Brownell	02	2147CST			0	0			Thunderstorm Wind (G56)
Hamilton County									
Syracuse	02	2157CST			0	0			Hail (1.00)
Trego County									
9 SE Ogallah	02	2200CST			0	0			Hail (0.75)
Ellis County									
3 NE Ellis	02	2210CST			0	0			Thunderstorm Wind (G56)
Hamilton County									
8 N Kendall	02	2230CST			0	0			Hail (0.75)
Kearny County									
13 NW Lakin	02	2233CST			0	0			Hail (0.75)
Trego County									
Trego Center	03	0135CST			0	0			Hail (0.88)
Hamilton County									
14 NE Syracuse	05	1521CST			0	0			Hail (0.75)
Kearny County									
24 NW Lakin	05	1530CST			0	0			Hail (0.88)
Scott County									
9 NW Scott City	05	1530CST			0	0			Hail (0.75)
Scott County									
6 N Modoc	05	1545CST			0	0			Hail (0.75)
Hamilton County									
10 N Syracuse	05	1620CST			0	0			Hail (0.75)
Stanton County									
Saunders	05	1900CST			0	0			Hail (0.75)
Finney County									
Garden City	05	1930CST			0	0	7.5K		Thunderstorm Wind
									Patio roof blown over a house...big scoreboard blown down and a 25 foot maple uprooted.
Trego County									
5 SE Trego Center	05	1930CST			0	0	2K		Thunderstorm Wind
									Four inch diameter limbs blown down. Shingles blown off roof.
Grant County									
11 SE Hickok	05	2130CST			0	0			Thunderstorm Wind (G61)
									Three to four inch diameter limbs blown down.
Grant County									
1 W Hickok	05	2250CST			0	0			Thunderstorm Wind (G52)
									Three to four inch diameter limbs blown down.
Seward County									
23 N Liberal	05	2315CST			0	0			Hail (0.75)
									Milo and corn shredded.
Meade County									
Missler	06	0000CST			0	0			Thunderstorm Wind (G56)
Kiowa County									
2 W Haviland	09	1535CST			0	0			Hail (1.00)
									Stripped corn stalks. Hail also covered the ground.
Rush County									
La Crosse	17	0210CST			0	0			Flash Flood
									Heavy rain flooded and closed the 9th street bridge.
Rush County									
La Crosse	17	0235CST			0	0			Flash Flood
									Heavy rain flooded the 1st street bridge.
Kearny County									
16 N Lakin	24	2100CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>KANSAS, Southwest</u>									
Hamilton County									
12 N Kendall	25	1810CST			0	0			Hail (0.75)
Stafford County									
Hudson	30	2200CST			0	0	100K		Thunderstorm Wind
A microburst that lasted three minutes caused tremendous damage in the small community. Every building in the town had damage. 15 Homes had major structural damage. An ammonia tank was damaged causing a 2 to 3 block area to be evacuated.									
Stafford County									
5 N Hudson	30	2230CST			0	0			Thunderstorm Wind (G80)
Six to eight inch diameter tree limbs blown down.									
<u>KENTUCKY, Central</u>									
Bullitt County									
Shepherdsville	20	1945EST 2040EST			0	0			Flash Flood
Flash flooding occurred along Highway 61 in Shepherdsville									
Taylor County									
Campbellsville	20	2015EST 2025EST			0	0	100K		Thunderstorm Wind (G60)
A severe thunderstorm with winds of approximately 70 mph hit the town of Campbellsville hard. Roofs were blown off buildings, including the Board of Education building in which water damage occurred to several computers and office equipment. Windows, including plate glass, were blown out of a businesses. A tree was blown onto a mobile home, breaking the home's windows. Also numerous trees and power lines were knocked down onto cars and homes.									
Adair County									
Columbia	20	2040EST			0	0			Thunderstorm Wind (G50)
Several trees downed									
Spencer County									
Elk Creek	21	2050EST 2120EST			0	0			Urban/Sml Stream fld
Water was across the road in places along Highway 155									
Madison County									
Richmond	23	1515EST			0	0			Hail (1.25)
Hart County									
Bonnieville	27	1940EST			0	0			Thunderstorm Wind (G50)
Trees down									
Garrard County									
Buckeye	28	1542EST 1550EST			0	3	80K		Thunderstorm Wind (G60)
A tied down house trailer was rolled about 100 feet into the middle of a road and was destroyed. The adult female and 2 children that were in the home at the time were treated for minor injuries. Also, damage occurred to several homes and barns. Trees were downed. The wind was strong enough to push large rolled bales of hay down a hill.									
<u>KENTUCKY, Eastern</u>									
Knott County									
Topmost	17	1610EST			0	0	0	0	Hail (1.00)
Hail the size of quarters covered the ground in the town of Topmost.									
Rockcastle County									
5 NW Mt Vernon	20	1910EST			0	0	0	0	Thunderstorm Wind
Several trees were blown down.									
Breathitt County									
Jackson	21	1638EST			0	0	5K	0	Thunderstorm Wind
Strong winds blew portions of a roof off an apartment building. The roof pieces landed in an adjacent parking lot causing damage to a nearby vehicle. An off duty National Weather Service employee had significant water damage inside his apartment as well.									
Breathitt County									
Jackson	21	1643EST			0	0	1K		Thunderstorm Wind
Off duty National Weather Service employee reported a large limb fell on a power line. This pulled the power connection and meter off the home and started a small fire.									
Wolfe County									
Campton	23	1630EST			0	0	0	0	Thunderstorm Wind
Several trees blown down in the town of Campton.									
Bell County									
Middlesboro	24	1200EST			0	0	2K	0	Thunderstorm Wind
Strong winds blew several trees down onto power lines across the town of Middlesboro. Approximately one-third of the town was without power for several hours.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

KENTUCKY, Northern

Pendleton County

Falmouth 26 2010EST
2015EST
Trees knocked down. 0 0 3K **Thunderstorm Wind (G50)**

Gallatin County

Ryle 26 2020EST
2025EST
Trees downed. 0 0 3K **Thunderstorm Wind (G50)**

KENTUCKY, Southwest

Calloway County

**5 S Murray to
1 NW New Concord** 01 1842CST
1853CST 9 400 0 0 100K **Tornado (F1)**

The tornado formed along U.S. Highway 641 about 5 miles south of Murray and tracked east into the New Concord area. The tornado was rated F-1 intensity with top winds near 110 MPH. Numerous trees were uprooted or snapped off along the path of the tornado. Some of the trees fell on utility lines, vehicles, and buildings. The area was sparsely populated, so damage was relatively light considering the path length and width. At least a dozen or so homes received some damage, mostly light roof or siding damage. There was moderate damage to at least a couple homes. Several barns were damaged. At one residence, a porch was damaged, along with other items such as a television antenna, fence, and swimming pool. Sheet metal from a barn was blown into treetops.

Trigg County

Cadiz 01 1925CST
Several trees were blown down near Cadiz. 0 0 3K **Thunderstorm Wind (G52)**

Christian County

Hopkinsville 01 1935CST
A couple of trees were blown down. 0 0 **Thunderstorm Wind (G50)**

Todd County

Countywide 02 0945CST
1045CST 0 0 20K **Flash Flood**

Slow-moving, nearly stationary thunderstorms dumped extremely heavy rain over central and southern parts of Todd County. Estimates ranged up to 4 inches in 2 hours. An unofficial measurement of 6.5 inches was reported just north of Elkton. Numerous creeks and streams were out of their banks, with many road closures.

KYZ001>022

Fulton - Hickman - Carlisle - Ballard - Mcracken - Graves - Livingston - Marshall - Calloway - Crittenden - Lyon - Trigg - Caldwell - Union - Webster - Hopkins - Christian - Henderson - Daviess - Mclean - Muhlenberg - Todd

18 1300CST 1 0 **Excessive Heat**
31 2359CST

Excessive heat and humidity during the latter half of July took a toll on the unprepared. In Hopkinsville, a 75-year-old man died in his home as a result of hyperthermia. The single window air conditioner in the house was inoperative, allowing the indoor temperature to reach 120 degrees. All of the windows were closed, and some were boarded up. The unrelenting heat triggered all-time peak-usage records at several Kentucky utilities, including the Paducah and Owensboro power systems. Some minor related outages were reported. The weather increased heat-related hospital visits, primarily for heat exhaustion. Shelters were opened at a few locations, and charities distributed free fans to the needy. Western Kentucky was under a Heat Advisory for over a week. High temperatures reached 100 degrees at Paducah on the 29th and 30th, with afternoon heat indices commonly from 110 to 115 degrees. This was the fifth warmest July on record at Paducah. M75PH

Calloway County

2 E Murray 24 1340CST
Several trees were blown down. 0 0 4K **Thunderstorm Wind**

LOUISIANA, Northeast

Morehouse Parish

Collinston 07 1535CST
Power lines were blown down. 0 0 5K **Thunderstorm Wind**

LOUISIANA, Northwest

Red River Parish

1 S Loggy Bayou 05 1750CST
Trees down along Hwy 515. 0 0 **Thunderstorm Wind (G52)**

Sabine Parish

Pleasant Hill 06 1720CST
Numerous powerlines down. 0 0 **Thunderstorm Wind (G57)**

Sabine Parish

Converse 06 1735CST
Trees down across railroad track in town. 0 0 **Thunderstorm Wind (G52)**

De Soto Parish

**Mansfield to
Pelican** 06 1740CST
Numerous trees and powerlines down. 0 0 **Thunderstorm Wind (G57)**

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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LOUISIANA, Northwest

Lincoln Parish

Ruston	07	1830CST			0	0	2K		Lightning Downtown Ruston was struck by lightning which caused a circuit to open at the generating plant which feeds the diesel plant substation. That in turn led to a circuit overload on the alternate feeder that blacked out the diesel plant substation that in turn blacked out downtown for about an hour. At the same time two feeders out of the Maple Street substation was opened and that collapsed the power grid across the west side of town.
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Webster Parish **Minden**

	21	1530CST			0	0	5K		Thunderstorm Wind Several large trees toppled. A pickup truck was damaged when a tree fell on it in the vicinity of Sheppard Street and Spann Street.
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Bienville Parish

Lucky	25	1438CST			0	0			Thunderstorm Wind (G56) Numerous trees down along Hwy 4.
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LAZ001

Caddo	27	1500CST			1	0			Excessive Heat Middle aged man died from a heat stroke while presumed fishing along the Red River. M52OU
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LOUISIANA, Southeast

Jefferson Parish

5 NE (Msy)Moisant Fld 5 N (Msy)Moisant Fld New	02	0755CST			0	0			Waterspout A waterspout was observed over southwest Lake Pontchartrain west of the Causeway Bridge.
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Tangipahoa Parish

Ponchatoula	10	1400CST			0	0	1K		Thunderstorm Wind Thunderstorm winds split a pecan tree that knocked an electrical transformer down.
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West Feliciana Parish **St Francisville**

	16	1645CST			0	0	0.50K		Thunderstorm Wind The West Feliciana Sheriff's Office reported trees blown down just northwest of St. Francisville.
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Terrebonne Parish

Dulac	24	1100CST			2	0			Lightning A lightning strike killed two men while fishing in a 15 foot aluminum boat on Muskrat Bayou. M67BO, M43BO
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Jefferson Parish

Avondale	24	1310CST			1	0			Lightning A lightning strike killed a man walking through a field at a landfill. M45OU
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Tangipahoa Parish

Tickfaw	24	1430CST			0	0	0.50K		Thunderstorm Wind A telephone pole was snapped off and a tree was blown down.
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East Baton Rouge Parish

5 SE Baton Rouge	27	1556CST	0.1	10	0	0			Tornado (F0)
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A cooperative observer and trained spotter reported a brief tornado touchdown near the southeast city limits of Baton Rouge near Highland Road east of Interstate Highway 10. Several trees had limbs knocked down but otherwise no significant property damage was reported.

Ascension Parish

Countywide	27	1600CST			0	0	0.50K		Thunderstorm Wind Ascension Parish Emergency Management reported 7 trees blown down across the north half and southeast sections of the parish.
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Tangipahoa Parish

Amite	28	1500CST			0	0			Lightning A man on electrical power poles and transmission lines was struck by lightning. He was taken to a hospital and examined. He was released with no apparent injuries.
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LOUISIANA, Southwest

St. Mary Parish

4 SW Louisa	03	1330CST			0	1			Lightning A 13 year old girl was struck by lightning while on the beach at Cypremort Point. She received minor injuries.
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Iberia Parish

Jeanerette	12	1100CST			0	0	2K		Thunderstorm Wind Many trees were downed in the Jackson Town subdivision.
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Calcasieu Parish

Vinton	12	1428CST			0	0	2K		Thunderstorm Wind Trees and power lines down.
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>LOUISIANA, Southwest</u>									
Calcasieu Parish									
4 N Sulphur	12	1525CST			0	0	2K		Thunderstorm Wind
			Trees and power lines down.						
Iberia Parish									
New Iberia	17	1430CST			0	0			Hail (1.00)
Iberia Parish									
New Iberia	17	1600CST			0	0	5K		Flash Flood
			Most city streets had standing water or were flooded after 4 to 6 inches of rain fell in less than 2 hours.						
Iberia Parish									
Loreauville	24	1300CST			0	0	2K		Flash Flood
			Water approaching several homes. Intersection of Highway 182 and 90 had water over the road.						
Avoyelles Parish									
Mansura	27	1820CST			0	0	2K		Thunderstorm Wind
			Trees and power lines down.						
<u>MAINE, North</u>									
Penobscot County									
Newport	05	0430EST			0	0			Thunderstorm Wind (G52)
			Trees and powerlines were downed with reports of scattered power outages.						
Piscataquis County									
Abbot Vlg	05	0430EST			0	0			Thunderstorm Wind (G52)
			Trees and powerlines were downed with reports of scattered power outages.						
Penobscot County									
10 NE Bangor	05	0445EST			0	0			Funnel Cloud
Penobscot County									
Bangor	05	0445EST			0	0			Thunderstorm Wind (G52)
			Numerous reports of snapped branches...downed trees...downed utility poles and power lines from across the city.						
Penobscot County									
Orono	05	0500EST			0	0			Thunderstorm Wind (G52)
			A 100 year old maple tree was uprooted causing minor damage to the roof of an adjacent house as it fell.						
Aroostook County									
Mars Hill	18	1452EST			0	0			Thunderstorm Wind (G60)
			Many branches were snapped off and several powerlines were downed.						
Aroostook County									
3 W Bridgewater	18	1455EST			0	0			Thunderstorm Wind (G60)
			Numerous trees ranging from 8-18 inches in diameter were uprooted onto Packard Road closing it for a time.						
Aroostook County									
3 N Bridgewater	18	1455EST			0	0			Thunderstorm Wind (G60)
			Several large trees were split and/or uprooted. One tree fell against a house. Several hay and potato fields were flattened by straight-line winds.						
Aroostook County									
Bridgewater	18	1500EST			0	0			Thunderstorm Wind (G60)
			Several large trees were uprooted along Route 1 at the north end of town briefly closing the road.						
Aroostook County									
3 NE Bridgewater	18	1500EST			0	0			Thunderstorm Wind (G60)
			Several 6-12 inch diameter trees were uprooted.						
Penobscot County									
Lincoln	22	0800EST			0	0			Lightning
			Lightning strikes triggered a forest fire which burned 1 acre of land.						
Washington County									
Beals	23	0030EST			0	0	40K		Lightning
			Lightning strikes caused a combined \$40000 in damage to two boats.						
Washington County									
1.5 S Woodland	23	1330EST			0	0			Lightning
			Lightning strikes triggered a forest fire which burned nearly 4 acres of land.						
Aroostook County									
15 W Clayton Lake	28	1317EST			0	0			Hail (0.75)
			The hail stripped leaves from trees.						
Aroostook County									
St Francis	28	1320EST			0	0			Hail (0.88)
Penobscot County									
Shin Pond	28	1550EST			0	0			Hail (0.75)
			Several tree limbs were also snapped off by strong winds.						
Aroostook County									
Houlton	28	1620EST			0	0			Thunderstorm Wind (G60)
			Windows were blown out of a house.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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MAINE, North

**Hancock County
Eastbrook**

29 1500EST 0 0 **Lightning**
Lightning strikes triggered a forest fire which burned 4 acres of land.

MAINE, South

**MEZ007>009-
012>014-018>028**

Northern Oxford - Northern Franklin - Central Somerset - Southern Oxford - Southern Franklin - Southern Somerset - Interior York - Interior Cumberland - Androscoggin - Kennebec - Interior Waldo - Coastal York - Coastal Cumberland - Sagadahoc - Lincoln - Knox - Coastal Waldo

01 0000EST 0 0 **Dry Conditions**
31 2359EST

Dry conditions persisted through July with some locations reporting only 20 percent of the normal rainfall. Agriculture was again the hardest hit. Most fruits and vegetables were undersized and the harvest was (or will be) much earlier than normal because of the dry conditions. The hay crop was also lower than normal. Many irrigation ponds went dry. The dry conditions increased the fire danger throughout the state and many lightning induced brush or forest fires were reported.

During the month, 101 new daily record low flows occurred in Maine rivers. Eight of the United States Geological Survey's ground-water monitoring wells were at record lows for July. The Palmer drought severity index remained in the moderate to severe category all month.

MEZ022-028

Interior Waldo - Coastal Waldo

02 0600EST 0 0 **Strong Winds**
1100EST

Gusty southwest winds ahead of an approaching cold front downed trees and caused scattered power outages in parts of Waldo County. Wind gusts to 33 mph were reported at Augusta and Rockland.

**Franklin County
Coburn Gore**

05 0316EST 0 2 **Thunderstorm Wind (G70)**
0321EST

**Franklin County
Rangeley**

05 0329EST 0 0 **Thunderstorm Wind (G70)**
0334EST

**Franklin County
Eustis**

05 0330EST 0 0 **Thunderstorm Wind (G70)**
0335EST

**Franklin County
Stratton**

05 0334EST 0 0 **Thunderstorm Wind (G60)**
0339EST

**Franklin County
Madrid**

05 0336EST 0 0 **Thunderstorm Wind (G60)**
0341EST

**Franklin County
Phillips**

05 0341EST 0 0 5K **Thunderstorm Wind (G60)**
0346EST

**Franklin County
Avon Corner**

05 0342EST 0 0 **Thunderstorm Wind (G60)**
0347EST

**Oxford County
Mexico**

05 0342EST 0 0 **Thunderstorm Wind (G60)**
0347EST

**Oxford County
Rumford**

05 0342EST 0 0 **Thunderstorm Wind (G60)**
0347EST

**Franklin County
Carrabassett**

05 0343EST 0 0 **Thunderstorm Wind (G60)**
0348EST

**Franklin County
Kingfield**

05 0346EST 0 0 40K **Thunderstorm Wind (G60)**
0351EST

**Franklin County
Strong**

05 0347EST 0 0 **Thunderstorm Wind (G60)**
0352EST

**Oxford County
Bethel**

05 0347EST 0 0 **Thunderstorm Wind (G60)**
0352EST

**Somerset County
New Portland**

05 0349EST 0 0 **Thunderstorm Wind (G60)**
0354EST

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MAINE, South									
Somerset County 7 SSW Bingham	05	0351EST 0356EST			0	0			Thunderstorm Wind (G60)
Somerset County Caratunk	05	0351EST 0356EST			0	0			Thunderstorm Wind (G60)
Franklin County Farmington	05	0353EST 0358EST			0	0			Thunderstorm Wind (G60)
Franklin County Jay	05	0353EST 0358EST			0	0			Thunderstorm Wind (G60)
Somerset County The Forks	05	0353EST 0358EST			0	0			Thunderstorm Wind (G60)
Somerset County 1 NW Bingham	05	0356EST 0401EST			0	0			Thunderstorm Wind (G60)
Androscoggin County Livermore Falls	05	0357EST 0402EST			0	0			Thunderstorm Wind (G60)
Somerset County Bingham	05	0357EST 0402EST			0	0			Thunderstorm Wind (G60)
Somerset County Solon	05	0358EST 0403EST			0	0			Thunderstorm Wind (G60)
Somerset County Embden	05	0359EST 0404EST			0	0			Thunderstorm Wind (G60)
Androscoggin County Livermore	05	0400EST 0405EST			0	0			Thunderstorm Wind (G60)
Somerset County Athens	05	0406EST 0411EST			0	0			Thunderstorm Wind (G60)
Somerset County St Albans	05	0412EST 0417EST			0	0			Thunderstorm Wind (G60)
Somerset County Hartland	05	0415EST 0420EST			0	0			Thunderstorm Wind (G60)
<p>A line of fast-moving, early-morning thunderstorms knocked over numerous trees and caused power outages in a path from the Maine mountains to east-central Maine. Large areas were left without power, some for several days. About 16,000 customers lost electrical service during the storm. Many roads were closed due to downed trees. A Livermore woman and her son were injured in Coburn Gore when a tree limb crashed on the tent in which they were sleeping; three others in the tent were uninjured. In Phillips, a grocery store reportedly lost about \$5,000 in food due to spoilage. In Kingfield, a 100 foot tall pine tree fell on a garage damaging the garage, two cars and a canoe.</p>									
Lincoln County Alna	05	0430EST			0	0			Lightning
<p>Lightning from an early morning thunderstorm struck a home in Alna, completely destroying the electrical system of the home. Although the home filled with a black smoke, no fire damage was reported. Although the home was equipped with lightning rods, the lightning apparently struck a nearby tree, jumped to a nearby lamppost, and then travelled into the house where it melted the fuse box, broke glass, tore a door off it's hinges, and knocked out a large section of the exterior wall.</p>									
Oxford County Peru	05	0430EST			0	0			Lightning
<p>Lightning struck the roof of a home in Peru, blew out windows, broke glass objects, knocked a wall out about 7 inches, then travelled through the home's electrical system where it destroyed electrical wiring and a variety of phone and electronic equipment. The lightning also singed clothes that were hanging on metal hangers from a metal pipe. The main fuse box in the home and the garage door opener were also destroyed.</p>									
Oxford County Wilson Mills	06	1340EST			0	0			Thunderstorm Wind (G50)
York County West Lebanon	06	1600EST			0	0			Thunderstorm Wind (G50)
<p>Severe thunderstorms knocked down trees in Wilson Mills in Oxford County and near West Lebanon in York County.</p>									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

MAINE, South

York County

Eliot

06 1615EST **0** **0** **Lightning**

Lightning struck a home in Eliot and ignited a fire which was contained to the attic of the building; both the first and second floors of the home sustained water damage.

Lincoln County

South Bristol

17 1500EST **0** **0** **Lightning**

Lightning was the apparent cause of a forest fire that began to blaze about 1:30 pm on the 24th. The fire was believed to have been caused by a lightning strike on the 17th. The fire apparently smoldered underground for about a week.

Lincoln County

Countywide

18 1330EST **0** **0** **Lightning**
1530EST

Lightning ignited several forest and brush fires during the afternoon of the 18th in Lincoln County as dry conditions contributed to the volatility of the situation. More than 30 firefighters were involved in fighting the blazes.

Cumberland County

West Scarborough

23 1508EST **0** **0** **Hail (1.00)**
1515EST

An isolated thunderstorm produced 1 inch hail in West Scarborough near Dunston Corners. Also, half inch hail reportedly covered the ground near Old Orchard Beach.

Oxford County

Bethel

25 1100EST **0** **0** **Lightning**

A pre-Civil War home in Bethel sustained extensive fire damage after being struck by lightning. It took two hours to contain the fire, and the upper stories of the home will have to be rebuilt. The remainder of the home suffered smoke and water damage.

MARYLAND, Central

**MDZ002>007-
009>011-013>014-
016>018**

**Allegheny - Washington - Frederick - Carroll - Northern Baltimore - Harford - Montgomery - Howard -
Southern Baltimore - Prince Georges - Anne Arundel - Charles - St. Mary'S - Calvert**

01 0000EST **0** **0** **Drought**
31 2359EST

High pressure was the dominant weather feature across Maryland during the month. This forced most rain producing storm systems to steer north of the region and resulted in the continuation of the climatological, meteorological, and hydrological drought that has plagued the area since last summer. The average monthly high temperature at Baltimore/Washington International Airport (BWI) of 91.4 degrees was just shy of the 91.9 degree record. Record highs were set on the 5th and 6th, and temperatures rose above 90 degrees on 22 of the 31 days. By the last week of July the Palmer Drought Index, a measure of long term drought conditions, indicated Maryland was in an extreme drought. The drought warning issued by the Maryland Department of the Environment in December remained in effect through the month. The governor issued a satellite drought emergency on the 29th. July was the 14th month in the past 16 months that precipitation was below normal. From August 1998 through July 1999 precipitation was a staggering 16 inches below average, the 2nd driest 12 month period on record. Only 2.06 inches of rain fell at BWI during the month of July, 1.63 inches below normal. The Maryland Science Center at Inner Harbor Baltimore reported 4.11 inches for the month, but 3.57 inches of the total fell on the 22nd. Additional July rainfall totals included Allegany County at 1.1 inches, Washington County at 2.0 inches, Frederick County at 1.4 inches, Prince Georges County at 0.7 inches, Carroll County at 3.5 inches, Anne Arundel County at 2.0 inches, and St. Mary's County at 1.8 inches.

The lack of rainfall affected water levels along the Potomac River and the Chesapeake Bay. In the Potomac watershed where below normal water levels have been recorded for the past 11 months, several record low daily flows were recorded. The flow of water past the Washington D.C. gauging station was only 18% of the long term monthly average. The low water level forced the town of Brunswick in Frederick County to cancel their annual Great River Race. For the first time water was released from the Randolph and Little Seneca Reservoirs near the Potomac headwaters on July 11th and 15th respectively to help maintain a safe water level for wildlife and human consumption. By July 31st, the Jennings Randolph Reservoir was 13.8% below capacity and the Little Seneca Reservoir was down 4 inches. The Cranberry Reservoir serving the Westminster area was near record low flow. In the city of Cumberland, Lake Gordon and Lake Koon were both 11 inches below the spillway. Officials in Frostburg reported the Piney Dam was 8 inches low. Liberty Reservoir, one of the main water sources for 1.8 million people in the Baltimore area, was 24 feet below normal and was holding less than half of its 43 billion gallon capacity. The Pretty Boy Reservoir was down 18 feet and the Loch Raven Reservoir was down 5 feet. A combination of water from these three reservoirs showed only a 35 day supply of water left for the Baltimore area by the end of July. The two main reservoirs serving Montgomery, Howard, and Prince Georges Counties, the T. Howard Duckett and T. Howard Duckett Reservoirs were down 35% and 58% respectively by July 31st. Nearly 60 communities across the state instituted mandatory or voluntary water restrictions. Several Frederick County towns and the town of Bel Air imposed mandatory water restrictions to reduce the strain on reservoirs and wells. About 12% of Maryland's population depend on wells for water. The community of Point of Rocks had to pull two of its four wells off-line because sediment appeared in the water. In Harford County, 30 homes experienced well failures and Deer Creek was at a critically low level. The total fresh water flow into the Chesapeake Bay from tributaries has been below average for the past 11 months and hovered around a record low for a third consecutive month. The deficit of fresh water resulted in an increase of salinity levels in the bay and had a noticeable impact on wildlife. Hundreds of fish died from lack of fresh water and the jellyfish population was much higher than normal. A popular swimming beach at Greenbriar State Park near Hagerstown had to be closed for the summer after rain never came to fill the 50 acre reservoir. Closing the beach for the summer resulted in \$120,000 in lost revenues.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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MARYLAND, Central

resulting in \$15,000 damage. Rainfall totals for the day included 3.95 inches in Brooklyn Park in Anne Arundel County, 3.57 inches at Inner Harbor Baltimore, 2.03 inches at Fullerton, 1.44 inches at Randallstown in Baltimore County, and 1.10 inches at Baltimore/Washington International Airport. Because a significant downpour of rain had not occurred in the area in several months, unusual effects were reported. The heavy rain washed 3 months of sewer and creek-bed trash into Baltimore's Inner Harbor area. Tires, appliances, plastic bottles, and other debris beached paddle boats and resulted in a terrible eyesore for tourists. It took 6 dump trucks to remove the 40 tons of debris which had collected in the harbor.

Charles County South Portion

24	1230EST				0	0	10K		Thunderstorm Wind
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Trees downed in Charlotte Hall, Faulkner, Newburg, Tompkinsville, and Rock Point

Calvert County St Leonard

24	1330EST				0	0	2K		Thunderstorm Wind
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Trees and power lines downed

Calvert County Lusby

24	1340EST				0	0	10K		Thunderstorm Wind
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Trees and power lines downed, a fallen tree damaged a home

St. Mary'S County Mechanicsville

24	1350EST				0	0	22K		Thunderstorm Wind
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Damage to 4 barns and a home, sheep killed by flying debris

St. Mary'S County Patuxent River

24	1355EST				0	0			Thunderstorm Wind (G53)
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Measured 61 MPH gust at Patuxent Naval Air Station

Scattered thunderstorms that developed across North Central Virginia moved across the Potomac River and across extreme South Central Maryland between 1:30 PM and 3:30 PM EDT. These storms produced winds in excess of 55 MPH, frequent lightning, and heavy downpours. The storms moved across the southern portion of Charles County between 1:30 PM and 2:00 PM EDT. Severe winds downed trees in Charlotte Hall, Faulkner, Newburg, Tompkinsville, and Rock Point. Electrical wires were also downed in Issue and Cobb Island. In addition, lightning struck electrical transformers in Issue and White Plains. Severe winds moved through Calvert County between 2:00 PM and 2:45 PM EDT. Trees and power lines were downed in St. Leonard. Trees and power lines were also toppled in Lusby, and one home in the Chesapeake Ranch Estates area suffered damage when an uprooted tree fell on the structure. The storms also damaged property near Mechanicsville in St. Mary's County around 3:00 PM EDT, resulting in \$22,000 in losses. Severe winds ripped one barn in two, destroying half of the structure and throwing debris in a circular pattern nearby. Nails were popped on a second barn, and moderate damage was reported to two other barns. Sheep were killed by flying debris. A window was blown in on a home and a tree landed on the roof of a farm house. Hail accompanied the storm and the high winds lasted for 4 minutes. At 2:55 PM EDT a 61 MPH wind gust was recorded at Patuxent Naval Air Station.

Washington County Countywide

25	1900EST				0	0	10K		Thunderstorm Wind
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Trees and power lines downed

A thunderstorm developed over West Central Maryland and moved across Washington County between 7:30 PM and 8:30 PM EDT. The storm produced winds in excess of 55 MPH and downed several trees and power lines across the county.

Frederick County Frederick

28	1500EST				0	0	15K		Thunderstorm Wind (G50)
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22 intersections closed by fallen trees and power lines, one home damaged by downed tree

Frederick County South Portion

28	1515EST				0	0	10K		Thunderstorm Wind
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60 trees downed with a concentration between New Market and Green Valley

Frederick County Monrovia

28	1521EST				0	0	130K		Lightning
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150 year old log home hit by lightning and burned to the ground

Washington County Boonsboro

28	1525EST				0	0	0.50K		Thunderstorm Wind
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Large tree limbs downed on Interstate 68

Washington County Sharpsburg

28	1525EST				0	0	0.50K		Thunderstorm Wind
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Large tree limbs downed on Shepherdstown Pike

Carroll County Mt Airy

28	1530EST				0	0	5K		Thunderstorm Wind (G60)
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69 MPH gust, trees downed including one across Interstate 70

Carroll County Sykesville

28	1530EST				0	0	5K		Thunderstorm Wind
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Trees downed

Howard County West Portion

28	1530EST				0	0	5K		Thunderstorm Wind
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Trees downed

Afternoon temperatures in the 90s and very muggy air led to the development of thunderstorms across North Central Maryland which produced heavy downpours, frequent lightning, and damaging winds in excess of 55 MPH. The storms moved through Washington,

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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MARYLAND, Central

Frederick, Carroll, and Howard Counties between 3:30 PM and 5:30 PM EDT. An observer near Westminster reported 1.5 inches of rainfall in 45 minutes. In Washington County, large tree limbs were downed by severe winds onto Interstate 68 near Boonsboro and on Shepherdstown Pike near Sharpsburg. In Frederick County, trees and power lines were downed onto Route 180 at the intersection of Mt. Zion Road, Main Street in New Market, Route 75 between Route 80 and Ed McClain Road, and Route 144. A concentrated area of tree damage also occurred between Monrovia and Bartholows Road. The city of Monrovia was hit especially hard. One home lost part of its roof when several trees fell onto the structure. A car in the driveway was also damaged by a fallen tree. A nearby 150 year old log home valued at \$130,000 was hit by lightning and burned to the ground. The fire department reported delays reaching the structure because of roads blocked by downed trees. In the city of Frederick, one house was damaged and 22 intersections were blocked by fallen trees. 150,000 customers in and around Frederick County lost power as a direct result of the storm. Winds gusted to 69 MPH at 4:30 PM EDT at Mt. Airy in Carroll County. Several trees were downed near Mt. Airy and Sykesville, including one that fell across busy Interstate 70 near mile marker 72. The storm was still powerful enough to topple a handful of trees in the western part of Howard County. By the time the storms reached Baltimore County, lightning was the biggest threat. 21,000 customers in the county lost power due to electrical surges directly related to the storm.

Howard County Clarksville

30	1715EST				0	0	5K		Thunderstorm Wind
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Trees and power lines downed

Howard County West Friendship

30	1715EST				0	0	5K		Thunderstorm Wind
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Trees and power lines downed

Prince George'S County Laurel

30	1735EST				0	0	0.50K		Thunderstorm Wind
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Tree downed

Baltimore County Hereford

30	1925EST				0	0			Hail (4.00)
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Baltimore County 1 S Beckleysville to 2 W Evna

30	1930EST 1935EST	3	50		0	0	10K		Tornado (F0)
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Baltimore County Cockeysville

30	1945EST				0	0			Hail (1.75)
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Baltimore City (C) Baltimore

30	1950EST				0	0			Hail (1.75)
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A thunderstorm producing wind gusts in excess of 55 MPH, heavy downpours, and dangerous lightning developed over Howard County around 6:00 PM EDT. The storm moved to the south and crossed into Prince Georges County by 6:30 PM EDT. As the storm moved through the Clarksville and West Friendship area of Howard County, trees and power lines were downed. The storm also downed a tree in Laurel as it moved through Prince Georges County. A second severe thunderstorm developed just north of the Mason-Dixon line around 8:00 PM EDT and moved south across Baltimore County and the city of Baltimore through 9:00 PM EDT. As the storm moved through the town of Hereford in Northern Baltimore County, grapefruit sized hail was reported. The storm also produced a weak, short-lived tornado that touched down one mile south of Beckleysville around 8:30 PM EDT. The tornado moved southeast and stayed on the ground for 3 miles until it reached the Mt. Carmel area. Several trees were damaged or downed in the path of the tornado, and weak structures such as lawn furniture and a tent were also blown over. As the storm moved into the southern half of the county it produced golf ball sized hail at Cockeysville and in the city of Baltimore.

MARYLAND, Northeast

MDZ008-012-015- 019>020 Cecil - Kent - Queen Annes - Talbot - Caroline

01 31	0000EST 2359EST				0	0			Drought
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The drought continued throughout July across the Maryland Eastern Shore. Unseasonably dry weather persisted through the first three weeks of the month. Heavy rain the morning of the 22nd across southern sections of the Eastern Shore gave Talbot County (on a county weighted average) above normal precipitation for the month (4.6 inches). But below normal rainfall continued elsewhere across the Eastern Shore and ranged (on a county weighted average) from 1.4 inches in Cecil County to 3.4 inches in Queen Anne's County. The July monthly normal rainfall is around 4 inches.

The effects of the drought continued to increase as the month wore on. Freshwater flow at the start of the month by the Susquehanna River into Chesapeake Bay was about 25 percent of normal and set an all time record low, surpassing June of 1964. About 200,000 young fish of all represented species were killed in two Chesapeake Bay tributaries in late June and early July. Low oxygen levels caused by the drought induced low streamflows were blamed for the deaths. During the first week of the month, Cecilton and Rising Sun in Cecil County imposed mandatory watering restrictions. Several other municipalities called for voluntary conservation. This was also echoed on July 7th by the Maryland Department of the Environment which called on a voluntary reduction of water consumption of 10 to 15 percent. With no widespread rain in sight, on July 29th Maryland Governor Parris Glendening declared the first ever statewide drought emergency. The governor asked residents to voluntarily conserve water, asked for federal money to help farmers and freed \$3 million dollars from the state to help farmers. The same day North East in Cecil County banned all outdoor use of water.

The drought coincided with the growing season. The April 1st through July 31st four month period was the driest on record over the past 105 years in the state of Maryland. Farmers in Maryland were feeling a double pinch. Irrigation, if possible, was driving up the

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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MARYLAND, Northeast

costs of farming. Meanwhile, ideal growing conditions elsewhere in the country kept crop prices low. Hay and pasture crops were hardest hit by the drought. By the end of the month about 90 percent of the topsoil and subsoil moisture level was rated as either short or very short. About seventy percent of all pastures and thirty-six percent of the corn crop was rated as either poor or very poor. Many farmers either started to cull their herds or feed livestock hay normally reserved for the winter. The worsening drought could prompt the federal Farm Service Agency to seek a disaster declaration for Maryland and Delaware farmers as early as August. This would be the third straight year that a dry growing season has cut crop production deeply enough to trigger federal assistance in the region.

MDZ008-012-015-019>020

Cecil - Kent - Queen Annes - Talbot - Caroline

04	0800EST	0	10	Excessive Heat
06	2000EST			

A very strong and oppressive high pressure system that extended from the surface to aloft gave the Maryland Eastern Shore a brutal heat wave that included the entire Independence Day weekend. High temperatures reached the 90s for the first time of the 3rd, but sweltering humidity and record breaking maximum temperatures of around 100 degrees occurred from Independence Day through the 6th. The combination of the temperature and humidity produced heat indices of around 110 degrees during the afternoon of each day. A cold front moved through the region early in the morning on the 7th. While high temperatures continued to reach the 90s from the 7th through the 10th, humidity levels were lower. A stronger cold front moved through the region during the afternoon of the 10th brought an even cooler and drier air mass. This ended the run of 90 degree highs.

About 10 people were reported to suffer heat exhaustion during this heat spell. Most were not avoiding strenuous activities. The heat killed tens of thousands of chickens throughout the Delmarva Peninsula. One company alone lost around 33,000 chickens. The record heat led to record demand for power. Conectiv Energy reported a record power usage of 3,418 megawatts within an hour on the 5th. The PJM Interconnection, a power pool that links electric utilities throughout the area churned out a record 52,000 megawatt hours of power on the 6th. The excessive demand for electricity strained electrical systems. Conectiv Energy instituted rolling blackouts to 40 percent of its 1.1 million customers in Maryland, Delaware and New Jersey at 1040 a.m. EDT on the 6th. A generator at Conectiv's Indian River Power Station failed. The blackouts affected 20,000 customers for 20 minutes at a time and included all of the Eastern Shore. Area wide, the PJM reduced voltage by 5 percent at 2 p.m. EDT on the 6th to deal with the huge demand that was straining the electrical system. Locally Choptank Electric reported only a few overloaded related outages on the weekend.

The highest temperatures during this hot spell occurred mainly on the 5th. They included 103 degrees in Havre De Grace (Harford County), 102 degrees at the Baltimore Washington International Airport, 101 degrees at Easton (Talbot County), 100 degrees in Salisbury (Wicomico County) and 97 degrees at Rock Hall (Kent County). Many daily record high temperature records were set on the 5th and the 6th.

MDZ008-012-015-019>020

Cecil - Kent - Queen Annes - Talbot - Caroline

16	0900EST	0	0	Excessive Heat
19	2000EST			

Another strong and oppressive ridge of high pressure gave the Maryland Eastern Shore four days of oppressive heat and humidity and five consecutive days of high temperatures in the 90s. High temperatures reached the 90s again on the 15th. The air mass on the 15th was still relatively dry. Southwest winds continued to increase humidity levels. The combination of the temperature and humidity produced heat indices of around 100 degrees during the afternoon of the 16th and around 105 degrees during each afternoon from the 17th through the 19th. The hottest part of this air mass passed over northern parts of the Middle Atlantic States. The most oppressive conditions were experienced in the northern parts of the Eastern Shore. A weak backdoor cold front moved south through the region during the evening of the 19th. While the air mass was not considerably drier on the 20th, skies were cloudy as the front stalled near the area. As a high pressure system built into New England on the 21st, some dry air briefly filtered southward.

The excessive heat and the lack of rain continued to decimate non-irrigated farms across the Eastern Shore. The high temperatures again put a strain on electrical utilities. For the second time this month, on Monday July 19th the PJM Interconnection Association called for a 5 percent reduction in voltage from 115 p.m. EDT through 210 p.m. EDT.

The highest temperatures during this hot spell were scattered from the 17th through the 19th. They included 98 degrees at the Baltimore-Washington International Airport and 94 degrees in Salisbury. Due to higher historical daily maximum temperature records, fewer daily high temperature records were set.

**Caroline County
Central Portion**

22	0300EST	0	0	Heavy Rain
	0700EST			

**Queen Anne'S County
Queenstown**

22	0300EST	0	0	Heavy Rain
	0700EST			

**Talbot County
Countywide**

22	0300EST	0	0	Heavy Rain
	0700EST			

Slow moving thunderstorms dropped between two and three inches of rain across southwestern Queen Anne's County, central Caroline County and Talbot County during the morning of the 22nd. This caused some poor drainage flooding, particularly in Talbot County. Officers had to block several flooded roads within Easton. Storm totals included 3.08 inches in Denton (Caroline County), 3.00 inches in Saint Michael's (Talbot County) and 2.00 inches in Easton (Talbot County).

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

MASSACHUSETTS, Central and East

only fell to a low of 81 degrees at Logan International Airport in Boston on July 5th, which was a record minimum high temperature for the date. The previous record was 79 degrees which was set in 1919. Although the high temperature of 98 degrees on the 5th did not break a record in Boston, the spell of heat and high humidity resulted in two deaths and record electricity usage in Boston. An 86-year old woman died from heat exhaustion after being rushed to the hospital from a private nursing home, and a 64-year old woman, also a resident of a Boston nursing home, died of similar causes later that day. F86PH, F64PH

Franklin County Shelburne to Northfield	06	1520EST 1545EST			0	0			Thunderstorm Wind (G60)
Hampshire County Plainfield to Hatfield	06	1522EST 1552EST			1	2			Thunderstorm Wind (G60)
		M29VE							
Worcester County Athol	06	1540EST			0	0			Thunderstorm Wind (G60)
Worcester County Templeton to Harvard	06	1555EST 1618EST			0	0			Thunderstorm Wind (G60)
Middlesex County Pepperell to Tyngsboro	06	1610EST 1615EST			0	0			Thunderstorm Wind (G56)
Middlesex County Boxborough to Wakefield	06	1630EST 1702EST			0	0			Thunderstorm Wind (G65)
Middlesex County Wilmington	06	1635EST			0	0			Hail (0.88)
Essex County Beverly	06	1645EST			0	0			Thunderstorm Wind (G52)
Norfolk County East Walpole to Avon	06	1715EST 1717EST			0	0			Hail (0.75)
Norfolk County Walpole	06	1717EST			0	0			Thunderstorm Wind (G50)
Plymouth County Brockton	06	1723EST 1835EST			0	0			Hail (2.75)
Plymouth County Whitman to Middleboro	06	1745EST 1830EST			0	0			Thunderstorm Wind (G60)
Norfolk County Avon	06	1755EST			0	0			Hail (0.75)
Plymouth County Cedarville	06	1900EST			0	0			Hail (0.75)
Barnstable County Sandwich	06	1910EST			0	0			Thunderstorm Wind (G55)
Middlesex County Holliston	06	2058EST			0	0			Thunderstorm Wind (G60)
Norfolk County Weymouth	06	2130EST			0	0			Thunderstorm Wind (G70)
Plymouth County Hingham to Abington	06	2145EST			0	0			Thunderstorm Wind (G60)

Severe thunderstorms swept across Massachusetts in advance of a strong cold front. For the fourth day in a row, temperatures soared well up into the 90s across the Bay State, along with high humidity. The thunderstorms arrived in two lines: one from mid-afternoon into early evening with winds clocked as high as 82 mph, and the second during the late evening with winds estimated over 80 mph and large hail. Damage was widespread from the east slopes of the Berkshires to the North and South Shore communities around Boston. In the wake of the storms, tens of thousands of electric customers were left without power, and in some communities, it took several days for power to be restored.

In Hampshire County, a 29-year old man was killed and two men were injured when a large tree branch fell on their car on Route 5 in Hatfield while returning home from a fishing trip. Wind gusts as high as 65 mph were reported in North Hatfield as the storms passed. There were countless reports of downed trees, wires, and telephone poles throughout western and central Massachusetts, where the most widespread damage occurred during mid to late afternoon.

In eastern Massachusetts, the storms caused the most damage during the late afternoon and early evening when there were many reports of downed trees, tree limbs, and power lines. In Middlesex County, wind gusts were estimated to be over 70 mph. Several five to ten

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons	Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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MASSACHUSETTS, Central and East

ton air conditioning units were blown off the roof of a building in Ashland, and part of the roof was torn off. Large hail was reported throughout much of Norfolk and Plymouth Counties early in the evening. Hailstones as large as baseballs fell in Brockton, covering Milton Street and damaging cars. In Chatham, on Cape Cod, a 13-year old boy was lowering the sail on his small fiberglass sailboat on the shore of Oyster Pond when thunderstorm winds blew him and the boat about 200 yards into the middle of the pond. The boy was not injured. Later in the evening, the second round of severe thunderstorms caused more sporadic wind damage to trees and power lines. The worst damage occurred in Weymouth, when a microburst caused extensive wind damage near Whitmans Pond. A storm survey conducted the next day by the National Weather Service concluded wind speeds reached around 80 mph, which downed large trees, power lines, damaged homes, and made some roads impassable from fallen debris. Damage was also noted farther south into Abington and Hanson.

MAZ015

Suffolk

14 0000EST
0800EST

0 0

Record Cold

The low temperature at Logan International Airport of 55 degrees tied the record low for the date which was set in 1937.

MAZ016

Eastern Norfolk

16 1355EST

0 0

Record Warmth

The high temperature of 94 degrees at the Blue Hill Observatory in Milton tied the record high for the date, which was set in 1983 and earlier years.

MAZ015>016

Suffolk - Eastern Norfolk

17 1329EST
1350EST

0 0

Record Warmth

The high temperature at Logan International Airport in Boston of 98 degrees tied the record high for the date which was set in 1977. At the Blue Hill Observatory in Milton, the high temperature of 95 degrees tied the record high for the date, which was set in 1997.

MAZ016

Eastern Norfolk

18 1403EST

0 0

Record Warmth

The high temperature at the Blue Hill Observatory in Milton of 96 degrees tied the record high for the date, which was set in 1991.

Franklin County Bernardston

18 1550EST

0 0

Thunderstorm Wind (G55)

An isolated severe thunderstorm downed trees in Bernardston.

Middlesex County Billerica

23 0010EST

0 0

Thunderstorm Wind (G50)

Plymouth County Plymouth

23 1545EST

0 0

Hail (0.75)

Bristol County Taunton

23 1630EST

0 0

Thunderstorm Wind (G50)

An early morning severe thunderstorm in northeast Massachusetts downed large tree limbs in Billerica, near Concord Road and Treble Cove Road. Later that day, severe thunderstorms moved across southeast Massachusetts, bringing damaging winds and large hail. Dime size hail was reported in Plymouth, near the town line with Carver, and two trees were downed by thunderstorm winds in Taunton.

Essex County Haverhill to Newburyport

24 1546EST
1618EST

0 0

Hail (1.50)

Worcester County Worcester

24 1600EST

0 0

Lightning

Worcester County Northborough

24 1611EST

0 0

Hail (0.75)

Worcester County Northborough to Shrewsbury

24 1615EST

0 0

Thunderstorm Wind (G50)

Middlesex County Littleton to Acton

24 1617EST
1636EST

0 0

Hail (1.00)

Middlesex County Shirley to Wakefield

24 1636EST
1710EST

0 0

Thunderstorm Wind (G50)

Essex County Rowley to Peabody

24 1700EST
1707EST

0 0

Hail (1.00)

Middlesex County Wakefield

24 1705EST

0 0

Hail (0.75)

Essex County Andover to Peabody

24 1710EST
1735EST

0 0

Thunderstorm Wind (G75)

Hampden County Chicopee

24 1745EST

0 0

Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

MASSACHUSETTS, Central and East

Worcester County

Barre 24 1745EST 0 0 Thunderstorm Wind (G50)

Essex County

Amesbury to Groveland 24 1913EST 1925EST 0 0 Thunderstorm Wind (G52)

Norfolk County

Dedham 24 2005EST 0 0 Thunderstorm Wind (G50)

Suffolk County

(Bos)Logan Intl Arpt 24 2045EST 0 0 Thunderstorm Wind (G64)

Norfolk County

Wrentham 24 2220EST 0 0 Thunderstorm Wind (G50)

Severe thunderstorms brought damaging winds and large hail to much of central and eastern Massachusetts. The hardest hit areas were in Boston's North and South Shore communities, where there were countless reports of downed trees and power lines, and hail as large as ping pong balls. In Essex County north of Boston, a microburst with wind speeds estimated between 80 and 100 mph caused extensive damage in Middleton and Peabody. Many large trees were totally uprooted, large pine trees were snapped off above the ground, and shingles were blown off two houses. The strongest winds occurred in Middleton, in the area of Lake Street between Wills Hill Reservoir and Middleton Pond. Another severe thunderstorm produced a wind gust to 74 mph at Logan International Airport in Boston. During the height of the storms, thousands of people were estimated to have lost power throughout the Bay State.

Middlesex County

Sudbury to Newton 25 1235EST 1325EST 0 0 Hail (1.00)

Middlesex County

Wayland 25 1301EST 0 0 Thunderstorm Wind (G50)

Worcester County

Harvard 25 1315EST 0 0 Hail (0.75)

Suffolk County

Brighton 25 1333EST 0 0 Hail (0.75)

Suffolk County

(Bos)Logan Intl Arpt 25 1348EST 0 0 Thunderstorm Wind (G50)

Middlesex County

Bedford to Waltham 25 1400EST 0 0 Lightning

Plymouth County

Brockton 25 1400EST 1500EST 0 0 Heavy Rain

Plymouth County

Brockton to Hanson 25 1425EST 0 0 Hail (1.25)

Plymouth County

East Bridgewater 25 1430EST 0 0 Thunderstorm Wind (G50)

Norfolk County

Stoughton 25 1505EST 0 0 Hail (0.75)

Essex County

Haverhill to West Newbury 25 1518EST 0 0 Thunderstorm Wind (G50)

Norfolk County

Walpole 25 1545EST 0 0 Thunderstorm Wind (G50)

Plymouth County

Abington 25 1555EST 0 0 Thunderstorm Wind (G50)

Severe thunderstorms brought damaging winds and large hail to central and eastern Massachusetts for the second day in a row. The hardest hit areas were once again in the suburbs of Boston, especially to the south, where there were many reports of downed trees and power lines. Hail as large as quarters covered the ground in spots. Brockton, in Plymouth County, was especially hard hit. Large hail the size of ping pong balls damaged cars, and torrential rainfall of two inches in one hour resulted in street flooding. A storm spotter reported two to three feet of water on Main and Belmont streets. Several house fires were started by lightning in Middlesex County. In Boston, water flooded the mezzanine level of South Station, closing the MBTA Red Line Station for about an hour. Service was also interrupted on the MBTA Green Line for about an hour, after a tree fell near Brookline Hills station. Logan International Airport recorded a wind gust to 58 mph in a thunderstorm, a day after measuring a wind gust to 74 mph. An estimated 25,000 customers in central and eastern Massachusetts were left without power.

Barnstable County

Mashpee to Sandwich 26 0600EST 0730EST 0 0 Lightning

Worcester County

Spencer 26 1225EST 0 0 Thunderstorm Wind (G50)

Worcester County

Spencer 26 1345EST 0 0 Lightning

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

MASSACHUSETTS, Central and East

Worcester County

Clinton	26	1800EST 1900EST			0	0			Lightning
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An isolated severe thunderstorm in Spencer downed trees on Northwest Road. Lightning strikes from other thunderstorms caused extensive damage in Worcester County and on Cape Cod. Early in the day, the thunderstorm that had earlier dropped quarter size hail in Rhode Island weakened, but lightning ignited several house fires in Sandwich and Mashpee, and knocked out power to about 10,000 customers on the Cape. In Worcester County, afternoon and evening thunderstorms with frequent lightning ignited an apartment building fire in Spencer, and a house fire in Clinton.

Worcester County

Spencer	29	1850EST			0	0			Thunderstorm Wind (G50)
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Franklin County

Ashfield	29	2145EST			0	0			Thunderstorm Wind (G50)
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Franklin County

Rowe	29	2200EST			0	0			Thunderstorm Wind (G50)
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Franklin County

Hawley	29	2221EST			0	0			Thunderstorm Wind (G50)
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Severe thunderstorms produced wind damage in Franklin and Worcester Counties. Large tree branches and wires were downed in Spencer, Ashfield, Rowe, and Hawley.

Worcester County

Leominster to Fitchburg	30	1528EST 1543EST			0	0			Lightning
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Hampden County

Palmer	30	1847EST 1901EST			0	0			Hail (0.75)
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An isolated severe thunderstorm produced dime size hail in Palmer. Earlier that day, lightning strikes from non-severe thunderstorms in Leominster and Fitchburg were responsible for starting two house fires and at least one brush fire. Lightning also caused damage to chimneys and roofs of several other homes.

MASSACHUSETTS, West

MAZ001

Berkshire

04	1200EST				0	0			Excessive Heat
06	1300EST								

An intense Bermuda high became established over the mid Atlantic region during the Independence Day weekend. This high pumped heat along with very high humidity across western Massachusetts, especially on July 5 and 6. Temperatures soared to 90 or higher most everywhere while dewpoints climbed well into the 70s. At the Albany International airport, the temperature peaked at 94 on July 5 and 95 on July 6. However after combining humidity values, the heat index reached as high as 105 on both days. High temperatures were similar in the Berkshires.

Berkshire County

Florida	09	1445EST			0	0	8K		Thunderstorm Wind (G65)
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A cold front moved from the Great Lakes eastward across New York State and then into the Berkshires on the afternoon of July 6. With sultry air in place, and favorable strong upper level winds, this front produced a squall line of strong to locally severe thunderstorms. Powerful thunderstorm winds brought down power lines in the town of Florida and produced a wind gust measured at 65 mph.

Berkshire County

Williamstown	29	2300EST			0	0	10K		Thunderstorm Wind
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A strong warm front and favourable wind shear aloft allowed for some thunderstorms to become strong to locally severe across Western Massachusetts late on the evening of July 29. Thunderstorms produced destructive wind gusts from Williamstown to Clarksburg in Berkshire county. Numerous power lines were knocked down resulting in the deployment of Massachusetts and Bell Atlantic workers.

MICHIGAN, East

MIZ047>049-053>055-060>063-068>070-075>076-082>083 Midland - Bay - Huron - Saginaw - Tuscola - Sanilac - Shiawassee - Genesee - Lapeer - St. Clair - Livingston - Oakland - Macomb - Washtenaw - Wayne - Lenawee - Monroe

04	1100EST				0	52			Excessive Heat
05	1800EST								

Hot and extremely humid weather rolled into southeast Michigan for the Fourth of July holiday weekend. High temperatures climbed into the 90s across the area, with dew points well into the 70s. This resulted in triple-digit heat indices across southeast Michigan on both the 4th and 5th. The heat index exceeded 105 in and near Detroit. This resulted in numerous heat-related illnesses, as people overdid outdoor activities during the holiday weekend. Numerous hospitals in metro Detroit reported cases of heat stroke, heat exhaustion, dehydration, and severe sunburn. However, unlike many other parts of the country, no fatalities were reported.

Lapeer County

Lapeer	17	1145EST			0	0	5K		Thunderstorm Wind (G52)
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Tuscola County

6 SW Caro	17	1400EST			0	0	8K		Thunderstorm Wind (G52)
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MICHIGAN, East									
St. Clair County									
Harsens Is	17	1550EST			0	0	14K		Thunderstorm Wind (G55)
									A warm and humid airmass covered southeast Michigan, with high temperatures around 90 and dew points around 70. Numerous thunderstorms developed in the unstable atmosphere, beginning around noon EDT. These were 'pulse' type thunderstorms, in that they had a very short life cycle. A few storms, at their most intense, briefly reached severe levels. Several large trees were downed in Lapeer. The same occurred southwest of Caro, and in addition a small shed was blown over. On Harsens Island, falling trees damaged two roofs and two boats.
Monroe County									
Maybee to 5 SW Maybee	21	1925EST 1927EST			0	0	5K		Thunderstorm Wind (G52)
Monroe County									
Monroe to 2 S La Salle	21	1930EST 1942EST			0	0	40K		Thunderstorm Wind (G57)
									A warm and sticky summertime day in southeast Michigan, with dew points well into the 70s. A few thunderstorms developed in the area, most of which were not especially strong. However, one thunderstorm in Monroe County evolved into a supercell, and produced an impressive swath of wind damage. Scores of trees were downed from the Maybee area to south of LaSalle. The most concentrated damage occurred along W Albain Road, just west of Telegraph Road (US-24) - between the city of Monroe and LaSalle. Here, two cars and one home were struck by falling trees, and a metal barn was heavily damaged.
Midland County									
Pleasant Vly	23	1210EST			0	0			Hail (0.75)
Midland County									
Midland	23	1240EST			0	0	25K		Thunderstorm Wind (G52)
Saginaw County									
Merrill to 2.5 W Swan Creek	23	1323EST 1334EST			0	0	5K		Thunderstorm Wind (G52)
Saginaw County									
1.5 W Swan Creek to 3 W Bridgeport	23	1334EST 1346EST			0	0	5K		Thunderstorm Wind (G52)
Saginaw County									
1.5 SW Bridgeport to Frankenmuth	23	1346EST 1400EST			0	0	5K		Thunderstorm Wind (G52)
Saginaw County									
Frankenmuth	23	1400EST			0	0	12K		Lightning
									A lightning strike took out a transformer, and blew the chimney off of a home.
Shiawassee County									
Owosso	23	1400EST			0	0	8K		Thunderstorm Wind (G52)
Tuscola County									
4 S Vassar	23	1400EST			0	0	7K		Thunderstorm Wind (G52)
Lapeer County									
9 N Lapeer	23	1420EST			0	0	95K		Thunderstorm Wind (G65)
Genesee County									
2 E Otisville	23	1425EST			0	0	8K		Thunderstorm Wind (G52)
Genesee County									
2 W Fenton	23	1438EST			1	1			Lightning
									A thunderstorm quickly rolled into Silver Lake Park near Fenton. Beachgoers at the park quickly gathered up their things and raced to their cars, but the last group off the beach was not quite quick enough. Lightning struck an adult female and an eight year old girl, about five feet away from their car. Rescue workers were briefly able to resuscitate the adult, but she died soon after arriving at a local hospital. The girl was treated for her injuries at the hospital, and was released the following day. F31OU
Lapeer County									
Imlay City	23	1444EST			0	0	8K		Thunderstorm Wind (G52)
Washtenaw County									
Ann Arbor	23	1445EST 1455EST			0	0	35K		Thunderstorm Wind (G52)
Livingston County									
7 N Hartland	23	1450EST			0	0	3K		Thunderstorm Wind (G50)
Oakland County									
3 S Holly	23	1455EST			0	0	6K		Thunderstorm Wind (G52)
St. Clair County									
Capac	23	1500EST			0	0	10K		Thunderstorm Wind (G52)
Oakland County									
White Lake to Milford	23	1508EST 1514EST			0	0	70K		Thunderstorm Wind (G52)
Oakland County									
2 SW Clarkston to 1 SW Pontiac	23	1510EST 1524EST			0	0	35K		Thunderstorm Wind (G58)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

MICHIGAN, East

Oakland County Ortonville	23	1510EST			0	0			Thunderstorm Wind (G57)
Wayne County 4.5 S Plymouth	23	1515EST			0	0	35K		Thunderstorm Wind (G55)
Oakland County Oxford to Lake Orion	23	1520EST			0	0	35K		Thunderstorm Wind (G55)
Oakland County Bloomfield Hills	23	1529EST			0	0	7K		Thunderstorm Wind (G52)
Wayne County Dearborn to Detroit	23	1538EST 1544EST			0	0	22K		Thunderstorm Wind (G61)
St. Clair County Port Huron	23	1540EST			0	0	18K		Thunderstorm Wind (G52)
Oakland County Royal Oak	23	1545EST			0	0	10K		Thunderstorm Wind (G52)
St. Clair County Algonac	23	1550EST			0	0	6K		Thunderstorm Wind (G52)
Macomb County St Clair Shrs	23	1610EST			0	0	70K		Thunderstorm Wind (G60)
Lenawee County Rome Center to 1 S Tipton	23	1700EST			0	0	16K		Thunderstorm Wind (G52)
Monroe County Dundee	23	1810EST			0	0	8K		Thunderstorm Wind (G52)

This was a hot and extremely humid day in southeast Michigan. Temperatures approached 90 degrees during the afternoon, with dew points as high as 80. This resulted in a very unstable airmass across the area. A trough of low pressure moved east into the western Great Lakes by late morning, and thunderstorms ignited along the trough. These storms moved southeast into Michigan, and a large number of them became severe.

The first severe report was dime sized hail in southwest Midland County. That would be the only severe hail event; the rest of the day was filled with damaging wind gusts. A 66 mph gust was measured at the National Weather Service office in White Lake, while a spotter estimated 70 mph winds near downtown Detroit.

Most the damage caused by the wind involved downed trees and power lines. Trees were downed onto homes in the city of Midland, White Lake, Lake Orion, Pontiac, and Deerfield Township (Lapeer County). Deerfield Township was especially hard hit, as some roads were closed for several days due to tree debris. A number of tents at the Ann Arbor Art Fair were demolished. Vehicles were destroyed in White Lake and Port Huron when trees fell on them. A large awning was blown off the roof of a Canton strip mall, and the roof of a hangar at the Oakland County International Airport in Waterford was displaced by the wind. Panelling was torn off the press box at Tiger Stadium in Detroit. In St Clair Shores, a garage collapsed, moored sailboats were tipped over, and part of an aluminum roof was peeled off a warehouse.

Locally heavy rainfall occurred with some of the thunderstorms, especially in metro Detroit. Freeway underpasses were flooded in Detroit, as were fifty basements in Dearborn. The thunderstorm hazard resulted in over a hundred flights at Detroit Metropolitan Airport being either delayed or cancelled. The Reform Party national convention in Dearborn was seriously disrupted, as several scheduled speakers - including Minnesota Governor Jesse Ventura - could not fly into Detroit.

Bay County Kawkawlin	24	1355EST 1400EST			0	0			Hail (1.75)
Bay County Bay City	24	1419EST			0	2			Hail (1.75)
Bay County Bay City	24	1419EST			0	0	90K		Thunderstorm Wind (G55)
Tuscola County 5 E Reese	24	1420EST			0	0			Hail (0.75)
Saginaw County 5 NE Saginaw	24	1425EST			0	0			Hail (1.75)
Saginaw County Bridgeport to Frankenmuth	24	1455EST 1457EST			0	0	8K		Thunderstorm Wind (G52)
Lapeer County 9 N Lapeer	24	1520EST			0	0			Hail (1.00)
Lapeer County 9 N Lapeer	24	1520EST			0	0	10K		Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated	Crops	Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage		
MICHIGAN, East									
Saginaw County									
Chesaning	24	1525EST			0	0	3K		Thunderstorm Wind (G50)
Genesee County									
Flushing to Flint	24	1533EST 1537EST			0	0			Hail (1.00)
Genesee County									
3.5 S Flint	24	1540EST			0	0			Thunderstorm Wind (G52)
Genesee County									
Grand Blanc to 3.5 SW Davison	24	1543EST 1548EST			0	0			Hail (1.00)
Shiawassee County									
Durand	24	1545EST			0	0			Hail (0.75)
St. Clair County									
6 NW Marine City	24	1545EST			0	0	11K		Thunderstorm Wind (G52)
Genesee County									
Fenton	24	1557EST			0	0	3K		Thunderstorm Wind (G52)
Livingston County									
7 NE Howell	24	1600EST			0	0	5K		Thunderstorm Wind (G50)
Oakland County									
4 SW Ortonville	24	1602EST			0	0			Hail (0.75)
Macomb County									
Romeo	24	1605EST			0	0	7K		Thunderstorm Wind (G52)
Oakland County									
Clarkston	24	1608EST			0	0	10K		Thunderstorm Wind (G52)
Oakland County									
Rochester Hills	24	1610EST			0	0	8K		Thunderstorm Wind (G52)
Oakland County									
Royal Oak	24	1620EST			0	0	9K		Thunderstorm Wind (G50)
Oakland County									
Southfield	24	1620EST			0	0			Hail (1.75)
Macomb County									
St Clair Shrs	24	1625EST			0	0			Hail (0.75)
An upper level disturbance crossed the Great Lakes region from northwest to southeast, igniting thunderstorms along its path. The thunderstorms evolved into a squall line as they moved across southeast Michigan. Instability was high on this warm and humid summer day, allowing many of the storms to become severe.									
Unlike the previous day, severe reports were almost evenly split between large hail and damaging wind. Most of the damaging wind gusts took down trees, tree limbs, utility poles, and power lines. However, the marine community felt the brunt of the severe thunderstorm winds in two separate incidents. A large number of sailboats were returning to the Bay City Yacht Club after a competition on Saginaw Bay, when the line of storms struck. As many as a dozen boats were capsized, with two sailboats demasted. On Lake St Clair, wind gusts capsized one sailboat, and caused a cabin cruiser to run aground.									
The largest hail of the day, golfball sized, was reported in Kawkawlin, Bay City, Zilwaukee, and Southfield. In Bay City, the large hail fell on the exposed mariners (see above), causing welts and bruises to at least two.									
Washtenaw County									
Manchester	24	2235EST			0	0	2K		Thunderstorm Wind (G50)
Lenawee County									
5 N Adrian to Adrian	24	2256EST 2301EST			0	0	6K		Thunderstorm Wind (G52)
Lenawee County									
Devils Lake	24	2310EST			0	0	8K		Thunderstorm Wind (G52)
Lenawee County									
Fairfield	24	2310EST			0	0	7K		Thunderstorm Wind (G52)
Lenawee County									
3 S Weston to 2 SW Ogden Center	24	2320EST			0	0	16K		Thunderstorm Wind (G55)
Far southern Michigan avoided the line of severe thunderstorms on the afternoon of the 24th. However, additional thunderstorms developed near Jackson late in the evening. One of these evolved into a supercell as it moved southeast, producing a swath of wind damage from Manchester to the Ohio border, south of Adrian. A number of trees and power lines were downed.									
Sanilac County									
4 E New Greenleaf to 3 NW Sandusky	28	1740EST 1825EST			0	0	45K		Lightning
Lightning-induced fires caused two barns to burn to the ground.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MICHIGAN, East									
Huron County									
3 W Bad Axe to Bad Axe	28	1800EST 1810EST			0	0	10K		Thunderstorm Wind (G52)
Sanilac County									
Elmer to Argyle	28	1800EST 1805EST			0	0			Hail (2.75)
Midland County									
4 W Midland to Midland	28	1835EST			0	0			Hail (1.75)
Tuscola County									
Cass City	28	1835EST			0	0	2K		Thunderstorm Wind (G50)
Midland County									
Midland	28	1840EST			0	0			Hail (1.75)
Sanilac County									
Peck	28	1842EST			0	0	8K	4K	Thunderstorm Wind (G55)
Sanilac County									
Amadore	28	1900EST			0	0	26K		Thunderstorm Wind (G52)
St. Clair County									
1.3 WSW Jeddo to 1.1 WSW Jeddo	28	1905EST	0.3	100	0	0	60K		Tornado (F1)
St. Clair County									
Ruby to 2 S Kimball	28	1909EST 1924EST			0	0	22K		Thunderstorm Wind (G52)
St. Clair County									
Kimball	28	1915EST			0	0			Hail (1.00)
Lenawee County									
Hudson	28	1917EST			0	0			Hail (1.00)
St. Clair County									
Port Huron	28	1926EST			0	0	8K		Thunderstorm Wind (G52)
Lenawee County									
Adrian	28	1930EST			0	0			Hail (1.75)
Saginaw County									
Shields	28	2000EST			0	0	5K		Thunderstorm Wind (G50)
Monroe County									
Petersburg	28	2007EST			0	0			Hail (0.75)
Monroe County									
Petersburg	28	2007EST			0	0	2K		Thunderstorm Wind (G50)
Monroe County									
1.8 N La Salle	28	2021EST			0	0	20K		Thunderstorm Wind (G55)
Monroe County									
Monroe	28	2024EST			0	0			Hail (0.75)
A weak cold front moved into a warm and humid airmass over southeast Michigan during the afternoon. A passing upper level disturbance added fuel to the fire. A number of severe thunderstorms developed, with the strongest and most concentrated area of activity in the Saginaw Bay and Thumb regions. The counties along the Ohio border also saw severe weather.									
The first severe thunderstorm of the day was also the most potent. It became a large supercell (a rotating thunderstorm) as it moved southeast across the Thumb. Baseball sized hail was reported in Elmer - the largest hail report in all of southeast Michigan all summer. Sporadic wind damage from this thunderstorm began near Bad Axe, and continued all the way to Port Huron, where the storm moved into Canada. Most of wind damage involved trees and power lines going down. The community of Peck had a picnic table tossed by the wind, and damage to nearby farm fields. In Amador, homes under construction were damaged. A tree was downed onto a home in Ruby, and in nearby Wadhams, a spotter estimated 60 mph winds with the storm.									
This supercell produced a brief tornado touchdown near Jeddo in northeast St Clair County. A home and garage suffered substantial damage to windows, roofing, and siding. A light trailer was flipped over, and some parked vehicles in the area were moved. Most impressively, a large aluminum rowboat - with attached outboard motor - was blown 20 feet up into a tree. The damage was consistent with winds in the 80 to 90 mph range, making this an F1 tornado.									
Over the rest of southeast Michigan, severe thunderstorms produced hail up to golfball size, and wind gusts that toppled trees and power lines. The most substantial damage occurred just southwest of the city of Monroe, where roofing was ripped off of a shed, and a barn was deroofed. This occurred along W Albain Road, exactly where damage occurred with the severe thunderstorms of July 21st.									
St. Clair County									
Yale to 4 N Avoca	31	1234EST 1237EST			0	0	8K		Thunderstorm Wind (G72)
Macomb County									
Memphis	31	1242EST			0	0	20K		Thunderstorm Wind (G51)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated	Crops	Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage Property		
MICHIGAN, East									
Lapeer County									
Metamora	31	1245EST			0	0	7K		Thunderstorm Wind (G51)
Genesee County									
Goodrich	31	1256EST			0	0			Hail (1.75)
Genesee County									
Goodrich to 2 SE Goodrich	31	1256EST 1258EST			0	0	140K		Thunderstorm Wind (G65)
Livingston County									
Gregory	31	1335EST			0	0	2K		Thunderstorm Wind (G50)
Livingston County									
Brighton	31	1350EST			0	0	8K		Thunderstorm Wind (G61)
St. Clair County									
5 SW St Clair to St Clair	31	1355EST 1400EST			0	0	8K		Thunderstorm Wind (G52)
Washtenaw County									
1 W Saline	31	1358EST			0	0			Thunderstorm Wind (G52)
Lenawee County									
Addison	31	1400EST			0	0	8K		Thunderstorm Wind (G54)
St. Clair County									
6 S Emmett	31	1400EST			0	0	2K		Thunderstorm Wind (G50)
Wayne County									
Redford	31	1413EST			0	0	14K		Thunderstorm Wind (G61)
Oakland County									
Pontiac to Rochester Hills	31	1415EST			0	0	45K		Thunderstorm Wind (G55)
Macomb County									
Utica to 7 ENE Utica	31	1422EST 1430EST			0	0	15K		Thunderstorm Wind (G52)
St. Clair County									
6 S Emmett	31	1430EST			0	0	8K		Thunderstorm Wind (G52)
Wayne County									
Allen Park	31	1430EST			0	0			Thunderstorm Wind (G52)
Wayne County									
Lincoln Park	31	1432EST			0	1			Lightning
As a woman walked by a window in her home, lightning apparently struck just outside. The woman was briefly knocked unconscious.									
Oakland County									
Pontiac to Rochester Hills	31	1433EST 1445EST			0	0	16K		Thunderstorm Wind (G52)
Wayne County									
Livonia	31	1440EST			0	0	12K		Thunderstorm Wind (G52)
Lenawee County									
3 S Cement City to 2 N Onsted	31	1445EST			0	0	15K		Thunderstorm Wind (G52)
Lenawee County									
Clinton	31	1445EST			0	0	6K		Thunderstorm Wind (G52)
Macomb County									
4 E Mt Clemens	31	1445EST			0	0	18K		Thunderstorm Wind (G52)
Monroe County									
Temperance	31	1454EST			0	0	7K		Thunderstorm Wind (G52)
Monroe County									
3 NE Maybee	31	1458EST			0	0	5K		Thunderstorm Wind (G52)
Oakland County									
1 W Bloomfield Hills to Royal Oak	31	1458EST 1508EST			0	0	30K		Thunderstorm Wind (G52)

After a long spell of hot and humid weather, a potent cold front finally moved through southeast Michigan. However, temperatures were able to climb well into the 90s before the front arrived, with dew points in the middle to upper 70s. Numerous severe thunderstorms developed along the front as it moved through, with most of the severe weather located south of Interstate 69.

Only one storm produced severe criteria hail. This occurred in Goodrich, where golfball sized hail fell. Otherwise, damaging wind gusts were the severe weather threat. Spotters reported 83 mph gusts just north of Avoca, 70 mph in Brighton and Redford, 60 mph in Saline, Allen Park, Macomb Township, and Rochester Hills, and 58 mph near Metamora.

As is usually the case, the main result of these severe gusts was to down trees, tree limbs, and power lines. The hardest hit community was Goodrich, where a garage was moved well off its foundation, a church steeple and a backyard pool were destroyed, and flying debris damaged siding. In Pontiac, a toppled tree punched a hole in a home's roof, utility poles were snapped, and a large sign was

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

MICHIGAN, East

tossed through the windows of an indoor flea market. Siding was torn off a building in nearby Auburn Hills. Cars were damaged by fallen trees in Royal Oak and Harrison Township (Macomb County).

The number of severe thunderstorms from the 23rd through the 31st was unusually high. Insurance companies stated that there were more damage claims from these late July storms than for any other single weather event since 1983. State Farm Insurance alone reported 7500 damage claims in the entire state of Michigan, worth about \$10 million. Allstate reported about 1600 claims, and AAA of Michigan 2000 claims, with no dollar figures available.

Area power companies came under some "heat" during this time period. Severe weather, combined with high electric demand due to hot and humid weather, produced frequent and lengthy power outages in some locations. In particular, Detroit Edison received quite a bit of negative press, with over 400,000 customers losing power at some point during the last 10 days of July.

MICHIGAN, Extreme Southwest

Hillsdale County

Jonesville	23	1655EST							
				0	0	25K			Thunderstorm Wind

Several tree limbs...power lines...and traffic lights were blown down.

Branch County

Coldwater	23	1804EST							
				0	0				Hail (1.75)

Hillsdale County

3 NW Pittsford to Osseo	28	1920EST							
				0	0				Hail (1.00)

Tree limbs were also blown down.

St. Joseph County

Constantine	28	2010EST							
				0	0				Hail (1.50)

Hillsdale County

Camden to Cambria	29	2142EST							
				0	0				Hail (0.75)

MICHIGAN, North

Chippewa County

Drummond Is	03	1000EST							
				0	0	200K			Waterspout

Waterspout damaged boat house and storage building on a marina dock.

Montmorency County

2 SE Lewiston	03	1820EST							
				0	0				Thunderstorm Wind (G65)

Hundreds of trees down around Wolf Lake. Several homes had roof damage

Montmorency County

3 ESE Lewiston	03	1821EST 1825EST	1	60					
					0	0	60K		Tornado (F1)

60 yard wide swath of trees snapped off 8 feet above the ground. 3 homes damaged. Several mobile homes damaged. Tornado continued into Oscoda county.

Oscoda County

7 NW Comins to 7 ESE Comins	03	1825EST 1848EST	16	120					
					0	2	1.5M		Tornado (F2)

Continuation of Montmorency County tornado. Most extensive area of damage occurred here. See narrative below. Tornado continued into Alcona county.

Alcona County

12 WNW Barton City to Barton City	03	1848EST 1858EST	12	60					
					0	0	250K		Tornado (F1)

Continuation of Oscoda County tornado. Hundreds of trees down and 16 homes damaged.

A thunderstorm developed rapidly over the city of Gaylord around 7 pm. The storm brought only very heavy rains to the city of Gaylord, then raced southeast toward Lewiston. By 720 pm, the storm was moving at 50 mph and strong rotation was noted, prompting a Tornado Warning. An F1 tornado formed just minutes after passing southeast of Lewiston. It then moved out of Montmorency county into Oscoda county.

By 732 pm, the storm strengthened to an F2 and reached the city of Comins, cutting it in two. It completely destroyed a Parsonage, Mennonite Church, Township Hall, Fire Department and Post Office within the town of Comins. The storm also destroyed 10 homes and damaged 45 others, in addition to destroying 4 businesses and damaging 4 others. The park facilities on the east side of Comins also sustained substantial damage.

The tornado continued out of Comins as an F1, continuing into Alcona county where 16 homes were damaged along the path from the county line to Barton City. The tornado lifted in the vicinity of Barton City around 8 pm.

Extensive tree damage was also noted along the 20 mile damage path of the tornado, with path widths ranging from 60 to 120 yards.

Chippewa County

De Tour Vlg	05	2120EST							
					0	0			Thunderstorm Wind (G60)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
MICHIGAN, North									
Antrim County									
Elk Rapids	05	2254EST			0	0			Flash Flood
			4 to 6 inches of water covered secondary roads.						
Leelanau County									
Countywide	06	0000EST			0	0			Flash Flood
			Several secondary roads throughout the county were washed out.						
Wexford County									
9 NW Cadillac	06	0010EST			0	0			Thunderstorm Wind (G50)
			Several trees and power lines down.						
Grand Traverse County									
Traverse City	06	0030EST			0	0			Flash Flood
			Small creeks were overflowing their banks and several secondary streets were covered with water. Numerous thunderstorms moved across eastern upper and northwest lower Michigan with isolated severe wind reports. Training echoes (thunderstorms continuously moving over the same general area) over the Lake Michigan shoreline counties in northwest lower Michigan caused up to 4 inches of rainfall within a few hours. This caused many secondary roadways near the Grand Traverse Bay area and across the Leelanau peninsula to flood. The Leelanau peninsula had several reports of secondary roadway flooding. Specifically, Cherry Bend Rd, Trumble Rd, and Cottonwood Rd were washed out. Traverse City also had several secondary city streets which had flooding. The worst was along East Front Street and 14th Street in downtown, where one business incurred minor basement flooding.						
Manistee County									
Manistee	23	0958EST			0	0			Thunderstorm Wind (G50)
			Several trees down in and around the City of Manistee						
Manistee County									
Wellston	23	1022EST			0	0			Thunderstorm Wind (G50)
Wexford County									
Cadillac	23	1125EST			0	0			Thunderstorm Wind (G50)
			Trees down .						
Roscommon County									
Higgins Lake	23	1204EST			0	0			Thunderstorm Wind (G50)
			Several trees and power lines down.						
Ogemaw County									
West Branch	23	1230EST			0	0			Thunderstorm Wind (G50)
			Several trees and power lines down.						
Gladwin County									
5 NE Gladwin	23	1239EST			0	0			Thunderstorm Wind (G50)
			Several trees and power lines down. A squall line strengthened over Lake Michigan and moved across northwest and north central lower Michigan. There were numerous severe wind gusts associated with this line of storms.						
Alcona County									
Greenbush	28	1533EST			0	0			Thunderstorm Wind (G55)
Gladwin County									
Gladwin	28	1645EST			0	0			Hail (0.75)
Gladwin County									
Gladwin	28	1710EST			0	0			Hail (0.75)
			An area of storms developed along a weak surface trof, affecting portions of northeast lower and central lower Michigan.						
Mackinac County									
Curtis	31	0030EST			0	0			Thunderstorm Wind (G50)
			Trees down.						
Mackinac County									
Engadine	31	0030EST			0	0			Flash Flood
			Few inches of standing water on local streets.						
Leelanau County									
Leland	31	0100EST			0	0			Thunderstorm Wind (G50)
Charlevoix County									
Charlevoix	31	0130EST			0	0			Thunderstorm Wind (G50)
			Trees and power lines down.						
Chippewa County									
Brimley	31	0130EST			0	0			Thunderstorm Wind (G50)
			Trees and power lines down.						
Emmet County									
Harbor Spgs	31	0140EST			0	0			Thunderstorm Wind (G65)
			Large park benches ripped from ground and thrown.						
Antrim County									
Bellaire	31	0145EST			0	0			Thunderstorm Wind (G50)
			Large tree limbs down.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MICHIGAN, North</u>									
Emmet County									
Pellston Arpt	31	0150EST			0	0			Thunderstorm Wind (G65)
					Many trees and power lines down. Wind gust measured by automated wind equipment.				
Grand Traverse County									
Traverse City	31	0157EST			0	0			Thunderstorm Wind (G60)
					Trees and power lines down. One building destroyed.				
Cheboygan County									
Cheboygan	31	0210EST			0	0			Thunderstorm Wind (G50)
					Trees and power lines down.				
Otsego County									
Elmira	31	0215EST			0	0			Lightning
					Two horses killed by lightning.				
Wexford County									
Cadillac	31	0218EST			0	0			Thunderstorm Wind (G50)
					Power lines down.				
Kalkaska County									
Kalkaska	31	0220EST			0	0			Thunderstorm Wind (G50)
					Trees down.				
Otsego County									
Otsego Lake	31	0220EST			0	0			Thunderstorm Wind (G50)
					Large tree limbs and power lines down.				
Presque Isle County									
10 N Rogers City	31	0238EST			0	0			Thunderstorm Wind (G60)
Cheboygan County									
Cheboygan	31	0240EST			0	0			Thunderstorm Wind (G50)
					Trees and power lines down.				
Kalkaska County									
2 E Darragh	31	0240EST			0	0			Thunderstorm Wind (G50)
					Trees down.				
Presque Isle County									
Hammond	31	0240EST			0	0			Thunderstorm Wind (G50)
					Trees down. Bow echo moved east across much of eastern upper and northern lower Michigan ahead of a cold front moving over the upper Midwest. Numerous reports of straight line wind damage were associated with the bow. Storms with heavy rain ahead of bow caused some flooding across Mackinac county.				
<u>MICHIGAN, Upper</u>									
Ontonagon County									
Bergland	04	1930EST			0	0			Hail (1.00)
Gogebic County									
Bessemer	05	1725EST			0	0			Thunderstorm Wind (G60)
					Many trees and power poles down.				
Gogebic County									
Ironwood	05	1735EST			0	0	15K		Thunderstorm Wind (G60)
					Over 100 trees down on Lake Rd. Two houses and a car were damaged by falling trees.				
Gogebic County									
Marenisco	05	1750EST			0	0			Thunderstorm Wind (G52)
					Several trees down				
Ontonagon County									
Rockland	05	1750EST			0	0			Thunderstorm Wind (G55)
Houghton County									
Baltic	05	1800EST			0	0			Thunderstorm Wind (G55)
					Many trees down.				
Ontonagon County									
Ontonagon	05	1806EST			0	0			Thunderstorm Wind (G58)
					Top of 40 foot spruce tree broken off.				
Houghton County									
Chassell	05	1815EST			0	0			Thunderstorm Wind (G52)
					Many small trees down.				
Baraga County									
Three Lakes	05	1830EST			0	0	100K		Thunderstorm Wind (G60)
					Trees uprooted - power lines down - some trees on houses. A resort at Lake Ruth suffered wind damage to its main lodge, three cabins, and two sheds. Six of its twelve 14 foot fishing boats were damaged beyond repair. Two houses on Lake George were seriously damaged by falling trees.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MICHIGAN, Upper									
Marquette County									
Marquette	05	1858EST			0	0	50K		Thunderstorm Wind (G60)
					Many trees down. Several houses and vehicles were damaged by falling trees.				
Marquette County									
Palmer	05	1905EST			0	0			Thunderstorm Wind (G58)
					Trees down blocking M-35.				
Alger County									
Munising	05	1920EST			0	1			Thunderstorm Wind (G58)
					Downed trees blocking roads. A hiker was injured by a falling tree.				
Luce County									
Newberry	05	2025EST			0	0			Thunderstorm Wind (G55)
					Numerous trees down along CR-413.				
Delta County									
Cornell	05	2030EST			0	0			Thunderstorm Wind (G52)
					Several small trees down.				
Schoolcraft County									
Germfask	05	2040EST			0	0			Thunderstorm Wind (G52)
					Large tree limbs down along M-77.				
Luce County									
Mc Millan	05	2107EST			0	0			Hail (1.00)
Iron County									
Caspian	14	2200EST			0	0	225K		Flash Flood
	15	1600EST							
					Two to seven and a half inches of rain fell over southern Iron County between 2200 EST, July 14 and 300 EST July 15. Considerable damage was done to area roads with many secondary roads down to one lane. Several roads were washed out and closed. Seventy-five homes in southern Iron County had flooded basements and some businesses in the low lying area of downtown Iron River were flooded and closed.				
Dickinson County									
Iron Mtn	14	2215EST			0	0	20K		Flash Flood
	15	1100EST							
					Heavy rain from thunderstorms partially washed out several secondary roads and sections of highway US-2 in the Iron Mountain area.				
Dickinson County									
Granite Bluff	14	2227EST			0	0			Hail (0.75)
Iron County									
Stambaugh	15	0100EST			0	0			Thunderstorm Wind (G55)
					Trees down on power lines.				
Dickinson County									
Channing	16	1425EST			0	0			Thunderstorm Wind (G55)
					Trees down across road.				
Dickinson County									
Randville	16	1440EST			0	0			Thunderstorm Wind (G55)
					Trees down.				
Marquette County									
Sawyer Afb	16	1500EST			0	0			Thunderstorm Wind (G52)
					Large tree down.				
Gogebic County									
Wakefield	23	0455EST			0	0			Thunderstorm Wind (G52)
					4 inch branches down along the southwest shore of Lake Gogebic.				
Gogebic County									
Watersmeet	23	0545EST			0	0			Thunderstorm Wind (G55)
					Trees down across US-2.				
Iron County									
Iron River	23	0600EST			0	0			Thunderstorm Wind (G58)
					12 inch dia. pine tree down across CR 657.				
Iron County									
Iron River	23	0610EST			0	0			Thunderstorm Wind (G58)
					Trees down across CR 643 - power lines down.				
Iron County									
Amasa	23	0615EST			0	0			Thunderstorm Wind (G60)
					Many 8 to 10 inch diameter trees down. across road				
Baraga County									
Nestoria	23	0620EST			0	0			Thunderstorm Wind (G60)
					10 inch diameter trees down across the road to Craig Lake.				
Baraga County									
Covington	23	0630EST			0	0			Thunderstorm Wind (G60)
					8 to 10 inch trees down in King Lake Campground.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MICHIGAN, Upper									
Marquette County									
Lake Michigamme	23	0645EST			0	0			Thunderstorm Wind (G52)
					3 inch diameter trees and large branches down in Van Riper State Park.				
Keweenaw County									
Isle Royal Nat Park	23	1937EST			0	0			Thunderstorm Wind (G59)
					Gust report from the Passage Island C-MAN station on the north end of Isle Royale.				
Houghton County									
Kenton	29	0435EST			0	0			Thunderstorm Wind (G55)
					Numerous trees down.				
Ontonagon County									
Bruce Crossing	29	0435EST			0	0			Hail (0.75)
Marquette County									
Big Bay	29	0450EST			0	0			Hail (0.75)
Gogebic County									
Ironwood	29	0500EST			0	0			Hail (0.75)
Marquette County									
Diorite	29	0500EST			0	0			Thunderstorm Wind (G52)
					6 inch tree broken.				
Iron County									
Amasa	29	0530EST			0	0			Hail (0.88)
					Nickle sized hail.				
Dickinson County									
Norway	29	0536EST			0	0			Hail (0.75)
Menominee County									
Wilson	29	0545EST			0	0			Hail (0.75)
Delta County									
Bark River	29	0603EST 0616EST			0	0			Thunderstorm Wind (G75)
Dickinson County									
Norway	29	0615EST			0	0			Thunderstorm Wind (G58)
					1 foot diameter tree down across Kimberly Road.				
Delta County									
Rapid River	29	0620EST			0	0			Thunderstorm Wind (G55)
					6 inch trees down along Highway US-41.				
Menominee County									
Carney	29	0630EST			0	0			Hail (0.75)
Menominee County									
Menominee	29	0645EST			0	0			Thunderstorm Wind (G58)
					12 inch maple tree snapped off.				
Gogebic County									
Bessemer	30	1945EST			0	0	10K		Thunderstorm Wind (G58)
					Trees down on camping vehicles.				
Gogebic County									
Wakefield	30	1955EST			0	0			Thunderstorm Wind (G60)
					20 inch diameter pine tree toppled.				
Gogebic County									
Watersmeet	30	1958EST			0	0			Thunderstorm Wind (G52)
					6 inch trees down on power lines.				
Ontonagon County									
Bruce Crossing	30	2020EST			0	0	60K		Thunderstorm Wind (G55)
					6 to 8 inch diameter apple trees down.				
Gogebic County									
Wakefield	30	2021EST			0	0	5K		Thunderstorm Wind
					Satellite dish destroyed. One to two foot diameter pine trees were blown down.				
Gogebic County									
Watersmeet	30	2045EST			0	0			Thunderstorm Wind (G55)
					Numerous trees down - power lines down.				
Iron County									
Iron River	30	2120EST			0	0			Thunderstorm Wind (G60)
					24 inch diameter trees down.				
Baraga County									
Covington	30	2145EST			0	0			Thunderstorm Wind (G50)
					58 mph gust.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MICHIGAN, Upper</u>									
Marquette County									
Gwinn	30	2200EST			0	0			Thunderstorm Wind (G55)
		10 inch diameter trees down.							
Marquette County									
Witch Lake	30	2200EST			0	0			Thunderstorm Wind (G58)
		Trees down across power and phone lines.							
Dickinson County									
Countywide	30	2210EST 2230EST			0	0	500K		Thunderstorm Wind (G52)
		Scattered reports of trees down. Part of the roof on the North Dickinson School was torn off and carried several hundred yards east over the football field. The wood framed, sheet metal-sided bus garage was considered a total loss and a bus inside the garage was slightly damaged. Near Merriman, an all-terrain vehicle was crushed, two houses suffered roof damage, and a shed and a van were seriously damaged by falling trees. A pick-up truck was crushed by a falling tree in Hardwood.							
Delta County									
Garden	30	2212EST			0	0			Hail (0.75)
Schoolcraft County									
Indian Lake	30	2223EST			0	0	10K		Thunderstorm Wind (G52)
		Damage to camping trailers.							
Menominee County									
Spalding	30	2238EST			0	0			Thunderstorm Wind (G55)
		14 inch diameter trees down.							
Delta County									
Cornell	30	2245EST			0	0			Thunderstorm Wind (G55)
		Three 10 inch diameter trees toppled.							
Delta County									
Gladstone	30	2259EST 2315EST			0	0			Thunderstorm Wind (G60)
		Two 3 foot diameter white pine trees down.							
Menominee County									
Daggett	30	2320EST			0	0			Hail (0.75)
Schoolcraft County									
Countywide	30	2320EST 2345EST			0	0			Thunderstorm Wind (G60)
		Scattered reports of 1 to 2 foot diameter trees down.							
Luce County									
Newberry Luce Arprt	31	0022EST			0	0			Thunderstorm Wind (G59)
<u>MICHIGAN, West</u>									
Newaygo County									
Newaygo	01	1300EST 1330EST	5	20	0	0	10K		Tornado (F0)
		A weak F0 tornado was on the ground in Newaygo county intermittently between 13:00 and 13:30 pm EST. Several tree limbs were downed.							
		A weak F0 tornado made intermittent touchdowns during the early afternoon hours in Newaygo County. A few tree limbs were downed, but otherwise there were no damage reports, as the tornado remained over rural areas.							
Oceana County									
Countywide	08	2245EST			0	0	20K		Thunderstorm Wind (G53)
		Several trees were downed across Oceana county.							
Muskegon County									
Ravenna	09	0035EST			0	0	10K		Thunderstorm Wind (G53)
		One tree and several large limbs were downed in Ravenna.							
Ottawa County									
Countywide	09	0055EST 0110EST			0	0	20K		Thunderstorm Wind (G53)
		Several trees were downed across Ottawa county. A quarter mile long stretch of trees was downed in Agnew, near the intersection of routes 45 and 31.							
Allegan County									
Countywide	09	0120EST			0	0	20K		Thunderstorm Wind (G53)
		Numerous trees were downed across Allegan county.							
Ottawa County									
Zeeland	09	0130EST			0	0	20K		Thunderstorm Wind (G53)
		Numerous trees were downed in Zeeland.							
Kent County									
Kentwood	09	0141EST			0	0	10K		Thunderstorm Wind (G53)
		Several large tree limbs were downed in Kentwood.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MICHIGAN, West									
A line of thunderstorms crossed Lake Michigan during the late evening hours of the 8th, and they intensified into a strong squall line once on land. There were numerous reports of trees downed across Oceana, Muskegon, Ottawa, Allegan, and Kent counties.									
Lake County									
Irons	23	1045EST			0	0	10K		Thunderstorm Wind (G53)
									Trees were downed in Irons.
Mecosta County									
Rustford	23	1140EST			0	0	10K		Thunderstorm Wind (G53)
									Trees were downed in Rustford.
Isabella County									
Mt Pleasant	23	1213EST	0.1	10	0	0	10K		Tornado (F0)
									Several people including one trained spotter reported what they believed to be a very brief tornado touchdown of 10 to 15 seconds. It occurred over a wooded rural area, so there was no extensive damage or any injuries.
Isabella County									
Rosebush	23	1215EST			0	0	10K		Thunderstorm Wind (G53)
									Trees were downed in Rustford.
Gratiot County									
Ithaca	23	1315EST			0	0	10K		Thunderstorm Wind (G53)
									Power lines and trees were downed in Ithaca.
Jackson County									
Tompkins Center	23	1338EST			0	0	10K		Thunderstorm Wind (G53)
									Several trees were downed in Topkins.
Eaton County									
Eaton Rapids	23	1345EST			0	0			Hail (0.75)
									3/4" diameter hail was observed in Eaton Rapids.
Ingham County									
Dansville to Stockbridge	23	1425EST 1427EST			0	0	10K		Thunderstorm Wind (G53)
									Numerous trees were downed in Dansville, Webberville, and Stockbridge.
Mecosta County									
Morley	23	1722EST			0	0	10K		Thunderstorm Wind (G53)
									Several trees were downed in Morley.
Montcalm County									
Lakeview	23	1750EST			0	0	15K		Thunderstorm Wind (G53)
									A tree was downed and fell on a vehicle in Lakeview.
Osceola County									
Tustin	23	1813EST 1828EST	1	10	0	0	10K		Tornado (F0)
									A weak tornado made a brief touchdown in Tustin at 20 Mile Road and the Mackinaw Trail, causing minor damage to one home.
Eaton County									
Vermontville to Charlotte	23	2200EST 2215EST			0	0	10K		Thunderstorm Wind (G53)
									Several power lines and trees were downed in Vermontville.
Calhoun County									
Albion	23	2245EST			0	0	1K		Thunderstorm Wind (G53)
									A tree was downed just north of Albion.
Jackson County									
Jackson	23	2310EST			0	0	1K		Thunderstorm Wind
									A large tree was downed on Comdon Road.
									A trough of low pressure triggered the development of numerous rounds of strong to severe thunderstorms across southwest Michigan through the day. Many of the thunderstorms produced gusty winds of 50 to 60 mph that downed numerous trees and power lines. There were also 2 reports of brief tornado touchdowns, both of which were very weak. One tornado touched down in a rural area of Mt. Pleasant in Isabella county, but produced no damage. Another brief touchdown was reported during the early evening hours in Tustin, in Osceola county. It was also very weak, but did produce minor damage to one home. There was also one report of 3/4" hail in Eaton Rapids, in Eaton county.
Gratiot County									
Breckenridge	24	1415EST 1420EST			0	0			Hail (0.88)
									3/4" to 7/8" diameter hail was observed in Breckenridge.
Gratiot County									
Perrinton	24	1455EST			0	0	10K		Thunderstorm Wind
									Large tree limbs were downed in Perrinton.
Clinton County									
St Johns	24	1510EST			0	0			Hail (1.00)
									1" diameter hail was observed 5 miles north of St. John's.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MICHIGAN, West</u>									
Ionia County Countywide	24	2105EST			0	0	10K		Thunderstorm Wind
			Several trees were downed, mainly in Campbell Township.						
Barry County Morgan	24	2130EST			0	0			Hail (0.75)
			3/4" diameter hail was observed in eastern Barry county, mainly in Castleton township.						
Eaton County Charlotte to Brookfield	24	2145EST 2148EST			0	0	10K		Thunderstorm Wind (G53)
			Several trees were downed across southern Eaton county.						
Jackson County Jackson	24	2228EST 2232EST			0	0	10K		Thunderstorm Wind
			Trees and a few power lines were downed in Jackson. Scattered strong to severe thunderstorms developed across central lower Michigan during the afternoon hours, and continued through the evening in a humid and unstable air mass. There were several reports of downed trees and power lines, as well as a few reports of hail 3/4" to 1" in diameter.						
Clare County Harrison to Leota	28	1630EST 1640EST			0	0			Hail (1.00)
			3/4" to 1" diameter hail was observed in Harrison and Leota.						
Ottawa County Grand Haven	28	1850EST			0	0			Hail (1.75)
			7/8" to 1.75" diameter hail was observed 4 miles south of Grand Haven.						
Ottawa County Allendale	28	1907EST 1909EST			0	0	50K		Hail (2.00)
			1.5" to 2" diameter hail was observed in Allendale. Wind damage included large limbs that were downed, and screens that were ripped off some homes.						
Kent County Byron Center to Kentwood	28	1920EST 1935EST			0	0	100K		Hail (1.25)
			Numerous reports of severe weather included the following: 7/8" diameter hail observed in Byron Center; Storm gutters that were blown off of a few homes in Kentwood; large limbs and a few trees were blown down across southern Kent county; several reports of 3/4" to 1.25" hail in Wyoming and Kentwood; and several windows that were blown out of cars in Wyoming.						
Barry County Woodland	28	1950EST			0	0	10K		Thunderstorm Wind (G53)
			Several 1 to 3 foot diameter trees were blown down on Woodland Road in Barry county.						
Ionia County Clarksville to Lake Odessa	28	1955EST 2000EST			0	0	20K		Thunderstorm Wind (G53)
			Several trees were downed across Ionia county, including one that fell on a car with passengers, but no injuries were reported. Scattered strong to severe thunderstorms developed along a trough of low pressure extending from northern lower Michigan to southern Wisconsin late in the afternoon, and progressed slowly southeast through the evening. The thunderstorms intensified and produced numerous reports of large hail up to 1.75" in diameter. There were also several reports of 60 to 70 mph, which downed trees, tree limbs and power lines, and caused minor damage to homes in Ottawa and Kent counties.						
Ingham County Leslie to Stockbridge	31	1305EST 1315EST			0	0	10K		Thunderstorm Wind (G53)
			2 foot diameter trees were downed in Leslie and in Stockbridge.						
Jackson County Pleasant Lake to Grass Lake	31	1305EST			0	0	10K		Thunderstorm Wind (G53)
			Several large trees were downed near Pleasant Lake and Grass Lake. A line of thunderstorms developed along a lake breeze boundary during the early afternoon hours, and intensified as it moved east. Several reports of downed trees were received across Ingham and Jackson counties.						
<u>MINNESOTA, Central and South Central</u>									
Lac Qui Parle County Dawson	03	0145CST			0	0			Thunderstorm Wind (G55)
			Trees, power lines down. Winds estimated.						
Swift County Appleton	03	0154CST			0	0			Thunderstorm Wind (G50)
			Few trees down. Winds estimated.						
Redwood County Lamberton	03	0155CST			0	0			Thunderstorm Wind (G55)
			Few trees broken in half. Winds estimated.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Central and South Central									
Chippewa County 5 NE Montevideo	03	0200CST			0	0			Thunderstorm Wind (G60)
					Roof off grain bin. Few trees uprooted. Winds estimated.				
Brown County Springfield	03	0215CST			0	0			Thunderstorm Wind (G65)
					Roof partially off house. Winds estimated.				
Redwood County 2 W Sanborn	03	0215CST			0	0			Thunderstorm Wind (G65)
					Cattle barn and top of silo demolished. Winds estimated.				
Brown County New Ulm	03	0225CST			0	0			Thunderstorm Wind (G60)
					Portion of old one story building collapsed onto car. Large tree limbs down. Winds estimated.				
Watonwan County Darfur	03	0229CST			0	0			Hail (1.75)
Renville County Fairfax	03	0240CST			0	0			Thunderstorm Wind (G50)
					Numerous 6 inch diameter branches down. Winds estimated.				
Watonwan County St James	03	0240CST			0	0			Thunderstorm Wind (G55)
					Few trees down. Winds estimated.				
Kandiyohi County New London	03	0252CST			0	0			Thunderstorm Wind (G55)
					Power lines down. Winds estimated.				
Watonwan County 1 E Madelia	03	0300CST			0	0			Thunderstorm Wind (G70)
					A number of barns, grain bins and trees damaged. Some barns were picked up and moved off their foundations, while others were flattened. Four grain bins blown off their foundations. Two tractors crushed. Winds estimated.				
Nicollet County Courtland	03	0310CST			0	0			Thunderstorm Wind (G50)
					Ten inch diameter trees snapped in half. Winds estimated.				
Stearns County Rockville	03	0312CST			0	0			Hail (0.75)
Sibley County Arlington	03	0330CST			0	0			Thunderstorm Wind (G60)
					Barn down. Winds estimated.				
Stearns County 6 S St Cloud	03	0330CST			0	0			Thunderstorm Wind (G50)
					Shed down. Winds estimated.				
Sherburne County Elk River	03	0340CST			0	0			Thunderstorm Wind (G50)
					Six inch tree branches severed. Winds estimated.				
Wright County 3 SW Delano	03	0340CST			0	0			Thunderstorm Wind (G55)
					Trees toppled. Winds estimated.				
Wright County Montrose	03	0340CST			0	0			Thunderstorm Wind (G55)
					Trees toppled. Winds estimated.				
Carver County Watertown	03	0345CST			0	0			Thunderstorm Wind (G50)
					Few trees toppled and large branches felled. Winds estimated.				
Renville County Olivia	08	0515CST			0	0			Thunderstorm Wind (G60)
					Trees blown down. Winds estimated.				
Nicollet County 5 NW Courtland	08	0606CST			0	0			Hail (0.75)
Le Sueur County 4 NW Greenland	08	0642CST			0	0			Hail (0.75)
Le Sueur County 3 N Elysian	08	0645CST			0	0			Hail (0.75)
Goodhue County 2 SW Roscoe	08	1640CST			0	0			Hail (0.75)
Freeborn County 2 W Albert Lea	08	1815CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Central and South Central									
Freeborn County									
Albert Lea	08	1830CST			0	0			Thunderstorm Wind (G55)
		Trees toppled. Winds estimated.							
Chisago County									
Harris	09	1055CST			0	0			Funnel Cloud
Chisago County									
1 W Stark	09	1110CST			0	0			Funnel Cloud
Chisago County									
2 E Almelund	09	1128CST	0.5	25	0	0			Tornado (F0)
		A shed and a few trees blown down.							
Chisago County									
3 N Center City	09	1135CST	0.5	25	0	0			Tornado (F0)
		Tornado touched down in open field.							
Chisago County									
1 SW Palmdale	09	1145CST	0.2	25	0	0			Tornado (F0)
		A few trees down.							
Kanabec County									
4 SW Grasston	09	1210CST			0	0			Funnel Cloud
Redwood County									
2 WSW Walnut Grove	13	2010CST			0	0			Hail (0.88)
Hennepin County									
Rockford	13	2155CST			0	0			Hail (1.00)
		Rockford straddles both Hennepin and Wright Counties.							
Wright County									
5 NE Delano	13	2155CST			0	0			Hail (1.00)
		Occurred in the city of Rockford on the Wright County side.							
Wright County									
5 SE Buffalo	13	2200CST			0	0			Hail (1.75)
Anoka County									
Anoka	13	2208CST			0	0			Hail (0.75)
Anoka County									
Andover	13	2211CST			0	0			Hail (1.00)
Anoka County									
Coon Rapids	13	2215CST			0	0			Hail (0.75)
Chisago County									
Wyoming	13	2232CST			0	0			Hail (0.75)
Wright County									
Monticello	13	2245CST			0	0			Hail (0.75)
Douglas County									
5 SW Evansville	15	1630CST			0	0			Hail (1.00)
Douglas County									
5 SW Evansville	15	1630CST			0	0			Thunderstorm Wind (G55)
		Two trees down. Estimated windspeed.							
Douglas County									
2 SW Evansville	15	1635CST			0	0			Hail (0.75)
Douglas County									
1 N Holmes City	15	1640CST			0	1			Thunderstorm Wind (G55)
		Large trees toppled, one onto a camper; slight injury to man inside. Estimated winds.							
Stevens County									
Morris	22	2148CST			0	0			Thunderstorm Wind (G55)
		Estimated winds. Trees felled. One vehicle damaged.							
Kandiyohi County									
Willmar Arpt	22	2218CST			0	0			Thunderstorm Wind (G53)
		Several intersections in Willmar blocked by fallen trees. AWOS measurement.							
Douglas County									
Miltona	22	2232CST			0	0			Thunderstorm Wind (G65)
		Estimated winds. Roof ripped off home. Auto damaged.							
Renville County									
Olivia	22	2245CST			0	0			Thunderstorm Wind (G50)
		Estimated winds, six inch branches severed.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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MINNESOTA, Central and South Central

Todd County
1 W Long Prairie 22 2300CST 0 0 **Thunderstorm Wind (G65)**
 Estimated winds. Barn collapsed and several oak trees downed.

Morrison County
Little Falls 22 2320CST 0 0 **Thunderstorm Wind (G55)**
 Estimated winds, trees down.

Stearns County
St Cloud 22 2325CST 0 0 **Thunderstorm Wind (G55)**
 Estimated winds.

Mcleod County
Winsted 22 2350CST 0 0 **Thunderstorm Wind (G55)**
 Estimated winds, trees felled.

Meeker County
6 S Litchfield 22 2355CST 0 0 **Thunderstorm Wind (G50)**
 Estimated winds. Several docks and boats flipped on Lake Minnie Belle.

Kanabec County
9 W Mora 23 0010CST 0 0 **Hail (1.50)**

Mille Lacs County
Princeton 23 0012CST 0 0 **Thunderstorm Wind (G55)**
 Estimated winds. Power lines down.

Kanabec County
Mora 23 0015CST 0 0 **Thunderstorm Wind (G55)**
 Estimated Winds. Trees down.

Isanti County
Braham 23 0030CST 0 0 **Thunderstorm Wind (G50)**
 Estimated winds, trees toppled.

Isanti County
Isanti 23 0030CST 0 0 **Thunderstorm Wind (G50)**
 Estimated winds, trees down.

Ramsey County
Little Canada 23 0040CST 0 0 **Thunderstorm Wind (G50)**
 Estimated winds, trees felled.

Washington County
Birchwood 23 0040CST 0 0 **Hail (1.00)**

Chisago County
North Branch 23 0105CST 0 0 **Thunderstorm Wind (G60)**
 Estimated Winds. Trees, powerlines toppled.

Brown County
4 NE Evan 23 0335CST 0 0 **Hail (1.50)**
 Hail accompanied by winds gusting to 40 knots flattened corn, soybean, and other crops.

MINZ041>045-047>070-073>078-082>085-091>093
Douglas - Todd - Morrison - Mille Lacs - Kanabec - Stevens - Pope - Stearns - Benton - Sherburne - Isanti - Chisago - Lac Qui Parle - Swift - Chippewa - Kandiyohi - Meeker - Wright - Hennepin - Anoka - Ramsey - Washington - Yellow Medicine - Renville - Mcleod - Sibley - Carver - Scott - Dakota - Redwood - Brown - Nicollet - Le Sueur - Rice - Goodhue - Watonwan - Blue Earth - Waseca - Steele - Martin - Faribault - Freeborn

23 1000CST 1 0 **Excessive Heat**
 25 2300CST

A massive upper ridge over the central and eastern U.S. enabled heat to build into Minnesota. Heat indices ranged from 95 to 110 the afternoon of the 23rd, 90 to 105 on the 24th, and climaxed at 95 to 116 on the 25th before a cold front moved in. Indices only dropped into the 70s the mornings of the 24th and 25th. Dewpoints in the middle and upper 70s were common, along with temperatures topping out in the lower and middle 90s. The highest indices noted, all on the 25th, were 116 in Lakeville, 113 in Appleton, and 110 in Faribault, Redwood Falls and Benson. A 43 year old man died in Willmar after falling asleep inside a closed vehicle on the 25th. M43VE

Todd County
Grey Eagle 25 1630CST 0 0 **Hail (0.75)**

Todd County
Grey Eagle 25 1630CST 0 0 **Thunderstorm Wind (G50)**
 Estimated Winds, large branches down.

Morrison County
5 S Little Falls 25 1710CST 0.2 25 0 0 **Tornado (F0)**
 Large trees down.

Morrison County
3 S Little Falls 25 1711CST 0 0 **Hail (1.00)**

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Central and South Central									
Morrison County									
1 E Royalton	25	1722CST			0	0			Hail (2.50)
Morrison County									
Little Rock	25	1730CST			0	0			Hail (0.75)
Stearns County									
Freeport	25	1825CST			0	0			Thunderstorm Wind (G50)
Several large trees downed, including one which fell onto a house, breaking through the roof. Estimated windspeed.									
Stearns County									
5 N Avon	25	1910CST			0	0			Hail (0.75)
Stearns County									
Holdingford	25	1910CST			0	0			Hail (0.75)
Stearns County									
St Stephen	25	1910CST			0	0			Hail (0.75)
Stearns County									
10 N St Cloud	25	1924CST			0	0			Thunderstorm Wind (G52)
Estimated winds, a few small trees down.									
Benton County									
2 SE Rice	25	1929CST			0	0			Hail (1.00)
Benton County									
Popple Creek	25	1935CST			0	0			Thunderstorm Wind (G55)
Winds estimated. Several trees toppled.									
Lac Qui Parle County									
Madison	27	1750CST			0	0			Thunderstorm Wind (G60)
Estimated winds. Trees down, some on houses and sheds. Trailer flipped. Forty foot KLQP-FM relay tower downed.									
Swift County									
Appleton	27	1750CST			0	0			Thunderstorm Wind (G55)
Estimated winds. Trees felled, one onto a car.									
Chippewa County									
4 NW Milan to Milan	27	1755CST			0	0			Thunderstorm Wind (G60)
Estimated winds. Steel siding ripped off barn. Numerous trees down in Milan, some on houses.									
Chippewa County									
5 N Gluek to 6 NE Gluek	27	1815CST 1820CST	3	20	0	0			Tornado (F1)
Barn and outbuildings down. Roof off grainery. Trees down. 14 sheep killed.									
Chippewa County									
Montevideo	27	1815CST			0	0			Thunderstorm Wind (G50)
Estimated winds. A few trees down.									
Chippewa County									
Clara City to 5 NE Clara City	27	1820CST			0	0			Thunderstorm Wind (G57)
Estimated winds. A few trees toppled.									
Chippewa County									
Montevideo Arpt	27	1820CST			0	0			Thunderstorm Wind (G53)
Measured windspeed by AWOS.									
Kandiyohi County									
2 W Spicer	27	1820CST			0	0			Hail (0.75)
Kandiyohi County									
Raymond	27	1825CST			0	0			Thunderstorm Wind (G55)
Estimated winds. A few trees down.									
Kandiyohi County									
Willmar	27	1830CST			0	0			Thunderstorm Wind (G51)
Windspeed measured at KWLM/KQIC radio.									
Kandiyohi County									
Svea	27	1840CST			0	0			Thunderstorm Wind (G50)
Estimated winds. Large branches down.									
Yellow Medicine County									
Granite Falls	27	1845CST			0	0			Thunderstorm Wind (G55)
Estimated winds. Trees and power lines felled.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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MINNESOTA, Central and South Central

Meeker County

Cosmos 27 1900CST 0 0 **Thunderstorm Wind (G60)**
Estimated winds. Numerous powerlines down.

Renville County

7 S Olivia 27 1906CST 0 0 **Thunderstorm Wind (G55)**
Estimated winds. Trees down.

Todd County

Eagle Bend 28 2248CST 0 0 **Hail (1.00)**

Stearns County

Albany 28 2305CST 0 0 **Hail (0.88)**

Morrison County

5 SW Harding 28 2335CST 0 0 **Hail (1.00)**

Stearns County

St Stephen 28 2340CST 0 0 **Hail (0.88)**

Benton County

2 S Rice 28 2345CST 0 0 **Hail (0.88)**

Benton County

1 N Glendorado 29 0015CST 0 0 **Hail (1.00)**

Mille Lacs County

Princeton Muni Arpt 29 0015CST 0 0 **Hail (1.50)**

Morrison County

5 N Hillman 29 0020CST 0 0 **Hail (1.00)**

Kanabec County

4 S Ogilvie 29 0050CST 0 0 **Hail (1.00)**

MINZ041>045-

**047>070-073>078-
082>085-091>093**

Douglas - Todd - Morrison - Mille Lacs - Kanabec - Stevens - Pope - Stearns - Benton - Sherburne - Isanti - Chisago - Lac Qui Parle - Swift - Chippewa - Kandiyohi - Meeker - Wright - Hennepin - Anoka - Ramsey - Washington - Yellow Medicine - Renville - McLeod - Sibley - Carver - Scott - Dakota - Redwood - Brown - Nicollet - Le Sueur - Rice - Goodhue - Watonwan - Blue Earth - Waseca - Steele - Martin - Faribault - Freeborn

29 0300CST 0 0 **Excessive Heat**
30 1900CST

Less than one week after the first heat wave, central and south central Minnesota were belted with even greater heat, especially on the 30th. The morning of the 29th started with lows in the 70s and dewpoints in the middle 60s to middle 70s, producing heat indices from 70 to 85. With afternoon highs well into the 90s, and dewpoints ranging from the middle 60s to upper 70s, heat indices climbed to the 95 to 114 range. Southern Minnesota bore the brunt of the heat this day with numerous triple digit indices. Faribault recorded the highest index at 114, with 113 at St. James, 111 at Redwood Falls, and 110 at Appleton and New Ulm. Though farther north, the central Minnesota cities of Mora and Little Falls still registered an index in the middle 90s.

A muggy night pervaded southern Minnesota, as some locations saw their low temperature remain around 80. Combined with dewpoints in the 70s, the heat index hovered in the lower and middle 80s at locations such as Minneapolis/St. Paul, Redwood Falls and Albert Lea. Central Minnesota locations had an overnight heat index in the 70s.

By 0900 CST on the 30th, the heat index had already climbed past 100 at Minneapolis/St. Paul and many other locales. High temperatures soared into the middle and upper 90s. Dewpoints neared 80, and some spots even exceeded 80. At 0755 CST, Minneapolis/St. Paul (MSP) tied an alltime record high dewpoint of 81 (equalling a mark set in 1995). Thus the heat index exceeded 110 in most areas. The highest reading was 122 at Faribault. A sampling of the heat index at other locations revealed 119 at Mora and Eden Prairie (Flying Cloud Airport/FCM), 116 at Redwood Falls, 115 at St. Cloud, and 113 at Glenwood. A cold front moved in later on the 30th, bringing severe thunderstorms and an end to the heat wave.

Pope County

1 SW Grovelake 30 1315CST 0 0 **Hail (0.75)**

Pope County

1 SW Grovelake 30 1315CST 0 0 **Thunderstorm Wind (G50)**
Large branches down. Estimated windspeed.

Morrison County

Elmdale 30 1320CST 0 0 **Hail (1.25)**

Mille Lacs County

5 N Milaca 30 1340CST 0 0 **Hail (0.88)**

Morrison County

3 SW Buckman 30 1340CST 0 0 **Thunderstorm Wind (G60)**
Numerous trees down. Siding ripped off house. Estimated windspeed.

Stearns County

1 E Holdingford 30 1346CST 0 0 **Hail (0.75)**

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Central and South Central									
Benton County 5 NW Rice	30	1355CST			0	0			Hail (1.75)
Yellow Medicine County 4 N Canby	30	1355CST			0	0	Numerous 6 inch diameter branches down. Estimated windspeed.		Thunderstorm Wind (G50)
Stearns County 2 E Holdingford	30	1356CST			0	0			Hail (1.50)
Benton County Rice	30	1400CST			0	0	Large branches down. Estimated windspeed.		Thunderstorm Wind (G52)
Lac Qui Parle County 13 SW Dawson	30	1400CST			0	0	Numerous trees down. Corn flattened. Estimated windspeed.		Thunderstorm Wind (G55)
Mille Lacs County 6 E Page	30	1415CST			0	0			Hail (1.00)
Morrison County 6 E Royaltan	30	1415CST			0	0	Large branches down. Estimated windspeed.		Thunderstorm Wind (G50)
Kanabec County 9 W Mora	30	1420CST			0	0	Numerous large branches down. Estimated windspeed.		Thunderstorm Wind (G50)
Swift County 1 N Murdock	30	1423CST			0	0			Funnel Cloud
Stearns County 2 NW St Joseph	30	1429CST			0	0			Hail (0.88)
Benton County 2 SW Rum River	30	1445CST			0	0	Numerous 6 inch diameter branches down. Estimated windspeed.		Thunderstorm Wind (G50)
Lac Qui Parle County 1 NW Dawson	30	1445CST			0	0	Few trees down. Estimated windspeed.		Thunderstorm Wind (G52)
Mille Lacs County 5 NW Onamia	30	1445CST			0	0			Funnel Cloud
Kanabec County 4 N Mora	30	1455CST			0	0			Hail (0.75)
Stearns County Rockville	30	1455CST			0	0			Hail (0.88)
Swift County Appleton	30	1455CST			0	0			Funnel Cloud
Swift County Appleton	30	1455CST			0	0	Large branches down partially blocking street. Estimated windspeed.		Thunderstorm Wind (G50)
Stearns County Pleasant Lake	30	1500CST			0	0			Hail (0.88)
Stearns County Waite Park	30	1502CST			0	0			Hail (1.00)
Chippewa County 12 NW Montevideo	30	1505CST			0	0	Few trees down. Estimated windspeed.		Thunderstorm Wind (G52)
Morrison County 1 W Pierz	30	1505CST			0	0	Few trees down. Estimated windspeed.		Thunderstorm Wind (G52)
Meeker County 6 N Kingston	30	1512CST			0	0			Funnel Cloud
Kanabec County 8 E Warman to 8 ENE Woodland	30	1520CST			0	0	Roofs partially off outbuildings. Windows blown out. Barn down. Numerous trees down in a five mile wide swath. Estimated windspeed.		Thunderstorm Wind (G65)
Wright County Monticello	30	1524CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MINNESOTA, Central and South Central</u>									
Kanabec County									
5 N Quamba	30	1525CST			0	0			Thunderstorm Wind (G55)
			Numerous trees down. Estimated windspeed.						
Mille Lacs County									
Estes Brook	30	1530CST			0	0			Hail (0.75)
Sherburne County									
Elk River	30	1541CST			0	0			Thunderstorm Wind (G56)
			Estimated windspeed.						
Rice County									
5 NNW Faribault to 5 N Faribault	30	1546CST			0	0			Thunderstorm Wind (G65)
			Several semi trucks rolled over on Interstate 35. Roofs torn off, Barn and shed flattened. Silos, trees and power lines down. Tree fell through one house. Downburst was 3 miles long and 1/2 mile wide.						
Isanti County									
1 SW Cambridge	30	1600CST			0	0			Thunderstorm Wind (G52)
			Tree toppled. Estimated windspeed.						
Renville County									
6 N Fairfax	30	1615CST			0	0			Hail (1.00)
			Ground white with hail.						
Sibley County									
6 N Gaylord	30	1655CST			0	0			Funnel Cloud
Sibley County									
3 N Henderson	30	1655CST			0	0			Thunderstorm Wind (G52)
			Few trees felled. Estimated windspeed.						
Sibley County									
3 SE Gaylord	30	1702CST			0	0			Funnel Cloud
Scott County									
Blakeley	30	1703CST	0.2	35	0	0			Tornado (F0)
			Silo tops taken off, some trees down.						
Sibley County									
8 SE Green Isle	30	1705CST			0	0			Thunderstorm Wind (G52)
			Few trees down. Estimated windspeed.						
Scott County									
Belle Plaine	30	1709CST	0.2	35	0	0			Tornado (F1)
			Roofs partially taken off two downtown businesses. Few trees down.						
Chisago County									
Shafer	30	1715CST			0	0			Thunderstorm Wind (G50)
			Power poles snapped. Estimated windspeed.						
Scott County									
Lydia	30	1720CST	0.1	30	0	0			Tornado (F0)
			Mostly touched down in open field near Hwy 13 and Co. Road 10, though a few trees and power lines were felled.						
Washington County									
1 W Stillwater	30	1733CST			0	0			Hail (0.75)
Scott County									
Elko	30	1745CST			0	0			Thunderstorm Wind (G55)
			Few trees and power lines down. Estimated windspeed.						
Dakota County									
Apple Vly	30	1755CST			0	0			Thunderstorm Wind (G52)
			Measured windspeed.						
Freeborn County									
1 SW Conger	30	1755CST			0	0			Hail (1.50)
Goodhue County									
5 SE Cannon Falls	30	1810CST			0	0			Thunderstorm Wind (G52)
			Numerous 8 inch diameter branches down. Estimated windspeed.						
<u>MINNESOTA, Northeast</u>									
Cass County									
Walker	04	0859CST			0	0			Thunderstorm Wind (G61)
Itasca County									
21 NNE Coleraine	04	0920CST			0	0			Thunderstorm Wind (G65)
Itasca County									
Blackberry	04	0941CST			0	0			Hail (1.50)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northeast									
Itasca County Grand Rapids	04	1000CST			0	0			Thunderstorm Wind (G50)
					Large trees were blown down. The wind speed is estimated.				
Aitkin County Hill City	04	1025CST			0	0			Thunderstorm Wind (G52)
					Public-reported winds to 60 mph blew down many large branches. The state of Minnesota estimated total costs of damage and debris clearance at more than \$3.3 million for the July 4th severe weather events in Itasca, Cass, and Aitkin counties.				
St. Louis County Hibbing	04	1027CST			0	0	80K		Thunderstorm Wind (G70)
					A hanger and the terminal building at Chisholm-Hibbing Airport suffered structural damage.				
St. Louis County Gheen	04	1030CST			0	0			Thunderstorm Wind (G56)
					Thunderstorm winds estimated at 65 mph blew down trees and power lines.				
St. Louis County 12 SW Virginia	04	1039CST			0	0			Thunderstorm Wind (G56)
					Thunderstorm winds were estimated by the public at 65 mph.				
St. Louis County Tower	04	1045CST			0	0			Thunderstorm Wind (G55)
					Large trees were blown down. The wind speed is estimated.				
St. Louis County 4 E Floodwood	04	1050CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. The wind speed is estimated.				
St. Louis County Hibbing	04	1052CST			0	0			Thunderstorm Wind (G61)
St. Louis County Independence	04	1055CST			0	0			Hail (0.75)
St. Louis County Canyon	04	1055CST			0	0			Thunderstorm Wind (G60)
					A semi-trailer truck was blown over. The wind speed is estimated.				
St. Louis County 7 S Biwabik	04	1107CST			0	0			Thunderstorm Wind (G50)
					Tree branches up to eight inches in diameter were blown down. The wind speed is estimated.				
St. Louis County 6 E Hibbing	04	1112CST			0	0			Thunderstorm Wind (G55)
					Power lines and 12-inch diameter trees were blown down. The wind speed is estimated.				
St. Louis County Babbitt	04	1120CST			0	0			Thunderstorm Wind (G50)
					Large trees were blown down. The wind speed is estimated.				
St. Louis County Whiteface	04	1122CST			0	0			Thunderstorm Wind (G52)
St. Louis County Brimson	04	1130CST			0	0			Thunderstorm Wind (G52)
Lake County 27 NW Silver Bay	04	1130CST			0	0			Thunderstorm Wind (G50)
					Numerous trees were blown down. The wind speed is estimated.				
St. Louis County Cotton	04	1130CST			0	0			Thunderstorm Wind (G52)
St. Louis County Cook	04	1130CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated. The state of Minnesota estimated total costs of damage and debris clearance for the July 4th storms in St. Louis county at more than \$3.8 million.				
Lake County 40 N Silver Bay	04	1142CST			0	0			Thunderstorm Wind (G50)
					Twelve-inch diameter trees were blown down. The wind speed is estimated.				
Lake County 70 N Two Harbors	04	1150CST			0	0			Thunderstorm Wind (G55)
					Trees and power lines were blown down near Basswood Lake. The wind speed is estimated.				
Cook County 25 NNW Grand Marais	04	1220CST			0	0			Thunderstorm Wind (G60)
					Numerous trees and power lines were blown down. The wind speed is estimated. A widespread convective windstorm called a "derecho" swept across the Arrowhead region of northeastern Minnesota on July 4th. Strong, straight-line winds in excess of 80 mph devastated a large area of the Boundary Waters Canoe Area Wilderness (BWCAW).				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

MINNESOTA, Northeast

This area is very sparsely populated, but thousands of trees in an area approximately 30 miles long by 12 miles wide, or about a quarter million acres, were levelled. The timber loss was estimated at .5 to .75 million cords and valued at between \$12 and \$18 million. Because much of the timber was torn and splintered, the salvage value was estimated to be only about \$5 million. The hardest hit area was from Moose Lake in the BWCAW to near ELY to the Gunflint Trail, where hardly a tree was left standing. Twenty people, injured by falling trees, had to be airlifted to area hospitals. A man was crushed under a tree for four hours, and a woman was pinned under a tree with both legs broken. The state of Minnesota estimated the cost of other damage and debris clearance for Lake and Cook counties at nearly \$5 million.

Crow Wing County **1 S Pequot Lakes**

04	1310CST			0	0				Thunderstorm Wind (G55)
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Numerous trees up to 36 inches in diameter were blown down. The wind speed is estimated.

Itasca County **Countywide**

05	0030CST			0	0				Flash Flood
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0430CST

St. Louis County **Central Portion**

05	0030CST			0	0				Flash Flood
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1200CST

Lake County **South Portion**

05	0220CST			0	0				Flash Flood
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1800CST

St. Louis County **Southeast Portion**

05	0220CST			0	0				Flash Flood
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1800CST

Cook County **South Portion**

05	0410CST			0	0				Flash Flood
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1800CST

Heavy rain from thunderstorms forming and moving repeatedly across the same areas produced flash flooding from Itasca county across the southern two-thirds of St. Louis county, into the Arrowhead region of northeastern Minnesota. Many highways and hundreds of basements on the Iron Range and the North Shore were flooded. The tracks of several railroads were washed out. Duluth doppler radar gave rainfall estimates around 6 inches. In St. Louis county, road damage alone amounted to about \$800,000. Cook county had \$850,000 in damage, with \$250,000 in Lake county, and \$850,000 in Itasca county. The heavy rain also caused low oxygen levels in some area rivers, resulting in the death of thousands of fish.

St. Louis County **2 N Island Lake**

05	1425CST			0	0				Thunderstorm Wind (G50)
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Numerous trees were down on County Highway 4. The wind speed is estimated.

Cass County **Backus**

13	1715CST			0	0				Hail (1.00)
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1730CST

Cass County **7 N Pine River**

13	1802CST			0	0				Hail (1.00)
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Itasca County **Squaw Lake**

15	1711CST			0	0				Thunderstorm Wind (G52)
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Public-estimated winds to 60 mph knocked down 8-inch diameter trees.

St. Louis County **Gheen**

15	1955CST			0	0				Thunderstorm Wind (G50)
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Trees and power lines were blown down. The wind speed is estimated.

Itasca County **Grand Rapids**

15	1955CST			0	0				Thunderstorm Wind (G52)
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Thunderstorm winds were estimated by the public at 60 mph.

Cass County **Pillager**

22	2315CST			0	0				Thunderstorm Wind (G50)
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Power lines were blown down. The wind speed is estimated.

Crow Wing County **Brainerd**

22	2315CST			0	0				Thunderstorm Wind (G50)
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Trees were blown down. The wind speed is estimated.

Crow Wing County **Deerwood**

22	2315CST			0	0				Thunderstorm Wind (G50)
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Trees and large branches were blown down. The wind speed is estimated.

Aitkin County **Aitkin**

23	0000CST			0	0				Thunderstorm Wind (G61)
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0005CST

Winds measured at 70 mph blew down trees in the city and caused damage to planes and hangers at the Aitkin Municipal Airport.

Aitkin County **Mc Gregor**

23	0025CST			0	0				Thunderstorm Wind (G50)
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Trees were blown down. The wind speed is estimated.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northeast									
Carlton County Kettle River	23	0038CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				
Pine County Sturgeon Lake	23	0041CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				
Carlton County Moose Lake	23	0042CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				
St. Louis County 3 S Floodwood	23	0100CST			0	0			Thunderstorm Wind (G50)
					Numerous trees were blown down. The wind speed is estimated.				
Carlton County Cloquet	23	0116CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				
Lake County Two Harbors	25	1013CST			0	0			Thunderstorm Wind (G50)
					Six-inch diameter trees were blown down. The wind speed is estimated.				
Itasca County Squaw Lake	25	1435CST			0	0			Thunderstorm Wind (G52)
Itasca County Bigfork	25	1525CST			0	0			Thunderstorm Wind (G61)
Itasca County 4 S Bigfork	25	1538CST			0	0			Thunderstorm Wind (G61)
Crow Wing County Cross Lake	25	1545CST 1600CST			0	3			Thunderstorm Wind (G70)
					Several recreational vehicles at a campground were damaged or destroyed, with three minor injuries. Many trees were blown down, and there was some damage to mobile homes and several other vehicles.				
Itasca County Deer River	25	1549CST			0	0			Thunderstorm Wind (G70)
Crow Wing County Nisswa	25	1553CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				
Crow Wing County Cross Lake	25	1553CST			0	0			Thunderstorm Wind (G50)
					Numerous trees were blown down. The wind speed is estimated.				
Cass County Cass Lake	25	1608CST			0	0			Thunderstorm Wind (G50)
					Large trees were blown down. The wind speed is estimated.				
St. Louis County Hibbing	25	1615CST			0	0			Thunderstorm Wind (G52)
St. Louis County Hibbing	25	1620CST			0	0			Thunderstorm Wind (G61)
Aitkin County 3 SE Tamarack	25	1630CST			0	0			Thunderstorm Wind (G60)
					Trees were knocked down and the roofs were blown off of two farmsteads.				
Aitkin County Jacobson	25	1636CST			0	0			Thunderstorm Wind (G55)
					Numerous trees were blown down in the Savanna State Forest. The wind speed is estimated.				
Aitkin County Palisade	25	1636CST			0	0			Thunderstorm Wind (G55)
					Numerous trees and power lines were blown down. The wind speed is estimated.				
Carlton County Mahtowa	25	1715CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. The wind speed is estimated.				
St. Louis County Floodwood	25	1715CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. The wind speed is estimated.				
St. Louis County Mountain Iron	25	1720CST			0	0			Thunderstorm Wind (G50)
					Power lines and large trees were blown down. The wind speed is estimated.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
<u>MINNESOTA, Northeast</u>									
St. Louis County									
Duluth	25	1732CST 1736CST			0	0			Thunderstorm Wind (G56)
Winds to 65 mph were reported at Chester Bowl Park, blowing down 12-inch diameter trees.									
St. Louis County									
Duluth	25	1751CST			0	0			Thunderstorm Wind (G50)
Six-inch diameter trees were blown down. The wind speed is estimated.									
St. Louis County									
Duluth	25	1759CST			0	0			Thunderstorm Wind (G50)
Six-inch diameter branches were blown down. The wind speed is estimated.									
Lake County									
Knife River	25	1803CST			0	0			Thunderstorm Wind (G50)
Six-inch diameter trees were blown down. The wind speed is estimated.									
Itasca County									
Squaw Lake	27	1621CST			0	0			Hail (0.75)
Itasca County									
Squaw Lake	27	1648CST			0	0			Hail (1.50)
Cass County									
Cass Lake	27	1652CST			0	0			Hail (0.75)
Itasca County									
Bigfork	27	1720CST			0	0			Hail (0.75)
Itasca County									
Marble	27	1753CST			0	0			Hail (0.75)
Itasca County									
Bovey	27	1806CST			0	0			Hail (1.00)
St. Louis County									
2 S Toivola	27	1859CST 1900CST	0	8.3	0	0			Tornado (F0)
A sheriff deputy reported a very brief touchdown of a weak tornado that caused no damage. The path length was only about 50 feet.									
Crow Wing County									
Ft Ripley	28	2337CST			0	0			Hail (0.75)
Crow Wing County									
10 E Ft Ripley	28	2346CST			0	0			Hail (1.75)
Koochiching County									
International Falls	29	0006CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated.									
St. Louis County									
Cook	29	0100CST			0	0			Thunderstorm Wind (G50)
Trees were blown down. The wind speed is estimated.									
Pine County									
Hinckley	30	1510CST			0	0			Hail (1.00)
Pine County									
Brook Park	30	1510CST			0	0			Thunderstorm Wind (G50)
Trees were blown down. The wind speed is estimated.									
Pine County									
Askov	30	1540CST			0	0			Thunderstorm Wind (G52)
Carlton County									
Holyoke	30	1612CST			0	0			Thunderstorm Wind (G50)
Tree limbs up to 12 inches in diameter were blown down. The wind speed is estimated.									
<u>MINNESOTA, Northwest</u>									
Clay County									
3 S Georgetown	03	0747CST			0	0			Hail (0.75)
Clay County									
Georgetown	03	0751CST			0	0			Hail (1.75)
Clay County									
7 NE Dilworth	03	0756CST			0	0			Hail (1.75)
Clay County									
2 E Averill	03	0815CST			0	0			Hail (2.75)
The hail caused quite a bit of damage to cars and homes.									
Clay County									
Hitterdal	03	0820CST			0	0			Hail (1.75)
Becker County									
1 N Lake Park	03	0827CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northwest									
Mahnomen County									
5 SE Mahnomen	03	0910CST			0	0	0.50K		Thunderstorm Wind
									Large tree limbs were blown down.
Clay County									
Moorhead	04	0640CST 0715CST			0	0	20K		Thunderstorm Wind (G56)
									Trees, signs, and power lines were downed around the Moorhead area as the strong winds came through.
Clay County									
Dilworth	04	0650CST			0	0			Hail (0.75)
Clay County									
Dilworth	04	0650CST			0	0	2K		Thunderstorm Wind
									Several large trees were blown down.
Clay County									
5 W Felton	04	0710CST			0	0			Hail (1.00)
Clay County									
Hawley	04	0710CST			0	0			Hail (0.75)
Norman County									
Ada	04	0710CST			0	0	50K		Thunderstorm Wind
									The strong wind peeled off the roof on the city's public works building. Debris from the falling roof damaged 4 vehicles inside. Another city building was also damaged, as well as many trees around town.
Becker County									
Lake Park	04	0715CST			0	0			Hail (2.00)
Becker County									
Detroit Lakes	04	0730CST			0	0			Thunderstorm Wind (G52)
									Power was lost in Detroit Lakes.
Clay County									
Sabin	04	0750CST			0	0			Hail (1.00)
Becker County									
1 E Ponsford	04	0813CST			0	0			Hail (0.88)
Becker County									
1 E Ponsford	04	0813CST			0	0			Thunderstorm Wind (G52)
Clay County									
Hawley	04	0814CST			0	0			Hail (0.75)
Hubbard County									
7 W Park Rapids	04	0815CST			0	0			Hail (0.75)
Hubbard County									
Akeley	04	0835CST			0	0	25K		Thunderstorm Wind
									Numerous trees were blown down at the Akeley campground. One fell on a car and another fell on a truck.
Hubbard County									
5 N Nevis	04	0835CST			0	0	15K		Thunderstorm Wind
									Numerous trees were blown down, also knocking down power lines.
Beltrami County									
Bemidji	04	0900CST			0	0	10K		Thunderstorm Wind
									A tree fell on a motorhome in Bemidji.
Beltrami County									
5 SW Blackduck	04	0900CST			0	0			Hail (0.88)
Beltrami County									
5 SW Blackduck	04	0900CST			0	0	2K		Thunderstorm Wind
									Significant tree damage was reported southwest of Blackduck. At Blackduck Lake, a car and camper were damaged by falling trees.
Beltrami County									
Blackduck	04	0920CST			0	0			Hail (1.00)
Beltrami County									
Blackduck	04	0920CST			0	0	1K		Thunderstorm Wind
									Large trees were damaged by the wind.
Otter Tail County									
Deer Creek	04	1121CST			0	0			Hail (0.75)
Wadena County									
Wadena	04	1129CST			0	0			Hail (0.75)
Norman County									
Ada	08	0839CST			0	0			Hail (0.88)
Polk County									
1 E Sherack	12	2125CST			0	0			Hail (0.88)
Polk County									
3 S Angus	12	2150CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northwest									
Polk County 4 E Euclid	12	2220CST			0	0			Hail (1.00)
Marshall County 1 S Oslo	14	0000CST			0	0			Hail (0.75)
Marshall County Oslo to 2 SE Oslo	14	0002CST	2	150	0	0	100K		Tornado (F2)
			The tornado lifted the roof off a warehouse, depositing it nearly 2 miles away to the southeast. A 6-ton truck was also pushed nearly 150 yards.						
Marshall County Oslo	14	0015CST			0	0			Hail (1.75)
Kittson County Humboldt	15	0740CST			0	0			Hail (0.75)
Roseau County 2 NW Roseau	15	0900CST			0	0	5K		Thunderstorm Wind
			Metal siding was blown off an apartment building.						
Lake Of The Woods County 5 SW Angle Inlet	15	1000CST			0	0	2K		Thunderstorm Wind
			Trees were downed along county road 49.						
Roseau County Roosevelt	15	1415CST			0	0	10K		Thunderstorm Wind
			A building collapsed in the high wind.						
Roseau County 5 SSW Roosevelt	15	1415CST			0	0	15K		Thunderstorm Wind
			Trees were blown down across roads and a tower was blown over.						
Lake Of The Woods County Williams	15	1420CST			0	0	5K		Thunderstorm Wind
			Trees were blown down, some falling on cars and power lines.						
Lake Of The Woods County Angle Inlet	15	1455CST			0	0	0.50K		Thunderstorm Wind
			Several trees were downed.						
Lake Of The Woods County 10 NW Lude	15	1458CST	0.5	25	0	0			Tornado (F0)
			A touchdown was reported over Lake of the Woods, north of Rocky Point.						
Polk County 10 N Gully	15	1504CST	0.5	25	0	0			Tornado (F0)
Lake Of The Woods County 36 NW Baudette	15	1505CST			0	0	0.50K		Thunderstorm Wind
			Large trees were blown down.						
Otter Tail County 1 N Pelican Rapids	15	1512CST			0	0	0.50K		Thunderstorm Wind
			Trees were blown down by the wind.						
Wilkin County 6 NW Rothsay	15	1512CST			0	0	5K		Thunderstorm Wind
			A semi truck was overturned on Interstate 94.						
Otter Tail County 4 S Perham	15	1513CST			0	0	2K		Thunderstorm Wind
			Power poles were downed.						
Otter Tail County Vergas	15	1535CST			0	0	0.50K		Thunderstorm Wind
			Trees were blown down in Vergas.						
Becker County 10 NE Detroit Lakes	15	1540CST			0	0			Thunderstorm Wind (G70)
Becker County 4 SW Detroit Lakes	15	1540CST			0	0	20K		Thunderstorm Wind
			Strong winds knocked down many trees in the Lake Sallie area. One landed on an empty tent, another fell on a restaurant, and another fell on a pickup. Pontoons and sailboats were also flipped over.						
Becker County 2 W Frazee	15	1540CST			0	0	15K		Thunderstorm Wind
			A 33 foot camper was rolled over by the wind at Eagle Lake.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northwest									
Becker County									
Frazee	15	1540CST			0	0	0.50K		Thunderstorm Wind
			Trees were blown down.						
Becker County									
12 NE Detroit Lakes	15	1547CST			0	0	0.50K		Thunderstorm Wind
			Trees were blown down at Height of Land Lake.						
Otter Tail County									
5 NE Perham	15	1608CST			0	0			Hail (0.75)
Becker County									
4 NW Osage	15	1611CST			0	0			Thunderstorm Wind (G52)
Hubbard County									
15 N Park Rapids	15	1615CST			0	0	0.50K		Thunderstorm Wind
			Trees were downed by the wind.						
Hubbard County									
Park Rapids	15	1630CST			0	0	10K		Thunderstorm Wind
			Several buildings were damaged by the strong wind. The steel from one of the buildings was found wrapped around some trees 1/4 mile away.						
Otter Tail County									
Parkers Prairie	15	1635CST			0	0			Thunderstorm Wind (G56)
Grant County									
Wendell	15	1840CST			0	0			Thunderstorm Wind (G61)
			The strong wind collapsed a barn and blew down some trees.						
Grant County									
Elbow Lake	15	1846CST			0	0	2K		Thunderstorm Wind
			Power poles were downed.						
Grant County									
Barrett	15	1849CST			0	0			Thunderstorm Wind (G61)
Otter Tail County									
2 S Dalton	15	1851CST			0	0			Thunderstorm Wind (G56)
Otter Tail County									
Clitherall	15	1905CST			0	0			Thunderstorm Wind (G52)
Otter Tail County									
12 E Fergus Falls	15	1915CST			0	0	0.50K		Thunderstorm Wind
			Trees were downed.						
Otter Tail County									
12 NE Battle Lake	15	1920CST			0	0	1K		Thunderstorm Wind
			Numerous large trees were downed.						
Otter Tail County									
New York Mills	15	1930CST			0	0	10K		Thunderstorm Wind
			A large tree split in two, one half falling on a car and the other half falling on a house.						
Wadena County									
3 N Menahga	15	1945CST			0	0			Thunderstorm Wind (G52)
Wadena County									
3 E Verndale	15	1950CST			0	0	20K		Thunderstorm Wind
			A 110 foot storage shed was blown down.						
Hubbard County									
4 W Nevis	15	1952CST			0	0			Thunderstorm Wind (G52)
Hubbard County									
Nevis	15	2000CST			0	0	0.50K		Thunderstorm Wind
			Trees were flattened in Nevis.						
Grant County									
2 S Herman to Hoffman	15 16	2200CST 0200CST			0	0	20K		Urban/Sml Stream Fld
			6 to 8 inches of rain fell across southern Grant county, with the town of Hoffman reporting 5 inches. Several roads were washed out and many others were blocked by high water.						
Marshall County									
5 N Gatzke	21	1104CST			0	0			Hail (1.00)
Roseau County									
1 E Strathcona	21	1104CST			0	0			Hail (0.75)
Marshall County									
6 N Middle River	21	1110CST			0	0			Hail (0.75)
Polk County									
Climax	22	2015CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northwest									
Polk County									
4 E Gently	22	2032CST			0	0	0.50K		Thunderstorm Wind
		Trees were damaged by the wind.							
Red Lake County									
Red Lake Falls	22	2050CST			0	0			Hail (0.75)
Polk County									
1 N Tabor	23	1130CST			0	0			Hail (1.25)
Polk County									
Euclid	23	1153CST			0	0			Hail (0.88)
Red Lake County									
2 E Dorothy	23	1210CST			0	0			Hail (1.00)
Red Lake County									
2 S Red Lake Falls	23	1228CST			0	0			Hail (1.75)
Red Lake County									
Red Lake Falls	23	1228CST			0	0			Hail (1.00)
Red Lake County									
3 NW Brooks	23	1240CST			0	0			Hail (1.00)
Polk County									
7 NE Erskine	23	1250CST			0	0			Hail (0.75)
Marshall County									
7 NE Oslo	25	0930CST			0	0			Hail (0.75)
Marshall County									
2 SW Argyle	25	0945CST			0	0			Hail (0.75)
Marshall County									
6 NW Newfolden	25	1045CST			0	0			Hail (0.75)
Roseau County									
Strathcona	25	1110CST			0	0			Hail (0.88)
Roseau County									
5 W Wannaska	25	1117CST			0	0			Hail (0.75)
Marshall County									
9 N Grygla	25	1135CST			0	0			Hail (0.75)
Pennington County									
26 E Thief River Falls	25	1145CST			0	0	1K		Thunderstorm Wind
		Trees were damaged by the wind.							
Polk County									
3 N Winger	25	1200CST			0	0	1K		Thunderstorm Wind
		Power lines were blown down.							
Becker County									
9 NW Ogema	25	1235CST			0	0			Hail (1.00)
Mahnomen County									
Waubun	25	1240CST	0.5	25	0	0			Tornado (F0)
Clay County									
1 W Ulen	25	1310CST			0	0	0.50K		Thunderstorm Wind
		Several trees were damaged.							
Clay County									
Ulen	25	1312CST			0	0	0.50K		Thunderstorm Wind
		Several trees were blown down.							
Becker County									
4 N Lake Park	25	1330CST			0	0	1K		Thunderstorm Wind
		Tree damage was reported.							
Becker County									
5 NW Detroit Lakes	25	1339CST	0.5	25	0	0			Tornado (F0)
Becker County									
10 W Detroit Lakes	25	1342CST			0	0			Hail (1.00)
Beltrami County									
9 SW Kelliher	25	1410CST			0	0			Thunderstorm Wind (G61)
Norman County									
Perley	27	1414CST			0	0			Hail (0.75)
Norman County									
3 N Perley	27	1419CST			0	0			Hail (1.75)
Norman County									
Ada	27	1430CST			0	0			Hail (2.75)
Clay County									
1 NW Georgetown	27	1436CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northwest									
Norman County									
Twin Vly	27	1442CST			0	0			Hail (1.75)
Norman County									
5 NW Twin Vly	27	1442CST			0	0			Hail (2.75)
Norman County									
Gary	27	1455CST			0	0			Thunderstorm Wind (G52)
									Large trees were blown down.
Clay County									
4 N Felton	27	1500CST			0	0			Hail (0.75)
Mahnomen County									
Mahnomen	27	1510CST			0	0			Hail (1.00)
Clearwater County									
Ebro	27	1531CST			0	0			Hail (1.75)
Clearwater County									
5 SW Bagley	27	1535CST			0	0	0.50K		Thunderstorm Wind
									Trees were blown down.
Clay County									
Sabin	27	1545CST			0	0			Hail (1.00)
Beltrami County									
Bemidji	27	1556CST			0	0	50K		Hail (2.00)
		1600CST							Car dealerships suffered a lot of damage from the hail.
Hubbard County									
2 W Nary	27	1600CST			0	0			Hail (1.75)
Beltrami County									
6 S Bemidji	27	1604CST			0	0			Hail (1.75)
Becker County									
Detroit Lakes	27	1624CST			0	0			Hail (0.88)
Becker County									
4 N Detroit Lakes	27	1628CST			0	0			Hail (1.75)
Beltrami County									
1 N Saum	27	1655CST			0	0			Hail (0.75)
Clearwater County									
4 S Clearbrook	28	1910CST			0	0			Hail (0.75)
Beltrami County									
4 N Bemidji	28	1955CST			0	0			Hail (1.75)
Hubbard County									
2 W Nary	28	2012CST			0	0			Thunderstorm Wind (G56)
MINNESOTA, Southeast									
MINZ079-086>088-094>096									
Wabasha - Dodge - Olmsted - Winona - Mower - Fillmore - Houston									
	04	0700CST			0	0			Excessive Heat
	05	1900CST							
									Afternoon temperatures reaching 95 to 100 combined with high humidity levels caused heat indices of 105 to 115. Even though there were a few cases of heat exhaustion reported, there were no deaths directly related to the excessive heat and humidity.
Wabasha County									
Mazeppa	08	1655CST			0	0	3.5K		Hail (0.75)
Wabasha County									
3 SE Lake City	08	1710CST			0	0	5K		Thunderstorm Wind (G55)
Wabasha County									
Wabasha	08	1710CST			0	0	2K		Thunderstorm Wind (G61)
Olmsted County									
Potsdam	08	1728CST			0	0			Hail (2.00)
Wabasha County									
2 W Elgin	08	1728CST			0	0	3K	4.5K	Hail (2.00)
Wabasha County									
Elgin	08	1730CST			0	0	8K		Thunderstorm Wind (G55)
Winona County									
1.5 NW Lewiston to 2 SE Lewiston	08	1820CST 1830CST	3.5	100	0	2	2M	60K	Tornado (F2)
Winona County									
Nodine	08	1832CST			0	0	2.5K		Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Southeast									
Houston County									
Houston	08	1853CST			0	0	2K		Hail (1.75)
Winona County									
Dresbach	08	1858CST			0	0			Hail (0.75)
Fillmore County									
2 N Canton	08	1945CST			0	0	2K		Thunderstorm Wind (G56)
<p>A tornado touched down just northwest of Lewiston (Winona County), then moved into the middle of town and intensified. Numerous homes along Main Street had extensive damage with broken windows, damaged roofs and downed trees. One home had the entire roof taken off, while at least 4 cars were demolished from debris landing on them. A farm southeast of town had every building destroyed, except the house. Of the 1,300 population in Lewiston, only two people sustained minor injuries. Elsewhere across southeast Minnesota, spotters and law enforcement officials reported hail up to 2 inches in diameter along with trees and power lines knocked down.</p>									
Mower County									
Countywide	18	1830CST 2330CST			0	0	80K	60K	Flash Flood
<p>3 inches of rain fell on already saturated soil, causing flash flooding. In the city of Austin, parks were underwater and several streets closed when the Cedar River and Dobbins Creek overflowed their banks. Flood waters forced the closure of Interstate 90 near Austin, which happened only twice previously when two 100 year floods occurred within 10 days of each other in 1978. Flood waters also caused damage to crops and homes in the Le Roy and Racine areas.</p>									
Mower County									
South Portion	20	0830CST 1000CST			0	0	45K	55K	Flash Flood
Fillmore County									
Countywide	20	0915CST 1100CST			0	0	85K	40K	Flash Flood
<p>Thunderstorms dumped 1 to 3 inches of rain on soils already saturated from recent heavy rain. In Adams (Mower County), water was up to the doors of businesses as residents sandbagged. Highway 63 near Spring Valley (Fillmore County) was covered with up to a foot of water, while flooding was also reported at a campground in Forestville State Park near Preston (Fillmore County).</p>									
MN2079-086>088-094>096									
Wabasha - Dodge - Olmsted - Winona - Mower - Fillmore - Houston									
	23	1000CST			0	0			Excessive Heat
	25	2300CST							
<p>For three consecutive days, afternoon highs reached into the 90s, while heat indices ranged from 105 to 115. No deaths directly related to the excessive heat and humidity were reported.</p>									
MN2079-086>088-094>096									
Wabasha - Dodge - Olmsted - Winona - Mower - Fillmore - Houston									
	28	1000CST			1	0			Excessive Heat
	30	2000CST							
<p>Excessive heat and humidity affected southeast Minnesota once again with afternoon highs reaching the middle 90s to 100. Heat indices ranged from 105 to as high as 120. A 65 year old woman died of heat stroke in her mobile home when the temperature inside the home reached 130 degrees. F65MH</p>									
MINNESOTA, Southwest									
Lincoln County									
5 NW Verdi	03	0103CST			0	0			Thunderstorm Wind (G52)
Pipestone County									
Woodstock	03	0130CST 0145CST			0	0	20K		Thunderstorm Wind (G61)
<p>Thunderstorm winds downed trees and power lines, littering the southeast side of Woodstock with debris. One garage was destroyed.</p>									
Lyon County									
Minneota	03	0130CST			0	0			Thunderstorm Wind (G52)
<p>Thunderstorm winds caused tree damage. The amount of damage was not determined.</p>									
Murray County									
5 SE Fulda	03	0139CST			0	0			Hail (0.75)
Lincoln County									
Lake Benton	13	1935CST			0	0			Hail (0.75)
Pipestone County									
8 W Ruthton	13	1949CST			0	0	5K		Thunderstorm Wind (G52)
<p>Thunderstorm winds blew down power lines and caused tree damage.</p>									
Lincoln County									
5 SE Lake Benton	13	1949CST			0	0			Hail (0.75)
Lyon County									
Balaton	13	1953CST			0	0			Hail (1.75)
Lyon County									
Tracy	13	2004CST			0	0	5K		Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

MINNESOTA, Southwest

Large hail broke windows, including one in a police car.

Lincoln County 8 NW Lake Benton	13	2047CST			0	0	20K		Thunderstorm Wind (G65)
									Thunderstorm winds blew down 24 electric poles and caused tree damage.
Rock County Hills	23	0130CST			0	0			Hail (0.75)
Rock County Hills	23	0130CST			0	0			Thunderstorm Wind (G52)
									Thunderstorm winds caused an undetermined amount of tree damage.

MINNESOTA, West

NONE REPORTED.

MINNESOTA, West Central

Big Stone County Ortonville	22	2110CST			0	0			Thunderstorm Wind (G71)
									Winds to 80 mph blew the roof off of the carpet store in Ortonville. The high winds also downed many large tree branches.
Big Stone County Graceville	25	1735CST			0	0			Thunderstorm Wind (G61)
									Winds to 70 mph blew down some trees near Graceville.

MISSISSIPPI, Central

Lauderdale County Meridian	07	1600CST			0	0	1K		Thunderstorm Wind
									A few trees were blown down.
Marion County Sandy Hook	07	1630CST			0	0	2K		Thunderstorm Wind
									Several trees were blown down.
Okibbeha County Starkville	16	1500CST			0	0	1K		Thunderstorm Wind
									Numerous large limbs were blown down.
Lauderdale County Meridian	16	1544CST			0	0			Hail (1.00)
Rankin County Florence	16	1820CST			0	0			Hail (0.75)
Simpson County Harrisville	17	1715CST			0	0	1K		Thunderstorm Wind
									Large limbs were blown down.
Rankin County Star	17	1740CST			0	0	1K		Thunderstorm Wind
									A few trees were blown down.
Copiah County Hazlehurst	17	2000CST			0	0	8K		Thunderstorm Wind
									Several trees and power lines were blown down.
Neshoba County 6 SW Philadelphia	26	1130CST			0	0	1K		Thunderstorm Wind
									A few trees were blown down at the intersection of Highway 21 and Highway 485.
Newton County Newton	26	1220CST			0	0	1K		Thunderstorm Wind
									A few trees were blown down along Highway 80.
Covington County Collins	26	1440CST			0	0	8K		Thunderstorm Wind
									Numerous trees were blown down along Highway 84.
Marion County Columbia	26	1605CST			0	0	2K		Thunderstorm Wind
									A few trees were blown down.
Copiah County Crystal Spgs	26	1715CST			0	0	2K		Thunderstorm Wind
									Several trees were blown down.
Covington County Seminary	30	1400CST			0	0	2K		Thunderstorm Wind
									Several trees were blown down.
Okibbeha County 10 S Starkville	31	1640CST			0	0	35K		Thunderstorm Wind
									Several homes received major roof damage. Several trees were blown down.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MISSISSIPPI, North</u>									
Lee County									
Tupelo	07	1600CST 1605CST			0	0	1K		Thunderstorm Wind
									One home had several shingles blown off of its roof.
Pontotoc County									
Furrs	25	1820CST 1825CST			0	0	5K		Thunderstorm Wind
									A few trees were blown down.
Tallahatchie County									
Countywide	26	1645CST 1655CST			0	0	10K		Thunderstorm Wind
									Many trees and power lines were blown down.
Tallahatchie County									
Countywide	26	1645CST 1900CST			0	0	1K		Urban/Sml Stream Fld
									A few roads were under water.
<u>MISSISSIPPI, South</u>									
Hancock County									
3 S Bay St Louis	01	0900CST			0	0			Waterspout
									Two waterspouts were observed off the Hancock County coast.
Jackson County									
3 S Gautier	02	0522CST			0	0			Waterspout
									Two waterspouts were observed off the Jackson County coast south of Gautier.
Harrison County									
Orange Grove	26	1340CST			0	0			Hail (0.75)
									Dime size hail was reported by Harrison County Civil Defense.
Hancock County									
Waveland	26	1400CST			0	0	0.50K		Thunderstorm Wind
									The Hancock County Sheriff's Office reported trees blown down.
Harrison County									
Gulfport	26	1400CST			0	0	10K		Lightning
									Lightning started a fire at a house on Pine Forest Road that caused damage to two bedrooms and a hallway. Smoke damage occurred throughout the home.
Hancock County									
Bay St Louis	26	1410CST			0	0	2K		Lightning
									Lightning strikes caused fires at a house and business resulting in minor damage to each structure.
Walthall County									
Tylertown	26	1650CST			0	0			Hail (0.75)
									A cooperative observer reported dime size hail.
Pike County									
Mc Comb	26	1730CST			0	0	0.75K		Thunderstorm Wind
									The McComb Police Department reported numerous power lines and a tree knocked down.
Pike County									
Summit	26	1746CST			0	0	0.25K		Thunderstorm Wind
									A tree was blown down on Highway 51.
<u>MISSISSIPPI, Southeast</u>									
Greene County									
4 E Neely to 7 E Neely	11	2115CST 2215CST			0	0	2K		Flash Flood
									Heavy rains caused temporary flooding along Old Highway 24 around Bradley. Several roads had to be closed for about an hour generally between State Highway 63 and Neeley road. WSR-88D radars estimated three to five inches of rain fell across the area in a three hour period.
Stone County									
Wiggins	25	1815CST 1820CST			0	0	20K		Thunderstorm Wind (G55)
									Strong thunderstorm winds blew several trees down over the southwest part of the county. Power lines were also knocked down, causing power outages in Wiggins.
George County									
Lucedale	30	1525CST			0	0			Hail (1.00)
									Quarter size hail was reported near Brushy Creek, northeast of Lucedale.
Greene County									
Pisgah	30	1525CST 1527CST			0	0			Hail (0.75)
									Dime size hail was reported along State Highway 63 just south of Pisgah.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
MISSISSIPPI, Southeast									
George County Benndale	30	1550CST 1552CST			0	0			Hail (0.75)
		Dime size hail was reported near State Highway 26 north of Benndale.							
MISSOURI, East									
Crawford County 6 S Steelville	06	1635CST			0	0			Thunderstorm Wind (G52)
		Thunderstorm wind gusts downed some trees south of Steelville.							
Warren County Marthasville	06	1730CST			0	0			Urban/Sml Stream Fld
		Heavy rain in the Marthasville area caused a couple of creeks to rise over their banks resulting in some minor road flooding.							
St. Louis County St Johns	09	1749CST			0	0			Thunderstorm Wind (G52)
		Thunderstorm wind gusts downed trees and power lines.							
St. Louis County 2 W Ellisville	09	1755CST			0	0			Thunderstorm Wind (G52)
		Thunderstorm wind gusts downed trees and power lines in the Wildwood area of west St. Louis County.							
St. Louis County Bellefontaine Neighb	09	1800CST			0	0			Thunderstorm Wind (G52)
		Thunderstorm wind gusts downed trees and power lines in north St. Louis County.							
Jefferson County Arnold	09	1810CST			0	0			Thunderstorm Wind (G52)
		Amateur radio spotters reported trees down along Old Lemay Ferry and Oak roads.							
MOZ050 Callaway	16	1100CST 2000CST			1	0			Excessive Heat
		The Missouri Health Department reported a heat related death in Callaway County. High temperatures that day were in the middle 90s. M67OU							
MOZ009>010-018>019-026>027-034>036-041>042-047>052-059>065-072>075-084>085	18 31	1200CST 1800CST			42	397			Excessive Heat
		A heat wave gripped the area for the last 2 weeks of July. Temperatures stayed in the middle to upper 90s with a few days topping 100. Columbia set a record high with 104 degrees on 7/29/99. St. Louis tied a record with 103 degrees on 7/30/99. The Heat Index generally ranged from 105 to near 115. Most of the deaths and injuries occurred in the St. Louis Metropolitan Area. M47OU, F43OU, M69OT, M70OT, M73OT, M74OT, F75OT, M75PH, M56PH, F72PH, F86PH, M85PH, M68PH, F87PH, M65PH, F88PH, F85PH, M82PH, F89PH, F69PH, F75PH, F73PH, M80PH, M83PH, M43OT, F76PH, M73PH, M54PH, F82PH, F87PH, F66PH, M80PH, M67PH, M48PH, F92PH, M86PH, M71PH, M72PH, F77PH, M76PH, F77PH, M51OT							
Scotland County 4 NE Memphis	23	1630CST			0	0			Thunderstorm Wind (G52)
		Thunderstorm wind gusts downed a light pole and a couple of trees northeast of Memphis.							
Knox County Baring	26	1750CST			0	0			Hail (1.00)
		A storm spotter reported 1 inch hail in Baring.							
Lewis County Lewistown	26	1855CST			0	0			Lightning
		Lightning damaged a primary substation, which caused a loss of power to two other substations resulting in about 2,200 people losing power. Power to the two secondary substations was restored within an hour. The lightning also damaged communications equipment at the Lewis County Rural Electric office.							
Lewis County 3 W Ewing	26	1902CST			0	0			Thunderstorm Wind (G52)
Lewis County Ewing	26	1905CST			0	0			Hail (0.75)
		Thunderstorm wind gusts damaged a garage and the two vehicles parked inside. 3/4 inch hail was also reported.							
Lewis County Canton	26	1915CST			0	0			Thunderstorm Wind (G52)
		Thunderstorm wind gusts downed a few trees and power lines.							
Iron County Ironton to Annapolis	27	1000CST			0	0			Thunderstorm Wind (G52)
		Thunderstorm wind gusts downed trees and power lines across parts of Ironton. At least 4000 people lost power for a time. A couple of							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

MISSOURI, East

trees fell on homes causing roof damage.

Boone County
2 SE Columbia

28	1030CST			0	1				Thunderstorm Wind (G60)
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Thunderstorm wind gusts caused damage at the University of Missouri's Bradford Research Farm just southeast of Columbia. Trees were downed and experimental crops flattened. One man suffered minor injuries from flying debris. An unofficial wind instrument measured a wind gust of 76 mph.

MISSOURI, Lower

NONE REPORTED.

MISSOURI, Northwest

MOZ020-032-037>040-046-054 Buchanan - Chariton - Jackson - Lafayette - Saline - Howard - Cooper - Henry

01	0000CST			0	0				Flood
14	2359CST								

Extensive river flooding that began in June continued into July. Major flooding occurred on the Missouri River at Waverly and Miami (see June StormData for crest information). Minor to moderate flooding occurred on the Missouri at St. Joseph, Sibley, Napoleon, Glasgow, and Boonville, the South Grand River near Ulrich, the Blackwater River near Blue Lick, and the Grand River at Brunswick. Moniteau Creek near Fayette flooded on July 1 as a result of rains that fell between June 27 and 30.

MOZ037

Jackson

08	0000CST			2	0				Excessive Heat
09	2359CST								

Hot and humid weather was the rule in the Kansas City area on July 8 and 9, as temperatures climbed to between 90 and 95 degrees. A Kansas City man and a Lees Summit woman died of heat-related causes. M65PH, F81PH

MOZ001>005-005>008-011>017-020>025-028>033-037>040-043>046-053>054

Atchison - Nodaway - Worth - Gentry - Harrison - Mercer - Putnam - Schuyler - Holt - Andrew - De Kalb - Daviess - Grundy - Sullivan - Adair - Buchanan - Clinton - Caldwell - Livingston - Linn - Macon - Platte - Clay - Ray - Carroll - Chariton - Randolph - Jackson - Lafayette - Saline - Howard - Cass - Johnson - Pettis - Cooper - Bates - Henry

18	0000CST			22	0				Excessive Heat
31	2359CST								

Northwest Missouri suffered through two weeks of oppressive heat and humidity in late July as temperatures topped the 90 degree mark for 14 consecutive days. Dew points in the lower to middle 70s pushed afternoon heat indices above 100 degrees each day.

The heat wave was most intense from July 23rd through the 30th, as temperatures reached the upper 90s or topped 100 degrees for 8 consecutive days, with afternoon heat indices between 110 and 115 degrees. Kansas City's downtown airport recorded 7 straight 100 degree days, peaking at 106 on July 29. Adding to the deadly effects of the heat was the lack of nighttime cooling, especially in the urban areas. Overnight temperatures in downtown Kansas City did not drop below 78 degrees for a 13-day period, and nighttime heat indices remained in the 80s.

The heat wave claimed a total of 22 lives in northwest Missouri. Most of the victims were elderly, and 16 of the fatalities occurred in the urban core of Kansas City. The other heat-related deaths occurred outside Kansas City in Jackson County (one death), and in Cass (2 deaths), Bates (1), Buchanan (1), and Harrison (1) Counties.

M74OU, M73PH, M37MH, M54PH, M40PH, M56PH, M75PH, M81PH, F79PH, M71PH, F79PH, F75PH, M75PH, F82PH, F74PH, F72PH, F70PH, M69PH, M83PH, M81PH, M78PH, M62PH

Buchanan County

Faucett

23	1345CST			0	0	5K			Thunderstorm Wind
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Thunderstorm winds blew the roof off of a barn.

Caldwell County

Polo

23	1410CST			0	0				Thunderstorm Wind (G50)
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Clinton County

3 E Lathrop

23	1410CST			0	0	10K			Thunderstorm Wind (G60)
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Several trees were downed along Interstate 35. Debris from a nearby outbuilding was blown onto the interstate.

Livingston County

Chillicothe

23	1415CST			0	0				Thunderstorm Wind (G60)
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Caldwell County

Polo

23	1426CST			0	0				Hail (0.75)
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Grundy County

Galt

23	1440CST			0	0				Thunderstorm Wind (G50)
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Several large trees were downed.

Atchison County

5 N Rockport

30	2210CST			0	0				Thunderstorm Wind (G50)
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Nodaway County

Ravenwood

30	2341CST			0	0				Thunderstorm Wind (G55)
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Large trees were downed by thunderstorm winds.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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MISSOURI, Northwest

Nodaway County

Graham	31	0000CST			0	0			Thunderstorm Wind (G50) Several trees were reported downed.
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MISSOURI, Southeast

MOZ076-086>087-100-107>112-114 Perry - Bollinger - Cape Girardeau - Wayne - Carter - Ripley - Butler - Stoddard - Scott - Mississippi - New Madrid

	18	1300CST			1	0			Excessive Heat
	31	2359CST							

Prolonged excessive heat and humidity took a toll on the unprepared. In Cape Girardeau County at Gordonville, a 69-year-old man died from heat causes. The man died outdoors while spending the entire day outdoors repairing a fence. The exact cause of death was listed as complete vascular collapse due to heat exposure. High temperatures were around 100 degrees during the last few days of the month, with heat indices peaking between 110 and 115 degrees. A Heat Advisory was posted for over a week. The American Red Cross opened heat shelters in Cape Girardeau and Scott Counties, but usage was minimal. Hundreds of fans were distributed to those in need. M69OU

Butler County

Poplar Bluff	27	1300CST			0	0	6K		Thunderstorm Wind (G50) A thunderstorm uprooted a couple of medium size trees and blew down numerous tree limbs. A large sign was blown down.
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MISSOURI, Southwest

Jasper County

Carl Jct	01	0900CST			0	0	5K		Thunderstorm Wind Thunderstorm winds downed trees and power lines.
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Newton County

1 E Saginaw	01	0915CST			0	0			Thunderstorm Wind (G58)
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Jasper County

1 W Carthage	01	0915CST			0	0	5K		Thunderstorm Wind Thunderstorm winds knocked trees down across a road just west of Carthage. Power lines were also knocked down.
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Barton County

Lamar	01	0930CST			0	0	0		Thunderstorm Wind Thunderstorm winds downed a large tree.
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Lawrence County

5 W Mt Vernon	01	0940CST			0	0			Thunderstorm Wind (G62)
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Dade County

Everton	01	0945CST			0	0	0		Thunderstorm Wind Thunderstorm winds downed trees.
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Greene County

Willard	01	0955CST			0	0	1K		Thunderstorm Wind Thunderstorm winds blew down a large tent housing a fireworks retailer.
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Greene County

Springfield	01	1000CST			0	0	30K		Thunderstorm Wind (G58) Thunderstorm winds downed numerous trees and power lines. Some damage to mobile homes was also reported.
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Polk County

1 NW Bolivar	01	1000CST			0	0	10K		Thunderstorm Wind Thunderstorm winds downed trees and power lines. One car was damaged by a fallen tree.
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Christian County

3 N Ozark	01	1010CST			0	0	1K		Thunderstorm Wind (G70) Thunderstorm winds caused tree damage and threw a camper top 300 feet.
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Taney County

Branson	01	1035CST			0	0	0		Thunderstorm Wind Thunderstorm winds downed trees in and around the Branson area.
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Stone County

2 N Hurley	01	1035CST			0	0	0		Thunderstorm Wind Thunderstorm winds blew down trees.
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Dallas County

Buffalo	01	1045CST			0	0	0		Thunderstorm Wind Thunderstorm winds downed trees.
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Laclede County

Conway	01	1048CST			0	0	0		Thunderstorm Wind Thunderstorm winds uprooted and downed trees.
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Webster County

3 E Seymour	01	1050CST			0	0	10K		Thunderstorm Wind Thunderstorm winds toppled a house trailer.
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Laclede County Nebo

01	1056CST			0	0				Hail (0.75)
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MISSOURI, Southwest									
Laclede County									
Falcon	01	1056CST			0	0			Hail (0.75)
Douglas County									
Ava	01	1105CST			0	0	7K		Thunderstorm Wind
Thunderstorm winds caused minor structural damage to an apartment house.									
Wright County									
2 N Hartville	01	1111CST			0	0	0		Thunderstorm Wind
Thunderstorm winds downed trees onto State Highway 5.									
Texas County									
2 W Houston	01	1150CST			0	0	0		Thunderstorm Wind
Thunderstorm winds downed trees.									
Howell County									
1 E Pomona	01	1200CST			0	0	0		Thunderstorm Wind
Thunderstorm winds downed trees.									
Dade County									
Greenfield	06	1812CST			0	0	0		Thunderstorm Wind
Thunderstorm winds downed trees.									
Dade County									
4 SE Greenfield	06	1815CST			0	0			Hail (0.75)
Benton County									
7 N Cole Camp	09	1835CST 2100CST			0	0			Flash Flood
Thunderstorm caused minor flooding of Highway U north of Cole Camp.									
Taney County									
5 N Protem	09	2230CST			0	0			Flash Flood
Thunderstorms caused flooding over Highway 125 north of Protem.									
Oregon County									
5 N Thayer	09	2230CST 10 0100CST			0	0	0		Thunderstorm Wind
Thunderstorms produced flooding of highways north of Thayer.									
MOZ055>058-066>071-077>083-088>098-101>106									
Benton - Morgan - Miller - Maries - Vernon - St. Clair - Hickory - Camden - Pulaski - Phelps - Barton - Cedar - Polk - Dallas - Laclede - Texas - Dent - Jasper - Dade - Greene - Webster - Wright - Newton - Lawrence - Christian - Douglas - Howell - Shannon - McDonald - Barry - Stone - Taney - Ozark - Oregon									
	23	0600CST			6	0			Excessive Heat
	31	1900CST							
A prolonged period of excessive heat occurred in central, southwest, and south central Missouri. Afternoon high temperatures during this period averaged 95 degrees or higher with heat index values of 105 to 115 degrees. Six deaths were attributed to the heat: Three in Jasper County and one each in Greene, McDonald, and Vernon Counties. F94PH, M64PH, M46OU, F49OT, F76PH, M41PH									
Oregon County									
Myrtle	24	1230CST			0	0	0		Thunderstorm Wind
Thunderstorm winds downed trees.									
Howell County									
West Plains	24	1415CST			0	0	0		Thunderstorm Wind
Thunderstorm winds downed 4 or 5 trees.									
Laclede County									
Lebanon	24	1735CST			0	0	30K		Thunderstorm Wind (G62)
Thunderstorm winds estimated at 60 to 70 mph caused roof damage to a gas station and a motel. Power lines and poles were also downed. A large tent was blown onto several cars.									
Christian County									
Ozark	24	1849CST			0	0	0		Hail (0.88)
A thunderstorm produced nickel sized hail and wind gusts of 50 to 55 knots.									
Phelps County									
Rolla	27	1130CST			0	0	0		Thunderstorm Wind
Thunderstorm winds downed trees.									
MONTANA, Central									
MTZ012									
Cascade / Eastern Teton									
	07	0300MST 0600MST			0	0			High Wind (G57)
9 S ULM									
Chouteau County									
Square Butte	07	1400MST	0.2	20	0	0	2K		Tornado (F0)
Fergus County									
Denton	07	1413MST	0.2	20	0	0	2K		Tornado (F0)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MONTANA, Central</u>									
MTZ013		Fergus / Judith Basin							
	07	1600MST			0	0			High Wind (G50)
		30 NE ROY							
MTZ010		Eastern Glacier / Eastern Pondera / Toole / Liberty							
	07	1700MST			0	0			High Wind (G57)
		1815MST							
		SWEETGRASS 1700MST 57KT...CTB ASOS 50KT 1815MST							
MTZ011		Blaine / Chouteau / Hill							
	07	1900MST			0	0			High Wind (G39)
		SUSTAINED 39KT							
MTZ011		Blaine / Chouteau / Hill							
	08	0400MST			0	0			High Wind (G53)
		CHINOOK 11 S							
MTZ010		Eastern Glacier / Eastern Pondera / Toole / Liberty							
	08	1000MST			0	0			High Wind (G57)
		SWEETGRASS							
MTZ011		Blaine / Chouteau / Hill							
	08	1337MST			0	0			High Wind (G57)
		CHINOOK 11S							
Fergus County									
7 S Moore	19	1815MST			0	0			Tstm Wind/Hail
		1 INCH HAIL AND WIND GUST TO 52KT							
Fergus County									
6 S Lewistown	19	1835MST			0	0			Tstm Wind/Hail
		3/4 INCH HAIL AND WIND GUST TO 52KT							
Fergus County									
Grassrange	20	1255MST			0	0			Tstm Wind/Hail
		3/4 INCH HAIL AND WIND GUSTS TO 61KT							
Fergus County									
7 NE Denton	20	1810MST	0.1	10	0	0			Tornado (F0)
Chouteau County									
12 N Iliad	21	1615MST			0	0			Hail (0.75)
Chouteau County									
30 NW Ft Benton	21	1630MST			0	0			Hail (0.75)
Cascade County									
13 SE Belt	21	1630MST			0	0			Hail (1.00)
Blaine County									
Ft Belknap	21	1645MST			0	0			Hail (0.75)
Chouteau County									
50 NW Ft Benton	21	1645MST			0	0			Hail (0.75)
MTZ008		Beaverhead							
	24	1340MST			0	0			High Wind (G55)
		DILLON							
MTZ010		Eastern Glacier / Eastern Pondera / Toole / Liberty							
	24	1545MST			0	0			High Wind (G63)
		16 E BRADY							
<u>MONTANA, East</u>									
Phillips County									
Malta	07	1700MST			0	0			Thunderstorm Wind (G52)
Phillips County									
2 S Saco	07	1725MST			0	0	3K		Thunderstorm Wind
Valley County									
25 SSW Glasgow	07	1830MST			0	0			Funnel Cloud
Valley County									
15 SE Glasgow	07	1831MST			0	0			Thunderstorm Wind (G52)
Valley County									
15 SE Glasgow	07	1839MST			0	0			Hail (0.75)
Valley County									
Ft Peck	07	1840MST			0	0			Hail (1.00)
Garfield County									
40 NE Jordan	07	1842MST			0	0			Thunderstorm Wind (G52)
McCone County									
55 NW Circle	07	1855MST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
MONTANA, East									
McCone County									
2 S Vida	07	1940MST			0	0			Hail (0.75)
McCone County									
15 SSE Vida	07	2024MST			0	0			Hail (1.50)
Dawson County									
7 SE Richey	07	2100MST			0	0			Hail (0.75)
Valley County									
8 ESE Glentana	12	1650MST			0	0			Hail (1.00)
Daniels County									
1 N Richland	12	1700MST			0	0			Hail (0.88)
Roosevelt County									
Poplar	12	1719MST			0	0			Hail (0.75)
Richland County									
21 NW Enid	12	1731MST			0	0			Hail (1.00)
Daniels County									
10 SW Peerless	12	1736MST			0	0			Hail (1.75)
Daniels County									
6 SW Peerless	12	1738MST			0	0			Hail (1.00)
Daniels County									
6 SW Peerless	12	1740MST			0	0			Funnel Cloud
Daniels County									
8 SW Peerless	12	1749MST			0	0			Hail (1.00)
Richland County									
12 N Enid	12	1816MST			0	0			Hail (1.00)
Roosevelt County									
Poplar	12	1900MST			0	0	20K		Hail (1.75)
Richland County									
21 NW Enid	12	1918MST			0	0			Hail (1.75)
Daniels County									
12 N Peerless	13	1352MST			0	0			Hail (1.00)
Garfield County									
10 NW Cohagen	18	1715MST			0	0			Hail (0.88)
Prairie County									
21 NNW Terry	18	1834MST			0	0			Hail (0.75)
McCone County									
20 WNW Brockway	18	1835MST			0	0			Hail (0.75)
McCone County									
6 SW Weldon	18	1905MST			0	0			Hail (1.00)
McCone County									
3 W Weldon	18	1915MST			0	0	25K		Hail (4.50)
A severe thunderstorm dropped softball sized hail near the small community of Weldon. Windows were broken out of homes and pickup trucks. At 11 a.m. the next morning, the hail was still the size of quarters.									
Wibaux County									
10 N Wibaux	19	0455MST			0	0			Hail (1.00)
Dawson County									
11 SW Richey	19	1355MST			0	0			Hail (1.00)
Dawson County									
12 SW Richey	19	1430MST			0	0			Hail (1.75)
Dawson County									
6 W Bloomfield	19	1515MST			0	0			Hail (1.00)
Dawson County									
4 W Bloomfield	19	1540MST			0	0			Hail (1.00)
Dawson County									
4 SE Bloomfield	19	1555MST			0	0			Thunderstorm Wind (G61)
Dawson County									
7 S Bloomfield	19	1600MST			0	0			Thunderstorm Wind (G52)
Dawson County									
20 NNW Glendive	19	1620MST			0	0			Hail (0.75)
Dawson County									
8 N Glendive	19	1655MST			0	0			Hail (1.00)
Roosevelt County									
20 NNE Brockton	19	2010MST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MONTANA, East</u>									
Sheridan County									
7 W Medicine Lake	19	2025MST			0	0			Hail (0.75)
Petroleum County									
8 SW Flatwillow	20	1345MST			0	0			Hail (1.00)
Garfield County									
5 SE Haxby	20	1645MST			0	0			Thunderstorm Wind (G61)
Phillips County									
15 SE Malta	21	1537MST			0	0	10K		Tstm Wind/Hail
Valley County									
15 W Glasgow	21	1639MST			0	0			Hail (0.88)
Phillips County									
Zortman	21	1643MST			0	0			Hail (0.75)
Phillips County									
22 S Malta	21	1730MST			0	0	30K		Hail (1.75)
Prairie County									
Terry	21	1742MST			0	0			Thunderstorm Wind (G52)
Phillips County									
22 S Malta	21	1815MST 1825MST			0	0			Hail (1.75)
Valley County									
18 S Hinsdale	21	1825MST			0	0			Hail (1.75)
Valley County									
Glasgow	21	1840MST			0	0		100K	Hail (2.50)
Valley County									
15 W Glasgow	21	1840MST			0	0	5K		Hail (4.00)
Valley County									
15 W Glasgow	21	1845MST			0	0			Funnel Cloud
Valley County									
Glasgow	21	1850MST			0	0	1.5M	100K	Hail (4.50)
Valley County									
Nashua	21	1920MST			0	0			Hail (2.50)
Valley County									
15 SE Glasgow	21	1947MST			0	0			Hail (0.88)
Phillips County									
10 W Saco	21	2005MST			0	0			Hail (0.88)
Valley County									
27 N Hinsdale	21	2015MST			0	0			Hail (0.88)
Roosevelt County									
6 W Poplar	21	2045MST			0	0			Hail (1.75)
Valley County									
12 N Frazer	21	2048MST			0	0			Hail (1.00)
Roosevelt County									
5 W Wolf Pt to Wolf Pt	21	2056MST			0	0			Funnel Cloud
Roosevelt County									
5 W Wolf Pt	21	2056MST			0	0			Hail (1.00)
Roosevelt County									
10 E Brockton	21	2147MST	0.2	10	0	0			Tornado (F0)
Valley County									
Opheim	21	2149MST			0	0			Hail (0.75)
Sheridan County									
Reserve	21	2201MST			0	0			Hail (0.75)
Roosevelt County									
Bainville	21	2210MST	1	30	0	0	20K		Tornado (F1)
Roosevelt County									
3 NE Wolf Pt	21	2232MST			0	0	10K		Thunderstorm Wind
Valley County									
7 SE Glasgow	21	2240MST			0	0			Hail (0.75)
Roosevelt County									
Poplar	21	2310MST			0	0			Hail (0.75)
Sheridan County									
Reserve	21	2313MST			0	0			Hail (0.88)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
<u>MONTANA, East</u>									
McCone County 15 N Vida	21	2315MST			0	0	4K		Hail (0.75)
Roosevelt County Poplar	21	2327MST			0	0			Thunderstorm Wind (G56)
Two supercell thunderstorms moved across northeast Montana causing a path of damage that extended from southern Phillips county to the North Dakota border. The hardest hit was the community of Glasgow where 4.5 inch hail fell damaging cars, roofs, windows and trees as it passed. The largest hail fell from downtown Glasgow near the courthouse northeast to the local Ford dealership. The storms continued east where they produced at least two tornado touchdowns in rural areas. Large hail continued to be reported along the Highway 2 corridor. A tornado touchdown was reported in Bainville where railroad cars were blown off of the tracks.									
Petroleum County Winnett	24	1415MST			0	0			Thunderstorm Wind (G61)
Petroleum County Winnett	24	1425MST			0	0	20K		Thunderstorm Wind (G78)
Valley County 8 SE Hinsdale	24	1629MST			0	0			Thunderstorm Wind (G52)
<u>MONTANA, South</u>									
Powder River County Biddle	01	2155MST			0	0			Thunderstorm Wind (G52)
Spotter estimated 60 mph wind gust.									
Powder River County Biddle	01	2215MST			0	0			Hail (0.75)
Spotter report of dime size hail.									
Carter County Albion	01	2225MST			0	0			Hail (0.88)
Spotter report of nickel size hail.									
Treasure County 2 W Hysham	02	2332MST			0	0			Funnel Cloud
Treasure County Sheriff and Montana State Highway Patrol observed a funnel cloud west of Hysham.									
Treasure County Hysham	03	0000MST			0	0			Hail (0.75)
Dime size hail reported by county sheriff.									
Fallon County Plevna	03	0215MST			0	0			Hail (1.00)
Quarter size hail reported.									
Fallon County Willard	04	2110MST			0	0			Hail (1.00)
Spotter report of quarter size hail.									
Carter County 7 N Ekalaka	04	2120MST			0	0			Hail (0.75)
Spotter report of dime size hail.									
Custer County 1 S Volborg	07	1555MST			0	0			Hail (0.75)
Spotter report of dime size hail.									
Custer County 20 SE Miles City	07	1615MST			0	0			Funnel Cloud
Public report of a funnel cloud.									
Powder River County 20 NW Broadus	07	1620MST			0	0			Hail (0.75)
Spotter report of dime size hail.									
Carter County 16 W Alzada	07	1715MST			0	0			Hail (0.75)
Spotter report of dime size hail.									
Powder River County 12 N Broadus	07	1805MST			0	0			Hail (1.00)
Spotter report of quarter size hail.									
Carter County 20 SSE Ekalaka	07	1815MST			0	0			Hail (0.75)
Spotter report of dime size hail.									
MTZ028 Wheatland	08	0800MST 0900MST			0	0			High Wind (G55)
Wind gusts to 63 mph were recorded at a missile silo in Wheatland County following a cold frontal passage.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
MONTANA, South									
Rosebud County									
Vananda	14	1700MST 1950MST			0	0			Flash Flood
Two inches of rain fell in less than one hour just south of Vananda as a slow moving thunderstorm moved over the area. The water was up to a foot deep.									
Rosebud County									
14 W Forsyth to 7 W Forsyth	14	1727MST 1733MST			0	0			Hail (0.75)
Dime size hail was reported by two spotters west of Forsyth.									
Rosebud County									
10 W Forsyth to Forsyth	14	1730MST 1740MST			0	0			Thunderstorm Wind (G80)
Wind gusts as high as 92 mph were reported 7 miles west of Forsyth. Three buildings were destroyed 10 miles west of Forsyth and several tree branches were broken in the Forsyth area. Widespread power outages were reported near Forsyth. Corn and beet crops sustained heavy losses.									
Rosebud County									
Hathaway	14	1845MST 1945MST			0	0			Thunderstorm Wind (G52)
Spotter estimated 60 mph wind gust.									
Custer County									
Miles City	14	1900MST			0	0			Thunderstorm Wind (G52)
Spotter estimated 60 mph wind gust.									
Stillwater County									
Fishtail	15	1535MST			0	0			Hail (0.75)
Spotter report of dime size hail.									
Carbon County									
Boyd	15	1555MST			0	0			Hail (1.00)
Spotter report of quarter size hail. Several cars were damaged by hail.									
Carbon County									
Fromberg	15	1610MST 1630MST			0	0			Hail (1.50)
Spotter report of hail as large as ping pong ball size.									
Big Horn County									
3 NE Decker	17	1700MST			1	0			Lightning
A 13 year old girl was stuck and killed by lightning on the Tongue River Reservoir. F13IW									
Rosebud County									
Ingomar	18	1715MST 1720MST			0	0			Hail (0.75)
Two spotters reported dime size hail, in and just east of, Ingomar.									
Rosebud County									
Ingomar	19	1120MST 1130MST			0	0			Hail (0.75)
Dime size hail fell at Ingomar and accumulated 4 inches deep just north of Ingomar.									
Treasure County									
17 NW Hysham	19	1130MST			0	0			Hail (0.75)
Dime size hail reported by sheriff.									
Powder River County									
14 NE Broadus	19	1445MST			0	0			Hail (0.88)
Spotter report of nickel size hail.									
Powder River County									
Broadus	19	1700MST 1745MST			0	0			Urban/Sml Stream Fld
Street flooding occurred in Broadus when 1.32 inches of rain fell in 45 minutes.									
Yellowstone County									
6 S Billings	20	1355MST			0	0			Thunderstorm Wind (G52)
Spotter estimated wind gust of 60 mph.									
Yellowstone County									
Acton	20	1400MST			0	0			Thunderstorm Wind (G52)
Spotter estimated wind gust of 60 mph.									
Yellowstone County									
6 S Billings	20	1406MST			0	0			Hail (1.00)
Spotter report of quarter size hail.									
Yellowstone County									
Huntley	20	1416MST			0	0			Hail (0.88)
Spotter report of nickel size hail.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MONTANA, South</u>									
Custer County									
Miles City	20	1730MST			0	0	50K		Thunderstorm Wind
									Thunderstorm wind gusts of at least 48 mph caused several trees and a billboard to be blown down, a camping trailer to be blown over and some broken windows in and around Miles City.
Carter County									
30 S Ekalaka	20	2030MST			0	0			Hail (0.75)
									Spotter report of dime size hail.
Powder River County									
Biddle	21	1818MST			0	0			Thunderstorm Wind (G52)
									Spotter report of 60 mph wind gust.
Big Horn County									
3 SE Hardin	22	2135MST			0	0			Hail (0.75)
									Spotter report of dime size hail.
<u>MONTANA, West</u>									
Missoula County									
(Mso)Missoula Intl A	20	1618MST			0	0			Thunderstorm Wind (G56)
									64 mph wind gust in Missoula.
Powell County									
Deer Lodge	21	1420MST			0	0			Hail (0.75)
									3/4 inch hail at Deer Lodge.
Flathead County									
Whitefish	21	2030MST			0	0			Hail (1.50)
									1.50 inch hail 15 SW Whitefish.
<u>NEBRASKA, Central</u>									
Keya Paha County									
4 W Springview	02	0008CST			0	0		7K	Hail (1.00)
Keya Paha County									
5 NNE Springview	02	0045CST			0	0			Hail (0.88)
Rock County									
10 NNE Newport	02	0055CST			0	0	3K	9K	Hail (1.50)
Holt County									
20 N O Neill	02	0132CST			0	0	4K		Thunderstorm Wind
									Three telephone poles were twisted by high wind.
Boyd County									
5 N Spencer	02	0230CST			0	0	10K	80K	Hail (4.50)
									Softball sized hail did extensive damage to area crops.
Boyd County									
5 NNE Spencer to Lynch	02	0230CST 0315CST			0	0	50K	150K	Thunderstorm Wind
									A thunderstorm producing large hail of unknown sized destroyed crops north of Spencer and north of Lynch. Damaging wind destroyed a shed and blew over a windmill. Extensive damage was sustained by trees and the wind bent a metal flagpole until it was parallel with the ground.
Boyd County									
5 N Spencer to 3 N Spencer	02	0230CST 0248CST			0	0	4K		Thunderstorm Wind
									Damaging thunderstorm wind overturned a semi-trailer rig. The wind caused extensive tree damage along the path of the storm.
Hayes County									
5 WNW Hamlet	02	1815CST			0	0			Hail (0.75)
Chase County									
13 WSW Champion	02	1850CST			0	0	12K		Thunderstorm Wind (G60)
									Thunderstorm wind blew down several 12 inch diameter trees and several sheds.
Perkins County									
Elsie	02	1910CST 1915CST			0	0	2K		Thunderstorm Wind
									Thunderstorm wind uprooted trees and picked up and smashed a grain bin.
Lincoln County									
11 S Sutherland	02	1920CST			0	0			Hail (0.75)
Lincoln County									
11 S Sutherland	02	1920CST			0	0			Thunderstorm Wind (G90)
									Thunderstorm wind of 80 to 100 mph was reported at the Sutherland power plant.
Lincoln County									
2 E North Platte	02	1950CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEBRASKA, Central

Lincoln County

2 E North Platte to 2 W North Platte	02	1953CST 1955CST			0	0	200K		Thunderstorm Wind (G70)
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A severe thunderstorm produced wind of at least 70 mph in and around North Platte. At the Union Pacific Railroad's Bailey Yard, the wind damaged several rail cars. Despite having air brakes set, six railroad cars were displaced for a considerable distance and derailed. In the process, minor damage was sustained by the tracks.

Perkins County

9 SSW Grant to 1 S Madrid	02	1847CST 1905CST	14	400	0	1	700K	1.5M	Tornado (F1)
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A tornado touched down 9 miles south southwest of Grant and lifted 1 mile south of Madrid. One man sustained minor injuries when his pickup was struck. The pickup was tossed and whirled around. The pickup was a total loss. Other damage included the destruction or damage to 30 center pivot irrigation systems and several barns, grain bins, and quonset buildings were damaged or destroyed. Damage to utilities included the loss of 82 power poles, 25 transformers, 10 high voltage transmission towers.

Lincoln County

15 NNE Maxwell	02	2030CST			0	0			Hail (0.75)
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Logan County

5 W Stapleton	02	2030CST			0	0			Thunderstorm Wind (G60)
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Sheridan County

5 SW Hay Spgs	02	2050CST			0	0		7K	Hail (1.00)
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Sheridan County

Gordon	02	2115CST			0	0			Thunderstorm Wind (G58)
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Cherry County

25 S Merriman	02	2145CST			0	0			Thunderstorm Wind (G60)
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Cherry County

8 S Merriman	02	2200CST			0	0			Thunderstorm Wind (G60)
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Cherry County

20 SW Valentine	02	2200CST			0	0			Hail (0.75)
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Custer County

3 S Arnold to 1 S Arnold	02	2035CST 2045CST	1	100	0	0	20K	15K	Tornado (F0)
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A tornado was reported to touch down south of Arnold and lifted before it reached Arnold. Damage in its path included one center pivot irrigation system, flattened crops in a field just south of town, and several trees uprooted or broken down.

Cherry County

Valentine Arpt	02	2250CST			0	0			Thunderstorm Wind (G62)
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Custer County

3 E Milburn	15	1630CST			0	0	5K		Thunderstorm Wind (G65)
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Thunderstorm wind of 60 to 70 mph blew down many large trees.

Loup County

2 W Taylor	15	1634CST			0	0	4K	10K	Hail (1.75)
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Holt County

10 SW Amelia	15	1740CST			0	0	1K		Thunderstorm Wind (G70)
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Holt County

6 ENE Page	15	1830CST			0	0	1K		Thunderstorm Wind (G70)
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Sheridan County

6 N Gordon	15	2148CST			0	0			Thunderstorm Wind (G60)
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Cherry County

Merriman	15	2215CST			0	0	4K		Thunderstorm Wind (G80)
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Thunderstorm wind of around 80 mph caused extensive tree damage in Merriman.

Deuel County

10 NE Chappell	19	1605CST			0	0			Hail (0.75)
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Garden County

10 S Oshkosh to 9 SE Oshkosh	19	1627CST 1630CST			0	0	4K	20K	Hail (1.75)
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Garden County

9 SE Oshkosh	19	1630CST	1	50	0	0			Tornado (F0)
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A brief tornado touchdown was reported by a spotter.

Deuel County

2 E Chappell	19	1728CST			0	0	10K	20K	Hail (2.00)
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Garden County

Lewellen	19	1730CST			0	0			Hail (0.75)
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Keith County

4 SW Ogallala to Ogallala	19	1750CST 1815CST	6	300	0	0	500K	1K	Tornado (F1)
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The tornado touched down briefly 4 miles southwest of Ogallala where its intensity was F0. The tornado then lifted and touched down

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

NEBRASKA, Central

again in the southeast part of Ogallala as an F1 and travelled northwest through a mobile home park destroying two trailers and damaging ten others. It then crossed Highway 61 and struck Indian Hills Manor breaking all the windows on the east side of the building and taking the roof off WEL-Life, a senior residence near Indian Hills. It then hit two homes, taking the roof off one and removing the garage from the other.

Keith County 5 N Ogallala	19	1805CST			0	0	10K		Hail (1.50)
Keith County 2 NE Roscoe	19	1810CST			0	0			Thunderstorm Wind (G60)
Keith County 1 S Keystone	19	1818CST			0	0			Thunderstorm Wind (G60)
Keith County 3 N Ogallala	19	1818CST			0	0			Hail (0.75)
Cherry County 48 S Merriman	19	1830CST			0	0			Hail (0.88)
Perkins County 2 SW Grant	19	1840CST			0	0			Hail (0.75)
Keith County 6 NW Paxton	19	1915CST			0	0			Hail (0.88)
Hooker County 17 SW Mullen to Mullen	19	1945CST 2000CST			0	0	7K		Thunderstorm Wind (G80)
Thunderstorm wind damaged, broke, or blew down numerous trees southwest of Mullen and in Mullen.									
Lincoln County 12 NNW Sutherland	19	1952CST			0	0			Hail (0.75)
Lincoln County 20 NE North Platte	19	2015CST			0	0			Hail (0.88)
Boyd County North Portion	19	2200CST 20 0200CST			0	0	5K		Flash Flood
Ponca Creek washed out part of a county road northeast of Naper.									
Keya Paha County Countywide	19	2200CST 20 0200CST			0	0	100K		Flash Flood
Numerous roads and culverts were washed out.									
Rock County Countywide	19	2200CST 20 0200CST			0	0	100K		Flash Flood
Roads and culverts were washed out all over the county.									
Holt County East Portion	19	2300CST 20 0300CST			0	0	500K		Flash Flood
Water was running about 15 feet deep and 40 feet wide near Highway 108 about 18 miles east of O'Neill. Part of the highway was washed away 16 miles east of O'Neill. In the Page area, 5 inches of rain caused flooding that washed out culverts and created gullies in many county roads.									
Cherry County Kilgore	23	1845CST			0	0			Hail (0.75)
Cherry County Kilgore	23	1845CST			0	0	1K		Thunderstorm Wind (G65)
Thunderstorm winds damaged trees.									
Cherry County Crookston	23	1920CST			0	0			Thunderstorm Wind (G60)
Cherry County 8 NW Brownlee	23	2030CST			0	0			Hail (0.88)
Cherry County 6 NW Brownlee	23	2125CST			0	0			Hail (0.75)
Cherry County 9 NW Brownlee	23	2215CST			0	0	2K		Hail (1.00)
Hayes County 8 NW Hamlet	25	1828CST			0	0	2K		Hail (1.00)
Hayes County 2 ENE Hamlet	25	1835CST			0	0			Hail (0.75)
Hayes County 14 NNW Hamlet	25	1900CST			0	0	5K	20K	Hail (2.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

NEBRASKA, Central

Lincoln County
9 SSE Wallace 25 1915CST 0 0 5K 15K Hail (1.75)

Custer County
6 W Mason City 25 2040CST 0 0 Hail (0.75)

NEBRASKA, East

NEZ091 Nemaha
01 0000CST 0 0 Flood
12 1700CST

Above normal rainfall during June, and periodic heavy rain in early July, across southeast Nebraska and southwest Iowa continued to cause minor lowland flooding along the Missouri River in the Brownville area through 7/12/99. This particular episode carried over from June of 1999 and reached a July crest of 36.46 feet on the first. Flood stage is 32 feet. Flooding was mainly contained to agricultural bottomlands.

NEZ068 Otoe
01 0000CST 0 0 Flood
04 1600CST

Flooding along the Missouri River carried over from June and another 1 to 3 inches of rain which fell on 7/1/99 over the basin kept the Missouri River above flood stage into 7/4/99. Although the flooding affected mainly agricultural bottomlands and the river crest was higher in late June, at Nebraska City the Missouri River reached 18.3 feet at 845 pm cst on 7/3/99, flood stage is 18 feet.

NEZ093 Richardson
01 0000CST 0 0 Flood
10 2200CST

Flooding along the Missouri River carried over from June and kept the river at Rulo above its flood stage of 17 feet the majority of the time right through 1000 pm cst 7/10/99. Rainfall of 1 to 3 inches on the basin on 7/1/99 also added to the high water. The flooding affected mainly agricultural lowlands, and a higher crest was observed in late June, but a crest of 20.5 ft was observed at 830 pm cst on 7/1/99.

NEZ078 Saline
01 0001CST 0 0 Flood
03 1600CST

One to three inches of rain fell on the Big Blue River basin early on 7/1/99. The Big Blue River was already running high due to heavy rain in late June and this additional rain caused the river to reach flood stage once again at Crete. The river reached a crest of 22.92 feet at 600 pm cst on 7/2/99 at Crete, flood stage is 18 feet. The flooding affected mainly agricultural lowlands.

NEZ065 Seward
01 0001CST 0 0 Flood
02 1900CST

Heavy rain in late June combined with an additional 1 to 3 inches early on 7/1/99 caused Lincoln Creek to flood around the Seward area. The creek at Seward reached 17.81 feet at 900 am cst on 7/1/99, flood stage is 15 feet. The flooding affected mainly agricultural lowlands.

Antelope County
Royal 02 0200CST 0 0 Thunderstorm Wind (G61)
Trees downed.

Antelope County
Brunswick 02 0215CST 0 0 Hail (1.00)

Knox County
5 S Verdel 02 0300CST 0 0 Hail (1.50)

Saline County
1 SW Wilber 03 0715CST 0 0 Hail (0.75)

Douglas County
Ralston 03 0927CST 0 0 Hail (0.75)

Douglas County
Omaha 03 0938CST 0 0 Hail (1.00)
Quarter size hail reported at 60th and "L" street.

Lancaster County
3 S Lincoln 05 1738CST 0 0 Hail (0.75)

Lancaster County
3 SE Waverly 05 1920CST 0 0 Flash Flood
2100CST

County roads flooded at 148th and Mckelvy and southeast of Waverly.

NEZ078 Saline
06 0800CST 0 0 Flood
1145CST

Roads along Swan Creek southwest of Swanton were flooded for several hours due to 4 to 6 inches of rain which fell Monday 7/5/99 over southern Saline county.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEBRASKA, East

Knox County

11 SW Verdigre to 10 N Verdigre	15	1900CST			0	0			Hail (1.00)
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NEZ011>012-015>018-030>034-042>045-050>053-065>068-078-088>093

Knox - Cedar - Thurston - Antelope - Pierce - Wayne - Boone - Madison - Stanton - Cuming - Burt - Platte - Colfax - Dodge - Washington - Butler - Saunders - Douglas - Sarpy - Seward - Lancaster - Cass - Otoe - Saline - Jefferson - Gage - Johnson - Nemaha - Pawnee - Richardson

19	0001CST				2	0	3.3M		Excessive Heat
30	2359CST								

From July 19th through the 30th high temperatures over eastern Nebraska and southwest Iowa reached 90 degrees or better all but a day or two, and even then highs were well into the 80s. In addition, overnight lows stayed mostly above 70 degrees. The high temperatures were accompanied by high humidities which caused afternoon heat indices to reach between 105 and 120 degrees. The highest temperatures in this period were observed on the 29th and 30th with highs both days in the upper 90s to low 100s across the region. Lincoln recorded 104 degrees on the 29th while Omaha Eppley reached 100. Two deaths were determined to be caused from the heat. A 34 year old male died while jogging or walking near Macy on 7/27/99 and a 75 year old man died in his mobile home on 7/28/99 after his air-conditioner broke and temperatures inside the trailer reached over 110 degrees. The heat was directly responsible for also killing at least 5000 head of cattle worth an estimated 3.3 million dollars. M34OU, M75MH

Wayne County

2 SW Hoskins	19	1600CST 1830CST			0	0			Flash Flood
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Three and a half to 4 inches of rain fell near Hoskins in 45 minutes which produced flash flooding of roads.

Stanton County

Stanton	19	1600CST			0	0	40K		Thunderstorm Wind (G52)
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Thunderstorm winds did substantial crop damage in Stanton county.

Stanton County

Pilger to 4 N Pilger	19	1610CST 1615CST			0	0	20K		Thunderstorm Wind (G61)
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Thunderstorm winds near 70 mph downed large trees from Pilger to around 4 miles north of town and did some minor house damage.

Stanton County

4 N Pilger	19	1610CST 1845CST			0	0			Flash Flood
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Three to 4.5 inches of rain fell in 45 minutes making some roads near Pilger impassable for a while.

Madison County

Norfolk	19	1610CST 1810CST			0	0			Flash Flood
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Street flooding in Norfolk from 2 to 4 inches of rain in one hour.

Cuming County

2 WNW West Pt	19	1700CST			0	0			Thunderstorm Wind (G58)
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Thunderstorm wind gust overturned a van that was being pulled by a semi-truck.

Cedar County

2 S Hartington	20	0030CST 0230CST			0	0			Flash Flood
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Flash flood covered a county road with mud and other debris.

Douglas County

Omaha	20	1800CST			0	0			Thunderstorm Wind (G55)
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A microburst with winds over 60 mph knocked tree limbs onto power lines and cars east of 40th street in Omaha.

Knox County

Bloomfield	21	0200CST 0630CST			0	0			Flash Flood
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Rainfall of around 5 inches backed up storm sewers in Bloomfield and caused flash flooding along Little Bazile Creek closing the main street through town for several hours. Santee's water supply/well field was also flooded.

Cedar County

Hartington	21	0200CST 0700CST			0	0	150K		Flash Flood
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Rainfall of 9.5 to 10.5 inches fell on the Hartington area in two days, 7/19 and 7/20/99 with lesser amounts across the rest of Cedar county. The 2nd day of rain caused the most damage due to flash flooding with 2 county bridges destroyed and highways 12 and 81 northwest of Hartington flooded. Damage was sustained along the Norwegian Bow Creek and the West Bow Creek. Besides bridge and road damage, several homes were flooded. Later in the afternoon on the 21st, high water along the West Bow Creek approached Bow Valley and Wynot flowing over some gravel roads and forcing sandbagging of several homes.

NEZ012

Cedar	21	0700CST 2000CST			0	0			Flood
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Heavy rain which fell over much of Cedar county the previous two days caused extensive flooding along Bow Creek. This high water flooded the Cedar county fairgrounds in Hartington and high water along the West Bow Creek approached Bow Valley and Wynot by afternoon flowing over some gravel roads and forcing the sandbagging and evacuation of several homes.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NEBRASKA, East</u>									
Otoe County 3 NE Dunbar	27	1520CST			0	0			Hail (0.88)
Cass County 3 E Union	27	1535CST			0	0			Hail (1.00)
Sarpy County Offutt Afb	27	1637CST			0	0			Hail (0.75)
Burt County Craig	30	1905CST			0	0			Thunderstorm Wind (G52)
Burt County 9 NE Tekamah	30	1920CST			0	0			Hail (0.75)
Saline County 2 NNE De Witt	30	2030CST			0	0			Thunderstorm Wind (G52)
			Thunderstorm winds damaged a garage and snapped a 10-12 inch tree off. Two power poles were also downed.						
Otoe County Nebraska City	30	2135CST			0	0			Thunderstorm Wind (G55)
			Thunderstorm gust downed two trees.						
<u>NEBRASKA, Extreme Northeast</u>									
Dixon County 5 N Dixon to Ponca	02	0815CST 0833CST			0	0	100K		Thunderstorm Wind (G61)
			Thunderstorm winds blew the roof and walls off a hog confinement building, damaged an irrigation system, caused minor damage to other structures, and caused widespread tree damage.						
Dixon County 5 W Ponca to Ponca	02	0830CST 0840CST			0	0	200K		Hail (0.75)
			Large hail damaged crops in an area 1 mile wide and 5 miles long.						
Dakota County 8 W Jackson to 1 W Dakota City	02	0835CST 0855CST			0	0	1.8M		Hail (1.00)
			Large hail caused widespread damage to 5 thousand acres of corn and soybean crops.						
Dakota County 5 NW Dakota City	02	0840CST 1030CST			0	0			Flash Flood
			Rainfall of 3 inches in a half hour flooded streets and basements. The amount of damage was not known.						
Dixon County 4 W Ponca to Ponca	02	0850CST 1030CST			0	0	1M		Flash Flood
			Flash flooding from over 3 inches of rain in a half hour covered streets with 2 feet or more of water, making travel impossible in places. Flooding also occurred in basements, yards and public land. Floodwaters deposited mud and debris which caused further damage.						
Dakota County South Sioux City	02	0908CST			0	0	200K		Hail (1.75)
			Large hail dented cars and siding, and broke windows.						
Dakota County 1 E South Sioux City	08	1635CST			0	0			Hail (0.75)
NEZ013>014									
	28	0800CST			1	0			Excessive Heat
	29	2200CST							
			Excessive heat occurred ..with heat indices above 120 degrees. Several cattle were lost, and a 68 year old woman died in an uncooled apartment in South Sioux City. F68PH						
<u>NEBRASKA, Extreme Southwest</u>									
Red Willow County (Mck)Mc Cook Arpt	15	1652CST			0	0			Thunderstorm Wind (G51)
Dundy County 2 S Benkelman	25	1700MST			0	0			Hail (0.75)
Hitchcock County Swanson Lake	25	1740CST			0	0			Hail (0.75)
<u>NEBRASKA, South Central</u>									
Nuckolls County 5 W Superior	05	1753CST			0	0	0	0	Hail (1.00)
Phelps County 8 NE Holdrege	25	1825CST			0	0	0	100K	Thunderstorm Wind (G61)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEBRASKA, South Central									
Dawson County 2 S Overton	25	1912CST			0	0	0	0	Thunderstorm Wind (G52)
Dawson County 7 W Lexington	25	2000CST			0	0	0	0	Thunderstorm Wind (G52)
NEBRASKA, West									
Dawes County Crawford	02	1915MST 1919MST			0	0			Hail (0.75)
		3/4 inch hail reported 9 miles south of Crawford, NE							
Cheyenne County Potter	19	1237MST 1243MST			0	0			Hail (1.00)
Cheyenne County Potter	19	1253MST 1257MST			0	0			Hail (0.75)
		3/4 inch hail fell 1 mile north of Potter, NE							
Morrill County Bridgeport	19	1315MST 1320MST			0	0		20K	Hail (1.75)
		1 3/4 inch hail reported 15 miles southeast of Bridgeport, NE							
Cheyenne County Sidney	19	1320MST 1324MST			0	0			Hail (0.75)
		3/4 inch hail fell 8 miles northwest of Sidney, NE							
Cheyenne County Dalton	19	1329MST 1333MST			0	0			Hail (0.88)
Cheyenne County Gurley	19	1408MST 1409MST			0	0			Thunderstorm Wind (G56)
		64 mph wind gust reported 6 miles northeast of Gurley, NE							
Cheyenne County Dalton	19	1410MST 1415MST			0	0			Hail (0.75)
		3/4 inch hail reported just northeast of Dalton, NE							
Kimball County Dix	19	1552MST 1556MST			0	0			Thunderstorm Wind (G67)
		77 mph wind gusts reported 10 miles north of Dix, NE							
Kimball County Kimball	19	1720MST 1725MST			0	0			Hail (1.00)
		1 inch hail reported 11 miles northwest of Kimball, NE							
Kimball County Kimball	19	1730MST 1734MST			0	0			Hail (1.00)
		1 inch hail reported 8 1/2 miles north of Kimball, NE							
Kimball County Dix	19	1800MST 1803MST			0	0			Thunderstorm Wind (G56)
		64 mph wind gust 10 miles north of Dix, NE							
Kimball County Dix	19	1800MST 1806MST			0	0			Hail (0.75)
		3/4 inch hail fell 7 miles south of Dix, NE							
Kimball County Kimball	19	1808MST 1812MST			0	0			Hail (0.75)
		3/4 inch hail reported 15 miles northeast of Kimball, NE							
Kimball County Dix	19	1810MST 1814MST			0	0			Hail (0.75)
		3/4 inch hail reported 7 miles south of Dix, NE							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEVADA, North

Elko County

4 E (Eko)Harris Fld Elk	18	1935PST 1937PST			0	0			Dry Microburst
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A dissipating shower produced a wind gust to 64 mph at the Elko Forecast Office.

NEVADA, South

Clark County

18 NW Glendale	08	0725PST			0	0			Flash Flood
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The Nevada Highway Patrol reported four feet of water running over State Route 168 three miles east of U.S. Highway 95. The road was blocked for a couple hours stranding a few cars.

Nye County

Pahrump	08	0900PST 1100PST			0	0			Flash Flood
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Flash flooding closed several roads around the Pahrump Valley from mid to late morning. The Nye County Sheriff's Office reported water blocking State Route 160 as early as 8:45 a.m. PDT and other secondary roads were covered with three to four feet of water before the runoff began receding around noon PDT. No serious property damage was reported.

Clark County

Las Vegas	08	1020PST 1645PST			1	0	25M		Flash Flood
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One of the worst flash flood events this century inundated the Las Vegas Valley damaging roads and buildings, sweeping away vehicles and bringing the entire city almost to a standstill from late morning through late afternoon. Thunderstorms formed over the elevated west side of the valley and began dumping heavy rain between 10 and 11 a.m. PDT. The storms slowly drifted to the east producing rainfall amounts over 1.5 inches across a substantial part of the metro area and some localized amounts topping 3 inches. The downpours forced closure of McCarran International Airport for about one hour and arriving planes were diverted to Los Angeles. Most of the rain ended by noon, but not before heavy runoff turned surface roads and washes into raging rivers carving a path of destruction toward the lower east side.

Early during the event, a roof collapsed on a motorcycle dealership under a heavy downpour but that was only a precursor to more significant damage to come throughout the day. Hundreds of motorists were forced to abandon their vehicles and helplessly watch as their cars were partially submerged or carried away. Numerous homeowners could do nothing but save a few items as flood waters poured into ground level floors and basements. Perhaps the most graphic display of property destruction occurred at the Miracle Mile Mobile Home Park which is located near the edge of Flamingo Wash on the east side of the valley. The rushing water eroded the unlined banks so extensively that at least one mobile home fell into the wash and four others were destroyed. Electricity was knocked out for a few hours to 2,500 customers and some gas lines were broken by the force of the water. The Las Vegas Strip also saw significant flooding with the most notable damage occurring in the Forum Shops at Caesar's Palace where two feet of water damaged over 60 stores and forced evacuation of the luxury shopping mall. Over 200 hundred swift water rescues were performed before flood waters receded and it is remarkable that only one drowning occurred. A homeless man's body was pulled from debris in the Flamingo Wash early in the afternoon. Several Clark County Flood Control gauges recorded water levels in area washes and the Gowan Detention Basin filled up to 22 feet deep, one foot below its capacity. An estimated \$25 million dollars in damage occurred to both public and private property. On July 20, President Clinton declared the event a federal disaster.

M500T

Clark County **15 SW Overton**

	09	1330PST 1500PST			0	0			Flash Flood
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Heavy rain filled the California Wash which flooded State Route 169 between Interstate 15 and the Valley of Fire State Park. Park rangers reported that the road remained closed for almost two hours.

Nye County **Pahrump**

	11	1630PST			0	0	10K		Tstm Wind/Hail
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Thunderstorm wind gusts blew over two small camper trailers and one vacant mobile home that had not been tied down.

Clark County **5 N Blue Diamond**

	13	1055PST 1300PST			0	0			Flash Flood
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Approximately 1.5 inches of rain fell in the Red Rock Canyon area, just west of Las Vegas, with over an inch of rainfall recorded in a 30 minute period. The resulting runoff flooded roads around the Red Rock scenic loop and forced closures in nearby Calico Basin.

Clark County **Las Vegas**

	13 14	2350PST 0130PST			0	0			Urban/Sml Stream Fld
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Late night thunderstorms erupted over the Las Vegas Valley dumping rainfall amounts of one-half to nearly an inch of rain across mainly the central and eastern sections of the metro area. Water did pool in underpasses and low-lying intersections and made a few roads impassable. The location of the rainfall was favorable for quick runoff into the Flamingo Wash which rose significantly and prompted a precautionary evacuation of the mobile home park near Boulder Highway which was flooded less than a week earlier. No significant damage was reported from the flooding.

Clark County **Searchlight**

	15	1726PST 2200PST			0	0			Flash Flood
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Early in the evening, thunderstorms began to produce rainfall amounts in the vicinity of Searchlight of over one inch per hour. A

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEW HAMPSHIRE, North and Central									
Coos County									
Errol	06	1350EST			0	0			Thunderstorm Wind (G60)
Coos County									
Whitefield	06	1350EST			0	0			Thunderstorm Wind (G60)
Grafton County									
Piermont	06	1425EST			0	0			Thunderstorm Wind (G60)
Grafton County									
Hanover	06	1430EST			0	0			Thunderstorm Wind (G60)
Sullivan County									
Plainfield	06	1430EST			0	0			Thunderstorm Wind (G60)
Grafton County									
Lebanon	06	1435EST			0	0			Thunderstorm Wind (G70)
Sullivan County									
Charlestown	06	1445EST			0	0			Thunderstorm Wind (G60)
Sullivan County									
Claremont	06	1445EST			0	0			Thunderstorm Wind (G60)
Sullivan County									
Newport	06	1450EST			0	0			Thunderstorm Wind (G60)
Sullivan County									
Unity	06	1450EST			0	0			Thunderstorm Wind (G60)
Grafton County									
Warren	06	1455EST			0	0			Thunderstorm Wind (G60)
Sullivan County									
Sunapee	06	1455EST			0	0			Thunderstorm Wind (G60)
Merrimack County									
Warner	06	1500EST			0	0			Thunderstorm Wind (G60)
Grafton County									
Alexandria	06	1505EST			0	0			Thunderstorm Wind (G60)
Merrimack County									
Salisbury	06	1505EST			0	0			Thunderstorm Wind (G60)
Sullivan County									
Washington	06	1505EST			0	0			Thunderstorm Wind (G60)
Merrimack County									
Franklin	06	1510EST			0	0			Thunderstorm Wind (G60)
Belknap County									
Center Harbor	06	1515EST			0	0			Thunderstorm Wind (G60)
Belknap County									
Laconia	06	1515EST			0	0			Thunderstorm Wind (G60)
Belknap County									
Meredith	06	1515EST			0	0			Thunderstorm Wind (G60)
Carroll County									
Moultonboro	06	1515EST			0	0			Thunderstorm Wind (G60)
Merrimack County									
Henniker	06	1515EST			0	0			Thunderstorm Wind (G60)
Belknap County									
Sanbornton	06	1516EST			1	0			Thunderstorm Wind (G60)
		M62VE							
Belknap County									
Gilford	06	1520EST			0	0			Thunderstorm Wind (G60)
Merrimack County									
Contoocook	06	1520EST			0	0			Thunderstorm Wind (G60)
Merrimack County									
Hopkinton	06	1520EST			0	0			Thunderstorm Wind (G60)
Merrimack County									
Concord	06	1523EST			0	0			Thunderstorm Wind (G60)
Merrimack County									
Pittsfield	06	1527EST 1528EST	1	75	0	0			Tornado (F1)
Belknap County									
Barnstead	06	1528EST 1534EST	4.5	300	0	0			Tornado (F2)
Merrimack County									
Loudon	06	1530EST			0	0			Thunderstorm Wind (G60)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
NEW HAMPSHIRE, North and Central									
Strafford County									
Strafford	06	1534EST 1537EST	2	250	0	0			Tornado (F2)
Strafford County									
Dover	06	1538EST			0	0			Thunderstorm Wind (G60)
Strafford County									
Rochester	06	1550EST			0	0			Thunderstorm Wind (G60)
Strafford County									
Madbury	06	1600EST			0	0			Thunderstorm Wind (G60)
Severe thunderstorm winds caused damage statewide as downed trees blocked roads and caused power outages. The winds also damaged several buildings. In Sanbornton, a 60 foot pine tree fell on a car killing the driver. An F2 tornado touched down in Pittsfield, moved through Barnstead, and then into Strafford before lifting off the ground, snapping and uprooting hundreds of trees, and damaging several homes. In Lebanon, a 50 x 70 ft section of the City Hall's copper roof was peeled back by the wind. In Hanover, a portion of a roof at Dartmouth College was blown off by the wind. In Claremont, the wind ripped the roof off a bandstand. The wind left 80,000 customers without electrical service statewide. Numerous trees were reported down in towns throughout the state and numerous roads throughout the state were closed. The heavy rain that accompanied the thunderstorms caused some of the small rivers and streams to rise rapidly. In Lincoln, two brothers swimming in the East Branch of the Pemigewasset River were swept away by the rapidly rising water; one of the boys was bounced down the river for about a quarter mile before grabbing hold of a rock in the water. A 14-year-old boy was injured in Piermont when lightning struck nearby and entered the cabin through electrical wires. Lightning also caused fires in several homes and buildings.									
Grafton County									
Piermont	06	1425EST			0	1			Lightning
A 14-year old boy was injured inside a cabin when lightning struck nearby and followed electrical wires inside the cabin. The boy was unplugging a CD player at the time.									
Merrimack County									
Newbury	06	1445EST			0	0			Lightning
Lightning was the apparent cause of a forest fire on the east side of Bald Sunapee Mountain. The fire was discovered on the 12th, but believed to have been caused by a lightning stroke from a storm the previous week. About 80 firefighters from six towns battled the blaze for more than a day before it was contained. Helicopters were also used to drop water onto the blaze.									
Rockingham County									
North Hampton	06	1615EST			0	0			Lightning
Lightning struck a home in North Hampton destroying telephones a variety of electrical equipment.									
Rockingham County									
Hampton	06	1625EST			0	0			Lightning
Lightning struck a home in Hampton causing the structure to catch fire and causing considerable damage to the home. Severe damage to the electrical system was reported throughout the home, the blast blew the siding off the house, basement windows were blown out, and different areas in the house were left smoldering. In addition, a tree and an outbuilding were also damaged by the lightning strike.									
Rockingham County									
Exeter	22	1057EST			0	0			Lightning
Lightning struck a tree in Exeter just before midnight and ignited a fire which destroyed a nearby 14x24 ft 1 and 1/2 story barn and its contents. The lightning also travelled 50 feet through a wire in the ground to a nearby house where the surge burned wires and caused smoke in the residence.									
Merrimack County									
Franklin	22	2030EST			0	0	200K		Lightning
Lightning from a late evening thunderstorm ignited fires and caused damage to several structures in the town of Franklin. Lightning struck a historic bed and breakfast inn in Franklin and caused a fire which resulted in between \$150,000 and \$200,000 damages to the building and its contents. The electrical system in the inn also suffered extensive damage. The lightning apparently jumped from a 70 ft spruce tree that was split apart by the strike. In a separate incident, a lightning strike blew a hole in the wall of another residence in the town and caused the outer wall to catch fire. Lightning also caused wall damage to a condominium in the town.									
Merrimack County									
Allenstown	24	1444EST			0	0			Hail (1.00)
Rockingham County									
Candia	24	1454EST			0	0			Thunderstorm Wind (G55)
Rockingham County									
Deerfield	24	1454EST			0	0			Thunderstorm Wind (G55)
Rockingham County									
Sandown	24	1520EST			0	0			Hail (1.00)
Rockingham County									
Sandown	24	1520EST			0	0			Thunderstorm Wind (G70)
A severe thunderstorm moving through southeastern Merrimack County and Rockingham County produced large hail and strong damaging winds. One inch hail was reported in Allenstown and Sandown, and wind damage was reported in Deerfield, Candia, and Sandown. In Sandown, strong northeast winds on the back side of the thunderstorm knocked over numerous trees in the area around Phillips Pond.									
Grafton County									
Franconia	25	0900EST			0	1			Lightning

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEW HAMPSHIRE, North and Central

A 33 year-old woman was struck by lightning and knocked unconscious as she watched the thunderstorm while standing in the entrance to a garage. She had her hand on the metal garage door track at the time. She was taken to a nearby hospital where she was kept overnight for observation.

Coos County
3 NNW Milan 25 1000EST 0 0 **Thunderstorm Wind (G55)**
Morning thunderstorms moving through eastern Coos County produced damaging winds along Route 16 in Dummer. The falling trees knocked out electrical service to the area.

Coos County
Mt Washington 25 1130EST 0 2 **Lightning**
Two teenage boys in separate parties hiking near the summit of Mt. Washington were injured when by lightning struck nearby. One was knocked unconscious as the lightning travelled along the rock surface while the other suffered burns to the calf. Both were advised to seek medical treatment at a nearby hospital.

Merrimack County
Dunbarton 25 1300EST 0 0 **Hail (0.88)**

Rockingham County
Sandown 25 1422EST 0 0 **Hail (1.75)**
A severe thunderstorm moving through Merrimack and Rockingham Counties produced large hail in Dunbarton and Sandown. Golfball sized hail was reported in parts of Sandown in exactly the same area that experienced damaging wind and large hail the previous day.

Rockingham County
Seabrook 25 1555EST 0 0 **Lightning**
Lightning struck two homes in Seabrook causing moderate damage to one and minor damage to the other. In the moderately damaged home, the lightning ignited a fire in the attic, and the home sustained some smoke and water damage. About 30 firefighters and emergency personnel responded to the incidents.

Belknap County
Belmont 26 1500EST
1900EST 0 0 **Urban/Sml Stream Fld**
Thunderstorms produced more than 2 inches of rain in 75 minutes causing flooding of poor drainage areas in Laconia and Belmont. Route 3 in Belmont flooded, as did several streets in Laconia.

Carroll County
Moultonboro 30 0150EST 0 0 **Lightning**
Lightning struck a tree in Moultonboro and followed an underground wire to a nearby historic post and beam barn where it ignited a fire. The fire caused moderate damage to the structure.

NEW HAMPSHIRE, Southern

Hillsborough County
Nashua 02 1441EST 0 0 **Lightning**
Lightning struck the Boston Air Route Traffic Control Center in Nashua, briefly knocking out the primary radar and radio communications systems. Controllers were forced to rely on a backup system for nearly three hours, which caused widespread delays during the holiday weekend. During that time, all jet aircraft were restricted from taking off at airports throughout New England, including Logan International Airport in Boston. The effects of the outage and slower backup system idled planes throughout the country that were headed for destinations in New England. Flights inbound from Europe were rerouted around the affected airspace.

Cheshire County
Gilsum to
Winchester 06 1507EST
1545EST 0 0 **Thunderstorm Wind (G60)**

Hillsborough County
Amherst to
Nashua 06 1545EST
1611EST 1 0 **Thunderstorm Wind (G71)**

M61PH
Severe thunderstorms moved across southern New Hampshire in advance of a strong cold front, resulting in widespread wind damage in Cheshire and Hillsborough Counties. For the fourth day in a row, temperatures peaked well up into the 90s along with high humidity. In Cheshire County, the storms downed trees and wires in Gilsum, Jaffrey, and Winchester. Trees and wires were also downed throughout much of Hillsborough County, including Mason, Nashua, Hudson, and Pelham. A Skywarn spotter in Amherst measured a wind gust to 82 mph as the storms moved through. About 6,600 customers in both counties lost power.

Hillsborough County
Manchester 24 1520EST 0 0 **Hail (1.00)**
A severe thunderstorm ahead of a cold front produced quarter size hail in Manchester.

Hillsborough County
Goffstown 25 1340EST 0 0 **Hail (0.75)**
A severe thunderstorm produced dime size hail in Goffstown.

Cheshire County
Jaffrey 27 1915EST 0 0 **Thunderstorm Wind (G50)**
An isolated severe thunderstorm near Thorndike Pond downed trees and wires, including one tree onto a car.

Hillsborough County
Mt Vernon 30 1630EST 0 0 **Hail (1.00)**

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEW HAMPSHIRE, Southern

An isolated severe thunderstorm produced quarter size hail in Mont Vernon, and over 2 inches of rain.

NEW JERSEY, Northeast

NJZ002>006-011

Western Passaic - Bergen - Eastern Passaic - Essex - Hudson - Union

04	1430EST				10	0			Excessive Heat
06	1700EST								

An extremely hot and humid airmass covered the region from July 4th through July 6th.

On Sunday July 4th, temperatures soared into the mid and upper 90s. The combination of high temperatures and moderate humidity caused most heat indices to range from 100 to 105 degrees.

On Monday July 5th, many new maximum temperature records were set. At Newark Airport, the temperature reached 103 degrees, which set a new record high. At Teterboro Airport, the temperature reached 100 degrees. Most high temperatures ranged from 100 to 105 degrees. Heat indices peaked from 110 to 115 degrees. "Rolling" electrical blackouts occurred across urban areas.

On July 6th, new record high temperatures were set again. At Newark Airport, the temperature reached 102 degrees, which set another new record. At Teterboro Airport, the temperature reached 100 degrees for the second consecutive day. Once again, heat indices peaked from 110 to 115 degrees. More significant blackouts occurred, especially in urban areas.

The heat wave was directly responsible for killing 10 people:

- o 3 from Essex County
- o 3 from Hudson County
- o 3 from Union County
- o 1 from Passaic County.

F38OT, M68OT, F85OT, M78OT, M79OT, F80OT, F44OT, F52OT, F76OT, F88OT

Bergen County
Mahwah

10	0010EST				0	0			Thunderstorm Wind (G50)
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Scattered severe thunderstorms developed in a line of thunderstorms and heavy showers. As the storms moved east, they produced high winds that downed trees in Mahwah.

Hudson County
Jersey City

19	1200EST				0	0			Flood
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Hudson County
Jersey City

19	1200EST				0	0			Lightning
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A thunderstorm produced torrential rain that caused significant street flooding in parts of Jersey City. A bus plowed through at least 3 feet of water on Garfield Ave. north of Carteret Ave. as storm drains were overwhelmed. Police Headquarters at 8 Erie street also sustained flood damage.

Lightning struck the top of a roof, which caused its' partial collapse at 56 Coles Street in Jersey City.

NEW JERSEY, South and Northwest

NJZ001-007>010-012>026

Sussex - Warren - Morris - Hunterdon - Somerset - Middlesex - Western Monmouth - Eastern Monmouth - Mercer - Salem - Gloucester - Camden - Burlington - Western Ocean - Cumberland - Western Atlantic - Western Cape May - Eastern Cape May - Eastern Atlantic - Eastern Ocean

01	0000EST				0	0			Drought
31	2359EST								

The drought intensified throughout July across New Jersey. For the fourth consecutive month, below normal precipitation continued. On a county weighted average for July, between 0.5 inches (in Somerset and Morris Counties) and 2.3 inches (in Cumberland County) fell. Aside from Cumberland County, every other county in the state had less than 2 inches of rain and every county from Mercer and Middlesex Counties northward had only one inch or less of rain. It was one of the ten driest Julys on record in Atlantic City. On a statewide average it was the seventh driest July on record. The July monthly normal rainfall is between 4 and 5 inches.

The effects of the drought increased as the month wore on. The unseasonably hot July did not help. On July 9th the New Jersey Forest Fire Service declared a very high fire warning for northern New Jersey. Open burning on the ground and in campfires were prohibited. Only fires permitted were ones off the ground within an enclosure. All agricultural open burning has been suspended. Through the 13th there were 44 forest fires in the state. On the 21st the burning restrictions were made tighter. Only propane fires were permitted in the northern part of the state and only elevated fires in the central and southern part of the state. On the 27th all outdoor burning was banned throughout the state as the fire danger was described as extreme.

On July 19th Governor Christie Whitman declared a water shortage alert and called for residents to voluntarily conserve water by not watering lawns or washing cars. Municipalities which depend on groundwater and smaller reservoirs went even further. The same day Monmouth County declared a drought emergency and implemented odd/even non-essential watering restrictions. Many shallow wells in the northwest part of the state were running dry. By the end of the month about 35 north central and northwest New Jersey townships asked residents to cut back on water usage. Rivers and streams in the state were flowing at near record lows and only about 25 percent of normal flow. Along the Delaware River, the unusually low flow pushed the salt front farther north than normal. In an effort to

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

NEW JERSEY, South and Northwest

maintain a flow on the river of 3,000 cubic feet per second at Trenton and to slow the northward progression of the salt front, the Delaware River Basin Commission increased releases from the upstate New York reservoirs and Beltzville and Blue Marsh Lakes in Pennsylvania. On the 26th of July, the salt front was 12 miles farther north than normal. Beside the corrosion problems, the brackish water forces expensive purification efforts for drinking water. By the end of the month, with no significant rainfall in site and to save precious water, the Delaware River Commission reduced its target flow at Trenton from 3,000 to 2,700 cubic feet per second. This forced industries below (south) of the Philadelphia International Airport that use river water for processing to turn to alternative water sources to avoid corrosion.

The drought coincided with the growing season. The April 1st through July 31st four month period was the driest on record over the past 105 years in the state of New Jersey. Farmers in New Jersey were feeling a double pinch. Irrigation, if possible, was driving up the costs of farming. Meanwhile, ideal growing conditions elsewhere in the country kept crop prices low. Irrigation was occurring everywhere if possible. Irrigation ponds were drying out and well permits were being issued. Irrigated corn fields were in fair condition, most corn was in poor condition. Low yields and nutrient content are expected with many fields already lost. Livestock feed crops were at a near-total loss and many farmers will have to borrow money to buy food for their cattle into 2000. Soybean crops (normally not irrigated) were in fair to poor condition. The second hay cutting (if there was one) was poor at best. No third cutting of alfalfa is expected. Pasture conditions were in poor condition. Supplemental feeding, some that is normally saved for the winter, was occurring. The hot weather also cut back milk production by about 20 percent. Sun damage was reported to pepper and tomato crops. Significant damage to the pumpkin crop is expected. Nurseries and landscapers were also hurt by the drought. People were not buying new trees and shrubs. The lack of rain increased watering costs to the nurseries and the dormant grass led to less lawn cuttings.

NJZ001-007>010-012>026

Sussex - Warren - Morris - Hunterdon - Somerset - Middlesex - Western Monmouth - Eastern Monmouth - Mercer - Salem - Gloucester - Camden - Burlington - Western Ocean - Cumberland - Western Atlantic - Western Cape May - Eastern Cape May - Eastern Atlantic - Eastern Ocean

04 0800EST 17 160 Excessive Heat
06 2000EST

A very strong and oppressive high pressure system that extended from the surface to aloft gave New Jersey a brutal heat wave that included the entire Independence Day weekend. There were seventeen heat related deaths and around 100 reported heat related injuries. High temperatures reached the 90s for the first time on the 3rd, but sweltering humidity and record breaking maximum temperatures of around 100 degrees occurred from Independence Day through the 6th. Even shore areas baked as a strong west to southwest wind prevented cooler air from coming in from the ocean. The combination of the temperature and humidity produced heat indices of around 110 degrees during the afternoon of each day. A cold front moved through the region early in the morning on the 7th. High temperatures reached the 90s from the 7th through the 9th in the southern half of the state, but humidity levels were lower. A stronger cold front moved through during the morning and early afternoon of the 10th and brought in a cooler and drier air mass. So, after some places in extreme southeast New Jersey had high temperatures in the 90s on the 10th, the run of 90 degree highs ended everywhere on the 11th.

The heat related deaths occurred in Camden (2), Mercer (3), Middlesex (4), Monmouth (4), Ocean (3) and Somerset (1) Counties. Most of the deaths occurred to elderly persons in poor health, with no air-conditioning and inadequate ventilation. A 61-year-old man was found dead in his Mercer County fan-less apartment on the 6th after he worked all day on a landscaping job. Two persons on Long Beach Island (Ocean County) also died of heat related problems. Most of the heat related injuries were reported in Monmouth and Ocean Counties as the shore offered no relief during this hot spell. Paramedics reported a doubling of responses in those two counties. Eight very serious cases of heat exhaustion were reported in Ocean County. In Camden County, a person was treated for heat exhaustion after he spent the 6th painting the exterior of a house. Homebound senior citizens were offered fans by the city of Camden. In Gloucester County, air-conditioned public buildings were opened to residents. Parades scheduled to commemorate Independence Day were cancelled.

The record heat led to record demand for electricity. Every local utility broke records. The strain overwhelmed the utilities. Starting on Sunday July 4th Conectiv Energy reported serious outages because of extraordinary demand for electricity during the holiday weekend. Hardest hit was Long Beach Island. Conectiv service personnel needed police escorts as people were getting upset as sporadic blackouts lasted into the 6th. Red Cross shelters were opened in Ocean County in Dover, Long Beach and Stafford Townships. A generator failure at Conectiv Energy's Indian River power plant contributed to the problems. GPU Energy also suffered equipment failures. Power usage peaked on the 6th as people returned to work. Utilities issued power alerts requested customers reduce consumption. Conectiv Energy instituted rolling blackouts to 40 percent of its 1.1 million customers in Maryland, Delaware and New Jersey at 1040 a.m. EDT on the 6th. GPU energy also implemented rolling blackouts. The blackouts affected 20,000 customers for 20 minutes at a time. Over 110,000 homes and businesses lost power in the state by either intentional or unintentional blackouts. Great Adventure (Ocean County) had to shut down one third of their rides for the day after the rolling blackouts affected them. Area wide, the PJM reduced voltage by 5 percent at 2 p.m. EDT on the 6th to deal with the huge demand that was straining the electrical system. Non-essential New Jersey state workers were sent home early on the 6th to reduce power consumption. Nevertheless, GPU Energy (10,063 megawatts), PSE&G (9,650 megawatts), Conectiv Energy (3,418 megawatts) and the whole The PJM Interconnection, a power pool that links electric utilities throughout the area churned out a record 52,000 megawatt hours of power on the 6th. Problems were not confined to coastal areas. In Sussex County, numerous parks periodically closed over the holiday weekend due to lack of parking and crowded swimming areas.

The highest temperatures during this hot spell occurred mainly on the 5th. They included 106 degrees in New Lisbon (Burlington County). The National Weather Service investigated the thermometer and deemed it was reading correctly. Other high temperatures included 103 degrees in Pennsauken (Camden County) and New Brunswick (Middlesex County), 102 degrees in Trenton (Mercer County), Flemington (Hunterdon County), Somerville (Somerset County), Margate (Atlantic County) and Lumberton (Burlington

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEW JERSEY, South and Northwest

County), 101 degrees in Belvidere (Warren County), Wertsville (Hunterdon County), Mount Holly (Burlington County) and the Atlantic City Marina, 100 degrees in Freehold (Monmouth County), Beach Haven (Ocean County) and Boonton (Morris County), 99 degrees at the Atlantic City International Airport, Belmar (Monmouth County), Wantage (Sussex County) and Wildwood (Cape May County), 98 degrees in Andover (Sussex County) and Seabrook (Cumberland County) and 97 degrees in Millville (Cumberland County). Many daily record high temperature records were either tied or set on the 5th and the 6th. Also, for many places July 5th was the hottest day in the state since July 15, 1995.

F72PH, M70PH, F64PH, M72PH, M85PH, M61PH, M41OU, M48PH, M51OT, F47OT, M87PH, M72PH, F66PH, M54OT, M47OT, M61PH, F75PH

Sussex County

Stillwater

09 2322EST 0 0 0 Thunderstorm Wind

A severe thunderstorm knocked down a couple of trees in Stillwater.

NJZ001-007>010-012>013-015>022

Sussex - Warren - Morris - Hunterdon - Somerset - Middlesex - Western Monmouth - Mercer - Salem - Gloucester - Camden - Burlington - Western Ocean - Cumberland - Western Atlantic

16 0900EST 1 0 Excessive Heat

19 2000EST

Another strong and oppressive ridge of high pressure gave New Jersey four days of oppressive heat and humidity and five straight days with high temperatures in the 90s. There were two heat related deaths, one in Middlesex County and one in Essex County. Unlike the previous hot spell, onshore winds prevented most shore areas from ever reaching 90 degrees. High temperatures reached the 90s again on the 15th. The air mass though was still relatively dry. Southwest winds continued to increase humidity levels. The combination of the temperature and humidity produced heat indices of around 100 degrees during the afternoon of the 16th and around 105 degrees during each afternoon from the 17th through the 19th. The hottest part of this air mass passed over northern parts of the Middle Atlantic States. Thus equally oppressive conditions occurred inland throughout the state. A weak backdoor cold front moved south through the region during the evening of the 19th. While the air mass was not considerably drier on the 20th, skies were cloudy as the front stalled near the area. Drier air slowly worked its way south during the afternoon and evening of the 20th. As a high pressure system built into New England on the 21st, dry air briefly covered the whole area.

A 79-year-old Middlesex County man died from the heat on July 19th. The excessive heat and the lack of rain continued to decimate non-irrigated farms across the state. The high temperatures again put a strain on electrical utilities. For the second time this month, on Monday, July 19th the PJM Interconnection Association called for a 5 percent reduction in voltage from 115 p.m. EDT through 210 p.m. EDT.

The highest temperatures during this hot spell were scattered from the 17th through the 19th. They included 102 degrees in Wertsville (Hunterdon County) and New Lisbon (Burlington County), 101 degrees in Pennsauken (Camden County), 100 degrees in Freehold (Monmouth County), Mount Holly (Burlington County), Somerville (Somerset County) and White House Station (Hunterdon County), 99 degrees in New Brunswick (Middlesex County), 98 degrees in Boonton (Morris County), Somerdale (Camden County) and Trenton (Mercer County), 97 degrees in Belvidere (Warren County), 96 degrees in Cherry Hill (Camden County), Estell Manor (Atlantic County), Seabrook (Cumberland County) and the Atlantic City International Airport in Pomona and 90 degrees in Wildwood (Cape May County). Due to higher historical daily maximum temperature records, fewer daily high temperature records were set.

M79PH

Warren County

Blairstown

17 1645EST 0 0 0 Thunderstorm Wind

A severe thunderstorm knocked down several trees in Blairstown, mainly to the northwest of State Highway 94.

Camden County

Cherry Hill

19 1830EST 0 1 0 Lightning

A 14-year-old boy in Cherry Hill was injured by lightning while talking on the telephone. Frequent lightning caused about 2,500 homes and businesses to lose power in Cherry Hill, Lawnside and Haddon Townships in Camden County. All power was restored by 6 a.m. EDT on the 20th.

NJZ001-007>010-012>013-015>022

Sussex - Warren - Morris - Hunterdon - Somerset - Middlesex - Western Monmouth - Mercer - Salem - Gloucester - Camden - Burlington - Western Ocean - Cumberland - Western Atlantic

23 0900EST 0 0 Excessive Heat

31 2359EST

A protracted run of consecutive days with high temperatures of 90 degrees or higher started in New Jersey on July 23rd. It lasted as long as 16 days in some parts of Southern New Jersey through August 7th. Dispersed within this run were two periods of both excessive heat and humidity: from July 23rd through July 25th and again from July 29th through August 1st. A cold front moved through the area on the 25th and brought in drier air. High temperatures still reached into the 90s from the 26th through the 28th. The humidity and even higher temperatures returned on the 29th. A strong cold front moved through the region the afternoon and evening of August 1st. This brought in considerably drier air, the driest air since mid July. Because of the extremely dry ground conditions, high temperatures kept on reaching around 90 degrees through the 7th. That day a stronger cold front brought in an even cooler air mass from Canada into the northeastern United States.

The continued excessive heat and lack of rain parched non-irrigated farms across the state. For most places the highest temperatures during this hot spell occurred on the 28th and 31st. They included 102 degrees in New Lisbon (Burlington County), 101 degrees in Flemington (Hunterdon County), 100 degrees in Mount Holly (Burlington County), Pennsauken (Camden County) and Newton (Sussex County), 99 degrees in Estell Manor (Atlantic County), New Brunswick (Middlesex County), Trenton (Mercer County) On

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEW JERSEY, South and Northwest

August 1st) and White House Station (Hunterdon County), 98 degrees in Belvidere (Warren County), Lumberton (Burlington County) and Somerville (Somerset County), 96 degrees in Hightstown (Mercer County), Millville (Cumberland County), Wantage (Sussex County) and the Marina within Atlantic City (Cumberland County), 94 degrees in Andover (Sussex County) and 92 degrees in Long Valley (Morris County). Shore areas had some relief from the heat as seabreezes developed along the shore. The hottest days along the shore were the 25th, 28th and August 1st. New daily record high temperature records were set or tied on the 25th and the 28th at the Marina within Atlantic City and also at the nearby International Airport on the 28th.

Morris County Rockaway

28 2025EST 0 0 0 Lightning

Lightning struck two separate homes in Rockaway Township and started fires. No injuries were reported.

NJZ001-007>010- 012>026

Sussex - Warren - Morris - Hunterdon - Somerset - Middlesex - Western Monmouth - Eastern Monmouth - Mercer - Salem - Gloucester - Camden - Burlington - Western Ocean - Cumberland - Western Atlantic - Western Cape May - Eastern Cape May - Eastern Atlantic - Eastern Ocean

31 2359EST 0 0 Unseasonably Warm And Dry

July 1999 continued the trend of extremely warm and dry weather across New Jersey. July 1999 was the warmest July on record at the marina within Atlantic City with a monthly mean temperature of 78.6 degrees. The previous record was 78.1 degrees set in 1993. July 1999 was the second warmest July on record at the Atlantic City International Airport with a monthly mean temperature of 78.6 degrees. The warmth was not confined to urban areas. For the state of New Jersey as a whole, the July 1999 monthly mean temperature of 76.9 degrees was the 5th warmest July on record dating back to 1895. July 1999 was also extremely dry. The state average rainfall total of 1.80 inches was the 7th driest July on record and the driest July since 1957. Rainfall totals on a county weighted average for the month ranged from 0.5 inches in Somerset and Morris Counties to 2.3 inches in Cumberland County. Every county from Mercer and Middlesex Counties northward had an inch or less of total rainfall for the month. The monthly rainfall totals of 1.70 inches at the Atlantic City International Airport and 1.20 inches at the Marina within Atlantic City were the 6th and 9th driest July on record respectively. The nearby Lehigh Valley International Airport had their driest July on record ever.

NEW MEXICO, Central and North

Colfax County 15 NE Abbott

02 1535MST 0 0 Hail (0.75)

Colfax County Raton

05 2020MST 0 0 Hail (1.00)

Colfax County 4 SW Raton

05 2100MST 0 0 Flash Flood

Storm near Raton produced heavy rain which closed State Road 555 at the Canadian River and also produced large hail.

Chaves County Roswell

08 1530MST 0 0 Hail (1.75)

San Miguel County Pecos

08 1530MST 0 0 Hail (0.75)

Curry County Clovis

08 2000MST 0 0 30K Lightning

Lightning caused fires damaged at least two homes in Clovis.

San Juan County Cedar Hill

09 1515MST 0 0 20K Flash Flood
1730MST

Heavy rain near Cedar Hill produced brief flooding of Country Road 2900 along the Animas River while flooding of a normally dry arroyo feeding into the river swept into several homes built on the river's edge.

Socorro County 2 S Socorro

21 0030MST 0 0 150K 150K Flash Flood
0200MST

Heavy rain near Socorro filled arroyos with runoff during the late evening. Several levees along Arroyo Matanza failed as additional strong runoff from the Magdalena Mountains overwhelmed a 90 degree turn in the arroyo just south of Socorro. Water flooded nearly 800 acres of farmland washing away fresh cut alfalfa hay and covering about 300 acres in heavy mud. An adjacent railroad bed was also undercut least 5 times along 2 miles of track.

Colfax County 8 SW Cimarron

24 1730MST 0 0 Hail (0.88)

Sandoval County Rio Rancho

29 1530MST 0 0 1M Flash Flood
1800MST

Heavy rain of 2 inches in about 2 hours caused road and soil erosion in northern Rio Rancho. No injuries were reported, but residents in some of the newer or remote subdivisions on the far north edge of the city were stranded after numerous dirt roads and low water arroyo crossings were washed out. Some roads became gullies 4 feet deep and 14 feet wide. The area around the city land fill suffered heavily with two miles of road isolated by at least 5 deep cuts. Damage costs were restricted to time and labor associated with road clearing and grading, small culvert replacement and to the lose of several heavy tractors near the land fill which were buried in 4 to 5 feet of mud and sand.

Cibola County 5 W Bluewater

29 1730MST 0 0 Flash Flood
1900MST

About a dozen mobile homes were briefly flooded by 1-2 feet of water in the Plano Colorado development west of Bluewater.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
<u>NEW MEXICO, Central and North</u>									
Sandoval County 7 SW Cuba to 15 SW Cuba	31	1630MST 1830MST			0	0			Flash Flood
									Heavy rain flooded Arroyo Chijuilla and closed Highway 197 southwest of Cuba to near the Johnson Trading Post.
Socorro County Escondida to Lemitar	31	1645MST 1800MST			0	0			Flash Flood
									Numerous roads including parts of County Road 91 and State Highway 408 closed by dangerously high water during heavy rain north of Socorro.
Socorro County Socorro to Lemitar	31	1740MST 1850MST			0	0			Flash Flood
									Heavy rain continued to flood roads north of Socorro with at least 2 State Police vehicles trapped on high ground between flooded arroyos.
San Juan County 45 SSW Shiprock	31	1845MST			1	4			Heavy Rain
									Heavy rain which reduced visibility to near zero was blamed for a head-on motor vehicle collision that left one man dead and 4 others injured. M38VE
Quay County Tucumcari	31	1900MST 2100MST			0	0			Flash Flood
									Heavy rain flooded underpasses and frontage roads along Interstate 40 in Tucumcari. Several cars were trapped between arroyos and then submerged by rising water after being abandoned by the drivers.
<u>NEW MEXICO, South Central and Southwest</u>									
Otero County La Luz	05	1440MST 1700MST			0	0			Flash Flood
									Heavy thunderstorm rains caused extensive flooding of several canyons near La Luz, with flooding extending to most roads in the area. U.S. Highway 54 was covered by 2 feet of water and a foot of mud, and was closed between Alamogordo and Tularosa for 90 minutes. A weather spotter measured 3.5 inches of rain in La Luz, with higher amounts estimated in the nearby canyons. There were no injuries or deaths.
Otero County Alamogordo	06	1400MST 1700MST			0	0			Flood
									A strong thunderstorm dropped between one and three inches of rain in the Alamogordo area. This resulted in widespread urban and arroyo flooding. The flooding forced the state police to close portions of U.S. route 70 near. Many streets were flooded in Alamogordo with numerous reports of stalled automobiles. Water was deep enough in some intersections to cause vehicles to float. There were no injuries or deaths.
Luna County 5 W Columbus	18	1838MST 1842MST			0	0			Hail (1.00)
Luna County 15 N Deming	21	1200MST 1400MST			0	0			Flood
									Law enforcement reported sporadic flooding due to heavy thunderstorm rains along U.S. highway 180 between Deming and Silver City.
Otero County Alamogordo	21	1500MST 1800MST			0	0			Flood
									Heavy rains from strong thunderstorms produced between one and two inches of rain in an hour. This resulted in extensive urban and arroyo flooding across the city of Alamogordo. Water reached near the first floor of homes in some areas. There were numerous reports of stranded motorists and stalled vehicles. There were no injuries or deaths.
Hidalgo County Lordsburg	26	1853MST 1900MST			0	0			Thunderstorm Wind (G70)
									A severe thunderstorm ripped through the Lordsburg area causing widespread power outages and structural damage. There were numerous reports of downed utility poles. A mobile home was pushed 4 feet off of the foundation with another mobile home damaged when a porch was hurled through the air. A barn on the east side of Lordsburg was completely torn apart. In addition to the strong winds, heavy rains caused minor flooding of streets and intersections.
Grant County Separ	20	2015MST 2315MST			0	0	100K		Flood
									A weather spotter measured 4 inches of rain at Separ (between Deming and Lordsburg) from a slow moving thunderstorm. The force of the running water washed out some of a railroad bed, knocked over much of the fencing in the area, and resulted in extensive erosion damage to local roads.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEW MEXICO, Southeast									
Eddy County Countywide	10	0900MST 1200MST			0	0			Flash Flood
									Widespread heavy rains caused flash flooding on many county roads and on State Highway 128 east of Carlsbad. County Road 395 was reported to have had 6 feet of water running across it.
Lea County Hobbs	14	1800MST			0	0	10K		Thunderstorm Wind
									Microburst winds in Hobbs, uprooted trees, downed utility poles, and took the roof off one trailer.
Eddy County 25 E Loving	22	1700MST			0	0	15K		Lightning
									Lightning struck two oil tank batteries causing them to burst into flames. Fire fighters from three towns fought the blaze.
NEW YORK, Central									
Delaware County 3 S Hancock	02	1515EST			0	0			Thunderstorm Wind (G55)
									Trees downed across Route 97
Cayuga County Countywide	03	1855EST 1925EST			0	0	100K		Thunderstorm Wind
									Tents blown down at the Cayuga County Fairgrounds located in Weedsport. Boats capsized at Owasco Lake. Trees and powerlines down throughout the county.
Onondaga County Countywide	03	1900EST 1930EST			0	0	200K		Thunderstorm Wind
									Numerous trees and powerlines blown down throughout the county with power outages reported in Syracuse, Liverpool, Lakeport, Manlius, Fayetteville and Tully. A few homes received minor damage from fallen trees and limbs in several of these towns.
Onondaga County Syracuse	03	1900EST 1920EST			0	11	500K		Thunderstorm Wind
									Numerous tents and booths were damaged or blown down at the county Fairgrounds during the "Taste of Syracuse" festival.
Onondaga County Syracuse Intl Arpt	03	1903EST			0	0			Thunderstorm Wind (G58)
Madison County Cazenovia	03	1915EST			0	0			Thunderstorm Wind (G50)
Onondaga County Otisco	03	1930EST			1	0	50K		Thunderstorm Wind
									A young girl drowned on Otisco Lake as a result of thunderstorm winds capsizing the party boat she was riding in. F4IW
Chenango County Earlville	03	1939EST			0	0			Thunderstorm Wind (G50)
Cortland County Cuyler	03	1940EST			0	0			Thunderstorm Wind (G50)
Otsego County Burlington	03	2000EST			0	0			Thunderstorm Wind (G50)
Delaware County Colchester	03	2015EST			0	0			Thunderstorm Wind (G50)
									An upper level disturbance raced east from the Great Lakes during the afternoon and interacted with a very hot and humid airmass already sweltering over central New York. Clusters and lines of thunderstorms developed during the early evening over western New York and pushed into the Finger Lakes and then through the Western Catskills during the mid to late evening hours. These thunderstorms packed strong wind gusts in excess of 60 mph as they raced across the area uprooting trees, damaging homes and knocking out power in many areas. These thunderstorms interrupted several summertime activities and scattered fairgoers in both Cayuga and Onondaga counties. Numerous tents and booths were blown down at the "Taste of Syracuse" festival in the city of Syracuse. Eleven people sustained minor injuries from flying debris at this location. Several boats were overturned in Owasco Lake, and at approximately 8:30 pm a 4 year old girl drowned underneath a capsized pontoon boat which was located on Otisco Lake in Onondaga county.
Oneida County Countywide	04	0200EST			0	0	10K		Thunderstorm Wind
									Several trees and powerlines blown down
Madison County Cazenovia	04	0215EST			0	0	5K		Thunderstorm Wind
									Several trees and powerlines blown down
Oneida County Countywide	04	0541EST 0730EST			0	0	2.5M		Flash Flood
Otsego County Laurens	04	0641EST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEW YORK, Central

Otsego County

East Portion	04	0657EST			0	0	75K		Flash Flood
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Delaware County

East Portion	04	0810EST 0910EST			0	0	1.5M	500K	Flash Flood
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An organized area of thunderstorms developed over the northern Great Lakes in association with an upper level disturbance and warm front. The thunderstorms moved southeast into a warm, humid and unstable airmass, entering the southern Tug Hill Plateau and western Mohawk Valley after midnight. The thunderstorms produced strong winds and heavy rain. Across Oneida, eastern Otsego and eastern Delaware counties numerous roads were washed out. Many streams and creeks rose out of their banks flooding countless basements across these counties. There was also extensive structural damage to bridges and buildings. A state of emergency was declared for Oneida county and the towns of Roxbury and Stamford in Delaware county. A rain spotter in Roxbury reported 3.84 inches of rain in just two hours. Flood waters washed out part of the Adirondack Scenic Railway line in Holland Patent.

Onondaga County

North Syracuse	06	1145EST			0	0	15K		Thunderstorm Wind
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Several trees and powerlines blown down.

Onondaga County

Syracuse	06	1200EST			0	1			Lightning
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Lightning struck a Rural/Metro driver in North Syracuse who was operating the passenger lift of a van and holding an umbrella. She did not suffer life-threatening injuries but was treated at a nearby hospital.

Oneida County

Lee Center to Rome	06	1210EST 1215EST			0	0			Thunderstorm Wind (G50)
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Several trees blown down

Madison County

Canastota	06	1220EST			0	0			Hail (0.88)
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Madison County

Sullivan	06	1225EST			0	0			Thunderstorm Wind (G50)
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Oneida County

Holland Patent	06	1225EST			0	0			Thunderstorm Wind (G50)
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Numerous trees and tree limbs blown down

Chenango County

Bainbridge	06	1455EST			0	0	5K		Thunderstorm Wind
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Tree downed on top of car

Otsego County

Unadilla	06	1500EST			0	0	10K		Thunderstorm Wind
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Numerous trees and powerlines were downed

Delaware County

Sidney Center	06	1515EST			0	0	20K		Thunderstorm Wind
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Several trees and wires downed along Route 23 along with structural damage to a barn, porch and a few chimneys.

Schuyler County

Montour Falls	06	1723EST			0	0	10K		Thunderstorm Wind
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A few trees and wires were knocked down. Some of these trees damaged a roof in town.

Broome County

Maine	06	1733EST			0	0	30K		Thunderstorm Wind
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A large portion of a roof was torn off a barn along with numerous trees blown down

Chemung County

Sullivanville	06	1735EST			0	0	15K		Lightning
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Lightning struck a three-story barn on Veteran Hill Road in the town of Veteran twice between 630 and 639 pm. The lightning ignited a fire that totally destroyed the barn which contained 200 to 300 bails of hay inside.

Broome County

Hillcrest	06	1753EST			0	0	10K		Thunderstorm Wind
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Tree blown over into a residence

Chemung County

Horseheads	06	1800EST			0	0			Thunderstorm Wind (G50)
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Tioga County

Spencer to Apalachin	06	1800EST 1815EST			0	0			Thunderstorm Wind (G50)
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Several trees were toppled from Spencer and Candor in the northwest part of the county to Owego and Apalachin in the southeast section.

Chenango County

Greene	06	1805EST			0	0	25K		Thunderstorm Wind
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Numerous trees and powerlines blown down with some crashing into houses. A state of emergency was declared by city officials.

Broome County

Castle Creek	06	1820EST			0	0	5K		Thunderstorm Wind
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An uprooted tree landed on a mobile home causing minor damage.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEW YORK, Central									
Delaware County									
Countywide	06	1845EST 1900EST			0	0			Thunderstorm Wind (G50)
		Trees were uprooted and snapped across the county.							
Delaware County									
Countywide	06	1900EST 1915EST			0	0			Thunderstorm Wind (G50)
		Numerous trees down throughout county from another round of thunderstorms on this day.							
Sullivan County									
Monticello to Grahamsville	06	2000EST 2020EST			0	0			Thunderstorm Wind (G50)
		Scattered trees and a few powerlines were downed by strong winds from the central to northeast part of the county. An upper level disturbance moving across northern New York in combination with an approaching cold front and a very moist unstable airmass in place across central New York, produced clusters and lines of thunderstorms during the afternoon of the 6th. The thunderstorms first developed over the northern part of central New York around noon moving southeast into the Southern Tier counties by late afternoon and early evening. Many people lost power and trees were topples onto vehicles, residences and a barn.							
Oneida County									
Marcy	07	2115EST			0	0	10K		Thunderstorm Wind
		A severe thunderstorm developed and tracked down the Mohawk Valley with damaging wind gusts that brought down several powerlines in the town of Marcy.							
Yates County									
Penn Yan	09	1925EST			0	0	20K		Thunderstorm Wind
		Numerous trees and powerlines downed. One tree fell on a house.							
Seneca County									
Ovid to Covert	09	1930EST			0	0	10K		Thunderstorm Wind
		Several trees and powerlines blown down across the southern part of the county.							
Steuben County									
Addison to Borden	09	1931EST 1938EST			0	0			Thunderstorm Wind (G50)
		Several trees blown down.							
Steuben County									
Borden	09	1935EST			0	0	15K		Thunderstorm Wind
		A barn roof was blown off.							
Cortland County									
Virgil	09	1955EST			0	0	10K		Thunderstorm Wind
		Trees and powerlines downed.							
Chemung County									
Southport	09	2012EST			0	0			Hail (0.75)
Chemung County									
Countywide	09	2015EST			0	0	10K		Thunderstorm Wind
		Trees and powerlines downed.							
Cortland County									
Cortland	09	2015EST			0	0			Thunderstorm Wind (G50)
		Six to eight inch diameter limbs were knocked down by the wind.							
Cayuga County									
Countywide	09	2030EST			0	0	10K		Thunderstorm Wind
		Scattered trees and powerlines were knocked down by strong thunderstorm winds.							
Tioga County									
Owego	09	2045EST			0	0			Thunderstorm Wind (G50)
		Trees and large branches downed.							
Tompkins County									
Etna to Freeville	09	2045EST			0	0			Thunderstorm Wind (G50)
		Several trees and tree limbs blown down.							
Broome County									
Countywide	09	2047EST 2115EST			0	0	5K		Thunderstorm Wind
		Numerous trees downed.							
Onondaga County									
Baldwinsville	09	2050EST			0	0	10K		Thunderstorm Wind
		Trees and powerlines blown down.							
Broome County									
Vestal	09	2055EST			0	0			Thunderstorm Wind (G70)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEW YORK, Central									
Cortland County									
Virgil to Cortland	09	2055EST 2120EST			0	0	10K		Thunderstorm Wind
		Several trees and powerlines blown down.							
Delaware County									
Margaretville	09	2140EST			0	0			Thunderstorm Wind (G50)
		Trees downed. A squall line with embedded bow echoes developed along a cold front approaching from the northwest. The line of severe thunderstorms maintained its intensity as it raced out ahead of the front moving across much of central New York during the evening hours. The highest thunderstorm gust reported was 70 mph in Vestal. At 9:55 pm a wind gust of 58 mph was reported in Port Crane. The strong thunderstorm winds uprooted trees and caused power outages.							
Tompkins County									
Ithaca	17	1544EST			0	0	5K		Thunderstorm Wind
Onondaga County									
Camillus to North Syracuse	17	1625EST 1640EST			0	0	20K		Thunderstorm Wind
Tompkins County									
Ithaca	17	1635EST			0	0	5K		Thunderstorm Wind
Sullivan County									
Jeffersonville	17	2000EST			0	0	25K		Thunderstorm Wind
		Several clusters of thunderstorms developed over central New York on this day in response to an upper level disturbance that moved out of the Ohio Valley during the late morning and afternoon hours. Some of these storms reached severe levels with one cluster downing powerlines near Ithaca College around 4:45 p.m. EDT. A little later, another round of thunderstorms moved through the same city and downed trees and additional wires in downtown sections of Ithaca shortly after 5:30 p.m. EDT. One particularly strong thunderstorm cell downed numerous trees and wires over central parts of Onondaga county and also disrupted a Blues Festival and the Fleet Arts and Crafts festival in downtown Syracuse. Strong winds destroyed tents and booths and sent fairgoers scattering about seeking shelter. Miraculously, no one was injured. Powerlines were also downed throughout the area as 13,000 residents were without electric power for several hours. A few more thunderstorms formed over Northeast Pennsylvania and subsequently entered the Western Catskills of New York around dusk. These storms tore into parts of Sullivan county and tore down trees in Jeffersonville. Approximately eight trees fell on a house, heavily damaging an art studio and it's contents.							
Otsego County									
Oneonta	18	1830EST			0	0	50K		Thunderstorm Wind
		Numerous cars and houses sustained minor damage throughout the city and surrounding areas of Oneonta as strong thunderstorm gusts uprooted trees and transmission poles and lines.							
Delaware County									
Davenport	18	1850EST			0	0			Thunderstorm Wind (G50)
		Trees and a few wires were downed by thunderstorm gusts.							
Delaware County									
Treadwell to Meridale	24	1400EST			0	0			Thunderstorm Wind (G50)
		Trees downed							
Cayuga County									
Auburn	25	1430EST			0	0	15K		Thunderstorm Wind
		Thunderstorm winds brought down two high voltage powerlines just outside the city of Auburn. This resulted in a loss of power for approximately 5000 people over a six county area.							
Steuben County									
Wayland to Cohocton	25	1600EST 1605EST			0	0			Thunderstorm Wind (G50)
		Trees and a few lines downed by thunderstorm gusts.							
Oneida County									
Lee Center to 2 E Lee Center	25	1635EST 1642EST			0	0			Hail (0.88)
Otsego County									
Laurens	29	1840EST			0	0			Thunderstorm Wind (G50)
		Several trees downed.							
Otsego County									
Schenevus	29	1900EST			0	0	5K		Thunderstorm Wind
		Powerlines downed by strong thunderstorm winds.							
Steuben County									
1 S Lindley	30	1352EST			0	0			Thunderstorm Wind (G50)
		Trees downed.							
Schuyler County									
Tyrone	30	1410EST			0	3			Hail (1.75)
		Three children suffered head injuries from being struck several times by hail averaging the size of golfballs.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEW YORK, Central

Tioga County									
Nichols	30	1530EST			0	0	5K		Thunderstorm Wind
Trees and powerlines downed									
Chenango County									
Mc Donough	30	1600EST			0	0	5K		Thunderstorm Wind
Powerlines downed by strong thunderstorm gusts.									
Otsego County									
Oneonta	30	1615EST			0	0	10K		Thunderstorm Wind
Several large limbs and a few trees fell on a homeowner's roof causing minor damage									
Chenango County									
New Berlin	30	1630EST			0	0			Thunderstorm Wind (G50)
Broome County									
Maine to Windsor	30	1700EST 1715EST			0	0	10K		Thunderstorm Wind
Scattered trees and powerlines were knocked down by strong thunderstorm winds.									
Steuben County									
Hammondsport	31	1830EST			0	0			Thunderstorm Wind (G50)
Tompkins County									
Countywide	31	1900EST			0	0			Thunderstorm Wind (G50)
Scattered thunderstorms rumbled through parts of central New York toppling numerous trees mainly over the northern portions of Steuben and Tompkins counties before they weakened.									

NEW YORK, Coastal

NYZ067>081

Orange - Putnam - Rockland - Northern Westchester - Southern Westchester - New York (Manhattan) - Bronx - Richmond (Staten Is.) - Kings (Brooklyn) - Queens - Nassau - Northwest Suffolk - Northeast Suffolk - Southwest Suffolk - Southeast Suffolk

04	1300EST	33	0	Excessive Heat
06	1800EST			

An extremely hot and humid airmass covered the region from July 4th through July 6th.

On Sunday July 4th, temperatures soared into the mid and upper 90s. The combination of high temperatures and moderate humidity caused most heat indices to range from 100 to 105 degrees. However, at Central Park, the Heat Index peaked at 110 degrees around 4 pm.

On Monday July 5th, many new maximum temperature records were set. At Islip McArthur Airport, the temperature reached 102 degrees, which set an all-time record high. At Central Park, the temperature reached 101 degrees, which set a record high for July 5th. High temperatures ranged from 96 degrees at Montauk Point to 102 degrees at Islip, Farmingdale, and JFK Airport. Heat indices peaked from 110 to 115 degrees. "Rolling" electrical blackouts occurred across the Metropolitan Region.

On July 6th, new record high temperatures were set again. At Central Park, the temperature reached 101 degrees for the second consecutive day, which set another new record. At LaGuardia Airport, the temperature reached 101 degrees, which was the second consecutive day the temperature reached at least 100 degrees. Heat indices peaked around 110 degrees. Widespread blackouts occurred across the Metro area, including Westchester County's sound shore from Pelham Manor to Port Chester.

This heat wave was directly responsible for killing 33 people in the NY Metro area:

- o 14 from Brooklyn (Kings County)
- o 13 from Manhattan (New York County)
- o 3 from Queens County
- o 2 from Pelham (Southern Westchester County).
- o 1 from Bronx County.

F79OT, F89OT, M48OT, M53OT, M60OT, M68OT, F90OT, F38OT, M45OT, M59OT, F76OT, F37OT, F102OT, M27OT, F33OT, M56OT, M65OT, F76OT, F47OT, F68OT, M71OT, M83OT, F34OT, M79OT, M82OT, F82OT, M72OT, M33OT, M63OT, F77OT, M49OT, M82PH, F82PH

Orange County									
Port Jervis	09	2325EST			0	0			Thunderstorm Wind (G50)
Orange County									
Middletown to Warwick	09	2340EST			0	0			Thunderstorm Wind (G50)
Rockland County									
Bear Mtn to Suffern	10	0000EST			0	0			Thunderstorm Wind (G50)

Scattered severe thunderstorms developed in a line of thunderstorms and heavy showers. As the storms moved east, they produced high winds that downed: wires in Port Jervis, trees from Middletown to Warwick, and trees and power lines from Bear Mountain State Park to Suffern.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEW YORK, Coastal									
Nassau County									
Bayville	19	1500EST			0	0			Thunderstorm Wind (G50)
Suffolk County									
Lloyd Harbor	19	1505EST			0	0			Thunderstorm Wind (G50)
As a "pulse" severe thunderstorm moved east across the extreme northeast shores of Nassau County and extreme northwest shores of Suffolk County, it produced high winds that downed trees and wires.									
Suffolk County									
Central Portion to Westhampton	22	1400EST 1600EST			0	0			Urban/Sml Stream Fld
As a cluster of thunderstorms moved southeast, they produced torrential rain that flooded streets, low-lying areas, and poor drainage areas. Rainfall rates were estimated from 1 to 2 inches per hour. In general, 2 to 3 inches of rain occurred. Specifically, 2.85 inches fell at Wading River and 2.00 inches fell at Westhampton.									
Richmond County									
Richmond	24	1710EST			0	0			Thunderstorm Wind (G50)
As a severe thunderstorm moved east across Richmond County, it produced high winds that uprooted trees in Richmond.									
Orange County									
Middlehope	30	1905EST			0	0			Thunderstorm Wind (G50)
As a severe thunderstorm moved southeast across Northeast Orange County, it produced high winds that downed tree limbs in MiddleHope.									
NEW YORK, East									
Herkimer County									
West Winfield	03	2030EST			0	0	1K		Thunderstorm Wind
Schoharie County									
Cobleskill	03	2030EST			0	0	1K		Thunderstorm Wind
Montgomery County									
Canajoharie	03	2100EST			0	0	1K		Thunderstorm Wind
Albany County									
New Scotland	03	2135EST			0	0	1.5K		Thunderstorm Wind
Greene County									
Prattsville	03	2135EST			0	0	5K		Thunderstorm Wind
A cluster of thunderstorms developed over the Great Lakes during the afternoon of July 3. The storms moved east southeast just south of a warm front, propagating into Western New York around sunset. The storms moved into the Mohawk Valley and Capital region later that evening. The storms produced isolated damage which included fallen trees in West Winfield, Herkimer county, Canajoharie in Montgomery county and Cobleskill in Schoharie County. Power lines were brought down in Prattsville Greene county which produced a number of power outages. Also trees and wires were blown down in New Scotland, Albany county.									
Montgomery County									
St Johnsville	04	0245EST			0	0	1K		Thunderstorm Wind
Greene County									
Halcott Center	04	0400EST 0700EST			0	0	40K		Flash Flood
Schoharie County									
Summit	04	0626EST			0	0	3K		Thunderstorm Wind
Herkimer County									
Ilion	04	0700EST 0900EST			0	0	250K		Flash Flood
Two more clusters of thunderstorms developed over the Great Lakes during the predawn hours on July 4. These storms took a very similar track to the previous storms that affected portions of the Mohawk Valley and northern Catskill region the evening of July 3. The cluster worked down the Mohawk Valley with torrential rain. There was also wind damage as trees and power lines were blown down in the village of St. Johnsville in Montgomery county. The third and final set of thunderstorms later that morning, also produced copious rainfall and some wind damage. This last batch brought destructive wind to the vicinity of Summit, Schoharie county. Trees were brought down there. Since all three storms moved over Southern Herkimer county, rainfall in the region ranged from 5 to 7 inches in less than a 12 hour period. This rainfall triggered severe flash flooding in and around Ilion sending Spencer and Tory creeks out of their banks. Many roads and bridges were closed. People were reported trapped in floating cars and had to be rescued. A small home in Little Falls was badly damaged by a mudslide. A large gabion wall along Multana creek by Arnold's Restaurant collapsed. A state of emergency was declared in both Ilion and German Flatts. The rains even brought the Mohawk River slightly over its flood stage of 15 feet midday at Little Falls in Montgomery County. Heavy rains from a thunderstorm cell measuring up to 4 inches washed out six town roads and a county road in the vicinity of Halcott, Greene county.									
Ulster County									
Kingston	04	0814EST			0	0	20K		Lightning
Ulster County									
Ulster Hgts	04	0824EST			0	0	15K		Lightning
Lightning from a thunderstorm struck two different houses, one in Ulster and another in Kingston. The first strike, at 119 Dewitt street in Kingston ignited a fire that was contained to a storage room. The second lightning strike hit a tree, destroying it. The flames from the tree damaged a roof at 98 Katrine Lane, in the town of Ulster. In addition, the lightning resulted in as many as 3,500 residents without									

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July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

NEW YORK, East

power in the Mid Hudson Valley.

NYZ032>033-038>043-047>054-058>061-063>066 Northern Herkimer - Hamilton - Southern Herkimer - Fulton - Montgomery - Northern Saratoga - Warren - Washington - Schoharie - Western Schenectady - Eastern Schenectady - Southern Saratoga - Western Albany - Eastern Albany - Western Rensselaer - Eastern Rensselaer - Western Greene - Eastern Greene - Western Columbia - Eastern Columbia - Western Ulster - Eastern Ulster - Western Dutchess - Eastern Dutchess

04 1200EST 0 0 Excessive Heat
06 1300EST

An intense Bermuda high became established over the mid Atlantic region during the Independence Day weekend. This high pumped heat along with very high humidity across eastern New York, especially on July 5 and 6. Temperatures soared to 90 or higher most everywhere while dewpoints climbed well into the 70s . At the Albany International airport, the temperature peaked at 94 on July 5 and 95 on July 6. However , after combining humidity values, the heat index reached as high as 105 on both days. At the Dutchess County airport near Poughkeepsie, the temperature crested at 99 degrees both days. On July 5, the dewpoint reached 79 to produce a heat index of 119 degrees! The heat index peaked around 110 degrees on July 6. The sultry air mass set the stage for a large severe thunderstorm outbreak during the afternoon of July 6 across eastern New York.

Herkimer County									
Poland	06	1250EST			0	0	1K		Thunderstorm Wind
Herkimer County									
Herkimer	06	1300EST			0	0	11K		Thunderstorm Wind
Herkimer County									
Newport	06	1300EST			0	0	5K		Thunderstorm Wind
Herkimer County									
Salisbury	06	1300EST			0	0	3K		Thunderstorm Wind
Warren County									
Warrensburg	06	1312EST			0	0	92K		Thunderstorm Wind
Warren County									
Bolton Lndg	06	1320EST			0	0	30K		Thunderstorm Wind
Warren County									
Diamond Pt	06	1320EST			0	2	20K		Thunderstorm Wind
Montgomery County									
Ft Plain	06	1323EST			0	0	2K		Thunderstorm Wind
Fulton County									
Mayfield	06	1328EST			0	0	4K		Thunderstorm Wind
Warren County									
Lake George	06	1329EST			0	0	15K		Thunderstorm Wind
Fulton County									
Broadalbin	06	1330EST			0	0	3K		Thunderstorm Wind
Montgomery County									
Ft Plain	06	1330EST			0	0	5K		Thunderstorm Wind
Warren County									
Lake George	06	1335EST			1	0	7K		Thunderstorm Wind
		M49CA							
Washington County									
Dresden	06	1336EST			0	0	3.5K		Thunderstorm Wind
Washington County									
Putnam	06	1337EST			0	0	110K		Thunderstorm Wind
Montgomery County									
Hagaman	06	1341EST			0	0	1K		Thunderstorm Wind
Saratoga County									
Fortsville	06	1341EST			0	0	2K		Thunderstorm Wind
Saratoga County									
Greenfield	06	1341EST			0	0	7K		Thunderstorm Wind
Washington County									
Ft Edward	06	1341EST			0	0	4K		Thunderstorm Wind
Saratoga County									
Charlton	06	1345EST			0	0	1.5K		Thunderstorm Wind
Saratoga County									
Burnt Hills	06	1347EST			0	0	6K		Thunderstorm Wind
Washington County									
Argyle	06	1347EST			0	0	6K		Thunderstorm Wind
Washington County									
Granville	06	1347EST			0	0	3K		Thunderstorm Wind
Schenectady County									
Rotterdam	06	1353EST			0	0	22K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEW YORK, East									
Schenectady County									
Glenville	06	1354EST			0	0	90K		Thunderstorm Wind
Schenectady County									
Schenectady	06	1356EST			0	0	175K		Thunderstorm Wind
Saratoga County									
Clifton Park	06	1358EST			0	0	300K		Thunderstorm Wind (G85)
Schenectady County									
Niskayuna	06	1358EST			0	0	10K		Thunderstorm Wind
Washington County									
Salem	06	1402EST			0	0	3.5K		Thunderstorm Wind
Schoharie County									
Cobleskill	06	1404EST			0	0	2K		Thunderstorm Wind
Washington County									
Cambridge	06	1404EST			0	0	20K		Thunderstorm Wind
Washington County									
Cambridge	06	1410EST			0	0	45K		Thunderstorm Wind
Albany County									
Cohoes	06	1415EST			0	0	1K		Thunderstorm Wind
Rensselaer County									
Pittstown	06	1417EST 1420EST			0	0	500K		Thunderstorm Wind (G100)
Rensselaer County									
Raymertown	06	1417EST			0	0	5K		Thunderstorm Wind
Schoharie County									
Cobleskill	06	1420EST			0	0	3K		Thunderstorm Wind
Rensselaer County									
Rensselaer	06	1422EST			0	0	10K		Thunderstorm Wind
Rensselaer County									
Grafton	06	1426EST			0	0	8K		Thunderstorm Wind
Rensselaer County									
Hoosick Falls	06	1428EST			0	0	1.5K		Thunderstorm Wind
Albany County									
South Berne	06	1557EST			0	0	9K		Thunderstorm Wind
Greene County									
Greenville	06	1603EST			0	0	3.5K		Thunderstorm Wind
Albany County									
Delmar	06	1614EST			0	0	1K		Thunderstorm Wind
Albany County									
Ravena	06	1614EST			0	0	11K		Thunderstorm Wind
Rensselaer County									
Rensselaer	06	1618EST			0	0	10K		Lightning
Rensselaer County									
Rensselaer	06	1618EST			0	0	35K		Thunderstorm Wind
Columbia County									
North Chatham	06	1633EST			0	0	2K		Thunderstorm Wind
Columbia County									
Chatham Center	06	1635EST			0	0	4K		Thunderstorm Wind
Herkimer County									
Little Falls	06	1736EST			0	0	40K		Thunderstorm Wind
Ulster County									
Kerhonkson	06	2007EST			0	0	7K		Thunderstorm Wind (G90)
Ulster County									
Accord	06	2011EST			0	0	12K		Thunderstorm Wind
Ulster County									
New Paltz	06	2019EST			0	0	3K		Thunderstorm Wind (G70)
Dutchess County									
Hyde Park	06	2030EST			0	0	13K		Thunderstorm Wind
Dutchess County									
Poughkeepsie	06	2030EST			0	0	2K		Thunderstorm Wind
Dutchess County									
Rhinebeck	06	2030EST			0	0	11K		Thunderstorm Wind
Dutchess County									
Pleasant Vly	06	2039EST			0	0	3K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NEW YORK, East

Dutchess County

Pawling

06	2104EST				0	0	1.5K		Thunderstorm Wind
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A cold front moved from the Great Lakes eastward across New York State on July 6. With sultry air in place, and favourable strong winds aloft, this front triggered the largest outbreak of severe weather in eastern New York since May 31st, 1998. A squall line developed around midday ahead of the front and produced the most damage. However, more thunderstorm cells continued developing and some of these became severe into the evening hours. Nearly every county in eastern New York experienced some wind damage. Rensselaer, Warren, Washington, Herkimer, Saratoga and Schenectady Counties were especially hard-hit. Powerful thunderstorms brought down trees and power lines in many localities. Unfortunately, a falling tree killed a camper located on Uncas Island on Lake George. Two other individuals were injured as they lost control of their car avoiding a falling tree at Diamond Point near Lake George. Four to five hundred trees were blown down in Putnam, Washington county. The wind peeled off roofs next to a toll booth located in Schenectady and downed trees crushed a car on Brandywine Avenue. Glenville in Schenectady county was described as a war zone with a large number of fallen trees. A microburst estimated at 80-90 mph downed hundreds of trees resulting in closed roads in Clifton Park, Saratoga County. The worst damage was in the vicinity of Ashley Drive and Huckleberry Lane. The swath was 1.6 miles long and fanned out 0.8 miles wide. Thunderstorm winds knocked trees onto a mobile home, crushing it, in the town of Halfmoon. An even more destructive microburst with estimated winds of 100 mph, brought thousands of trees down between Raymertown and Pittstown, Rensselaer County, and tore roofs off storage buildings. This microburst travelled 4.5 miles and damage fanned out to 2.2 miles wide. Another microburst took place in Rensselaer, Rensselaer County, bringing a large number of trees down. In addition, roofs were peeled off homes. Lightning also struck several buildings in that town. One last microburst was discovered at Little Falls, Herkimer County. The wind with this one was clocked at 90 mph, bringing a large number of trees and power lines down in and around the town. The wind also imploded a barn in Little Falls. A wind gust of 70 mph was measured in New Paltz, Ulster County. Shortly after the storm, an estimated 75,000 customers were without power in the immediate Capital Region.

Washington County

Dresden

18	1127EST				0	0	1K		Thunderstorm Wind
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Washington County

Ft Ann

18	1140EST				0	0	1.5K		Thunderstorm Wind
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Washington County

Argyle

18	1232EST				0	0	2K		Hail (1.75)
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Washington County

Granville

18	1322EST				0	0	5K		Thunderstorm Wind
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Washington County

West Hebron

18	1330EST				0	0	6K		Thunderstorm Wind
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Washington County

Hudson Falls

18	1358EST				0	0			Hail (0.75)
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Saratoga County

South Glens Falls

18	1400EST				0	0	3K		Lightning
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Washington County

Salem

18	1407EST				0	0	10K		Thunderstorm Wind
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Saratoga County

Gansevoort

18	1410EST				0	0	1K		Thunderstorm Wind
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Washington County

Hudson Falls

18	1458EST				0	0	7K		Thunderstorm Wind
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A pre-frontal trough sparked scattered thunderstorms in a very unstable air mass around midday on July 18. A few of the cells became severe in the Lake George / Saratoga region. The storms brought spotty damage, including downed trees and wires to a large number of communities in central Washington county. Golf ball size hail was noted at Argyle and dime size hail was noted at Hudson Falls.

Dutchess County

Wappingers Falls

18	2015EST				0	0	1K		Thunderstorm Wind
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A lone thunderstorm cell that formed in a very unstable air mass became severe on the evening of July 18 in southern Dutchess county. The thunderstorm produced wind damage that brought down trees and wires in the village of Wappingers Falls.

Montgomery County

Amsterdam

23	1300EST				0	0	2K		Flash Flood
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Montgomery County

Amsterdam

23	1307EST				0	0	1K		Thunderstorm Wind
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Montgomery County

Ft Johnson

23	1340EST				0	0	1.5K		Thunderstorm Wind
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Scattered thunderstorms developed in an unstable air mass during the afternoon of July 23 in the Mohawk Valley. Both of the thunderstorms cells become severe. One produced wind gusts strong enough to down trees at Fort Johnson, the other in Amsterdam. In addition, torrential rains spawned flooding on a few of the streets in Amsterdam.

Washington County

Kingsbury

25	1340EST				0	0	0.50K		Thunderstorm Wind
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Washington County

Argyle

25	1345EST				0	0	1K		Thunderstorm Wind (G60)
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An unstable air mass produced widely scattered thunderstorms in eastern New York on the afternoon of July 25. One of the cells became severe in Washington County. This storm produced wind damage as several trees were knocked down near Kingsbury and Argyle. In addition, a wind gust was clocked as high as 60 miles an hour in Argyle.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEW YORK, East									
Fulton County									
Perth	29	1752EST			0	0	0		Hail (0.88)
Fulton County									
Gloversville	29	1840EST			0	0	1K		Thunderstorm Wind
Montgomery County									
St Johnsville	29	1842EST			0	0	2K		Thunderstorm Wind
Dutchess County									
Billings	29	1918EST			0	0			Hail (0.75)
A strong warm front and favourable wind shear aloft allowed for some thunderstorms to become strong to locally severe across eastern New York on the evening of July 29. Thunderstorms deposited dime to nickel size hail at Perth, Fulton County as well as Billings in Dutchess county. Thunderstorms produced destructive wind gusts in Gloversville, Fulton county as trees were blown down. Power lines were knocked down at St. Johnsville in Montgomery county. In addition, the storms produced heavy rainfall in excess of an inch in 15 to 30 minutes in some localities. No flooding was reported.									
Warren County									
Hague	30	1545EST			0	0	1K		Hail (1.00)
Herkimer County									
Middlefield	30	1845EST			0	0	5K		Thunderstorm Wind
Herkimer County									
Little Falls	30	1910EST			0	0			Hail (0.75)
A sultry unstable air mass allowed for scattered thunderstorms to develop across eastern New York on the evening of July 30. Some of the storms became severe. Thunderstorms deposited walnut size hail at Hague, Warren county. Wind damage from a severe thunderstorm later during the evening knocked trees and power lines down in the Middleville to Herkimer area. The same storm produced dime sized hail at Little Falls in Herkimer county.									
NEW YORK, North									
Clinton County									
Rouses Pt	05	0210EST 0220EST			0	0	5K		Thunderstorm Wind
A mesoscale convective complex consisting of a cluster of thunderstorms moved across northern New York during the early morning hours of Monday, July 5th. In the town of Rouses Point, NY a tree was blown down along with numerous large tree branches.									
Franklin County									
Paul Smiths	05	1745EST			0	0	10K		Thunderstorm Wind
A frontal boundary across extreme northern New York triggered late afternoon and evening thunderstorms on July 5th. Trees and power lines were blown down in Paul Smiths, NY.									
Essex County									
Crown Pt	05	1750EST			0	0	20K		Thunderstorm Wind (G56)
A frontal boundary across extreme northern New York triggered late afternoon and evening thunderstorms on July 5th. Trees and power lines were blown down in Crown Point, NY. Several 60 foot trees were blown down or uprooted. Trailers were blown over. The wind was estimated at 60 to 70 mph.									
St. Lawrence County									
Ogdensburg	05	1945EST			0	0	40K		Thunderstorm Wind
A frontal boundary across extreme northern New York triggered evening thunderstorms on July 5th. Numerous trees and power lines were blown down in Ogdensburg, NY. The roof was torn off a building.									
St. Lawrence County									
Cranberry Lake	05	2040EST			0	0	5K		Thunderstorm Wind
St. Lawrence County									
Hammond	05	2040EST			0	0	5K		Thunderstorm Wind
A frontal boundary across extreme northern New York triggered evening thunderstorms on July 5th. Numerous trees and power lines were blown down in Hammond and Cranberry Lake, NY.									
Franklin County									
Harrietstown	05	2110EST			0	0	1K		Thunderstorm Wind
A frontal boundary across extreme northern New York triggered evening thunderstorms on July 5th. Trees were blown down in Harrietstown, NY.									
Clinton County									
Ellenburg Center	06	1210EST			0	0	20K		Thunderstorm Wind
Clinton County									
Saranac	06	1235EST			0	0	5K		Thunderstorm Wind
A cold front moved across northern New York during the afternoon of July 6th. Thunderstorms formed along and ahead of the front. In Ellenburg Center, NY, thunderstorm related winds blew over a camper and broke a window. In the town of Saranac trees were blown down.									
Essex County									
Ticonderoga	06	1400EST			0	0	1K		Thunderstorm Wind
A cold front moved across northern New York during the afternoon of July 6th. Thunderstorms associated with this front blew down trees in Ticonderoga, NY.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

NEW YORK, North

St. Lawrence County Ogdensburg

07 1825EST 0 0 20K Thunderstorm Wind

Thunderstorms developed ahead of a weather disturbance moving from southern Canada into northern New York Wednesday evening, July 7th. Some thunderstorms resulted in strong damaging winds. In Ogdensburg, NY (St. Lawrence county) many trees and power lines were blown down by thunderstorm winds. Roof damage resulted from the winds. A funnel cloud was also reported in the area.

Franklin County Paul Smiths

07 1925EST 0 0 1K Thunderstorm Wind

Thunderstorms developed ahead of a weather disturbance moving from southern Canada into northern New York Wednesday evening, July 7th. Some thunderstorms resulted in strong damaging winds. In Paul Smiths, NY (Franklin county) trees were blown down by thunderstorm winds.

Clinton County Plattsburgh

07 1935EST 0 0 1K Thunderstorm Wind

Thunderstorms developed ahead of a weather disturbance moving from southern Canada into northern New York Wednesday evening, July 7th. Some thunderstorms resulted in strong damaging winds. In Plattsburgh, NY (Clinton county) trees were blown down by thunderstorm winds.

St. Lawrence County Lisbon

24 2025EST 0 0 1K Thunderstorm Wind

Trees were blown down by thunderstorm winds in Lisbon, NY (St Lawrence county).

NEW YORK, West

Oswego County Fulton

02 0250EST 0 0 5K Flash Flood
0430EST

Thunderstorms with heavy rain repeatedly crossed southern Oswego county. The downpours resulted in flash flooding and a portion of Rte. 481 in Fulton had to be closed.

Niagara County Wilson

03 1712EST 0 0 15K Thunderstorm Wind

Orleans County Yates Center

03 1712EST 0 0 25K Thunderstorm Wind

Erie County Springville

03 1725EST 0 0 5K Hail (0.75)

Erie County Springville

03 1725EST 0 0 15K Thunderstorm Wind

Cattaraugus County Yorkshire

03 1730EST 0 0 50K Thunderstorm Wind

Wyoming County Arcade

03 1736EST 0 0 30K Thunderstorm Wind

Cattaraugus County Freedom

03 1745EST 0 0 50K Thunderstorm Wind

Allegany County Centerville

03 1750EST 0 0 15K Thunderstorm Wind

Wyoming County Perry

03 1750EST 0 0 22K 20K Hail (1.50)

Monroe County Greece

03 1805EST 0 0 25K Thunderstorm Wind

Livingston County Geneseo

03 1823EST 0 0 10K Thunderstorm Wind

Ontario County Gorham

03 1837EST 0 0 10K Thunderstorm Wind

Wayne County Wolcott

03 1845EST 0 0 11K Thunderstorm Wind

Oswego County Granby Center

03 1849EST 0 0 10K Thunderstorm Wind

Oswego County Hannibal

03 1910EST 0 0 50K Thunderstorm Wind

Cayuga County Fair Haven

03 1915EST 0 0 30K Thunderstorm Wind

Severe thunderstorms cross the region during the late afternoon hour. The thunderstorms produced heavy downpours, up to three inches in some spots, strong winds and large hail. The heavy downpours resulted in localized poor drainage flooding. The strong winds downed trees and power lines throughout the region. Structure damage was also reported. Funnel clouds were sighted in Freedom in Cattaraugus County and in Cato in Northern Cayuga county. A thunderstorm which crossed Wyoming and Livingston counties produced a swath of hail between one-half and one-mile wide. Windows were broken and siding and shutters were damaged. Hundreds of acres of corn were damaged. The golfball sized hail covered the ground in spots and remained for several hours. A NWS survey team examined the damage in southern Erie and Cattaraugus counties where funnels were reported. Although it was determined to be the result of downburst winds, the damage was quite extensive. In Yorkshire, a large equipment shed was blown apart. In Delevan, a large barn and two

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEW YORK, West									
concrete silos were destroyed. At the Freedom Speedway, several large trees were moved, light poles were bent over and a cinder block building was moved off its foundation.									
Jefferson County Alexandria Bay	05	2015EST			0	0	10K		Thunderstorm Wind
Lewis County Harrisville	05	2100EST			0	0	10K		Thunderstorm Wind
A severe thunderstorm developed over eastern Lake Ontario and moved across Jefferson and Lewis counties during the late afternoon hours. The thunderstorm produced damaging winds which downed trees and power lines in Diana. The downed tree limbs blocked some roads.									
Oswego County Phoenix	06	1150EST			0	0	10K		Thunderstorm Wind
An isolated thunderstorm over Oswego county downed trees and power lines in Phoenix during the late morning hours.									
Niagara County Pekin	06	1355EST			0	0	50K		Thunderstorm Wind
Niagara County Lockport	06	1415EST			0	0	15K		Thunderstorm Wind
A severe thunderstorm crossed eastern Niagara County during the early afternoon hours. The thunderstorm dropped up to three inches of rain which resulted in localized flash flooding. The high winds the thunderstorm produced downed trees and power lines. In Wheatfield, a lightning bolt crashed through the front window of a home, setting in on fire. Extensive damage resulted.									
Jefferson County Adams	07	1940EST			0	0	15K		Thunderstorm Wind
Lewis County Martinsburg	07	2030EST			0	0	5K		Thunderstorm Wind
Severe thunderstorms crossed the north country during the evening hours. The thunderstorms produced damaging downburst winds. The Sheriffs of Jefferson and Lewis counties reported downed trees and power lines. In Adams, a motorist and her 8-year-old son were uninjured when a tree limb landed on their car, shattering the back window.									
Chautauqua County Stockton	09	1740EST			0	0	100K	100K	Thunderstorm Wind
Cattaraugus County Yorkshire	09	1800EST			0	0	15K		Thunderstorm Wind
Chautauqua County Ellington	09	1800EST			0	0	35K		Thunderstorm Wind
Erie County Springville	09	1810EST			0	0	10K		Thunderstorm Wind
Allegany County Cuba	09	1830EST			0	0	15K		Thunderstorm Wind (G55)
Allegany County Wellsville	09	1905EST			0	0	10K		Thunderstorm Wind
Allegany County Bolivar	09	1945EST			0	0	10K		Thunderstorm Wind
Severe thunderstorms crossed the counties of extreme western New York producing damaging winds, downpours, and hail. The winds downed trees and power lines with scattered power outages reported. Falling trees resulted in structure damage in Cassadaga and Ellicottville. A funnel was also sighted in Cassadaga. In Sinclairville, the strong winds levelled a large barn. The high which fell with the same storm damaged corn, tomato, pepper and squash crops. In Ellicottville, one of the trees that fell, presumed planted in the late 1800's, had a circumference of 144 inches.									
Niagara County Porter Center	17	1230EST			0	0	5K		Thunderstorm Wind
A severe thunderstorm which developed along the Lake Ontario shoreline produced downpours and damaging winds. The Niagara County Sheriff reported power outages and six to eight inch tree limbs down.									
Niagara County Lewiston	24	2003EST			0	0	20K		Thunderstorm Wind
Erie County Buffalo	24	2015EST			0	0	15K		Thunderstorm Wind
Orleans County Medina	24	2030EST			0	0	25K		Thunderstorm Wind
Monroe County Greece	24	2100EST			0	0	15K		Thunderstorm Wind
Wayne County Sodus	24	2115EST			0	0	10K		Thunderstorm Wind
Severe thunderstorms developed across the counties along the south shore of Lake Ontario. The thunderstorms produced downpours and strong winds. The damaging winds downed trees and power lines with scattered outages reported. Niagara County Sheriff reported several roads blocked by fallen trees and limbs.									
Allegany County Wellsville	25	1230EST			0	0	10K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NEW YORK, West</u>									
Cattaraugus County									
Olean	25	1315EST			0	0	5K		Hail (0.88)
Orleans County									
Shelby	25	1335EST			0	0	8K		Thunderstorm Wind
Genesee County									
Alabama	25	1340EST			0	0	10K		Thunderstorm Wind
Wayne County									
Fairville	25	1510EST			0	0	10K		Thunderstorm Wind
Allegany County									
Wellsville	25	1515EST			0	0	15K		Thunderstorm Wind
Severe thunderstorms developed along lake breezes from Lakes Erie and Ontario then crossed parts of western New York and the Finger Lakes Region during the early afternoon hours. The thunderstorms produced nickel-sized hail and brief downpours. The downburst winds from the thunderstorms downed trees and limbs.									
Cattaraugus County									
Randolph	28	1550EST			0	0	5K		Thunderstorm Wind
An isolated thunderstorm that developed over Cattaraugus County produced damaging winds that downed power lines and tree limbs.									
Chautauqua County									
Hanover Center	30	0200EST			0	0	25K		Thunderstorm Wind
An isolated thunderstorm developed during the predawn hours. The thunderstorm uprooted several large trees, several of which damaged cars and homes. Power lines were also downed resulting in power outages.									
Erie County									
Buffalo	31	1555EST			0	12	50K		Thunderstorm Wind (G55)
Niagara County									
North Tonawanda	31	1555EST			0	0	20K		Thunderstorm Wind
Monroe County									
Rochester Arpt	31	1601EST			0	4	150K		Thunderstorm Wind (G55)
Monroe County									
Henrietta	31	1615EST			0	0	50K		Thunderstorm Wind
Genesee County									
Bergen	31	1630EST			0	0	20K		Thunderstorm Wind
Cattaraugus County									
Otto	31	1635EST			0	0	20K		Thunderstorm Wind
Wyoming County									
Attica	31	1635EST			0	0	15K		Thunderstorm Wind
Cayuga County									
Fair Haven	31	1700EST			0	0	15K		Thunderstorm Wind
Wayne County									
Palmyra	31	1700EST			0	0	25K		Thunderstorm Wind
Livingston County									
Avon	31	1705EST			0	0	20K		Thunderstorm Wind (G51)
Chautauqua County									
Clymer	31	1708EST			0	0	15K		Thunderstorm Wind
Oswego County									
Oswego	31	1718EST			0	0	25K		Thunderstorm Wind
Livingston County									
Caledonia	31	1735EST			0	0	10K		Thunderstorm Wind
Chautauqua County									
Lakewood	31	1750EST			0	0	15K		Thunderstorm Wind
Allegany County									
Almond	31	1810EST			0	0	15K		Thunderstorm Wind
Lewis County									
Lowville	31	1815EST			0	0	10K		Thunderstorm Wind
Violent thunderstorms ripped across western New York and the Finger Lakes region during the evening hours. The strong thunderstorms downed trees and power lines and left hundreds of thousands without power. Several roads were blocked by fallen debris. Several of the falling trees caused damage to houses and automobiles. At Beaver Island State Park, 12 people were injured when gust front winds downed a 35 foot tree onto a table of picnickers. Seven adults and five children, ranging in age from 5 to 35, were taken to the hospital. Most suffered cuts and bruises. Eleven were treated and released. One woman was held overnight with shoulder and upper back injuries. In Monroe County, at the Freeman Park in Mumfords four people at a company picnic were injured when high winds picked up a tent and dragged it through the crowd. They were treated and released from an area hospital.									

NORTH CAROLINA, Central

Davidson County									
Lexington	01	1745EST			0	0			Thunderstorm Wind (G50)
Trees and power lines down on Hwy 64 and in the Hillside/Woodhaven areas.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
NORTH CAROLINA, Central									
Davidson County									
Lexington	01	1900EST			0	0			Flash Flood
									Three to five inches of rain in a short period caused water to get into homes and some roads were down to one lane.
Johnston County									
Countywide	05	1945EST			0	0	40K	200K	Hail (1.75)
									A strong thunderstorm moved across the western edge of Johnston county...roughly between Angier and the small community of Willow Springs . Golfball hail was reported along its path. The wind destroyed many acres of tobacco crops and blew down barns and damaged farm equipment.
NCZ042-085									
Johnston - Scotland									
23		1300EST			2	0			Excessive Heat
25		1300EST							A farm worker was overcome by heat exhaustion. He was taken to the local hospital where his body temperatures was measured at 108. A 3 year old boy died after he apparently go into his parents car and could not get out. M3VE, M39OU
Wake County									
Falls	24	1515EST			1	0			Lightning
									A man was stepping from his boat..onto the dock...when he was hit by lightning. He never regained consciousness and died the next day. M28BO
Johnston County									
Clayton	25	1345EST			0	1			Lightning
									A fourteen year old was trying to hold up a metal pole that was supporting a tent. Lightning hit a nearby road...then ran through the ground to the boy's feet. He was treated by paramedics at his home. He was not seriously injured.
Randolph County									
Seagrove	06	1350EST			0	0			Thunderstorm Wind (G50)
									Trees down in Seagrove on Bennett Rd.
Durham County									
Parkwood	06	1548EST			0	0			Hail (0.75)
									Dime size hail fell at the intersection of Hwy 54 and I-40.
Wake County									
Carpenter	06	1555EST			0	0			Hail (1.00)
									Quarter size hail fell on Hwy 55
Guilford County									
Greensboro	07	1550EST			0	0			Thunderstorm Wind (G50)
									Trees down on Old Battleground Rd and Lake Jeanette Rd
Granville County									
Stovall	07	1615EST			0	0			Thunderstorm Wind (G50)
									Trees down on Dave Winstead and Greenway roads.
Orange County									
Schley	07	1635EST			0	0			Thunderstorm Wind (G50)
									Trees down on Hwy 57
Nash County									
Bailey	24	1308EST			0	0			Thunderstorm Wind (G50)
									Many trees down and quarter size hail reported,
Cumberland County									
Fayetteville Arpt	24	1330EST			0	0			Thunderstorm Wind (G62)
									Trees and power lines were blown down.
Johnston County									
Kenly	24	1330EST			0	0			Thunderstorm Wind (G50)
									Numerous trees were blown down near I-95 at the Kenly exit.
Cumberland County									
5 S Fayetteville Arpt	24	1345EST			0	0			Thunderstorm Wind (G50)
									Trees were blown down near Grays Creek, which is a few miles south of the airport...along the Cape Fear River.
Johnston County									
Princeton	24	1430EST			0	0	10K		Thunderstorm Wind (G50)
									Trees down on yards and streets. A tree fell on a home.
Wayne County									
Rosewood	24	1430EST			0	0			Thunderstorm Wind (G50)
									Numerous trees down. Dime size hail also reported at the AFB.
Orange County									
Hillsborough	24	1545EST			0	0			Thunderstorm Wind (G50)
									Trees down north of town.
Orange County									
Efland	24	1630EST			0	0			Thunderstorm Wind (G50)
									Trees down .

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NORTH CAROLINA, Central

Anson County									
Wadesboro	24	1740EST			0	0			Hail (0.88)
Nickel size hail and numerous tree limbs on Hwy 742 south of town.									

NORTH CAROLINA, Central Coastal

Duplin County									
Kenansville	24	1459EST			0	0			Thunderstorm Wind (G55)
Large trees down in Kenansville.									
Lenoir County									
La Grange	24	1506EST			0	0			Thunderstorm Wind (G55)
Large trees down in La Grange.									
Lenoir County									
Pink Hill	24	1506EST			0	0			Thunderstorm Wind (G53)
Severe roof damage in Pink Hill.									
Greene County									
Snow Hill	24	1515EST			0	0			Thunderstorm Wind (G50)
Large trees limbs on roads S and W of Snow Hill.									
Jones County									
Comfort	24	1540EST			0	0			Thunderstorm Wind (G55)
Large trees down on Hwy 41 between Comfort and Hargetts.									
Onslow County									
Jacksonville	24	1549EST			0	0			Thunderstorm Wind (G50)
58mph tstm gust and trees down on roads in Jacksonville.									
Washington County									
Plymouth	24	1720EST			0	0			Thunderstorm Wind (G50)
Powerlines down between Plymouth and Roper.									

NORTH CAROLINA, Extreme Southwest

Clay County									
Warne	05	1445EST			0	0	10K		Thunderstorm Wind
Trees down.									
Cherokee County									
Countywide	05	1510EST			0	0	15K		Thunderstorm Wind
Trees down.									
Cherokee County									
Andrews	06	1345EST			0	0	15K		Thunderstorm Wind
Trees down on Highway 19									
Cherokee County									
6 N Murphy	07	1500EST			0	0			Urban/Sml Stream Fld
Hanging Dog Creek out of its banks in many places across an access road.									
Cherokee County									
2 NW Murphy	29	1540EST			0	0	4K		Thunderstorm Wind
Trees down.									

NORTH CAROLINA, North Coastal

Northampton County									
2 S Margaretsville	20	1735EST			0	0	2K		Thunderstorm Wind
Spotter reported several two foot diameter trees down.									
Northampton County									
Pleasant Hill	20	1751EST			0	0	1K		Thunderstorm Wind
Large tree down.									
Northampton County									
Galatia	20	1821EST			0	0	1K		Thunderstorm Wind
Large tree down.									
Currituck County									
Currituck	24	1620EST			0	0	2K		Thunderstorm Wind
Several trees down.									
Pasquotank County									
Ecq Cst Grd Air Stn	24	1642EST			0	0			Thunderstorm Wind (G53)
Gust to 53 knots (61 mph) at ASOS site.									

NORTH CAROLINA, Northwest and North Central

NCZ001>006-018>020	Ashe - Alleghany - Surry - Stokes - Rockingham - Caswell - Watauga - Wilkes - Yadkin								
01	0000EST				0	0			Drought
31	2359EST								
Dry conditions that began in July of 1998, subsided for several months during the later part of 1998 and the first part of 1999, returned									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

NORTH CAROLINA, Northwest and North Central

in June of 1999 and continued in many areas through July. In many areas, crops were damaged or destroyed. Water levels in creeks, streams, and rivers remained very low.

Watauga County Boone	02	1633EST 1715EST			0	0			Flash Flood
Heavy thunderstorm rains produced flash flooding in Boone, with several roads underwater and closed.									
Ashe County Baldwin	07	1143EST			0	0			Hail (0.75)
Rockingham County Mayodan	07	1345EST			0	0			Hail (0.75)
Surry County Mt Airy	07	1355EST			0	0			Hail (0.75)
Rockingham County Monroeton	07	1410EST			0	0			Hail (1.00)
Rockingham County Monroeton	07	1410EST			0	0	0		Thunderstorm Wind
Yadkin County 2 S Enon	07	1440EST			0	0	0		Thunderstorm Wind
Caswell County 5 W Yanceyville	07	1445EST			0	0	0		Thunderstorm Wind
Rockingham County 2 E Madison	07	1515EST			0	0			Hail (0.75)
Rockingham County 2 E Madison	07	1520EST			0	0	0		Thunderstorm Wind
Rockingham County Mayodan	07	1525EST			0	0			Hail (0.75)
Alleghany County Countywide	07	1600EST 1625EST			0	0	45K		Lightning
Surry County Mt Airy	07	1615EST			0	0	2K		Lightning
Watauga County Boone	07	1630EST 1650EST			0	0			Urban/Sml Stream Fld

Thunderstorms during the afternoon and evening of the 7th produced damaging winds, hail up to 1 inch in diameter, minor small stream and urban flooding, and damaging lightning.

Thunderstorm winds blew down a large tree onto route 421, two miles south of Enon, an 8 inch diameter tree onto Hodges Road, 5 miles west of Yanceyville, a 16 inch diameter tree, 2 miles east of Madison, and trees and tree limbs in Monroeton.

Heavy thunderstorm rain in Boone caused minor street flooding, and Kraut Creek to overflow its banks.

Lightning struck and killed 12 cattle in Alleghany County and damaged a mobile home in Surry County.

Wilkes County South Portion	09	1645EST 1900EST			0	0			Flash Flood
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Thunderstorms in the late afternoon and evening of the 9th produced flash flooding in southern Wilkes County.

Several small streams and creeks, including Moravian Creek, flooded onto roads in the Thankful to Boomer area at 1645 EST. At 1710, Cub Creek and Hunting Creek flooded. Flooding continued through 1900 EST.

Stokes County Francisco	23	1920EST			0	0			Hail (0.75)
Thunderstorms on the evening of the 23rd produced hail up to dime size.									
Surry County Southwest Portion	24	1300EST 1315EST			0	0	0		Thunderstorm Wind
Caswell County Milton	24	1500EST			0	0	0		Thunderstorm Wind
Thunderstorm winds on the 24th downed large trees across southwestern Surry County and in Milton.									
Stokes County 3 NE Sandy Ridge	29	0245EST 0345EST			0	0	50K		Lightning

Lightning struck 2 houses, 3 miles northeast of Sandy Ridge, starting fires that damaged the houses.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NORTH CAROLINA, Southwest

Jackson County 3 NE Big Ridge	03	1430EST			0	7			Lightning
A lightning strike caused injuries to 7 people at a campground, including burns to 3 people.									
Jackson County 2 W Wolf Mtn	06	1207EST			0	0			Thunderstorm Wind (G50)
Gaston County Gastonia	06	1714EST 1725EST			0	0			Hail (1.00)
Mecklenburg County 5 NE Cit Douglas Arpt	06	1715EST			0	0			Hail (0.75)
Mecklenburg County 5 N Charlotte	06	1740EST			0	0			Hail (0.75)
Mecklenburg County 5 N Charlotte	06	1740EST			0	0			Thunderstorm Wind (G50)
Mecklenburg County 5 SW Charlotte to 5 S Charlotte	06	1743EST			0	0			Thunderstorm Wind (G50)
Rowan County 5 E China Grove	06	1805EST			0	0			Hail (0.75)
Rowan County 3 WSW Rockwell	06	1830EST			0	0			Hail (1.00)
Union County Weddington	06	1830EST			0	0			Thunderstorm Wind (G50)
Madison County 2 NW Allenstand to 12 NW Mars Hill	06 07	2300EST 0200EST			0	0	3M	3M	Flash Flood
One thunderstorm early in the afternoon became severe and an automated gage at Panthertown measured a wind gust to 58 mph. A cluster of severe thunderstorms produced large hail and damaging wind from near Gastonia through and around the city of Charlotte during the early evening. Numerous reports of dime size hail were received. Trees were downed across the northern and central parts of Charlotte, while other trees were uprooted and snapped on the south side. Downed trees in Weddington caused some property damage, but a dollar amount was not known at the time of the writing.									
A stationary thunderstorm over the extreme northern part of Madison county affected the Laurel area and surrounding communities. A NWS trained spotter reported 6 inches of rain in a 2 hour period and a fire department reported 3 inches of rain in one hour. This large amount of rain in a short period caused a major flash flood event which began around midnight and lasted into the early morning hours. The Hickory Fork Creek, Little and Big Laurel Creeks, and Shelton Laurel Creek all rose well out of their banks quickly. Numerous roads were either washed out, or flooded and closed for several hours. A 15 mile stretch of Hwy 208 was flooded. Seventeen bridges across northern Madison county were destroyed, one church was destroyed and millions of dollars worth of damage occurred to Hwy 208. Several cars were washed into Shelton Laurel Creek, water rose into several homes and Laurel Elementary School, and 4 tractors were lost.									
Rutherford County 2 N Rutherfordton	07	1245EST			0	0			Thunderstorm Wind (G52)
Caldwell County Kings Creek	07	1350EST			0	0			Lightning
Caldwell County Kings Creek	07	1350EST			0	0			Thunderstorm Wind (G52)
Burke County 10 NW Morganton	07	1400EST			0	0			Thunderstorm Wind (G50)
Burke County 5 SE Morganton	07	1430EST			0	0			Thunderstorm Wind (G50)
Iredell County Statesville	07	1430EST			0	0	20K		Lightning
Davie County 5 NE Smiths Grove	07	1455EST			0	0	15K		Thunderstorm Wind (G50)
Catawba County Countywide	07	1500EST			0	0			Lightning
Burke County 3 S Jonas Ridge to 5 NE Table Rock	07	1530EST 1700EST			0	0			Flash Flood

Severe thunderstorms across the foothills of North Carolina produced damaging wind gusts which downed trees and power lines. In the northwest piedmont, trees were downed across Hwys 158 and 801. A large tree fell across a mobile home in Hillsdale. Lightning strikes started fires which destroyed a house roof in Statesville, damaged a house in Kings Creek, and damaged several structures across Catawba county. Excessive rain in northern Burke county caused a flash flood which covered many roads at the base of the mountains.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
NORTH CAROLINA, Southwest									
Catawba County									
Newton	21	1710EST			0	0			Thunderstorm Wind (G50)
					A large severe thunderstorm blew down trees and caused power outages in the Newton area.				
Yancey County									
7 W Burnsville	24	1200EST 1215EST			0	0			Hail (1.00)
Iredell County									
2 S Union Grove	24	1400EST			0	0			Hail (1.00)
Rowan County									
Cleveland	24	1430EST			0	0			Thunderstorm Wind (G50)
Rowan County									
Salisbury	24	1440EST			0	0			Thunderstorm Wind (G50)
Cabarrus County									
Kannapolis	24	1510EST			0	0			Thunderstorm Wind (G60)
Madison County									
Marshall	24	1510EST			0	0			Hail (0.88)
Madison County									
Marshall	24	1510EST			0	0			Thunderstorm Wind (G60)
Madison County									
Mars Hill	24	1525EST			0	0			Hail (0.88)
Madison County									
Mars Hill	24	1525EST			0	0			Thunderstorm Wind (G60)
Buncombe County									
Weaverville	24	1537EST			0	0			Thunderstorm Wind (G50)
Gaston County									
Gastonia	24	1650EST			0	0			Lightning
Gaston County									
Gastonia	24	1650EST			0	0			Thunderstorm Wind (G60)
Gaston County									
Gastonia	24	1650EST 1750EST			0	0			Urban/Sml Stream Fld
Union County									
Monroe	24	1730EST			0	0			Thunderstorm Wind (G50)
Union County									
Monroe	24	1730EST 1830EST			0	0			Urban/Sml Stream Fld
Clusters of slow-moving thunderstorms developed during the afternoon on another hot and humid summer day. Some of the storms became severe, producing large hail the size of nickels and quarters, and straight-line winds which downed numerous trees. In Kannapolis, the roof of a commercial building was blown off. The Gastonia area experienced a severe thunderstorm which lasted nearly an hour. Numerous trees and power lines were downed, some of which fell on a trailer and homes. Urban flooding in normally flood-prone areas stranded a few cars and lightning strikes caused several house fires. In rural areas around Monroe, small streams briefly came out of their banks and flooded typical flood-prone areas.									
Transylvania County									
3 S Brevard	27	1426EST			0	3			Lightning
Transylvania County									
3 S Brevard	27	1426EST			0	0			Thunderstorm Wind (G50)
A severe thunderstorm downed several trees and power lines. In addition, a great amount of cloud to ground lightning was produced, which resulted in 3 injuries. One person was injured while in the basement, touching a water heater. Another injury occurred while talking on the phone.									
Mecklenburg County									
Charlotte	29	1600EST			0	0			Thunderstorm Wind (G50)
Union County									
Marshville	29	1700EST			0	0	40K		Lightning
A severe thunderstorm downed trees in downtown Charlotte in the Charlotte Plaza. A lightning strike in Marshville sparked a blaze which destroyed a house.									
Union County									
Monroe	31	0030EST			0	0			Lightning
Union County									
Monroe	31	0030EST			0	0			Thunderstorm Wind (G50)
Cabarrus County									
Harrisburg	31	0055EST			0	0			Lightning
Cabarrus County									
Harrisburg	31	0055EST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NORTH CAROLINA, Southwest

Mecklenburg County									
5 E Charlotte	31	0100EST			0	0			Lightning
Mecklenburg County									
5 E Charlotte	31	0100EST			0	0			Thunderstorm Wind (G50)
Rowan County									
Faith	31	0100EST			0	0	10K		Thunderstorm Wind (G60)
Cabarrus County									
Concord	31	0115EST			0	0	15K		Thunderstorm Wind (G60)
Severe thunderstorms shortly after midnight produced damaging winds and a considerable amount of lightning across the southern piedmont of North Carolina. Scattered trees were downed, some on roads. At a Faith school, a grandstand was blown down and a ticket booth was blown over. Signs were blown away in the town, a screen door was torn off a business and trees were split in half. Downed trees also occurred in nearby Richfield and East Rowan. At the Concord Airport, 25 percent of a hangar's roof was blown off. Lightning strikes across the region caused numerous structure fires.									
Gaston County									
Bessemer City	31	1545EST			0	0			Thunderstorm Wind (G50)
Gaston County									
3 E Kings Mtn	31	1600EST			0	0			Hail (0.75)
A severe thunderstorm in the late afternoon produced dime size hail and damaging wind. Trees were blown down onto power lines and one tree fell on a van.									

NORTH DAKOTA, Central and West

Morton County									
Glen Ullin	03	0500CST			0	0			Thunderstorm Wind (G50)
Morton County									
Glen Ullin	03	0500CST			0	0			Hail (0.75)
Morton County									
9 SE Almont	03	0500CST			0	0			Hail (0.75)
Stutsman County									
Jamestown	03	0615CST			0	0			Hail (1.25)
Stutsman County									
Jamestown Arpt	03	0615CST			0	0			Thunderstorm Wind (G50)
Stutsman County									
1 N Jamestown	03	0615CST			0	0			Thunderstorm Wind (G56)
Hettinger County									
Regent	04	2350CST			0	0			Hail (0.75)
Divide County									
7 N Noonan	13	1625CST			0	0			Hail (0.90)
Burke County									
Columbus	13	1640CST			0	0	20K		Hail (1.75)
A one to seven mile path of damage to agricultural region.									
Burke County									
Lignite	13	1650CST			0	0			Hail (1.00)
Ward County									
3 W Kenmare	13	1730CST			0	0			Hail (1.00)
Mountrail County									
21 ENE Lostwood	13	1738CST			0	0			Hail (1.75)
Ward County									
3 S Kenmare to 2 N Coulee	13	1745CST	9	50	0	0	150K	1M	Tornado (F1)
Crop losses of 20 to 40 percent of 145,200 acres.									
Renville County									
17 SW Grano	13	1805CST			0	0			Hail (1.75)
Ward County									
3 N Berthold	13	1815CST			0	0			Hail (1.75)
Ward County									
2 W Berthold	13	1819CST	2	30	0	0			Tornado (F1)
Ward County									
Burlington	13	1842CST			0	0			Hail (1.75)
Ward County									
Minot	13	1850CST			0	0			Hail (2.75)
Ward County									
5 W Minot to 4 SE Minot	13	1850CST	11	60	0	0	120K	1M	Tornado (F1)
Significant damage to rural areas south and southeast of Minot.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NORTH DAKOTA, Central and West									
Ward County									
Minot	13	1850CST			0	0			Thunderstorm Wind (G65)
					Urban flooding in the city of Minot caused severe storm drainage overload.				
Ward County									
Logan	13	1900CST			0	0			Hail (2.75)
Ward County									
Sawyer to 3 SE Sawyer	13	1920CST			0	0			Hail (1.75)
Sheridan County									
14 N Denhoff	13	2030CST			0	0			Thunderstorm Wind (G61)
					Damage to a farm house.				
Wells County									
Wellsburg to Heimdal	13	2040CST			0	0			Hail (1.50)
Mchenry County									
Anamoose	13	2105CST			0	0			Thunderstorm Wind (G50)
Ward County									
Burlington	13	2112CST			0	0			Hail (0.75)
Pierce County									
Selz	13	2115CST			0	0			Hail (1.50)
					Significant agricultural damage.				
Ward County									
Berthold	13	2145CST			0	0			Hail (0.88)
Wells County									
3 N Fessenden	13	2309CST			0	0			Hail (1.75)
					Significant agricultural damage.				
Mchenry County									
11 NE Anamoose	13	2315CST			0	0			Hail (1.75)
Wells County									
Harvey	14	0020CST			0	0			Hail (1.50)
Wells County									
2 S Wellsburg	14	0035CST			0	0			Hail (1.75)
Mclean County									
1 SW Ruso	14	2045CST			0	0			Hail (1.75)
Mckenzie County									
Watford City	15	1740CST			0	0	100K		Thunderstorm Wind (G64)
					Light to moderate damage to homes and business. Numerous uprooted trees and power lines.				
Golden Valley County									
5 N Beach	20	1905CST			0	0			Hail (0.88)
					The path of hail averaged 6 miles wide.				
Mercer County									
18 N Zap	20	1945CST			0	0			Hail (0.75)
Dunn County									
Halliday	20	2000CST			0	0			Thunderstorm Wind (G52)
Dunn County									
Halliday	20	2000CST			0	0			Hail (1.50)
Dunn County									
Halliday	20	2045CST			0	0			Hail (0.75)
Dunn County									
Halliday	20	2045CST			0	0			Thunderstorm Wind (G52)
Mercer County									
11 N Zap	20	2110CST			0	0			Hail (1.75)
Williams County									
18 NW Williston	21	2328CST			0	0			Hail (1.00)
Williams County									
18 NW Williston	21	2328CST			0	0			Thunderstorm Wind (G52)
Williams County									
20 SW Williston	21	2330CST			0	0	40K		Thunderstorm Wind (G69)
Williams County									
Williston Arpt	21	2341CST			0	0			Thunderstorm Wind (G69)
Williams County									
Williston Arpt	21	2358CST			0	0			Hail (1.00)
					Power poles snapped off, roof damage to buildings in the city of Williston.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NORTH DAKOTA, Central and West									
Williams County									
Ray	22	0025CST			0	0			Thunderstorm Wind (G52)
Williams County									
11 N Williston	22	0041CST			0	0			Thunderstorm Wind (G87)
									Numerous power poles and lines down.
Mountrail County									
15 NW Stanley	22	0042CST			0	0			Thunderstorm Wind (G52)
Burke County									
Battleview	22	0045CST			0	0			Thunderstorm Wind (G61)
									Roof blown off a local business.
Mountrail County									
4 SW Stanley	22	0122CST			0	0			Hail (0.75)
Mountrail County									
4 SW Stanley	22	0122CST			0	0			Thunderstorm Wind (G61)
Williams County									
Williston Arpt	22	0142CST			0	0			Thunderstorm Wind (G51)
Williams County									
Williston Arpt	22	0142CST			0	0			Hail (0.75)
Williams County									
6 E Williston	22	0150CST			0	0			Hail (1.75)
									Broken windows in mobile homes.
Mountrail County									
13 E Stanley	22	0157CST			0	0			Thunderstorm Wind (G52)
Ward County									
13 N Minot	22	0215CST			0	0			Thunderstorm Wind (G73)
Ward County									
Minot	22	0219CST			0	0			Thunderstorm Wind (G57)
									Power lines down.
Mchenry County									
3 SE Velva	22	0248CST			0	0			Thunderstorm Wind (G52)
									Twenty ash trees blown over.
Pierce County									
Rugby	22	0316CST			0	0			Thunderstorm Wind (G53)
Pierce County									
2 N Rugby	22	0335CST			0	0			Thunderstorm Wind (G52)
									Minor damage to buildings in the city of Rugby. Damage to shelter belts of 40K. 5 percent yield loss.
Mcintosh County									
10 E Wishek	22	1617CST			0	0			Hail (0.75)
Logan County									
15 S Gackle	22	1625CST			0	0			Hail (2.75)
Logan County									
Gackle	22	1720CST			0	0			Thunderstorm Wind (G50)
Stutsman County									
8 W Jamestown	22	1754CST			0	0			Hail (1.75)
Stutsman County									
Jamestown	22	1800CST			0	0			Hail (0.88)
Mclean County									
3 N Garrison	24	2005CST			0	0			Hail (1.75)
Burleigh County									
6 NE Regan	25	0500CST			0	0			Thunderstorm Wind (G61)
									New pole barn thrown 200 yards.
Kidder County									
3 N Robinson	25	0530CST			0	0			Thunderstorm Wind (G50)
									Tree damage reported.
La Moure County									
12 WSW Edgeley	27	1410CST			0	0			Hail (1.00)
									Hail fell in the city of Kulm.
Dickey County									
1 E Fullerton	27	1435CST			0	0			Hail (1.25)
Dickey County									
1 S Monango	27	1440CST			0	0	5K		Hail (2.75)
									Damage to sheriff vehicle.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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NORTH DAKOTA, Central and West

Dickey County

1 S Ellendale 27 1455CST 2 40 0 0 800K **Tornado (F2)**
One half mile debris from 3 mobile homes. Large trees uprooted. 70kt winds reported with storm.

La Moure County

La Moure 27 1500CST 0 0 **Hail (1.00)**

NORTH DAKOTA, East

Barnes County

Rogers 03 0620CST 0 0 0.50K **Thunderstorm Wind**
Trees were blown down.

Barnes County

Sanborn 03 0623CST 0 0 **Thunderstorm Wind (G52)**

Barnes County

7 NW Valley City 03 0630CST 0 0 50K **Thunderstorm Wind**
0640CST

A camper and several tents were overturned at Bald Hill Dam Campground. One tent, with the 2 occupants inside, was picked up by the wind and carried a short distance away. Several docks were destroyed and several boats were pushed on shore.

Barnes County

9 NW Valley City 03 0643CST 0 0 10K **Thunderstorm Wind**
A mobile home was overturned at Martin's Landing.

Barnes County

11 N Valley City 03 0645CST 0 0 **Hail (1.50)**

Barnes County

7 N Valley City 03 0650CST 0 0 0.50K **Thunderstorm Wind**
Trees were blown down.

Cass County

Argusville 03 0735CST 0 0 **Hail (1.00)**

Cass County

Casselton 04 0615CST 0 0 2K **Thunderstorm Wind**
0645CST

Several trees around town were blown down.

Cass County

2 W Mapleton 04 0620CST 0 0 10K **Thunderstorm Wind**
A Burlington Northern-Santa Fe trailer train was toppled by the wind.

Cass County

Mapleton 04 0620CST 0 0 10K **Thunderstorm Wind**
0710CST

Many trees were downed around Mapleton and there were power outages. Two semi trucks were also overturned.

Cass County

3 N West Fargo 04 0620CST 0 0 **Hail (0.75)**

Cass County

3 N West Fargo 04 0620CST 0 0 15K **Thunderstorm Wind**
0702CST

A barn roof was blown off and several large trees were downed.

Cass County

West Fargo 04 0620CST 0 0 5M **Thunderstorm Wind**
0700CST

Strong winds hit the West Fargo area, knocking down trees, power lines, and signs. A motel on Main Avenue was damaged as well as numerous roofs. A block of storage sheds were blown apart, with debris damaging vehicles and apartments in the area. 4300 people were without power. At the West Fargo airport, a hanger was demolished, wrecking the Cessna 182 parked inside. A skydiver group who owned the hanger lost most of their equipment inside, some blowing over a half mile away. Some contents of the hanger were found inside a home to the east of the airport. This home had its roof torn off and windows blown in. This allowed some of the debris from the airport hanger to get inside the house. A fireworks tent was flattened, with most of the fireworks inside destroyed because of the rain. 55 power poles were knocked down in the West Fargo area, some snapped at ground level. Several motorhomes at the West Fargo Fairgrounds were overturned, with no injuries reported. A set of bleachers and a press box at the old West Fargo High School were also flattened. On Main Avenue, a 100,000 bushel grain bin was wrecked.

Cass County

Fargo 04 0630CST 0 0 80M **Thunderstorm Wind (G79)**
0715CST

Thunderstorms producing strong winds hit the Fargo area, causing widespread damage. On the north side of town, Hector Airport had winds in excess of 50 knots for 39 minutes, with a peak speed of 79 knots at 0642 CST. A dozen airplanes at Hector Airport were damaged, some landing upside down. Several hangers were also damaged. The NDSU station just west of campus reported a maximum wind speed of 51 knots. Power was knocked out to the ASOS unit at the airport for 2 days. 35,000 people in Fargo were without power for various times. Apartment buildings were hit particularly hard, with roof damage quite common. This was especially true in the West Acres area on the west side of Fargo. Huge chunks of roofs were blown off, exposing individual apartment units. A 48 unit apartment building under construction was completely blown down. One apartment garage blew off its foundation and into a

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

NORTH DAKOTA, East

parked car nearby. At NDSU, the Dairy Research Facility lost parts of its roof and a wall was blown in. Many stop lights, satellite dishes, and advertising signs were twisted or damaged. Several garages were also blown down. A seasonal greenhouse along 13th Avenue southwest was ripped apart. The JCPenney store at West Acres Shopping Center lost a portion of its roof, allowing the rain to damage some contents inside. Skateland, a roller-skating facility, had its roof torn halfway off, exposing its maplewood floor. The rain caused the floor to instantly warp. This business alone estimated damages at \$1 million. Several extra large transmission poles just west of West Acres were also toppled. There were reports of some minor cuts to people, but nothing was officially confirmed.

Cass County Fargo	04	0630CST 0845CST			0	0	15K		Urban/Sml Stream Fld
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Many underpasses around the Fargo area were flooded. Several cars were stalled in the high water.

Cass County Harwood	04	0635CST 0710CST			0	0	50K		Thunderstorm Wind
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A house, in the process of having a new basement poured, was blown off the blocks it was stored on. The Harwood elevator sustained some damage and had several grain bins blown off their foundations and tossed about 100 yards. Trees were also downed around town.

Cass County 2 S Harwood	04	0635CST 0710CST			0	0	25K		Thunderstorm Wind
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A business along Interstate 29 lost half its roof due to the wind. Plastic tanks they manufacture were blown as far as 3 miles to the east.

Cass County Kindred	04	0725CST			0	0			Hail (1.00)
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Cass County West Fargo	04	0736CST			0	0			Hail (0.75)
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Griggs County Cooperstown	08	0735CST			0	0	5K		Thunderstorm Wind
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Trees and power lines were downed.

Trails County Hillsboro	08	0815CST			0	0	5K		Thunderstorm Wind
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Trees and power lines were downed, knocking out power to 2882 customers.

Trails County 4 E Hillsboro	08	0815CST			0	0			Thunderstorm Wind (G87)
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An 87 knot wind was reported from a personal weather station. A metal building was destroyed and trees and power lines were downed.

Cavalier County 5 W Hannah	12	1910CST			0	0			Hail (1.00)
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Cavalier County 5 W Hannah	12	1910CST			0	0			Thunderstorm Wind (G52)
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Cavalier County 10 N Calvin	12	1911CST			0	0	1K		Hail (1.00)
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Windows were broken by the hail.

Cavalier County 4 W Langdon	12	1945CST			0	0		4.5M	Hail (1.25)
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37,000 acres of wheat, canola, barley, and sunflowers were damaged by hail.

Cavalier County 2 NW Nekoma	12	2000CST			0	0			Hail (1.75)
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Cavalier County Nekoma	12	2000CST			0	0			Hail (1.50)
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Trails County 10 W Buxton	12	2008CST			0	0			Hail (1.75)
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Ramsey County 7 NE Edmore	12	2010CST			0	0			Hail (1.25)
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Trails County Buxton	12	2018CST			0	0			Hail (0.88)
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Ramsey County 5 NE Edmore	12	2025CST			0	0			Hail (1.25)
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Walsh County Fairdale	12	2025CST 2035CST			0	0		750K	Hail (1.75)
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40 quarters of cropland were damaged by the hail.

Walsh County 8 SW Lankin	12	2105CST			0	0			Hail (1.25)
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Ramsey County 2 N Southam	12	2115CST			0	0			Hail (1.00)
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Nelson County Lakota	12	2135CST			0	0			Hail (1.00)
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NORTH DAKOTA, East</u>									
Nelson County 12 S Michigan City	12	2205CST			0	0			Hail (0.75)
Ramsey County Lawton	13	2145CST	0.5	25	0	0			Tornado (F0)
Ramsey County 3 N Brocket	13	2200CST			0	0			Hail (1.00)
Eddy County 3 S New Rockford	13	2218CST			0	0			Hail (0.88)
Eddy County 7 S New Rockford	13	2225CST			0	0			Hail (0.88)
Nelson County 2.5 N Dahlen	13	2230CST	0.5	25	0	0			Tornado (F0)
Benson County 13 WSW Maddock to 13 SW Maddock	13	2300CST			0	0			Hail (1.50)
Walsh County 4 ENE Ardoch	13	2340CST			0	0			Hail (1.75)
Walsh County 4 ENE Ardoch	13	2340CST			0	0	20K		Thunderstorm Wind
					An estimated 500 trees were destroyed by the wind and 2 barns were damaged.				
Eddy County 5 W New Rockford	13	2346CST			0	0			Hail (1.75)
Grand Forks County 8 N Manvel	13	2350CST			0	0			Hail (1.00)
Walsh County 5 E Ardoch	13	2350CST			0	0			Hail (1.00)
Walsh County 7 E Ardoch	13	2355CST	0.5	25	0	0			Tornado (F0)
Eddy County 5 SW New Rockford	14	0100CST			0	0			Hail (0.75)
Benson County 9 NW Maddock	22	0250CST			0	0			Hail (0.75)
Ramsey County Webster	22	0330CST			0	0			Hail (0.75)
Towner County 7 N Egeland	22	0350CST			0	0			Thunderstorm Wind (G52)
Ramsey County Brocket	22	0430CST			0	0	1K		Thunderstorm Wind
					Several large trees were blown over.				
Ramsey County 6 N Devils Lake	22	0430CST			0	0			Hail (0.75)
Ramsey County 6 N Devils Lake	22	0430CST			0	0	0.50K		Thunderstorm Wind
					Several large trees were uprooted.				
Ramsey County Penn	22	0440CST			0	0	10K		Thunderstorm Wind
					Large trees were blown down and several roofs had damage.				
Griggs County 7 SW Binford	22	0500CST			0	0			Hail (0.75)
Barnes County 2 S Fingal	22	1730CST			0	0			Hail (0.75)
Barnes County 4 E Valley City	22	1740CST			0	0			Hail (0.88)
Cass County 9 SW Alice	22	1752CST			0	0			Hail (1.00)
Cass County 20 W Leonard	22	1810CST			0	0			Hail (1.00)
Cass County 20 W Leonard	22	1810CST			0	0	1K		Thunderstorm Wind
					Trees were blown down.				
Cass County 6 SW Tower City	22	1820CST			0	0			Hail (1.75)
Cass County 15 W Leonard	22	1830CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NORTH DAKOTA, East</u>									
Cass County 3 SW Alice	22	1900CST 2100CST			0	0	10K		Flash Flood
		4.1 inches of rain was reported just southwest of Alice. A flooded basement was reported.							
Cass County 5 N Leonard	22	1900CST 2100CST			0	0	10K		Flash Flood
		Fields were flooded north of Leonard.							
Grand Forks County 8 N Manvel	23	1125CST			0	0			Hail (0.88)
Grand Forks County Inkster	25	0900CST			0	0			Hail (0.75)
Grand Forks County 3 SE Inkster	25	0900CST			0	0			Hail (0.75)
Barnes County 3 NW Litchville	25	0931CST	0.5	25	0	0	10K		Tornado (F0)
		Two homes were damaged by a tornado northwest of Litchville. One home had quite a few shingles blown off. The second home had part of its roof torn off. Several rafters and a third of the shingles were blown off. Most of the insulation in the attic was sucked out.							
Walsh County 2 NE Poland	25	1000CST			0	0			Hail (0.75)
Cass County 6 W Argusville	25	1126CST			0	0			Hail (1.75)
Cass County Fargo	25	1200CST			0	0			Hail (0.75)
Ransom County 3 SW Enderlin	25	1210CST			0	0			Hail (1.75)
Ransom County 2 W Enderlin	25	1210CST			0	0			Hail (1.00)
Ransom County 4 E Anselm	25	1245CST			0	0			Hail (0.75)
Barnes County 8 N Litchville	27	1325CST			0	0			Hail (1.50)
Barnes County 14 E Valley City	27	1350CST			0	0			Hail (1.75)
Barnes County Nome	27	1356CST			0	0			Hail (1.00)
Cass County 3 S Buffalo	27	1402CST			0	0			Hail (1.00)
		One inch hail was reported at the 1-94 exit to Buffalo.							
Cass County 1 S Buffalo	27	1405CST			0	0			Hail (1.75)
Cass County 2 W Arthur	27	1410CST			0	0			Hail (2.75)
Cass County Amenia	27	1426CST			0	0			Hail (0.88)
Barnes County 6 SE Nome	27	1445CST			0	0			Hail (1.25)
Barnes County Nome	27	1445CST			0	0			Hail (0.75)
Cass County Argusville	27	1445CST			0	0			Hail (1.75)
Cass County Casselton	27	1445CST			0	0			Hail (1.00)
Ransom County 2 NE Enderlin	27	1445CST			0	0			Hail (0.75)
Ransom County Mc Leod	27	1510CST			0	0	5K		Thunderstorm Wind
		Large trees were uprooted. One tree fell on a trailer home.							
Ransom County 7 N Lisbon	27	1515CST			0	0			Hail (1.75)
Ransom County Ft Ransom	27	1520CST			0	0			Hail (1.75)
Richland County Wyndmere	27	1530CST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NORTH DAKOTA, East</u>									
Ransom County									
13 NE Lisbon	27	1535CST			0	0			Thunderstorm Wind (G52)
									Large trees were blown down.
Cass County									
West Fargo	27	1540CST			0	0			Hail (0.75)
Ransom County									
6 NW Mc Leod	27	1600CST			0	0			Thunderstorm Wind (G72)
Richland County									
9 N Wyndmere	27	1600CST	0.5	25	0	0			Tornado (F0)
Richland County									
Wyndmere	27	1600CST			0	0	3K		Thunderstorm Wind
									Trees were blown down in Wyndmere and some siding on a church was torn off.
Richland County									
3 N Wyndmere	27	1600CST			0	0			Thunderstorm Wind (G52)
									Trees were blown down.
Richland County									
2 E Wyndmere	27	1600CST			0	0			Thunderstorm Wind (G67)
<u>OHIO, East</u>									
Coshocton County									
New Guilford	09	1820EST			0	0	2K		Thunderstorm Wind
									Thunderstorm winds downed a few trees.
Carroll County									
Minerva	09	1826EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Columbiana County									
Homeworth	09	1830EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees and power lines, setting fire to several trees.
Coshocton County									
Coshocton	09	1830EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Carroll County									
Malvern	09	1835EST			0	0			Hail (0.88)
Carroll County									
Malvern	09	1836EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Columbiana County									
Hanoverton	09	1845EST			0	0	2K		Thunderstorm Wind
									Thunderstorm winds downed a few trees and several large tree limbs.
Columbiana County									
3.5 SE Lisbon to 5 SE Lisbon	09	1845EST 1850EST			0	0	100K		Thunderstorm Wind (G70)
									A microburst with winds estimated at around 80 MPH produced damage across the Lisbon area. The microburst produced a path of sporadic wind damage about 1.5 miles in length. The width varied from about 100 feet near the start of the track to nearly 100 yards at the end. The path of the microburst was directed west to east across Ohio SR 30/45 approximately 3.5 miles southeast of Lisbon. One house sustained some structural damage near the roof and second story balcony. A mobile home was lifted from its foundation and several smaller sheds and out-buildings on the property were also damaged or destroyed. In addition, numerous trees and power lines were downed by the microburst winds.
Columbiana County									
East Palestine	09	1850EST			0	0			Hail (1.00)
Tuscarawas County									
Dover	09	1855EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Columbiana County									
Calcutta	09	1857EST			0	0	50K		Thunderstorm Wind (G53)
									Thunderstorm winds estimated at around 60 MPH blew a pickup truck into several other vehicles in a parking lot. A tent-greenhouse constructed with a metal-pipe/aluminum frame was also destroyed in the parking lot, with the tent framing damaging several cars as it blew across the area.
Jefferson County									
Wintersville	09	1930EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Muskingum County									
3 N Zanesville	09	1935EST			0	0	2K		Thunderstorm Wind
									Thunderstorm winds downed a few large trees.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
OHIO, East									
Jefferson County									
Irondale	09	1940EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees and large limbs.
Jefferson County									
Steubenville	09	2015EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Belmont County									
Barnesville	09	2035EST			0	0			Hail (0.88)
Belmont County									
Belmont	09	2036EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Monroe County									
2 E Woodsfield	21	1305EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees and large limbs.
Coshocton County									
Nellie	28	1000EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees and large limbs.
Tuscarawas County									
Newcomerstown	28	1000EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees and large limbs.
Guernsey County									
3 NE Cambridge	28	1030EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees near Salt Fork State Park.
Guernsey County									
3 E Middlebourne	28	1100EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Coshocton County									
Coshocton	28	1110EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Belmont County									
3 W Barnesville	28	1111EST			0	0			Hail (1.00)
Muskingum County									
Dresden	28	1120EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Tuscarawas County									
Dover	28	1140EST			0	0	5K		Thunderstorm Wind
									Thunderstorm winds downed numerous trees around the Dover area.
Jefferson County									
Steubenville	28	1145EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Monroe County									
Clarington	28	1205EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Monroe County									
Woodsfield	28	1205EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Carroll County									
Leesville	28	1225EST			0	0	5K		Thunderstorm Wind
									Thunderstorm winds downed several trees and signs.
Harrison County									
Scio	28	1230EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several large trees.
Monroe County									
Woodsfield	28	1300EST			0	0	1K		Thunderstorm Wind
									Thunderstorm winds downed a large tree.
Columbiana County									
North Georgetown	29	0000EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several large trees.
Columbiana County									
Lisbon	29	0040EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several large trees.
Carroll County									
Countywide	29	0050EST 0110EST			0	0	10K		Thunderstorm Wind
									Thunderstorm winds downed numerous trees across the county, causing widespread power outages.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated	Crops	Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage Property		
OHIO, East									
Muskingum County									
Ellis	29	0145EST			0	0	2K		Thunderstorm Wind
									Thunderstorm winds downed a few trees.
Harrison County									
Harrisville	29	0210EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Jefferson County									
Adena	29	0210EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Coshocton County									
3 NW Chili	31	0049EST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds downed a large tree onto SR 643.
Tuscarawas County									
Baltic	31	0055EST			0	0			Hail (0.75)
Columbiana County									
Lisbon	31	1805EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Columbiana County									
Unity	31	2025EST			0	0			Hail (0.75)
Muskingum County									
Duncan Falls	31	2045EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several large trees and power lines.
Monroe County									
Graysville	31	2100EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several large trees onto SR 537 and SR 26.
OHIO, North									
OHZ003-005>014-017>023-027>033-036>038-047									
Lucas - Henry - Wood - Ottawa - Sandusky - Erie - Lorain - Cuyahoga - Lake - Geauga - Ashtabula - Hancock - Seneca - Huron - Medina - Summit - Portage - Trumbull - Wyandot - Crawford - Richland - Ashland - Wayne - Stark - Mahoning - Marion - Morrow - Holmes - Knox									
	01	0000EST			0	0			Excessive Heat
	31	2359EST							
									Temperatures across northern Ohio were much above normal. High temperatures reached the middle 90s several days and five daily record high temperatures were established at Mansfield and Youngstown. An unofficial 100 degree temperature was measured in Sandusky County at Clyde on July 5th and the temperatures reached 100 degrees in Lake County near Painesville on the 31st. All major reporting stations in northern Ohio finished with average monthly temperatures among the ten warmest on record for July. Youngstown recorded its 6th warmest July on record with the 6th warmest July in Cleveland.
OHZ002>003-005>014-017>023-027>033-036>038-047									
Fulton - Lucas - Henry - Wood - Ottawa - Sandusky - Erie - Lorain - Cuyahoga - Lake - Geauga - Ashtabula - Hancock - Seneca - Huron - Medina - Summit - Portage - Trumbull - Wyandot - Crawford - Richland - Ashland - Wayne - Stark - Mahoning - Marion - Morrow - Holmes - Knox									
	01	0000EST			0	0			Drought
	31	2359EST							
									Drought conditions across northern Ohio eased as thunderstorm rains became more widespread. None the less, very dry soil conditions persisted in a few areas that missed the brunt of the thunderstorm activity. Some communities instituted water use restrictions and crop yields will likely be reduced because of the lack of adequate rainfall. Losses due to the drought were unknown.
Wyandot County									
Carey	01	1330EST			0	0	10K		Thunderstorm Wind
									Many trees and powers lines downed.
Ashland County									
Polk	01	1540EST			0	0	5K		Thunderstorm Wind
									Two trees fell and knocked down power lines.
Medina County									
Granger	01	1550EST			0	0	25K		Thunderstorm Wind
									Several trees fell on power lines knocking power out to over 5,000 people.
Medina County									
Lafayette	01	1600EST			0	0			Funnel Cloud
Wayne County									
Rittman to Doylestown	01	1640EST	7	50	0	0	150K		Tornado (F1)
		1655EST							
									The tornado touched down on the southeast corner of the town of Rittman then traveled east toward Hatfield Road and Ohio 94 where it flattened an apple orchard. Several buildings were also damaged in the vicinity of the orchard including a small concrete block building which was completely destroyed. The roofs of several other buildings were severely damaged. From the site of the orchard, the tornado traveled east and knocked down many trees before finally dissipating near Doylestown. Eye witness reports and damage surveys indicate that the tornado was slightly aloft during a good part of its life cycle.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Knox County									
Mt Vernon	01	2136EST			0	0	150K		Lightning
									A lightning struck a feed store at 502 West Gambier Street. The resulting fire did extensive damage to the store.
Ashtabula County									
Lakeshore	03	1330EST			0	1			Lightning
									A male of unknown age was stuck by lightning at Great Lakes Marina. The person received minor injuries and was taken to a local hospital for treatment.
Ashtabula County									
Ashtabula	03	1522EST			0	0			Hail (1.00)
Ashtabula County									
Countywide	03	1600EST 1645EST			0	0	20K		Thunderstorm Wind
									Scattered trees reported down across the county.
Ashtabula County									
Lakeshore	03	1609EST			0	2			Lightning
									A 26 year old male and a female of unknown age were struck by lightning while picnicking at Lakeshore Park in Ashtabula Township. Both people received minor injuries and were taken to a local hospital where they were treated and released.
Ottawa County									
Graytown	06	1315EST			0	0	30K		Thunderstorm Wind
									A large barn was blown down and destroyed just north of Graytown on Graytown Road.
Erie County									
Vermillion	06	1350EST			0	0	15K		Thunderstorm Wind (G51)
									A 59 mph gust was measured at Vermillion. Five boats were overturned at a local Lake Erie marina. Downed trees and traffic lights were also reported near Milan.
Lorain County									
Countywide	06	1400EST 1440EST			0	0	25K		Thunderstorm Wind
									Many large trees downed.
Cuyahoga County									
North Olmsted	06	1420EST			0	0	40K		Thunderstorm Wind
									Many trees and large limbs downed. A 20 foot by 40 foot pavilion at a housing development was also destroyed.
Hancock County									
Findlay	06	1430EST			0	0	15K		Thunderstorm Wind
									Numerous trees and power lines downed.
Medina County									
Medina	06	1430EST			0	1			Lightning
									A 38 year old male construction worker was struck by lightning while working outside. The man was treated for minor injuries at a local hospital.
Seneca County									
Tiffin	06	1430EST			0	1			Lightning
									A 20 year old male was struck by lightning while golfing. The man was treated at a local hospital for minor injuries.
Seneca County									
Tiffin	06	1430EST			0	0	10K		Thunderstorm Wind
									Many large tree limbs and power lines downed.
Stark County									
Countywide	06	1430EST 1500EST			0	0	25K		Thunderstorm Wind
									Many trees and power lines reported down in Canton. In Masilion, 14 trees were blown over and a house had some siding torn off.
Cuyahoga County									
Garfield Hgts	06	1432EST			0	0			Thunderstorm Wind (G50)
									A 58 mph wind gust was measured in Garfield Heights.
Cuyahoga County									
Parma	06	1435EST			0	0			Hail (1.00)
Medina County									
Wadsworth	06	1450EST			0	0	5K		Thunderstorm Wind
									Several large trees downed.
Lorain County									
Elyria	06	1500EST			0	1			Lightning
									A 40 year old woman working inside was injured when electricity from a lightning strike traveled through the fan she was using. The woman was taken to a local hospital and treated for minor injuries.
Lorain County									
Lorain	06	1500EST			0	0	15K		Thunderstorm Wind (G53)
									A 61 mph wind gust was measured in Lorain and many trees were knocked down in Amherst and Lorain.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated	Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage Property Crops	
OHIO, North								
Sandusky County								
Fremont	06	1500EST 1510EST			0	0	35K	Thunderstorm Wind
			Several power poles blown down across Highway 6. A tree was blown down on the roof of a house.					
Wyandot County								
Upper Sandusky	06	1500EST			0	0	15K	Thunderstorm Wind
			Two cars were damaged by falling trees.					
Cuyahoga County								
Warrensville Hgts	06	1502EST			1	0		Lightning
			A 36 year old male construction worker was found laying dead face up in a puddle of water. Witnesses claim the man was struck by lightning while working outdoors. M36OU					
Geauga County								
Middlefield	06	1505EST			0	0		Hail (0.75)
Summit County								
Myersville	06	1505EST			0	0	10K	Thunderstorm Wind
			Many trees and power lines downed.					
Portage County								
Countywide	06	1510EST 1530EST			0	0	20K	Thunderstorm Wind
			Many trees downed in the Aurora and Streetsboro. A car was damaged by a falling limb in Aurora.					
Trumbull County								
Countywide	06	1510EST 1525EST			0	0	20K	Thunderstorm Wind
			Dozens of trees downed across the northern half of the county.					
Ashtabula County								
Orwell	06	1520EST			0	0	5K	Thunderstorm Wind
			Several large limbs downed.					
Huron County								
Norwalk	06	1520EST 1530EST			0	0	25K	Thunderstorm Wind (G51)
			A 59 mph wind gust was measured in Norwalk and several large trees were downed. A roof of a house and a car were damaged by falling trees. Several trees were also reported down in Willard and Bellevue.					
Ashland County								
Polk	06	1525EST			0	0	10K	Thunderstorm Wind
			Trees and power lines downed along State Route 520.					
Richland County								
Countywide	06	1525EST 1545EST			0	0	20K	Thunderstorm Wind
			Trees and power lines reported down across most of the county.					
Huron County								
Countywide	06	1530EST			0	0		Flood
			Heavy thunderstorm rains in excess of 3 inches in 90 minutes caused many small streams in the county to come out of their banks. Significant street flooding was also reported along State Route 61 in Norwalk. Other roads flooded in Norwalk included Milan Avenue, Water Street and Lais Rd.					
Wayne County								
Countywide	06	1540EST 1545EST			0	0	20K	Thunderstorm Wind
			Thunderstorms damaged a railroad crossing gate on Highway 57 near Orrville. Many trees were downed on the northwest side of Wooster.					
Ashtabula County								
Jefferson	06	1605EST			0	0		Lightning
			Two men, ages 55 and 31 were struck by lightning while leaning on a metal pole in their yard. Both men were treated for minor injuries at a local hospital.					
Seneca County								
Countywide	09	1600EST 1630EST			0	0	100K	Thunderstorm Wind
			Thunderstorms producing strong downburst winds downed trees and power lines throughout the county. A 75 foot by 100 foot pole barn located two miles to the northeast of Republic was completely destroyed and blown 200 feet. Just east of Cromers on State Route 53, a pole barn had an entire side blown off. A nearby garage was blown off its foundation and completely destroyed. Two cars were destroyed in Fostoria by fallen trees.					
Seneca County								
Fostoria	09	1600EST			0	0		Hail (0.88)
Wood County								
North Baltimore	09	1605EST			0	0	5K	Thunderstorm Wind
			Several large trees were downed.					

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Sandusky County									
Fremont	09	1608EST			0	0	10K		Thunderstorm Wind
									One tree was blown down in Fremont with several large trees and powerlines downed just south of town.
Hancock County									
Countywide	09	1620EST 1630EST			0	0	15K		Thunderstorm Wind
									A large tree was blown down in the northern portion of the county with several power poles snapped across the southern half of the county.
Erie County									
Countywide	09	1634EST 1650EST			0	0	20K		Thunderstorm Wind
									Four power poles were knocked down in the southwest corner of the county with many trees downed countywide.
Marion County									
Countywide	09	1635EST 1650EST			0	0	60K		Thunderstorm Wind
									Trees and power lines were downed across the county. A large tree fell in Marion and completely destroyed a 24 foot above ground swimming pool. A car was damaged by a falling tree in New Bloomington.
Huron County									
Countywide	09	1645EST 1715EST			0	0	300K		Thunderstorm Wind
									Thunderstorms producing strong downburst winds downed trees and power lines across the entire county. An addition to a house was completely destroyed along State Route 162 in North Fairfield and an adjacent concrete block barn was destroyed. The roof of a small mobile home was torn off and landed on a truck and destroyed it. Two barns were blown down southeast of Greenwich on Fairfield Angling Road. The roof of trucking company located on State Route 61 north of Plymouth was blown off. One semi trailer inside the building was crushed by the collapsing roof and another semi trailer parked outside was flipped on its side. A plumbing business lost the south wall of its building and had damage done to its floor. A pole building at a Fitchville gas company was destroyed.
Wyandot County									
Countywide	09	1645EST 1700EST			0	0	40K		Thunderstorm Wind
									Twelve trees downed in Upper Sandusky with additional trees and powerlines downed countywide. A semi truck was blown over at weigh station near the intersection of U.S. Highways 23 and 30.
Crawford County									
Bucyrus	09	1649EST			0	0	90K		Thunderstorm Wind (G51)
									A 59 mph wind gust was measured in Bucyrus. Several large trees were downed in Bucyrus and a tree fell on a house in Leesville. The house sustained major damage to a portion of its roof. Thirty to forty trees were blown down at a golf course in Galion. A sun porch on a house in Crestline was hit by a falling tree and destroyed. Flagpoles in the city of Crestline were bent by winds estimated at 60 to 70 mph and a fence at Crestline High School was blown down.
Lorain County									
Avon	09	1650EST			0	0	15K		Thunderstorm Wind (G61)
									Trees and power lines downed across the county. A 70 mph gust was measured in Avon.
Cuyahoga County									
Countywide	09	1652EST 1730EST			0	0	30K		Thunderstorm Wind
									Trees and power lines were downed across the county including in the cities of Cleveland and Euclid.
Geauga County									
Chardon	09	1655EST			0	0			Hail (1.75)
Geauga County									
Chardon	09	1655EST 1710EST			0	0	50K		Thunderstorm Wind
									Many trees downed across the central portion of the county. Twenty four trees were reported down in Chardon with three homes sustaining minor damage from falling trees. One car was also damaged by a falling tree in Chardon.
Lake County									
Countywide	09	1655EST 1710EST			0	0	20K		Thunderstorm Wind
									Trees and power lines downed across the county. A house was damaged by a falling tree in Concord Township to the south of Painesville.
Huron County									
New London	09	1700EST 1702EST	0	30	0	0	100K		Tornado (F1)
									A tornado briefly touched down near New London. Around 200 trees were blown down. The roof of a barn on State Route 60 was blown off and two other barns just east of town were completely destroyed. Two businesses in New London also suffered roof damage.
Mahoning County									
North Jackson	09	1700EST	4	40	0	0	150K		Tornado (F1)
									A tornado skipped along a path approximately four to five miles long in Jackson Township. Several homes received structural damage

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

OHIO, North

including one that was moved slightly off its foundation. Another home had its garage door and contents destroyed and a few other homes had siding torn off. Power lines and several dozen trees were also knocked down along the path of the tornado.

Lorain County Rochester

09	1708EST 1712EST	0	20	0	0	30K	Tornado (F0)
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A tornado touched down briefly near the intersection of Gore Orphange and Stewart Roads (just south of Rochester) then moved east along Stewart Road. Trees and powers lines were blown down.

Ashland County Countywide

09	1710EST 1730EST			0	1	70K	Thunderstorm Wind
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Trees downed across the entire county with the most concentrated damage in the northwest corner near Ruggles and Nova. A male of unknown age was injured by flying debris while camping at a campground in Nova. Fallen trees resulted in a major railroad track being closed for three hours. Power poles were snapped at Hayesville and Widowville. At Jeromesville, many trees were downed including two that fell on houses. A fence at a Jeromesville ball field was ripped out of the ground.

Ashtabula County Countywide

09	1710EST 1725EST			0	0	50K	Thunderstorm Wind
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Trees and power lines down across the county. A chimney was toppled off a house in Jefferson while a house in Ashtabula was seriously damaged by two falling trees.

Richland County Countywide

09	1710EST 1745EST			0	0	160K	Thunderstorm Wind
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Trees and power lines downed countywide with the most concentrated damage along U.S. Highway 30 on the north side of Mansfield. The roof of a furniture store near Highway 30 in Mansfield was torn off resulting in water damage to much of the store's inventory. Five power poles were snapped just east of the furniture store and trees around the perimeter of a nearby state prison were knocked down. A portion of the roof of a Mansfield car dealership was torn off. Around a dozen trees were knocked down in the city Bellville on the south end of the county.

Medina County Chippewa On The Lake to Wadsworth

09	1715EST 1735EST			0	0	1.1M	Thunderstorm Wind
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A series of macrobursts began on the west side of Chippewa Lake and moved east to Wadsworth resulting in a nearly continuous line of damage. Two homes were destroyed, 16 others suffered major damage and 40 homes suffered minor damage. Of the two homes that were destroyed, one was cut in half by a falling tree and the other was blown off its foundation. Another 200 homes received minimal damage from such things as broken windows and damaged rain gutters. Baseball and softball dugouts at a local ball field were also destroyed. Hundreds of trees were reported down in the southeastern portion of the county. Approximately 10 vehicles were damaged or destroyed by falling trees and at least 30 houses were struck by falling trees. A semi truck was blown over on Interstate 76 approximately 5 miles west of Wadsworth. Siding on a house in Lafayette Township was torn off. Dozens of trees were downed in Wadsworth with 20 down at one house alone. A boat was damaged by a fallen tree and a large restaurant sign was also blown down. Several homes in the Wadsworth area suffered roof damage from fallen trees and winds there were estimated at 60 to 80 mph.

Medina County Lodi

09	1715EST 1717EST	0	20	0	0	100K	Tornado (F0)
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A tornado touched down briefly in Lodi doing some structural damage. Roofs and siding were torn off of several homes with dozens of trees also downed. An amateur radio tower was knocked and the metal roofing of a local business was peeled off. Many trees were downed in the front yard of the local elementary school.

Summit County Countywide

09	1735EST 1805EST			0	0	700K	Thunderstorm Wind
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Trees and power lines downed countywide. A 70 mph gust was measured in Barberton where a roof was blown off a building. The roof landed on a truck completely destroying it. Two other cars were crushed by falling trees in Barberton. The roof of a house in Akron was torn off and several cars were damaged by falling trees. Approximately two dozen houses in the county received damage from falling trees. Around a dozen grave stones were blown over at an Akron cemetery. A total of 400 trees and 225 power poles were blown down in the county. A State of Emergency was declared in Akron because of widespread damage and electrical outages. The NOAA Weather Radio transmitter located on the west side of Akron was knocked off the air by winds estimated at 60 to 70 mph. Several dozen trees were downed in Norton and Barberton. Scaffolding at a school construction site in Barberton was blown down into the side of the building.

Wayne County Countywide

09	1735EST 1800EST			0	0	125K	Thunderstorm Wind
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Trees downed across the entire county with the most concentrated damage in and around Wooster. A tree fell onto the roof of a fraternal lodge in Wooster causing considerable damage. A school addition three miles southeast of Wooster was significantly damaged when 38 roof trusses were blown off a roof and destroyed. Several cars were damaged in Wooster by falling trees and another car was destroyed by falling trees in Shreve.

Cuyahoga County Cleveland

09	1800EST 1830EST			0	0		Flash Flood
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A car became trapped in high water at an underpass on Martin Luther King Jr. Boulevard near St Clair Street. The two occupants of the

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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OHIO, North

Stark County Countywide

car were forced to seek safety on the roof of their car and were rescued by the fire department.

09	1823EST 1845EST				0	1	150K		Thunderstorm Wind
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Trees and power lines downed across the entire county. A canning factory in Perry Township was damaged when a fan housing on its roof blew off tearing a hole in the roof. This allowed water to damage many of the items stored inside. A 60 mph gust was measured at Waco. A tree fell on a mobile home near the intersection of state routes 44 and 619 in the northeast corner of the county. A male occupant inside the trailer received minor injuries and was transported to a local hospital for treatment.

Mahoning County Countywide

09	1850EST 1920EST				0	1	75K		Thunderstorm Wind
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Trees and power poles downed throughout the county. Around a dozen trees were downed in Struthers with one landing on a house causing minor damage. Another fallen tree did structural damage to a house in Austintown. A second house in Austintown lost most of its roof. A large tree fell on a car on the south side of Youngstown injuring the driver and destroying the car. The female occupant of the car was transported to a local hospital and treated for minor injuries.

Portage County Countywide

09	1853EST				0	0	20K		Thunderstorm Wind (G58)
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A 67 mph gust was measured in Ravenna and several trees were downed. A large outdoor tent was blown down in Kent and the steeple of an historic church in Rootstown was severely damaged.

Holmes County Countywide

09	1855EST 1915EST				0	0	10K		Thunderstorm Wind
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Many trees downed across the county.

Trumbull County Countywide

09	1900EST 1915EST				0	0	50K		Thunderstorm Wind (G51)
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Many trees downed in county. A 60 mph gust was measured at Leavittsburg. A tree fell on a house in the western portion of the county and destroyed a newly constructed porch. A 1600 pound tarp laying on a baseball field in Niles was picked up by winds estimated at 60 to 70 mph and thrown several hundred feet into a nearby grandstand.

Wood County Countywide

17	1530EST 1540EST				0	0	15K		Thunderstorm Wind
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Trees and power lines downed.

Wood County Countywide

17	1559EST 1706EST				0	0	15K		Thunderstorm Wind
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Severe thunderstorms producing estimated winds of 70 to 80 mph knocked down trees and power lines throughout the county.

Ottawa County Elmore

17	1605EST				0	0	1K		Thunderstorm Wind
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One tree and one large limb blown down.

Lucas County West Toledo

17	1830EST 1900EST				0	0			Flood
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Thunderstorms dumped one to two inches of rain over the area in less than an hour. Street flooding was reported throughout West Toledo with the intersection of Monroe and Douglas Streets under as much as two feet of water at times. Water above curb height was also reported along Secor and Central Avenues.

Lorain County Countywide

17	1850EST				0	0	5K		Thunderstorm Wind
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Many large limbs downed in Avon with several trees downed in Elyria. The roof of a home in Elyria was slightly damaged by a falling tree.

Morrow County Mt Gilead

21	1555EST				0	0	5K		Thunderstorm Wind
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Many trees downed north of Mt. Gilead in the Canaan Lake Area.

Hancock County Benton Ridge

21	1826EST				0	0			Hail (1.75)
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Hancock County Jenera

21	1830EST				0	0			Hail (0.75)
----	---------	--	--	--	---	---	--	--	--------------------

Lucas County Oregon

21	2010EST				0	0			Hail (0.75)
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Sandusky County Fremont

21	2100EST				0	0	5K		Thunderstorm Wind
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A few large trees and power lines were knocked down on the east side of Fremont.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
OHIO, North									
Ottawa County Countywide	21	2110EST 2145EST			0	0	10K	10K	Thunderstorm Wind
			Many trees were downed throughout the county. A barn was blown apart and scattered over a half mile area two miles north of Graytown near the intersection of Graytown Road and State Route 579. An amateur radio tower was knocked down in Graytown and around a dozen trees were blown down in Rocky Ridge. Several corn fields in Benton Township were flattened.						
Crawford County Bucyrus	23	1704EST			0	0		10K	Hail (0.88)
Crawford County Countywide	23	1715EST			0	0	10K		Thunderstorm Wind
			Many trees downed across the northern half of the county.						
Richland County Lexington	23	1743EST 1751EST			0	0		10K	Hail (1.00)
Wood County Countywide	23	1915EST 1945EST			0	0	25K		Thunderstorm Wind
			Many trees and large limbs down throughout the county. A 10 by 30 foot section of roofing was blown off a barn east of Jerry City near the intersection of Huffman and Cygnet Roads.						
Lucas County Neapolis	23	1930EST			0	0	10K		Thunderstorm Wind
			Many large trees downed in the southwest corner of the county near Neapolis and also to the north of Grand Rapids.						
Medina County Medina	24	1945EST			0	0	5K		Thunderstorm Wind
			Several trees downed in Medina.						
Cuyahoga County Bay Vlg	24	1956EST			3	0	2K		Thunderstorm Wind
			A 46 year old woman and two men, ages 30 and 32 were killed when a large branch broke off of a tree and fell 60 feet landing on the picnic table they were sitting at. Although no adverse weather was occurring at the time of the accident, strong thunderstorms producing winds of around 45 mph moved through the area about an hour earlier. It is believed that these storms weakened the branch and ultimately caused it to fall. M30UT, M32UT, F46UT						
Lorain County Rochester	24	2000EST			0	0	5K		Thunderstorm Wind
			Large trees downed.						
Ashland County Countywide	24	2015EST 2025EST			0	0	10K		Thunderstorm Wind
			Many large trees downed in Ashland and Nankin..						
Medina County Countywide	24	2015EST 2030EST			0	0	15K		Thunderstorm Wind
			Large trees and limbs downed in Lodi, Hinckley and Guilford Township.						
Ashland County Polk	24	2020EST			0	0		20K	Hail (1.00)
Crawford County Galion	24	2030EST			0	0	20K		Thunderstorm Wind
			A large tree fell on a van in the city of Galion and completely destroyed it.						
Ashland County Countywide	24	2100EST 2130EST			0	0	100K	20K	Thunderstorm Wind
			Thunderstorms producing strong downburst winds downed dozens of trees and limbs throughout the county. A 60 by 120 foot pole barn was blown down and totally destroyed east of Hayesville on County Road 30A. The poles supporting the front side of the building were pulled completely out of the ground while the poles in the back were snapped off at ground level. A home under construction on Township Road 251 south of Rowsburg also suffered damage.						
Wayne County Countywide	24	2100EST			0	0	10K		Thunderstorm Wind
			Larges trees downed across the northern half of the county.						
Holmes County Countywide	24	2110EST 2130EST			0	0	15K		Thunderstorm Wind
			Many trees and powerlines downed across the county.						
Wayne County Countywide	24	2130EST			0	0	15K		Thunderstorm Wind
			Large limbs and power lines downed throughout the county.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Lucas County Countywide	24	2350EST			0	0	10K		Thunderstorm Wind
					Many trees down in Providence Township in the southwest corner of the county.				
Lucas County Toledo	25	0000EST			0	0			Thunderstorm Wind (G52)
					A 60 mph wind gust was measured.				
Hancock County Mc Comb	25	0020EST			0	0	5K		Thunderstorm Wind (G52)
					A 60 mph wind gust was measured and a few large trees were downed.				
Wood County Bowling Green	25	0020EST			0	0		5K	Hail (1.00)
Geauga County Chardon	28	0745EST			0	0		10K	Hail (1.50)
Trumbull County Mesopotamia	28	0807EST			0	0	5K		Thunderstorm Wind
					Many trees and large limbs downed.				
Geauga County Chardon	28	0810EST			0	0		10K	Hail (1.75)
Trumbull County Mesopotamia	28	0825EST			0	0		10K	Hail (0.75)
Trumbull County Countywide	28	0837EST 0904EST			0	0	10K		Thunderstorm Wind
					Trees downed across the northern half of the county. Two 14 foot boats were damaged by fallen trees at Mosquito Lake State Park.				
Ashland County Countywide	28	0915EST			0	0	125K		Thunderstorm Wind
					A TV tower was toppled near Nova and an equipment building was blown down and destroyed five miles northeast of Loudonville on County Road 2575. A small barn near the equipment building was also heavily damaged.				
Trumbull County Countywide	28	0915EST 0945EST			0	0	75K		Thunderstorm Wind
					Trees downed across the southern half of the county. A 65 mph gust was measured in Warren. A mobile home in Masury was cut in half by a fallen tree and destroyed. Eight trees were downed in Brookfield with one fallen tree doing serious damage to a car. Other trees were downed in Warren, Niles and Liberty Township.				
Trumbull County Countywide	28	0930EST 1030EST			0	0	50K		Flood
					One to two inches of rainfall fell in less than an hour resulting in widespread street flooding in Warren and Niles. Most of the flooding was due to backed up sewer systems and several roads had to be closed. The roof of a municipal building in Warren partially collapsed from the weight of the water on top of it.				
Trumbull County Warren	28	0940EST			0	0			Hail (0.88)
Lorain County Elyria	28	0945EST			0	0			Thunderstorm Wind (G52)
					A 60 mph wind gust was measured in Elyria.				
Mahoning County Boardman	28	0950EST			0	0	5K		Thunderstorm Wind
					Several large limbs were blown down.				
Mahoning County Youngstown	28	0950EST			0	0			Hail (2.00)
Lorain County Elyria	28	1005EST			0	0	225K		Lightning
					A church was struck by lightning and caught fire.				
Knox County Countywide	28	1015EST 1050EST			0	0	15K		Thunderstorm Wind
					Trees and large limbs downed throughout the county. Siding was torn off a house in Mount Vernon.				
Morrow County Marengo	28	1015EST 1030EST			0	0	10K		Thunderstorm Wind
					Many trees and limbs downed.				
Lorain County Grafton	28	1025EST			0	0	5K		Thunderstorm Wind
					Trees downed.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Medina County									
Medina	28	1025EST			0	0		5K	Hail (0.75)
Ashland County									
Polk	28	1030EST			0	0			Hail (0.75)
Medina County									
Central Portion	28	1030EST			0	0	20K		Thunderstorm Wind
									Trees downed in and around the City of Medina. The roofs of three houses received minor damage from fallen trees.
Holmes County									
Nashville to Holmesville	28	1108EST 1118EST	5	50	0	4	75K		Tornado (F1)
									A tornado touched down just north of Nashville near a campground and then traveled east along County Roads 316 and 329 to near Holmesville. From the initial touchdown eastward, the damage path was intermittent. Four females, ages 12, 14, 17 and 50 were injured by flying debris while standing inside of an 80 by 100 foot pavilion at the campground. All four victims were transported to a local hospital and the 17 year old required surgery for arm injuries. The roof of the pavilion was partially torn off and a nearby small building was moved approximately 10 feet. A video game inside the small building was flipped over. Six inch by six inch wood posts supporting the pavilion were lifted out of the ground two feet and several trees were also blown down at the campground. Around a dozen trees were snapped just to the west of Holmesville and the roofs of two house suffered damage from fallen trees.
Wayne County									
Countywide	28	1115EST 1125EST			0	0	25K		Thunderstorm Wind
									Trees were downed in and around Shreve and a barn was blown down and destroyed near Burbank.
Holmes County									
Berlin	28	1130EST			0	0	10K		Thunderstorm Wind
									Many trees reported down with minor damage done to the roof of a strip mall.
Stark County									
Waynesburg	28	1150EST			0	0			Thunderstorm Wind (G52)
									A 60 mph wind gust was measured in Waynesburg.
Lake County									
Fairport Harbor	28	2219EST			0	0			Thunderstorm Wind (G58)
									A 67 mph wind gust was measured at the Fairport Harbor Lighthouse.
Lake County									
Painesville	28	2220EST			0	0	150K		Thunderstorm Wind (G52)
									Many large trees downed in Painesville. One tree pierced the roof of a nursing home with branches ending up less than a foot away from an elderly woman laying in bed. Three classic cars were severely damaged when the garage they were in was destroyed by a fallen tree. A brand new sport utility vehicle was also destroyed by a fallen tree. An additional dozen trees were downed to the east of Painesville in North Perry.
Ashtabula County									
Countywide	28	2230EST 2250EST			0	0	75K		Thunderstorm Wind
									Dozens of trees and power lines downed across the county. Around a dozen trees were blown down in Ashtabula with eight trees were downed in Jefferson. A cemetery in Jefferson had several grave stones e damaged by fallen trees. A fallen tree did significant structural damage to a house in Geneva on the Lake with another tree downed on a house in Saybrook.
Cuyahoga County									
Bedford	28	2245EST			0	0			Hail (0.75)
Geauga County									
Central Portion	28	2245EST 2300EST			0	0	15K		Thunderstorm Wind
									Many trees and power lines downed throughout the central portion of the county.
Cuyahoga County									
Cleveland Lakefront	28	2252EST 2255EST			0	0	25K		Thunderstorm Wind
									Many trees were blown down in Cleveland, Euclid and Bedford Heights. A fallen tree poked a hole in the roof of a home in Bedford Heights and another tree did damage to a garage. Fallen limbs did minor damage to several cars.
Cuyahoga County									
Cleveland Lakefront	28	2253EST			0	0			Thunderstorm Wind (G56)
									A 64 mph wind gust was measured at Burke Lakefront Airport.
Cuyahoga County									
Valley View	28	2258EST 2304EST	2	200	0	0	175K		Tornado (F1)
									The tornado touched down near Schrieber Road then travelled south into Summit County. The damage path was around four miles in length and was non-continuous. Approximately 200 trees were downed along the damage path. A house in Valley View had several windows blown out and also suffered roof and chimney damage. The roof of the house was penetrated in couple of spots by flying debris. A small building nearby was blown off of its foundation and a car was also significantly damaged in the area. Several other homes and a barn sustained roof damage from fallen trees and one house had all of its window screens blown out. A semi trailer was flipped on its side near Hub Park.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Summit County Sagamore Hills	28	2304EST 2308EST	2	100	0	0	75K		Tornado (F0)
The Cuyahoga County tornado weakened as it crossed the county line near Sagamore Hills. The tornado traveled approximately two miles in Summit County before dissipating as it approached Highway 82 from the north. The damage path was non-continuous. Several dozen trees were downed and a couple houses received minor roof damage. Fallen trees also damaged three cars.									
Summit County Northfield to Twinsburg	28	2308EST 2320EST			0	0	40K		Thunderstorm Wind
Many trees downed across the northern portion of the county. A large tree in downtown Twinsburg landed on a set of bleachers and destroyed them. Two trees fell on homes in Macedonia and two trucks in Macedonia was also severely damaged by fallen trees. Five trees were downed in Northfield.									
Lorain County Avon Lake	28	2310EST			0	0	5K		Thunderstorm Wind
Trees and power lines downed.									
Summit County Twinsburg	28	2310EST			0	0			Hail (0.75)
Portage County Aurora	28	2315EST			0	0		5K	Hail (0.75)
Geauga County Huntsburg	28	2318EST			0	0	100K		Lightning
Lightning struck a barn two miles north of Huntsburg. The resulting fire destroyed the barn and several cattle and approximately 50 pigs perished.									
Trumbull County Cortland	28	2325EST			0	0	5K		Thunderstorm Wind
Many trees downed.									
Ottawa County Port Clinton	28	2330EST			0	0	5K		Thunderstorm Wind
Many trees and large limbs downed.									
Portage County Ravenna	28	2330EST			0	0	30K		Thunderstorm Wind
Many trees downed including one that fell on a car. The chimney of a house was partially blown down.									
Mahoning County Youngstown	28	2344EST			0	0	5K		Thunderstorm Wind
Trees and power lines downed.									
Lucas County Whitehouse	29	2159EST			0	0			Hail (0.75)
Huron County Norwalk	30	2250EST			0	0			Hail (0.75)
Huron County Wakeman	30	2336EST			0	0		10K	Hail (0.75)
Huron County Wakeman	30	2337EST			0	0	5K		Thunderstorm Wind
Trees downed.									
Erie County Berlin Hgts	30	2354EST			0	0	5K		Thunderstorm Wind
One tree and several large limbs downed.									
Ashland County Rowsburg	30	2355EST			0	0	5K		Thunderstorm Wind
Trees downed.									
Wayne County Springville	31	0015EST			0	0	5K		Thunderstorm Wind
Numerous trees and power lines downed in and around Springville.									
Lorain County Lorain	31	0114EST			0	0			Hail (0.75)
Medina County Lodi	31	0315EST			0	0	5K		Thunderstorm Wind
Trees downed.									
Geauga County Middlefield	31	1550EST			0	0		10K	Hail (1.25)
Lake County Countywide	31	1630EST			0	0	75K		Thunderstorm Wind
A 60 mph gust was measured in Willoughby and many trees were downed across the county. Four homes suffered minor damage from									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

OHIO, North

fallen trees near the Chagrin River in Willoughby. An additional house was damaged in Concord by falling trees.

Sandusky County Gibsonburg

31 1639EST **0** **0** **25K** **Thunderstorm Wind**

Several large trees were blown down in and around Gibsonburg and a barn south of town near the intersection of State Route 300 and US 6 had its roof blown off.

Geauga County Countywide

31 1640EST **1** **0** **400K** **Thunderstorm Wind**
1705EST

Trees and power poles downed throughout the county from thunderstorm winds of 60 to 80 mph. A 55 year old female was killed at Punderson State Park in Newbury Township when a 40 foot tree fell on her camper and crushed it. Twelve other campers in the park were severely damaged. A tree fell on a house in Newbury Township and destroyed the living, family and dining rooms. Dozens of trees were downed in Bainbridge where one house received extensive damage from a fallen tree. Dozens of trees and power poles were also downed in Burton Village and Chardon. A boat was overturned and destroyed in Chardon and several homes were damaged by fallen trees. F55MH

Ashtabula County Countywide

31 1655EST **0** **2** **60K** **Thunderstorm Wind**

Trees and power poles downed across the county with a 60 mph gust measured in Orwell. The library in Orwell lost some its siding and the Orwell Fire Department was damaged when fallen trees poked three 15 inch holes into its roof. Many trees were also downed in and around Jefferson. A large tent was blown down and thrown 200 feet at an outdoor party north of Jefferson. Two women of unknown age standing under the tent were injured slightly.

Portage County Countywide

31 1720EST **0** **0** **75K** **Thunderstorm Wind**

Trees downed across the county. A mobile home in Garrettsville was ripped off of its foundation and blown 45 feet. Thirty trees were blown down on a golf course just north of Kent.

Stark County Hartville

31 1720EST **0** **0** **10K** **Thunderstorm Wind (G70)**

An 81 mph wind gust was measured and trees were downed in Hartville.

Erie County Countywide

31 1725EST **0** **0** **300K** **Thunderstorm Wind**

Trees and power poles downed across the county. A house under construction to the north of Castalia on State Route 269 was damaged when part of its framing was blown down. A nearby barn also lost its roof. A semi truck crossing a bridge over Lake Erie on State Route 2 between Port Clinton and Sandusky was blown over. Thirty poles along a causeway leading to an amusement park were also knocked over. In Sandusky, approximately 30 percent of the streets in the city had to be closed because of fallen trees. One home in Sandusky was severely damaged when a porch on its top floor was destroyed by a fallen tree. Several other homes and at least ten cars were damaged by fallen trees and limbs in Sandusky. At least 20 trees were downed in and around Vermilion.

Trumbull County Countywide

31 1725EST **0** **0** **250K** **Thunderstorm Wind**

Hundreds of trees downed across the county by thunderstorm winds of 60 to 80 mph. A 70 mph gust was measured at Leavittsburg with a 60 mph gust in Mecca. A large tree fell on a van in Champion trapping a mother and her young daughter inside. Both were uninjured. A tree fell on a house on the northwest side of Warren and did major structural damage. At least four other homes were damaged in Warren. One of the homes had some siding blown off, another had its chimney and a fence blown down and a third had a porch destroyed by a fallen tree. Twenty five trees were downed in Howland Township and between 200 and 250 trees were downed at a golf course on the east side of Warren. Additional trees were downed in Hubbard, Southington and Niles.

Crawford County Bucyrus

31 1810EST **0** **0** **5K** **Thunderstorm Wind**

Trees and power lines downed.

Mahoning County Struthers

31 1825EST **0** **0** **10K** **Thunderstorm Wind**

Many trees downed.

Richland County Shelby

31 1910EST **0** **0** **10K** **Thunderstorm Wind**

A barn just south of Shelby suffered damage to its roof.

Stark County Canal Fulton

31 1923EST **0** **0** **5K** **Thunderstorm Wind**

Trees downed.

Marion County Countywide

31 1925EST **0** **0** **10K** **Thunderstorm Wind**
1945EST

Many trees downed across the county.

Erie County Crystal Rock

31 1948EST **0** **0** **25K** **Thunderstorm Wind**

Many trees and power poles downed. A house south of Crystal Rock near the intersection of State Route 269 and US 6 suffered structural damage from a fallen tree. A nearby barn lost its roof.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Wayne County Countywide	31	1955EST 2015EST			0	0	5K		Thunderstorm Wind
									Many trees and power lines downed.
Cuyahoga County Cle Hopkins Intl Arp	31	1555EST			0	0	50K		Thunderstorm Wind (G59)
									A 68 mph wind gust was measured at Cleveland Hopkins International Airport. In nearby Olmstead Falls, around a dozen trees were blown down with at least three landing on houses. Other damage in Olmstead Falls included a broken railroad crossing gate, a knocked down fence and a destroyed playhouse. Around a dozen trees were downed just south of the airport in Berea.
Cuyahoga County Countywide	31	1600EST 1620EST			0	0	200K		Thunderstorm Wind
									Thunderstorms producing strong downburst winds developed over Lake Erie and then moved inland over the eastern half of the county. Cars and boats were damaged at a marina on East 55th Street in Cleveland. Approximately 50 cars sitting in a parking lot at the marina had windows blown out. A 200 pound man walking near the parking lot was thrown 30 feet and ended up in the water. He was not injured. Several small boats were damaged including one that was lifted out of the water and blown over a chain link fence. Power poles and trees were downed in Cleveland, Shaker Heights, Cleveland Heights, Chagrin Falls and Moreland Hills.
Sandusky County Gibsonburg	31	1620EST			0	0	10K		Hail (0.75)
Lorain County Lorain	31	1722EST			0	0			Thunderstorm Wind (G52)
Trumbull County Leavittsburg	31	1725EST			0	0	10K		Thunderstorm Wind (G61)
									A 70 mph wind gust was measured in Leavittsburg with a 60 mph gust measured in Mecca. Four trees were downed in Mecca.
Hancock County Findlay	31	1750EST			0	0	15K		Hail (1.75)
Stark County Canton	31	1921EST			0	0	5K		Hail (0.88)
OHIO, Northwest									
Putnam County Kalida	06	1334EST 1339EST			0	0			Hail (0.88)
Van Wert County Van Wert	06	1359EST			0	0			Thunderstorm Wind (G50)
Putnam County 2 SW Glandorf to 2 SE Glandorf	06	1400EST 1430EST			0	0	2K		Thunderstorm Wind
									Part of a garage roof was blown off 1.5 miles south of Glandorf. Several large trees with diameters of between 1 and 2 feet were downed in this area.
Allen County 3 NE Cairo to 3 ENE Cairo	06	1415EST 1420EST			0	0	2K		Thunderstorm Wind (G50)
									Wind damage occurred as 2 storms merged. Several trees and power lines were downed between Cairo and Beaverdam.
Van Wert County 2 NE Willshire	09	1510EST			0	0	0.50K		Thunderstorm Wind
									Untied mobile home blown over
Van Wert County Venedocia	09	1535EST			0	0	5K		Thunderstorm Wind
									Trees and power lines downed
Allen County Delphos	09	1545EST			0	0			Hail (0.88)
Allen County Lima	09	1550EST			0	0	5K		Thunderstorm Wind
									Trees and power lines down throughout county
Allen County Lima	21	1815EST 1825EST			0	0	4K		Thunderstorm Wind
									Canopy on a shopping mall was blown down along with a portion of the wall that it was attached to. 4 blocks to the south several large tree limbs were sheared off from only the lowest 20 feet of the trees.
Putnam County Pandora	21	1820EST			0	0	0.20K		Thunderstorm Wind
									Wind damage - trees downed.
Fulton County Wauseon	23	1742EST			0	0	0		Thunderstorm Wind
									Numerous trees and limbs were blown down.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, Northwest									
Fulton County									
Fayette	24	2340EST			0	0	0		Thunderstorm Wind
			Trees blown down.						
Fulton County									
Wauseon	24	2345EST			0	0	0		Thunderstorm Wind
			Trees blown down.						
Putnam County									
Columbus Grove	25	0115EST			0	0			Thunderstorm Wind (G53)
Allen County									
Lima	25	0130EST			0	0	20K		Thunderstorm Wind
			TV tower blown down.						
Allen County									
Lima	25	0130EST			0	0	0		Thunderstorm Wind
			Numerous trees blown down.						
Allen County									
Lima	25	0130EST			0	0	25K		Thunderstorm Wind
			Many power lines were downed.						
Allen County									
1 W Beaverdam	25	0140EST			0	0	20K		Thunderstorm Wind
			Garage blown down. Car inside suffered moderate damage.						
Allen County									
3 E Lima to Allen Co Arpt	25	0140EST			0	0	0		Thunderstorm Wind
			Fourteen 4-8 foot diameter trees were uprooted along the Auglaize River.						
Williams County									
Pioneer	29	2142EST			0	0			Hail (0.75)
Fulton County									
Delta	29	2146EST			0	0	0		Thunderstorm Wind
			Power lines blown down.						
Fulton County									
Swanton	29	2146EST			0	0			Hail (1.00)
Williams County									
Montpelier	29	2157EST			0	0			Hail (0.75)
Williams County									
Montpelier	29	2157EST			0	0	0		Thunderstorm Wind
			Power lines and tree limbs down.						
OHIO, Southeast									
OHZ066>067-075>076- Perry - Morgan - Athens - Washington - Jackson - Meigs - Gallia - Lawrence									
083-085>087									
	01	0000EST			0	0			Drought
	31	2300EST							
			The drought strengthened during the first half of the month, then eased slightly during the last 2 weeks. The worst drought conditions remained in Athens, Lawrence, Gallia, Meigs, and Jackson Counties. In Lawrence County, an emergency drought declaration was issued. Delivery of water to residents with dry or contaminated wells continued in Lawrence County. The town of Rio Grande in Gallia County had to connect to another water system when their source was depleted. In Jackson County, filling stations were set-up for families that had problems with their wells.						
			The extreme heat depleted much of the moisture from the scattered showers. Preliminary data indicated Beverly of Washington County and South Point of Lawrence County both reached 102 degrees on the 30th.						
Gallia County									
7 W Patriot	30	1625EST			0	0			Hail (1.75)
Morgan County									
Morgansville to Wrightstown	31	2020EST 2025EST			0	0	5K		Thunderstorm Wind
			Numerous trees were blown down and roads were blocked.						
Perry County									
Bruno	31	2030EST			0	0	120K		Thunderstorm Wind
			Straight line winds were estimated at 60 to 70 mph by a National Weather Service survey. This caused damage along a path that was about a half mile wide and 2 miles long. One tree fell onto a house. A mobile home and a school had sections of their roofs ripped off. Several residents had siding or shingles removed by the wind.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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OHIO, Southeast

Athens County Glouster to Jacksonville	31	2145EST 2150EST			0	0	3K		Thunderstorm Wind
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Trees were knocked down, causing roads to be blocked.

OHIO, Southwest

OHZ026-034>035-042>046-051>056-060>065-070>074-077>082-088 **Hardin - Mercer - Auglaize - Darke - Shelby - Logan - Union - Delaware - Miami - Champaign - Clark - Madison - Franklin - Licking - Preble - Montgomery - Greene - Fayette - Pickaway - Fairfield - Butler - Warren - Clinton - Ross - Hocking - Hamilton - Clermont - Brown - Highland - Adams - Pike - Scioto**

01	0000EST				0	0			Drought
31	2359EST								

Dry conditions that began in the spring and early summer continued into July. Excessive heat contributed to substantial crop loss across much of the Buckeye state. Rainfall was widely scattered and did little to help farmers. Crop damage amounts were not available at the time of this writing.

Auglaize County St Marys	01	1145EST 1150EST	0.1	30	0	0	10K	5K	Tornado (F0)
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A brief tornado touched down overturning a semi truck on State Route 33. Trees were knocked down and a path of damage was noted in a corn field.

Preble County 3 NW Sugar Vly	01	1655EST 1700EST	0.1	100	0	0	20K		Tornado (F0)
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A tornado touched down briefly uprooting numerous trees, knocking down power lines, and tearing a few roofs from a few barns.

Union County Marysville	01	2130EST 2230EST			0	0			Flood
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Heavy rain caused roads to be closed due to flood waters.

Champaign County Urbana	06	1615EST 1620EST			0	0	5K		Thunderstorm Wind (G50)
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Trees and power lines.

Greene County 3 E Yellow Spgs	06	1746EST 1750EST			0	0	3K		Thunderstorm Wind (G50)
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Trees knocked down.

Hardin County Ada to 1 E Ada	09	1620EST 1625EST			0	0	50K		Thunderstorm Wind (G60)
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A television tower was blown over, a roof damaged, and trees and power poles were downed.

Auglaize County Cridersville	09	1643EST 1645EST			0	0	3K		Thunderstorm Wind (G50)
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Numerous large limbs downed.

Auglaize County Wapakoneta	09	1710EST 1715EST			0	0	5K		Thunderstorm Wind (G50)
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Trees downed.

Shelby County Jackson Center	09	1733EST 1740EST			0	0	25K		Thunderstorm Wind (G60)
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Roofs were damaged on several buildings and trees were knocked down.

Preble County West Alexandria	09	1804EST 1805EST			0	0			Thunderstorm Wind (G60)
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Winds gusted to 70 mph.

Miami County Potsdam	09	1805EST 1810EST	0.3	50	0	0	10K		Tornado (F0)
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A weak tornado knocked down trees and power lines and made a path through a corn field.

Miami County West Milton	09	1815EST 1820EST			0	0	5K		Thunderstorm Wind (G50)
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Trees and power lines downed.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, Southwest									
Union County									
5 E Marysville	09	1816EST 1817EST			0	0			Thunderstorm Wind (G60)
		Winds gusted to 70 mph.							
Champaign County									
St Paris	09	1831EST 1835EST			0	0	3K		Thunderstorm Wind (G50)
		Trees knocked down.							
Montgomery County									
Englewood	09	1839EST 1845EST			0	0			Thunderstorm Wind (G52)
		Winds gusted to 60 mph.							
Clark County									
Donnelsville	09	1900EST 1905EST			0	0	5K		Thunderstorm Wind (G50)
		Trees downed.							
Franklin County									
Gahanna	09	1915EST 1920EST			0	0	5K		Thunderstorm Wind (G50)
		Trees and power lines knocked down.							
Licking County									
Countywide	09	1925EST 1945EST			0	0	10K		Thunderstorm Wind (G50)
		Trees down in numerous locations.							
Greene County									
Xenia	09	1930EST 1935EST			0	0	5K		Thunderstorm Wind (G50)
		Trees and power lines downed.							
Butler County									
Hamilton Arpt	09	1934EST			0	0	5K		Thunderstorm Wind (G51)
		Winds gusted to 60 mph at the Hamilton airport. Also, trees and power lines were knocked down.							
Madison County									
Madison Lake	09	1950EST 1955EST			0	0	5K		Thunderstorm Wind (G50)
		Trees downed.							
Hamilton County									
Miamitown	09	2008EST 2015EST			0	0	3K		Thunderstorm Wind (G50)
		Trees knocked down.							
Warren County									
Waynesville to Oregonia	09	2010EST 2015EST			0	0	5K		Thunderstorm Wind (G50)
		Trees and power lines downed.							
Clinton County									
Midland to Westboro	09	2015EST 2020EST			0	0	3K		Thunderstorm Wind (G50)
		Trees downed.							
Clermont County									
Goshen	09	2030EST 2035EST			0	0	3K		Thunderstorm Wind (G50)
		Trees knocked down.							
Highland County									
Hillsboro	09	2030EST 2035EST			0	0	5K		Thunderstorm Wind (G50)
		Numerous large tree limbs were knocked down, some of which fell across roads.							
Fairfield County									
Amanda	18	1745EST 1750EST			0	0	3K		Thunderstorm Wind (G50)
		Several trees knocked down.							
Preble County									
New Paris	19	1515EST 1520EST			0	0	3K		Thunderstorm Wind (G50)
		Trees knocked down.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, Southwest									
Auglaize County Waynesfield	25	0155EST 0200EST			0	0	5K		Thunderstorm Wind (G50)
		Numerous trees downed.							
Shelby County Lockington	26	1405EST 1410EST			0	0	3K		Thunderstorm Wind (G50)
		Several trees downed.							
Miami County Piqua	26	1415EST 1420EST			0	0	5K		Thunderstorm Wind (G50)
		Trees and power lines downed.							
Greene County Xenia	26	1500EST 1505EST			0	0	3K		Thunderstorm Wind (G50)
		Trees knocked down.							
Clark County New Carlisle	26	1515EST 1520EST			0	0	3K		Thunderstorm Wind (G50)
		Numerous trees downed.							
Auglaize County New Bremen	26	1605EST 1610EST			0	0	3K		Thunderstorm Wind (G50)
		Trees downed.							
Preble County New Lexington	26	1620EST 1625EST			0	0	3K		Thunderstorm Wind (G50)
		Trees downed.							
Shelby County Sidney	26	1640EST 1645EST			0	0	3K		Thunderstorm Wind (G50)
		Trees downed.							
Butler County Trenton	26	1645EST 1650EST			0	0	3K		Thunderstorm Wind (G50)
		Several trees downed.							
Montgomery County Centerville	26	1650EST 1655EST			0	0	5K		Thunderstorm Wind (G50)
		Numerous trees knocked down.							
Greene County Countywide	26	1710EST 1725EST			0	0	10K		Thunderstorm Wind (G50)
		Numerous trees downed across the county.							
Logan County Russells Pt to De Graff	26	1710EST 1720EST			0	0	5K		Thunderstorm Wind (G50)
		Trees downed.							
Clinton County 2 N Wilmington	26	1717EST 1720EST			0	0	5K		Thunderstorm Wind (G50)
		Trees were knocked down across Highway 68 north of Wilmington.							
Warren County Franklin to Lebanon	26	1720EST 1730EST			0	0	7K		Thunderstorm Wind (G50)
		Trees down across the county.							
Brown County Mt Orab	26	1800EST 1805EST			0	0	15K		Thunderstorm Wind (G50)
		Thunderstorm winds knocked down trees and power lines. A few of the trees fell on homes causing damage.							
Highland County New Petersburg	26	1810EST 1815EST			0	0	3K		Thunderstorm Wind (G50)
		Trees knocked down.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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OHIO, Southwest

Hamilton County

Delhi	26	1920EST 1925EST			0	0	5K		Thunderstorm Wind (G50)
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Trees downed.

Fairfield County 5 E Lancaster

	30	0054EST 0100EST			0	0	3K		Thunderstorm Wind (G50)
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Trees knocked down.

Hocking County Murray City

	30	0130EST 0135EST			0	0	5K		Thunderstorm Wind (G50)
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Trees and power lines knocked down.

Scioto County Portsmouth

	30	1804EST 1807EST			0	0			Hail (1.75)
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Adams County Blue Creek

	30	1940EST 1945EST			0	0	3K		Thunderstorm Wind (G50)
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Trees downed.

Adams County Peebles

	30	2005EST 2010EST			0	0	3K		Thunderstorm Wind (G50)
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Numerous large limbs knocked down.

Mercer County Rockford

	31	1610EST 1615EST			0	0	5K		Thunderstorm Wind (G50)
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Trees and electrical poles downed.

Darke County Union City to Greenville

	31	1745EST 1800EST			0	0	10K		Thunderstorm Wind (G50)
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Numerous trees and power lines downed.

Shelby County Anna

	31	1750EST			0	1	20K		Lightning
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Lightning struck a barn causing a damaging fire. It also struck a man who received minor injuries.

Shelby County Countywide

	31	1800EST 1815EST			0	0	10K		Thunderstorm Wind (G50)
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Numerous trees knocked down.

Logan County Bellefontaine

	31	1815EST 1820EST			0	0	3K		Thunderstorm Wind (G50)
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Several trees knocked down.

Hardin County Countywide

	31	1850EST 1905EST			0	0	5K		Thunderstorm Wind (G50)
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Trees knocked down.

Fairfield County Baltimore

	31	2005EST 2010EST			0	0	3K		Thunderstorm Wind (G50)
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Trees downed.

OKLAHOMA, Eastern

OKZ063-068>069 Delaware - Cherokee - Adair

	01	0000CST			0	0			Flood
	02	1100CST							

The Illinois River at Watts rose above its flood stage of 13 feet at 700 PM CDT on June 30. The river crested at a level of 20.6 feet at 200 AM CDT on July 1 before falling back below its flood stage at 1100 AM CDT that same morning.

The Illinois River at Tahlequah rose above its flood stage of 11 feet at 200 PM CDT on July 1. The river crested at a level of 14.5 feet at 400 AM CDT on July 2 before falling back below flood stage at Noon CDT that same day.

OKZ076

Le Flore

	01	0000CST			0	0			Flood
	03	0100CST							

The Poteau River at Poteau rose above its flood stage of 24 feet at 400 PM CDT on June 30. The river crested at a level of 25.6 feet at 900 PM CDT that evening before falling back below flood stage at 600 AM CDT on July 1.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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OKLAHOMA, Eastern

The Poteau River at Panama rose above its flood stage of 29 feet at 1100 AM CDT on June 30. The river crested at a level of 36.0 feet at 300 PM CDT on July 1 before falling back below its flood stage at 200 AM CDT on July 3.

OKZ067-070

Wagoner - Muskogee

01	0000CST								
	0400CST				0	0			Flood

The Arkansas River at Muskogee rose above its flood stage of 28 feet at 900 PM CDT on June 30. The river crested at a level of 28.1 feet at 100 AM CDT on July 1 before falling back below flood stage at 500 AM CDT later that same morning.

OKZ064>066

Creek - Okfuskee - Okmulgee

01	0000CST								
	0800CST				0	0			Flood

The Deep Fork River at Beggs rose above its flood stage of 18 feet at Noon CDT on June 29. The river crested at a level of 20.6 feet at 100 AM CDT on July 2 before falling back below its flood stage at 900 AM CDT on July 4.

Osage County Shidler

01	0700CST								
					0	0	0.50K		Thunderstorm Wind (G61)

Several trees were blown down in Shidler.

Pawnee County Pawnee

01	0705CST								
					0	0			Thunderstorm Wind (G52)

Two storage barns were turned over in a back yard of the Reeves Addition in Pawnee. Also, tree and tree limbs were blown over by the winds. A storm spotter reported 60 mile an hour winds with this storm. Somewhere west of Pawnee, a trailer house was moved by the strong winds.

Osage County 4 WNW Pawhuska

01	0715CST								
					0	0	20K		Thunderstorm Wind

Winds damaged several boat docks at the second cove by Bluestem Lake. Trees were down along the shoreline. Roof damage and other damage were also evident.

Osage County 4 W Hulah

01	0735CST								
					0	0	3K		Thunderstorm Wind

Trees and tree limbs were blown down near Hulah Lake. A pop-up camper was overturned.

Pawnee County Terlton

01	0735CST								
					0	0	0.10K		Thunderstorm Wind

Tree limbs were blown down in Terlton.

Washington County 1 N Copan

01	0750CST								
					0	0	16K		Thunderstorm Wind

Winds damaged a barn and a mobile home just north of Copan. Many trees were also blown down.

Nowata County Wann

01	0800CST								
					0	0	0.50K		Thunderstorm Wind

Several trees were blown down in Wann.

Washington County Bartlesville Arprt to Bartlesville

01	0800CST								
					0	0	10K		Thunderstorm Wind

A building at the Bartlesville Airport sustained wind damage. Four large trees and several smaller ones were either damaged or uprooted at the Sunset Country Club in Bartlesville.

Rogers County 2 N Oologah

01	0805CST								
					0	0	0.50K		Thunderstorm Wind

Several trees were blown down north of Oologah.

Delaware County Bernice

01	0821CST								
					0	0			Hail (1.00)

Craig County Vinita

01	0825CST								
					0	0	3K		Thunderstorm Wind

Tree limbs and power lines were blown down in Vinita.

Delaware County 1 NE Grove

01	0830CST								
					0	0	0.10K		Thunderstorm Wind

A large tree was blown down northeast of Grove, blocking traffic for a time.

Ottawa County 1 N Commerce

01	0855CST								
					0	0	0.10K		Thunderstorm Wind (G52)

Winds estimated at 60 miles an hour blew over a large tree.

Delaware County Jay

01	0858CST								
					0	0			Hail (0.75)

Osage County 1 S Fairfax

01	0923CST								
					0	0			Hail (0.88)

Adair County Watts

01	0940CST								
					0	0	0.10K		Thunderstorm Wind

Several large tree limbs were blown down in Watts.

Pawnee County Cleveland

01	1010CST								
					0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

OKLAHOMA, Eastern

Osage County

Osage 01 1012CST 0 0 Hail (1.00)

Tulsa County

1 E Collinsville 01 1025CST 0 0 Hail (0.75)

Location: US Hwy 169 and OK Hwy 20

Tulsa County

Sperry 01 1030CST 0 0 Hail (0.75)

Osage County

10 N Sand Spgs 01 1045CST 0 0 Hail (0.75)

Location: Zink Ranch

Tulsa County

1 W Owasso 01 1045CST 0 0 Hail (0.88)

Rogers County

2 W Claremore 01 1105CST 0 0 Hail (0.88)

A solid line of thunderstorms crossed the Kansas state line and moved southward across eastern Oklahoma on the morning of July 1. Along the way, there were spotty reports of marginally severe hail and severe winds. The line of storms weakened and dissipated as it moved south of Tulsa.

OKZ057>058

Craig - Ottawa

01 1900CST 0 0 Flood

03 0700CST

The Neosho River at Commerce rose above its flood stage of 15 feet at 800 PM CDT on July 1. The river crested at a level of 17.1 feet at 700 PM CDT on July 2 before falling back below its flood stage at 800 AM CDT on July 3.

Tulsa County

7 SE Tulsa 07 1200CST 0 0 0.10K Thunderstorm Wind

A mature 6-8" diameter tree was blown down by winds from a wet microburst near E. 51st Street and South Sheridan Road in Tulsa.

Cherokee County

Tahlequah 07 1230CST 0 0 Urban/Sml Stream Fld

1330CST

There was street flooding in many portions of Tahlequah.

Cherokee County

Tahlequah 07 1245CST 0 0 0.50K Thunderstorm Wind

A power line was blown down in the southwest part of Tahlequah (in the 200 block of West Allen).

Cherokee County

Peggs 07 1315CST 0 0 0.50K Thunderstorm Wind

A power line was blown down near Peggs.

Mayes County

Chouteau 07 1355CST 0 0 Hail (0.75)

Mayes County

Chouteau 07 1400CST 0 0 2K Thunderstorm Wind

Power lines were blown down in Chouteau.

Isolated air mass thunderstorms briefly reached severe limits over Cherokee and Mayes Counties from Tahlequah to Chouteau, producing severe winds and marginally severe hail.

OKZ073

Pittsburg

10 0000CST 0 0 Record Cool

2359CST

The high temperature of 83 degrees at the McAlester Regional Airport tied for being the coolest high temperature on record for this date.

OKZ060

Tulsa

26 0000CST 0 0 Record Warmth

27 2359CST

The low temperature dropped to 81 degrees Fahrenheit at the Tulsa International Airport on both July 26 and 27. This tied the record for being the warmest low temperature on record for both dates.

OKLAHOMA, Extreme Southeast

McCurtain County

2 E Tom 07 1600CST 0 0 Thunderstorm Wind (G52)

Several large trees down across Hwy 3.

McCurtain County

.8 W Watson 10 1840CST 0 0 40K Flash Flood

State Highway 4 was closed due to the road and a culvert being washed out.

OKLAHOMA, Panhandle

Cimarron County

.5 S Boise City 06 1650CST 0 0 Hail (0.75)

An isolated severe thunderstorm developed during the early evening across the western Oklahoma panhandle.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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OKLAHOMA, Western, Central and Southeast

Grant County 1 SW Medford	01	0600CST			0	0			Thunderstorm Wind (G50)
Grant County 1 SW Medford	01	0605CST			0	0			Thunderstorm Wind (G61)
Kay County Braman	01	0620CST			0	0			Thunderstorm Wind (G61)
Kay County 2 W Blackwell	01	0630CST			0	0			Thunderstorm Wind (G69)
Kay County Tonkawa	01	0630CST			0	0	5K		Thunderstorm Wind
Kay County Ponca City	01	0650CST			0	0	15K		Thunderstorm Wind

Severe thunderstorms formed over portions of Kay and Grant Counties during the early morning of the 1st. Several large trees were blown down and a barn was destroyed at a farm just to the southwest of Tonkawa in Kay County, while in Ponca City, also in Kay County, a large tree limb was blown down, falling onto a nearby building, causing extensive damage, and another large tree limb fell onto power lines and an automobile.

OKZ008

Kay 02	0300CST				0	0			Flood
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Highway 177 was completely submerged in parts of Blackwell due to flooding along the Chikaskia River.

Garfield County

Enid	09	0949CST			0	0			Flash Flood
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Major County

5 S Meno	09	1035CST			0	0			Flash Flood
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Heavy rain fell across portions of northern Oklahoma during the morning of the 9th, resulting in minor flooding. Several roads were closed due to flooding 5 miles south of Minco in Major County, and street flooding was reported in Enid in Garfield County.

OKZ008-025-025-025-025-029>030-036

Kay - Oklahoma - Cleveland - Pottawatomie - Jackson 26	1900CST				8	1			Excessive Heat
31	1100CST								

A period of very hot temperatures with highs ranging from the upper 90s to near 105 and lows ranging from the lower 70s to near 80, affected portions of central and southwest Oklahoma from July 26th through July 31st. Eight persons died, and 1 serious injury resulted from the excessive heat. The first fatality from the excessive heat occurred on the 27th, when a 57-year old man was found dead in his home in Norman in Cleveland County. Two persons died from the heat on the 28th, a 65-year old woman found dead in her home in Shawnee in Seminole County, and a 73-year old woman found dead in her front yard in Altus in Jackson County. She collapsed and died while mowing her lawn. Three fatalities resulted from the heat on the 30th. The first was in Ponca City in Kay County, where a 73-year old man was found dead in his home, while the 2nd and 3rd fatalities were reported in Oklahoma City (Oklahoma County), where 2 women, ages 84 and 85, were found dead in separate homes. The last 2 heat related fatalities occurred on the 31st and were also reported in Oklahoma City. An 86-year old woman and an 82-year old man were found dead in their own homes. Except for the fatality in Altus (Jackson County), the majority of persons who died from the heat owned an air conditioner, but it wasn't being used, and the windows of their homes were closed. The only known serious injury occurred on the 26th in Oklahoma City, when a 12-year boy suffered from heat stroke while playing football. He spent several days in the hospital in critical condition before being released. F84PH, F85PH, M73PH, M82PH, F86PH, F65PH, F73OU, M57PH

OREGON, Central and East

ORZ016>017

01	0000PST				0	0			Drought
31	0000PST								

Drought, which started to develop early this year, greatly reduced the yields of green peas and winter wheat harvested this month in eastern Oregon. According to the Oregon Climate Service, rainfall for the Columbia Basin averaged 25 percent less than normal since last fall. For example, Heppner only reported 8.8 inches of rain since September. During a normal water year 11.2 inches could be expected. In addition, very little rain has fallen since mid-May. Western Umatilla and Morrow counties have reported the worst crop conditions, with winter wheat harvests averaging only around 40 percent of normal. Near Ione, which is located in Morrow county, many farmers plowed up their crops due to stunted growth. An insurance adjuster there reported that he had received around 300 claims just from the immediate area.

Deschutes County

15 SW Bend	20	1350PST			0	0	0	0	Hail (0.88)
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Deschutes County

20 S Bend	20	1550PST			0	0	0	0	Hail (0.75)
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Deschutes County

Bend	20	1700PST			0	0	1K	0	Lightning
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Thunderstorms developed around Bend during the afternoon. Lightning struck a home in western Bend, damaging a wall and some electrical circuits. Frequent lightning also started several dozen small fires around the area.

Jefferson County

Warm Spgs	23	1735PST			0	0	0	0	Hail (0.75)
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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OREGON, Northwest

NONE REPORTED.

OREGON, Southeast

NONE REPORTED.

OREGON, Southwest

ORZ015

03	1400PST				0	0			Extreme Cold
04	0800PST								

See below.

A Frost Warning was issued for the above stations. Although no frost was reported, numerous low temperature readings in the 30s indicate that frost probably did develop.

ORZ015

03	1400PST				0	0			Extreme Cold
04	0800PST								

See below.

A Frost Warning was issued for this zone. Reported low temperatures were mostly in the 30s, so frost probably did occur this night...though none was reported.

ORZ015

04	1400PST				0	0			Extreme Cold
05	0800PST								

See below.

A Frost Warning was issued for the above counties. Although no frost was reported, numerous low temperature readings in the 30s indicate that frost probably did develop.

ORZ015

04	1400PST				0	0			Extreme Cold
05	0800PST								

See below.

A Frost Warning was issued for this area. Reported low temperatures were warmer than the previous night...but Sprague River still reported a low of 27 degrees. Some frost probably did occur this night, but it probably wasn't as widespread as the previous night.

Klamath County Klamath Falls

14	0700PST				0	0			Wild/Forest Fire
	2250PST								

See below.

Lake County Lakeview

14	0700PST				0	0			Wild/Forest Fire
	2250PST								

See below.

A Red Flag Warning was issued for fire zones 624/625, which encompasses most of these counties. The warning was due to a combination of gusty winds, low humidities, a moderate risk Haines Index, and dry fuels.

ORZ015

15	1455PST				0	0			Extreme Cold
16	0800PST								

See below.

A Frost Warning was issued this night. Several stations reported low temperatures in the lower to middle 30s. Frost likely occurred, but none was reported.

ORZ015

16	0350PST				0	0			Extreme Cold
	0939PST								

See below.

A short-lived Frost Warning was issued for this area, but was cancelled 6 hours later before the event transpired. Reported low temperatures were mostly warmer than the previous night, but some cold spots got down to the middle 30s. Some frost probably occurred this night, though not as widespread as the previous night. No frost reports were received.

Douglas County Diamond Lake

19	1647PST				0	0			Tstm Wind/Hail
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Spotter DO27 reported dime size hail, heavy rain, and distant thunder.

Douglas County Diamond Lake

19	1839PST				0	0			Tstm Wind/Hail
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Spotter DO27 reported 1 inch hail at 1805 LDT. Estimated 1.00 inches rain fell since 1640 LDT.

Douglas County Diamond Lake

19	1910PST				0	0			Flash Flood
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WSR-88D estimated a storm total precipitation maximum of 4.1 inches over Mt. Bailey...5 NM west of Diamond Lake.

Based on spotter reports and radar data, a Severe Thunderstorm Warning for extreme eastern Douglas County was issued at 1630 LDT. This warning expired at 1720 LDT, but was extended at 1735 LDT. The extension expired at 1859 LDT. The warning was verified by spotter reports of hail up to an inch in diameter.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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OREGON, Southwest

WSR-88D data and spotter reports indicated that heavy rain was occurring with this storm, and the storm was moving slowly. Thus, a Flash Flood Warning was issued for this storm at 1847 LDT, and it expired at 2100 LDT.

Jackson County Wimer

20	1000PST 2110PST				0	0			Wild/Forest Fire
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The Medford Mail Tribune reported at least five dry lightning ignited fires in Jackson County.

A Red Flag Warning for dry lightning was issued for most of southwest and southcentral Oregon at 1000 LDT on 07/20/99. The coast and the Cascade/Siskiyou mountains were excluded. This warning verified with at least 5 dry-lightning ignited fires reported in Jackson County alone. The warning was cancelled at 2110 LDT.

Curry County Gold Beach

20	1437PST				0	0			Tstm Wind/Hail
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Spotter CU09 7 miles up the Rogue River reported a thunderstorm with heavy rain and dime-size hail.

Based on the above spotter report, a Severe Thunderstorm Warning was issued at 1432 LDT and expired at 1458 LDT.

Douglas County Toketee Falls

20	1506PST				0	0			Tstm Wind/Hail
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See below.

Based on WSR-88D data, a Severe Thunderstorm Warning was issued for this storm at 1506 LDT. A similar radar return earlier in the day was associated with large hail (verified by a spotter), so it was deemed that large hail was likely with this storm as well. The warning expired at 1532 LDT, but a second storm developed nearby soon thereafter. A second Severe Thunderstorm Warning was issued for this storm at 1611 LDT and it expired at 1709 LDT.

Jackson County Union Creek

20	1643PST				0	0			Tstm Wind/Hail
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See below.

Jackson County Union Creek

20	1643PST				0	0			Tstm Wind/Hail
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See below.

Based on WSR-88D returns, a Severe Thunderstorm Warning was issued for this storm at 1643 LDT. The radar return was similar to a storm earlier in the afternoon that contained large hail (verified by a spotter). The warning expired at 1744 LDT. The Medford Mail-Tribune newspaper reported the next day that "Hailstones the size of cherries were reported falling between Union Creek and Crater Lake".

Jackson County Mc Leod

20	1759PST				0	0			Tstm Wind/Hail
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See below.

WSR-88D data indicated that this storm was similar to others earlier in the day, at least two of which produced large hail. A Severe Thunderstorm Warning was issued for this storm at 1759 LDT and expired at 1858 LDT.

Douglas County Diamond Lake

23	1654PST				0	0			Tstm Wind/Hail
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A spotter reported nickel size hail (0.88 inches) and 1.00 inches of rain in 15 minutes.

Based on the above spotter report, a Severe Thunderstorm Warning was issued for the Diamond Lake area and nearby State Highway 138. The warning was issued at 1654 LDT and expired at 1743 LDT.

PACIFIC

Guam Countywide

05	2200SST				0	0	50K		Lightning
06	0000SST								

Guam Countywide

05	2200SST				0	0			Urban/Sml Stream Fld
06	0000SST								

Strong thunderstorms moved across the island from 2200 to midnight. Frequent lightning and heavy rain pushed across the island. Lightning hit a 115 kilovolt main transmission line that runs from the Cabras Power Plant to Nimitz Hill at around 2315. This caused power to go off over two thirds of the island. The power generators and transmission lines were all intact and power was restored to most places shortly after midnight on the 6th. The rain was very heavy with 0.99 of an inch of rain falling at the National Weather Service Office at Tiyan from 2200 to midnight. There were a few reports of people losing their computer modems and a few even losing the entire computer as a result of lightning strikes and resulting power surges. It is possible that one of the Weather Service's Handar Stations (an automated observing station) was damaged by lightning. An upper level low moving through the region caused thunderstorms to develop over Guam.

Guam Countywide

07	0000SST 0400SST				0	0			Urban/Sml Stream Fld
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From midnight to 0400 0.29 of an inch of rain fell at the National Weather Service office at Tiyan.

Guam Andersen Afb

16	1652SST 1701SST				0	0			Waterspout
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A waterspout was observed from Andersen Air Force Base from 1652 to 1701. The waterspout was 15 miles to the west of the Air Force Base. It dissipated by 1701.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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PACIFIC

Guam Central Portion	28	0400SST 1000SST			0	0			Urban/Sml Stream Fld
Between Midnight and 0400 0.24 of an inch of rain fell, between 0400 and 1000 0.42 of an inch fell. An upper level low moving across the region enhanced shower activity across the Marianas Islands.									
Guam Countywide	29	0000SST 0700SST			0	0			Urban/Sml Stream Fld
Guam Central Portion	29	2200SST 30 0000SST			0	0			Urban/Sml Stream Fld
Between Midnight and 0400 2.07 inches of rain fell at the National Weather Service Office in Tiyan. An additional 0.74 of an inch of rain fell between 2200 and midnight, most falling between 2300 and midnight. Upper level divergent winds combined with low level winds converging into the Monsoon trough caused heavy showers to move across Guam.									
Guam Central Portion	30	0000SST 0400SST			0	0			Urban/Sml Stream Fld
At the National Weather Service Office at Tiyan 0.62 of an inch of rain fell between Midnight and 0400 with an additional 0.16 of an inch falling between 0400 and 1000. Upper level divergent winds combined with low level winds converging into the Tropical Depression 11W caused heavy showers to move across Guam. Tropical Depression 11W formed well to the west of Guam on the 29th. Tropical Depression 11W developed from a circulation. This circulation was first observed on the 23rd near 5N 146E to the southwest of Chuuk. It continued to move west an eventually moved between Yap and Palau on the 27th, it was still a circulation at this time. On the 30th Tropical Depression 11W became Tropical Storm Olga. The storm was out over the ocean far from land. It's northward movement took pushed it out of the Guam Area of Responsibility on the morning of the 31st.									
Saipan Saipan Intl Airport	30	1425SST 1445SST			0	0			Funnel Cloud
Funnel cloud sighted from the Saipan International Airport.									
Guam Apra Harbor	30	1720SST 1740SST			0	0			Funnel Cloud
Waterspout was reported by a Cessna pilot over Apra Harbor at around 1720.									
Guam Merizo	30	1740SST 2000SST			0	0	400K		Flash Flood
Flash flooding event in Merizo. Heavy rain from a nearly stationary thunderstorm caused flash flooding across a small section along the southern tip of Guam. Nexrad radar indicated that the thunderstorm was mainly offshore, with heavy rain occurring in the affected area for approximately 50 minutes from about 1740 to 1830. 3 hour precipitation estimates from the Nexrad radar indicate a peak of 4 inches in the region. Rain fell in the Merizo area in a small strip along an near the coast from Achang Bay, the Manell River eastward to the Sumay River.									
Water flowing down the Manell River, which is located northeast of Achang Bay, normally flows down the river then into a drainage culvert which empties out into Achang Bay. Slabs of cement in the newly renovated 16 foot culvert made passage too narrow for the tons of bamboo and foliage debris that was washed down the Manell River with the flood water. The debris formed a dam which then allowed the flood water to stream onto people's land and into houses. 50 people and 13 homes were affected by the flooding. The flood water was 3 to 4 feet in certain places at certain times. The flood water also washed out a 15 foot section of the gravel topped road and collapsed part of the drainage culvert. Through all of this no one was injured.									

PENNSYLVANIA, Central

PAZ006-011>012-017>019-024>028-033>037-041>042-045>046-049>053-056>059-063>066	Potter - Cameron - Northern Clinton - Clearfield - Northern Centre - Southern Centre - Cambria - Blair - Huntingdon - Mifflin - Juniata - Somerset - Bedford - Fulton - Franklin - Tioga - Northern Lycoming - Sullivan - Southern Clinton - Southern Lycoming - Union - Snyder - Montour - Northumberland - Columbia - Perry - Dauphin - Schuylkill - Lebanon - Cumberland - Adams - York - Lancaster	01 31	0000EST 2359EST		0	0	500M		Drought
Governor Ridge declared a drought emergency in 55 of the 67 counties of Pennsylvania following extended dry weather through much of the summer. Water usage was restricted. Precipitation deficits for many counties for the months of May through July averaged between 5 and 7 inches. Precipitation departures for the 365 day period ending in mid-July were over 1 foot below normal in many places. This is about one-third of total annual normal precipitation in most areas. Streams were empty, wells dried up, and the Susquehanna River hit record low flows. Hot sunny days combined with the dry weather to take a large toll on crops. Preliminary estimates by the Department of Agriculture indicated possible crop losses in excess of \$500 million. The figure did not include a 20% decrease in milk production due to the drought that would also result in million dollar losses. There were some counties that									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

PENNSYLVANIA, Central

experienced 70 to 100% crop loss. At least 30% losses are needed for a drought disaster declaration.

Fulton County
Harrisonville **01** **1700EST** **0** **0** **10K** **Thunderstorm Wind**
A number of trees were downed.

Lycoming County
3 E Bodines to **01** **1800EST** **0.5** **200** **0** **0** **10K** **Tornado (F0)**
3.5 E Bodines

A small tornado touched down on McNamie Hill Road about 3 miles east of Bodines near Kellysburg. The storm sheared off about 50 to 75 trees along a 1/2 mile path. a resident on McNamie Hill Road reported seeing debris from the trees being swept in a circle as the storm passed. The area nearby is mostly state forest land.

Sullivan County
5 SW Hugos Corners to **01** **1830EST** **5** **200** **0** **0** **200K** **Tornado (F1)**
Hugos Corners **1840EST**

An F1 tornado touched down in Elkland township about two miles northwest of Lincoln Falls on route 154, then moved northeast through a crossroads near Eldredsville to Hugo corners. Trees were blown down as the storm crossed route 154. Just west of McCarty Ridge Road a group of campers narrowly missed injury when a stand of trees were blown over near their site. The heaviest damage was along McCarty Ridge Road near the town of Eldredsville. A well built older home was lifted just slightly on its foundation. The occupants told of seeing a cloud of dust appear as they watched from their basement. A barn nearby was leveled. The roof flew off a sawmill and landed largely intact about 100 feet northwest of the mill. Several other homes had some structural damage and one had shingles removed from a roof. A travel trailer was overturned and an outdoor shed was destroyed. A couple mobile homes were damaged by debris, but were not moved off their foundations. Tree damage was sporadic along the path with a number of trees down in the Hugo Corners area near the end of the path.

Elk County
Lake City **01** **2100EST** **0** **0** **10K** **Thunderstorm Wind**
Trees and power lines downed.

York County
Spry **02** **1710EST** **0** **0** **10K** **Thunderstorm Wind**
Trees down and power out.

Warren County
Warren **06** **1605EST** **0** **0** **30K** **Thunderstorm Wind**
Trees and wires down in Warren and other parts of the county.

Mckean County
Duke Center **06** **1645EST** **0** **0** **10K** **Thunderstorm Wind**
Trees were down in Otto Township near Duke Center.

Mckean County
Bradford **06** **1650EST** **0** **0** **10K** **Thunderstorm Wind**
Trees and power lines down.

Potter County
Coudersport **06** **1720EST** **0** **0** **50K** **Thunderstorm Wind**
Trees were down on several houses.

Potter County
Galeton **06** **1720EST** **0** **0** **10K** **Thunderstorm Wind**
Trees down.

Elk County
St Marys **06** **1725EST** **0** **0** **10K** **Thunderstorm Wind**
Trees and power lines down.

Elk County
Glen Hazel **06** **1740EST** **0** **0** **10K** **Thunderstorm Wind**
Trees and power lines down.

Cameron County
Emporium **06** **1745EST** **0** **0** **10K** **Thunderstorm Wind**
Trees and power lines down.

Tioga County
Wellsboro **06** **1800EST** **0** **0** **15K** **Thunderstorm Wind**
Trees and wires down.

Clinton County
Renovo **06** **1814EST** **0** **0** **15K** **Thunderstorm Wind**
Trees on wires.

Clinton County
South Renovo **06** **1835EST** **0** **0** **10K** **Thunderstorm Wind**
Trees down in starburst pattern.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated	Crops	Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage		
PENNSYLVANIA, Central									
Lycoming County									
Jersey Shr	06	1840EST			0	0	15K		Thunderstorm Wind
									Trees were down in Jersey Shore, Saladasburg and Haneyville.
Sullivan County									
Forksville	06	1900EST			0	0	10K		Thunderstorm Wind
									Trees were down on route 154 near Forksville.
Cambria County									
Colver	06	1930EST			0	1			Lightning
									A man was shocked by lightning while taking a shower. He was not seriously injured.
Cambria County									
Colver	06	1930EST			0	0	10K		Thunderstorm Wind
									Trees down.
Elk County									
Brockport	09	1510EST			0	0	10K		Thunderstorm Wind
									Trees down.
Elk County									
Toby Mines	09	1512EST			0	0	10K		Thunderstorm Wind
									Many trees down.
Elk County									
1 S Ridgway to Ridgway	09	1515EST			0	0			Hail (1.00)
Clearfield County									
Quehanna	09	1540EST			0	0			Hail (0.88)
									Nickel size hail.
Clinton County									
Lock Haven	09	1615EST			0	0	10K		Thunderstorm Wind
									Trees and power lines down.
Warren County									
Garland	09	1625EST			1	2	150K		Thunderstorm Wind
									Downburst winds blew down dozens of trees. A tree fell on a car on route 27 just south of Garland, fatally injuring the 21 year old female driver, critically injuring the second female passenger, and seriously injuring the third. Close by another tree fell and completely smashed an unoccupied auto. Just to the east of Garland, a barn was partially unroofed and a silo was damaged. F21VE
Centre County									
Nittany	09	1635EST			0	0	5K		Thunderstorm Wind
									Trees down.
Clinton County									
Lamar	09	1635EST			0	0	5K		Thunderstorm Wind
									Trees down.
Union County									
2 N Laurelton	09	1650EST			0	0			Hail (1.00)
Mckean County									
Bradford	09	1826EST			0	0	10K		Thunderstorm Wind
									Trees down.
Warren County									
Tidioute to 3 E Tidioute	09	1830EST 1835EST	3	100	0	0	150K		Tornado (F1)
									A small tornado touched down on State Route 3005 just across the Allegheny River south of Tidioute. The storm tracked east paralleling the road for about three miles crossing Red House Hill Road near McKean Corners. Damage was mostly to trees with one home having a chimney damaged. A broad area of downburst damage associated with the storm extended south from Red House Hill Road all the way to the Pennsylvania border along Route 3005 (Kelly Hill Road). Hundreds of trees were down, power poles were snapped off, and many hunting and recreational cabins in the area had some structural damage due to falling trees. This was a low F1 event with winds probably best estimated on the order of 80 to 90 mph. In addition, trees were downed in many locations of Warren County.
Warren County									
Sheffield	09	1845EST			0	0	5K		Thunderstorm Wind
									Trees down.
Elk County									
Ridgway	09	1930EST			0	0	10K		Thunderstorm Wind
									Trees were down in Ridgway and other parts of the county.
Potter County									
3 S Bingham Center	09	1935EST			0	0	10K		Thunderstorm Wind
									Trees were down in Ulysses.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
PENNSYLVANIA, Central									
Tioga County									
West Field	09	1940EST			0	0	10K		Thunderstorm Wind
		Trees down.							
Cameron County									
Emporium	09	1945EST			0	0	20K		Thunderstorm Wind
		Trees were down in Emporium and other parts of the county.							
Clearfield County									
Penfield	09	1955EST			0	0	20K		Thunderstorm Wind
		Many trees down in Penfield and on Route 153 west of town.							
Cameron County									
Sinmahoning	09	2000EST			0	0	10K		Thunderstorm Wind
		Trees down and power out.							
Potter County									
5 W Carter Camp to Carter Camp	09	2000EST			0	0	5K		Thunderstorm Wind
		Trees were down on a state forest road 3 southwest of Cherry Springs or about 5 miles west of Carter Camp.							
Clearfield County									
2 NW Tyler to Tyler	09	2010EST			0	0	30K		Thunderstorm Wind
		A tree fell on a couple cars causing serious damage in the town of Hollywood about 2 miles northwest of Tyler.							
Elk County									
2 S Force	09	2010EST			0	0	5K		Thunderstorm Wind
		Trees down.							
Cambria County									
Emeigh	09	2015EST			0	0	15K		Thunderstorm Wind
		Tree fell on a car.							
Clearfield County									
Beccaria	09	2025EST			0	0	10K		Thunderstorm Wind
		Trees and power lines down.							
Clinton County									
Renovo	09	2030EST			0	0	15K		Thunderstorm Wind (G52)
		Trees down and winds G 60 mph.							
Blair County									
Tyrone	09	2039EST			0	0	15K		Thunderstorm Wind
		Trees down in Tyrone and Altoona.							
Centre County									
State College	09	2050EST			0	0	10K		Thunderstorm Wind (G52)
		Trees were down. A wind Gust to 60 mph was recorded at Penn State University.							
Tioga County									
Liberty	09	2050EST			0	0	25K		Thunderstorm Wind
		A tree was blown down on a car and a home.							
Centre County									
Madisonburg	09	2055EST			0	0	10K		Thunderstorm Wind
		Trees down.							
Huntingdon County									
Warriors Mark	09	2055EST			0	0	10K		Thunderstorm Wind
		Trees and power lines down.							
Lycoming County									
Jersey Shr	09	2100EST			0	0	15K		Thunderstorm Wind
		Trees down on Route 44 near Jersey Shore and Route 973 near Salladasburg.							
Huntingdon County									
Mc Alevys Fort	09	2103EST			0	0	10K		Thunderstorm Wind
		Trees down.							
Snyder County									
Middleburg	09	2105EST			0	0	10K		Thunderstorm Wind
		Trees down.							
Clinton County									
Loganton	09	2110EST			0	0	10K		Thunderstorm Wind
		Trees down.							
Mifflin County									
Burnham	09	2110EST			0	0	10K		Thunderstorm Wind
		Trees down.							
Sullivan County									
Dushore	09	2115EST			0	0	10K		Thunderstorm Wind
		Tree and power lines down.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
PENNSYLVANIA, Central									
Juniata County									
2 S Evandale	09	2130EST			0	0	10K		Thunderstorm Wind
									Trees were down in Monroe Township near Evandale and Kellerville.
Montour County									
Danville	09	2140EST			0	0	10K		Thunderstorm Wind
									Trees down.
Union County									
Mifflinburg	09	2145EST			0	0	10K		Thunderstorm Wind
									Several trees down.
Northumberland County									
Sunbury	09	2150EST			0	0	20K		Thunderstorm Wind
									Trees down in Sunbury, Northumberland and Herndon.
Perry County									
Liverpool	09	2150EST			0	0	15K		Thunderstorm Wind
									Tree down on route 235 involved in a auto accident.
Dauphin County									
Millersburg	09	2200EST			0	0	5K		Thunderstorm Wind
									Large limb down in the town square.
Bedford County									
Centerville	09	2235EST			0	0	5K		Thunderstorm Wind
									Tree down south of town.
Somerset County									
Sipesville	09	2245EST			0	0	5K		Thunderstorm Wind
									Tree down on Route 601.
Cambria County									
Johnstown	17	1500EST			0	0	10K		Thunderstorm Wind
									Trees and wires down.
Huntingdon County									
Huntingdon	17	1510EST			0	0			Hail (1.00)
Mifflin County									
Allensville	17	1530EST			0	0	5K		Thunderstorm Wind
									Trees down.
Tioga County									
Knoxville	17	1550EST			0	0	10K		Thunderstorm Wind
									Trees down in Knoxville and 1 inch hail fell in Westfield.
Potter County									
Austin	17	1615EST			0	0	10K		Thunderstorm Wind
									A dozen trees were down in Homer township near Austin.
Centre County									
Spring Mills	17	1630EST			0	0	10K		Thunderstorm Wind
									Trees were down and power out. Hail of 1 inch size was reported.
Lancaster County									
Mt Joy	18	2000EST			0	0	10K		Thunderstorm Wind
									Several trees were blown down.
Dauphin County									
Linglestown	22	1610EST			0	0	10K		Thunderstorm Wind
									Trees and wires down.
York County									
Lewisberry	22	1640EST			0	0	5K		Thunderstorm Wind
									Tree down.
Centre County									
State College	25	1522EST			0	0	10K		Thunderstorm Wind
									Trees were down in a couple locations.
Somerset County									
Somerset	28	1310EST			0	0	5K		Thunderstorm Wind
									Tree down in Somerset.
York County									
Hanover	28	1610EST			0	0	5K		Thunderstorm Wind
									A tree was blown down in Hanover.
Tioga County									
Mansfield	30	1320EST			0	0	5K		Hail (1.50)
									Ping Pong Ball size hail fell.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
PENNSYLVANIA, Central									
Lycoming County Montoursville	30	1441EST 1455EST			0	0			Hail (0.75)
Lycoming County Williamsport	30	1450EST			0	0			Hail (1.00)
Hail fell for about 15 minutes in the Williamsport area.									
Lycoming County Montgomery	30	1505EST			0	0			Hail (1.00)
Lycoming County Warrensville	30	1534EST			0	0			Hail (1.75)
Dauphin County Millersburg	30	1545EST			0	0			Hail (0.80)
Lycoming County Williamsport	30	1555EST			0	0			Hail (1.75)
Lycoming County Montgomery	30	1600EST			0	0			Hail (1.75)
Two separate thunderstorms formed over the Williamsport area and moved southeast across the mountain into Montgomery, dropping hail from a dime to the size of golf balls.									
Northumberland County									
Milton	30	1600EST			0	0			Hail (0.75)
Union County									
Allenwood	30	1600EST			0	0			Hail (0.80)
Snyder County									
Selinsgrove	30	1628EST			0	0			Hail (1.75)
Union County									
New Columbia	30	1630EST			0	0			Hail (1.75)
Northumberland County									
Dalmatia	30	1632EST			0	0	10K		Thunderstorm Wind
Trees and power lines down.									
Lycoming County									
2 E Jersey Shr	30	1645EST			0	0	500K		Hail (1.00)
Fruit and tobacco crops on farms in the Nipponose Valley East of Jersey Shore were devastated by hail. Seven orchards were heavily damaged, with an estimated 3/4 of the apple crop lost in what was to be an outstanding year. Tobacco farmers lost their entire crop, and corn was heavily damaged.									
Lycoming County									
Oval	30	1645EST			0	0			Hail (1.00)
Dauphin County									
Millersburg	30	1703EST			0	0	10K		Thunderstorm Wind
Trees down.									
Dauphin County									
Halifax	30	1733EST			0	0	10K		Thunderstorm Wind
Trees down.									
Juniata County									
Mc Alisterville	30	1750EST			0	0	5K		Thunderstorm Wind
Trees down on Route 2017.									
Perry County									
Newport	30	1800EST			0	0			Hail (1.75)
Golf ball size hail.									
Perry County									
Duncannon	30	1810EST			0	0	10K		Thunderstorm Wind
Trees and wires down.									
York County									
York	30	1835EST			0	0	30K		Thunderstorm Wind
A roof was blown off a home on Gay Street. .									
Cumberland County									
Carlisle	30	1840EST			0	0	15K		Thunderstorm Wind
A tree fell onto a house.									
York County									
Seven Vlys	30	1850EST			0	0			Hail (2.50)
Hail the size of peaches fell in Seven Valleys, Jacobus, Glen Rock and Shrewsbury.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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PENNSYLVANIA, Central

Somerset County									
5 NW Salisbury	31	1535EST			0	0			Hail (1.75)
Golf ball size hail fell on Mt Davis about 5 miles northwest of Salisbury.									
Cambria County									
Patton	31	1635EST			0	0	5K		Thunderstorm Wind
Wires down.									
Blair County									
Bellwood	31	1722EST			0	0	5K		Thunderstorm Wind
Trees down.									
Warren County									
Columbus	31	1730EST			0	0	10K		Thunderstorm Wind
Trees down.									
Warren County									
Russell	31	1755EST			0	0	10K		Thunderstorm Wind
Trees down.									
Warren County									
Youngville	31	1755EST			0	0	10K		Thunderstorm Wind
Trees down.									
Mckean County									
Bradford	31	1835EST			0	0	5K		Thunderstorm Wind
Power Lines down.									
Elk County									
Wilcox	31	1852EST			0	0	5K		Thunderstorm Wind
Power lines down.									
Elk County									
James City	31	1900EST			0	0	5K		Thunderstorm Wind
Trees down.									
Elk County									
St Marys	31	1915EST			0	0	10K		Thunderstorm Wind
Trees down.									
Clearfield County									
3 NE Du Bois	31	1955EST			0	0	10K		Thunderstorm Wind
Trees and wires were down at Treasure Lake 3 miles northeast of Dubois.									

PAZ056>057-059-063>066

05 1930EST 2 0 Excessive Heat
 A Perry County elderly and her daughter were found dead in their Oliver Township home near Newport. The women both had pre-existing medical conditions and their deaths were listed as natural, with the heat a contributing factor. Temperatures exceeded 100 degrees for the three days from the 4th through the 6th. Electrical service was strained, and the Harrisburg division of Pennsylvania Power and Light set an all time record for usage. The heat also took a toll on poultry farms. Heat affected egg production, and also increased mortality with hundreds of chickens dying each day the temperature was above 100 degrees.
 F80PH, F54PH

Tioga County									
Mansfield	30	1425EST			0	0			Hail (1.00)

PENNSYLVANIA, East

PAZ054>055-060>062-067>071 Carbon - Monroe - Berks - Lehigh - Northampton - Chester - Montgomery - Bucks - Delaware - Philadelphia

01 0000EST 0 0 Drought
31 2359EST

The drought intensified throughout July across eastern Pennsylvania. For the fourth consecutive month, below normal precipitation continued. On a county weighted average for July, between 0.3 inches (in Lehigh County) and 2.0 inches (in Delaware County) fell. Less than one inch of rain fell across the Lehigh Valley, Berks County and Philadelphia's northwest suburbs. It was the driest July on record at the Lehigh Valley International Airport and one of the ten driest Julys on record at the Philadelphia International Airport. The July monthly normal rainfall is around 4.5 inches.

The effects of the drought increased as the month wore on. The unseasonably hot July 4th weekend did not help. In the first third of the month fire marshals already banned open fires in Chester and Northampton Counties. A brush fire in Upper Uwchlan Township (Chester County) spread from two to 40 acres in 40 minutes. Brush fires have doubled in the Lehigh Valley since early June. In the second third of the month additional burning bans were implemented by more townships in Berks, Chester, Montgomery, Northampton, Carbon and Monroe Counties. In the Poconos the availability of water from ponds and streams for firefighters in areas not served by hydrants was becoming a problem. Hay bales were spontaneously combusting in Chester County. A car fire on the eastbound lanes of Interstate 78 in Lower Saucon Township (Northampton County) spread to nearby brush and forced the closure of the eastbound lanes on the interstate. During the last third of the month outdoor burning bans were implemented by numerous other municipalities. By the end of July, 18 of the 20 townships in Monroe County had imposed burning bans. On July 22nd the heads of the Pennsylvania Game

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

PENNSYLVANIA, East

Commission and the State Department of Conservation and Natural Resources declared bans on all open fires in the 3.5 million acres of state forests and gamelands.

Streamflow and groundwater levels which started the month at or near record low levels continued to fall lower. This left municipalities which rely on smaller reservoirs or groundwater to ask for voluntary cutbacks on water usage. Some though were in worse shape. In Bucks County, water emergencies were declared in Buckingham, Warrington and Upper Makefield Townships. Mandatory restrictions were implemented. Residents could not water lawns, wash cars or fill swimming pools. Later in the month, Buckingham Township went as far as surcharging homes that use more than 225 gallons a day. Upstream reservoir releases were started to maintain streamflow along the Delaware River and Brandywine Creeks. This would be a "normal" procedure during the autumn of a dry summer. Conditions worsened during the second third of the month. The Jordan Creek in South Whitehall Township (Lehigh County) stopped flowing. The Reading Water Authority and the Citizens Utilities Water Company (both Berks County) declared drought emergencies by the 19th and banned all non-essential water use. On the 20th Coatesville (Chester County) started emergency pumping of the West Branch of the Brandywine and the Octoraro Creeks because of low reservoir levels. One third of all of Chester County's wells are at historic lows.

With no end in sight on July 21st Governor Tom Ridge signed a proclamation declaring a drought emergency throughout most of Pennsylvania. The Susquehanna River Basin Commission also declared a drought emergency. The drought emergency banned all non-essential water usage including watering lawns, washing cars with a hose, washing of sidewalks and driveways, serving of water in restaurants unless requested, filling of residential swimming pools, watering fairways and all indoor/outdoor water fountains. The drought emergency allows state and local agencies to hire, purchase and contract water companies without the usual bid requirements. The declaration allows communities to implement mandatory water conservation measures, local drought emergency plans and enforce water conservation methods. The emergency allows water suppliers, with Department of Environmental Protection approval to implement local water-rationing plans in the event conditions get worse. Resources may also be marshalled to respond to actual emergency conditions to avoid depletion of water supply, ensure health and safety and to support essential and high priority water use. At the time of the drought emergency declaration, 21 of the state's 50 monitoring wells were at emergency levels. Along the Delaware River, the unusually low flow pushed the salt front farther north than normal. Nevertheless, with no significant rainfall in sight and to save precious water, the Delaware River Commission reduced its target flow at Trenton from 3,000 to 2,700 cubic feet per second. This forced industries below (south) of the Philadelphia International Airport that use river water for processing to turn to alternative water sources to avoid corrosion. This also forced expensive purification efforts for municipalities south of the airport that rely on the river for drinking water. As the month ended, drought conditions intensified further. Record low streamflows were recorded at a number of creeks including the Marsh Creek at Glenmoore (Chester County), Brandywine Creek at Chadds Ford (Delaware County), Neshaminy Creek at Langhorne (Bucks County), Wissahickon Creek at Philadelphia and the Ridley Creek at Media (Delaware County). The creeks were all flowing at only 10 percent of normal streamflow. Emergency well drilling permits increased as wells were running dry. In Montgomery County alone 93 emergency permits were issued for 22 of the county's municipalities to either dig new or deepen existing wells. The low streamflow and groundwater levels also led to water quality problems. Algae blooms, brown water and higher concentrations of pollution were common. The city of Philadelphia had to use taste improving chemicals on the water it withdrew from the Schuylkill River because of green algae.

The drought coincided with the growing season. The April 1st through July 31st four month period was the fourteenth driest on record over the past 105 years in the state of Pennsylvania. Farmers in the state were feeling a double pinch. Irrigation, if possible, was driving up the costs of farming. Meanwhile, ideal growing conditions elsewhere in the country kept crop prices low. Irrigation was occurring everywhere if possible. Irrigation ponds and wells were drying out. Adjectives such as total devastation, desperately thirsting for water, total crop failure were used to describe conditions. It was estimated that the corn crop loss in the state could reach 100 million dollars. In Berks County, farmers pegged losses of corn, soybean and hay crops between 75 and 100 percent. In Bucks County, farmers were expecting a 75 to 87 percent reduction in their normal corn crop. In the Lehigh Valley, the second alfalfa cutting was expected to be 25 percent of normal, the soybean crop one third of normal and the corn crop half of normal. Supplemental feeding, some that is normally saved for the winter, was occurring throughout Eastern Pennsylvania. Some farmers went as far as to sell steers. The hot weather also cut back milk production by about 20 percent. Throughout the state 91 percent of the soil moisture was rated as either short or very short. Sixty-four percent of the corn crop and 89 percent of the pastures were rated as either poor or very poor.

The drought also affected the quality of life in other ways. Sprinkler caps were removed within the city of Philadelphia to conserve water during one of the hottest Julys on record. There was a large drop in sales of trees, shrubs and plants from nurseries and garden centers. At the same time their costs were increasing because of needed irrigation. Landscapers had fewer lawns to mow. Pond plants were dying and companies that specialize in building backyard ponds were hurting. Low water levels made it impossible, difficult and dangerous to use waterways and boating access points for fishing and boating. Amusement parks cut back on their water usage and Longwood Gardens (Chester County) curtailed their daily fountain displays. Fish were dying because of low streamflows. The amount of pollution increases, lower water levels led to higher stream temperatures, less dissolved oxygen and more algae.

PAZ054>055-060>062-067>071 **Carbon - Monroe - Berks - Lehigh - Northampton - Chester - Montgomery - Bucks - Delaware - Philadelphia**

04 0800EST 74 135 Excessive Heat
06 2000EST

A very strong and oppressive high pressure system that extended from the surface to aloft gave Eastern Pennsylvania a brutal heat wave that included the entire Independence Day weekend. There were 74 heat related deaths and over 100 reported heat related injuries. High temperatures reached the 90s for the first time on the 3rd, but sweltering humidity and record breaking maximum temperatures of around 100 degrees occurred from Independence Day through the 6th. The combination of the temperature and humidity produced heat indices of around 110 degrees during the afternoon of each day. A cold front moved through the region early in the morning on the 7th.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

PENNSYLVANIA, East

While high temperatures continued to reach the 90s on the 8th and 9th in the southern half of the state, humidity levels were lower. A stronger cold front moved through during the morning and early afternoon of the 10th and brought in a cooler and drier air mass. The run of 90 degree highs ended everywhere on the 10th.

The heat related deaths occurred in Philadelphia (58), Delaware (7), Chester (4), Bucks (2), Montgomery (1), Northampton (1) and Lehigh (1) Counties. Most of the deaths occurred under similar circumstances. They were elderly people with underlying health problems. Most had no air conditioning and were found in houses or apartments with little or no adequate ventilation. Room temperatures in many cases were over 90 degrees. Four of the Delaware County heat related deaths were persons who were taking anti-psychotic medication. This medication automatically raises body temperatures and make them more susceptible to the heat. Two persons (Chester and Philadelphia Counties) died in vehicles. A 49-year-old Philadelphia man died in an office supply building. A 30-year-old migrant worker died in Delaware County after spending the day picking cucumbers in Swedesboro, New Jersey. A 79-year-old Slatington (Northampton County) woman died after tending her flower garden for three hours in the afternoon of the 5th. Over 100 persons suffered heat related illnesses. In an effort to help the elderly, many of the counties declared Code Reds, had Aging Services open hotlines and distributed fans. In Lehigh County five heat relief sites were opened for the elderly. The Philadelphia Heat Line was swamped with over 700 calls. The city also gave water bottles and rides to shelters to homeless people. Over 100 persons were treated for heat related illnesses. Philadelphia's hospitals called the emergency room visits a steady stream with a surprising number of younger people seeking help. On the 6th around Philadelphia students were dismissed early from summer school classes.

The excessive heat led to the drowning of two men trying to beat the heat. A 22-year-old Catasaqua (Lehigh County) man drowned while swimming in the Lehigh River on the 6th. A 30-year-old man drowned on Independence Day while trying to swim across the Delaware River near Depue Island (Monroe County) in the Delaware Water Gap National Recreational Area. The heat also caused buckling of major roadways around Philadelphia. The Pennsylvania Department of Transportation (PENNDOT) reported 15 roadways buckled, several had to be closed. The worst buckling occurred on both sides of Interstate 95 on successive days near Street Road in Bucks County. Other major roadway bucklings affected the Schuylkill Expressway (Montgomery County) near U.S. Route 202, the Pennsylvania Turnpike in Montgomery County, U.S. Route 1 and the U.S. Route 30 Bypass in Chester County and Pennsylvania State Route 309 in Montgomery County. The heat dropped milk production on area farms. For the whole month of July production was down 20 percent. Thousands of chickens died in Berks County. In Carbon County, trout died in Lizard Creek as the creek temperature hit 80 degrees for the first time ever.

The record heat led to record demand for electricity. Many utilities broke records. The strain led to outages to 12,000 PECO customers in Chester, Delaware and Philadelphia Counties; half were in Chester County. Area wide, the PJM reduced voltage by 5 percent at 2 p.m. EDT on the 6th to deal with the huge demand that was straining the electrical system. PECO Energy, GPU Energy and Pennsylvania Power and Light (PPL) curtailed electrical delivery to about 80 large industrial customers. GPU Energy (10,063 megawatts) and PECO Energy (7,800 megawatts), and the whole The PJM Interconnection, a power pool that links electric utilities throughout the area churned out a record 52,000 megawatt hours of power on the 6th. The PECO peak usage was 35 percent above July 1998's average. Water usage also set an all-time record for the Philadelphia Suburban Company on the 5th. Usage averaged an extra 37 gallons per person.

The highest temperatures during this hot spell occurred mainly on the 5th. They included 104 degrees at the Franklin Institute within Philadelphia, 102 degrees in Crum Creek (Delaware County), 101 degrees in Hamburg (Berks County), Neshaminy Falls (Bucks County) and the Northeast Philadelphia Airport, 100 degrees at the Philadelphia International Airport, the Lehigh Valley International Airport, East Stroudsburg (Monroe County), Easton (Northampton County), Reading (Berks County), Pottstown (Montgomery County), Valley Forge (Chester County) and Doylestown (Bucks County), 99 degrees in Perkasie (Bucks County), 96 degrees in Avoca (Luzerne County) and West Chester (Chester County), 93 degrees in Tobyhanna (Monroe County) and 92 degrees at the F. E. Walter Dam (Carbon County). Many daily record high temperature records were either tied or set on the 5th and the 6th. The high temperature of 100 degrees at Philadelphia International Airport on the 5th was the first time the temperature reached 100 degrees at the airport since July 15, 1995.

F79PH, M75PH, M55PH, F69MH, M56VE, M56PH, M30OU, M62PH, M61PH, F88PH, M46PH, M68PH, M91PH, F84PH, F87PH, F79OU, F85PH, M60PH, M75PH, F77PH, F79PH, F87PH, M49PH, F91PH, M54PH, M72PH, M72PH, F44OU, F87PH, M69PH, F71PH, M59VE, F60PH, M86PH, M40PH, F75PH, M69PH, F74PH, F92PH, M73PH, F63PH, M69PH, F88PH, F85PH, F70PH, M71PH, M78PH, F49PH, M66PH, M83PH, M68PH, M52PH, F77PH, M64PH, M77PH, M57PH, F75PH, M73PH, F87PH, F80PH, M69PH, M82PH, M62PH, F73PH, M55PH, M60PH, M63PH, F77PH, F93PH, F80PH, F62PH, M65PH, M80PH, M81PH

PAZ054-054>055-055-060>062-067>071

Carbon - Monroe - Berks - Lehigh - Northampton - Chester - Montgomery - Bucks - Delaware - Philadelphia

16 0900EST 0 0 Excessive Heat
19 2000EST

Another strong and oppressive ridge of high pressure gave the Poconos three days and the rest of Eastern Pennsylvania four days of oppressive heat and humidity and five consecutive days with high temperatures in the 90s. High temperatures reached into the 90s again on the 15th after several days of unseasonably cool weather. The air mass initially was relatively dry. Southwest winds continued to increase humidity levels. The combination of the temperature and humidity produced heat indices of around 100 degrees during the afternoon of the 16th and around 105 degrees during each afternoon from the 17th through the 19th. The hottest part of this air mass passed over northern parts of the Middle Atlantic States. Thus some of the highest temperatures occurred well north of the Pennsylvania/Maryland border. This hot spell produced higher temperatures in the Poconos than the hot spell over the Independence Day Holiday Weekend. A weak backdoor cold front moved south through the region during the evening of the 19th. While the air mass was not considerably drier on the 20th, skies were cloudy as the front stalled near the area. Drier air worked its way north to

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

PENNSYLVANIA, East

south across the area during the afternoon and evening of the 20th. As a high pressure system built into New England on the 21st, dry air briefly covered the area.

Once again health officials issued Code Reds, opened up hotlines and tried to assist the elderly the best they could. No heat related deaths were reported. The excessive heat and the lack of rain continued to decimate non-irrigated farms across the state. Milk production was also affected and statewide was down about 20 percent for the month of July. The high temperatures again put a strain on electrical utilities. For the second time this month, on Monday July 19th the PJM Interconnection Association called for a 5 percent reduction in voltage from 115 p.m. EDT through 210 p.m. EDT. PECO Energy requested large industrial users to conserve electricity. PECO Energy reported the second highest energy usage on record on the 19th. On July 17th, the 6,856 megawatts of power set a new weekend record for PECO.

The highest temperatures during this hot spell were scattered from the 17th through the 19th. They included 100 degrees in East Stroudsburg (Monroe County), Easton (Northampton County), Hamburg (Berks County), New Hope (Bucks County), Perkasio (Bucks County), Reading (Berks County) and Valley Forge (Chester County), 99 degrees at the Lehigh Valley International Airport, Pottstown (Montgomery County), the Franklin Institute within Philadelphia and Doylestown and Sellersville in Bucks County, 98 degrees at the Philadelphia International Airport and the Northeast Philadelphia Airport, 97 degrees at the Willow Grove NAS (Montgomery County) and Hopewell Village (Berks County), 96 degrees in Avoca (Luzerne County), 95 at the F.E. Walter Dam (Carbon County) and 93 degrees in Long Pond (Monroe County). Due to higher historical daily maximum temperature records, fewer daily high temperature records were set. But, the high of 99 degrees at the Lehigh Valley International Airport set a new daily record high for the 17th.

Chester County

3 SE West Chester

19 1730EST 0 0 Hail (1.00)

Chester County

3 SE West Chester

19 1730EST 0 0 Thunderstorm Wind (G50)

A severe thunderstorm knocked down several trees in southeastern Chester County in Westtown Township and Devon. Quarter size hail was also reported in Westtown Township around Pennsylvania State Route 926. PECO Energy reported about 33,000 homes and businesses lost power because of the severe thunderstorms in southeast Pennsylvania. Most of the outages were in neighboring Delaware County.

Delaware County

Countywide

19 1736EST 0 0 Thunderstorm Wind (G50)
1748EST

A severe thunderstorm knocked numerous wires throughout Delaware County. PECO Energy reported about 33,000 homes and businesses lost power because of the severe thunderstorms in southeast Pennsylvania. Most of the outages were in Delaware County.

Montgomery County

Gladwyne

19 1745EST 0 0 0 Thunderstorm Wind

A severe thunderstorm knocked down several trees in Lower Merion Township. PECO Energy reported about 33,000 homes and businesses lost power because of the severe thunderstorms in southeast Pennsylvania. Most of the outages were in neighboring Delaware County.

PAZ060>062-067>071

Berks - Lehigh - Northampton - Chester - Montgomery - Bucks - Delaware - Philadelphia

23 0900EST 4 0 Excessive Heat
31 2359EST

A protracted run of days with consecutive high temperatures of 90 degrees or higher began on July 23rd in Southeast Pennsylvania. It lasted as long as 16 days near the Maryland border through August 7th. Dispersed within this run were two periods of both excessive heat and humidity: from July 23rd through July 25th and again from July 29th through August 1st. There were nine heat related deaths during this hot spell, four in July and five in early August. A cold front moved through the area on the 25th and brought in drier air. High temperatures still reached into the 90s from the 26th through the 28th. The humidity and higher temperatures returned on the 29th. A strong cold front moved through the region the afternoon and evening of August 1st. This brought in considerably drier air, the driest air since mid-July. Because of the extremely dry ground conditions, high temperatures kept on reaching around 90 degrees through the 7th. That day a stronger cold front brought in a cooler air mass from Canada into the northeastern United States. The string of 12 consecutive days with high temperatures of 90 degrees or higher at Philadelphia International Airport was the longest since the summer of 1995.

There were nine heat related deaths during this run of oppressive weather, four occurred in July, five in August. One death occurred in Delaware County and the other three were in Philadelphia. In Delaware County a 59-year-old male was discovered dead in his house on the 24th. All the windows in the house were shut and there was no air conditioning. Similar circumstances occurred with the three heat related deaths within Philadelphia. The continued excessive heat and lack of rain parched non-irrigated farms across the state.

For most places the highest temperatures during this hot spell occurred on the 28th and 31st. They included 102 degrees in Valley Forge (Chester County), 101 degrees in Hamburg (Berks County), Sellersville (Bucks County), and Easton (Northampton County), 100 degrees in Pottstown (Montgomery County), Reading (Berks County) and in the Franklin Institute within Philadelphia, 99 degrees at the Philadelphia and Lehigh Valley International Airports, Bath (Northampton County) and Morgantown (Berks County), 98 degrees at the Northeast Philadelphia Airport and Doylestown (Bucks County), 97 degrees at the Willow Grove NAS (Montgomery County) and East Stroudsburg (Monroe County) and 96 degrees in West Chester (Chester County). The Poconos offered some relief from the heat as high temperatures occasionally failed to reach 90 degrees during this 16 day period, especially in the higher terrain. New daily record high temperature records were set on the 24th at the Lehigh Valley International Airport (95 degrees) and the Philadelphia International Airport (96 degrees) on the 26th.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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PENNSYLVANIA, East

M59PH, M90PH, M56PH, M67PH

Monroe County Pocono Lake

28 1845EST 0 0 0 Thunderstorm Wind

A severe thunderstorm knocked down trees and power lines in Pocono Lake. Lightning also struck and slightly damaged one home.

Carbon County Albrightsville

28 2040EST 0 0 0 Thunderstorm Wind

A severe thunderstorm pulled down power lines and caused outages in the northeast part of Carbon County.

PAZ054>055-060>062-067>071

Carbon - Monroe - Berks - Lehigh - Northampton - Chester - Montgomery - Bucks - Delaware - Philadelphia

31 2359EST 0 0 Unseasonably Warm And Dry

July 1999 continued the trend of extremely warm and dry weather across Eastern Pennsylvania. July 1999 was the third warmest July on record at both the Lehigh Valley International Airport (mean temperature of 78.0 degrees) and Reading (mean temperature of 79.0 degrees). July 1999 was also the fifth warmest July on record at the Philadelphia International Airport with a monthly mean temperature of 81.1 degrees. The warmth was not confined to urban areas. For the state of Pennsylvania as a whole, July 1999 was the 11th warmest July on record dating back to 1895. July 1999 was also extremely dry. Rainfall totals on a county weighted average for the month ranged from 0.3 inches in Lehigh County to 2.0 inches in Delaware County. Less than an inch of rain fell across the Lehigh Valley, Berks County and the northwestern Philadelphia suburbs. The July monthly normal rainfall is around 4.5 inches. It was the driest July on record at both Reading (0.31 inches) and the Lehigh Valley International Airport (0.33 inches). It was also the 8th driest July on record at the Philadelphia International Airport as only 1.22 inches fell.

PENNSYLVANIA, Northeast

Bradford County 5 W Overton to 3 N Overton

01 1855EST 2.7 150 0 0 5K Tornado (F0)
1910EST

An upper level atmospheric disturbance moved out of the Ohio Valley and produced scattered lines of thunderstorms from western New York into Pennsylvania during the evening. A severe thunderstorm developed on the southern edge of one of these lines of showers that was moving through north central Pennsylvania. This storm began rotating shortly after it developed north of Williamsport and dropped a tornado over northeast Lycoming county. The tornado then tracked northeast through Sullivan and into Bradford county shortly before 8 pm EDT. This weak tornado uprooted several dozen large trees and some powerlines in Overton Township as it moved over the ridgetops. Trees blocked county roads for several hours stranding some neighborhoods until the following morning. On Cahill Road, trees smashed into an unoccupied summer cabin, causing minor damage to the roof and a back porch.

Bradford County Sayre to East Athens

06 1822EST 0 0 Thunderstorm Wind (G50)
1830EST

Strong thunderstorm winds blew down some trees and a few powerlines

Susquehanna County Countywide

06 1845EST 0 0 Thunderstorm Wind (G50)
1920EST

Numerous trees were blown down throughout the county.

Wayne County Damascus

06 1950EST 0 0 Thunderstorm Wind (G50)

Strong thunderstorm winds toppled several trees in town.

An upper level disturbance moving across northern New York in combination with an approaching cold front and a very moist unstable airmass in place across Northeast Pennsylvania, produced clusters and lines of thunderstorms during the afternoon of the 6th. The thunderstorms first developed over central New York earlier in the day, moving into the Northern Tier counties by early evening. Trees were toppled and the power was knocked out in some places.

Bradford County Countywide

09 2037EST 0 0 Thunderstorm Wind (G50)

Trees downed.

Luzerne County Harveys Lake

09 2155EST 0 0 Thunderstorm Wind (G50)

Large limbs were knocked down by the wind.

Susquehanna County New Milford

09 2215EST 0 0 Thunderstorm Wind (G50)

Several trees blown down.

Lackawanna County Newton to Taylor

09 2217EST 0 0 10K Thunderstorm Wind
2235EST

Scattered trees and a few wires blown down.

Wayne County Lake Ariel to Hamlin

09 2255EST 0 0 Thunderstorm Wind (G50)

Trees downed.

Pike County Dingmans Ferry

09 2300EST 0 0 10K Thunderstorm Wind

Several trees and powerlines blown down.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

PENNSYLVANIA, Northeast

A squall line with embedded bow echoes developed along a cold front approaching from the northwest. The line of severe thunderstorms maintained its intensity as it raced out ahead of the front moving across much of Northeast Pennsylvania during the evening hours. The strong thunderstorm winds uprooted trees and caused power outages.

Wayne County

Equinunk to Damascus	17	1800EST 1815EST			0	0			Thunderstorm Wind (G50)
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Scattered thunderstorms, triggered by an upper level disturbance crossing the region, uprooted numerous trees over much of Wayne county, but particularly the northeast portion where most of the damage was observed between Equinunk and Damascus.

Susquehanna County

Clifford	18	1620EST			0	0	5K		Thunderstorm Wind (G50)
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Trees and a few wires blown down by thunderstorm gusts.

Lackawanna County

5 W Carbondale	18	1650EST			0	0	15K		Thunderstorm Wind
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Wind damage to buildings created losses to a computer system and pump machinery at the Greenfield sewer treatment plant.

Susquehanna County

Dimock to Brooklyn	24	1457EST 1504EST			0	0			Thunderstorm Wind (G50)
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Trees downed

PENNSYLVANIA, Northwest

PAZ001>003

Northern Erie - Southern Erie - Crawford

01	0000EST			0	0			Excessive Heat
31	2359EST							

Temperatures across northwest Pennsylvania were much above normal with high temperatures in the 90s several days. Erie set a record high of 98 degrees on the 31st. This temperatures was only 2 degrees away from the all time record high in Erie of 100 degrees. The average monthly temperature in Erie was 75.7 degrees and was the 3rd warmest July on record.

PAZ001>003

Northern Erie - Southern Erie - Crawford

01	0000EST			0	0			Drought
31	2359EST							

Drought conditions across northwest Pennsylvania eased as thunderstorm rain became more widespread. None the less, very dry soil conditions persisted in a few areas that missed the brunt of the thunderstorm activity. Crop yields will likely be reduced because of the lack of adequate rainfall. Losses due to the drought were unknown.

Crawford County

Springboro	03	1442EST			0	0	5K		Hail (0.75)
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Crawford County

Springboro	03	1458EST			0	0	10K		Hail (1.00)
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Erie County

Erie Intl Arpt	03	1615EST			0	0			Hail (0.75)
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Erie County

Erie Intl Arpt	03	1617EST			0	0			Thunderstorm Wind (G53)
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A 61 mph wind gust was measured at Erie International Airport.

Erie County

Erie	03	1620EST			0	0	5K		Hail (0.75)
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Crawford County

Countywide	06	1540EST 1610EST			0	0	25K		Thunderstorm Wind
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Many trees and power lines downed in the Meadville and Titusville areas.

Erie County

Countywide	09	1700EST 1800EST			0	0	120K		Thunderstorm Wind
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Estimated winds of 60 to 70 mph knocked down trees and power lines throughout the county. A large tree fell on a house in Waterford seriously damaging the roof and an upstairs bedroom. Many trees were downed in Cranesville.

Crawford County

Countywide	09	1705EST 1800EST			0	0	1.4M		Thunderstorm Wind
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A damaging line of severe thunderstorms packing estimated winds of 60 to 85 mph moved across the county knocking down as many as 1000 trees. The majority of the damage occurred along a path from near Linesville to Harmonsburg to Meadville. Approximately one half of the county lost power. A total of 41 homes were damaged in Harmonsburg with 18 homes damaged in Linesville and an additional 3 homes damaged in Pinesville Township. The roof of a factory in Linesville was also blown off. Many cars were damaged by fallen trees.

Crawford County

Meadville	17	1756EST			0	0	5K		Thunderstorm Wind (G53)
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A 61 mph wind gust was measured in Meadville. Large limbs were downed near Linesville and Saegertown.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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PENNSYLVANIA, Northwest

Crawford County

Countywide	28	2335EST 2350EST			0	0	35K		Thunderstorm Wind
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Many trees downed across the southern half of the county. Three power poles were snapped east of Linesville and a house in Conneaut Lake was damaged by a fallen tree.

Erie County

Countywide	31	1630EST 1700EST			0	0	60K		Thunderstorm Wind
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Trees and powers lines downed across the county. The city of Erie and surrounding areas were especially hard hit with several dozen trees downed. A van was crushed by a fallen tree on the west side of Erie and several homes nearby sustained minor damage from fallen trees.

Erie County

Erie Intl Arpt	31	1639EST			0	0			Thunderstorm Wind (G53)
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A 61 mph wind gust was measured at Erie International Airport.

Crawford County

Saegertown	31	1748EST			0	0	10K		Thunderstorm Wind
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Many trees downed.

PENNSYLVANIA, West

Butler County

Bruin	01	2100EST			0	0	5K		Thunderstorm Wind
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Thunderstorm winds downed numerous large trees.

Forest County

13 NE Tionesta	06	1700EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds downed several trees.

Allegheny County

Monroeville	06	1830EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds downed several trees in the Monroeville area.

Westmoreland County

Greensburg	06	1850EST			0	0	5K		Thunderstorm Wind
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Thunderstorm winds downed numerous trees in the Greensburg area.

Westmoreland County

Derry	06	1915EST			0	0	10K		Thunderstorm Wind
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Thunderstorm winds damaged a ferris wheel and several booths at a fair.

Washington County

1 S Burgettstown	09	1722EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds downed several large trees and power lines.

Allegheny County

Baldwin	09	1745EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds downed several trees.

Mercer County

1 N Mercer	09	1820EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds estimated to 60 MPH by spotters downed several trees just north of the Mercer area.

Mercer County

Kennard	09	1825EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds downed several trees.

Venango County

Pleasantville	09	1825EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds downed several trees.

Venango County

Franklin	09	1830EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds downed several trees.

Lawrence County

New Castle	09	1835EST			0	0	3K		Thunderstorm Wind
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Thunderstorm winds downed several trees and power lines.

Beaver County

Countywide	09	1855EST 1920EST			0	0	100K		Thunderstorm Wind (G60)
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Thunderstorm winds downed numerous trees across Beaver county as a line of storms moved from northwest to southeast across the county. Among the areas that reported damage were Darlington Borough, Beaver Falls, New Brighton, Rochester and Baden. The city of Beaver was perhaps the hardest hit area, with numerous trees blown down by winds estimated at over 60 MPH. One tree fell onto a parked station wagon, crushing it. Despite the widespread damage, no injuries were reported.

Forest County

Marienville	09	1900EST			0	0	2K		Thunderstorm Wind
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Thunderstorm winds down a few trees across SR 66.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
PENNSYLVANIA, West									
Butler County									
Slippery Rock	09	1905EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Lawrence County									
New Wilmington	09	1905EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Butler County									
Zelienople	09	1912EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Clarion County									
Clarion	09	1915EST			0	0	2K		Thunderstorm Wind
			A few trees were uprooted by thunderstorm winds.						
Mercer County									
Leesburg	09	1915EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Allegheny County									
Countywide	09	1920EST 2030EST			0	0	50K		Thunderstorm Wind (G60)
			Thunderstorm winds estimated at over 60 MPH by spotters downed numerous trees and power lines across Allegheny County.						
Butler County									
4 W Mars	09	1920EST			0	0	15K		Thunderstorm Wind
			Thunderstorm winds blew a large tree down onto SR 19 and blew the roof from a video store.						
Butler County									
Ekastown	09	1935EST			0	0	1K		Thunderstorm Wind
			Thunderstorm winds downed a large tree.						
Jefferson County									
Desire	09	1940EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Armstrong County									
Parker City	09	1945EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several large trees.						
Jefferson County									
Punxsutawney	09	1951EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several large trees.						
Washington County									
Atlasburg	09	2000EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Westmoreland County									
New Kensington	09	2000EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Indiana County									
Clymer	09	2030EST			0	1	3K		Thunderstorm Wind (G53)
			A thunderstorm wind gust estimated at 60 MPH by a spotter downed several trees. Lightning from this storm also injured one person in Clymer.						
			Severe thunderstorms formed ahead of a cold front which moved through western Pennsylvania during the evening of the 9th. Although damage was reported in 12 western Pennsylvania counties, the worst damage occurred in Beaver and Allegheny counties where strong straight-line winds downed numerous trees and left over 26,000 people without power. It took local utility companies over 48 hours to respond to all of the outages. In addition, nearly 500 storm-related calls were logged in the Beaver County Emergency Services Center on the evening of the 9th.						
Venango County									
Pleasantville	17	2025EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Mercer County									
Sharon	28	0909EST			0	0			Thunderstorm Wind (G61)
			A spotter estimated thunderstorm winds to 70 MPH.						
Lawrence County									
Countywide	28	0910EST 0920EST			0	0	25K		Thunderstorm Wind
			Thunderstorm winds downed numerous trees and power lines across the county, producing widespread power outages.						
Mercer County									
Mercer	28	0930EST			0	0	3K		Thunderstorm Wind
			Thunderstorm winds downed several trees.						
Lawrence County									
New Castle	28	0938EST			0	0			Hail (0.88)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
PENNSYLVANIA, West									
Lawrence County									
Countywide	28	1010EST			0	0	250K		Flash Flood
	Thunderstorms moving across the county dumped over 3 inches of rainfall, producing widespread flash flooding across the county. Numerous reports of basement flooding were reported. In New Castle, the water roared down one street with such force it lifted the blacktop off of the road. Many motorists were trapped inside their vehicles in flooded intersections, with one vanload of children trapped on a New Castle street. Despite the widespread flooding, no injuries were reported.								
Butler County									
Evans City	28	1020EST			0	0	2K		Thunderstorm Wind
	Thunderstorm winds downed a few trees.								
Beaver County									
Beaver Falls	28	1022EST			0	0			Hail (1.00)
Mercer County									
South Portion	28	1030EST 1200EST			0	0	20K		Flash Flood
	Thunderstorms moving across southern portions of the county deposited up to 3.7 inches of rainfall, producing roadway and localized basement flooding in the cities of Sharon and Mercer.								
Allegheny County									
Sewickley	28	1100EST			0	0			Hail (1.00)
Allegheny County									
Countywide	28	1115EST 1135EST			0	0	50K		Thunderstorm Wind
	Thunderstorm winds downed numerous trees and power lines countywide. A wind gust to 66 MPH was recorded at the Carnegie Science Center in downtown Pittsburgh. Power was knocked out to 110,000 customers across the county, while another 196,000 households and businesses were left without water for several hours.								
Beaver County									
Countywide	28	1120EST 1130EST			0	0	50K		Thunderstorm Wind
	Thunderstorm winds produced widespread damage across the county, downing numerous trees and power lines. One car was crushed by a large tree in Midland. One beef cattle in Daugherty Township was electrocuted when a wire fell on it. Several other reports of minor damage to siding and roofs were received by the area 911.								
Jefferson County									
Brookville	28	1120EST			0	0	3K		Thunderstorm Wind
	Thunderstorm winds downed several trees and power lines.								
Allegheny County									
Countywide	28	1130EST 1400EST			0	0	1M		Flash Flood
	Thunderstorms passing over the region produced between 3.0 to around 4.5 inches of rain across the county, with the South Hills area of Pittsburgh one of the hardest-hit areas. Numerous roads across the area were flooded, with five towns (Brentwood, Castle Shannon, Mt. Lebanon, Dormont and West Elizabeth) declaring states of emergency due to flooded roadways. In Castle Shannon alone, the volunteer fire department estimated damage "in the hundreds of thousands of dollars" to their facilities and other businesses in town. Many other reports of business and residential basement flooding were also received across the area. Several motorists had to be rescued from their vehicles as they tried to cross flooded roads. The Port Authority's entire light rail line was disabled due to flooding in the two main power stations that control the signals.								
Jefferson County									
Brockway	28	1130EST			0	0	3K		Thunderstorm Wind
	Thunderstorm winds downed several trees and power lines.								
Westmoreland County									
Greensburg	28	1145EST			0	0	10K		Thunderstorm Wind
	Thunderstorm winds downed numerous trees and power lines across the Greensburg area.								
Washington County									
Finleyville	28	1158EST			0	0	5K		Thunderstorm Wind
	Thunderstorm winds downed numerous trees and power lines.								
Fayette County									
Uniontown	28	1242EST 1400EST			0	0	5K		Flash Flood
	Thunderstorm rains produced minor street flooding and mudslides in the Uniontown area.								
Fayette County									
Connellsville	28	1300EST			0	0	3K		Thunderstorm Wind
	Thunderstorm wind downed several trees and power lines.								
Lawrence County									
Countywide	28	1300EST 1400EST			0	0	250K		Flash Flood
	Thunderstorm rains procuded street and basement flooding across the county. Several vehicles became stranded in flooded roadways. In New Castle, several businesses reported up to a foot of water in their stores, ruining carpeting and inventory. An assisted-living center in Neshannock Township reported several inches of water through their first floor. No residents were injured. In addition, many								

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

PENNSYLVANIA, West

homes across the area reported basement flooding.

Westmoreland County West Newton

28	1300EST 1400EST			0	0	2K	Flash Flood
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Thunderstorm rains produced minor street flooding in West Newton.

On July 28th, thunderstorms produced a macroburst which blew across portions of Western Pennsylvania. the macroburst started at around 9 AM EST and marched across the region through the late morning hours.

The thunderstorms first started in west-central Lawrence County and moved southeast at about 30 to 35 MPH into northeast Beaver County. An additional storm developed in northeast Beaver County and merged with the first storm in the northwestern part of the county. Together they combined into an intense thunderstorm complex which produced a swath of wind damage across Western Pennsylvania that punched southeastward through southwest Butler, much of Allegheny, northeast Washington, southwest Westmoreland and northern Fayette counties.

Hundreds of trees and power lines were snapped and toppled. Approximately 110,000 customers lost power in Allegheny County alone. This power outage was larger than the one that occurred during the June 2nd, 1998 tornado which struck the Mt. Washington section of Pittsburgh. Air traffic at the Pittsburgh International Airport was suspended for nearly four hours. There were also several instances of structural damage to homes and businesses in the form of roof, shingle, and siding damage. Some small out-building and sheds were also damaged or destroyed.

This rather long-lived macroburst event had an approximate path length of 85 miles and stretched across parts of seven counties. The width varied from approximately a mile or so to as much as 12 to 14 miles wide, especially across parts of Allegheny County. Spotters provided several reports of winds reaching 60 to 70 MPH, with some reports as high as 85 MPH. This macroburst event is comparable in size and strength to the June 30th, 1998 event which roared across Beaver, Allegheny and Westmoreland counties in Western Pennsylvania.

In addition to the damaging winds, the storms produced torrential amounts of rainfall which flooded roadways, under-passes and other low-lying areas, stranding several people in their cars. Several mud and rock slides were also reported. There were numerous reports of basement flooding across the region. The Pittsburgh International Airport reported a record-setting 3.48 inches of rain for the day.

Lawrence County

2 W New Wilmington to 2.5 S New Wilmington

28	2350EST			0	0	200K	Thunderstorm Wind (G90)
29	0000EST						

A microburst occurred across the New Wilmington area. Winds estimated to just over 100 MPH occurred along a narrow and sporadic path from about 2 miles west of New Wilmington at the intersection of Routes 18 and 208 to 2.5 miles south of New Wilmington on Route 956. One business, the Farmer's Cheese factory, had a large portion of the roof blown off. One home had the roof completely blown off, and several cars were crushed by falling trees.

Butler County

Muddy Creek

29	0005EST			0	0	3K	Thunderstorm Wind
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Thunderstorm winds downed several trees and power lines.

Lawrence County

New Castle

29	0005EST			0	0	75K	Thunderstorm Wind
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Thunderstorm winds downed numerous trees and power lines across the New Castle area, shutting power off to around 11,000 people in the area. A power company representative said the thunderstorm winds and falling trees damaged several transformer lines and substations.

Lawrence County

Princeton

29	0030EST 0300EST			0	0		Flash Flood
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Thunderstorm rains produced minor flooding on US Route 422 near Princeton.

Venango County

Seneca

31	0655EST			0	0	3K	Thunderstorm Wind
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Thunderstorm winds downed trees and power lines onto SR 257 and US 322.

Lawrence County

Frizzleburg

31	1725EST			0	0	3K	Thunderstorm Wind
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Thunderstorm winds downed several trees.

Mercer County

Mercer

31	1744EST			0	0	3K	Thunderstorm Wind
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Thunderstorm winds downed several trees.

Mercer County

Sharon

31	1747EST			0	0	50K	Thunderstorm Wind (G57)
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Thunderstorm winds estimated by a spotter at 65 MPH downed several trees, some of which fell onto homes.

Venango County

Franklin

31	1756EST			0	0	3K	Thunderstorm Wind
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Thunderstorm winds downed several trees.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>PENNSYLVANIA, West</u>									
Mercer County									
Sharpsville	31	1805EST			0	0	25K		Thunderstorm Wind
									Thunderstorm winds downed a barn and several trees.
Venango County									
Lisbon	31	1805EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Butler County									
Slippery Rock	31	1820EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Lawrence County									
Edinburg	31	1820EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Forest County									
Marienville	31	1826EST			0	0	1K		Thunderstorm Wind
									Thunderstorm winds downed a large tree onto SR 899.
Clarion County									
Clarion	31	1836EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Armstrong County									
Parker City	31	1845EST			0	0	5K		Thunderstorm Wind
									Thunderstorm winds downed several trees across the area, blocking SR 268.
Beaver County									
Darlington	31	1845EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Butler County									
Butler	31	1845EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees.
Jefferson County									
Brookville	31	1900EST			0	0	5K		Thunderstorm Wind
									Thunderstorm winds downed several trees, blocking local streets in Brookville.
Lawrence County									
New Castle	31	1935EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several large trees.
Butler County									
Prospect	31	1940EST			0	0	2K		Thunderstorm Wind
									Thunderstorm winds downed a few trees.
Allegheny County									
East Mc Keesport	31	2000EST			0	0	5K		Thunderstorm Wind
									Thunderstorm winds downed several large trees and power lines.
Westmoreland County									
Circleville	31	2005EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several large trees.
Beaver County									
Beaver Falls	31	2105EST			0	0	3K		Thunderstorm Wind
									Thunderstorm winds downed several trees and power lines.
<u>PUERTO RICO</u>									
San Juan									
Vega Alta	09	1000AST 1130AST			0	0			Urban/Sml Stream Fld
									Civil Defense indicated urban and small stream flooding over parts of Vega Alta.
San Juan									
Cayey	09	1200AST 1330AST			0	0			Urban/Sml Stream Fld
									Heavy rains flooded various roads in Cayey.
Mayaguez									
San German	11	1400AST 1500AST			0	0			Tstm Wind/Hail
									Civil Defense indicated medium size hail and strong winds. A few trees went down on road 2.
Mayaguez									
Cabo Rojo	15	1100AST 1200AST			0	0	10K		Thunderstorm Wind (G50)
									Civil Defense in Cabo Rojo indicated that various homes had roof damages due to the wind and a tree fell on a house. Hail was also observed.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>PUERTO RICO</u>									
Mayaguez Cabo Rojo	20	1415AST 1430AST	0.5	20	0	0			Tornado (F0)
									Civil Defense indicated that a tornado was sighted seven miles southwest of Cresta Blanca sector near road 301.
Humacao Rio Grande	30	1700AST 1930AST			0	0	5K		Flash Flood
San Juan Canovanas	30	1700AST 1930AST			0	0	5K		Flash Flood
									Civil Defense indicated various houses flooded in Rio Grande and Canovanas due to heavy rains.
<u>RHODE ISLAND</u>									
Newport County Tiverton	04	0800EST			0	0			Lightning
									Thunderstorms with frequent lightning moving across Rhode Island started a house fire in Tiverton.
RIZ004	05	0000EST 1800EST			0	0			Record Heat
									Bermuda high pressure brought a southwest flow of hot and humid air to Rhode Island during the holiday weekend. The high temperature of 98 degrees at T.F. Green State Airport in West Warwick tied the record high for July 5th which was first set in 1919. Also, the temperature only fell to a low of 78 degrees on the 5th, which set a record high minimum temperature for the date. The previous record was 77 degrees which was also set in 1919.
RIZ004	06	0600EST 1800EST			0	0			Record Heat
									For the second day in a row, temperatures at T.F. Green State Airport in West Warwick tied the record high for the date. The high of 97 degrees equaled the record high for July 6th, which was set in 1911.
RIZ004	14	0000EST 0800EST			0	0			Record Cold
									The low temperature at T.F. Green State Airport dropped to 53 degrees, which tied the record low for the date which was set in 1937.
RIZ004	17	1350EST			0	0			Record Warmth
									The high temperature at T.F. Green State Airport of 97 degrees tied the record high for the date, which was set in 1977.
RIZ004	18	1423EST			0	0			Record Warmth
									The high temperature at T.F. Green State Airport of 98 degrees tied the record high for the date, which was set in 1982.
Providence County Cumberland to Lincoln	19	1640EST			0	0			Thunderstorm Wind (G50)
									Severe thunderstorms moved across northern Rhode Island, after causing extensive wind damage in northern Connecticut. Thunderstorm winds downed five-inch diameter trees in Cumberland, blocking a roadway, and also downed power lines in Lincoln.
Kent County Coventry to West Greenwich	23	1900EST 1910EST			0	0			Thunderstorm Wind (G50)
									An isolated severe thunderstorm, which caused extensive damage in Windham County Connecticut, weakened somewhat as it entered Rhode Island, but still produced damage in Kent County. Trees and wires were downed on Susan Bowen Road and Fish Hill Road in Coventry, while in neighboring West Greenwich, trees, large branches, and wires were downed by thunderstorm winds.
Kent County West Greenwich	25	1315EST			0	0			Hail (1.00)
Kent County Warwick	25	1350EST			0	0			Hail (1.00)
Bristol County Barrington	25	1405EST			0	0			Thunderstorm Wind (G50)
									Severe thunderstorms brought damaging winds and large hail to Rhode Island. Hail as large as quarters fell in West Greenwich and Warwick, while thunderstorm winds downed large branches in Barrington.
Newport County Tiverton	26	0630EST			0	0			Hail (1.00)
									An isolated early morning severe thunderstorm dropped quarter size hail in Tiverton. The large hail dented several cars, and broke holes into greenhouse roofs.
<u>SOUTH CAROLINA, Central</u>									
Orangeburg County 7 NNE Bowman	06	1230EST			0	0	0.50K		Hail (1.75)
									EOC reported golfball size hail damaged windshields of vehicles near hwy 301 and 176.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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SOUTH CAROLINA, Central

Aiken County New Ellenton	06	1300EST			0	0	0		Hail (0.75) Sheriff reported penny size hail.
Barnwell County 2 SSW Williston	06	1315EST			0	0			Hail (0.75) Sheriff reported 3/4 inch hail.
Barnwell County 3 SW Barnwell	06	1328EST			0	0			Hail (0.88) Sheriff reported nickel size hail.
Lexington County Pelion	06	1345EST			0	0			Hail (0.75) SKYWARN spotter reported 3/4 inch hail.
Bamberg County Bamberg	11	1420EST			0	0	0		Hail (0.75) Sheriff reported 3/4 inch hail in town of Bamberg.
Bamberg County Bamberg	11	1423EST			0	0	0		Thunderstorm Wind (G50) Newspaper reported trees down. One fell on propane tanks and ignited a large blaze.
Clarendon County Turbeville	23	1745EST			0	0	0		Thunderstorm Wind (G50) Post Office and Black River Electric reported trees and powerlines down in and around Turbeville causing 2 hr power outages in some areas.
Kershaw County Liberty Hill	24	1800EST			0	0	0		Thunderstorm Wind (G50) Post Office reported powerlines down.
Kershaw County Westville	24	1825EST			0	0	0		Thunderstorm Wind (G50) Post Office reported large 6 inch branches and powerlines down.
Kershaw County Elgin	24	1840EST			0	0	0		Thunderstorm Wind (G50) Fairfield Electric reported trees down on powerlines with power outages.
Newberry County Newberry	24	1700EST			0	0	0		Thunderstorm Wind (G50) Newspaper reported a few trees and powerlines fell in Newberry.
Chesterfield County Pageland	31	0025EST			0	0	0		Thunderstorm Wind (G55) Sheriff called and reported trees down.
Aiken County 10 NE Aiken	31	1430EST			0	0	0	0	Thunderstorm Wind (G50) Sheriff reported a few trees down across hwy 302.
Lancaster County Tradesville to Antioch	31	0055EST 0115EST			0	0	0	0	Thunderstorm Wind (G50) Newspaper reported trees and powerlines down between Tradesville, Antioch and Bufford.
Lancaster County 6 N Van Wyck	31	0103EST			0	0	0	0	Thunderstorm Wind (G50) Newspaper reported trees down on Henry Harris road along with powerlines.

SOUTH CAROLINA, North Coastal

Marion County Marion	06	0815EST 0825EST			0	0	15K		Thunderstorm Wind (G70) Large trees were downed onto power lines.
Marion County Marion	06	0830EST 1000EST			0	0			Flash Flood Torrential thunderstorm rain measured around 4 inches and flooded US 76 in Marion, requiring warning signs.
Marion County Sellers	06	0900EST			0	1			Lightning A farm worker was struck by lightning while in a field, was hospitalized in critical condition.
Horry County Allsbrook to Surfside Beach	06	0900EST 1000EST			0	0			Flash Flood Heavy thunderstorm rains caused widespread ponding of water on roads and flooding of parking lots.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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SOUTH CAROLINA, North Coastal

Georgetown County Georgetown	06	1000EST 1030EST			0	0	5K		Lightning
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Lightning from a thunderstorm caused power outages, disrupting the 911 center. Nearly 5 inches of rain in 2 hours caused ponding on roads.

SCZ034 Horry	20	1100EST			0	15			Excessive Heat
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31 2000EST
An extended heat wave caused hospital treatment of dozens of people in Horry County, as well as in other counties in Northeast South Carolina.

Williamsburg County Warsaw	30	2345EST 2355EST			0	0	5K		Thunderstorm Wind (G70)
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Power company reported trees downed onto power lines.

SOUTH CAROLINA, Northwest

Anderson County Powdersville	05	1535EST			0	1			Lightning
Anderson County Powdersville	05	1535EST			0	0	2K		Thunderstorm Wind (G52)
Spartanburg County Spartanburg	05	1625EST 1635EST			0	0			Thunderstorm Wind (G52)
Union County 5 N Union to Union	05	1719EST 1730EST			0	0			Hail (0.75)
Union County 5 N Union to Union	05	1719EST 1730EST			0	0			Thunderstorm Wind (G50)

Scattered thunderstorms developed across the Upstate during the afternoon. One became severe in Anderson county and blew down several trees on Hwys 81 and 153. One person was injured by lightning in Powdersville. A NWS spotter reported 60 mph gusts and trees down all across the city of Spartanburg. Dime size hail which fell north of Union, was followed by damaging winds which blew down trees and power lines.

Greenville County Mauldin to Simpsonville	06	1150EST 1201EST			0	0			Hail (0.75)
Greenville County Mauldin to Simpsonville	06	1150EST 1201EST			0	0	10K		Thunderstorm Wind (G55)
Anderson County Williamston	06	1230EST			0	0			Lightning
Anderson County Williamston	06	1230EST			0	0			Thunderstorm Wind (G50)
Pickens County 10 NW Pickens	06	1235EST			0	0	1K		Thunderstorm Wind (G50)
Pickens County Six Mile	06	1305EST			0	0			Thunderstorm Wind (G50)
Anderson County Iva	06	1340EST			0	0			Hail (0.88)
Anderson County Iva	06	1340EST			0	0			Thunderstorm Wind (G50)
Abbeville County Lowndesville	06	1415EST			0	0			Thunderstorm Wind (G50)
Spartanburg County Pelham	06	1503EST			0	0			Hail (1.75)
Spartanburg County Spartanburg	06	1503EST			0	0			Thunderstorm Wind (G50)
Laurens County Clinton	06	1515EST 1520EST			0	0			Thunderstorm Wind (G65)
Union County Carlisle	06	1525EST			0	0			Thunderstorm Wind (G50)
Union County Cross Keys	06	1605EST			0	0			Thunderstorm Wind (G50)

Scattered thunderstorms developed during the afternoon with several becoming severe. Numerous trees and power lines were downed

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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SOUTH CAROLINA, Northwest

and sometimes across roads. Some trees fell on houses, damaged a school roof, and damaged the city hall in Mauldin. Clinton was the other area that was hardest hit with a quarter mile area affected. Numerous trees were downed, 15 to 20 utility poles were downed, and Thornwell School was damaged. Power was out until the next day for many people. In addition, one tree fell on a house. A lightning fire destroyed a church in Anderson county.

Abbeville County Abbeville

07 1000EST 0 0 100K Lightning

A church outside the city limits of Abbeville was destroyed by a fire sparked by lightning. The church was established in 1884 and rebuilt in 1979.

Spartanburg County Spartanburg

07 1600EST 0 0 Urban/Sml Stream Fld
1630EST

Spartanburg County Spartanburg

07 1630EST 0 0 Flash Flood
1730EST

Oconee County 5 W Seneca

07 1925EST 0 0 Hail (0.88)

For the 3rd day in a row, thunderstorms over the city Spartanburg produced rain heavy enough to swamp cars in normally flood-prone areas. However, on this day, the flooding was excessive, with water covering many streets, rising into homes, and stalling and damaging many cars. Nickel size hail occurred in Oconee county.

Greenville County 7 NW Greer

10 1635EST 0 0 Thunderstorm Wind (G50)

An isolated pulse severe thunderstorm downed several trees in the Lake Cunningham area.

Anderson County 1 SW Starr to Iva

11 1350EST 0 0 Thunderstorm Wind (G50)
1400EST

A severe thunderstorm downed trees between Hwy 181 and Hwy 81.

SCZ001>014-019

Northern Oconee - Northern Pickens - Northern Greenville - Southern Oconee - Southern Pickens - Southern Greenville - Spartanburg - Cherokee - York - Anderson - Abbeville - Laurens - Union - Chester - Greenwood
15 0000EST 0 0 Drought
31 2359EST

A long term dry spell became a drought in July as no organized rainfall affected the region. The lack of rain and temperatures well into the 90s, and above 100 degrees at times, began to cause significant damage to crops. Dollar amounts of the damage were unavailable at the time of this writing.

Anderson County 9 N Anderson

21 1820EST 0 0 Thunderstorm Wind (G50)

Trees and power lines were blown down onto Manse Jolly Road by a severe thunderstorm.

SCZ013

Union
23 1600EST 1 0 Excessive Heat
1700EST

An elderly woman died while walking outside her home. Probable cause was cardiac arrhythmia caused by heat stress. Temperatures were well into the 90s with high humidity. F72OU

Cherokee County Blacksburg

24 1550EST 0 0 Thunderstorm Wind (G50)

York County

Bethany to 6 N Newport

24 1630EST 0 0 Thunderstorm Wind (G50)
1645EST

Anderson County Iva

24 1654EST 0 0 Hail (1.75)

Abbeville County Level Land

24 1700EST 0 0 Hail (0.75)

Abbeville County 13 W Abbeville

24 1705EST 0 0 Thunderstorm Wind (G55)

Union County Union

24 1730EST 0 0 Thunderstorm Wind (G50)

Union County Cross Keys

24 1745EST 0 0 Thunderstorm Wind (G50)

Laurens County 5 W Laurens to Laurens

24 1802EST 0 0 Thunderstorm Wind (G52)
1810EST

Several severe thunderstorms marched across the Upstate during the late afternoon and early evening. Damaging straight-line winds between 50 and 60 mph downed numerous trees and power lines across the region. One tree fell on a house near Union. Golf ball size hail was reported in Iva.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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SOUTH CAROLINA, Northwest

SCZ006-010-010-010>012-019 **Southern Greenville - Anderson - Abbeville - Laurens - Greenwood**

26	1600EST				7	0			Excessive Heat
31	1100EST								

Beginning on the 23rd of July, high temperatures each day reached between 95 and 105 degrees. These hot temperatures combined with high humidity contributed to the deaths of a few people during this period. A couple were found inside unairconditioned homes where the air temperature had reached 108 degrees. Others suffered fatal heat strokes after attempting to perform intensive work outdoors. M46OU, M42OU, M59PH, M44OU, M60PH, F81PH, M51OU

Spartanburg County
Landrum

27	1400EST				0	0	15K		Lightning
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Spartanburg County
2 E Greer

27	1438EST				0	0			Thunderstorm Wind (G50)
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A severe thunderstorm produced winds which downed power lines. About one half hour earlier, the same thunderstorm produced a lightning strike which killed 3 horses.

York County
Mc Connells

31	0110EST				0	1			Thunderstorm Wind (G60)
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Chester County
4 W Chester

31	0245EST				0	0			Thunderstorm Wind (G50)
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Severe thunderstorms during the wee hours of the morning produced damaging winds which blew the roof off a building and into a mobile home, injuring one person. Numerous trees and power lines were also downed. A wind gust to 50 mph at Lowrys blew trash cans into store windows, breaking them.

Spartanburg County
5 NW Woodruff

31	1500EST				0	0			Hail (1.75)
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Anderson County
5 E Belton

31	1530EST				0	0			Thunderstorm Wind (G50)
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Chester County
Lowrys

31	1630EST				0	0	10K		Thunderstorm Wind (G55)
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Scattered severe thunderstorms produced hail to golf ball size and damaging wind. A couple trees were downed along Hwy 247 in Anderson county. An unoccupied mobile home was overturned in Chester county.

SOUTH CAROLINA, South Coastal

Charleston County
5 W Charleston to
2 NW Charleston

03	0920EST				0	0			Funnel Cloud
	0930EST								

Allendale County
Allendale

06	1440EST				0	0			Thunderstorm Wind (G50)
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Several large tree limbs down.

Dorchester County
2 W Summerville

11	1300EST				0	0			Thunderstorm Wind (G50)
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Roof and air conditioning system on roof were heavily damaged.

Beaufort County
Burton

12	1845EST				0	0			Lightning
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Lightning damaged a home heavily.

Beaufort County
2 E Beaufort

12	2000EST				0	0			Lightning
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Lightning struck a house

Charleston County
Mt Pleasant

22	1500EST				0	0			Hail (0.75)
	1505EST								

Berkeley County
2 S Cross to
3 S Cross

22	1630EST				0	0			Thunderstorm Wind (G50)
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Several large limbs down.

Colleton County
3 NE Walterboro

22	1630EST				0	0			Thunderstorm Wind (G50)
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Trees down.

Berkeley County
1 E Goose Creek to
Goose Creek

11	1600EST				0	0			Thunderstorm Wind (G50)
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Two houses sustained damage from strong gusty winds.

Charleston County
Mt Pleasant

21	1600EST				0	0			Lightning
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Lightning struck a transformer, knocking out power to over 1500 customers for several hours.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
SOUTH DAKOTA, Central and North									
Codington County									
1 S Watertown	03	0055CST			0	0			Thunderstorm Wind (G71) Winds gusting to 80 mph knocked down two large cottonwood trees, blew a single car garage apart, tore shingles off of the house, blew a trampoline about 400 feet and scattered the lawn furniture.
Hamlin County									
Estelline	03	0115CST			0	0			Thunderstorm Wind (G61) Winds gusting to 70 mph uprooted several trees in Estelline. Some power lines were also downed.
Campbell County									
20 W Mound City	07	2230CST			0	0			Hail (1.75)
Brown County									
5 W Aberdeen	07	2330CST			0	0			Thunderstorm Wind (G61) Winds gusting to 70 mph brought down some large tree branches along with some power lines west of Aberdeen.
Edmunds County									
Mina	07	2330CST			0	0			Thunderstorm Wind (G52) Winds to 60 mph brought numerous power lines down throughout Mina.
Mcpheerson County									
5 SE Eureka	07	2335CST			0	0			Thunderstorm Wind (G61) Several trees and numerous tree branches were downed as a result of the high winds. Also some shingles were torn off of the house.
Brown County									
5 N Aberdeen	08	0050CST			0	0			Thunderstorm Wind (G52)
Brown County									
Groton	08	0140CST			0	0			Thunderstorm Wind (G52)
Potter County									
15 W Gettysburg	15	1340CST			0	0			Hail (1.75)
Sully County									
15 SE Onida	15	1505CST			0	0			Hail (1.00)
Lyman County									
Lower Brule	15	1655CST			0	0			Hail (0.75)
Buffalo County									
Ft Thompson	15	1700CST			0	0			Thunderstorm Wind (G71) Winds to 80 mph blew the roof off of a garage and damaged a trailer.
Lyman County									
7 S Kennebec	18	1705CST			0	0			Thunderstorm Wind (G53)
Lyman County									
3 E Lyman	18	1725CST			0	0			Hail (1.00)
Lyman County									
4 NE Iona	18	1830CST			0	0			Hail (1.25)
Lyman County									
10 S Kennebec	22	1515CST			0	0			Hail (0.75)
Sully County									
2 S Onida	22	1626CST			0	0			Hail (0.75)
Sully County									
10 SE Onida	22	1630CST 1636CST	0.2	10	0	0			Tornado (F0) A tornado touched down briefly on a farm southeast of Onida. Over half of the roof of a 40 by 45 foot building was torn off and deposited in a tree belt 200 yards to the north. The south wall of this building was caved in and the north wall was pulled out and the overhead door was ripped off. A grain auger was also damaged when it was blown up against a granary. A semi trailer was blown over. About 400 acres of ripe wheat were also flattened and some sunflowers suffered damage as a result of the tornado. Path length and width were estimated.
Mcpheerson County									
16 SW Leola to 15 SW Leola	22	1729CST 1744CST	1	20	0	0			Tornado (F0) A tornado occurred southwest of Leola and damaged every building on a farm. The garage walls collapsed and several pieces of farm equipment were flipped over. Nearly all of the windows were broken in the house. The tornado tipped over the propane tank, central air unit and the satellite dish. Some debris created some holes in the roof and sides of the house. Approximately 50 bales of hay were torn apart. A car was also extensively damaged. Path length and width were estimated.
Edmunds County									
1 S Roscoe	22	1823CST			0	0			Hail (1.00)
Edmunds County									
Roscoe	22	1834CST			0	0			Hail (0.88)
Brown County									
2 W Westport	22	1835CST			0	0			Thunderstorm Wind (G60)
Brown County									
3 S Westport	22	1838CST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
SOUTH DAKOTA, Central and North									
Brown County									
Aberdeen	22	1852CST			0	0			Thunderstorm Wind (G52)
Spink County									
Turton	22	1901CST			0	0			Thunderstorm Wind (G52)
Brown County									
Aberdeen	22	1903CST			0	0			Thunderstorm Wind (G61)
									Winds from 60 to 70 mph brought down many large tree branches along with a few trees in Aberdeen. Power lines were also downed resulting in power outages for many homes and businesses for several hours. A semi trailer was also turned onto its side by the high winds.
Day County									
Bristol	22	1935CST			0	0			Thunderstorm Wind (G54)
Day County									
2 W Webster	22	1938CST			0	0			Thunderstorm Wind (G52)
Clark County									
3 W Clark	22	1940CST			0	0			Thunderstorm Wind (G52)
Marshall County									
Britton	22	1949CST			0	0			Thunderstorm Wind (G52)
Spink County									
2 N Athol	22	1954CST			0	0			Thunderstorm Wind (G52)
Codington County									
5 W Watertown	22	2003CST			0	0			Thunderstorm Wind (G52)
Hamlin County									
Lake Norden	22	2005CST			0	0			Thunderstorm Wind (G52)
									High winds brought many large tree branches down in Lake Norden.
Roberts County									
Corona	22	2010CST			0	0			Thunderstorm Wind (G52)
									High winds brought many large tree branches down in Corona.
Grant County									
8 NW Milbank	22	2015CST			0	0			Thunderstorm Wind (G61)
									An old barn was blown over by 70 mph winds.
Codington County									
Watertown	22	2045CST			0	0			Hail (0.75)
Roberts County									
1 W Summit	22	2045CST			0	0			Thunderstorm Wind (G52)
									The high winds blew a sheet of tin off of a building which damaged a car.
Deuel County									
Clear Lake	22	2105CST			0	0			Thunderstorm Wind (G52)
									Winds gusting to 60 mph brought many tree branches down in Clear Lake.
Marshall County									
1 S Britton	22	2045CST			0	0			Lightning
									Lightning struck the two-way antenna at a home south of Britton. The house became filled with smoke setting off the smoke alarms. The lightning destroyed the surge protector, the antenna, the transmitter, three televisions, the computer, and the garage door opener.
Dewey County									
Isabel	23	0800CST			0	0			Thunderstorm Wind (G52)
									Winds to 60 mph tipped over a cook shack near the baseball field in Isabel. The grain elevator lost two doors to the high winds. A trailer home had its skirting damaged and several tree branches were downed throughout town.
Marshall County									
Britton	25	1300CST			0	0			Lightning
									Lightning struck the Britton Country Club damaging the course sprinkler system and destroying the clubhouse television, cable box, portable phone, PA system, and lottery machines.
Sully County									
7 NE Onida	27	1458CST			0	0			Hail (1.75)
Edmunds County									
9 NW Ipswich	27	1500CST			0	0			Hail (2.75)
Sully County									
10 NE Onida	27	1500CST			0	0			Hail (0.75)
Edmunds County									
1 S Ipswich	27	1510CST			0	0			Hail (1.00)
Brown County									
10 W Hecla to 9.5 W Hecla	27	1515CST 1525CST	0.5	10	0	0			Tornado (F0)
									A tornado occurred 10 west of Hecla with no damage reported. Path length and width were estimated.
Edmunds County									
7 SE Ipswich	27	1520CST			0	0			Hail (1.75)
									Golfball size hail and high winds destroyed hundreds of acres of crops on a farm southeast of Ipswich.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
SOUTH DAKOTA, Central and North									
Edmunds County									
1 NE Mina	27	1523CST			0	0			Hail (0.88)
Edmunds County									
6 S Mina	27	1525CST			0	0			Hail (1.75)
Edmunds County									
6 S Mina	27	1525CST			0	0			Thunderstorm Wind (G61)
									Golfball size hail and high winds caused extensive damage to the Richland Weslyn Church and to the pastor and associate pastor's homes. The hail poked numerous holes in the siding and shingles of the buildings and broke many windows. Several cars were damaged and a large tree was also downed.
Faulk County									
Seneca	27	1530CST			0	0			Hail (1.25)
Hyde County									
16 N Highmore	27	1530CST			0	0			Hail (0.75)
Edmunds County									
10 S Mina	27	1533CST			0	0			Hail (1.75)
Edmunds County									
10 S Mina	27	1533CST			0	0			Thunderstorm Wind (G61)
									Winds gusting to 70 mph and golfball size hail blew a barn off of its foundation and broke several windows out of the house. The high winds also blew several trees down.
Faulk County									
6 NW Chelsea to 1 N Chelsea	27	1536CST 1550CST	5	200	0	0			Tornado (F1)
									The tornado snapped large branches off a live oak and drove them into the ground. The tornado knocked down approximately 5 headstones in a small cemetery, and took a roof off a small outbuilding. It destroyed an empty grain bin, moved a grain auger 50 feet, took off several large doors on a machine shed. The tornado also knocked down or snapped off numerous large trees in shelter belts and destroyed a barn and several outbuildings just north of Chelsea.
Edmunds County									
8 S Mina	27	1550CST			0	0			Hail (1.25)
Faulk County									
Norbeck	27	1553CST			0	0			Hail (1.75)
Marshall County									
9 E Britton	27	1600CST			0	0			Thunderstorm Wind (G52)
Faulk County									
5 N Wecota	27	1610CST			0	0			Hail (1.75)
Hyde County									
1 W Highmore	27	1613CST			0	0			Hail (1.75)
Faulk County									
5 SE Cresbard	27	1617CST			0	0			Thunderstorm Wind (G71)
									Winds gusting to 80 mph at a farm southeast of Cresbard overturned some farm equipment, rolled hay bales, snapped off a tree, moved the home air conditioner a few feet off of its cement base, and rolled a large chemical tank. Marble size hail in combination with the high winds broke many windows on the farm.
Marshall County									
Eden to 4 E Eden	27	1625CST 1630CST			0	0			Thunderstorm Wind (G71)
									High winds blew part of the roof off a mobile home and downed some trees and many tree branches in Eden and to the east.
Hyde County									
16 N Highmore	27	1630CST			0	0			Hail (1.00)
Faulk County									
8 S Chelsea	27	1633CST			0	0			Hail (2.75)
									Baseball sized hail broke the windshield on a pickup truck.
Hand County									
4 S Ree Hgts	27	1638CST			0	0			Hail (0.75)
Day County									
7 NE Grenville	27	1640CST			0	0			Thunderstorm Wind (G61)
									Winds to 70 mph blew several trees down near Pickeral Lake.
Hand County									
Ree Hgts	27	1655CST			0	0			Hail (1.75)
Spink County									
Redfield	27	1700CST			0	0			Hail (1.75)
Grant County									
1 W Milbank	27	1720CST			0	0			Thunderstorm Wind (G52)
Clark County									
1 W Carpenter	27	1945CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>SOUTH DAKOTA, Central and North</u>									
Marshall County 9 E Britton	27	1600CST			0	0			Thunderstorm Wind (G52)
Stanley County Wendte	29	1815CST			0	0			Hail (0.88)
Lyman County 4 NE Vivian	29	1845CST			0	0			Hail (0.88)
Hamlin County Bryant	30	1310CST			0	0			Hail (0.75)
Hamlin County Hayti	30	1310CST			0	0			Hail (2.75)
Clark County 4.5 SW Willow Lake	30	1315CST			0	0			Hail (1.00)
Hamlin County 2 E Thomas	30	1315CST			0	0			Hail (2.75)
Codington County Watertown	30	1319CST			0	0			Thunderstorm Wind (G52)
			Winds gusting to 60 mph blew several tree limbs down in Watertown.						
Deuel County 3 W Clear Lake	30	1324CST			0	0			Hail (0.75)
Hamlin County Castlewood	30	1326CST			0	0			Hail (1.00)
Codington County 18 SW Watertown	30	1345CST			0	0			Hail (1.00)
			Large hail destroyed hundreds of acres of wheat.						
<u>SOUTH DAKOTA, Southeast</u>									
Gregory County Dallas	02	0125CST			0	0	10K		Thunderstorm Wind (G52)
			Thunderstorm winds caused tree damage including several trees uprooted. The winds also rolled large hay bales.						
Gregory County Gregory	02	0135CST			0	0			Hail (1.00)
Gregory County Burke	02	0155CST			0	0			Hail (0.88)
Gregory County Gregory to Bonesteel	02	0205CST 0259CST			0	0	500K	1M	Hail (1.50)
			Large hail fell over a wide area, including the towns of Gregory, Burke, and Bonesteel. The hail damaged roofs, broke windows, and dented vehicles. Crops in some areas were totally destroyed.						
Charles Mix County 1 E Pickstown	02	0230CST			0	0	10K		Thunderstorm Wind (G70)
			Thunderstorm winds caused tree damage, including one to two foot diameter tree limbs down.						
Charles Mix County 13 S Wagner	02	0330CST			0	0	10K		Thunderstorm Wind (G61)
			Thunderstorm winds caused tree damage, including 2 foot diameter tree limbs down.						
Union County Alcester to 7 S Alcester	02	0655CST 0700CST			0	0	50K		Thunderstorm Wind (G58)
			Thunderstorm winds caused tree damage, including large trees uprooted. The winds also blew off a dugout roof at a baseball field, and blew down part of a wall at a meat business.						
Union County .5 S Nora to .5 SE Nora	02	0708CST 0710CST	0.5	50	0	0	5K		Tornado (F0)
			A tornado damaged trees. Flying debris damaged the fender and door of a van, and the door of a house on a farm.						
Charles Mix County Academy to Lake Andes	02	2230CST 2303CST			0	0	100K		Thunderstorm Wind (G60)
			Thunderstorm winds caused widespread tree damage, destroyed an unoccupied trailer home south of Platte, damaged calf shelters and other farm structures. The winds also blew off a 30 foot section of a metal roof at a pork plant near Academy, and overturned campers.						
Aurora County 12 S White Lake	02	2310CST 2330CST			0	0	20K		Thunderstorm Wind (G52)
			Thunderstorm winds destroyed or damaged several farm structures, including a large pole barn, killing two sheep. The winds also caused tree damage.						
Douglas County Corsica	02	2310CST			0	0	5K		Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
SOUTH DAKOTA, Southeast									
Thunderstorm winds caused tree damage, including blowing over a 20 inch diameter tree. The winds also bent a flagpole parallel to the ground.									
Hutchinson County 8 W Kaylor	02	2323CST			0	0			Thunderstorm Wind (G52)
Davison County 15 SW Mitchell	02	2330CST			0	0			Thunderstorm Wind (G52)
Davison County (Mhe)Mitchell Arpt	02	2335CST			0	0			Thunderstorm Wind (G50)
Kingsbury County De Smet to Arlington	03	0015CST 0045CST			0	0	100K		Thunderstorm Wind (G57)
Thunderstorm winds destroyed a large garage, a 3200 bushel grain bin, at least two large barns, a pole barn, and a carport. A car in the carport was damaged. The winds also caused extensive tree damage.									
Brookings County Brookings to 1 E Elkton	03	0045CST 0103CST			0	0	100K		Thunderstorm Wind (G57)
Thunderstorm winds damaged several small farm buildings, damaged siding and roofs and some buildings, and caused widespread tree damage.									
Hutchinson County Parkston	15	1915CST			0	0	100K		Thunderstorm Wind (G52)
Thunderstorm winds caused tree damage, and triggered a power outage which lasted for 3 hours.									
Mccook County Spencer	15	1915CST			0	0			Thunderstorm Wind (G52)
Davison County 4 N Mitchell	15	1930CST			0	0			Hail (0.75)
Miner County 2 SW Fedora to Fedora	15	1945CST 2000CST			0	0	50K		Thunderstorm Wind (G57)
Thunderstorm winds flattened one barn and a tool shed, blew the roof off another barn, and blew half the roof off a house, as well as causing other building damage.									
Kingsbury County Badger	15	2005CST			0	0	20K		Thunderstorm Wind (G52)
Thunderstorm winds caused tree damage, and triggered a 4 hour power outage.									
Gregory County Dixon	18	1905CST			0	0			Hail (1.50)
Gregory County 12 N Gregory	18	1921CST			0	0			Hail (0.75)
Gregory County Gregory	18	1930CST			0	0			Thunderstorm Wind (G65)
Union County 13 NE Elk Pt	20	0330CST			0	0			Flood
Heavy rain caused street and lowland flooding, washing out driveways.									
Clay County Vermillion	21	0310CST			0	0			Flood
Heavy rain caused street flooding.									
Minnehaha County 2 S Baltic	23	0030CST			0	0			Hail (0.75)
Minnehaha County 2 S Baltic	23	0030CST			0	0			Thunderstorm Wind (G52)
Lincoln County Sioux Falls	23	0100CST			0	0			Thunderstorm Wind (G52)
Minnehaha County Sioux Falls	23	0100CST			0	0			Thunderstorm Wind (G52)
Beadle County Huron Arpt	30	1245CST			0	0			Thunderstorm Wind (G55)
Beadle County 10 S Cavour	30	1250CST			0	0			Thunderstorm Wind (G52)
Kingsbury County 10 SW De Smet to Lake Preston	30	1312CST 1330CST			0	0			Thunderstorm Wind (G65)
Thunderstorm winds blew down large trees as well as power lines and poles. The amount of damage was not known.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
SOUTH DAKOTA, West									
Tripp County									
Winner	01	0006MST			0	0			Hail (1.75)
Haakon County									
Milesville	01	0007MST			0	0			Hail (1.00)
Tripp County									
Winner	01	0042MST			0	0			Hail (1.00)
Tripp County									
18 SE Winner	01	0059MST			0	0			Hail (0.88)
Todd County									
7 S Olsonville	02	2127MST			0	0	10K		Thunderstorm Wind
Spotters reported power lines blown down and several cars were damaged by fallen tree branches.									
Tripp County									
Winner	02	2144MST			0	0	10K		Thunderstorm Wind (G51)
Nine power poles and several large trees were blown down.									
Shannon County									
Pine Ridge	03	2018MST			0	0			Thunderstorm Wind (G52)
Shannon County									
Pine Ridge	03	2020MST			0	0			Hail (0.75)
Bennett County									
Allen	03	2115MST			0	0			Funnel Cloud
Public report of a short lived funnel cloud.									
Bennett County									
Allen	03	2125MST			0	0	5K		Thunderstorm Wind
A mobile home was blown over and damaged. No estimate of wind speed given.									
Custer County									
4 E Custer	15	1830MST			0	0			Hail (0.75)
Meade County									
Ellsworth Afb	15	1915MST			0	0			Thunderstorm Wind (G61)
Shannon County									
Pine Ridge	15	2005MST			0	0			Thunderstorm Wind (G51)
Fall River County									
8 S Hot Spgs	17	1515MST			0	0			Thunderstorm Wind (G70)
Winds over 80 mph damaged camping areas around Angustora Reservoir.									
Fall River County									
8 SE Hot Spgs	17	1540MST			0	0			Hail (0.75)
Fall River County									
12 SE Hot Spgs	17	1600MST			0	0			Thunderstorm Wind (G52)
Wind gusts estimated at 60 mph.									
Butte County									
Vale	19	1111MST			0	0			Thunderstorm Wind (G52)
Butte County									
3 SW Vale	19	1130MST			0	0	5K		Thunderstorm Wind (G52)
Doors torn off a barn. Two horses were killed and another injured.									
Butte County									
8 E Belle Fourche	19	1201MST			0	0	1K		Thunderstorm Wind
Trees were blown over and sheds and barns had damage.									
Meade County									
Hereford	19	1220MST			0	0			Hail (0.88)
Pennington County									
5 W Hill City to Hill City	20	1450MST 1459MST			0	0			Hail (1.00)
Custer County									
6 N Custer	20	1530MST 1545MST			0	0			Hail (0.75)
Custer County									
1 S Hermosa	24	1330MST			0	0			Hail (1.00)
Mellette County									
11 S Cedar Butte	24	1640MST			0	0			Thunderstorm Wind (G52)
Winds were estimated at 60 to 70 mph by spotter.									
Todd County									
2 SW Parmelee	24	1700MST			0	0			Hail (0.75)
Todd County									
Rosebud	24	1726MST 1735MST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>SOUTH DAKOTA, West</u>									
Jackson County									
Interior	27	1415MST			0	0			Hail (0.75)
Mellette County									
1 N Cedar Butte	27	1530MST			0	0	1K		Thunderstorm Wind
									Several large trees were snapped in half.
Jackson County									
3 SW Potato Creek	27	1555MST			0	0			Hail (0.75)
Mellette County									
11 S Cedar Butte	27	1555MST			0	0			Thunderstorm Wind (G52)
									Winds were estimated at 60 to 70 mph.
Lawrence County									
8 W Spearfish to 10 NW Spearfish	21	2100MST 2110MST	8	100	0	0	0	0	Tornado (F1)
<u>TENNESSEE, Central</u>									
Montgomery County									
Clarksville	01	2010CST			0	0			Thunderstorm Wind (G50)
									Tree down on car.
Houston County									
Countywide	01	2027CST			0	0	5K		Thunderstorm Wind (G50)
									Trees and power lines down countywide. One tree landed on a house.
Stewart County									
Countywide	01	2028CST			0	0			Thunderstorm Wind (G50)
									Trees down countywide.
Houston County									
5 NE Erin	01	2030CST			0	0	20K		Thunderstorm Wind
									A sawmill was flattened due to strong thunderstorm winds. The saw mill was located on Clay Wright Road.
Macon County									
Countywide	01	2230CST			0	0			Thunderstorm Wind (G50)
									Sheriff's office reported trees down countywide.
Montgomery County									
Countywide	01	2235CST			0	0	50K		Thunderstorm Wind (G50)
									TEMA reported straight line wind damage to 15 homes.
Hickman County									
Countywide	02	0040CST 0230CST			0	0			Flash Flood
									TEMA reported flooding in several low lying areas around the county.
Lewis County									
Countywide	02	0425CST 0630CST			0	0			Flash Flood
									Sheriff's office reported flooding across several county roads. Evacuation of some low lying areas began at 0530 CST.
Montgomery County									
3 NW Clarksville	02	0815CST 1130CST			0	0			Flash Flood
									Flooding was reported at Peachers Mill Road area.
Montgomery County									
St Bethlehem	02	1000CST 1130CST			0	0			Flash Flood
									EMA reported flooding in the Spring Creek area.
Wilson County									
Mt Juliet	01	2200CST			0	0	10K		Lightning
									Lightning struck the main building of Moss' Florist. All the contents inside the greenhouse were destroyed.
Dickson County									
Dickson	02	0000CST			0	0	200K		Lightning
									The home of a prominent Dickson physician burned to the ground after lightning struck the house. The family was out of town when the lightning hit the house. The house was located at 198 Farrar Lane in Druid Hills.
Smith County									
Countywide	02	0200CST 0500CST			0	0	50K		Flash Flood
									Heavy rainfall early Friday morning dumped 3 to 7 inches of rain in a short period of time and resulted in flash flooding in several locations. One of the hardest hit areas was South Carthage. A mobile home on Hogan's Creek Road in South Carthage was swept off its foundation at a distance of 10 yards. It was lodged against trees and vehicles which were sitting in the yard. Most of the damage around the county was to roads where tile bridges and paving were washed up. Most of the residential damage though occurred on Hogan's Creek.

Another mobile home, a double-wide, received severe damage to its underpinning. Flood waters entered the garage of another resident.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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TENNESSEE, Central

4 vehicles were washed downstream or submerged.

One family on Wilkie Circle in the Brush Creek community had to be evacuated because of rising waters on Hickman Creek. The water circled the home but did not enter it.

Water seeped inside a trailer on Dale Lane on Plunkett's Creek Circle. Water also flooded a work shop on Bob More Lane. A truck from R&R Auto Sales was swept several yards down the road into a creek. Many roads in Smith county were barricaded due to high water. Tile bridges were washed out at the New Middleton community namely at Dry Fork Road, and also on Plunkett's Creek Road and Dog Branch Road near Difficult.

Giles County

Pulaski	07	1630CST			0	0	150K		Lightning
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Four mobile homes were struck by lightning. These homes were fully loaded when they were struck at the Oakwood Homes on Highway 31.

Giles County

Pulaski	07	1745CST			0	0			Thunderstorm Wind (G50)
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Sheriff's office reported tree limbs down, just north of Pulaski.

Davidson County

Nashville	24	1413CST			0	0			Thunderstorm Wind (G50)
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Police department reported power lines down in south Nashville.

Overton County

Livingston	24	1445CST			0	1			Lightning
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A farmer had his hand on a fence. Lightning struck the fence and left him unconscious. A neighbor performed CPR. He was taken to the hospital and recovered.

Rutherford County

Murfreesboro	24	1500CST			0	0			Thunderstorm Wind (G50)
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Large tree was blown down at the exit of the Murfreesboro Post Office on South Church St.

Marshall County

Countywide	24	1520CST			0	0			Thunderstorm Wind (G50)
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Sheriff's office reported a few trees down around the county.

Franklin County

Cowan	29	1445CST			0	0	20K		Thunderstorm Wind (G50)
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Tree was blown down on 2 cars.

Franklin County

5 S Cowan	29	1521CST			0	0	10K		Thunderstorm Wind (G50)
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Sheriff's department reported damage to al large metal building.

Franklin County

Cowan	29	1522CST			0	0			Thunderstorm Wind (G50)
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Sheriff reported damage to a roof and siding to a home.

TENNESSEE, East

Hamilton County

Red Bank	02	1350EST			0	0			Flood
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Sheriff's office reports water up to car doors. Water up to 8 inches deep at the intersection of highways 153 and 27.

Hamilton County

Hixon	02	1455EST			0	0			Flood
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Amnicola Highway under water. Water up to doors at police service center. Excessive water in trailer park along Highway 27N.

Rhea County

Spring City	06	1545EST			0	0	50K		Thunderstorm Wind
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The 28-slip Eden Resort and Marina boat dock was totally destroyed. 15 boats were docked there at the time. 12 sustained minor damage.

Meigs County

5 N Decatur	06	1620EST			0	0	10K		Thunderstorm Wind
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Trees and power lines down.

Rhea County

Spring City	06	1625EST			0	0	10K		Thunderstorm Wind
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Trees down.

Hamilton County

Soddy Daisy	06	1635EST			0	0	12K		Thunderstorm Wind
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Trees down.

Mcminn County

3 NW Athens	06	1650EST			0	0	10K		Thunderstorm Wind
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Trees down on county road 305.

Bradley County

Countywide	06	1715EST			0	0	70K		Thunderstorm Wind
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Trees down. In Cleveland, wind collapsed a building owned by Mr. Randy Strickland. The building housed a large collection of

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TENNESSEE, East									
Volkswagen cars and vans. Damage is estimated at \$40000 to \$50000.									
Monroe County Madisonville to Vonore	06	1730EST			0	0	20K		Thunderstorm Wind
Trees and power lines down.									
Monroe County Vonore	06	1730EST			0	0	15K		Thunderstorm Wind
At the TRW plant, a 14x6x2 feet steel cover on the roof blew about 150 yards. It put several holes in the roof as it bounced along.									
Blount County Alcoa	06	1820EST			0	0	9K		Thunderstorm Wind (G53)
Large tree limbs down.									
Blount County Alcoa	06	1820EST			0	0			Flood
Alcoa Highway closed from the Motor Mile to the county line due to 1 to 3 feet of water over the road.									
Greene County Countywide	06 07	1900EST 0100EST			0	0			Flood
Most of the flooding occurred over the southern part of the county, mainly from the Nolichucky River to the North Carolina line. Many roads were either washed out or covered with mud and rocks. The worst flooding was in the Cedar Creek and Lower Paint Creek areas.									
Cocke County Del Rio	06 07	1900EST 0100EST			0	0	225K		Flood
A mud slide on Highway 25/70 blocked both lanes of traffic. The highway was reopened later on Wednesday the 7th. Bear Branch Road was washed out. Flooding also occurred along Long Branch Road, Rays Chapel, Blue Mill Road and Midway Road. Water 2-3 feet deep was reported in several homes and a grocery store.									
Jefferson County 2 W Jefferson City	06	1905EST			0	0	5K		Thunderstorm Wind
Trees down.									
Hawkins County Rogersville	07	1525EST			0	0	10K		Thunderstorm Wind
Trees down.									
Hamblen County Whitesburg	07	1530EST			0	0	5K		Thunderstorm Wind
Trees down.									
Monroe County 5 E Tellico Plains	07	1530EST			0	0			Flood
River Road along the Tellico River near the North Carolina state line was under water.									
Hawkins County Rogersville	07	1615EST			0	0	15K		Thunderstorm Wind
Trees and power lines down.									
Greene County Jearoldstown	07	1630EST			0	0	8K		Thunderstorm Wind
Trees down.									
Washington County Countywide	07	1635EST			0	0	25K		Thunderstorm Wind
Trees down.									
Knox County Farragut	07	1832EST			0	0	6K		Thunderstorm Wind
Trees down.									
Loudon County Loudon to Lenoir City	07	1855EST			0	0	19K		Thunderstorm Wind
Trees down.									
Blount County (Tys)Mcghee Tyson Kn	07	1931EST			0	0			Thunderstorm Wind (G51)
Mcminn County Athens	10	1555EST			0	0	7K		Thunderstorm Wind
Strong thunderstorm winds blew a large tree onto a 1996 GMC Sonoma pickup truck.									
Bledsoe County Countywide	11 12	1000CST 1400CST			0	0			Flood
Anderson County Countywide	11 12	1100EST 1500EST			0	0			Flood

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TENNESSEE, East									
Blount County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Campbell County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Carter County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Claiborne County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Cocke County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Grainger County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Greene County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Hamblen County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Hancock County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Hawkins County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Jefferson County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Johnson County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Knox County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Loudon County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Mcminn County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Meigs County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Monroe County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Rhea County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Roane County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Sevier County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Sullivan County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							

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TENNESSEE, East									
Union County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Washington County									
Countywide	11	1100EST			0	0			Flood
	12	1500EST							
Widespread showers and thunderstorms with heavy rain caused flooding problems throughout much of East Tennessee. In Cocke County, flooding occurred along Knoxville Highway west of Newport and in the fairgrounds. In Blount County, numerous streets and roads were closed. The Abrams Creek Campground in the Cades Cove area of the Great Smoky Mountains National Park was evacuated as a precautionary measure Sunday. The campground was reopened Monday. The bottom two apartments of Atchley Apartments in Maryville had 6 inches of water in them early Monday morning. In Knox County, many cars were stranded in flooded underpasses. In Bledsoe County, the Jack Branch Road bridge along Highway 30 on the Van Buren County line was washed out. Numerous incidents of minor flooding were reported around the remainder of the region. Water began to recede across the region by late afternoon/early evening Monday.									
Cocke County									
Cosby	17	0000EST 0200EST			0	0			Flash Flood
Flooding on Cosby Creek forced the evacuation of approximately 20 campers from Cripple Creek Campground off Bogard Road. Water was receding around 2 hours later. The campers were then able to return to their campsites.									
Bledsoe County									
Countywide	17	0810CST			0	0			Urban/Sml Stream Fld
Unicoi County									
Countywide	17	1130EST			0	0			Flood
Some county roads flooded. In Erwin, major street flooding occurred, and an apartment complex was evacuated.									
Blount County									
Townsend to Cades Cove	17	1750EST			0	0			Tstm Wind/Hail
Tree down on Cavern road in Townsend reported by Sheriff's office. Half-inch hail at Cades Cove, reported by National Park Service ranger.									
Campbell County									
3 SE Caryville	21	1435EST			0	0	7K		Thunderstorm Wind
Trees down.									
Bradley County									
Countywide	21	1630EST			0	0			Urban/Sml Stream Fld
A few roads closed during heavy rain were reopened by late afternoon/early evening.									
Rhea County									
Countywide	22	1412EST 1545EST			0	0			Urban/Sml Stream Fld
High water problems which began near Dayton on Highway 60 escalated into widespread flooding and culvert overflow across much of southern Rhea County. Many highways and other roads were closed during this time.									
Claiborne County									
Harrogate	24	1200EST			0	0			Hail (1.00)
Claiborne County									
Harrogate	24	1200EST			0	0	10K		Thunderstorm Wind
Trees down.									
Campbell County									
6 S Jellico	24	1245EST			0	0	5K		Thunderstorm Wind
Trees down along Stinking Creek Road.									
Anderson County									
Marlow	24	1245EST			0	0	3K		Thunderstorm Wind
Trees down.									
Claiborne County									
Cumberland Gap	24	1250EST			0	0	10K		Thunderstorm Wind
Trees down.									
Campbell County									
6 E La Follette	24	1250EST			0	0	4K		Thunderstorm Wind
Trees down along Cross Valley Road near Highway 63.									
Knox County									
2 N Knoxville	24	1310EST			0	0	15K		Thunderstorm Wind
Trees down across northern portion of the county.									
Union County									
Countywide	24	1310EST			0	0	20K		Thunderstorm Wind
Trees down.									
Knox County									
Countywide	24	1335EST			0	0	25K		Thunderstorm Wind

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TENNESSEE, East									
									Trees down.
Jefferson County Countywide	24	1340EST			0	0	20K		Thunderstorm Wind
									Trees down.
Grainger County Bean Station	24	1345EST			0	0			Thunderstorm Wind (G53)
Hamblen County Morristown	24	1345EST			0	0	12K		Thunderstorm Wind
									Trees down.
Blount County Countywide	24	1345EST			0	0	17K		Thunderstorm Wind
									Trees down.
Sevier County Beech Spgs	24	1400EST			0	0	6K		Thunderstorm Wind
									Trees down.
Hawkins County Church Hill to Mt Carmel	24	1400EST			0	0	11K		Thunderstorm Wind
									Trees down.
Sullivan County Kingsport	24	1400EST			0	0	2K		Thunderstorm Wind
									Large tree limbs down.
Sullivan County Kingsport	24	1400EST			0	0			Urban/Sml Stream Fld
									Flooding on Chadwell Road east of Kingsport. Road closed for a short time.
Anderson County Oliver Spgs	24	1400EST			0	0			Urban/Sml Stream Fld
									2 feet of water washing large tree limbs and other debris across the 2400 block of Dutch Valley Road.
Sullivan County Blountville	24	1405EST			0	0	10K		Thunderstorm Wind
									Trees down.
Hawkins County 6 N Surgoinsville	24	1415EST			0	0			Hail (0.75)
Hawkins County Countywide	24	1430EST			0	0			Urban/Sml Stream Fld
									Flooding of many small streams with many roads covered by high water.
Hamilton County Hixon	24	1500EST			0	0	20K		Thunderstorm Wind (G53)
									Trees and power lines down, especially around the Hixon Middle School property. One tree estimated around 2 to 3 feet in diameter was across the entrance road to Hamilton Memorial Gardens off Highway 153. A few trees down off Hixon Pike.
Hamilton County Hixon	24	1500EST			0	0	10K		Thunderstorm Wind
									WTVC-TV reports their remote automated weather station recorded a 54 mph wind gust at Northgate Mall. Media reported minor damage to a Home Depot store on Highway 153.
Unicoi County Countywide	24	1500EST			0	0			Flash Flood
									Many roads washed out in the Flag Pond area. Some evacuations from Little Higgins Creek area off old Highway 23. Water was reported flowing into lots of homes.
Carter County Countywide	24	1505EST			0	0			Flash Flood
									Flash flooding across many areas especially along Highway 91 in the Stoney Creek area and also in the Milligan Crest area.
Johnson County Countywide	24	1510EST			0	0			Urban/Sml Stream Fld
									High water problems on many roads due to stream and culvert overflow, especially in the Doe Valley area.
Sevier County 5 N Sevierville	27	1437EST			0	0	1M		Wind And Wave
									Douglas Lake Marina was hit by waves estimated at 4 to 6 feet and then a wind gust estimated at 45-55 mph. One 300 foot section of the 3-section dock was totally destroyed. 15-20 boats were either damaged or destroyed. Storm survey revealed no tree or structure damage on adjacent or upwind shoreline.
Sevier County Sevierville	27	1450EST			0	0			Hail (0.75)
Anderson County 2 N Clinton	27	1715EST			0	0	5K		Thunderstorm Wind
									Power lines down in north part of county.

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TENNESSEE, East									
Knox County									
2 SW Knoxville	27	1720EST			0	0	10K		Thunderstorm Wind
			Trees down on the south and west side of Knoxville.						
Anderson County									
2 SW Clinton	27	1755EST			0	0	10K		Thunderstorm Wind
			Trees and power lines down in southwest part of county.						
Roane County									
1 NE Harriman	27	1755EST			0	0	11K		Thunderstorm Wind
			Trees and power lines down.						
Loudon County									
1 N Lenoir City	27	1800EST			0	0	9K		Thunderstorm Wind
			Trees down in north part of county.						
Knox County									
2 W Knoxville	27	1805EST			0	0	12K		Thunderstorm Wind
			Trees and power lines down.						
Hancock County									
2 SE Sneedville	28	1845EST			0	0	5K		Thunderstorm Wind
			Trees down near Hawkins County line.						
Hawkins County									
1 W Rogersville	28	1910EST			0	0	10K		Thunderstorm Wind
			Trees and power lines down.						
Greene County									
Baileyton	28	1925EST			0	0	1K		Thunderstorm Wind
			A large tree down.						
Washington County									
Taylor Mill	28	1925EST			0	0	1K		Thunderstorm Wind
			Tree down at the intersection of highways 81 and 75.						
Cocke County									
5 S Newport	29	1325EST			0	0			Hail (1.25)
Blount County									
Wellsville	29	1410EST			0	0			Hail (1.00)
			Also large tree limbs down.						
Jefferson County									
1 NE Jefferson City	29	1420EST			0	0			Hail (1.00)
			Hail reported at Cherokee Dam.						
Jefferson County									
New Market	29	1420EST			0	0			Hail (0.75)
Loudon County									
Lenoir City	29	1430EST			0	0			Hail (1.75)
Loudon County									
Lenoir City	29	1430EST			0	0	12K		Thunderstorm Wind
			Numerous trees down.						
Sevier County									
Kodak	29	1445EST			0	0	12K		Thunderstorm Wind
			Trees and power lines down.						
Monroe County									
Madisonville to Tellico Plains	29	1455EST			0	0	7K		Thunderstorm Wind
			Trees down in west part of county.						
Monroe County									
Vonore	29	1520EST			0	0	5K		Thunderstorm Wind
			Trees down.						
Sevier County									
Pigeon Forge	29	1540EST			0	0	10K		Thunderstorm Wind
			Trees and power lines down.						
Blount County									
Townsend	29	1600EST			0	0	15K		Thunderstorm Wind
			Trees down. Reported by National Park Service.						
Polk County									
Turtletown	29	1630EST			0	0	10K		Thunderstorm Wind
			Trees and power lines down.						

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<u>TENNESSEE, West</u>									
Gibson County									
Humboldt	03	1500CST 1505CST			0	0	1K		Thunderstorm Wind
A 100-year old maple tree was uprooted.									
Madison County									
Jackson	11	0900CST 1215CST			0	0	15K		Urban/Sml Stream Fld
Heavy rain caused several poorly drained roads in Jackson to flood. Over two feet of water covered a few of these roads and several businesses in the area were flooded.									
Henderson County									
Wildersville	24	1620CST 1625CST			0	0	5K		Thunderstorm Wind
A few trees were knocked down.									
Shelby County									
Germantown	25	1845CST 1850CST			0	0	5K		Thunderstorm Wind
Several trees were knocked down.									
<u>TEXAS, Central</u>									
Coleman County									
Coleman	10	0805CST 1000CST			0	0			Flash Flood
Heavy rainfall inundated sections of the city of Coleman, forcing the closure of several city streets.									
Mcculloch County									
Brady	10	1115CST 1345CST			0	0			Flash Flood
Heavy rainfall of up to 3 inches flooded streets and low water crossings throughout the city of Brady.									
Concho County									
South Portion	10	1125CST 1210CST			0	0			Flash Flood
Rainfall of up to 4 inches flooded several roads near Live Oak in southern Concho County.									
Menard County									
Countywide	10	1145CST 1345CST			0	0			Flash Flood
Rainfall of up to 7 inches flooded many roads and low water crossings across much of Menard County. Water up to 5 feet deep was reported across Highway 189, forcing the road to be closed for several hours.									
Very heavy rain of 3 to 7 inches fell across sections of the Heartland, Concho Valley, and Northwest Hill Country. Low water crossings and other low lying roadways were quickly closed as floodwaters covered the roadways.									
TXZ053									
Mitchell									
	11	0700CST			0	0			Flood
	12	1200CST							
Very heavy rainfall of up to 5 inches fell across parts of Scurry County on the 10th, causing the Colorado River across Mitchell County to climb out of its banks during the morning of the 11th. The river would crest at 12.0 feet on the evening of the 11th, about 3 feet above flood stage. Only minor flooding of low lying areas along the river was reported.									
<u>TEXAS, Central Southeast</u>									
NONE REPORTED.									
<u>TEXAS, Extreme West</u>									
Hudspeth County									
4.5 N Dell City	04	1620MST 1625MST			0	0			Thunderstorm Wind (G60)
Strong thunderstorm winds damaged part of a home and an adjacent building									
El Paso County									
El Paso	16	1730MST 1930MST			0	0			Flood
Heavy thunderstorm rains amounting to between one and two inches produced widespread urban and arroyo flooding on the east side of El Paso. There were numerous reports of stranded vehicles. Several vehicles were washed into a ravine in the lower valley. There were no injuries.									
El Paso County									
El Paso	17	1855MST 1900MST			0	0			Hail (0.75)
A spotter reported dime size hail in the north hills area of El Paso.									
El Paso County									
El Paso	20	1630MST 1930MST			0	0			Flood
Heavy rains produced by a series of thunderstorms caused localized urban and arroyo flooding. A 50 year old transient man was swept									

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TEXAS, Extreme West

away and killed by surging waters while taking refuge in a drainage tunnel near the intersection of Sunland Park Road and Mesa Street.

TEXAS, Mid - South

NONE REPORTED.

TEXAS, North

Somervell County
5 S Glen Rose

06 1700CST **0** **0** **5K** **Thunderstorm Wind**
High thunderstorm winds unroofed a mobile home.

Eastland County
Gorman

06 1930CST **0** **0** **Flash Flood**
Street flooding was reported in Gorman.

Eastland County
Gorman

06 1930CST **0** **0** **5K** **Thunderstorm Wind**
A school roof was damaged by thunderstorms. Trees and power lines were also blown down.

Tarrant County
Arlington

07 1545CST **0** **0** **Flash Flood**
1700CST
Parts of South Davis St. were flooded, as well as some underpasses.

Dallas County
Grand Prairie

10 1208CST **0** **0** **Flash Flood**
Several high water rescues were necessary due to flooding.

Dallas County
Dallas

10 1230CST **0** **0** **Flash Flood**
Street flooding was reported in Dallas.

Bell County
Temple

10 1710CST **0** **0** **Flash Flood**
1755CST
Part of Interstate 35 was closed due to high water from thunderstorm rains.

TEXAS, North Panhandle

Potter County
12 E Marsh

09 2030CST **0** **0** **Flash Flood**
2200CST

Flash flooding occurred in Alibates/McBride Canyon areas of Lake Meredith National Recreation Area as reported by U.S. Park Rangers during the late evening hours. A total of ten or eleven people were stranded in the high water in McBride Canyon. A Park Service vehicle in Alibates National Monument floated two hundred yards downstream and the Park Ranger had to be rescued. A total of four vehicles were stranded in McBride Canyon including a wrecker that was called out to assist one of the vehicles. A slow moving cold front and abundant low level moisture resulted in thunderstorms with locally very heavy rains over the southern end of Lake Meredith.

Armstrong County
9 S Washburn

16 1730CST **0** **0** **Hail (0.75)**

Armstrong County
9 S Washburn

16 1730CST **0** **0** **5K** **Thunderstorm Wind (G57)**
A storage building was blown over and large tree branches were downed.

Randall County
17 SE Canyon

16 1930CST **0** **0** **Flash Flood**
17 0300CST

Trash dumpsters and two high water markers were washed down the creek at Palo Duro Canyon State Park. The first low water crossing had four feet of water over it and two feet of silt. Texas Park Rangers also reported that the very heavy rainfall was causing rock slides.

A severe thunderstorm developed over the south-central Texas panhandle during the early evening hours producing some damaging winds and hail. Other thunderstorms developed over Palo Duro Canyon State Park in the south-central Texas panhandle producing very heavy rainfall and flash flooding from the evening hours and into the early morning hours.

Potter County
Amarillo Intl Arpt

31 1837CST **0** **0** **Thunderstorm Wind (G50)**
A severe thunderstorm over the south-central Texas panhandle during the early evening hours produced some high winds.

TEXAS, Northeast

Shelby County
Center

07 1818CST **0** **0** **Thunderstorm Wind (G52)**
Few large trees down along Hwy 96 on the southeast side of town.

TEXAS, South

NONE REPORTED.

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TEXAS, South Central									
Williamson County									
Countywide	10	1800CST 1930CST			0	0	20K	0	Flash Flood
Thunderstorms produced between 2 and 3 inches of rain generally over Travis and Williamson Counties, with up to 5 inches of rain in Williamson County near Georgetown. The flooding that resulted covered low water crossings and streets, causing minor damage, mainly in Williamson County.									
Travis County									
North Portion	10	1830CST 1930CST			0	0	5K	0	Flash Flood
Medina County									
West Portion	11	0300CST 0900CST			0	0	10K	0	Flash Flood
Uvalde County									
East Portion	11	0300CST 0500CST			0	0	10K	0	Flash Flood
Bandera County									
Countywide	11	0600CST 0800CST			0	0	15K	0	Flash Flood
Thunderstorms redeveloping frequently over Medina, Uvalde and Bandera Counties, produced widespread rain accumulations of 3 to 4 inches. Isolated totals of up to 6 inches were reported in the area from Bandera to Medina to Uvalde and Hondo. Sheriff's Departments in the three counties reported numerous roads flooded and closed through the early morning hours.									
Val Verde County									
North Portion	11	0700CST 1100CST			0	0	10K	0	Flash Flood
Thunderstorms over northern Val Verde County produced general 2 to 3 inch rain totals, with isolated amounts to near 5 inches northwest of Juno. Flooding was reported along the Devil's River near Juno and SH163 was closed due to high water.									
Lee County									
Lincoln	11	1400CST 1500CST			0	0	6K	0	Flash Flood
Brief heavy rain caused short-lived flooding near Lincoln, with roads quickly becoming passable again. One resident of Lincoln reported that the water accumulation was sufficient to dislodge and float her underground tornado shelter. She looked in her back yard to see the shelter spinning in its former hole.									
Karnes County									
Countywide	11	1800CST 1900CST			0	0	10K	0	Flash Flood
Thunderstorms moving slowly over Karnes County produced general 2 to 3 inch rainfall, with isolated totals to near four inches. Brief flooding was reported.									
Bandera County									
East Portion	11	1800CST 1930CST			0	0	10K	0	Flash Flood
Bexar County									
Northwest Portion	11	1830CST 2000CST			0	0	20K	0	Flash Flood
Comal County									
West Portion	11	1830CST 2000CST			0	0	10K	0	Flash Flood
Widespread thunderstorms between Bandera, San Antonio and New Braunfels, produced rain accumulations of 1 to 2 inches with isolated totals to near 4 inches. Sheriff's Departments in the three counties reported roads briefly flooded. The most severe flooding took place in Bandera County, which had experienced flooding earlier that morning.									
Llano County									
North Portion	12	1700CST 1800CST			0	0	5K	0	Flash Flood
Thunderstorms produced general 2 inch accumulations over the northern half of Llano County, with isolated totals to 4 inches. Short-lived flooding was reported due to the heavy rain, with roads briefly closed.									
Williamson County									
Countywide	12	1800CST 1900CST			0	0	5K	0	Flash Flood
Thunderstorms in Williamson County caused general 2 inch accumulations across the county. Isolated totals were reported near 4 inches. This, after the flooding just two days prior, caused brief flooding of streets and low areas.									
Lee County									
South Portion	13	1500CST 1600CST			0	0	5K	0	Flash Flood
Brief flooding was reported in the Giddings area and over southern Lee County as thunderstorms produced general 2 to 3 inch rainfall with isolated totals of up to 5 inches.									

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<u>TEXAS, South Central</u>									
Travis County									
Lago Vista	13	1650CST 1651CST			0	0	0	0	Funnel Cloud
The funnel was reported by the public. It did not touch down.									
Williamson County									
5 W Granger	13	1745CST 1746CST			0	0	0	0	Funnel Cloud
The funnel was reported by Sheriff's Deputies. It formed quickly but did not touch down.									
TXZ192									
Travis									
29	29	0700CST			1	0	0	0	Excessive Heat
A man, aged 40, was found wandering in Austin and suffering from heat stress. He was taken to a hospital but died. M40OU									
<u>TEXAS, South Panhandle</u>									
Garza County									
6 W Post	14	1749CST			0	0	0	50K	Hail (1.00)
Quarter-sized hail was reported 6 miles west of Post.									
Lubbock County									
Lubbock	16	2020CST 2130CST			0	0	10K		Flash Flood
Several roads and intersections in Lubbock were closed due to flooding.									
<u>TEXAS, Southeast</u>									
Hardin County									
Silsbee	12	1300CST			0	0	2K		Thunderstorm Wind
Trees falling in the Silsbee area knocked power out to 11,000 residents.									
Orange County									
Orange	12	1343CST			0	0	2K		Thunderstorm Wind
Trees and power lines were blown down.									
Jefferson County									
Beaumont	12	1350CST			0	0	5K		Thunderstorm Wind
Several trees and power lines were blown down.									
Jefferson County									
Beaumont	12	1400CST			0	1			Lightning
A 33 year old woman was struck by lightning as she was taking down a picnic umbrella in front of her house. She received minor injuries.									
Newton County									
Deweyville	12	1415CST			0	0	5K		Thunderstorm Wind
Roof damage to a home.									
<u>TEXAS, West</u>									
Scurry County									
Central Portion	10	0400CST 0800CST			0	0			Flash Flood
Rains of up to 5.2 inches in the Union area flooded U.S. Highway 180 west of Snyder and the collection of waters over the western and northern parts of the county caused flooding of Deep Creek in Snyder. The creek rose to cover 28th Street in town.									
Reeves County									
Northwest Portion	10	1200CST 1330CST			0	0			Flash Flood
Heavy rains from thunderstorms flooded U.S. Highway 285 north of Orla at the Salt Creek crossing. Several cars were reported to have been full of water.									
Loving County									
Central Portion	10	1400CST 1500CST			0	0			Flash Flood
Minor flooding was reported along State Highway 302 east of Mentone.									
Terrell County									
South Portion	10	1830CST 2000CST			0	0			Flash Flood
Extremely heavy thunderstorm rains east of Sanderson caused flooding on U.S. Highway 90. Flooding was as high as 3-4 feet deep.									
Brewster County									
South Portion	22	1900CST 2000CST			0	0			Flash Flood
Heavy rains in and north of Big Bend National Park resulting in flooding of roadways. U.S. Highway 385 about 5 miles north of Persimmon Gap became flooded.									
Jeff Davis County									
7 W Ft Davis	28	1430CST 1433CST	0.5	50	0	0			Tornado (F0)
A landspout tornado formed in the mountains west of Fort Davis. The tornado's life was spent on a grassy hillside resulting in no									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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TEXAS, West

Presidio County Paisano

damage. The tornado had a condensation funnel to the ground.

	28	1600CST 1700CST			0	0	10K		Flash Flood
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Thunderstorms in the Paisano Pass area dumped heavy rains at a Baptist Summer Camp, where usually dry draws became running torrents and even came out of their banks to flood the campground. Over 1200 people were in the camp at the time of the event. Eight cabins were flooded by the high water and numerous cars were stranded in mud. Rainfall measured at the camp was 2.8 inches. The running water pushed debris into U.S. Highway 67/90 near the camp.

Jeff Davis County 6 W Ft Davis to 5 W Ft Davis

	29	1140CST 1152CST	1.5	60	0	0	10K		Tornado (F1)
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A landspout tornado formed on a developing thunderstorm in the Davis Mountains in the Limpia Crossing Subdivision west of Fort Davis. A similar landspout formed the previous day very near to this location. A hay barn was destroyed, utility lines were downed, and insulation was strewn a couple of miles away from its starting point. The debris from the hay barn was scattered in many directions.

Brewster County 1 W Alpine

	30	1630CST			0	0	20K		Thunderstorm Wind
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Strong thunderstorms in the Alpine area dropped around 2 inches of rain in 40 minutes and contained at least one microburst that lifted a roof off a house, damaged a porch, overturned sheds, and downed utility lines and tree limbs.

Ector County 4 W Odessa

	31	1800CST			0	0	10K		Thunderstorm Wind
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A microburst on the west side of Odessa overturned a small mobile home, uprooted trees, blew sheet metal into utility lines and cut the lines. Also minor roof damage was reported.

Midland County 1 W Midland

	31	1830CST			0	0	10K		Thunderstorm Wind
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A microburst took the roof off a carport, uprooted some trees, and broke plate glass windows west of downtown Midland.

Midland County 5 WSW Midland

	31	2000CST 2100CST			0	0			Flash Flood
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Street flooding occurred in the southwest parts of Midland after a series of training storms passes over the area.

TEXAS, Western North

NONE REPORTED.

UTAH, East

Uintah County Jensen

	02	1615MST 1625MST			0	0	1K		Thunderstorm Wind (G50)
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Outflow winds from a thunderstorm which came up from the southwest blew down numerous tree branches and tore shingles off some residences.

Grand County 12 NE Moab

	08	1915MST 2000MST			0	0			Flash Flood
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Heavy rain on Parriott Mesa poured mud and boulders across nearly the entire length of Pace hill Road.

Grand County Crescent Jet

	14	1700MST			0	0			Lightning
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Lightning struck an electric power substation, knocking out power to the east side of Green River, Utah (20 miles west of Crescent Junction) for several hours.

Grand County Moab

	14	2100MST 2359MST			0	0	60K		Flash Flood
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Heavy rain resulted in flash flooding along Mill Creek in Moab. During the flash flood, the swollen creek was running 15 feet deep and 45 feet wide. The newly constructed Mill Creek Parkway received extensive damage, with about 75 feet of sidewalk destroyed and other sidewalk areas covered by 4 to 5 feet of mud. A large cement-block retaining wall along the parkway was also destroyed. Basements of some nearby homes were flooded. Road crews were called out to remove mud and debris from roads and storm drains in the community, as well as to remove rock and mud which was deposited onto State Highway 279 and US Highway 191 on the outskirts of Moab. A weather spotter in the Moab recorded 1.40 inches of rain which fell within a 2 hour period.

Grand County Moab

	27	1745MST 1815MST			0	0	10K		Heavy Rain
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A weather spotter in Moab reported an inch of rainfall within 30 minutes. Several homes and businesses were flooded. An east-side apartment complex near the hills had several lower units flooded with water and mud.

Grand County 5 N Thompson

	30	1530MST 1730MST			0	0	2K		Flash Flood
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A flash flood occurred in Sego Canyon, trapping a television news crew near the ghost town of Sego. The news crew videotaped the

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

UTAH, East

flash flood and reported a 6 foot wall of water and debris which came down the canyon, washing out a section of road.

UTAH, West and Central

Duchesne County

Myton	08	1200MST 1800MST			0	0	0	0	Heavy Rain
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Garfield County

Henrieville	08	1200MST 1800MST			0	0	0	0	Heavy Rain
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Iron County

Cedar City	08	1200MST 1800MST			0	0	0	0	Heavy Rain
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More heavy rain reports from the southwest and northeast parts of the state. In the southwest, the south part of Cedar City received .72 inches of rain in 15 minutes, and 1.10 inches fell in 45 minutes in Henrieville. Also, 12 miles south of Myton in northeast Utah, 1.25 inches was reported to have fallen in just 30 minutes.

Kane County

Glendale	10	1200MST 1800MST			0	0	5K	5K	Flash Flood
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Heavy rains in Kane County produce flash flooding near Glendale, with washes and culverts overflowing and sweeping away some sheep. Large trees also fell into the swollen east fork of the Virgin River, blocking the flow and causing it to overflow onto US89 near Orderville. Rainfall reports from the area included .84 inches in 35 minutes in Henrieville, and .35 inches in Orderville.

Millard County

Delta	13	1400MST 1600MST			0	0	0	0	Heavy Rain
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An afternoon thunderstorm dropped .90 inches of rain in a little over an hour near Delta. Another report of over an inch of rain estimated in Hinckley over a short period of time.

Kane County

Kanab	14	1200MST 2300MST			0	0	0	0	Heavy Rain
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Heavy rain fell in Kanab during the day, with 1.32 inches of rain being reported.

Emery County

Green River	14	1500MST 2300MST			0	0	1M	100K	Heavy Rain
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Torrential rains hit the Green River area on the evening of the 14th, causing widespread flooding of streets, homes and property. Over 2 inches of rain (2.16) fell in 6 hours, with most of that falling in a 2-3 hour period. The 24 hour rainfall was 3.05 inches, which was a new record rainfall for Green River. A dike was breached on I-70, which flooded an underpass to add to the problems. On a cattle and ostrich ranch, 15 baby ostriches were drowned. State Route 24 suffered major damage, with the road being covered with debris and shoulders washed out about 12 miles west of Green River. Water also washed through a private hunting reserve, wiping out 80% of the pheasants and chukars housed in pens. One home owner lost \$30,000 worth of ice-making equipment when his basement was flooded. To make matters worse, lightning struck a substation nearby and knocked out the power in Green River for several hours.

Salt Lake County

Riverton	14	1500MST 1600MST			0	0	10K	0	Heavy Rain
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A downpour in southern Salt Lake County dropped .82 inches in 20-30 minutes in Riverton, with a storm total of 1.15 inches. Water was reported in a few basements.

Emery County

Central Portion	14	1700MST 2300MST			0	0	10K	5K	Flash Flood
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Heavy downpours produced flash flooding in Buckhorn Wash in the San Rafael Swell, stranding several people in the canyon. Numerous mudslides and washouts were also seen in the same area. A flash flood washed rocks and debris onto I-70 near the reef section of the San Rafael Swell, below Spotted Wolf Canyon.

Carbon County

Wellington	14	1800MST 1900MST			0	0	0	0	Heavy Rain
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Very heavy rain fell in Wellington, with 1.25 inches reported in just 25 minutes.

Tooele County

Central Portion	17	1500MST 1530MST			0	0	0	0	Funnel Cloud
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High-based thunderstorms spawned 2 short-lived funnel clouds over the Tooele Valley during the afternoon hours.

Washington County

Rockville	19	1900MST 1915MST			0	0	1K	0	Heavy Rain
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Torrential rains that lasted only 15 minutes caused mudslides in Rockville, near the southwest border of Zion National Park. Large

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

UTAH, West and Central

rocks and mud were deposited on a road, but damage was minor.

Iron County Summit

26	1400MST 1600MST				0	0	0	0	Heavy Rain
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A thunderstorm brought much needed rain to portions of Iron County. A downpour dropped 1.50 inches in an hour, with 1.96 inches total in Summit.

Kane County Glen Canyon

27	1800MST 1900MST				0	0	50K	0	Thunderstorm Wind
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A severe thunderstorm with wind gusts near 60 mph moved over Lake Powell just north of Page, Arizona. The storm produced 8-12 foot swells, making for extremely hazardous boating conditions. Warnings were issued well in advance of the storm, so many boats were beached to prepare for the storm. Some boats did not make it however, and 2 were sunk. Nobody was injured during this event.

Kane County Glen Canyon

27	1830MST 2200MST				0	0	2K	2K	Flash Flood
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The same storm that sunk the boats on Lake Powell caused flash flooding in some campgrounds, and washed mud and debris over the road. Fortunately, the floods did not hit any campers or vehicles, as many were camping down on the beach near the shore at the time.

Iron County Countywide

28	1500MST 1700MST				0	0	0	0	Heavy Rain
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Thunderstorm downpours produced 1.25 inches of rain in 40 minutes at Brian Head ski resort, and .58 inches in 30 minutes in Cedar City.

Washington County Central Portion

28	1500MST 1700MST				0	0	10K	1K	Flash Flood
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Heavy rains caused the La Verkin Creek to overflow its banks, washing out a temporary road, a bridge, and three culverts. Flood waters along the creek overflowed the banks in the Cholla Creek Subdivision, with one house reporting minor damage.

Duchesne County Duchesne

29	1400MST 1600MST				0	0	0	0	Flash Flood
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Utah Highway Patrol reported flash flooding near Starvation Reservoir that flowed over a dirt road, trapping 2 people for a short period of time.

Emery County Central Portion

30	1200MST 1400MST				0	2	2K	0	Flash Flood
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A flash flood on 1-70 near milepost 128 washed a car off the road, with minor injuries reported.

Carbon County Sunnyside

30	1600MST 1700MST				0	0	1K	0	Heavy Rain
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Sunnyside didn't live up to it's name, as 1.65 inches fell in an hour. Minor flooding and street damage was reported.

VERMONT, North and Central

Grand Isle County Alburg Spgs

05	0210EST				0	0	5K		Thunderstorm Wind
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A mesoscale convective system consisting of a cluster of thunderstorms moved across northern NY and northern Vermont during the early morning hours of Monday, July 5th. There were numerous reports of trees and power lines blown down. For example, in Grand Isle county of Vermont, trees and large branches were blown down in Alburg Springs.

Franklin County Countywide

05	0215EST 0245EST				0	0	30K		Thunderstorm Wind
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A mesoscale convective system consisting of a cluster of thunderstorms moved across northern New York and northern Vermont during the early morning hours of Monday, July 5th. There were numerous reports of trees and power lines blown down across the county. This included the towns of Swanton, Highgate, Franklin, Sheldon, Bakersfield, Berkshire and Fairfield. Damage was reported to campers in the Swanton area while in Fairfield picnic tables and canoes were blown around. In the town of Franklin, Vermont extensive roof damage to a building resulted from the wind.

Orleans County Countywide

05	0235EST 0300EST				1	0	60K		Thunderstorm Wind
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

VERMONT, North and Central

A mesoscale convective complex consisting of a cluster of thunderstorms moved across northern New York and northern Vermont during the early morning hours of Monday, July 5th. Across Orleans county Vermont, there were numerous reports of trees and power lines blown down with thousands without power.

One death occurred on Lake Salem in Derby, Vermont when a person camping in a tent on a raft was blown away by thunderstorm winds. The tent became submerged and entangled in the water and the camper drowned.

In the Newport area, damage resulted when trees fell on tents and campers as well as on cars and boats. In North Troy, a tree was blown onto a house. Across the county, some damage resulted when trees fell on cars. M32CA

Essex County Countywide

05	0300EST 0330EST			0	0	10K	Thunderstorm Wind
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A mesoscale convective complex consisting of a cluster of thunderstorms moved across northern New York and northern Vermont during the early morning hours of Monday, July 5th. These storms blew down numerous trees and power lines as they moved across Essex county Vermont. The towns of Norton, Canaan, Island Pond and Lunenburg reported a good deal of tree damage.

Caledonia County East Burke

05	0300EST 0310EST			0	0	5K	Thunderstorm Wind
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Caledonia County West Burke

05	0300EST 0310EST			0	0	5K	Thunderstorm Wind
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Caledonia County Sheffield

05	0310EST 0320EST			0	0	30K	Thunderstorm Wind
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Caledonia County Sutton

05	0310EST 0320EST			0	0	5K	Thunderstorm Wind
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Caledonia County Lyndon

05	0315EST 0325EST			0	0	5K	Thunderstorm Wind
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A mesoscale convective complex consisting of a cluster of thunderstorms moved across northern New York and northern Vermont during the early morning hours of Monday, July 5th. Across the northern half of the county the following towns were greatly impacted with numerous reports of trees and power lines blown down: East and West Burke, Sutton, Sheffield, Lyndon. Over 1 thousand were without power. In addition, in the town of Sheffield, a pickup truck was totalled when a tree was blown on top of it.

Franklin County Highgate Center

06	1245EST			0	0	1K	Thunderstorm Wind
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A cold front moved across Vermont during the afternoon and evening of July 6th. Thunderstorms formed along and ahead of the front. In Highgate Center, Vt, thunderstorm related winds blew over a large tree and large branches.

Orleans County Derby Line

06	1250EST			0	0	5K	Thunderstorm Wind
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A cold front moved across Vermont during the afternoon and evening of July 6th. Thunderstorms formed along and ahead of the front. In Derby Line, Vt, thunderstorm related winds blew down large trees.

Lamoille County Hyde Park

06	1250EST			0	0	1K	Thunderstorm Wind
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Lamoille County Waterville

06	1250EST			0	0	5K	Thunderstorm Wind
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A cold front moved across Vermont during the afternoon and evening of July 6th. Thunderstorms formed along and ahead of the front. In the town of Hyde Park, Vt, thunderstorm related winds blew down a large tree, while in Waterville, Vt, trees were blown down.

Caledonia County West Danville

06	1326EST			0	0		Thunderstorm Wind (G51)
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Addison County Orwell

06	1332EST			0	0	1K	Thunderstorm Wind
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A cold front moved across Vermont during the afternoon and evening of July 6th. A tree was blown down in Orwell, Vt by thunderstorm related winds.

Rutland County Pittsford

06	1345EST			0	0	10K	Thunderstorm Wind
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Rutland County Sudbury

06	1404EST			0	0	5K	Thunderstorm Wind
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Rutland County Rutland

06	1405EST			0	0	10K	Thunderstorm Wind
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A cold front moved across Vermont during the afternoon and evening of July 6th. Thunderstorms formed along and ahead of the front. Large trees and power lines were blown down in the Vermont locations of: Sudbury, Rutland and Pittsford.

Washington County Calais

06	1350EST			0	0	5K	Thunderstorm Wind
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
VERMONT, North and Central									
Washington County									
Cabot	06	1400EST			0	0	5K		Thunderstorm Wind
									A cold front moved across Vermont during the afternoon and evening of July 6th. Thunderstorms formed along and ahead of the front. Numerous trees were blown down by thunderstorm related winds in the towns of Calais and Cabot.
Essex County									
Concord	06	1404EST			0	0	1K		Thunderstorm Wind
Essex County									
Lunenburg	06	1404EST			0	0	1K		Thunderstorm Wind
									A cold front moved across Vermont during the afternoon and evening of July 6th. The associated thunderstorms blew down a swath of trees in Concord and Lunenburg.
Windsor County									
Bridgewater	06	1415EST			0	0	1K		Thunderstorm Wind
Windsor County									
Woodstock	06	1420EST			0	0	5K		Thunderstorm Wind
Windsor County									
Chester	06	1430EST			0	0	5K		Thunderstorm Wind
Windsor County									
Hartland	06	1430EST			0	0	1K		Thunderstorm Wind
Windsor County									
Ludlow	06	1430EST			0	0	1K		Thunderstorm Wind
Windsor County									
White River Jct	06	1430EST			0	0	1K		Thunderstorm Wind
Windsor County									
Windsor	06	1430EST			0	0	5K		Thunderstorm Wind
									A cold front moved across Vermont during the afternoon and evening of July 6th. Thunderstorms formed along and ahead of the front...with numerous trees and power lines blown down in the towns of: Bridgewater, Woodstock, Chester, Windsor, Ludlow, Hartland and White River Jct.
Orange County									
Randolph	06	1415EST			0	0	5K		Thunderstorm Wind
									A cold front moved across Vermont during the afternoon and evening of July 6th. Thunderstorms formed along and ahead of the front with numerous trees and power lines blown down in Randolph.
Chittenden County									
North Underhill	07	2005EST			0	0	1K		Thunderstorm Wind
Chittenden County									
Williston	07	2010EST			0	0	1K		Thunderstorm Wind
									Thunderstorms developed ahead of a weather disturbance moving from southern Canada into northern Vermont Wednesday evening, July 7th. Some thunderstorms resulted in strong damaging winds. In the Vermont towns of North Underhill and Williston (Chittenden county), trees were blown down.
Chittenden County									
Essex Center	07	2010EST			0	0			Hail (0.75)
Chittenden County									
Essex Center	07	2010EST			0	0	30K		Thunderstorm Wind
									Thunderstorms developed ahead of a weather disturbance moving from southern Canada into northern Vermont Wednesday evening, July 7th. Some thunderstorms resulted in strong damaging winds. In Essex Center, Vermont (Chittenden county), trees were blown down. One tree landed on a house. In addition, 3/4 inch hail was reported.
Caledonia County									
Newark Hollow	07	2125EST			0	1			Lightning
									Thunderstorms developed ahead of a weather disturbance moving from southern Canada into northern Vermont Wednesday evening, July 7th. In Newark, Vermont (Caledonia county) a man was struck by lightning and treated.
Essex County									
Bloomfield	17	1925EST			0	0	1K		Thunderstorm Wind
									A warm humid airmass was established across Vermont. An evening thunderstorm moving across Essex county Vermont was accompanied by locally strong winds in the Bloomfield area with trees uprooted.
Washington County									
North Fayston	22	1830EST			0	0			Hail (1.00)
Washington County									
Waitsfield	22	1845EST			0	0			Hail (1.50)
									A large thunderstorm developed during the late afternoon and evening hours over the Green Mountains in Washington county Vermont. Large hail, 1 inch in diameter, was reported in North Fayston while hail 1 1/2 inches in diameter was reported in Waitsfield. In Moretown, Vermont hail was reported the size of marbles.
Orange County									
West Fairlee	22	1930EST			0	0	15K		Lightning
									Lightning struck a barn causing severe damage. Also, in the area power outages were reported due to lightning strikes.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

VERMONT, South

VTZ013>014

Bennington - Windham

04	1200EST								
06	1400EST				0	0			Excessive Heat

An intense Bermuda high became established over the mid Atlantic region during the Independence Day weekend. This high pumped heat along with very high humidity across extreme southern Vermont, especially on July 5 and 6. Temperatures soared to 90 or higher in valley locations while dewpoints climbed well into the 70s. At the Albany International airport, the temperature peaked at 94 on July 5 and 95 on July 6. However after combining humidity values, the heat index reached as high as 105 on both days. Temperatures were similar to Albany in valley locations of the southern Greens, but a little cooler over higher elevations.

Bennington County

Arlington to Pownal	06	1435EST							
					0	0	5K		Thunderstorm Wind

Bennington County

Stamford	06	1445EST							
					0	0	3K		Thunderstorm Wind

Windham County

Halifax	06	1505EST							
					0	0			Hail (0.75)

Windham County

Guilford Center	06	1510EST							
					0	0	150K		Thunderstorm Wind

A cold front moved from the Great Lakes eastward across New York State and then into southern Vermont on July 6. With sultry air in place, and favourable strong upper level winds, this front triggered a powerful squall line around midday which bore down on southern Vermont during the afternoon. Destructive thunderstorm winds brought down trees and power lines in Pownal and Stamford, Bennington county. Dime size hail was noted in Halifax, Windham county. By far the most widespread damage occurred at Guilford Center in Windham county. A microburst with estimated winds up to 90 mph, brought hundreds of trees down or sheared them in half. The most significant tree damage appeared along the upper sections of Jacksonville Stage, Miller and along northern sections of Sweet Pond roads. The microburst travelled 3 miles and damage fanned out to nearly 2.5 miles wide.

Bennington County

Rupert	18	1320EST							
					0	0	6K		Thunderstorm Wind

A pre-frontal trough sparked scattered thunderstorms in a very unstable air mass around midday on July 18. Some of the storms affecting southern Vermont became locally severe. A severe thunderstorm knocked down trees and wires in Ruppert, Bennington County along Route 153.

VIRGIN ISLANDS

St. Croix County

St. Croix	08	0800AST 1400AST							
					0	0			Urban/Sml Stream Fld

St. John County

St. John	08	0800AST 1400AST							
					0	0			Urban/Sml Stream Fld

St. Thomas County

St. Thomas	08	0800AST 1400AST							
					0	0			Urban/Sml Stream Fld

A tropical wave brought heavy downpours and strong winds across most of the U.S. Virgin Islands. Several streets flooded across the islands. Wind gusts of 41 mph were reported over St. Croix.

VIRGINIA, East

Louisa County

Bumpass	07	1502EST							
					0	0	2K		Thunderstorm Wind

Several trees down and power outages.

Nottoway County

Crewe	07	1505EST							
					0	0	2K		Thunderstorm Wind

Trees down.

Amelia County

Amelia	07	1520EST							
					0	0			Hail (0.75)

Powhatan County

Countywide	07	1550EST							
					0	0	2K		Thunderstorm Wind

Trees and power lines down countywide.

Amelia County

Masons Corner	07	1555EST							
					0	0	2K		Thunderstorm Wind

Several trees down on Route 604.

Mecklenburg County

Clarksville to Boydton	07	1603EST							
					0	0	1K		Thunderstorm Wind

Power lines down.

Chesterfield County

Midlothian	07	1624EST							
					0	0	1K		Thunderstorm Wind

Large tree down at Sycamore Square.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>VIRGINIA, East</u>									
Mecklenburg County									
Clarksville to South Hill	07	1629EST 1640EST			0	0	2K		Thunderstorm Wind
		Few trees down.							
Suffolk (C)									
Suffolk	07	1650EST			0	0	1K		Thunderstorm Wind
		Large tree down.							
Brunswick County									
Alberta	07	1700EST			0	0	2K		Thunderstorm Wind
		Numerous trees down.							
Greensville County									
Countywide	07	1725EST			0	0	2K		Thunderstorm Wind
		Numerous trees down countywide.							
Prince George County									
Countywide	07	1730EST			0	0	2K		Thunderstorm Wind
		Trees down countywide.							
Prince George County									
2 SW New Bohemia	07	1730EST			0	0			Hail (0.75)
Sussex County									
Waverly	07	1730EST			0	0	2K		Thunderstorm Wind
		Several trees down.							
Southampton County									
Capron to Boykins	07	1805EST			0	0	2K		Thunderstorm Wind
		Several trees down.							
Louisa County									
4 W Louisa	22	1530EST			0	0	2K		Thunderstorm Wind
		Few trees down.							
Fluvanna County									
5 W Palmyra	22	1550EST			0	0	2K		Thunderstorm Wind
		Few trees down.							
Fluvanna County									
3 W Fork Union	22	1640EST			0	0	2K		Thunderstorm Wind
		Few trees down western portion of county. Power lines down.							
Caroline County									
Port Royal	24	1325EST			0	1	20K		Thunderstorm Wind
		Numerous trees were downed, causing structural damage to two homes and one injury when a tree fell on a car. Many trees were down along Highway 17 between Rappahannock Academy and Port Royal.							
Portsmouth (C)									
Portsmouth	24	1355EST			0	0			Hail (0.75)
Prince Edward County									
5 NW Darlington Hgts	24	1435EST			0	0	2K		Thunderstorm Wind
		Few trees down.							
Cumberland County									
3 NW Cumberland	24	1440EST			0	0	2K		Thunderstorm Wind
		Several trees down.							
Southampton County									
Boykins	24	1445EST			0	0	1K		Thunderstorm Wind
		Large tree down on Route 671.							
Prince Edward County									
Prospect	24	1512EST			0	0	2K		Thunderstorm Wind
		Few trees down.							
Dinwiddie County									
Dinwiddie	24	1525EST			0	0	2K		Thunderstorm Wind
		Several trees down.							
Isle Of Wight County									
3 SW Whitley	24	1525EST			0	0	2K		Thunderstorm Wind
		Few trees down.							
Portsmouth (C)									
Portsmouth	24	1535EST			0	0	1K		Thunderstorm Wind
		Large tree (16-18" diameter) and many limbs down.							
Chesapeake (C)									
Deep Creek	24	1540EST			0	0	1K		Thunderstorm Wind
		Large tree down and blocking road.							

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>VIRGINIA, East</u>									
Chesapeake (C)									
Chesapeake	24	1545EST 2000EST			0	0			Flash Flood
			Parts of Interstate 264 were covered with more than 3 feet of water. Some other roads including Ballahack Road were also flooded. In addition, there was 14 feet of water reported on Military Highway at the Triple Decker Bridge. Fire Station 2 in Chesapeake near Norfolk was evacuated and the cars were under water.						
Norfolk (C)									
Norfolk	24	1545EST 2000EST			0	0			Flash Flood
			Many roads including Hampton Boulevard were flooded and impassable.						
Portsmouth (C)									
Portsmouth	24	1545EST 2000EST			0	0			Flash Flood
			Parts of Interstate 264 were covered with more than 3 feet of water. Some other roads were impassable. Spotter reported just over 7 inches of rain in 4 hours.						
Suffolk (C)									
Suffolk	24	1545EST 2000EST			0	0			Flash Flood
			Many roads were flooded and impassable.						
Virginia Beach (C)									
Virginia Beach	24	1545EST 2000EST			0	0			Flash Flood
			Many roads were flooded and impassable.						
Louisa County									
Poindexter	28	1800EST			0	0	2K		Thunderstorm Wind
			Several trees down.						
Caroline County									
Ruther Glen	28	1836EST			0	0	2K		Thunderstorm Wind
			Large trees down.						
Hanover County									
Montpelier	28	1840EST			0	0	2K		Thunderstorm Wind
			Several trees down.						
Dinwiddie County									
5 S Darvills	28	1910EST			0	0	2K		Thunderstorm Wind
			Several trees down.						
Chesterfield County									
Midlothian	28	1915EST			0	0	2K		Thunderstorm Wind
			Several trees down. Power outages.						
Dinwiddie County									
Carson	28	1950EST			0	0	2K		Thunderstorm Wind
			Few trees down.						
Sussex County									
Waverly	28	1950EST			0	0	1K		Thunderstorm Wind
			Large tree down behind paper mill.						
Sussex County									
5 S Stony Creek	28	1954EST			0	0	2K		Thunderstorm Wind
			Large trees down on Route 645.						
Surry County									
Spring Grove	28	2020EST			0	0	1K		Thunderstorm Wind
			Large tree (2 feet diameter) down on Route 10.						
Southampton County									
2 E Joyner	28	2030EST			0	0	1K		Thunderstorm Wind
			Large tree down across road near intersection of Routes 608 and 609.						
Hampton (C)									
Hampton	28	2100EST			0	0	2K		Thunderstorm Wind
			Few trees down on road.						
Isle Of Wight County									
Windsor	28	2100EST			0	0	1K		Thunderstorm Wind
			Large tree down across power lines.						
Norfolk (C)									
Norfolk	28	2120EST			0	0	1K		Thunderstorm Wind
			Large tree down, blocking road. Branches on power lines.						
Virginia Beach (C)									
Virginia Beach	28	2120EST			0	0	1K		Thunderstorm Wind
			Large tree down off Kings Road near London Bridge area.						

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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VIRGINIA, East

Goochland County Fife to Hadensville	29	1555EST 1605EST			0	0	2K		Thunderstorm Wind
Trees and power lines down.									
Fluvanna County 5 W Troy	29	1605EST			0	0	2K		Thunderstorm Wind
Trees down in the Lake Monticello area on Routes 53 and 618.									
Fluvanna County 3 S Palmyra	29	1622EST			0	0			Hail (1.75)
Powhatan County Central Portion	29	1630EST			0	0	2K		Thunderstorm Wind
Trees down.									
Amelia County 3 N Chula	29	1656EST			0	0	1K		Thunderstorm Wind
Large tree down.									
Nottoway County Crewe	29	1728EST			0	0			Hail (2.50)

VIRGINIA, Extreme Southwest

Russell County 2 NE Honaker to 3 NE Honaker	23	1515EST			0	0	14K		Thunderstorm Wind
Numerous trees down.									
Wise County Countywide	23	1730EST			0	0	22K		Thunderstorm Wind
Trees and power lines down.									
Russell County Swords Creek to Belfast	25	1745EST			0	0	14K		Thunderstorm Wind
Trees and power lines down.									
Russell County Lebanon	28	1930EST			0	0	5K		Thunderstorm Wind
Trees and power lines down.									
Washington County Countywide	28	1950EST			0	0	15K		Thunderstorm Wind
Trees down.									

VIRGINIA, North

VAZ021-025>031-036>042-050>057	Highland - Augusta - Rockingham - Shenandoah - Frederick - Page - Warren - Clarke - Nelson - Albemarle - Greene - Madison - Rappahannock - Fauquier - Loudoun - Orange - Culpeper - Prince William - Fairfax - Arlington - Stafford - Spotsylvania - King George				
01	0000EST	0	0	83M	Drought
31	2359EST				

High pressure was the dominant weather feature across Northern Virginia during the month. This forced most rain producing storm systems to steer north of the region and resulted in the continuation of the climatological, meteorological, and hydrological drought that had plagued the area since last summer. This was the 2nd warmest July on record, with an average temperature of 82.9 degrees. Record highs were set on the 5th and 6th, and temperatures rose above 90 degrees on average temperature of 82.9 degrees. Record highs were set on the 5th and 6th, and temperatures rose above 90 degrees on 22 of the 31 days. By the last week of July the Palmer Drought Index, a measure of long term drought conditions, indicated Northern Virginia was in an extreme drought except for the Central Shenandoah Valley which was in a severe drought. July was the 10th month in the past 12 months that precipitation was below normal. From August 1998 through July 1999 precipitation was a staggering 10 to 16 inches below average, the 2nd driest 12 months on record. Only 2.56 inches of rain fell at Dulles Airport during the month of July, 0.93 inches below normal. Reagan National Airport in Arlington reported a monthly total of only 1.01 inches, 2.79 inches below normal. Measurable rain only fell on 8 days during the month. The 12 month period from August 1st to July 31st was the driest since record keeping began 58 years ago at the Piedmont Agricultural Research Station in Orange. Additional July rainfall totals included Frederick, Shenandoah, and Clarke County at 2.8 inches; Warren County at 2.3 inches; Rockingham County at 2.4 inches; Orange County at 2.7 inches; Highland County at 1.3 inches; Augusta County at 4.4 inches; Page County at 3.8 inches; Madison and Albemarle County at 3.0 inches; Nelson County at 3.3 inches; Culpeper County at 5.0 inches; Rappahannock County at 5.1 inches; FAuquier County at 3.4 inches; Spotsylvania County at 2.3 inches; and Loudoun County at 2.8 inches.

The lack of rainfall affected water levels along the Potomac River, the main water source for extreme northern Virginia. The flow of water past Washington D.C. has been below average for the last 11 months. During July, the average daily flow of the river was only 18% of the long term average. Many upstream tributaries also reported extremely low water levels. For the first time, water was released from the Randolph and Little Seneca reservoirs near the Potomac headwaters on July 11th and 15th respectively to help maintain a safe water level for wildlife and human consumption. By July 31st, the Jennings Randolph Reservoir was 13.8% below capacity and the Little Seneca Reservoir was down 4 inches. Many stations on the Shenandoah and Rappahannock watersheds reported

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

VIRGINIA, North

streamflow at or below the 90 percent exceedence, which rivaled minimum daily mean flow values of the drought of 1980-82. The Shenandoah River dropped to less than 22% of its normal flow and the water level near Strasburg was at the lowest recorded in July since records began 72 years ago. Nearby, a recreational facility at Half Moon Beach reported water levels 12 to 15 feet below normal. Happy Creek in Front Royal was nearly dry by mid month, and Holman's Creek through Southern Shenandoah County went dry west of Forestville by the end of the month. The Rappahannock River was approaching 10% of normal flow, and west of Fredericksburg was flowing with just a few feet of water. Twenty miles upstream of Fredericksburg, the river was too shallow for canoes. Boat trips were only possible on the river 4 weekends out of the past year. By the third week of July, fewer than 40% of small streams in Culpeper County continued to run. The Occoquan Reservoir, the main water source for Southern Fairfax County, was 21% below capacity by the end of the month.

With such low water tables, most locations were forced to begin voluntary water restrictions. Some locations such as Loudoun County began mandatory restrictions. Many residents away from the Washington D.C. suburbs and larger cities depended on water deliveries after wells dried up. The Ni River Reservoir, main water source for Spotsylvania County, dipped 4 inches below the spillway by mid month. Lake Pelham, main water source for the town of Culpeper, was 11 inches below normal, and the Staunton Dam was down two feet. The Stephens City Quarry in Frederick County dropped 32 feet below normal during July, and amount equal to a two month supply of water. The Beaverdam Reservoir in Loudoun County was at 50% capacity, still recovering from being drained to fill Goose Creek Reservoir. This reservoir, the main water source for Loudoun and half of Fairfax County, fell to 2.5 feet below the dam by the end of the month, a level officials called dangerously low. Frederick County declared a drought emergency on the 14th, and Clarke County made the same declaration on the 20th.

The lack of precipitation was devastating for the agricultural community. Crops were dying in the fields, trees were prematurely shedding leaves in orchards, hay and pasture land were wilting, and watering holes and irrigation sources were slowly drying up. 46% of pasture land and 77% of non-alfalfa hay crops across the state were reported in poor or very poor condition. Corn that should have been 6 feet high was only waist-high at best and did not germinate. Some farmers had to reduce their herd sizes in order to stretch hay and water supplies. The Frederick County auction reported cattle sales were five times above normal. In Shenandoah County, extension agents reported 3,000 cattle had died or were sold to slaughter early during the month. Augusta County estimated drought losses at \$20,000,000, with every cash crop reporting a yield loss of at least 70%. The Page County extension office reported more than half of the crops in the county were lost. Loudoun County estimated \$15,000,000 in agricultural losses. Clark County expected \$8,000,000 in losses, citing 75% of corn beyond recovery. Rappahannock County reported \$2,500,000 in losses citing 65,000 acres of devastated pasture land. In addition to agricultural lands, forest and rural vegetation were also dangerously dry. The Virginia Department of Forestry reported a record fire season January through July, 1320 fires burning 6146 acres. This number already exceeded the amount of fires reported in 1998. During the month of July alone, 61 fires burned 280 acres. The Cumulative Severity Index, a measure of fire danger which ranges from 1 to 800, gave Northern Virginia a rating of 628 by month's end. Animal control officials also attributed an increase of wildlife entering populated areas in search of food and water to the drought.

VAZ021-025>031-
036>042-050>057

Highland - Augusta - Rockingham - Shenandoah - Frederick - Page - Warren - Clarke - Nelson - Albemarle - Greene - Madison - Rappahannock - Fauquier - Loudoun - Orange - Culpeper - Prince William - Fairfax - Arlington - Stafford - Spotsylvania - King George

04 0800EST 1 80 Excessive Heat
07 1200EST

High pressure sat off the Mid-Atlantic coast from the 4th through the 7th, acting like a heat pump drawing extremely warm and humid air into Northern Virginia. Temperatures on the 4th through early on the 7th were oppressively hot, and extremely humid conditions added to the misery. These conditions continued until a cold front swept through the area during the afternoon of the 7th, ushering cooler and much less humid air. The mercury soared into the upper 90s to lower 100s during the period. Dew points were in the lower to middle 70s, creating heat indices between 100 and 115 degrees. Overnight lows only dipped into the 70s and heat index values ranged from the upper 70s to upper 80s. The heat index only dropped to 90 degrees at National Airport in the Washington D.C. suburbs on the morning of the 6th. Record highs were broken at Washington National Airport on the 5th and 6th. The record high at Dulles International Airport was broken on the 4th and tied on the 5th. High temperatures on the 3rd included 97 degrees at Winchester, 96 degrees at Woodstock, 95 degrees at Dale Enterprise, and 94 degrees at Sterling. Afternoon readings on the 4th included 103 degrees at Dale Enterprise, 102 degrees at Front Royal, 101 degrees at Woodstock, 100 degrees at Edinburg, 99 degrees at National Airport, 98 degrees at Fredericksburg and Luray, and 97 degrees at Dulles International Airport and Winchester. High temperatures on the 5th included 102 degrees at Washington National Airport, 101 degrees at Edinburg and Fredericksburg, 100 degrees at Orange, 99 degrees at Dulles International Airport and Staunton, and 98 degrees at Culpeper. Highs on the 6th included 103 degrees at Front Royal and National Airport, 102 degrees at Winchester, 101 degrees at Fredericksburg, 100 degrees at The Plains, and 99 degrees at Dulles Airport.

Because of the 4th of July holiday weekend, many people were inconvenienced by the oppressive conditions. Many holiday events had low attendance, with the exception of the late evening fireworks displays which occurred after temperatures fell below 90 degrees. Those who spent considerable time outdoors were subject to heat related illnesses. On the early evening of the 3rd, a 58 year-old man who was hiking for two hours with his family near the Doyles River Trail at Shenandoah National Park in Rockingham County died from a heart attack brought on by heat stress. Rockingham officials reported 6 other heat related injuries from the 3rd through the 7th. The number of persons treated for heat related illnesses in other locations included at least 5 in Augusta County, 1 in Charlottesville, 9 in Fauquier County, 7 in Frederick and Loudoun Counties, 24 in Fairfax County, and 21 in Alexandria. In addition, 6,000 turkeys were killed by the heat wave in Orange County.

Road surfaces and cars also fell victim to the heat. A major asphalt buckle occurred on Interstate 395 between King Street and Seminary Road in the Washington D.C. suburbs, closing all southbound lanes for a short time on the 8th. Tar on roads near

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

VIRGINIA, North

Community Park and New Market in Shenandoah County melted and had to be covered with gravel. State police reported 30 vehicles were disabled by the heat. Virginia Power reported a record high consumption of energy during the late afternoon of the 5th and 6th. High demand for electrical power blew transformers, leading to widely scattered power outages. Staunton cancelled summer school classes on the 6th due to the heat. The heat also contributed to several wildfires. A fire in Rockingham County sparked by an electric fence burned 60 acres. One firefighter battling the blaze had to be treated for heat problems. In Shenandoah County, an overheated car off Virginia Route 720 ignited a fire that burned 9 acres of barley. The exhaust system of a second car caught fire and sparked another fire in the same field. Another 20 acres burned near Meems Bottom after a spark from farm machinery set a grass field ablaze. People setting off fireworks near Singers Mill set another blaze which burned a quarter acre of field grass and came within 100 yards of a home. M58OU

Fauquier County Delaplane

08	1900EST			0	0		3K	Lightning
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Livestock killed by lightning strike
Five Angus heifers and one bull, valued at \$3000, were killed by lightning at a Delaplane field on the evening of the 8th.

Clarke County 4 S White Post

09	1330EST 2020EST			0	0	92K	6.7K	Wild/Forest Fire
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60 acres of wheat, 5 acres of farmland, 2 acres of woodland, and a combine destroyed
A combine moving through a wheat field around 2:30 PM EDT overheated and started a fire that spread rapidly due to extremely dry conditions. Within minutes flames destroyed the combine estimated to be worth about \$92,000 and swept eastward across a field of foot high wheat stubble. The fire was extremely intense, with flames reaching 15 feet in height. Three State Department of Forestry fire fighting units and nine volunteer fire companies from Frederick, Clarke, and Warren Counties battled the blaze. The fire was brought under control by 5:00 PM EDT and completely extinguished at 9:20 PM EDT. Six firefighters were treated for heat exhaustion at the scene during the operation. The fire ended up burning 60 acres of wheat valued at around \$6,700, 5 acres of farmland, and 2 acres of woodland.

Nelson County 3 SW Lovingson

14	1500EST			0	0	5K		Hail (1.00)
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Hail size estimated from damage report

Nelson County 1 SW Lovingson

14	1500EST			0	0	15K		Lightning
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Barn hit by lightning damaged by resulting fire

Nelson County 3 SW Lovingson

14	1500EST			0	0	100K		Lightning
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Vacant house hit by lightning caught fire and burned to the ground
A thunderstorm that moved through Nelson County during the afternoon of the 14th produced large hail, frequent lightning, and brief heavy rain around the Lovingson area. Two separate lightning strikes started fires in the northwest part of the county. The first strike hit a vacant house about 3 miles southwest of Lovingson on Virginia Route 652 near Freshwater Cove. The fire that resulted burnt the home to the ground. As firefighters arrived to battle the blaze they were confronted by 10 to 15 minutes of hail, and officials reported crop damage and dented automobiles from the deluge. The second lightning strike hit an old barn one mile southwest of Lovingson near Thompson's Store. The barn caught fire and was significantly damaged. Lightning also caused power outages in the communities of Nellysford, Roseland, and Piney River, in addition to the immediate Lovingson area. Heavy downpours with the storm were also blamed for a two vehicle accident near the intersection of Highway 29 and Main Street in Lovingson.

Albemarle County North Portion

18	1510EST			0	0	5K		Thunderstorm Wind
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Trees downed

Greene County 4 S Ruckersville

18	1515EST			0	0	1K		Thunderstorm Wind
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Trees downed on Route 604 near the Albemarle County line

Loudoun County 4 SE Ashburn

18	1709EST			0	0			Thunderstorm Wind (G55)
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Dulles Airport ASOS measured wind gust

Loudoun County 2 SE Ashburn

18	1709EST			0	0	5K		Thunderstorm Wind
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Trees downed on Route 606 and Moran Road

Fairfax County 1 SW Herndon

18	1725EST			0	0	15K		Thunderstorm Wind
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Minor damage to home under construction and trees downed
A line of thunderstorms producing winds in excess of 55 MPH, frequent lightning, and heavy downpours moved from Central Virginia to Northeast Virginia between 4:00 PM and 6:45 PM EDT. As the storms moved through Albemarle County, severe winds blew down several trees in the northern part of the county around 4:10 PM EDT. Trees were downed on Route 604 in extreme southeast Greene County around 4:15 PM EDT. The storms weakened for a time as they moved into Northern Virginia, then strengthened once again as they moved into Loudoun County. At Dulles International Airport, a gust of 63 MPH was recorded at 6:09 PM EDT. Trees and power lines were downed about 2 miles north of the airport on Route 606 and near the Dulles Post Office on Moran Road. Power outages were reported in the vicinity. As the storms moved into Fairfax County, strong winds tore tar paper and flashings off townhomes under construction a mile southwest of Herndon at 6:25 PM EDT. A few pine trees were also downed nearby.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>VIRGINIA, North</u>									
Culpeper County									
Culpeper	22	1355EST 1410EST			0	0			Hail (1.00)
Culpeper County									
Culpeper	22	1410EST			0	0	5K		Thunderstorm Wind
									Trees and power lines downed
Madison County									
Elly	22	1450EST			0	0			Hail (1.00)
Orange County									
Gordonsville	22	1505EST			0	0			Hail (1.00)
									Very warm and humid air just east of the Appalachian Mountains helped to fire scattered thunderstorms in the mid afternoon hours. One area of storms that moved across Culpeper, Madison, and Orange Counties between 2:45 PM and 4:15 PM EDT produced wind gusts in excess of 55 MPH and 1 inch diameter hail. Trees and power lines were downed in the city of Culpeper around 3:10 PM EDT. Another storm that produced very heavy rain lowered visibilities significantly as it moved across Fairfax County around 3:15 PM EDT which was a contributing factor in two serious multi-car accidents. One 22 car pileup occurred on Interstate 66 near the intersection of Highway 28. Twenty people were injured in the crash and the interstate had to be closed for a short time while emergency personnel attended to the injured and cleared debris. Another multi-car crash, just minutes later, occurred on Interstate 95 between the Lorton and Newington exits, closing the artery for several hours. Eighteen cars were involved and 15 people were injured.
Harrisonburg (C)									
Harrisonburg	24	1130EST			0	0	10K		Thunderstorm Wind
									Tree downed onto car on Route 11 just north of Harrisonburg
Page County									
Shenandoah to Stanley	24	1130EST 1145EST			0	0	4K		Thunderstorm Wind
									Trees downed
Madison County									
Syria	24	1145EST 1200EST			0	0	5K		Thunderstorm Wind
									4 downed trees on Route 600, downed trees on Route 231 and 634, and 6 trees downed in open areas
Culpeper County									
Countywide	24	1200EST 1230EST			0	0	10K		Thunderstorm Wind
									Numerous trees downed across county and one shed blown over
Fauquier County									
1 N Remington	24	1230EST			0	0			Hail (1.00)
Fauquier County									
1 N Remington	24	1230EST			0	0	10K		Thunderstorm Wind
									Barn roof blown off and carried 100 feet
Prince William County									
Gainesville	24	1245EST			0	0	10K		Thunderstorm Wind
									Downed trees and power lines blocked Glenkirk Road and Linton Hall Road
Orange County									
2 SE Flatrun to 4 SE Flatrun	24	1255EST 1257EST	1	75	0	0	50K		Tornado (F1)
									Several trees downed, some damaging homes and scattering debris on a nearby golf course near Route 3
Spotsylvania County									
1 W Wilderness Corner 4 N Concord Hgts	24	1257EST 1313EST	13	75	0	0	150K		Tornado (F1)
									Hundreds of trees uprooted and snapped and buildings damaged along the Route 3 corridor
Spotsylvania County									
North Portion	24	1300EST 1315EST			0	0	20K		Thunderstorm Wind
									Numerous trees downed
Fredericksburg (C)									
Fredericksburg	24	1313EST 1318EST	2	75	0	0	20K		Tornado (F1)
									Spotsylvania County tornado crossed over the city of Fredericksburg
Spotsylvania County									
1 W Sylvania Hgts to Sylvania Hgts	24	1318EST 1320EST	1	75	0	0	2K		Tornado (F1)
									Trees downed
Spotsylvania County									
Four Mile Fork	24	1320EST			0	0	15K		Thunderstorm Wind
									Damage to roof at Fredericksburg Academy

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>VIRGINIA, North</u>									
Stafford County									
1 SW Falmouth to Falmouth	24	1320EST 1322EST	1	75	0	0	10K		Tornado (F1)
			Trees and power lines downed						
King George County									
Countywide	24	1330EST 1400EST			0	0	1K		Thunderstorm Wind
			Trees downed						
Rockingham County									
Elkton	24	1700EST			0	0	68K		Lightning
			Lightning started a fire that burned a 100 year old two story home to the ground						
Loudoun County									
Round Hill to Bluemont	24	1900EST			0	0	5K		Thunderstorm Wind
			Trees downed between Middleburg and Aldie on Highway 50						
Loudoun County									
Middleburg to Aldie	24	1910EST 1920EST			0	0	5K		Thunderstorm Wind
			Trees downed on Route 50 between Middleburg and Aldie						

Warm and humid air ahead of a cold front combined to produce scattered thunderstorms across the northern half of Virginia from midday through sunset. The first batch of thunderstorms developed over Rockingham County around 12:30 PM EDT and moved eastward to the Potomac River by 3:00 PM EDT. These storms produced winds in excess of 55 MPH, large hail, frequent lightning, and a tornado that crossed parts of Orange, Spotsylvania, and Stafford County. As the storms passed through Harrisonburg, a tree was toppled onto a car on Route 11 and marble sized hail was reported. When the storms crossed Page County, trees were downed in Shenandoah, Stanley, and Luray. Madison County reported fallen trees on Route 634, 4 trees downed across Route 600, and 6 other fallen trees in yards across the county. Another tree that fell across Route 231 caused a vehicle accident. The storms downed several trees in Culpeper County. A car in the city of Culpeper was flattened by an uprooted tree, and severe winds also blew over a shed. The storms crossed Southern Fauquier County and blew a roof off of a 60x100 foot barn and tossed the debris 100 feet near the intersection of Route 28 and 29. The storms were also responsible for extensive damage in the Lake of the Woods area of Northern Orange County. Numerous trees were knocked down, scattering debris on a golf course. Fallen trees also damaged several houses, closed several roads, and knocked out power in the community.

A tornado developed near Lake of the Woods in Orange County. It stayed on the ground for 20 miles and moved across northern Spotsylvania County, the city of Fredericksburg, and the northwest portion of Stafford County. The tornado was of F1 strength for most of its path, occasionally weakening to F0 strength in some locations. The tornado entered Spotsylvania County near Wilderness Corner, downing trees near the intersection of Route 3 and 613 and taking shingles off homes. The tornado continued to topple soft and hardwood trees as it moved east to Chancellorville, and damaged the roof of a barn on Route 612 and Johnsons Corner. Siding and shingles were stripped from homes in Stonewall Estates. The tornado remained on the ground moving east just south of Route 3. It damaged trailer classrooms at Salem Elementary School near the intersection of Route 3 and 639. Next, the storm passed directly over the southern half of the city of Fredericksburg, downing several more trees and power lines, blocking roads and knocking power out for 12,000 customers. Nine buildings in the city were significantly damaged. The tornado finally dissipated as it reached Falmouth. Winds gusted over 55 MPH in northern Spotsylvania County just south of the tornado's path, causing more damage. In the city of Spotsylvania trees were downed by the sudden downburst of wind. Near Four Mile Fork, wind gusts blew part of the roof off the Fredericksburg Academy and rainwater falling through the open roof damaged the gym floor. Across all of Spotsylvania County, 45,000 customers lost power as a direct result of the storm. The storm still packed a punch when it moved across Stafford, King George, and Prince William Counties. Severe winds downed trees and power lines on Glenkirk Road and Linton Hall Road in Western Prince William County, leaving 1,000 residents without power. One 80 foot tall tree was uprooted and fell across Route 29 near the intersection of Interstate 66. Parts of Southern Stafford County lost power after downed trees fell onto power lines. Most of the downed trees were in the Falmouth area. Only a few trees were knocked down in King George County, causing minimal damage.

A few additional thunderstorms developed between 6:00 PM and 9:00 PM EDT just east of the Appalachian Mountains. One isolated storm moved across Loudoun County and produced winds in excess of 55 MPH. Trees and power lines were downed between Aldie and Middleburg on Route 50, and on Route 7 between Bluemont and Round Hill. Lightning from a storm over Rockingham County caught a 100 year old house valued at \$68,000 on fire and burned the structure to the ground.

Loudoun County									
Bluemont	25	2000EST			0	0	5K		Thunderstorm Wind
			Several trees downed blocking driveways and roads						
Loudoun County									
Aldie	25	2015EST			0	0	5K		Thunderstorm Wind
			Trees downed						
Fairfax (C)									
Fairfax	25	2020EST			0	0	0.50K		Thunderstorm Wind
			Tree downed onto Prosperity Avenue						

An area of thunderstorms developed over the Eastern Panhandle of West Virginia and moved across Loudoun and Fairfax Counties between 8:30 PM and 9:30 PM EDT. These storms produced heavy downpours and winds in excess of 55 MPH. Several trees were downed between Round Hill and Bluemont and near Aldie in Loudoun County. A tree was also downed in the city of Fairfax and

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
<u>VIRGINIA, North</u>									
temporarily blocked Prosperity Avenue.									
Rappahannock County Sperryville	28	1620EST			0	0	2K		Thunderstorm Wind (G52)
Trees downed									
Fauquier County Opal	28	1645EST			0	0	3K		Thunderstorm Wind
Trees downed with estimated wind gust of 60-70 MPH									
Rappahannock County West Portion	28	1650EST			0	0	8K		Thunderstorm Wind
Trees downed in west portion to county along the Hughes River									
Fauquier County Warrenton to 15 SE Warrenton	28	1700EST			0	0	5K		Thunderstorm Wind
Trees and power lines downed in Warrenton, Summerduck, and Goldvein									
Waynesboro (C) Waynesboro	28	1700EST			1	0	0.50K		Thunderstorm Wind
48 year old woman killed by falling tree F48UT									
Prince William County Dumfries	28	1715EST			0	0	4K		Thunderstorm Wind
Trees and power lines downed along Dumfries Road									
Stafford County Falmouth	28	1715EST			0	0	4K		Thunderstorm Wind
Trees and power lines downed									
Afternoon highs in the 90s and very moist and unstable air combined to produce scattered thunderstorms across the northern portion of Virginia. Several of these storms produced winds in excess of 55 MPH, heavy downpours between 5:00 PM and 6:30 PM EDT. Winds were estimated between 60 and 70 MPH in the community of Opal in Southern Fauquier County around 5:45 PM EDT and a wind gust of 60 MPH was reported at Sperryville in Rappahannock County at 5:20 PM EDT. These severe winds downed trees and power lines in several locations of Rappahannock and Fauquier Counties, and in isolated locations in Prince William and Stafford Counties. An observer in Opal reported 1.22 inches of rainfall in only 30 minutes as the storms passed through. In the city of Waynesboro, a 42 year old woman was killed as winds from a passing thunderstorm toppled a 25 foot tall locust tree onto her as she was trying to free a pet from an outdoor kennel around 6:00 PM EDT.									
Clarke County White Post	31	1330EST			0	0	2K		Thunderstorm Wind
6 trees downed, some blocked Route 644									
Augusta County Annex	31	1500EST			0	0			Hail (0.75)
Augusta County Annex	31	1500EST	0.1	100	0	0	15K		Tornado (F1)
Barn destroyed, greenhouse damaged, and trees snapped 5 miles East of Staunton									
Scattered thunderstorms developed over the Shenandoah Valley between 2:00 PM and 4:30 PM EDT. One storm moved across Clarke County and produced winds in excess of 55 MPH, downing trees in White Post. Two trees blocked Route 644. A second storm moved through Augusta County around 4:00 PM EDT and produced a short-lived tornado about 5 miles east-southeast of Staunton. The tornado was about 100 yards wide and stayed on the ground for only one tenth of a mile. A large perennial nursery was damaged by the twister. Windows were blown in on the northwest side of a greenhouse. A large barn roof was torn from its foundation and thrown 600 feet. One beam weighing 100 pounds was buried into the ground and the roof itself was rolled into a ball. In addition, several trees on the property were snapped or bent. The storm also produced three quarter inch diameter hail. Lightning from another thunderstorm ignited a forest fire west of Woodstock in Shenandoah County on the 31st.									
<u>VIRGINIA, Northwest</u>									
VAZ003>004									
Dickenson - Buchanan									
	01	0000EST			0	0			Drought
	31	2300EST							
Drought conditions spread into Buchanan and Dickenson Counties during the month. Monthly rain totals were mostly in the 2.5 to 3.5 inch range. However, the hot temperatures evaporated most of the moisture received from scattered showers. Clintwood reached 95 degrees on the afternoon of the 31st.									
That was their warmest temperature since 1985.									
Buchanan County Hurley to Davenport	30	0940EST 0950EST			0	0	10K		Thunderstorm Wind
Several trees were blown down along this corridor. Power outages occurred in Dual.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

VIRGINIA, Southwest

VAZ007-009>020-022>024-032>035-043>047-058>059 **Tazewell - Smyth - Bland - Giles - Wythe - Pulaski - Montgomery - Grayson - Carroll - Floyd - Craig - Alleghany - Bath - Roanoke - Botetourt - Rockbridge - Patrick - Franklin - Bedford - Amherst - Henry - Pittsylvania - Campbell - Appomattox - Buckingham - Halifax - Charlotte**

01	0000EST			0	0				Drought
31	2359EST								

Dry conditions that began in July of 1998, subsided for several months during the later part of 1998 and the first part of 1999, returned in June of 1999 and continued in many areas through July. In many areas, crops were damaged or destroyed. Water levels in creeks, streams, and rivers remained very low. Carvins Cove reservoir, the water supply for Roanoke City, was a record low of around 28 feet below capacity near the end of the month.

Pittsylvania County									
Dry Fork	07	1300EST			0	0			Hail (0.75)
Danville (C)									
Danville	07	1315EST			0	0			Hail (0.75)
Pittsylvania County									
Blairs	07	1345EST			0	0			Hail (0.88)
Franklin County									
Boones Mill	07	1350EST			0	0	25K		Lightning
Franklin County									
Burnt Chimney	07	1420EST			0	0			Hail (0.75)
Franklin County									
2 SE Burnt Chimney	07	1430EST			0	0	0		Thunderstorm Wind
Amherst County									
Amherst	07	1440EST			0	0			Hail (0.75)
Amherst County									
Central Portion	07	1445EST 1450EST			0	0	0		Thunderstorm Wind
Bedford County									
Forest	07	1515EST			0	0			Hail (1.75)
Campbell County									
Naruna	07	1530EST			0	0			Hail (1.00)
Halifax County									
Scottsburg	07	1530EST			0	0	0		Thunderstorm Wind
Botetourt County									
Troutville	07	1635EST			0	0			Hail (0.88)
Franklin County									
Boones Mill	07	1815EST			0	0	2K		Lightning

Thunderstorms during the afternoon and early evening of the 7th produced damaging winds, damaging lightning, and hail up to 1 3/4 inches in diameter.

Thunderstorm winds downed trees in central Amherst County, 2 miles southeast of Burnt Chimney, and in Scottsburg, with one tree blocking a road.

Lightning struck and damaged two houses in Boones Mill, in the early afternoon and evening.

Patrick County									
1 N Claudville	18	1500EST			0	0	0		Thunderstorm Wind
Pittsylvania County									
5 NE Cascade	18	1520EST			0	0	2K		Hail (1.25)
Roanoke (C)									
Roanoke	18	1615EST 1630EST			0	0	0		Thunderstorm Wind
Roanoke (C)									
Roanoke	18	1620EST			0	0	10K		Lightning
Grayson County									
Fries	18	1645EST			0	0	0		Thunderstorm Wind
Botetourt County									
Countywide	18	1700EST 1730EST			0	0	0		Thunderstorm Wind

Thunderstorms during the afternoon of the 18th produced damaging winds, hail up to 1 1/4 inches in diameter, and damaging lightning.

Thunderstorm winds downed trees 1 mile north of Claudville, trees and powerlines in Roanoke, two trees onto Highway 94 in Fries, and trees across Botetourt County.

Lightning struck a house in the northern part of Roanoke, starting a fire.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

VIRGINIA, Southwest

Hail up to 1 1/4 inches in diameter 5 miles northeast of Cascade damaged a corn crop.

Pittsylvania County 5 NE Cascade	21	1515EST			0	0	0		Hail (1.25)
Campbell County Lynch Station	21	1800EST			0	0			Hail (0.75)
Campbell County Lynch Station	21	1815EST			0	0	0		Thunderstorm Wind
Roanoke (C) Roanoke	21	1815EST			0	0			Hail (0.88)
Pittsylvania County Northwest Portion to North Portion	21	1855EST			0	0			Hail (0.88)
Pittsylvania County Pittsville	21	1920EST			0	0	10K		Thunderstorm Wind
Henry County Countywide	21	2030EST 2115EST			0	0	30K		Lightning
Martinsville (C) Martinsville	21	2030EST			0	0	10K		Thunderstorm Wind
Martinsville (C) Martinsville	21	2045EST 2200EST			0	0	50K		Flash Flood

Thunderstorms during the afternoon and evening of the 21st produced damaging wind, hail up to 1 1/4 inches in diameter, and flash flooding.

Thunderstorm winds downed trees in Lynch Station, trees in the City of Martinsville damaging a house, and downed large tree limbs and caused crop damage to several fields of tobacco plants in Pittsville.

Thunderstorm rains caused significant flash flooding in Martinsville. Flood waters washed out one bridge on Smith Lake Road, flooded 25 roads, with up to 4 feet of water on business U.S. Route 220, caused a mudslide onto U.S. Route 58, and flooded three businesses along the Smith River. A woman was rescued by police from her car that was nearly completely submerged in flood waters.

Lightning during the evening of the 21st struck 3 houses in Henry County, starting fires that damaged the houses.

Pittsylvania County Hurt	21	1855EST			0	0			Hail (0.88)
Thunderstorms on the 21st produced hail up to nickel size.									
Franklin County Gladehill	22	1707EST			0	0	0		Thunderstorm Wind
Buckingham County Centenary	22	1730EST			0	0			Hail (0.88)
Martinsville (C) Martinsville	22	1810EST			0	0			Hail (1.75)
Martinsville (C) Martinsville	22	1810EST			0	0	0		Thunderstorm Wind

Thunderstorms during the late afternoon of the 22nd produced damaging winds and hail up to 1 3/4 inches in diameter.

Thunderstorm winds downed trees onto powerlines along route 40 in Gladehill and tree limbs 2 inches in diameter in Martinsville.

Wythe County Wytheville	24	1252EST			0	0	0		Thunderstorm Wind
Carroll County Sylvatus	24	1300EST			0	0	0		Thunderstorm Wind
Patrick County 2 E Stuart	24	1355EST			0	0			Hail (0.75)
Patrick County Stuart	24	1400EST			0	0	0		Thunderstorm Wind
Giles County Kimballton	24	1415EST			0	0	0		Thunderstorm Wind
Danville (C) Danville	24	1430EST			0	0	5K		Thunderstorm Wind
Henry County Fieldale	24	1430EST			0	0	0		Thunderstorm Wind
Giles County Northwest Portion	24	1550EST 1640EST			0	0	0		Flash Flood

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

VIRGINIA, Southwest

Thunderstorms in the afternoon of the 24th downed tree limbs, produced flash flooding, and produced hail up to dime size.

Thunderstorms winds in the afternoon of the 24th downed tree limbs in Sylvatus, a tree in the southeastern part of Wytheville, several trees in Kimballton, a tree onto a car in Danville, trees in Fieldale, and trees in Stuart.

Thunderstorm rains resulted in flash flooding in Giles County from Narrows to Rich Creek along U.S. route 460.

Buena Vista (C)									
Buena Vista	28	1630EST			0	0	0		Thunderstorm Wind
Montgomery County									
Blacksburg	28	1630EST			0	0	0		Thunderstorm Wind
Roanoke (C)									
Roanoke	28	1645EST 1700EST			0	0	0		Thunderstorm Wind
Montgomery County									
Shawsville	28	1700EST			0	0	0		Thunderstorm Wind
Bedford County									
Forest	28	1712EST			0	0	0		Thunderstorm Wind
Bedford County									
Sedalia	28	1722EST			0	0	0		Thunderstorm Wind
Bedford County									
Stewartsville	28	1722EST			0	0	0		Thunderstorm Wind
Amherst County									
Amherst	28	1725EST			0	0	0		Thunderstorm Wind
Campbell County									
3 N Rustburg	28	1730EST			0	0	0		Thunderstorm Wind
Henry County									
Bassett	28	1800EST			0	0	0		Thunderstorm Wind
Danville (C)									
Danville	28	1815EST			0	0	0		Thunderstorm Wind
Wythe County									
3 E Ft Chiswell to 6 E Ft Chiswell	28	1818EST			0	0	0		Thunderstorm Wind
Martinsville (C)									
Martinsville	28	1830EST			0	0	0		Thunderstorm Wind
Carroll County									
Laurel Fork	28	1840EST			0	0	0		Thunderstorm Wind
Tazewell County									
Richlands	28	1844EST			0	0			Thunderstorm Wind (G56)

Thunderstorms during the afternoon and evening of the 28th produced damaging winds.

Thunderstorm winds downed trees in Forest, Bassett, Shawsville, Danville, Laurel Fork, Amherst, Buena Vista, a 4 inch diameter tree limb in Blacksburg, 6 to 8 inch diameter trees onto U.S. Route 501, three miles north of Rustburg, trees and powerlines in Sedalia, Stewartsville, and Martinsville.

Thunderstorm winds downed trees across Roanoke City, including trees that blocked Mudlick and Brandon Avenues.

Thunderstorm winds downed trees east of Ft Chiswell, onto Interstate Route 81 from mile marker 85 to mile marker 88.

A wind gust in Richlands was estimated at 65 miles per hour, by a spotter.

Giles County									
5 SSW Pearisburg	29	1010EST			0	0	20K		Thunderstorm Wind
A thunderstorm 5 miles south-southwest of Pearisburg uprooted trees and broke off large tree limbs, tore siding off of a house, ripped a roof off of a hay barn, and damaged a car. The damage from the storm was about a quarter of a mile long and a tenth of a mile wide.									
Pittsylvania County									
6 S Chatham	29	1130EST			0	0			Hail (0.75)
Patrick County									
10 SE Stuart	29	1215EST			0	0			Hail (1.00)
Thunderstorms during midday of the 29th produced hail up to quarter size.									
Tazewell County									
Wittens Mills	31	0050EST			0	0	5K		Thunderstorm Wind
A thunderstorm during the early morning of the 31st, produced damaging winds, blowing over a tree onto a house.									
Amherst County									
Elon	31	1615EST			0	0	0		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

VIRGINIA, Southwest

Bedford County									
Boonsboro	31	1625EST			0	0	0		Thunderstorm Wind
Amherst County									
Madison Hgts	31	1626EST			0	0	0		Thunderstorm Wind
Lynchburg (C)									
Lynchburg	31	1630EST			0	0	0		Thunderstorm Wind
Henry County									
Bassett	31	1730EST			0	0	0		Thunderstorm Wind
Martinsville (C)									
Martinsville	31	1735EST 1740EST			0	1	100K		Thunderstorm Wind
Henry County									
5 SE Martinsville City	31	1750EST			0	0	0		Thunderstorm Wind
Appomattox County									
Appomattox	31	1950EST			0	0	0		Thunderstorm Wind

Thunderstorms during the late afternoon of the 31st produced damaging winds.

Thunderstorm winds in the City of Martinsville blew over numerous large trees, blocking many roads and downing powerlines. Felled trees caused damage to many residences and other structures. A woman suffered non-life threatening injuries when a tree was blown down onto her house.

Thunderstorm winds downed trees in Boonesboro, Appomattox, Madison Heights, 1 foot diameter trees in the City of Lynchburg, 1 to 1 1/2 foot diameter trees in Elon, large trees in Bassett, and large trees 5 miles southeast of Martinsville.

Martinsville (C)									
Martinsville	31	2310EST 2359EST			0	0			Flash Flood

Thunderstorm winds during the late evening of the 31st downed numerous large poplar and oak trees in the City of Martinsville. Heavy thunderstorm rain flooded and closed many streets in the City of Martinsville.

WASHINGTON, Northeast

Grant County									
Grand Coulee	21	1600PST 1603PST			0	0	15K		Tstm Wind/Hail

Thunderstorm winds to 40 mph and 1/4 inch size hail lead to the downing of several small to medium size limbs.

WASHINGTON, Northwest

King County									
Woodinville	16	1800PST			0	0	130K		Lightning

Lightning struck a house and knocked out power to about 8000 homes.

Kitsap County									
Bremerton	17	2000PST			0	1			Lightning

A woman was injured after being struck by lightning. She was released from the hospital the next day with an aching arm and a headache.

WASHINGTON, Southeast

WAZ028>029 Lower Columbia Basin - Blue Mountain Foothills									
	01	0000PST			0	0			Drought
	31	0000PST							

Drought reduced the yields of winter wheat and green peas during the harvest this month. Below average rainfall affected most of the Columbia basin and the foothills of the Blue Mountains this winter and spring. Kennewick, which is a part of the Tri-Cities area, received only 2.58 inches of rain since January 1st. This is 65 percent of the yearly average. Whitman Mission, located in the foothills near Walla Walla, received 5.87 inches. This is 75 percent of the yearly average rainfall.

Klickitat County									
9 NE Goldendale	17	1225PST			0	0			Hail (1.00)

A farmer located 4 miles south of Satus Pass reported crop damage due to hail as well as some erosion from heavy rain. Lightning also damaged a sprinkler pump.

WASHINGTON, Southwest

NONE REPORTED.

WEST VIRGINIA, East

WVZ048>055 Grant - Mineral - Hampshire - Morgan - Berkeley - Jefferson - Pendleton - Hardy									
	01	0000EST			0	0			Drought
	31	2359EST							

High pressure was the dominant weather feature across the Eastern Panhandle during the month. This forced most rain producing storm systems to steer north of the region and resulted in the continuation of the climatological, meteorological, and hydrological drought that

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

WEST VIRGINIA, East

had plagued the area since last summer. By the last week of July the Palmer Drought Index, a measure of long term drought conditions, indicated the Eastern Panhandle was in an extreme drought. July was the 10th month in the past 12 months that precipitation was below normal. This long-lived drought was the worst since 1966 and was very close to conditions during the 1931 drought. From August 1998 through July 1999 precipitation was a staggering 14 inches below average. Rainfall totals across the Eastern Panhandle during the month of July included 2.1 inches in Pendleton County, 2.6 inches in Grant and Berkeley County, 1.5 inches in Hardy County, 1.4 inches in Mineral County, 2.8 inches in Jefferson County, 1.0 inches in Hampshire County, and 2.1 inches in Morgan County.

The lack of precipitation was devastating for the agricultural community. During the first week of July, the governor declared an agricultural emergency across the state. The state also asked residents to conserve water voluntarily by the 20th. The Jennings Randolph Reservoir on the Potomac River near Piedmont was 13.8% below capacity by the 31st. Springs that supply water to Berkeley County residents flowed at half the normal rate during the month. Several other small streams went dry. 35% of farmers had to haul water for livestock, and 34% of wells were dry or in danger of drying up. County extension agents reported 79% of the hay crop and 87% of pasture land was in poor to very poor condition. 82% of the corn crop, 55% of oats, 34% of soybeans, and 60% of the tobacco crop was also in poor or very poor condition. 92% of topsoil was reported short or very short of water by the end of the month. Tomatoes and onions were only half the normal size and dairy production was down 15 to 25%.

WVZ048>055

Grant - Mineral - Hampshire - Morgan - Berkeley - Jefferson - Pendleton - Hardy

04	0400EST	0	3	Excessive Heat
07	1200EST			

High pressure sat off the Mid-Atlantic coast from the 4th through the 7th, acting like a heat pump drawing in extremely warm and humid air. Temperatures on the 4th through early on the 7th were oppressively hot, and extremely humid conditions added to the misery. These conditions continued until a cold front swept through the area during the afternoon of the 7th, ushering cooler and much less humid air. The mercury soared into the upper 90s to lower 100s during the period. Dew points were in the lower to middle 70s, creating heat indices between 105 and 115 degrees. High temperatures on the 4th included 101 degrees at Berkeley Springs, 99 degrees at Keyser, 98 degrees at Romney and Charles Town, and 97 degrees at Mathias. Afternoon readings on the 5th included 103 degrees at Berkeley Springs, 101 degrees at Keyser, 100 degrees at Mathias, Moorefield, Charles Town, and Romney; 99 degrees at Martinsburg, and 98 degrees at Wardensville. Highs on the 6th included 102 degrees at Sugar Grove, 100 degrees at Charles Town, Martinsburg, Mathias, Moorefield, Romney, and Keyser; 98 degrees at Wardensville, and 96 degrees at Petersburg.

Because of the 4th of July holiday weekend, many people were inconvenienced by the oppressive conditions. Those who spent considerable time outdoors were subject to heat related illnesses. Three people were treated at Martinsburg City Hospital for heat exhaustion on the 5th. Berkeley County reported a handful of calls from residents complaining of heat related problems. Power companies reported extremely high energy consumption during the late afternoon on the 5th and 6th.

**Berkeley County
Martinsburg**

24	1650EST	0	0	Hail (0.88)
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**Berkeley County
Martinsburg Arprt**

24	1650EST	0	0	2K	Thunderstorm Wind (G55)
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Measured gust at Martinsburg Airport, trees and power lines downed

**Berkeley County
1 N Falling Waters**

24	1700EST	0	0	Hail (0.75)
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**Jefferson County
Leetown**

24	1710EST	0	0	5K	Thunderstorm Wind
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Trees and power lines downed

Warm temperatures and muggy conditions combined to develop thunderstorms across Berkeley and Jefferson Counties between 5:30 PM and 6:30 PM EDT. The storms produced winds in excess of 55 MPH, large hail, and heavy downpours. Nickel sized hail fell in Martinsburg and a wind gust of 63 MPH was recorded at the city airport. Dime sized hail was reported between Falling Waters and Marlowe. Trees and power lines were downed, knocking out power to 2,500 customers in Charles Town, Back Creek Valley, and Harpers Ferry. Hundreds of dollars in damage occurred at a Leetown nursery when between 50 and 100 plants were damaged by high wind. 2.3 inches of rain fell in Leetown during a two hour period. The North Queen Street underpass was temporarily flooded by the deluge.

**Berkeley County
Falling Waters**

25	1905EST	0	0	Hail (0.75)
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**Berkeley County
Marlowe**

25	1910EST	0	0	2K	Thunderstorm Wind
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Trees and power lines downed

**Jefferson County
5 E Kabletown**

25	1930EST	0	0	Hail (1.00)
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A thunderstorm moved across Berkeley and Jefferson Counties between 7:45 PM and 8:30 PM EDT and produced heavy downpours, large hail, and winds in excess of 55 MPH. Three quarter inch diameter hail was reported in Falling Waters at 8:05 PM and one inch diameter hail was reported in Shannondale around 8:30 PM EDT. Trees and power lines were downed in Marlowe around 8:10 PM EDT.

**Berkeley County
Martinsburg**

28	1500EST	0	0	20K	Thunderstorm Wind
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Trees downed onto power lines, cars, and buildings

**Jefferson County
Shepherdstown**

28	1515EST	0	0	3K	Thunderstorm Wind
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Trees downed

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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WEST VIRGINIA, East

Temperatures in the 90s and very muggy air combined to produce thunderstorms across the Eastern Panhandle from 3:30 PM to 5:00 PM EDT. The storms that moved across Jefferson and Berkeley Counties produced winds in excess of 55 MPH, downing several trees. The city of Martinsburg reported several trees downed onto power lines, cars, and buildings. Two cars and a shed were totalled by falling trees as large as 5 feet in diameter. In Shepherdstown, a tree and power line fell onto a moving car. The driver of the vehicle was startled but unhurt. Several other trees in the city were also downed by the storm.

WEST VIRGINIA, North

Hancock County 1 S Chester to New Cumberland	09	1938EST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed trees onto CR 208 just south of Chester.									
Brooke County Colliers	09	1940EST			0	0	3K		Thunderstorm Wind
Thunderstorm winds downed several trees.									
Brooke County Bethany	09	2010EST			0	0	3K		Thunderstorm Wind
Thunderstorm winds downed several trees.									
Marshall County Limestone	09	2030EST			0	0	3K		Thunderstorm Wind
Thunderstorm winds downed several trees.									
Wetzel County Hundred	28	1400EST			0	0	3K		Thunderstorm Wind
Thunderstorm winds downed several trees.									
Preston County Kingwood	31	2320EST			0	0	3K		Thunderstorm Wind
Thunderstorm winds downed several trees.									
Preston County Corinth	31	2330EST			0	0	3K		Thunderstorm Wind
Thunderstorm winds downed several trees.									

WEST VIRGINIA, Southeast

WVZ042>045	Mercer - Summers - Monroe - Greenbrier								
	01	0000EST			0	0			Drought
	31	2359EST							
Dry conditions that began in July of 1998, subsided for several months during the later part of 1998 and the first part of 1999, returned in June of 1999 and continued in many areas through July. In many areas, crops were damaged or destroyed. Water levels in creeks, streams, and rivers remained very low.									
Monroe County Peterstown	24	1405EST			0	0	0		Thunderstorm Wind
Summers County Pipestem	24	1500EST			0	0			Hail (0.88)
Summers County Pipestem	24	1500EST			0	0	0		Thunderstorm Wind
Monroe County Countywide	24	1550EST 1645EST			0	0			Flash Flood
Thunderstorms during the afternoon of the 24th produced damaging winds, hail up to nickel size, and flash flooding.									
Heavy rain caused flooding of small streams across Monroe County.									
Thunderstorm winds downed trees in Pipestem and 6 to 8 inch diameter trees in Peterstown.									
Monroe County Lindside	25	1545EST 1550EST			0	0	0		Thunderstorm Wind
Summers County 3.8 E Pipestem	25	1545EST			0	0	0		Thunderstorm Wind
Thunderstorms during the afternoon of the 25th produced damaging winds.									
Thunderstorm winds downed trees along the western shore of Bluestone Lake, 3.8 miles east of Pipestem, and onto roads in Lindside, including U.S. Route 219.									
Summers County 2 N Hinton	28	1530EST			0	0	0		Thunderstorm Wind
Summers County Hilldale	28	1600EST			0	0	0		Thunderstorm Wind
Monroe County 3.5 N Wolf Creek	28	1623EST			0	0	0		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

WEST VIRGINIA, Southeast

Monroe County 1 SW Sinks Grove	28	1630EST			0	0	0		Thunderstorm Wind
Monroe County 1 N Union	28	1630EST			0	0	0		Thunderstorm Wind
Summers County Hilldale	28	1830EST			0	0	0		Thunderstorm Wind

Thunderstorms during the afternoon and evening of the 28th produced damaging winds.

Thunderstorm winds downed trees 2 miles north of Hinton, 6 to 8 inch diameter trees in Hilldale, a large tree onto a road 3.5 miles north of Wolf Creek, a large tree 1 mile north of Union, a tree 1 mile southwest of Sinks Grove, and additional trees in Hilldale.

WEST VIRGINIA, West

WVZ005>011-013>020-024>040-046>047	Wayne - Cabell - Mason - Jackson - Wood - Pleasants - Tyler - Lincoln - Putnam - Kanawha - Roane - Wirt - Calhoun - Ritchie - Doddridge - Mingo - Logan - Boone - Clay - Braxton - Gilmer - Lewis - Harrison - Taylor - Mcdowell - Wyoming - Raleigh - Fayette - Nicholas - Webster - Upshur - Barbour - Pocahontas - Randolph								
01	0000EST				0	0			Drought
31	2300EST								

The drought strengthened during the 1st half of July. Showers became more common during the last 2 weeks of the month. Soil moisture and stream flow improved temporarily, especially in the Kanawha and Elk River Valleys. However, the extreme heat quickly dried the surface. Ground water continued to be depleted.

It was the second warmest July on record both at Huntington and Beckley. Charleston had its 5th warmest July and its hottest month in 52 years. Charleston reached into the 90s for 24 days during the month. Afternoon temperatures in the 90s were common across all of the lowlands, due to the dry ground. Huntington reached 101 degrees on the 30th. Lesage of Cabell County had 100 degrees on the 5th.

At the start of the month, counties were setting up water distribution points for citizens with dry wells. By month's end, 500 portable water storage tanks and two dozen water pumps were purchased by the state. This was done, mainly to bring water to livestock. Voluntary water conservation was in effect for 30 West Virginia counties. Small public service districts began imposing mandatory water rationing to their customers. The large Corps of Engineers dams were augmenting the river flows, lowering the elevation of lakes such as Summersville.

Doddridge County West Union	06	1940EST			0	0			Hail (0.75)
Doddridge County 8 SE West Union	06	1950EST			0	0	2K		Thunderstorm Wind

Trees were blown down across County Route 13 along Maxwell Ridge.

Ritchie County Toll Gate	17	2110EST			0	0	1K		Thunderstorm Wind
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Large tree branches fell across driveways.

Boone County Orgas	18	0020EST			0	0			Hail (0.75)
Logan County Verdunville	25	1500EST			0	0			Hail (1.00)
Mingo County Delbarton	25	1510EST			0	0			Hail (1.00)
Mingo County 3 N Vulcan	25	1535EST			0	0	2K		Thunderstorm Wind

Trees were blown down across County Route 49.

Doddridge County 4 E Smithburg	28	1358EST			0	0			Hail (0.75)
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Dime size hail fell around Longrun.

Harrison County Wallace	28	1425EST			0	0	2K		Thunderstorm Wind
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Trees were knocked down and blocked Route 20.

Fayette County Fayette	28	1435EST			0	0			Hail (1.00)
Mason County New Haven	30	0235EST			0	0	10K		Thunderstorm Wind

Fallen trees knocked down power lines.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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WEST VIRGINIA, West

Wayne County East Lynn	30	0848EST			0	0	2K		Thunderstorm Wind
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Mingo County 2 NE Dingess to Lenore	30	0900EST 1000EST			0	0	15K		Flash Flood
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An estimated 2 to 3 inches of rain in 2 hours caused minor flooding along Laurel Creek. Also, the Right Fork of Twelvepole Creek flooded over roads.

Boone County Bim	30	1115EST			0	0			Hail (0.75)
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Wayne County Dunlow	30	1800EST 1900EST			0	0	5K		Flash Flood
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A second round of thunderstorms hit southern Wayne County, about 12 hours after the first downpours. Small tributaries to Twelvepole Creek flooded roads, but no dwellings were affected.

Wayne County Dunlow	30	1800EST			0	0			Hail (0.75)
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Wayne County Radnor	30	1830EST			0	0	2K		Thunderstorm Wind
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Harrison County Shinnston	31	1510EST			0	2	40K		Thunderstorm Wind
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Trees were blown down in a field. A nearby roof to a porch was ripped off and flung over the house. Two people sustained minor injuries from a tree striking a home.

Ritchie County Pennsboro	31	2155EST			0	0	2K		Thunderstorm Wind
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Trees were blown down across Route 74.

Doddridge County West Union	31	2215EST			0	0	2K		Thunderstorm Wind
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Route 18 was blocked by fallen trees.

WISCONSIN, Extreme Southwest

NONE REPORTED.

WISCONSIN, Northeast

WIZ035		Wood			0	0			Record Rainfall
		01	0000CST						
		31	2359CST						

The Wisconsin Rapids (Wood county) cooperative observing station reported record rainfall of 9.57 inches for the month of July 1999. Rainfall of 8.27 inches at the Marshfield (Wood county) agricultural research station also set a record for the month.

Oneida County Lake Tomahawk	03	0143CST			0	0			Hail (0.75)
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Oneida County 10 E Lake Tomahawk	03	0200CST			0	0			Hail (0.75)
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Marathon County 2 NW Fenwood	03	0705CST			0	0			Lightning
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Shawano County Leopolis	03	0745CST			0	0			Lightning
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Waushara County Coloma	03	0755CST			0	0			Thunderstorm Wind (G52)
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Waushara County 4 N Wautoma	03	0800CST			0	0			Thunderstorm Wind (G50)
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Kewaunee County Kewaunee	03	0958CST			0	0			Lightning
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Severe thunderstorms that developed north of an approaching warm front dropped large hail across north-central Wisconsin and produced damaging winds in the central part of the state during the morning. Trees were downed by the strong winds as the storms passed 4 miles north of Wautoma (Waushara county). Lightning caused extensive damage in Kewaunee (Kewaunee county) where a tree was debarked and another was knocked down. Pieces of wood from the trees went through the outside wall of a house causing damage inside the house. The wire running from the power pole to the house was completely melted. The electric meter was blown off the house and the breaker box in the basement was blown up. The telephone box outside was found across the highway. Lightning caused damage at a Leopolis (Shawano county) farm, making a 50 foot long trench in the ground, knocking out a wall in a steel utility shed and knocking blocks out of a wall in a small barn. The lightning also destroyed numerous appliances inside the farmhouse.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
WISCONSIN, Northeast									
WIZ030	Marathon	04	1400CST			0	0		Record Warmth
			1600CST						
A record high temperature of 95 degrees was set in Wausau (Marathon county) on the 4th of July.									
Oneida County	Starks	05	0847CST			0	0		Hail (1.00)
Oneida County	8 W Three Lakes	05	0850CST			0	0		Hail (2.00)
Forest County	Argonne	05	0912CST			0	0		Thunderstorm Wind (G50)
Oneida County	Three Lakes	05	0925CST			0	0		Thunderstorm Wind (G50)
Severe thunderstorms moved through north-central Wisconsin ahead of an approaching cold front. The storms dropped 1 inch diameter hail at Starks (Oneida county) and 2 inch diameter hail at Sugar Camp (Oneida county) and downed trees and power lines in Argonne (Forest county) and Three Lakes (Oneida county).									
Vilas County	Lac Du Flambeau	05	1811CST			0	0		Thunderstorm Wind (G50)
Vilas County	St Germain	05	1835CST			0	0		Thunderstorm Wind (G50)
Lincoln County	Tomahawk to	05	1858CST			0	0		Thunderstorm Wind (G57)
	7 N Tomahawk		1904CST						
Oneida County	15 WSW Rhinelander	05	1904CST			0	0		Thunderstorm Wind (G50)
Oneida County	15 W Rhinelander	05	1910CST			0	0		Thunderstorm Wind (G50)
Marathon County	Wausau	05	1920CST			0	0		Thunderstorm Wind (G50)
Oneida County	Rhinelander	05	1920CST			0	0		Thunderstorm Wind (G50)
Marathon County	Wausau Arpt	05	1922CST			0	0		Thunderstorm Wind (G50)
Oneida County	8 W Three Lakes	05	1925CST			0	0		Thunderstorm Wind (G50)
Langlade County	Antigo	05	1930CST			0	0		Thunderstorm Wind (G50)
Marathon County	15 E Wausau	05	1940CST			0	0		Thunderstorm Wind (G50)
Shawano County	2 S Aniwa to	05	1945CST			0	0		Thunderstorm Wind (G50)
	Birnamwood		1949CST						
Langlade County	White Lake	05	1955CST			0	0		Thunderstorm Wind (G50)
Menominee (C)	Neopit	05	1955CST			0	0		Thunderstorm Wind (G50)
Shawano County	Gresham	05	2005CST			0	0		Thunderstorm Wind (G50)
Oconto County	Townsend to	05	2008CST			0	0		Thunderstorm Wind (G50)
	Mountain		2014CST						
Florence County	2 W Fence	05	2015CST			0	0		Thunderstorm Wind (G50)
Shawano County	Shawano	05	2015CST			0	0		Thunderstorm Wind (G50)
Marinette County	10 W Wausaukee	05	2030CST			0	0		Thunderstorm Wind (G50)
Marinette County	Crivitz	05	2037CST			0	0		Thunderstorm Wind (G50)
Outagamie County	Appleton	05	2159CST			0	0		Urban/Sml Stream Fld
			2230CST						
Calumet County	5 SE Appleton	05	2230CST			0	0	12K	Lightning
Severe thunderstorms formed in a hot, humid and unstable airmass just ahead of an approaching cold front. The storms downed									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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WISCONSIN, Northeast

numerous trees and power lines across northeast Wisconsin. Northern Lincoln county and Oneida county were hit particularly hard. A mobile home at Swamp Lake (Oneida county) was damaged by a fallen tree. Fallen trees also damaged a car, a deck and a cottage in Nokomis (Oneida county) and a power transformer in Tomahawk (Lincoln county). A radio station in Tomahawk measured a wind gust of 66 mph as the storms moved through the city. Downed power lines caused a fire near Harshaw (Oneida county). The storms knocked out power to an estimated 3,000 customers. An automated observing system recorded a wind gust of 58 mph at the airport in Wausau (Marathon county). Lightning killed 6 cows at a dairy farm in Calumet county and heavy rain resulted in some street flooding on the north side of Appleton.

Lincoln County 1 E Tomahawk	08	1330CST			0	1			Lightning
Lincoln County Tomahawk	08	1805CST			0	1			Lightning
Lincoln County Tomahawk	08	1805CST			0	0			Thunderstorm Wind (G50)
Marathon County Countywide	08	1811CST 1858CST			0	0	55K		Thunderstorm Wind (G70)
Langlade County Antigo	08	1815CST			0	0			Thunderstorm Wind (G50)
Wood County Marshfield	08	1815CST			0	0			Thunderstorm Wind (G50)
Langlade County Antigo	08	1852CST 2000CST			0	0			Urban/Sml Stream Fld
Shawano County Morgan	08	1858CST			0	0			Thunderstorm Wind (G50)
Wood County Arpin	08	1905CST			0	0			Thunderstorm Wind (G50)
Portage County 5 W Stevens Pt	08	1908CST			0	0			Thunderstorm Wind (G50)
Shawano County Shawano	08	1917CST			0	0			Thunderstorm Wind (G50)
Waupaca County Waupaca	08	1921CST			0	0			Thunderstorm Wind (G50)
Outagamie County New London	08	1933CST 1954CST			0	0			Urban/Sml Stream Fld
Waupaca County New London	08	1933CST 1954CST			0	0			Urban/Sml Stream Fld
Waushara County Redgranite	08	1944CST			0	0			Thunderstorm Wind (G50)
Calumet County Chilton	08	1945CST			0	0			Thunderstorm Wind (G50)
Portage County 17 NE Stevens Pt	08	1946CST			0	0			Lightning
Winnebago County Winneconne	08	1953CST			0	0			Thunderstorm Wind (G52)
Winnebago County Oshkosh	08	2011CST			0	0			Thunderstorm Wind (G50)
Winnebago County Oshkosh	08	2016CST			0	0			Thunderstorm Wind (G56)
Kewaunee County Stangelville	08	2030CST			0	0			Thunderstorm Wind (G50)
Door County 4 E Maplewood	08	2141CST			0	0			Thunderstorm Wind (G50)

Thunderstorms developed ahead of a cold front in Minnesota and moved through northeast Wisconsin during the evening. Severe thunderstorms downed numerous trees and power lines across northeast Wisconsin. Wind gusts were as high as 70 to 80 mph. Emergency government officials in Marathon county reported extensive damage, especially around Stratford. They received numerous reports of trees down on power lines and roads, 4 reports of barns destroyed or damaged, 1 house destroyed and 8 houses damaged by the strong winds. The storm knocked out power to 2,500 customers in Marathon county, mainly in the the Wausau, Mosinee and Stratford areas. Street flooding was reported in New London (Waupaca and Outagamie counties) and Antigo (Langlade county). Homes in Antigo also experienced some basement flooding.

Portage County Plover	14	0243CST			0	0			Lightning
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

WISCONSIN, Northeast

Lightning from a line of thunderstorms "fused section lines and disrupted transformers," causing about 100 customers to lose electrical service.

Door County Washington Is	14	1405CST			0	0			Hail (1.00)
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A severe thunderstorm produced hail up to an inch in diameter that covered the ground on Washington Island (Door county).

Florence County Florence to Commonwealth	15	0005CST 0400CST			0	0	1.6M		Flash Flood
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Forest County Alvin to Nelma	15	0005CST 0400CST			0	0			Flash Flood
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Rainfall of 5 to 8 inches in just a few hours caused significant flash flooding across Florence county and extreme northern Forest county. An estimated 50 to 75 miles of roads required repairs, including U.S. Highways 2 and 141 and state highways 70 and 101. A total of 49 homes and 2 businesses suffered some water damage. The damage was mainly confined to basements with minimal first floor inundation.

WIZ012 Florence	15	0115CST 1200CST			0	0			Flood
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The flooding on the Pine River at Florence (Florence county) was in response to heavy rain that fell in the area during the early morning hours. The river reached a crest of 7.67 feet at 6:30 am CST on the 15th, causing only minor flooding of lowlands before quickly receding. Flood stage on the Pine River at Florence is 7.0 feet.

Florence County Florence	16	1340CST			0	0			Thunderstorm Wind (G50)
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Langlade County Antigo to Pickerel	16	1430CST 1615CST			0	0			Urban/Sml Stream Fld
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Marathon County Wausau	16	1500CST			0	0			Thunderstorm Wind (G50)
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Portage County Stevens Pt	16	1600CST 1625CST			0	0			Urban/Sml Stream Fld
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Thunderstorms that formed ahead of an approaching cold front downed some trees in Wausau (Marathon county) and Florence (Florence county). The storms also caused flooding of some underpasses in Stevens Point (Portage county) and minor flooding of streets and highways around Antigo, Deerbrook and Pickerel (Langlade county).

Wood County Nekoosa	18	2040CST 2120CST			0	0			Urban/Sml Stream Fld
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Waushara County Plainfield to Coloma	18 19	2220CST 0130CST			0	0			Urban/Sml Stream Fld
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Heavy rainfall, associated with an approaching warm front, caused minor street flooding in Nekoosa and flooded some basements in western Waushara county. Rainfall totalled 3.96 inches in Pine River (Waushara county), 3.25 inches in Port Edwards (Wood county) and 4.22 inches 4 miles north of Wautoma (Waushara county).

Vilas County Manitowish Waters	23	0340CST			0	0			Thunderstorm Wind (G50)
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Lincoln County 6 N Tomahawk	23	0400CST			0	0			Thunderstorm Wind (G50)
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Vilas County 5 SW Boulder Jct	23	0400CST			0	0			Thunderstorm Wind (G50)
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Vilas County Boulder Jct	23	0405CST			0	0			Thunderstorm Wind (G50)
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Vilas County Land O Lakes	23	0425CST			0	0			Thunderstorm Wind (G50)
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Door County Egg Harbor	23	0712CST			0	0			Hail (0.75)
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Door County Ephraim	23	0712CST			0	0			Hail (0.75)
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Thunderstorms developed during the morning near a warm front over central Wisconsin and in advance of a cold front in Minnesota. Some of the storms were severe and produced damaging winds and large hail as they moved across north-central and northeast Wisconsin. Trees and power lines were downed in Vilas county and northern Lincoln county. Two campers were damaged by fallen trees at a campground in Boulder Junction (Vilas county) but there were no injuries. Some large hail fell as the storms moved through central Door county.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm	
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops		
WISCONSIN, Northeast										
WIZ005-010>013-018>022-030>031-035>040-045-048>050										
			Vilas - Oneida - Forest - Florence - Marinette - Lincoln - Langlade - Menominee - Oconto - Door - Marathon - Shawano - Wood - Portage - Waupaca - Outagamie - Brown - Kewaunee - Waushara - Winnebago - Calumet - Manitowoc							
		23	1200CST			3	0			Excessive Heat
		31	2000CST							
		Over one week of hot and very humid conditions across northeast Wisconsin resulted in numerous heat related illnesses and 3 deaths due to excessive heat. A 72 year old male died in his home in Stockbridge (Calumet county), a 61 year old male died in his home in Manitowoc (Manitowoc county), and a 48 year old died in a prison in Oshkosh (Winnebago county). The heat caused concrete on some roads to buckle. M72PH, M61PH, M48OT								
Door County										
1 W Carlsville	24	1420CST			0	0				Hail (1.00)
Door County										
Valmy	24	1425CST			0	0				Hail (1.00)
Door County										
1 NE Sturgeon Bay	24	1428CST			0	0				Thunderstorm Wind (G50)
Door County										
1 E Sturgeon Bay	24	1430CST			0	0				Thunderstorm Wind (G50)
		The combination of an unstable airmass, a trough and lake breeze resulted in the formation of isolated thunderstorms. One of the storms was severe and downed trees and dropped large hail across the Door peninsula. A boater on the Bay of Green Bay, about 6 miles north of Sturgeon Bay (Door county) reported encountering winds in excess of 70 mph for around 20 miles. One person onboard suffered an eye injury from hail associated with the storm.								
Lincoln County										
1 N Merrill	26	0005CST			0	0				Thunderstorm Wind (G50)
Marathon County										
5 NE Abbotsford	26	0015CST			0	0				Thunderstorm Wind (G50)
		A large thunderstorm complex moved across central and northern Wisconsin during the early morning hours. Some wind damage was reported with these storms. A shed was blown down near Abbotsford (Marathon county) and trees were downed near Merrill (Lincoln county).								
Vilas County										
1 N Sayner	29	0320CST			0	0				Thunderstorm Wind (G50)
Forest County										
5 N Newald	29	0350CST			0	0				Hail (0.88)
Florence County										
Long Lake	29	0353CST			0	0				Hail (1.00)
Florence County										
7 SSE Spread Eagle	29	0410CST			0	0				Thunderstorm Wind (G50)
Oneida County										
8 NE Lake Tomahawk	29	0414CST			0	0				Thunderstorm Wind (G50)
Forest County										
Nelma	29	0445CST			0	0				Hail (1.00)
Door County										
10 NE Gills Rock	29	0520CST			0	0				Thunderstorm Wind (G50)
		Severe thunderstorms, that developed in response to strong southerly flow at the surface and an upper atmospheric system, moved across northern Wisconsin during the early morning hours. These storms dropped large hail and downed trees across northeast Wisconsin. The most significant damage was on Washington Island (Door county) where strong winds destroyed a barn and a garage, damaged a radio tower and knocked down eight large trees and 40 to 60 smaller ones.								
Wood County										
Marshfield	30	1755CST			0	0				Thunderstorm Wind (G50)
Marathon County										
Mosinee	30	1832CST			0	0				Thunderstorm Wind (G50)
Marathon County										
Wausau Arpt	30	1844CST			0	0				Thunderstorm Wind (G54)
Lincoln County										
5 NW Merrill	30	1915CST			0	0				Thunderstorm Wind (G50)
Oneida County										
Hazelhurst	30	1920CST			0	0	250K			Thunderstorm Wind (G50)
Oneida County										
Woodruff	30	1920CST			0	0	250K			Thunderstorm Wind (G50)
Oneida County										
Lake Tomahawk	30	1927CST			0	0	500K			Thunderstorm Wind (G61)
Vilas County										
Countywide	30	1930CST			2	0	1M			Thunderstorm Wind (G58)
		2010CST								
		F37UT, M43UT								

Storm Data and Unusual Weather Phenomena

July 1999									
Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
WISCONSIN, Northeast									
Lincoln County									
Harrison	30	1935CST			0	0			Thunderstorm Wind (G50)
Forest County									
Alvin	30	2015CST			0	0			Thunderstorm Wind (G50)
Forest County									
Crandon	30	2015CST			0	0			Thunderstorm Wind (G50)
Florence County									
Long Lake to Spread Eagle	30	2025CST 2050CST			0	0	102K		Thunderstorm Wind (G65)
Oconto County									
Mountain	30	2030CST			0	0			Thunderstorm Wind (G50)
Langlade County									
Pickereel	30	2035CST			0	0			Thunderstorm Wind (G50)
Marathon County									
Knowlton	30	2037CST			0	0			Thunderstorm Wind (G52)
Marinette County									
Dunbar	30	2050CST			0	0			Thunderstorm Wind (G50)
Wood County									
Vesper	30	2100CST			0	0			Thunderstorm Wind (G50)
Menominee (C)									
Keshena	30	2120CST			0	0			Thunderstorm Wind (G50)
Waupaca County									
Fremont	30	2128CST			0	0			Thunderstorm Wind (G54)
Oconto County									
Klondike	30	2130CST			0	0			Thunderstorm Wind (G50)
Shawano County									
6 SW Shawano	30	2130CST			0	0			Thunderstorm Wind (G50)
Waupaca County									
Clintonville	30	2130CST			0	0	50K		Thunderstorm Wind (G50)
Marinette County									
Wausaukee	30	2137CST			0	0			Thunderstorm Wind (G50)
Waushara County									
1 N Wild Rose	30	2143CST			0	0			Thunderstorm Wind (G50)
Calumet County									
Jericho	30	2145CST			0	0			Thunderstorm Wind (G50)
Calumet County									
Chilton	30	2150CST			0	0	1.5K		Thunderstorm Wind (G50)
Waushara County									
Redgranite	30	2200CST			0	0			Thunderstorm Wind (G50)
Marinette County									
Peshigo	30	2206CST			0	0			Thunderstorm Wind (G50)
Manitowoc County									
2 SW Reedsville	30	2210CST			0	0			Thunderstorm Wind (G50)
Outagamie County									
Appleton	30	2210CST			0	0			Thunderstorm Wind (G50)
Brown County									
8 NE Green Bay	30	2215CST			0	0			Thunderstorm Wind (G50)
Door County									
Sturgeon Bay	30	2230CST			0	0			Thunderstorm Wind (G60)
Winnebago County									
Oshkosh	30	2230CST			0	0			Thunderstorm Wind (G50)
Door County									
Gills Rock	30	2240CST			0	0			Thunderstorm Wind (G56)
Manitowoc County									
2 NE Kiel	30	2300CST			0	0			Thunderstorm Wind (G50)
Manitowoc County									
Manitowoc	30	2310CST			0	0			Thunderstorm Wind (G50)
Brown County									
Green Bay	31	0030CST			0	0	40K		Lightning

A mesoscale convective system moved across north-central, central and northeast Wisconsin during the evening of July 30, 1999. Thunderstorm wind gusts over 70 mph (and possibly as high as 100 mph) produced significant damage across the far north-central part of the state. The hardest hit areas were Oneida county and Vilas county, but most of the NWS Green Bay forecast area was affected.

In Vilas county, an estimated 100,000 trees were downed by the storm and two people were killed by falling trees in Oneida county.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

WISCONSIN, Northeast

The storm left 50,000 people without electrical service, damaged 150 to 200 homes and blocked all major highways and secondary roads in the northern one-third of Oneida county. The storm left a damage path 15 to 20 miles wide and 40 to 50 miles long across Vilas county. A falling tree damaged a bengal tiger cage at the Warbonnet Zoo in Hazelhurst (Oneida county), allowing 2 tigers to escape for a brief period.

Lightning struck a tree and travelled through the ground and into a house in Green Bay (Brown county). The wiring in the house caught fire, filling the house with smoke and causing significant damage to the walls.

WISCONSIN, Northwest

Bayfield County Bayfield	04	2030CST			0	0			Thunderstorm Wind (G50)
Trees were blown down. The wind speed is estimated.									
Bayfield County North Portion	05	0820CST 1800CST			0	0	500K		Flash Flood
Highways and bridges near Port Wing, Bayfield, and Washburn were flooded by heavy rain from slow-moving thunderstorms.									
Douglas County Solon Springs	05	1515CST			0	0			Thunderstorm Wind (G55)
Trees up to 20 inches in diameter were blown down. The wind speed is estimated.									
Bayfield County 5 E Iron River	05	1515CST			0	0			Thunderstorm Wind (G50)
Trees were blown down in the Long Lake area. The wind speed is estimated.									
Bayfield County 18 S Iron River	05	1520CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down around Barnes. The wind speed is estimated.									
Douglas County 6 E Gordon	05	1525CST			0	0			Thunderstorm Wind (G50)
Trees were blown down. The wind speed is estimated.									
Bayfield County Drummond	05	1526CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated.									
Bayfield County 5 SE Drummond	05	1530CST			1	0			Thunderstorm Wind (G50)
An eleven-year-old boy was killed when he was struck by a falling tree as he was heading for shelter at the Chequamegon Boy's Camp. M11CA									
Ashland County Ashland	05	1534CST 1540CST			0	0			Thunderstorm Wind (G52)
Tree branches and power lines were blown down.									
Iron County Saxon	05	1540CST			0	0			Thunderstorm Wind (G55)
Power lines and 3-foot diameter trees were blown down across U.S. Highway 2, and there was some structural damage in the Saxon area. The wind speed is estimated.									
Bayfield County Namekagon	05	1546CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated.									
Iron County Hurley	05	1605CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated.									
Burnett County Webster	09	1310CST			0	0			Hail (1.00)
Bayfield County Central Portion	14	2000CST 2240CST			0	0	500K		Flash Flood
Heavy thunderstorm rains caused U.S. Highway 2 and State Highway 118 to flood and partially wash out.									
Bayfield County Namekagon	14	2125CST			0	0			Hail (1.75)
Burnett County Grantsburg	23	0050CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated.									
Douglas County Superior	23	0133CST			0	0			Thunderstorm Wind (G52)
Sawyer County 21 ENE Hayward	23	0220CST			0	0			Thunderstorm Wind (G55)
Trees up to 3 feet in diameter were knocked down. The wind speed is estimated.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
WISCONSIN, Northwest									
Sawyer County									
Hayward	23	0220CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. The wind speed is estimated.				
Price County									
5 S Phillips	23	0310CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. The wind speed is estimated.				
Iron County									
Mercer	23	0340CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				
Ashland County									
Ashland	23	0350CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. A window at the fire station was broken. The wind speed is estimated.				
Douglas County									
Solon Springs	25	1850CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. The wind speed is estimated.				
Burnett County									
Hertel	25	1850CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. The wind speed is estimated.				
Washburn County									
Minong	25	1900CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				
Bayfield County									
Moquah	25	1910CST			0	0			Thunderstorm Wind (G50)
					Large trees were blown down. The wind speed is estimated.				
Sawyer County									
Hayward	25	1919CST			0	0			Thunderstorm Wind (G50)
					Large trees were blown down. The wind speed is estimated.				
Sawyer County									
Hayward	25	1937CST			0	0			Thunderstorm Wind (G50)
					Many trees were blown down. The wind speed is estimated.				
Sawyer County									
Hayward	25	2003CST			0	0			Thunderstorm Wind (G50)
					A tree was blown down on to a house. The wind speed is estimated.				
Ashland County									
Butternut	25	2004CST			0	0			Thunderstorm Wind (G52)
					A weather spotter estimated thunderstorm winds at 60 mph.				
Sawyer County									
Hayward	25	2030CST			0	0			Thunderstorm Wind (G50)
					Large trees were blown down. The wind speed is estimated.				
Sawyer County									
Winter	25	2030CST			0	0			Thunderstorm Wind (G50)
					Large trees were blown down. The wind speed is estimated.				
Sawyer County									
Stone Lake	25	2030CST			0	0			Thunderstorm Wind (G50)
					Large trees were blown down. The wind speed is estimated.				
Douglas County									
Countywide	25	2030CST 2330CST			0	0	2M		Flash Flood
					Flash flooding caused by very heavy thunderstorm rains occurred across much of the county, with many roads washed out or under water. Hardest hit was the central part of the county, including Parkland, Oakland, and Solon Springs townships. U.S. Highway 53 in the city of Solon Springs and County Highway C near South Range were under several feet of water through the night, and traffic had to be rerouted. Streets and basements in the city of Superior were also flooded. The total cost of damage county-wide was nearly \$2 million.				
Price County									
Catawba	25	2137CST			0	0			Thunderstorm Wind (G52)
Burnett County									
Danbury	30	1658CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				
Douglas County									
Wascott	30	1703CST			0	0			Thunderstorm Wind (G50)
					Trees and power lines were blown down. The wind speed is estimated.				
Washburn County									
Minong	30	1723CST			0	0			Thunderstorm Wind (G50)
					Trees were blown down. The wind speed is estimated.				

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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WISCONSIN, Northwest

Bayfield County									
Drummond	30	1730CST			0	0			Hail (1.00)
Bayfield County									
Cable	30	1730CST			0	0			Hail (1.00)
Bayfield County									
18 S Iron River	30	1730CST			0	0			Hail (1.00)
Washburn County									
Spooner	30	1732CST			0	0			Thunderstorm Wind (G55)
Trees and power lines were blown down, and some roofs were torn off. The wind speed is estimated.									
Bayfield County									
Grandview	30	1740CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated.									
Sawyer County									
Hayward	30	1745CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated.									
Douglas County									
10 E Solon Springs	30	1758CST			0	0			Thunderstorm Wind (G50)
Trees were blown down. The wind speed is estimated.									
Ashland County									
Mellen	30	1815CST			0	0			Thunderstorm Wind (G87)
Trees were blown down. Observers estimated wind speeds at 70 mph sustained, with gusts to 100 mph.									
Ashland County									
Glidden	30	1825CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated. The strong thunderstorm winds caused an estimated \$243,000 in damage across Ashland county.									
Sawyer County									
Loretta	30	1838CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated.									
Price County									
5 SW Phillips	30	1845CST			0	0			Thunderstorm Wind (G76)
Trees and power lines were blown down.									
Iron County									
Saxon	30	1900CST			0	0			Thunderstorm Wind (G50)
Trees were blown down. The wind speed is estimated.									
Iron County									
Montreal	30	1900CST			0	0			Thunderstorm Wind (G50)
Trees were blown down. The wind speed is estimated.									
Price County									
Catawba	30	1915CST			0	0			Thunderstorm Wind (G60)
A barn was blown down. The wind speed is estimated.									
Price County									
Prentice	30	1915CST			0	0			Thunderstorm Wind (G65)
Trees and power lines were blown down. A semi-trailer was overturned. Damage from all July storms in Price county was estimated at \$186,500.									
Iron County									
Manitowish	30	1920CST			0	0			Thunderstorm Wind (G50)
Trees and power lines were blown down. The wind speed is estimated. Damage from all July storms in Iron county was estimated at \$79,000.									

WISCONSIN, Southeast

Rock County									
Janesville	03	0300CST			0	0	2K		Thunderstorm Wind
An isolated severe thunderstorm's downburst winds leveled large trees and damaged some patio furniture.									
WIZ046>047-051>052-056>060-062>072									
Marquette - Green Lake - Fond Du Lac - Sheboygan - Sauk - Columbia - Dodge - Washington - Ozaukee - Iowa - Dane - Jefferson - Waukesha - Milwaukee - Lafayette - Green - Rock - Walworth - Racine - Kenosha	04	0300CST			0	0			Excessive Heat
	05	2300CST							
A two day heat wave over southcentral and southeast Wisconsin pushed utility companies to the limit, but there were no brownouts due to the fact that it was a Holiday weekend. Nonetheless, the excessive heat and humidity resulted in 40 people being treated for heat-related illness at local hospitals. In general, overnight minimum air temperatures were in the mid to upper 70s while daytime maximum air temperatures were in the lower to mid 90s. Dewpoints in the mid to upper 70s resulted in minimum heat indices of 80 to 85 at night and maximum heat indices of 102 to 110 during the afternoon hours. A new record high minimum air temperature of 79 was set in Milwaukee on July 4th, breaking the old record of 78 set back in 1921. In Madison, the minimum air temperature of 77 on July 4th tied the old record of set back in 1897. Normal maximum air temperatures are 82 degrees for this time of the year. The									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

WISCONSIN, Southeast

excessive heat was a contributing factor in the death of 73 year old man who died on July 6th (classified as an indirect death).

Washington County West Bend	05	2245CST			0	0	2K		Thunderstorm Wind
Fond Du Lac County Fond Du Lac	05	2255CST			0	0	2K		Thunderstorm Wind (G58)
Widely scattered severe thunderstorms generated powerful winds that leveled many large trees. Measured gusts peaked at 58 knots (67 mph) at the Fond du Lac Airport.									
Fond Du Lac County Peebles to St Peter	08	2030CST 2040CST			0	0	1K		Thunderstorm Wind
Sheboygan County 7 N Beechwood to Beechwood	08	2040CST			0	0	2K		Thunderstorm Wind
Fond Du Lac County Fond Du Lac	08	2059CST			0	0	40K		Lightning
Fond Du Lac County Fond Du Lac to 2 N Dundee	08	2104CST 2115CST			0	0	155K		Thunderstorm Wind
Sheboygan County Sheboygan	08	2105CST			0	0	40K		Thunderstorm Wind
Sauk County 3 SE Reedsburg	08	2110CST			0	0			Hail (0.88)
Iowa County 2 N Clyde	08	2125CST			0	0	1K		Thunderstorm Wind
Dodge County Theresa	08	2150CST			0	0	1K		Thunderstorm Wind
Washington County Germantown	08	2200CST			0	0	2K		Thunderstorm Wind
Waukesha County Waukesha	09	0032CST			0	0			Hail (0.75)
Waukesha County New Berlin to Waukesha	09	0100CST			0	0	2K		Lightning
Waukesha County Waukesha	09	0100CST 0400CST			0	0			Urban/Sml Stream Fld

Several clusters of thunderstorms, some severe, rumbled across southcentral and southeast Wisconsin during the evening hours of the 8th into the early morning hours of the 9th. Many large trees and power lines were knocked down by the powerful thunderstorm winds. Scattered large hail was also reported. A church and a car in Fond du Lac (Fond du Lac Co.) sustained considerable wind damage. A power transformer on Highway 23 in the city of Fond du Lac took a direct lightning hit. In Sheboygan (Sheboygan Co.), several large tents were leveled in a Rotary Club event in the city park. About 2000 customers were without electrical power in the Germantown area of southern Washington County due to lightning striking power poles. In addition, lightning struck a TV antenna on a New Berlin residence and damaged the home's TV, electrical sockets, and computer. Rainfall amounts of 1.5 to 2 inches in the city of Waukesha (Waukesha Co.) resulted in urban flooding in the pre-dawn hours. Several roads were blocked by water levels reaching 1 to 2 feet in low spots.

Dodge County Mayville	14	0430CST			0	0	20K		Lightning
Lightning struck the roof of a residential home, resulting in a roof/attic fire.									
Dane County Oregon	17	0100CST 0800CST			0	0			Urban/Sml Stream Fld
Several thunderstorms visited the Oregon area (Dane Co.) during the early morning hours. Total rainfall amounts were in the 5 to 6 inch range. Urban/small stream flooding was noted, but there was no damage. Many roads in the area had 1 to 2 feet of water covering them. Several were blocked by the high water levels. Local streams briefly exceeded their bankfull levels.									
Iowa County 4 WNW Blanchardville to 2 N Blanchardville	20	1320CST			0	0	300K	50K	Thunderstorm Wind
Lafayette County 2 N Argyle	20	1334CST			0	0			Hail (0.75)
Green County 4 WNW New Glarus	20	1340CST			0	0	3K		Thunderstorm Wind
Green County 2 S Monticello	20	1345CST 1600CST			0	0			Urban/Sml Stream Fld

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
WISCONSIN, Southeast									
Green County									
1 W Albany to 3 S Albany	20	1355CST 1405CST			0	0	225K		Thunderstorm Wind
Rock County									
2 SE Janesville	20	1413CST			0	0	35K		Lightning
Rock County									
2 SW Orfordville to 3 W Beloit	20	1425CST 1440CST			0	0	300K	50K	Thunderstorm Wind
Rock County									
Beloit	20	1430CST 1600CST			0	0			Urban/Sml Stream Fld
Dodge County									
Beaver Dam	20	2130CST			0	0	20K		Thunderstorm Wind
Sauk County									
3 SW Baraboo	20	2235CST			0	0	8K		Lightning
Milwaukee County									
West Allis	20	2320CST			0	0	75K		Lightning
<p>Thunderstorms packing destructive winds, large hail, heavy rainfall, and lightning strikes pummelled southern Wisconsin in the afternoon and nighttime hours. The extreme southeast corner of Iowa County just west and north of Blanchardville experienced damaging winds. Three farms had significant damage. Altogether, 2 barns were destroyed, and one damaged. In addition, a corn crib, machine shed, and mechanical equipment were damaged. One of the farm's home sustained extensive damage after a large tree crashed through it. Eight calves were crushed in one of the destroyed barns, along with some hay crop. About 150 large trees were flattened. The severe storms continued southeast through Green county in the afternoon. About 100 livestock injuries/deaths occurred in Green County when 3 barns were destroyed by the powerful winds near Albany and a family of 3 were trapped in their vehicle due to fallen power line poles. 1.15 inches of rain fell in 15 minutes near New Glarus. The heavy rains resulted in urban/small stream flooding in and around Monticello (Green Co.). Water levels on some roads reach 6 to 12 inches. In neighbouring Lafayette county three-quarter inch hail was observed at Blanchardville and in southwest Rock county 3 farms sustained extensive damage to several buildings. A barn was downed west of Beloit and a few corn fields were flattened. Lightning struck a residential home in Rock county, destroying the garage and contents and causing heat/smoke damage to the home. After sunset lightning caused an attic fire near Baraboo in Sauk county and wind downed numerous trees near Beaver Dam in Dodge county, damaging the roofs of 6 homes. Lightning struck two buildings in West Allis (Waukesha Co.): a Fire Department building sustained communications and computer equipment damage; and a residential home had considerable fire damage to it roof/attic and 2nd story. In all, 10,000 customers were without power in southcentral and southeast Wisconsin due to the wind or lightning damaging power lines.</p>									
Sauk County									
Lake Delton	20	1830CST 2000CST			0	0			Urban/Sml Stream Fld
Dodge County									
North Portion	20	2130CST 2300CST			0	0	20K		Flash Flood
Columbia County									
Poynette to Pardeeville	20 21	2215CST 0100CST			0	0	5K		Urban/Sml Stream Fld
Waukesha County									
Pewaukee	20 21	2300CST 0200CST			0	0	10K		Flash Flood
Washington County									
Hartford to 5 E West Bend	20 21	2325CST 0300CST			0	0	30K		Flash Flood
Dodge County									
North Portion	21	0000CST 0400CST			0	0	30K		Flash Flood
Milwaukee County									
Countywide	21	0030CST 0400CST			0	0	40K		Flash Flood

A series of thunderstorms feeding off of a humid tropical-like airmass repeatedly trained across portions of southcentral and southeast Wisconsin during the late evening of the 20th into the early morning hours of the 21st. The net result was widespread flash flooding. There were numerous reports of shoulder washouts of roads and basement flooding. There were also many reports of stalled vehicles due to high water levels on many roads. One rainfall observer located 6 miles northeast of Beaver Dam in Dodge county reported 5.0 inches of rain between 2030CST and 2350CST on the 20th, with a total amount of 6.08 inches through 0620CST on the 21st.

Northern Dodge County was hit by 2 separate flash flood rounds. Numerous roads had standing water 3 to 5 feet deep and some country roads experienced shoulder washouts. A stretch of railroad tracks were washed out in Iron Ridge. Elsewhere, rainfall rates of 1 to 1.5 inches an hour were reported in Washington county, and at West Bend 4.10 inches was measured from 2300CST on the 20th to 0700CST on the 21st.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Property Damage	Crops	Character of Storm
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WISCONSIN, Southeast

Similar rainfall rates were reported in Milwaukee county resulting in the Root River in the southern part of the county rising out of its banks. The Menomonee river in the Wauwatosa area (Milwaukee Co.) crested at 13.03 feet at 0145CST on the 21st, or 2.03 feet above flood stage. In the city of Milwaukee, a TV station reported 2.66 inches of rain between 2300CST on the 20th to 0100CST on the 21st. Law enforcement officials reported 1 to 2 feet of water on many roads, including the Interstate Highways, in and around the city of Milwaukee. In neighboring Waukesha County, 3 to 4 feet of standing water was reported on Interstate 94 near Pewaukee! Homes in Poynette and Pardeeville in Columbia county had homes with flooded basements, and 1 to 2 feet of standing water was reported on low spots of Highway 12 and other area roads near Lake Delton in Sauk County. Rainfall totals of 2 to 3 inches were noted around Lake Delton. Elsewhere, the Rock River at Waupun in Dodge County peaked 14 inches above its flood stage later on during the afternoon hours of the 21st.

WIZ057>060-063>064-066-069>072 **Columbia - Dodge - Washington - Ozaukee - Dane - Jefferson - Milwaukee - Rock - Walworth - Racine - Kenosha**

23	0200CST				0	0			Excessive Heat
24	2000CST								

Hot, muggy air settled over portions of southcentral and southeast Wisconsin in between rounds of thunderstorms. Early morning heat indices were around 80, and they rose to 105 to 110 during the afternoon hours. Maximum air temperatures in the afternoon were in the lower to middle 90s and afternoon dewpoints were in the lower to mid 70s. Nighttime minimum air temperatures were generally in the lower 70s. The heat and humidity forced a near record demand for electricity, resulting in brownouts that left about 5000 customers without power for several hours on the 23rd, and 7000 customers without power on the 24th.

Green Lake County

Markesan	23	1245CST			0	0			Hail (0.75)
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Washington County

2 NW Slinger	23	1300CST			0	0			Funnel Cloud
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Dane County

Madison	23	1320CST			0	1			Lightning
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Dodge County

Beaver Dam to Lowell	23	1334CST 1352CST			0	0	2K		Thunderstorm Wind
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Dane County

Cottage Grove	23	1340CST			0	1			Lightning
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Columbia County

Rio	23	1345CST			0	0	2K		Thunderstorm Wind
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Jefferson County

1 S Watertown	23	1408CST			0	0			Thunderstorm Wind (G52)
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Columbia County

5 W Columbus	23	1430CST			0	0	1K		Thunderstorm Wind
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Dane County

Madison Truax Arpt	23	1439CST			0	0			Hail (0.75)
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Dane County

Belleville	23	1440CST			0	0	1K		Thunderstorm Wind
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Dodge County

Richwood	23	1440CST			0	0			Hail (0.75)
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Green County

5 E Dayton to Brodhead	23	1445CST 1500CST			0	0	25K		Thunderstorm Wind
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Jefferson County

Ft Atkinson	23	1449CST			0	0	2K		Thunderstorm Wind
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Ozaukee County

Grafton	23	1455CST			0	0	5K		Thunderstorm Wind
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Rock County

3 W Union	23	1455CST			0	0	1K		Thunderstorm Wind
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Rock County

Janesville	23	1510CST			0	0	1.5K		Thunderstorm Wind
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Dane County

3 NW Stoughton	23	1521CST			0	0	1K		Thunderstorm Wind
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Milwaukee County

Milwaukee	23	1530CST			0	0	30K		Thunderstorm Wind
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Racine County

Waterford	23	1533CST			0	0	2K		Thunderstorm Wind
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Walworth County

Walworth to Lake Geneva	23	1536CST 1550CST			0	0	2K		Thunderstorm Wind (G57)
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Kenosha County

1 SW Twin Lakes	23	1555CST			0	0	3K		Thunderstorm Wind
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Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

WISCONSIN, Southeast

Rock County
Newville 23 1555CST 0 0 1K **Thunderstorm Wind**

Racine County
North Bay 23 1615CST 0 0 3K **Thunderstorm Wind**

Scattered pre-dawn thunderstorms and a daytime mixture of temperatures in the lower 90s and dewpoints in the lower to mid 70s primed the atmosphere for a round of severe weather across southcentral and southeast Wisconsin. During the afternoon hours of the 23rd several short lines of severe thunderstorms moved east/southeast at 35 mph dumping large hail and torrential rains, and producing damaging wet microburst winds. Numerous large trees were blown over and many power lines were knocked over. A measured peak wind gust of 57 knots (66 mph) was recorded in Lake Geneva (Walworth Co.). Large hail (7/8 inch) was reported along with damaging winds that raked the Beaver Dam to Lowell area of Dodge County. In Madison (Dane Co.), lightning injured a woman, and also struck and injured a boy on a bike in Cottage Grove. A farm garage building in northeast Green County was blown down by the powerful thunderstorm winds. In the city of Milwaukee (Milwaukee Co.) 1 home and 3 cars sustained wind damage.

Dane County
Madison 25 1832CST 0 0 15K **Thunderstorm Wind**

Dane County
Madison 25 1845CST
2030CST 0 0 15K **Flash Flood**

Rock County
Edgerton 25 1845CST
1945CST 0 0 1K **Thunderstorm Wind**

Rock County
3.5 S Clinton 25 1910CST 0 0 1K **Thunderstorm Wind**

An isolated cluster of severe thunderstorms developed north of the Madison area (Dane Co.) and proceeded to move southeast at about 15 mph. The storms produced wet microbursts that levelled trees and stop signs on the southside of Madison. Two vehicles were damaged by tree branch debris. It was the same story in Rock County where trees were toppled by powerful winds in Edgerton and south of Clinton.

The slow moving thunderstorms also dumped torrential rains at the rate of 1 to 2 inches per hour. The net result was a brief flash flood on the southside of Madison. Several roads were closed due to water levels of 3 to 5 feet. Some erosion of roadside banks was noted and several cars stalled in the deep water. Unofficial rainfall observations indicate that 4 inches of rain fell in less than 2 hours from Madison to Stoughton (Dane Co.).

Sauk County
3 NE Baraboo 26 0250CST 0 0 30K **Thunderstorm Wind**

An isolated severe thunderstorm's powerful downburst winds tore off 3/4ths of a farm home's roof and levelled many trees.

Columbia County
3 SE Portage to
Wyocena 26 0300CST
0310CST 0 0 5K 50K **Thunderstorm Wind**

The Sauk County severe storm pulsed up once again and flattened many large trees and some corn crop.

Lafayette County
5 N Darlington 28 0910CST 0 0 **Hail (1.00)**

**WIZ046>047-051>052-
056>060-062>072** **Marquette - Green Lake - Fond Du Lac - Sheboygan - Sauk - Columbia - Dodge - Washington - Ozaukee -
Iowa - Dane - Jefferson - Waukesha - Milwaukee - Lafayette - Green - Rock - Walworth - Racine - Kenosha**
29 0800CST 8 0
31 0600CST **Excessive Heat**

The most intense heat wave since the killer heat wave of July 13-14, 1995, struck southcentral and southeast Wisconsin at the end of July, 1999. This most recent heat wave was responsible for directly killing 8 people (heat was the major cause of death), and indirectly killing (heat was a contributing factor) an additional 6 people. Most of these deaths occurred in or near the city of Milwaukee (Milwaukee Co.), possibly due to the fact that Milwaukee registered a minimum air temperatures of 70 degree or higher for the last 11 days of July. In addition, at least 150 people were treated at local hospitals for heat-related exhaustion or dehydration.

Meteorologically, high pressure over the southeast U.S. pushed hot, muggy air into southern Wisconsin. Additional moisture was added to the atmosphere by evaporation of moisture from the Mid West corn belt. In fact, the dewpoint at Milwaukee Mitchell Field reached 82 degrees at 1200CST on the 30th, tying the record high dewpoint set back on July 4, 1977. Kenosha (Kenosha Co.) also hit 82 for a maximum dewpoint reading, while Madison (Dane Co.) came in with 79. On July 29th, maximum air temperatures ranged from 93 at the Wisconsin Dells (Columbia Co.) to 99 at Mt. Mary College in Milwaukee County. Minimum air temperatures for the morning of July 30th ranged from 68 in Juneau (Dodge Co.) to 76 at the Charmany Farm in Madison. Maximum air temperatures for July 30th ranged from 95 in Juneau to 104 in Kenosha. The 104 degrees in Kenosha established a new all-time record for that location! Milwaukee topped out at 95 and 99 for the 29th and 30th, respectively, while Madison topped out at 93 and 97. Minimum air temperatures for the morning on the 31st were in the lower 70s.

Thanks to the high dewpoint levels, heat index values during the afternoon hours on the 29th and 30th ranged from 110 to 115. However, on the 30th, the city of Fond du Lac (Fond du Lac Co.) had heat indices of 116 to 119 for 3 hours, the city of Racine (Racine Co.) had heat indices of 115 to 119 for 2 hours, and the city of Kenosha had readings of 115 to 125 for 6 hours. Minimum heat indices during the nighttime hours were around 80.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

WISCONSIN, Southeast

In Milwaukee County, the 4 direct heat deaths were: male 45, male 54, male 66, and female 73, all in their home or apartment. There were 6 other indirect heat-related deaths in Milwaukee County; again, all in their home. Other direct heat-related deaths were: in the city of Fond du Lac /male 65/, in Madison /male 53/, in the city of Racine /male 59/, and in the city of Waukesha (Waukesha Co.) /female 79/, all in their home. M65PH, M53PH, F79PH, M45PH, M54PH, M66PH, F73PH, M59PH

Rock County **Beloit**

29 0940CST 0 0 3K **Thunderstorm Wind**

An isolated severe thunderstorm generated strong winds which pushed over a few large trees in and near Beloit (Rock Co.).

Fond Du Lac County **Fond Du Lac**

30 2127CST 0 0 3K **Thunderstorm Wind (G60)**
2130CST

An isolated thunderstorm generated a wet microburst that levelled some large trees. Peak wind gust was measured.

Sheboygan County **Greenbush to** **Sheboygan Falls**

30 2315CST 0 0 20K **Thunderstorm Wind**
2325CST

An eastward moving line of thunderstorms in central Wisconsin generated a well-defined (on WSR-88D imagery) gust front which pushed some 5 to 15 miles ahead of the surface position of the associated rain. The counties of Sauk, Marquette, Green Lake, and Fond du Lac reported wind gusts of 35 to 43 knots (40 to 50 mph), however the outflow winds increased in strength after the gust front pushed into Sheboygan County. Many large trees and some power lines were pushed over from the Greenbush to Sheboygan Falls area. Peak winds gusts in Sheboygan county were estimated to be about 50 to 60 knots based on the damage reports.

WISCONSIN, Southwest

WIZ017-029-032>034-041>044-053>055-061 Taylor - Clark - Buffalo - Trempealeau - Jackson - La Crosse - Monroe - Juneau - Adams - Vernon - Crawford - Richland - Grant

04 0700CST 0 0 **Excessive Heat**
05 1900CST

Temperatures reaching 95 to 100 combined with high humidity levels to produce heat indices of 105 to 115 over the Fourth of July holiday. Local hospitals reported treating a few people for heat exhaustion, but there were no deaths related to the excessive heat and humidity.

Buffalo County **8 SW Mondovi to** **2 NE Mondovi**

08 1720CST 10 120 0 3 1M 35K **Tornado (F1)**
1740CST

Taylor County **Medford**

08 1735CST 0 0 1K **Thunderstorm Wind (G53)**

Taylor County **Medford**

08 1745CST 0 0 1K **Thunderstorm Wind (G55)**

Clark County **Thorp**

08 1753CST 0 0 3K 2K **Thunderstorm Wind (G52)**

Clark County **Owen**

08 1805CST 0 0 10K 3K **Thunderstorm Wind (G61)**

Clark County **Dorchester**

08 1820CST 0 0 1K 2.5K **Thunderstorm Wind (G61)**

Jackson County **Merrillan**

08 1900CST 0 0 5K **Thunderstorm Wind (G56)**

Clark County **5 S Neillsville**

08 1912CST 0 0 **Funnel Cloud**

La Crosse County **La Crosse**

08 1913CST 0 0 **Funnel Cloud**

La Crosse County **Onalaska**

08 1915CST 0 0 10K **Hail (0.88)**

Clark County **Neillsville**

08 1918CST 0 0 **Funnel Cloud**

La Crosse County **La Crosse Muni Arpt**

08 1920CST 0 0 **Funnel Cloud**

Clark County **6 SE Neillsville**

08 1925CST 0 0 2.5K **Thunderstorm Wind**

La Crosse County **1.5 E La Crosse**

08 1928CST 0 0 0.25K **Thunderstorm Wind (G63)**

La Crosse County **Barre Mills**

08 1929CST 0 0 150K 40K **Thunderstorm Wind (G65)**

La Crosse County **2 E La Crosse**

08 1930CST 0 0 85K **Thunderstorm Wind (G65)**

La Crosse County **Bangor**

08 1956CST 0 0 15K **Hail (0.75)**

Monroe County **Norwalk**

08 2007CST 0 0 15K **Hail (0.75)**

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
WISCONSIN, Southwest									
Monroe County									
Portland	08	2010CST			0	0	0.80K	10K	Thunderstorm Wind (G55)
Vernon County									
Viroqua	08	2025CST			0	0	10K	10K	Thunderstorm Wind (G58)
Vernon County									
Ontario	08	2035CST			0	0	1K		Thunderstorm Wind (G54)
Crawford County									
Gays Mills	08	2047CST			0	0	0.20K		Thunderstorm Wind
A tornado sheared off trees and caused minor damage to homes and barns before hitting the town of Mondovi (Buffalo County). Two homes in Mondovi had roofs removed or garages damaged. Three people sustained minor injuries. 70 to 80 mph winds ripped through areas east of La Crosse, knocking down numerous trees and causing extensive damage to a campground. One home and a barn were destroyed, while a few other homes received roof damage. Several cars were crushed or damaged by falling limbs and trees. There were no injuries reported. Elsewhere across west central Wisconsin, damaging winds and dime size hail were reported by spotters and law enforcement officials.									
Vernon County									
Central Portion	20	2030CST 2230CST			0	0	8K	2.5K	Flash Flood
1 to 2 inches of rain fell in less than an hour, causing flash flooding along Cook Creek and Harrison Creek near Viroqua.									
WIZ017-029-032>034-041>044-053>055-061									
Taylor - Clark - Buffalo - Trempealeau - Jackson - La Crosse - Monroe - Juneau - Adams - Vernon - Crawford - Richland - Grant									
	23	1000CST			0	0			Excessive Heat
	25	2300CST							
Three consecutive days of high temperatures in the 90s, combined with high humidity levels caused afternoon heat indices of 105 to 115. No deaths directly related to the heat were reported.									
Taylor County									
Medford	25	2218CST			0	0	5K		Thunderstorm Wind (G56)
Clark County									
Thorp to Christie	25	2345CST 2353CST			0	0	10K		Thunderstorm Wind (G56)
Law enforcement officials reported trees and power lines were downed as winds gusted to 65 mph.									
Trempealeau County									
Blair	28	0553CST			0	0			Hail (0.75)
WIZ017-029-032>034-041>044-053>055-061									
Taylor - Clark - Buffalo - Trempealeau - Jackson - La Crosse - Monroe - Juneau - Adams - Vernon - Crawford - Richland - Grant									
	28	1000CST			1	0			Excessive Heat
	30	2100CST							
Oppressive heat and humidity affected the area once again with highs in the middle 90s to 100. La Crosse (La Crosse County) established new record highs when the temperature reached 98 and 100 on the 29th and 30th respectively. Heat indices both days topped out around 120. An 80 year old man died of heat stroke in Crawford County. M800T									
Trempealeau County									
Whitehall	30	1604CST			0	0	3K		Thunderstorm Wind (G52)
Trempealeau County									
Whitehall	30	1606CST			0	0	2.5K		Thunderstorm Wind (G53)
Taylor County									
8 W Stetsonville	30	1949CST			0	0	25K		Thunderstorm Wind (G56)
Clark County									
Owen	30	2000CST			0	0	2K		Thunderstorm Wind (G53)
Monroe County									
Tomah	30	2115CST			0	0	0.50K		Thunderstorm Wind (G50)
60 to 65 mph wind gusts were reported by spotters and law enforcement officials. Several large trees were blown down and a barn was blown down near Stetsonville (Taylor County).									
Taylor County									
Medford	30	1814CST			1	0			Lightning
A 24 year old Amish man was killed by lightning, while travelling in a horse and buggy. The horse was killed also. M240U									
WISCONSIN, West									
Polk County									
Milltown	03	0450CST			0	0			Thunderstorm Wind (G55)
A few trees felled. Winds estimated.									
Barron County									
4 W Chetek	08	1643CST			0	0			Funnel Cloud
Barron County									
2 S Dallas	08	1655CST			0	0			Funnel Cloud
Rusk County									
Island Lake	08	1715CST			0	0			Thunderstorm Wind (G60)
Trees and power lines downed. Winds estimated.									

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	
WISCONSIN, West									
Chippewa County 5 NE Bloomer	08	1720CST			0	0			Funnel Cloud
Chippewa County Cornell	08	1730CST			0	0	Several trees and power lines downed. Roads blocked. Windspeed estimated.		Thunderstorm Wind (G55)
Chippewa County Boyd	08	1745CST			0	0	Several trees and power lines down. Some roads blocked. Windspeed estimated.		Thunderstorm Wind (G55)
Polk County 3 N Centuria	09	1141CST	0.1	25	0	0	Brief Touchdown. No damage.		Tornado (F0)
Polk County Balsam Lake	09	1152CST	0.5	50	0	0	Few trees and power lines down along six blocks in Balsam Lake. Pole barn down on the east side of Balsam Lake.		Tornado (F0)
Barron County 3 NE Turtle Lake	09	1215CST			0	0	Funnel came very close to ground.		Funnel Cloud
Barron County 3 S Rice Lake	09	1230CST			0	0			Funnel Cloud
Barron County 3 N Cameron	09	1235CST			0	0			Hail (0.75)
Polk County 3 S Eureka Center	13	2300CST			0	0			Hail (0.75)
Polk County Osceola	23	0102CST			0	0	Estimated Winds, a few trees and powerlines down.		Thunderstorm Wind (G55)
Polk County Osceola Muni Arprt	23	0104CST			0	0	AWOS measurement.		Thunderstorm Wind (G56)
Polk County Centuria	23	0115CST			0	0	Shed down. Large limbs and power lines down. Estimated winds.		Thunderstorm Wind (G52)
St. Croix County Deer Park	23	0128CST			0	0	Estimated winds. Trees and power lines brought down.		Thunderstorm Wind (G60)
St. Croix County Hudson	23	0128CST			0	0	Estimated winds. Trees and power lines down.		Thunderstorm Wind (G60)
Barron County 3 N Turtle Lake to 3 NW Almena	23	0130CST 0135CST			0	0	Barn down. Silo down. Numerous trees down along a four mile long path. Estimated windspeed.		Thunderstorm Wind (G60)
Polk County Luck to Clam Falls	23	0135CST			0	0	Scattered trees down along a 10 mile long swath. Estimated winds.		Thunderstorm Wind (G55)
Barron County 6 NW Rice Lake	23	0145CST			0	0			Hail (0.75)
Polk County Clayton	23	0145CST			0	0	Estimated winds. Trees felled.		Thunderstorm Wind (G55)
Barron County Barron	23	0150CST			0	0	Estimated winds. Trees felled.		Thunderstorm Wind (G55)
Barron County 4 S Rice Lake	23	0156CST			0	0	Estimated winds. Trees toppled.		Thunderstorm Wind (G55)
Barron County 6 E Cameron	23	0206CST			0	0	Estimated winds. Trees down.		Thunderstorm Wind (G55)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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WISCONSIN, West

Rusk County

Weyerhaeuser	23	0234CST			0	0			Thunderstorm Wind (G65)
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Estimated winds. Powerlines down, numerous trees down.

WIZ014>016-023>028 Polk - Barron - Rusk - St. Croix - Pierce - Dunn - Pepin - Chippewa - Eau Claire

23	1000CST				0	0			Excessive Heat
25	2300CST								

A massive upper ridge over the central and eastern U.S. enabled heat to build into Wisconsin, especially on the 25th. Maximum heat indices on the 23rd and 24th were in the middle and upper 90s, but soared well into triple digits on the 25th. A cold frontal passage very late on the 25th put an end to the heat wave. The highest indices noted on the 25th were 116 at Red Wing MN airport (the airport is one mile southeast of Hager City in Pierce County WI), and 110 at both Eau Claire and Rice Lake. Temperatures hit the middle 90s on the 25th; dewpoints were widespread in the upper 70s, and even topped out at 81 in Rice Lake and Red Wing airport.

Rusk County

3 N Ladysmith	25	2056CST			0	0			Thunderstorm Wind (G60)
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Estimated winds, large trees toppled.

Barron County

Barronett	25	2125CST			0	0			Thunderstorm Wind (G52)
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Estimated winds, few trees down.

Barron County

Cumberland	25	2135CST			0	0			Thunderstorm Wind (G60)
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Estimated winds, numerous trees down.

Barron County

4 SE Cumberland	25	2140CST			0	0			Hail (1.00)
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Rusk County

2 E Hawkins	25	2142CST			0	0			Thunderstorm Wind (G55)
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Estimated winds, several trees down.

Barron County

Rice Lake	25	2150CST			0	0			Thunderstorm Wind (G50)
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Estimated winds, scattered trees down.

Rusk County

9 N Bruce	25	2345CST			0	1			Flash Flood
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At least 6 inches of rain led to flooding of Clear Creek near Hwy 40 and County Road H. Normally 10 feet wide, it swelled to 100 yards wide. County Road H Bridge and nearby approaches washed out. Camper and farm machinery swept away. Basements flooded. Creek also flowed across Hwy 40. One man slightly injured when he drove into washed out bridge approach.

WIZ014>016-023>028 Polk - Barron - Rusk - St. Croix - Pierce - Dunn - Pepin - Chippewa - Eau Claire

29	0300CST				0	0			Excessive Heat
30	2000CST								

Less than one week after the first heat wave, west central Wisconsin received even greater heat, especially on the 30th. The morning of the 29th started with lows in the 70s and dewpoints around 70, producing heat indices in the middle and upper 70s. With afternoon highs in the 90s and dewpoints in the 60s, heat indices climbed to the 95 to 105 range. The highest index of 105 occurred at Red Wing MN airport (which is located near Hager City of Pierce County WI). A muggy night ensued, with heat indices remaining from 70 to 75 throughout.

The bulk of the heat hit on the 30th. By 0900 CST, heat indices at both Eau Claire and Red Wing airport had soared into triple digits. High temperatures rose into the upper 90s and dewpoints were at 81 or 82 throughout west central Wisconsin. Rice Lake and Eau Claire both had a maximum heat index of 121, and Red Wing airport hit 122. A cold front moved in on the evening of the 30th, bringing severe thunderstorms and putting an end to the heat wave.

Polk County

Luck	30	1645CST			0	0			Thunderstorm Wind (G52)
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Few trees down. Estimated windspeed.

St. Croix County

3 NE Somerset	30	1715CST			0	0			Thunderstorm Wind (G52)
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Few trees felled. Estimated windspeed.

Barron County

Cumberland	30	1730CST			0	0			Thunderstorm Wind (G50)
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Trees and power lines down. Estimated windspeed.

St. Croix County

1 N Somerset	30	1733CST			0	0			Thunderstorm Wind (G50)
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Tree down. Estimated windspeed.

St. Croix County

2 N New Richmond	30	1740CST			0	0			Thunderstorm Wind (G50)
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Tree and power lines down. Estimated windspeed.

Barron County

Dallas	30	1745CST			0	0			Thunderstorm Wind (G55)
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Shed down. Numerous trees and power lines down. Estimated windspeed.

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>WISCONSIN, West</u>									
Barron County									
1 W Cameron	30	1750CST			0	0			Thunderstorm Wind (G50)
			Tree down across road. Estimated windspeed.						
St. Croix County									
5 N River Falls	30	1752CST			0	0			Hail (0.75)
Pierce County									
Prescott	30	1805CST			0	0			Thunderstorm Wind (G50)
			Tree toppled onto truck. Estimated windspeed.						
Rusk County									
Ladysmith to 2 E Hawkins	30	1810CST 1835CST			0	0			Thunderstorm Wind (G65)
			A five mile wide swath of damaging winds tracked for 20 miles through central and eastern Rusk County, downing hundreds of trees, some eighteen inches in diameter. Some trees on houses and garages. Roof partially blown off house in Ladysmith. Shed down 2 N Tony. Two unanchored mobile homes smashed 1 NE Ingram. Part of a tree in Hawkins blown 100 yards. Barn down, hangar and two aircraft destroyed 1 S Hawkins. Some shingles and soffets torn off in Hawkins. Estimated windspeed.						
Pierce County									
5 NW Maiden Rock	30	1825CST			0	0			Thunderstorm Wind (G50)
			Large branches felled and blocking road. Estimated windspeed.						
Chippewa County									
10 E New Auburn	30	1832CST			0	0			Thunderstorm Wind (G52)
			Few trees down. Estimated windspeed.						
Pepin County									
3 N Pepin to 1 SE Arkansas	30	1840CST 1845CST			0	0			Thunderstorm Wind (G60)
			A 10 mile long swath of damaging winds downed numerous trees. Roof partially off an outbuilding 3 N Pepin. Chimney blown off house and garage pushed off foundation 1 SE Arkansas. Estimated windspeed.						
Chippewa County									
9 N Stanley	30	1920CST			0	0			Thunderstorm Wind (G55)
			Large tree down across road. Estimated windspeed.						
Eau Claire County									
1 SE Eau Claire	30	1920CST			0	0			Thunderstorm Wind (G52)
			Several trees down. Estimated windspeed.						
<u>WYOMING, Central and West</u>									
Teton County									
19 NNW Jackson	20	1300MST			0	1			Lightning
			Person struck by lightning on Table Mountain.						
<u>WYOMING, Extreme Southwest</u>									
			NONE REPORTED.						
<u>WYOMING, North Central</u>									
			NONE REPORTED.						
<u>WYOMING, Northeast</u>									
Campbell County									
8 SE Gillette	07	1545MST			0	0			Hail (0.75)
Crook County									
25 NW Hulett	07	1635MST			0	0			Thunderstorm Wind (G52)
Crook County									
21 N Hulett	07	1700MST			0	0			Hail (1.00)
Weston County									
10 W Upton	15	1515MST			0	0			Hail (0.75)
Campbell County									
20 SE Gillette	15	1525MST			0	0			Hail (1.00)
Crook County									
14 SW Sundance	15	1615MST			0	0			Hail (1.00)
Weston County									
6 N Upton	15	1615MST			0	0			Hail (1.00)
			Hail was one foot deep along the Crook and Weston county line.						
Weston County									
15 W Four Corners	15	1640MST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>WYOMING, Northeast</u>									
Crook County									
Devils Tower	15	1715MST			0	0			Hail (0.88)
Weston County									
5 SW Newcastle	17	1424MST	0.1	10	0	0			Tornado (F0)
			Brief touchdown. Path width and length estimated.						
Weston County									
4 SW Upton	20	1907MST			0	0			Hail (0.75)
Weston County									
16 SW Upton	20	2000MST			0	0			Hail (0.75)
Campbell County									
Countywide	21	1700MST			0	0			Lightning
	22	1700MST							
			11 fires were started throughout the county due to lightning striking rangeland and hay bales. The largest fire reached 300 acres before firefighters were able to contain it.						
Campbell County									
Echeta	21	1715MST			0	0			Thunderstorm Wind (G66)
<u>WYOMING, Southeast</u>									
Goshen County									
Veteran	21	1505MST 1510MST			0	0			Hail (0.75)
			3/4 inch hail reported 4 miles west of Veteran, WY						
Albany County									
Centennial	24	1715MST 1735MST			2	0			Lightning
			Lightning killed two hikers on Medicine Bow peak northwest of Centennial, WY, about 150 to 200 feet below the summit at an altitude just over 12,000 feet. F30OU, M40OU						

Storm Data and Unusual Weather Phenomena

January 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

INDIANA, Central

INZ039>041-047-053>055-061>062-067>068 **Hamilton - Madison - Delaware - Marion - Owen - Morgan - Johnson - Greene - Monroe - Knox - Daviess**

21	2300EST			0	0	19M	Flood
31	2359EST						

Heavy rain of up to 5 inches on the 21st and 22nd combined with rapid snow melt upstream causing widespread flooding along the White River from Muncie to East Mount Carmel. Crests ranged from around a foot above flood stage along extreme eastern sections of the White to around 10 feet above flood stage across extreme western sections. Flooding along the river in Hamilton and northern Marion counties were the highest seen since December 1990 and January 1991. Many homes and streets were flooded, and a few rescues took place. The following are various crests along the river: Muncie - 9.62 feet (flood stage is 9 feet); Anderson - 12.8 feet (flood stage is 10 feet); Noblesville - 20.42 feet (flood stage is 14 feet); Nora - 16.67 feet (flood stage is 11 feet); Ravenswood - 10.8 feet (flood stage is 6 feet); Centerton - 16.61 feet (flood stage is 12 feet); Spencer - 22.33 feet (flood stage is 14 feet); Worthington - 26.0 feet (flood stage is 18 feet); Ellisten - 27.62 feet (flood stage is 18 feet); Newberry - 23.66 feet (flood stage is 13 feet); Edwardsport - 24.6 feet (flood stage is 15 feet); Petersburg 24.89 feet (flood stage is 16 feet) and Hazleton - 25.10 feet (flood stage is 16 feet)

INZ045>046-053>054 **Putnam - Hendricks - Owen - Morgan**

21	2300EST			0	0	250K	Flood
25	2100EST						

Rapid snow melt and 2 to 5 inches of rain on the 21st and 22nd led to flooding along MillCreek. The crest at Cataract was 19.42 feet (flood stage is 10 feet).

INZ041>042 **Delaware - Randolph**

21	2300EST			0	0	750K	Flood
25	0900EST						

Rapid snow melt and heavy rain on the 21st and 22nd led to flooding along the Missessinewa River. Ridgeville crested at 13.93 feet (flood stage is 10 feet).

INZ021-029-031 **Carroll - Tippecanoe - Howard**

22	0100EST			0	0	14M	Flood
25	2300EST						

Rapid snowmelt and heavy rain on the 21st and 22nd caused widespread flooding along Wildcat Creek. 120 homes were evacuated on Kokomo's east side.

INZ030 **Clinton**

22	0100EST			0	0	100K	Flood
23	2100EST						

3 feet of water in the Frankfort High School parking lot in addition to many flooded streets closed schools across the county. Local authorities said the high water was a result of run-off from the snow melt and 4-5 inches of rain that fell over the previous 24 hours.

INZ048>049-055>057 **Hancock - Henry - Johnson - Shelby - Rush**

22	0300EST			0	0	100K	Flood
24	1500EST						

Rapid snow melt and 2 to 5 inches of rain on the 21st and 22nd led to flooding along the Big Blue River. The Crest at Carhage was 8.62 feet (flood stage is 7 feet) and 14.70 feet at Shelbyville (flood stage is 11 feet).

INZ037-044>045 **Boone - Parke - Putnam**

22	0300EST			0	0	100K	Flood
23	2300EST						

Rapid snow melt and 2 to 5 inches of rain on the 21st and 22nd caused flooding along Big Racon Creek. The crest at Fincastle was 14.26 feet (flood stage is 11 feet) and at Coxville was 14.36 feet (flood stage is 14 feet).

INZ045>046 **Putnam - Hendricks**

22	0300EST			0	0	100K	Flood
23	2300EST						

Rapid snow melt and 2 to 5 inches of rain on the 21st and 22nd caused flooding along Big Walnut Creek. The crest at Reelsville was 16.60 feet (flood stage is 12 feet).

INZ060 **Sullivan**

22	0300EST			0	0	100K	Flood
25	0700EST						

Rapid snow melt and 2 to 5 inches of rain on the 21st and 22nd led to flooding along Busseron Creek. The crest was at 17.02 feet (flood stage is 16 feet).

INZ045-052-061 **Putnam - Clay - Greene**

22	0300EST			0	0	100K	Flood
24	1200EST						

Rapid snow melt and 2 to 5 inches of rain on the 21st and 22nd led to flooding along the Eel River. Bowling Green crested at 20.79 feet (flood stage is 17 feet).

Storm Data and Unusual Weather Phenomena

January 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Property Damage	Crops	Character of Storm
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ADDITIONS/CORRECTIONS

INDIANA, Central

INZ039>040-047-049	Hamilton - Madison - Marion - Henry								
	22	0300EST			0	0	100K		Flood
	25	2100EST							
	Rapid snow melt along with 2 to 5 inches of rain on the 21st and 22nd led to flooding along Fall Creek. The crest at Fortville was 7.7 feet and at Millersville 10.96 feet (flood stage is 7 feet).								
INZ071>072	Jackson - Jennings								
	22	0300EST			0	0	50K		Flood
	27	2100EST							
	Rapid snow melt and heavy rain on the 21st and 22nd caused flooding along the Muscatatuck River. The crest at Wheeler Hollow was 21.9 feet (flood stage is 16 feet).								
INZ021-029	Carroll - Tippecanoe								
	22	0300EST			0	0	50K		Flood
	26	2300EST							
	Rapid snow melt and heavy rain on the 21st and 22nd led to flooding along the Tippecanoe River. The crest at Delphi was 9.68 feet (flood stage is 8 feet).								
INZ040	Madison								
	22	0300EST			0	0	50K		Flood
	24	0700EST							
	Rapid snow melt and heavy rain on the 21st and 22nd led to flooding along Pipe Creek. Frankton crested at 12.97 feet (flood stage is 12 feet).								
INZ048-055>056	Hancock - Johnson - Shelby								
	22	0300EST			0	0	50K		Flood
	25	1100EST							
	Rapid snow melt and heavy rain on the 21st and 22nd led to flooding along Sugar Creek. Edinburg crested at 14.6 feet (flood stage is 9 feet).								
INZ030-036>037-044	Clinton - Montgomery - Boone - Parke								
	22	0300EST			0	0	50K		Flood
	23	0900EST							
	Rapid snow melt and heavy rain on the 21st and 22nd led to flooding along Sugar Creek. Crawfordsville crested at 10.93 feet (flood stage is 8 feet).								
INZ054	Morgan								
	22	0300EST			0	0	50K		Flood
	23	2100EST							
	Rapid snow melt and 2 to 5 inches of rain on the 21st and 22nd caused flooding along White Lick Creek. Mooresville crested at 20.33 feet (flood stage is 15 feet).								
INZ028>029-035-043>044-051-060-067	Warren - Tippecanoe - Fountain - Vermillion - Parke - Vigo - Sullivan - Knox								
	22	0700EST			0	0	9M		Flood
	31	2359EST							
	Rapid snow melt and heavy rain on the 21st and 22nd from 2 to 5 inches caused widespread flooding all along the Wabash River from Lafayette to East Mount Carmel. Flooding was the highest since April 1994 as crests were generally around 10 feet above flood stage. As flooding was nearing an end, more rain on the 31st caused the flooding to continue into February. The following are crests for various locations along the Wabash: Lafayette - 21.83 feet (flood stage is 11 feet); Covington - 26.18 feet (flood stage is 16 feet); Montezuma - 26.30 feet (flood stage is 14 feet); Clinton - 25.75 feet (flood stage is 18 feet); Terre Haute - 22.42 feet (flood stage is 14 feet); Riverton - 21.89 feet (flood stage is 15 feet); Vincennes - 24.47 feet (flood stage is 17.5 feet)								
INZ037-047	Boone - Marion								
	22	1100EST			0	0	1M		Flood
	23	2300EST							
	Rapid snow melt and heavy rain caused flooding along Eagle Creek. Zionsville crested at 10.7 feet (flood stage is 7 feet), while Speedway crested at 11.37 feet (flood stage is 9 feet).								
INZ064-069>071	Bartholomew - Martin - Lawrence - Jackson								
	22	1300EST			0	0	5M		Flood
	30	0700EST							
	A combination of snowmelt and a heavy rain storm late on the 21st and 22nd caused widespread flood along the East Fork of the White River. Travel was very difficult in Jackson county as bridge construction had closed U.S. Highway 50, the only east-west road in the county that the East Fork does not flood. The East Fork flooded all local roads used as a detour for Highway 50. Columbus crested at 12.64 feet (flood stage is 9 feet), Seymour at 17.47 feet (flood stage is 12 feet), Bedford at 28.15 feet (flood stage is 20 feet), Williams at 10.9 feet (flood stage is 8 feet) and Shoals at 21.16 feet (flood stage is 20 feet).								

MISSOURI, Southwest

Howell County									
Mountain View	17	1440CST			0	0	0		Hail (0.75)

Storm Data and Unusual Weather Phenomena

January 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured		Estimated Damage Property	Crops	Character of Storm
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ADDITIONS/CORRECTIONS

MISSOURI, Southwest

Thunderstorms downed a few large tree limbs and dropped dime sized hail.

Oregon County Countywide

17	1530CST	0	0	0	Thunderstorm Wind
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A few trees were reported downed by thunderstorm winds, mainly across northern sections of the county.

Storm Data and Unusual Weather Phenomena

February 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

MISSOURI, Southwest

Dade County

Greenfield

11 1032CST 0 0

Hail (0.88)

Nickel sized and wind gusts estimated at 52 knots were reported.

Storm Data and Unusual Weather Phenomena

April 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Crops	Character of Storm
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ADDITIONS/CORRECTIONS

COLORADO, South Central and Southeast

COZ070>075-077	Wet Mountains - Southern El Paso County/Colorado Springs And Vicinity - Northern El Paso County/Monument Ridge - Pueblo And Eastern Fremont Counties/Pueblo And Vicinity - Upper Huerfano River Basin/Walsenburg And Vicinity - Upper Purgatoire River Basin/Trinidad And Vicinity - Eastern Las Animas County	30	0200MST 2359MST	0	0	25.1M	Flood
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Rainfall amounts of 6 to 13 inches from Wednesday night to Friday night caused fast rushing water and major flooding from the Fountain Creek watershed to the Arkansas River east of Pueblo. Heavy rain in the mountains and adjacent plains upstream from Pueblo on the Arkansas River caused flooding in Custer, Fremont and Pueblo counties as well. In Pueblo county, damage was done to roads, irrigation systems and bridge structures, especially near Fountain Creek. In far eastern Custer county, damage was done to a few roads. Heavy rain amounts, of 4 to 10 inches extended south to the Trinidad area, and began to flood the Purgatoire River basin, Huerfano River basin, and St. Charles River basin. The flood waters moved toward Otero county and Rocky Ford and La Junta. The rest of the narrative on this major flood, which was likely the greatest since 1965 will be continued in May Stormdata, with reports on flooding in the Arkansas River Valley in the southeast plains of Colorado.

FLORIDA, West Panhandle

Okaloosa County Destin	23	1400CST		1	0		Rip Currents
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A male visiting Destin from out of state was caught in a strong rip current and drowned. He was brought to shore and died before reaching a local hospital.
M59IW

ILLINOIS, Northwest

Hancock County Basco	05	1820CST		0	0		Funnel Cloud
McDonough County 2 SW Good Hope to 1 W Good Hope	05	1830CST 1832CST	0.5	100	0	0	Tornado (F0)
McDonough County 1 W Good Hope to 1 N Good Hope	05	1832CST 1834CST	0.4	100	0	0	5K Tornado (F2)
McDonough County 1 N Good Hope to 5 N Good Hope	05	1834CST 1839CST	5.5	100	0	0	0.50K Tornado (F1)
Warren County 2.5 SW Swan Creek to Swan Creek	05	1839CST 1842CST	2	100	0	0	3K Tornado (F1)
Warren County Swan Creek to 1 N Swan Creek	05	1842CST 1845CST	0.6	100	0	0	8K Tornado (F2)

The tornado first touched down along Highway 9 southwest of Good Hope snapping several trees. From there the tornado moved northeast across Town Fork Creek damaging several trees in a densely wooded area and snapping two large trees along a county road. Damage along this path was rated F0.

As the tornado continued northeast it moved through plowed farmland and approached a homestead along north-south county road west of Good Hope. The house sustained no structural damage, but several outbuildings suffered substantial damage. An older concrete block hog house was destroyed while the roof and sides of a new machine shed were torn off. A grain bin was blown about 500 yards from the home site into a neighboring field. Damage along this path was rated F2.

For the next several miles the tornado tracked through plowed farmland snapping a few trees and blowing over several fences. The tornado then approached US Highway 67 just south of the McDonough-Warren County line. The tornado snapped two very large oak trees at a homestead with one landing on the house. It continued on a northeast track snapping several trees and damaging a roof on a homestead just south of the county line. Damage along this path was rated F1.

The tornado then crossed from McDonough county into Warren county just east of highway 67. As the tornado continued northeast it hit a group of farm buildings north of the county line. Three of the buildings sustained major damage. A corn crib was blown on it's side while the roof of a barn and shed were destroyed. Damage along this path was rated F1.

The tornado tracked into the south side of Swan Creek destroying a grain elevator. Just northeast of the elevator the walls of a concrete block machine shop were blown in and the building was completely destroyed. As is continued northeast it toppled several trees and antennae. Other damage in Swan Creek included two porches torn off

Storm Data and Unusual Weather Phenomena

April 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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ADDITIONS/CORRECTIONS

ILLINOIS, Northwest

homesteads and two roofs lifted, but not pulled off homesteads. Damage along this path was rated F2.

The tornado continued northeast and lifted just north of town.

KANSAS, Southwest

Hamilton County

20 NNW Syracuse	25	1601MST			0	0			Thunderstorm Wind (G55)
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Scott County

8 WSW Scott City	25	1840CST			0	0			Hail (1.00)
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Scott County

8 N Scott City	25	1914CST			0	0			Hail (1.00)
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Lane County

1 N Shields	25	1950CST			0	0			Hail (0.88)
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Lane County

10 N Dighton	25	1953CST			0	0			Hail (0.88)
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Trego County

2 S Wakeeney	25	2130CST			0	0			Hail (0.75)
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MISSOURI, Southwest

Taney County

Branson	03	1425CST			0	0	30K		Thunderstorm Wind
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Thunderstorm wind gusts estimated at 60 mph produced damage downed trees and power lines in the Branson area. Dime sized hail was also reported.

Miller County

Eldon	08	1727CST			0	0	0		Hail (0.88)
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Thunderstorms produced nickel sized hail and tree damage.

Mcdonald County

2 N Powell	22	1743CST			0	0			Hail (1.75)
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A severe thunderstorm produced golfball sized hail and 50 knot winds.

Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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ADDITIONS/CORRECTIONS

COLORADO, South Central and Southeast

COZ068-070>077-079>080 **Western Fremont And Northern Custer Counties - Wet Mountains - Southern El Paso County/Colorado Springs And Vicinity - Northern El Paso County/Monument Ridge - Pueblo And Eastern Fremont Counties/Pueblo And Vicinity - Upper Huerfano River Basin/Walsenburg And Vicinity - Upper Purgatoire River Basin/Trinidad And Vicinity - Crowley And Otero Counties/La Junta And Vicinity - Eastern Las Animas County - Bent County/Las Animas And Vicinity - Prowers County/Lamar And Vicinity**

01	0000MST				0	0	4.2M	3.6M	Flood
05	1200MST								

The most significant river flooding along the Arkansas River since at least 1965 was caused by widespread and persistent rainfall...especially along the eastern slopes of the southeast mountains. The heaviest rainfall occurred from late in the day on the 28th of April and persisted into the afternoon hours of April 30th. Widespread rainfall totals in excess of 8 inches was noted in 40 hours with some locations receiving in excess of 13 inches of rain in 48 hours. As stated in April Storm Data, the heavy rain event led to widespread river flooding...especially along the Arkansas River as well as the Fountain Creek watershed. By the morning of May 2nd portions of northern La Junta were under 5 to 6 feet of water, which damaged or destroyed over 250 homes and businesses. Nearly 100 other structures were damaged or destroyed. Many irrigation ditches in southeast Colorado sustained damage to channels and gates. Agricultural lands were swept away, and the channel of the Arkansas River was significantly altered in many locales. Significant flooding occurred between Rocky Ford and La Junta along the Arkansas River. There were numerous roads washed out and bridges destroyed by the flood waters. Water levels began receding in earnest on May 3rd and were generally below flood level by May 5th.

KANSAS, Extreme Southeast

Bourbon County									
Ft Scott	04	2127CST			0	0	5K		Hail (0.88)

A thunderstorm produced nickel sized hail and downed trees.

KANSAS, Southwest

Seward County									
4 S Kismet	02	1755CST			0	0			Hail (0.75)
									Lasted 15 minutes.
Seward County									
4 S Kismet	02	1759CST			0	0			Hail (0.75)
Ellis County									
1 E Yocemento	04	1000CST			0	0			Hail (1.00)
Ellis County									
13 N Hays	04	1035CST			0	0			Hail (0.88)
Ellis County									
17 NE Hays	04	1245CST			0	0			Hail (0.75)
Ellis County									
4 NE Emmeram	04	1440CST			0	0			Hail (1.00)
Rush County									
2 E Timken	04	1545CST			0	0			Hail (0.75)
Rush County									
3 W Otis	04	1604CST			0	0			Hail (0.75)
Comanche County									
5 NE Protection	09	1705CST			0	0			Hail (1.00)
Kiowa County									
15 SSW Greensburg	09	1722CST			0	0			Hail (0.88)
Stafford County									
7 NE St John	10	1832CST			0	0			Hail (1.00)
Stafford County									
9 S St John to 9 S Seward	10	1939CST			0	0			Hail (0.75)
Pratt County									
2 N Byers	10	1940CST			0	0			Hail (1.00)
Pratt County									
1 N Byers	10	1950CST			0	0			Hail (1.00)
Stafford County									
6 SW St John	10	2002CST			0	0			Hail (0.75)
Pratt County									
10 NNW Pratt	10	2005CST			0	0			Hail (0.75)
Pratt County									
9 NW Pratt	10	2012CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Pratt County 2 N Iuka	10	2017CST			0	0			Hail (0.88)
Pratt County 3 N Pratt	10	2032CST			0	0			Hail (1.00)
Pratt County 2 NW Pratt	10	2037CST			0	0			Hail (0.75)
Pratt County 2 N Pratt	10	2043CST			0	0			Hail (0.88)
Pratt County Pratt	10	2045CST			0	0			Hail (1.00)
Pratt County 1 S Pratt	10	2045CST			0	0			Hail (1.00)
Pratt County Coats	10	2046CST			0	0			Hail (0.75)
Kearny County 6 W Lakin	10	2048CST			0	0			Hail (0.75)
			Had 50 mph wind along with the hail.						
Finney County 7 S Holcomb	10	2120CST			0	0			Hail (0.88)
			Had 55 mph wind along with the hail.						
Barber County 3 W Lake City	10	2125CST			0	0			Hail (0.75)
Pratt County 2 S Coats	10	2130CST			0	0			Hail (0.75)
Pratt County 13 SW Pratt	10	2130CST			0	0			Flash Flood
			Water was over a county road.						
Pratt County 13 SW Pratt	10	2130CST			0	0			Hail (0.75)
Pratt County 11 E Sawyer	10	2230CST			0	0			Hail (0.75)
Barber County 6 S Sun City	10	2248CST			0	0			Hail (1.00)
Barber County 8 NW Hardtner	16	1825CST			0	0			Hail (0.75)
Barber County 10 S Medicine Lodge	16	1850CST			0	0			Hail (0.88)
Barber County 5 S Medicine Lodge	16	1933CST			0	0			Hail (2.00)
Hamilton County 21 NW Syracuse	16	1936CST			0	0			Hail (1.25)
			Reported by a pilot on the ground.						
Hamilton County 18 N Syracuse	16	2000CST			0	0	2K		Thunderstorm Wind
			Power poles down across highway 27.						
Hamilton County 12 N Kendall	16	2005CST			0	0			Thunderstorm Wind (G69)
Comanche County 22 SE Coldwater	16	2007CST			0	0			Hail (1.75)
Hamilton County 9 NNW Coolidge	16	2030CST			0	0	30K		Hail (1.75)
			Swath of hail and high wind across the northern 1/4 of the county produced \$30,000 damage to property. Damage was also done to crops. Do not have dollar figure available.						
Kearny County 14 N Deerfield	16	2040CST			0	0			Hail (1.75)
			Window broken out a car.						
Scott County 2 S Modoc	16	2042CST			0	0			Hail (1.75)
Comanche County 18 SE Coldwater	16	2045CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Scott County									
Scott City	16	2050CST			0	0			Hail (1.75)
Scott County									
Scott City	16	2050CST			0	0	1.6M		Thunderstorm Wind (G71)
Swath of large hail and high wind across the county produced \$1.55 million in damage to property. Extensive damage was also done to crops. In Scott City, a roof was blown off; a camper was blown 30 feet and a shed was blown down.									
Finney County									
4 W Friend	16	2056CST			0	0			Hail (1.25)
Lane County									
1 W Dighton	16	2112CST			0	0			Hail (1.00)
Lane County									
Dighton	16	2115CST			0	0			Hail (1.75)
Lane County									
Shields	16	2120CST			0	0			Hail (0.75)
Ness County									
Ransom	16	2130CST			0	0			Hail (2.75)
Ness County									
7 SSW Utica	16	2132CST			0	0			Hail (1.00)
Ness County									
20 NNW Ness City	16	2135CST			0	0			Hail (1.75)
Ness County									
Ness City	16	2142CST			0	0			Hail (1.75)
Ness County									
2 E Utica	16	2143CST			0	0			Hail (1.00)
Comanche County									
2 S Protection	16	2145CST			0	0			Hail (1.00)
Ness County									
9 SW Ness City	16	2145CST			0	0			Hail (1.75)
Also had 79 mph wind which broke the equipment and the hail broke out windows.									
Ness County									
9 SW Ness City	16	2145CST			0	0			Thunderstorm Wind (G69)
Ness County									
Utica	16	2145CST			0	0			Hail (1.00)
Ness County									
Utica	16	2145CST			0	0			Hail (1.00)
Ness County									
1 N Ransom	16	2153CST			0	0			Hail (1.25)
Ness County									
9 SSE Ness City	16	2200CST			0	0			Hail (1.75)
Ness County									
3 NW Brownell	16	2205CST			0	0			Hail (1.00)
Also had 60 mph wind.									
Ness County									
3 NW Brownell	16	2205CST			0	0	200K		Thunderstorm Wind (G52)
Two separate swaths of hail moved through the county. The first was in a 7 to 12 mile wide swath from 2 miles south of Utica...to Arnold...Ransom...Brownell...and McCracken. The second swath was from 2 miles south of Beeler...to 4 miles south of Ness City...to 3 miles south of Bazine. A dollar amount was not made available...but crops were nearly completely wiped out in the hail swaths and numerous windows were broken out in automobiles and homes.									
Trego County									
22 S Wakeeney	16	2205CST			0	0			Hail (1.00)
Pawnee County									
28 WNW Larned	16	2215CST			0	0			Hail (1.75)
Pawnee County									
28 WNW Larned	16	2215CST			0	0			Thunderstorm Wind (G58)
Trego County									
17 S Riga	16	2215CST			0	0			Hail (0.75)
Ellis County									
8 S Ellis	16	2220CST			0	0			Hail (0.88)
Lasted 20 minutes.									

Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Rush County Alexander	16	2220CST			0	0			Hail (0.75)
Rush County La Crosse	16	2230CST			0	0			Hail (1.75)
Rush County Rush Center	16	2230CST			0	0			Hail (1.75)
Pawnee County 10 NW Larned	16	2235CST			0	0	100K		Hail (1.75)
\$100,000 in damage across the county.									
Ford County Wright	16	2240CST			0	0			Hail (2.00)
Rush County Rush Center	16	2245CST			0	0	2.5M		Hail (1.75)
Widespread severe weather continued from eastern Colorado, spreading across Rush county during the midnight hour. One person escaped injury by crawling out of bed! Golf ball size hail driven by 70 mph wind smashed through the window and window blind and passed by a man's head as he lay in bed. After the event, hail and glass shreds covered the bed. Loss to wildlife and some livestock across the county was heavy. There was a report of several dead cattle and many injured cow and horses. One-hundred thousand acres of wheat were mowed down, 3,500 acres of corn damaged and 4,000 acres of alfalfa destroyed (first cutting). \$480,000 in damage was done to farm equipment across the county (included in the \$2.48m)									
Rush County 2 SW Timken	16	2245CST			0	0	50K		Thunderstorm Wind
Pawnee County 12 N Larned	16	2250CST			0	0			Hail (1.00)
Pawnee County 6 NNW Larned	16	2305CST			0	0			Hail (0.88)
Had 70 mph wind too.									
Pawnee County 6 NNW Larned	16	2305CST			0	0			Thunderstorm Wind (G61)
Stafford County 8 N Hudson	16	2325CST			0	0			Hail (0.75)
Ellis County 2 W Hays	20	1203CST			0	0			Hail (1.75)
Lane County 3 S Dighton	20	1300CST			0	0			Hail (1.00)
Trego County 17 NE Wakeeney	20	1300CST			0	0			Hail (1.75)
Trego County 6 S Riga	20	1342CST			0	0			Hail (1.75)
Rush County Bison	20	1515CST			0	0			Hail (0.75)
Stevens County 2 N Woods	20	1525CST			0	0			Hail (0.75)
Stevens County 6 SE Moscow	20	1535CST			0	0			Hail (0.88)
Seward County 11 NW Liberal	20	1540CST			0	0			Hail (1.00)
Seward County 15 NW Liberal	20	1545CST			0	0			Hail (1.00)
Hail completely covered the ground.									
Pawnee County 3 NW Rozel	20	1600CST			0	0			Hail (0.88)
Haskell County 3 SW Sublette	20	1602CST			0	0			Thunderstorm Wind (G52)
Seward County 22 NW Liberal	20	1610CST			0	0			Hail (1.00)
Gray County 5 SE Copeland	20	1635CST			0	0			Hail (0.88)
Meade County 4 S Plains	20	1640CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Meade County									
16 S Meade	20	1645CST			0	0			Hail (1.25)
Lane County									
6 SE Dighton	20	1646CST			0	0			Hail (0.88)
Meade County									
1 SE Fowler to 1 S Collano	20	1705CST			0	0			Hail (0.75)
Clark County									
13 W Ashland	20	1720CST			0	0			Thunderstorm Wind (G65)
			4 inch diameter tree limbs down.						
Pratt County									
1 N Coats	20	1833CST			0	0			Hail (1.00)
Grant County									
7 SSW Hickok	22	0315CST			0	0			Hail (0.75)
Stevens County									
Moscow	22	0348CST			0	0			Hail (1.00)
Stevens County									
1 S Moscow	22	0349CST			0	0			Hail (0.75)
Seward County									
14 NW Liberal	22	0355CST			0	0			Hail (0.75)
Seward County									
9 N Liberal	22	0410CST			0	0			Hail (1.00)
Seward County									
5 SW Kismet	22	0450CST			0	0			Hail (0.88)
Seward County									
4 SW Kismet	22	0500CST			0	0			Hail (0.75)
Hodgeman County									
5 W Jetmore	22	0535CST			0	0			Hail (0.75)
Ness County									
1 N Ransom	22	0705CST			0	0			Hail (0.75)
Trego County									
7 S Collyer	22	0705CST			0	0			Hail (1.75)
Trego County									
10 S Collyer	22	0712CST			0	0			Hail (1.00)
Ness County									
9 NE Ness City	22	0715CST			0	0			Hail (0.75)
Morton County									
11 N Elkhart	22	1645CST			0	0			Hail (0.88)
Morton County									
5 NNE Elkhart	22	1758CST			0	0			Hail (0.75)
Trego County									
Cedar Bluff Res	22	1900CST			0	0			Thunderstorm Wind (G60)
			Camper overturned and tree limbs blown down.						
Ness County									
3 W Brownell	22	1940CST			0	0			Thunderstorm Wind (G52)
Rush County									
Mc Cracken	22	1940CST			0	0			Thunderstorm Wind (G61)
Hodgeman County									
8 N Jetmore	22	1945CST			0	0			Thunderstorm Wind (G52)
Hodgeman County									
8 N Jetmore	22	1955CST			0	0			Hail (1.00)
Pawnee County									
11 NW Burdett	22	1955CST			0	0			Thunderstorm Wind (G61)
Ellis County									
4 E Victoria	22	2000CST			0	0			Thunderstorm Wind (G52)
Rush County									
6 S Loretta	22	2000CST			0	0			Thunderstorm Wind (G65)
Hodgeman County									
8 N Jetmore	22	2003CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Ellis County									
Hays Muni Arpt	22	2015CST			0	0			Thunderstorm Wind (G54)
Edwards County									
10 N Kinsley	22	2026CST			0	0			Hail (1.00)
Hodgeman County									
3 N Hanston	22	2030CST			0	0			Hail (1.00)
Pawnee County									
4 S Burdett	22	2040CST			0	0			Hail (1.00)
Stafford County									
7 S Macksville	22	2055CST			0	0			Hail (0.75)
Stafford County									
7 S Macksville	22	2055CST			0	0			Thunderstorm Wind (G70)
			Five inch diameter tree limbs blown down.						
Pratt County									
Hopewell	22	2100CST			0	0			Hail (0.75)
Edwards County									
8 S Lewis	22	2105CST			0	0			Hail (0.75)
Pratt County									
4 WNW Byers	22	2105CST			0	0			Hail (0.75)
Pratt County									
4 WNW Byers	22	2105CST			0	0			Thunderstorm Wind (G52)
Stanton County									
5 E Johnson	24	1617CST			0	0			Hail (0.75)
Stanton County									
2 S Johnson	24	1645CST			0	0			Hail (0.75)
Kearny County									
15 N Lakin	24	1700CST			0	0			Flash Flood
			Water was reported over highway K25.						
Kearny County									
17 N Lakin	24	1700CST			0	0			Hail (0.88)
Kearny County									
21 N Lakin	24	1700CST			0	0			Hail (1.00)
			Also had 60 mph wind.						
Kearny County									
21 N Lakin	24	1700CST			0	0			Thunderstorm Wind (G52)
Finney County									
10 NNW Garden City	24	1739CST			0	0			Hail (0.75)
Kearny County									
10 N Deerfield	24	1800CST			0	0			Hail (0.75)
			Hail covered the ground.						
Kearny County									
13 N Lakin	24	1818CST			0	0			Hail (1.25)
Stanton County									
1 S Saunders	24	1820CST			0	0			Hail (0.75)
Hodgeman County									
3 E Hanston to 3 N Hanston	24	1853CST			0	0			Hail (0.88)
Kearny County									
10 N Deerfield	24	1855CST			0	0			Hail (1.00)
Edwards County									
5 NE Kinsley	24	1930CST			0	0			Hail (0.75)
Grant County									
11 S Hickok	24	2000CST			0	0			Hail (0.75)
Kearny County									
3 W Deerfield	24	2015CST			0	0			Hail (0.75)
			Also, had five inches of rain.						
Finney County									
5 SW Pierceville	24	2115CST			0	0			Hail (0.75)
			Wheat was shredded.						

Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Finney County 5 SW Pierceville	24	2115CST			0	0			Thunderstorm Wind (G69)
									Shingles blown off and had 4 inch diameter tree limbs down.
Seward County 15 NNW Liberal	30	1733CST			0	0			Hail (0.88)
Meade County 15 S Meade	30	1915CST			0	0			Hail (0.75)
Meade County 9 SW Meade	30	1927CST			0	0			Hail (0.75)
Meade County 7 S Meade	30	1936CST			0	0			Hail (1.00)
Stanton County 5 SE Saunders	30	1940CST			0	0			Thunderstorm Wind (G69)
									Shingles blown off the roof.
Morton County 12 NW Richfield	30	1945CST			0	0			Thunderstorm Wind (G61)
									Three inch diameter tree limbs blown down.
Clark County Ashland	30	2254CST			0	0			Hail (0.88)
Clark County 6 NE Ashland	30	2310CST			0	0			Hail (0.75)
Comanche County Coldwater	30	2324CST			0	0			Hail (0.88)
Comanche County Coldwater	30	2325CST			0	0			Hail (0.88)
Ness County 12 S Bazine	30	2340CST			0	0			Thunderstorm Wind (G69)
									Four to six inch diameter tree limbs down.
Barber County Sharon	31	0030CST			0	0			Hail (0.88)
Barber County 6 SE Medicine Lodge	31	0040CST			0	0			Hail (0.75)
Barber County 2 NE Hazelton	31	0045CST			0	0			Hail (0.75)
Barber County Sharon	31	0100CST			0	0			Hail (0.88)
Barber County 3 NNW Hazelton	31	0200CST			0	0			Hail (0.88)
									Forty percent of the wheat was damaged.
Barber County Sharon	31	0200CST			0	0			Hail (0.88)
Barber County 4 S Sharon	31	0315CST			0	0			Hail (1.75)
Seward County 12 N Kismet	31	1645CST			0	0			Hail (1.00)
Meade County 11 WNW Meade to 9 WNW Meade	31	1650CST 1657CST	2	30	0	0			Tornado (F0)
Meade County 10 N Plains	31	1655CST			0	0			Hail (1.00)
Meade County Missler	31	1700CST			0	0			Hail (1.75)
Meade County 4 ENE Plains	31	1715CST			0	0			Hail (2.75)
Meade County Meade	31	1719CST			0	0			Hail (1.25)
Meade County 2 SE Meade	31	1725CST 1726CST	0.2	50	0	0			Tornado (F0)
									Windows blown out of a house.

Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Meade County Meade	31	1730CST			0	0			Hail (1.75)
Meade County 5 E Plains	31	1730CST			0	0			Hail (4.75)
Meade County 6 NE Meade	31	1735CST			0	0			Hail (4.50)
Meade County 9 E Meade	31	1750CST			0	0			Hail (2.50)
Clark County 10 S Minneola	31	1759CST			0	0			Hail (2.75)
Ellis County 11 NE Hays	31	1815CST			0	0			Hail (1.25)
Clark County 4 SW Sitka to 4 SSE Sitka	31	1830CST 1838CST	4.2	150	0	0			Tornado (F1) Tree row heavily damaged.
Clark County 9 NNE Sitka	31	1836CST			0	0			Hail (1.00)
Clark County 5 S Sitka	31	1839CST			0	0	3K		Thunderstorm Wind Ten power poles taken down by the RearFlank Downdraft.
Comanche County Protection	31	1845CST			0	0			Hail (1.00)
Ellis County 16 NE Hays	31	1845CST			0	0			Hail (1.25)
Clark County 9 NNE Sitka	31	1846CST			0	0			Hail (1.50)
Comanche County 3 SSW Protection to 3 S Protection	31	1850CST 1855CST	1.5	75	0	0			Tornado (F1) Mature cottonwood grove taken out.
Comanche County 1 SW Protection	31	1855CST			0	0			Hail (2.50)
Clark County 11 NE Ashland	31	1900CST			0	0			Hail (1.25)
Clark County 4 NE Sitka	31	1900CST			0	0			Hail (4.00)
Comanche County 5 WNW Coldwater	31	1912CST			0	0			Hail (1.00)
Comanche County 12 SE Coldwater	31	1930CST			0	0			Hail (1.75)
Barber County 3 ESE Sharon	31	1940CST			0	0	20K		Thunderstorm Wind Barn damaged.
Barber County 4 E Sharon	31	1945CST			0	0	20K		Lightning House struck.
Comanche County 22 SE Coldwater	31	2000CST			0	0			Hail (1.25)
Barber County Hardtner	31	2008CST			0	0			Hail (1.00)
Comanche County 4 NW Coldwater	31	2012CST			0	0			Hail (1.00)
Barber County 3 SW Sharon	31	2030CST			0	0			Hail (2.75)
Barber County 2 SW Sharon	31	2030CST			0	0			Thunderstorm Wind (G52)

MISSOURI, Southwest

Howell County Pottersville	17	1123CST			0	0			Hail (0.75)
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Storm Data and Unusual Weather Phenomena

May 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

MISSOURI, Southwest

Thunderstorms produced dime sized hail and blew down trees.

NEBRASKA, West

Scotts Bluff County
Central Portion to
Gering

09	1640MST 1653MST								Hail (1.75)
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Golfball size hail fell southwest of Gering, NE.

Scotts Bluff County
Scottsbluff

09	1655MST 1700MST								Hail (0.75)
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3/4 inch hail fell in Scottsbluff.

Morrill County
3 W Broadwater

13	1510MST 1515MST								Hail (0.75)
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Kimball County
10 NW Kimball

14	1220MST 1225MST	0.1	50	0	0				Tornado (F0)
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OKLAHOMA, Western, Central and Southeast

Grady County
2 SSW Amber to
8 ESE Tuttle

03	1726CST 1800CST	15	1760	12	39	90M			Tornado (F5)
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Tornado A9 (Grady County portion). See summary at end of May 3rd storm reports. The beginning time of this tornado was changed from 1723 CST to 1726 CST. Please refer to the original version of May Storm Data for more information. F55MH, F44PH, F1PH, F53PH, F59MH, M73MH, F73MH, M50MH, F59MH, F25MH, F41MH, M39MH

Pottawatomie County
3 SSE Pink to
2 NNE Pink

03	1941CST 1952CST	5	30	0	0	75K			Tornado (F1)
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Tornado D1 (Pottawatomie County portion). See summary at end of May 3rd storm reports. The end point of this tornado was changed from 3 miles northeast of Pink to 2 miles north-northeast of Pink. Please refer to the original version of May Storm Data for more information.

Kingfisher County
5 WNW Kingfisher

03	2009CST			0	0				Hail (4.50)
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Hail ranged from golf ball size (1.75 inches) to softball size (4.5 inches). This event is an addition to the original version of May Storm Data.

Kingfisher County
Dover

03	2020CST			0	0	20K			Hail (2.75)
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Large hail, ranging from golf ball size (1.75 inches) to baseball size (2.75 inches), damaged the sides and roofs of buildings and broke numerous windows on the southeast side of Dover. This event is an addition to the original version of May Storm Data.

Kingfisher County
Dover

03	2020CST			0	0	15K			Thunderstorm Wind
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Severe thunderstorm winds, estimated to be near 100 mph, caused widespread property damage on the southeast side of Dover. The walls of a cinder-block building and garage collapsed, and numerous trees were uprooted. This event is an addition to the original version of May Storm Data.

Kingfisher County
10 WSW Kingfisher to
7 NW Kingfisher

03	2026CST 2036CST			0	0	40K			Thunderstorm Wind
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Severe winds produced a 9 mile long, intermittent damage path on the west and northwest sides of Kingfisher. One mobile home was destroyed, while 2 others were moved about 30 yards from their foundation. One shed was blown over; dozens of trees and utility poles were downed, and one cow was killed. This event is an addition to the original version of May Storm Data.

SOUTH DAKOTA, West

Lawrence County
10 NW Spearfish to
11 NW Spearfish

15	1543MST 1550MST	1	10	0	0				Tornado (F0)
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Butte County
10 SW Belle Fourche to
9 SW Belle Fourche

15	1550MST 1553MST	1	10	0	0				Tornado (F0)
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A tornado touched down north of Interstate 90 northwest of Spearfish and travelled into Butte County.

Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time	Path	Path	Number of		Estimated	Crops	Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Damage		

ADDITIONS/CORRECTIONS

COLORADO, Central and Northeast

Logan County 8 N Crook	26	1930MST 1935MST	0.2	50	0	0			Tornado (F1)
Logan County 5 N Iliff	26	1950MST	0.2	50	0	0			Tornado (F1)
Logan County 3 N Crook	26	1955MST	0.2	50	0	0	100K		Tornado (F1)
Sedgwick County 5 W Sedgwick	26	1955MST			0	0			Hail (1.75)
Logan County Iliff	26	1957MST	0.2	50	0	0			Tornado (F1)
Logan County Iliff	26	2045MST 2100MST			0	0			Hail (0.75)
Phillips County 5 NW Holyoke	26	2110MST			0	0			Hail (1.75)
Phillips County Holyoke	26	2115MST			0	0			Hail (1.75)
Phillips County 8 NE Holyoke	26	2120MST			0	0			Hail (1.75)
Phillips County 11 SE Holyoke	26	2135MST			0	0			Hail (1.00)
Phillips County 11 E Holyoke	26	2140MST			0	0			Hail (1.75)

Portions of the Northeast Plains were hammered by a variety of severe weather during the evening hours. Large hail, tornadoes, straight-line winds, heavy rain and flooding did extensive damage in Logan, Sedgwick and Phillips Counties. Several tornadoes reportedly touched down. A newly built home was struck 3 miles north of Crook, damaging nearly two thirds of the residence. Tornado touchdowns were also reported in and near Iliff.

Several barns, crops, farm equipment, grain bins and fences were either damaged or destroyed. Approximately 80 power lines were downed near Crook along with several trees as large hail and damaging winds moved through the area. Some livestock was also injured. Flooding also developed as several creeks jumped their banks. A number of county roads were washed out. Some roadways were covered by as much as 4 feet of water in spots. An exact estimate of the damage throughout the tri-county areas was not available.

GEORGIA, Southeast

Chatham County East Portion	29	0915EST 1120EST			0	0			Flood
Chatham County East Portion	29	1200EST 1420EST			0	0			Flood
Chatham County East Portion	29	1500EST 1815EST			0	0	7M		Flood
Effingham County Rincon	29	1510EST 1730EST			0	0			Flood

Slow moving showers and thunderstorms developed repeatedly across Chatham County and Effingham County during the day. Twenty-four hour rainfall amounts ranged from about 7 inches to over 13 inches. As a result of the flooding, over 500 homes and businesses were damaged to varying degrees and almost 600 automobiles were damaged. Water was as much as 6 ft deep in some places. Numerous roads were washed out and/or closed during the flooding. Estimated dollar damage for public property was 4.5 million dollars and at least another 2.5 million dollars for private property.

KANSAS, Southwest

Ellis County Ellis	03	0100CST			0	0			Other
Twenty-four inch diameter tree uprooted from high wind generated from dying thunderstorms to the south.									
Ellis County Hays	03	0100CST			0	0			Other
58 mph gust at the hays airport. Wind generated from dying thunderstorms to the south.									

Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Trego County 9 S Ogallah	03	0100CST			0	0			Other Six to eight inch diameter tree uprooted. Wind generated from dying thunderstorms to the south.
Hamilton County 12 S Kendall	04	1745MST			0	0			Thunderstorm Wind (G61) Two to three inch diameter branches down.
Morton County Rolla	04	1855CST			0	0			Hail (0.75)
Stanton County 15 SE Johnson	04	1902CST			0	0			Thunderstorm Wind (G52)
Grant County 4 WSW Ulysses	04	1903CST			0	0			Hail (0.75)
Kearny County 12 SW Lakin to 12 SW Lake Mc Kinney	04	1907CST			0	0			Hail (1.00)
Grant County 2 S Ulysses	04	1910CST			0	0			Hail (0.75)
Kearny County 14 SW Lakin	04	1920CST			0	0			Hail (0.75)
Stevens County Hugoton	04	1930CST	0.5	75	0	0	750K		Tornado (F1) Large trees uprooted...at least 5 roofs heavily damaged...trailer blown off foundation...grain bin destroyed and power poles blown down. At least two folks witnessed the touched down...described as two swirling white funnels. Probably brief multiple suction vortices beneath the rotating updraft.
Finney County 13 WSW Garden City	04	1940CST			0	0			Thunderstorm Wind (G52)
Stevens County 8 NE Hugoton	04	1940CST			0	0	40K		Thunderstorm Wind (G71) Damage to barn and pivot sprinkler.
Stevens County Moscow	04	1940CST			0	0			Thunderstorm Wind (G56)
Grant County 15 ENE Ulysses	04	2005CST			0	0			Thunderstorm Wind (G56)
Haskell County 4 W Satanta	04	2015CST			0	0	2K		Thunderstorm Wind Power lines down and storage shed moved off foundation at the golf course.
Seward County 16 NNE Liberal	04	2025CST			0	0			Hail (0.75)
Stevens County 9 SSE Hugoton	04	2030CST			0	0			Thunderstorm Wind (G56) Three to four inch branches blown down.
Gray County 15 WNW Cimarron	04	2100CST			0	0			Thunderstorm Wind (G52)
Seward County 10 N Liberal	04	2110CST			0	0			Hail (0.75)
Morton County 2 SW Richfield	04	2114CST			0	0			Hail (1.00)
Stevens County 18 SE Hugoton	04	2130CST			0	0			Thunderstorm Wind (G56)
Stevens County 13 NE Hugoton	04	2130CST			0	0			Thunderstorm Wind (G56)
Morton County 1 NE Richfield	04	2145CST			0	0			Hail (1.00)
Morton County 5 E Richfield	04	2145CST			0	0			Hail (0.75)
Morton County 6 SSE Rolla	04	2215CST			0	0			Hail (0.75)
Morton County 6 SSE Rolla	04	2215CST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Ellis County

Hays	04	2315CST			0	0	7K		Thunderstorm Wind
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Dugout moved off foundation and football shed demolished.

Haskell County

Sublette	04	2315CST			0	0			Thunderstorm Wind (G52)
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Gray County

8 S Cimarron	05	0120CST			0	0			Thunderstorm Wind (G52)
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Ford County

Dodge City	05	0140CST			0	0			Thunderstorm Wind (G52)
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Two inch diameter limbs blown down.

Hodgeman County

11 NNW Jetmore	05	0200CST			0	0	0.60K		Thunderstorm Wind
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Two power poles blown down.

Hodgeman County

9 SSE Jetmore	05	0200CST			0	0			Thunderstorm Wind (G52)
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Gray County

Ingalls	05	0220CST			0	0			Thunderstorm Wind (G61)
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Gray County

Ingalls	05	0224CST			0	0			Thunderstorm Wind (G53)
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Scott County

7 NW Scott City	08	2032CST			0	0			Hail (0.75)
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Scott County

6 WSW Shallow Water	08	2043CST			0	0			Hail (0.88)
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Morton County

10 WSW Richfield	08	2054CST			0	0			Hail (0.75)
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Scott County

11 ESE Shallow Water	08	2116CST			0	0			Hail (0.75)
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Morton County

4 NNE Rolla	08	2128CST			0	0			Hail (0.75)
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Relayed by the NWS - Amarillo

Finney County

13 NNW Kalvesta	08	2200CST			0	0			Hail (0.88)
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Stevens County

4 WSW Moscow	08	2200CST			0	0			Hail (0.75)
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Stevens County

6 W Moscow	08	2205CST			0	0			Hail (0.75)
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Stevens County

Moscow	08	2214CST			0	0			Hail (0.88)
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Stevens County

7 SE Hugoton	08	2223CST			0	0			Hail (0.88)
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Seward County

14 NNW Liberal	08	2234CST			0	0			Hail (0.75)
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Lasted four minutes.

Seward County

11 NW Kismet	08	2250CST			0	0			Hail (0.88)
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Hodgeman County

Jetmore	08	2255CST			0	0			Hail (0.75)
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Meade County

Meade	09	0010CST			0	0			Hail (0.75)
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0025CST
Lasted 15 minutes.

Clark County

7 S Minneola	09	1540CST			0	0			Hail (0.75)
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Edwards County

20 ESE Kinsley	09	1703CST			0	0			Hail (0.75)
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Morton County

7 NE Elkhart	09	1843CST			0	0			Hail (1.00)
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Comanche County

3 N Wilmore	09	1923CST			0	0			Hail (0.75)
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Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Kiowa County 4 S Haviland	09	1928CST			0	0			Hail (0.88)
Kiowa County 15 S Greensburg	09	1945CST			0	0			Hail (0.75)
Haskell County 2 NNE Satanta	09	2020CST			0	0			Hail (0.75)
Stevens County 5 N Hugoton	09	2021CST			0	0			Hail (0.75)
Stripped the trees of leaves.									
Finney County 10 NW Kalvesta	09	2030CST			0	0			Hail (0.75)
Meade County Plains	09	2043CST			0	0			Hail (1.00)
Finney County 10 NNW Kalvesta	09	2045CST			0	0			Hail (1.50)
Meade County 6 N Plains	09	2120CST			0	0			Hail (0.75)
Gray County 2 ESE Copeland	09	2130CST			0	0			Hail (0.75)
Lane County 13 S Alamota	09	2135CST			0	0			Hail (0.75)
Ness County 10 SW Ness City	09	2205CST			0	0			Thunderstorm Wind (G50)
Measured by wind equipment.									
Barber County 1 W Kiowa	09	2250CST			0	0			Flash Flood
Water was over highway K2.									
Stevens County 7 N Hugoton	10	0205CST			0	0			Flash Flood
Water over highway 25.									
Stanton County 2 S Johnson	10	0455CST			0	0			Hail (0.88)
Morton County 7 W Richfield	11	2216CST			0	0			Hail (0.75)
Stevens County 10 S Moscow	11	2218CST			0	0			Hail (1.00)
Relayed by radio station.									
Stevens County 6 N Woods	11	2224CST			0	0			Hail (1.00)
Seward County 18 NW Liberal	11	2225CST			0	0			Hail (0.75)
Seward County 6 NW Kismet	11	2230CST			0	0			Hail (0.88)
Stevens County 9 N Hugoton	11	2250CST			0	0			Hail (0.88)
Seward County 7 NW Kismet	11	2318CST			0	0			Hail (1.00)
Seward County 11 N Liberal	11	2325CST			0	0			Hail (1.75)
Seward County Liberal	12	0025CST			0	0			Flash Flood
Flooding reported all over town.									
Seward County 15 NNE Liberal	12	0045CST			0	0			Flash Flood
Flooding on highway 160 just east of the 83/160 intersection.									
Stevens County Hugoton	15	1332CST			0	0			Hail (0.75)
Gray County Cimarron	15	1515CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Haskell County 15 N Satanta	18	1520CST			0	0			Hail (1.25)
Haskell County 11 NNE Sublette	18	1530CST			0	0			Hail (1.25)
Haskell County 3 N Tice	18	1544CST 1545CST	0.1	20	0	0			Tornado (F0)
Gray County Copeland	18	1545CST			0	0			Hail (0.75)
Haskell County Sublette	18	1600CST			0	0			Hail (1.75)
High wind with the hail devastated crops in the area.									
Haskell County 1 SW Tice	18	1600CST			0	0			Thunderstorm Wind (G70)
Haskell County 4 SE Sublette	18	1620CST			0	0			Hail (2.75)
Haskell County 4 SE Sublette to 5 SE Sublette	18	1620CST 1625CST	1	40	0	0	11K		Tornado (F1)
Machine shed heavily damaged, horse trailer turned over and windows blown out of a trailer.									
Haskell County 6 SSE Sublette	18	1625CST			0	0			Hail (1.75)
Seward County 11 N Kismet	18	1640CST			0	0			Hail (1.25)
Meade County 1 W Plains	18	1643CST			0	0			Hail (0.75)
Meade County 5 N Plains	18	1644CST			0	0			Hail (1.00)
Meade County Plains	18	1655CST			0	0			Hail (1.00)
Meade County 3 W Meade State Park	18	1717CST			0	0			Hail (1.25)
Meade County 9 SW Meade State Park	18	1724CST			0	0			Hail (1.75)
Meade County 16 S Meade	18	1756CST			0	0			Hail (2.00)
Meade County 16 S Meade	18	1756CST			0	0			Thunderstorm Wind (G52)
Kearny County 22 NW Lakin to 21.5 NW Lakin	22	1915CST 1916CST	0.5	50	0	0			Tornado (F0)
Kearny County 22 NW Lakin to 22 W Lake Mc Kinney	22	1930CST			0	0			Hail (0.75)
Kearny County 22 NW Lakin to 21.5 NW Lakin	22	1930CST 1931CST	0.5	50	0	0			Tornado (F0)
Brief touchdown again in same area as 15 minutes earlier.									
Hamilton County 9 N Kendall	22	2000MST			0	0			Hail (1.75)
Kearny County 24 NW Lakin	22	2030CST			0	0			Hail (1.75)
Kearny County 24 NW Lakin	22	2030CST			0	0			Thunderstorm Wind (G78)
Blew six diameter tree limbs down.									
Hamilton County 1 NW Kendall	22	2035MST			0	0			Hail (0.75)
Kearny County 18 NW Lakin	22	2045CST			0	0			Hail (0.88)

Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Kearny County 19 NW Lakin	22	2045CST	0.1	20	0	0			Tornado (F0) Very brief spin-up/
Kearny County 15 NW Lakin	22	2100CST			0	0			Hail (1.50)
Kearny County 12 N Lakin	22	2112CST			0	0			Hail (0.75)
Finney County 9 N Garden City	22	2115CST			0	1			Lightning Lightning struck the chimney, travelled down the phone line and burnt the ear of the resident talking on the phone when the handset exploded. Also, the charge blew the hinged fireplace doors 20 feet into the living room.
Kearny County 5 N Lakin	22	2130CST			0	0			Thunderstorm Wind (G52)
Stanton County 4 S Big Bow	22	2140CST			0	0			Thunderstorm Wind (G75)
Kearny County 6 W Lakin	22	2154CST			0	0			Hail (2.50) Car windshield broken
Finney County 4 N Holcomb	22	2158CST			0	0			Hail (0.75)
Trego County 8 WSW Trego Center	22	2200CST			0	0			Hail (0.75) Had 50 mph wind with the hail.
Finney County 15 NE Garden City	22	2215CST			0	0			Thunderstorm Wind (G55) Recorded by home equipment.
Finney County 1 NW Pierceville	22	2225CST			0	0			Thunderstorm Wind (G61)
Finney County 13 NW Kalvesta	22	2230CST			0	0			Hail (0.75)
Gray County Cimarron	22	2242CST			0	0			Thunderstorm Wind (G52)
Ford County 2 SW Dodge City Arpt	22	2310CST			0	0			Thunderstorm Wind (G61) Trees broken, windows blown out of trailer house and fence twisted.
Finney County 8 NE Garden City	23	0200CST			0	0			Hail (1.00)
Finney County Plymell	23	0235CST			0	0	82.5K		Lightning Lightning struck a home that was being constructed and burnt it to the ground.
Hamilton County 5 W Kendall	23	1645MST			0	0			Hail (1.25)
Hamilton County 4 ESE Syracuse	23	1737MST			0	0			Hail (1.00)
Hamilton County 21 NW Syracuse	23	1738MST			0	0			Hail (0.75)
Hamilton County 21 NW Syracuse	23	1745MST			0	0			Hail (1.50)
Hamilton County 8 SE Syracuse	23	1750MST			0	0			Hail (1.50)
Hamilton County 18 NNW Syracuse	25	1755MST			0	0			Hail (0.88)
Morton County 3 NW Elkhart	29	1505CST			0	0			Hail (0.75)
Morton County 3 W Elkhart	29	1520CST			0	0			Hail (1.75)
Morton County Elkhart	29	1529CST			0	0			Hail (0.75)
Gray County 13 NNE Cimarron	29	2000CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Hodgeman County									
19 WSW Jetmore	29	2000CST			0	0			Hail (0.75)
Ford County									
Dodge City	29	2018CST			0	0			Hail (0.75)
Ford County									
Dodge City	29	2019CST			0	0			Hail (0.75)
Ford County									
Dodge City	29	2020CST			0	0			Hail (0.75)
Ford County									
Dodge City Arpt	29	2020CST			0	0			Hail (0.88)
Ford County									
Dodge City	29	2030CST			0	0			Hail (1.75)
Ford County									
3 NE Bucklin	29	2100CST			0	0			Hail (0.75)
Kiowa County									
9 WSW Greensburg	29	2110CST			0	0			Hail (0.75)
Ness County									
3 NE Bazine	30	1122CST			0	0			Thunderstorm Wind (G56)
Recorded by wind equipment.									
Ness County									
8 SE Brownell	30	1135CST			0	0			Excessive Rainfall
Rainfall of 2.00" in 15 minutes.									
Rush County									
5 S Nekoma	30	1155CST			0	0			Hail (0.88)
Pawnee County									
1 N Larned	30	1227CST			0	0			Thunderstorm Wind (G52)
Pawnee County									
4 N Larned	30	1230CST			0	0	0.50K		Thunderstorm Wind
Three inch diameter limbs down.									
Pawnee County									
7 NE Larned	30	1230CST			0	0	5K		Thunderstorm Wind
Large tree limbs down.									
Pawnee County									
4 NE Larned	30	1234CST			0	0	30K		Thunderstorm Wind (G61)
Pivot sprinkler overturned and 18 inch diameter tree limb broken.									
Pawnee County									
2 NE Larned	30	1256CST			0	0	40K		Thunderstorm Wind
Power poles down and pivot sprinkler overturned.									
Stafford County									
3 SW Seward	30	1257CST			0	0			Thunderstorm Wind (G61)
Stafford County									
3 N St John	30	1315CST			0	0			Excessive Rainfall
Rainfall of 2.00" in 15 minutes.									
Stafford County									
3 N St John	30	1315CST			0	0			Thunderstorm Wind (G61)
Stafford County									
St John	30	1330CST			0	1	300K		Thunderstorm Wind
One trailer home was completely destroyed and the occupant received minor cuts and bruises, but lucky to be alive according to the Emergency Manager. Trees were down all over the place and several roofs received quite a bit of damage. Several pivot sprinklers overturned or damaged and a patrol car window pushed out. The same patrol car was blown into a ditch, after sitting idle with the driver pressing on the brake, powerless to the high wind.									
Scott County									
12 N Modoc	30	1435CST			0	0			Hail (1.75)
Broke windows out of a patrol car.									
Scott County									
1 N Modoc	30	1445CST	0.1	30	0	0			Tornado (F0)
Reported by law enforcement.									
Finney County									
6 W Holcomb	30	1530CST			0	0			Hail (1.75)
On Finney/Kearny county line.									

Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property Damage	Crops	

ADDITIONS/CORRECTIONS

KANSAS, Southwest

Kearny County 1 E Deerfield	30	1530CST			0	0			Hail (1.75)
On Finney/Kearny county line.									
Kearny County 12 N Deerfield	30	2149CST			0	0			Hail (1.00)
Finney County Garden City	30	2212CST			0	0			Hail (0.88)
Finney County Garden City	30	2215CST			0	0			Hail (1.50)
Far ne part of city.									
Finney County 7 NE Garden City	30	2216CST			0	0			Hail (0.75)
Kearny County 4 N Lakin	30	2240CST			0	0			Hail (1.75)
Finney County 2 W Garden City	30	2301CST			0	0			Hail (0.75)
Scott County 15 NNE Scott City	30	2320CST			0	0			Hail (1.00)
Lane County Shields	30	2340CST			0	0			Hail (2.75)
Cracked a car windshield.									

MISSOURI, Southwest

Dent County Lake Spg	01	1820CST			0	0	0		Hail (1.00)
A thunderstorm produced quarter sized hail and downed large tree limbs.									
Douglas County 3 W Ava	10	1145CST			0	0	2K		Thunderstorm Wind
Thunderstorm winds downed power lines.									
Dent County Salem	27	1240CST			0	0	3K		Thunderstorm Wind
Thunderstorm winds downed power lines.									
Cedar County Stockton	28	0200CST			0	0			Hail (0.75)

NEBRASKA, East

Richardson County 6 NE Humboldt	06	1640CST			0	0			Hail (0.75)
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NEW MEXICO, South Central and Southwest

Grant County Pinos Altos	13	1900MST 1905MST			0	0			Thunderstorm Wind (G65)
A mobile home had half of the roof torn off and was pushed off the foundation by strong thunderstorm winds.									
Dona Ana County Las Cruces	17	0300MST 0700MST			0	0	300K		Flash Flood

Three to four inches of rain fell in the East Mesa area of Las Cruces. Water running off the nearby Organ Mountains caused considerable damage to mobile homes, homes and washed out roads. The high water had some residents on the east side of Las Cruces trapped in their homes for several hours. A 70 year old woman had to be rescued after trying to cross a flooded road in her car.

NORTH DAKOTA, Central and West

Golden Valley County 12 SSW Golva to 13 S Golva	20	2015CST 2020CST	1	25	0	0			Tornado (F0)
Slope County 32 E Amidon to 30 E Amidon	20	2020CST 2025CST	2	25	0	0	5K		Tornado (F0)
Burleigh County 2 S Arena to 2 SE Arena	25	2124CST 2127CST	2	30	0	0			Tornado (F1)
Touch down in open field.									

Storm Data and Unusual Weather Phenomena

June 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage	Property	Crops	Character of Storm
					Killed	Injured				

ADDITIONS/CORRECTIONS

NORTH DAKOTA, Central and West

Kidder County

7 SW Tuttle to 6 SW Tuttle	25	2127CST 2130CST	1	30	0	0	Tornado (F1)
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Tornado remained in open field.

Reference Notes:

Fatality Location Abbreviations:

BF	Ball Field	MH	Mobile Home
BO	Boating	OT	Other
BU	Business	OU	Outside/Open Areas
CA	Camping	PH	Permanent Home
EQ	Heavy Equipment/Construction	SC	School
GF	Golfing	TE	Telephone
IW	In Water	UT	Under Tree
LS	Long Span Roof	VE	Vehicle

List of Acronyms:

WCM	- Warning Coordination Meteorologist
NWS	- National Weather Service
NOAA	- National Oceanic and Atmospheric Administration
DST	- Daylight Savings Time
LST	- Local Standard Time
LDT	- Local Daylight Time

Other Notes:

When listing wind speed values under “Character of Storm”, ex. High Wind (G81), the “G” indicates a “Gust” which is a peak 5-second averaged wind speed in Knots (kts). 1 kt. = 1.152 mph.

When listing hail size under “Character of Storm”, ex. Hail (2.25), the hail size is given in inches and hundredths of inches.

When listing property and crop damage, the figures indicated are the best guess made by the NWS from the available sources of information at the time of the printing.

The Saffir-Simpson Scale

Category One Hurricane:

Winds 74-95 mph (64-82 kt or 119-153 kph). Storm surge generally 4-5 ft above normal. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Some damage to poorly constructed signs. Also, some coastal road flooding and minor pier damage.

Category Two Hurricane:

Winds 96-110 mph (83-95 kt or 154-177 kph). Storm surge generally 6-8 feet above normal. Some roofing material, door, and window damage of buildings. Considerable damage to shrubbery and trees with some trees blown down. Considerable damage to mobile homes, poorly constructed signs, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of the hurricane center. Small craft in unprotected anchorages break moorings.

Category Three Hurricane:

Winds 111-130 mph (96-113 kt or 178-209 kph). Storm surge generally 9-12 ft above normal. Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Damage to shrubbery and trees with foliage blown off trees and large trees blown down. Mobile homes and poorly constructed signs are destroyed. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the hurricane center. Flooding near the coast destroys smaller structures with larger structures damaged by battering of floating debris. Terrain continuously lower than 5 ft above mean sea level may be flooded inland 8 miles (13 km) or more. Evacuation of low-lying residences with several blocks of the shoreline may be required.

Category Four Hurricane:

Winds 131-155 mph (114-135 kt or 210-249 kph). Storm surge generally 13-18 ft above normal. More extensive curtainwall failures with some complete roof structure failures on small residences. Shrubs, trees, and all signs are blown down. Complete destruction of mobile homes. Extensive damage to doors and windows. Low-lying escape routes may be cut by rising water 3-5 hours before arrival of the hurricane center. Major damage to lower floors of structures near the shore. Terrain lower than 10 ft above sea level may be flooded requiring massive evacuation of residential areas as far inland as 6 miles (10 km).

Category Five Hurricane:

Winds greater than 155 mph (135 kt or 249 kph). Storm surge generally greater than 18 ft above normal. Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. All shrubs, trees, and signs blown down. Complete destruction of mobile homes. Severe and extensive window and door damage. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the hurricane center. Major damage to lower floors of all structures located less than 15 ft above sea level and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5-10 miles (8-16 km) of the shoreline may be required.

The Fujita Scale

F-Scale	Intensity	Wind Speed (mph)	Typical Damage
F0	Gale Tornado	40 - 72	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate	73 - 112	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant	113 - 157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe	158 - 206	Roof and some walls torn off well constructed houses; trains overturned; most trees in fores uprooted
F4	Devastating	207 - 260	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible	261 - 318	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-inforced concrete structures badly damaged.
F6	Inconceivable	319 - 379	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds.

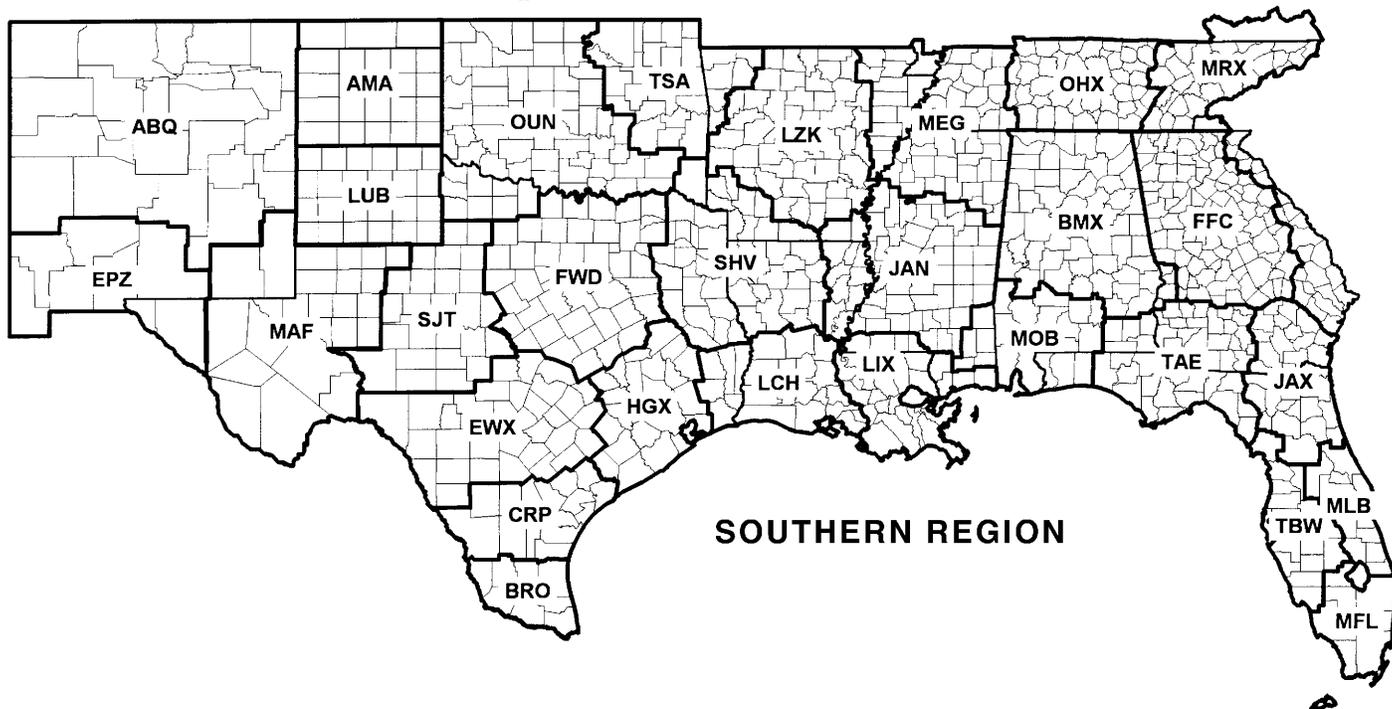


* From the Journal of Atmospheric Science, August 1981, p. 1517-1519

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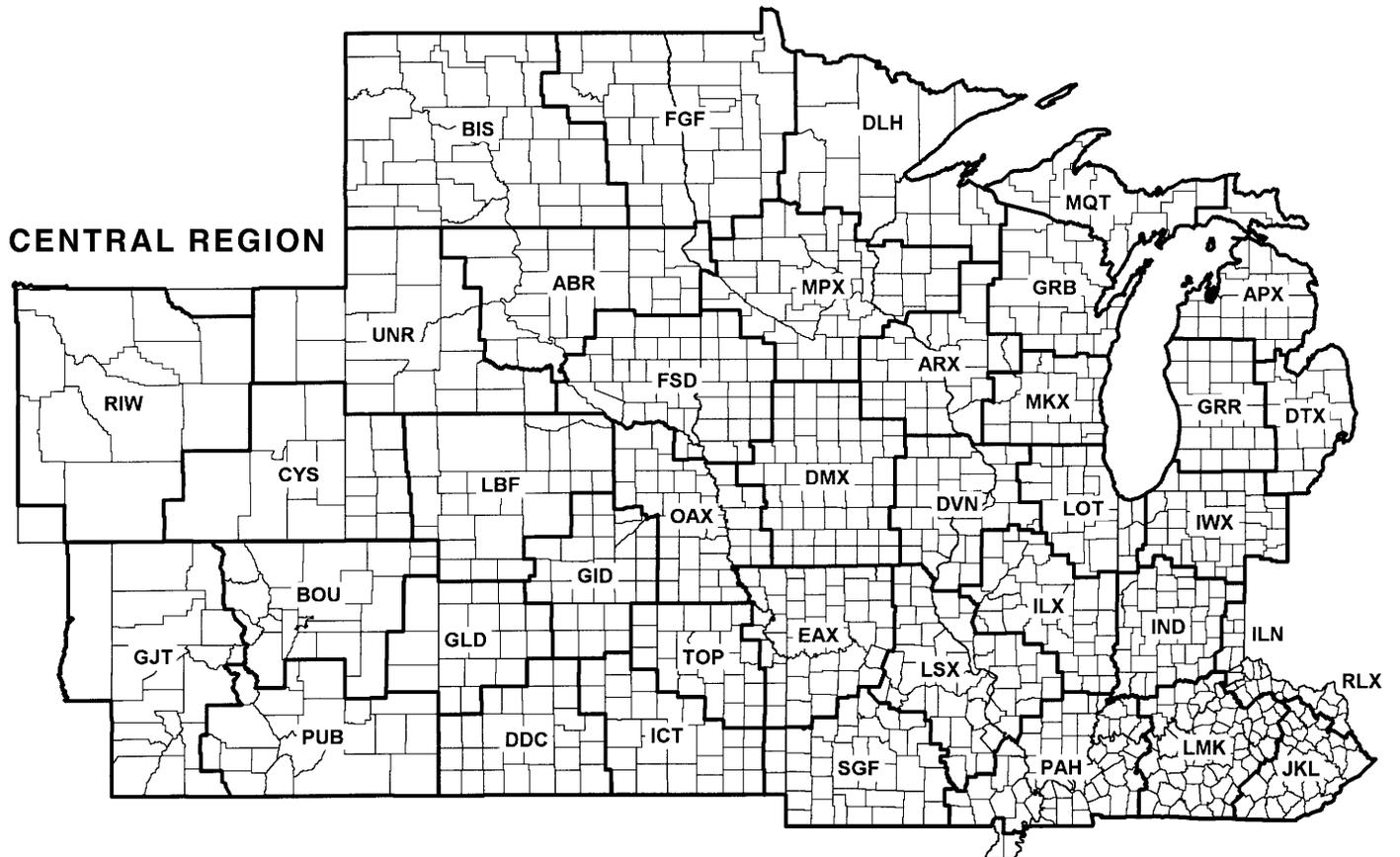
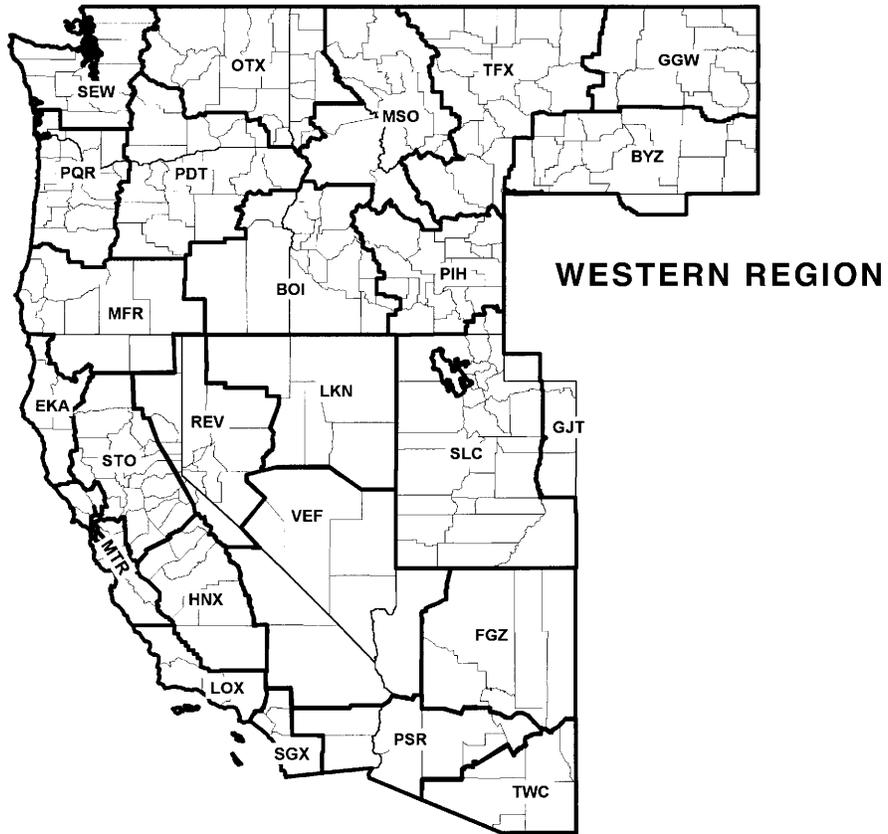


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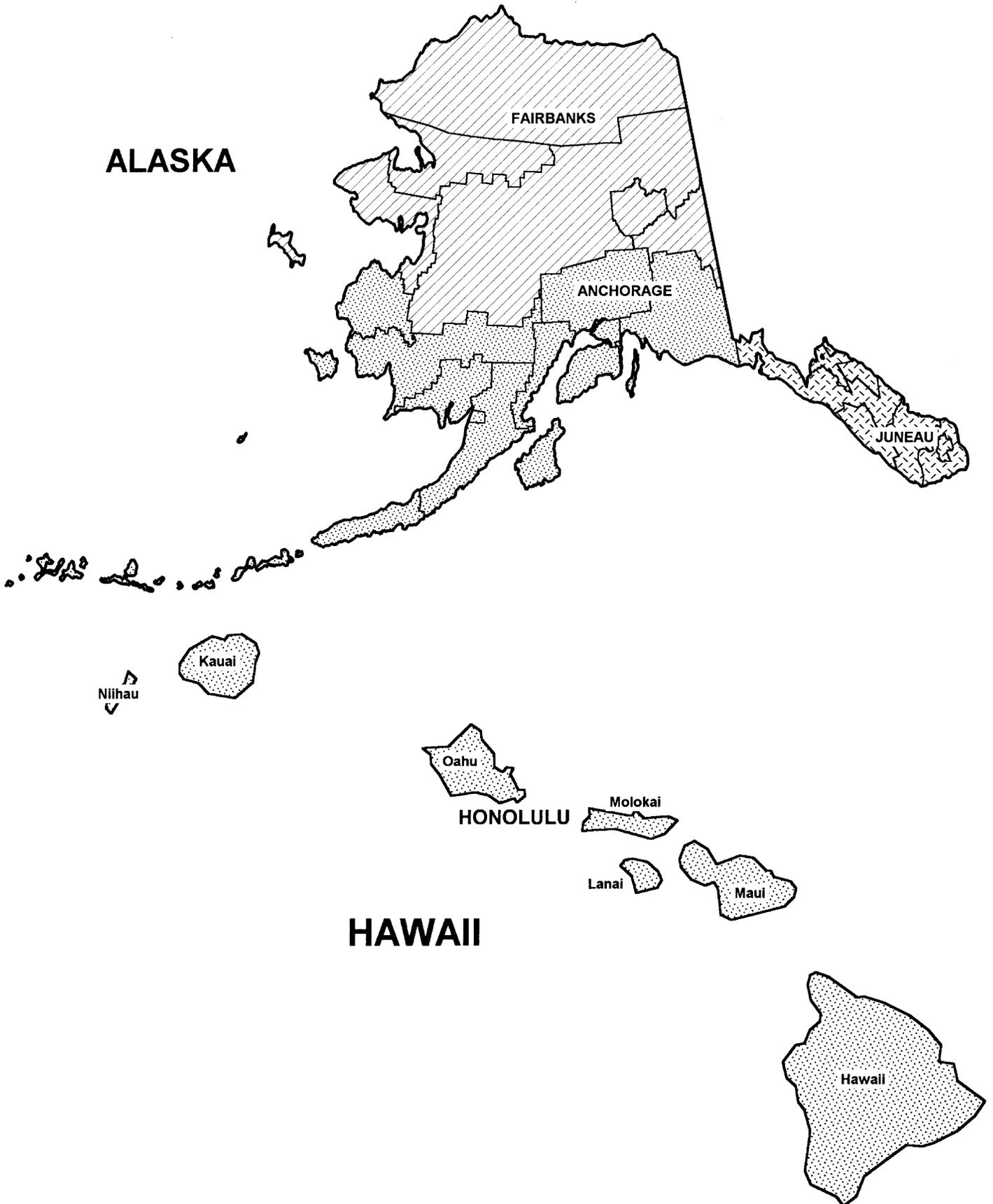


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MODERNIZED COUNTY WARNING AREAS



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