

**JULY 1998
VOLUME 40
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, N.C.

Cover: An F5 tornado wrapped this car around a tree along the Kansas Turnpike (Interstate 35) near Wichita, Kansas. The photograph was taken during a tornado outbreak on April 26, 1991 when 55 tornadoes killed 21 people, injured hundreds and caused millions in property and crop damage. (*Photograph courtesy of The Wichita Capital-Journal*)

TABLE OF CONTENTS

	Page
Outstanding Storms of the Month	5
Storm Data and Unusual Weather Phenomena	6
Reference Notes	250

STORM DATA
(ISSN 0039-1972)
National Climatic Data Center
Editor: Stephen Del Greco
Assistant Editor: Stuart Hinson

The Storm Data Publication can be accessed in PDF format via the WWW at:
<http://www.ncdc.noaa.gov/ol/climate/climateproductsstormdata.html>

STORM DATA is prepared, funded, and distributed by the National Oceanic and Atmospheric Administration (NOAA). The Outstanding Storms of the Month section is prepared by the Data Operations Branch of the National Climatic Data Center.

The Storm Data and Unusual Weather Phenomena narratives and Hurricane/Tropical Storm summaries are prepared by the National Weather Service. Monthly and annual statistics and summaries of tornado and lightning events resulting in deaths, injuries, and damage are compiled by cooperative efforts between the National Climatic Data Center and the Storm Prediction Center.

STORM DATA contains all confirmed information on storms available to our staff at the time of publication. However, due to difficulties inherent in the collection of this type of data, it is not all-inclusive. Late reports and corrections are printed in each edition.

Maps of the National Weather Service County Warning Areas which are used in the Storm Data and Unusual Weather Phenomena section will be printed in all editions.

Except for limited editing to correct grammatical errors, materials submitted are generally published as received.

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.

Subscription, pricing, and ordering information is available from:

National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801
(828) 271-4800 or (828) CLIMATE

The editors of **STORM DATA** solicits your help in acquiring photographs (prints or slides; black and white, or color), maps, clippings, etc. of significant or unusual weather events (past or present). These could be 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:

Stuart Hinson
National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801

Any such items received by the editor will be for use in **STORM DATA** only. Any other use will be with the permission of the owner of said items. Materials submitted will be returned if requested in the original submission.

"I certify that this is an official publication of the National Oceanic and Atmospheric Administration and is compiled from information received at the National Climatic Data Center Asheville, North Carolina 28801-2733."

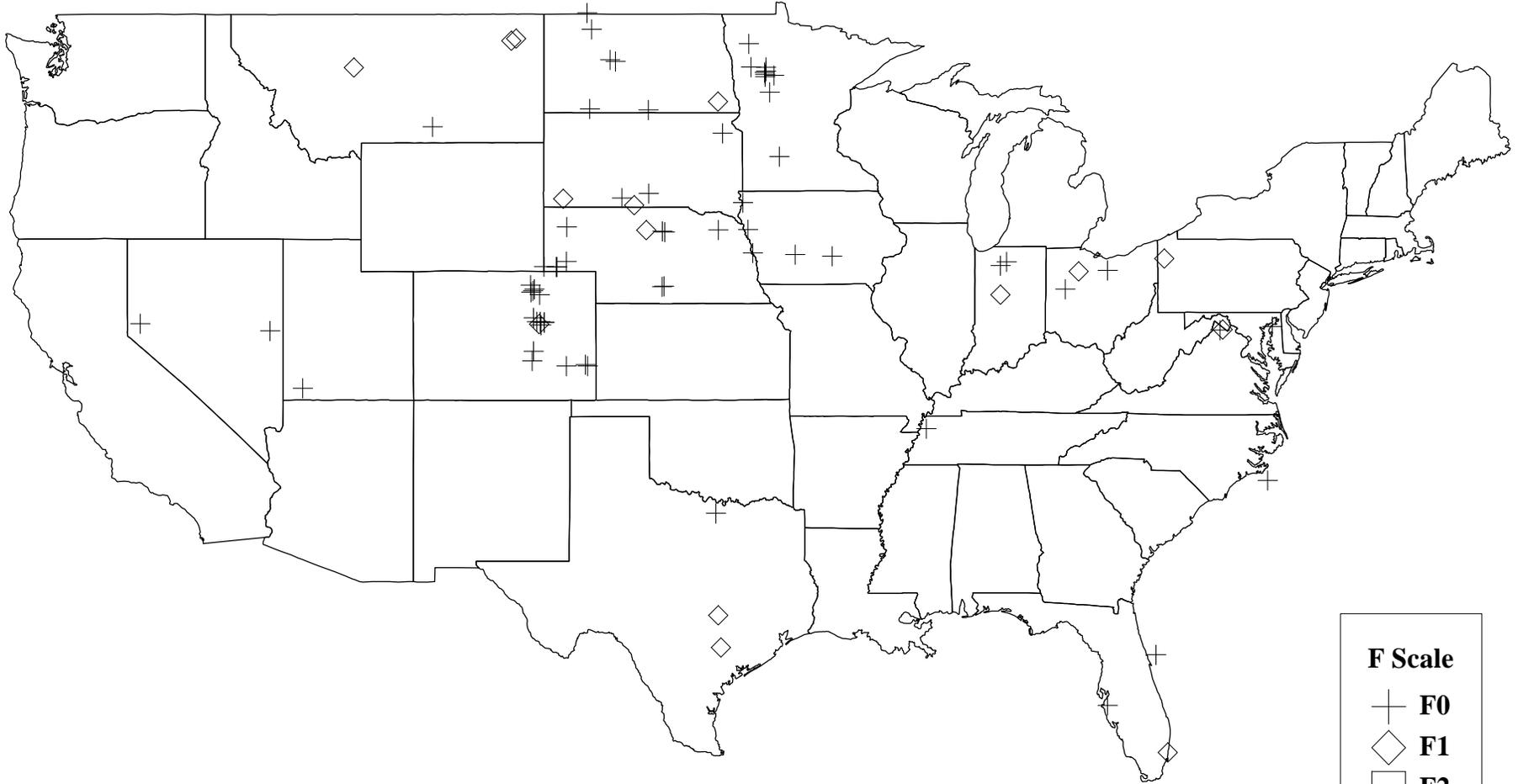


Thomas R. Karl
Director,
National Climatic Data Center

The Cyclone Track Map which usually appears on this page is not available for July 1998.

Should the data become available in the future, a cyclone track map will be produced and printed in a subsequent issue.

July 1998 Confirmed Tornadoes



4

F Scale	F0	F1	F2	F3	F4	F5	Total
Number	65	15	0	0	0	0	80

F Scale

- + F0
- ◇ F1
- F2
- △ F3
- F4
- ★ F5

OUTSTANDING STORMS OF THE MONTH

The “Outstanding Storm of the Month” which usually appears on Page 5 is not available for this month.

The Editors of the **Storm Data** Publication solicit your help acquiring materials such as photographs, newspaper articles, graphs, charts, maps, etc. of severe weather events or any unusual weather phenomena. Any such items received by the editors may be for use in the “Outstanding Storm of the Month” section. Materials will be returned if requested in the original submission. Please send any such materials to the address below. If you have any questions, comments or suggestions, please feel free to contact us at the address below.

Editor: Storm Data
National Climatic Data Center
Federal Building - Room 420
151 Patton Avenue
Asheville, NC 28730
Ph: (704)271-4437
Fax: (704)271-4022
E-Mail: StormDat@ncdc.noaa.gov

Storm Data and Unusual Weather Phenomena

July 1998

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

ALABAMA, North Central

Jefferson County

Homewood to Vestavia Hills	26	1950CST 2000CST			0	0	650K	0	Thunderstorm Wind (G65)
----------------------------	----	--------------------	--	--	---	---	------	---	-------------------------

A downburst with a late evening thunderstorm damaged trees, downed powerlines, and damaged several structures in a path about 3 miles long. The wind damage began near Oxmoor Road and I-65 where about 20 feet of decorative fascia on a Comfort Inn motel was ripped off the roof and thrown onto about 10 cars. In the residential section of Southwood and Oak Grove Estates a number of trees were downed along with large limbs. The damaging wind crossed I-65 and damaged a number of apartments in the Woodmere Creek area where chimneys were ripped from the roofs. A number of trees and powerlines were also downed in this area. A double billboard which also served as a cellular telephone site was destroyed when three of the five telephone poles comprising the billboard were broken off. Additional trees were reported downed along Tyler Road which runs from Vestavia Hills into Hoover.

Hale County

2.6 W Havana	26	2053CST 2058CST			0	3	120K	0	Thunderstorm Wind (G75)
--------------	----	--------------------	--	--	---	---	------	---	-------------------------

A strong downburst apparently occurred when a thunderstorm developed and collapsed rapidly upon the interaction with an outflow boundary from other nearby convection in the area about 2.6 miles west of Havana in northern Hale County. One business (a small grocery) was partially deroofed (essentially destroyed), four mobile homes were damaged including one that was completely flipped over, one that lost shingles, one that was pushed off it's blocks, and one that was sliced by a falling tree. The three injuries, all minor, occurred in the mobile home that flipped. Numerous trees were downed including some that were estimated to be over 200 years old. Trees were downed in an area that extended for about 2.5 miles west and southwest of the heaviest damage.

Clay County

8 SE Ashland	03	1900CST 2000CST			1	0	15K	0	Flash Flood
--------------	----	--------------------	--	--	---	---	-----	---	-------------

A flash flood, about 3 inches in an hour, washed out sections of Fuller Road in Mellow Valley. A 51 year-old man drove into the washed out area and was severely injured. He died the next day in the hospital from his injuries.
M51VE

Jackson County

Hytop	04	1310CST			0	0	5K	0	Thunderstorm Wind (G50)
-------	----	---------	--	--	---	---	----	---	-------------------------

A few trees were down in the Hytop area.

Marshall County

Arab	07	1730CST			0	0	30K	0	Lightning
------	----	---------	--	--	---	---	-----	---	-----------

Lightning was blamed for three house fires in Arab. Each of the fires were in the attics and didn't affect the rest of the house.

Jefferson County

Birmingham Arpt to Birmingham	09	1215CST			0	0	3K	0	Thunderstorm Wind (G51)
-------------------------------	----	---------	--	--	---	---	----	---	-------------------------

A gust to 59 mph was reported at the airport by the Birmingham ASOS.

Jefferson County

4 NE Birmingham	09	1300CST			0	1	0	0	Lightning
-----------------	----	---------	--	--	---	---	---	---	-----------

A firefighter was injured when he was standing in some water. Lightning struck nearby and traveled through the water and he was struck. He was taken to the hospital and was in stable condition.

Marion County

Hamilton	09	1110CST			0	0	5K	0	Thunderstorm Wind (G50)
----------	----	---------	--	--	---	---	----	---	-------------------------

Numerous trees and power lines were down in Hamilton, including a tree on a home.

Bibb County

3 NE Centreville	09	1315CST			0	0	10K	0	Thunderstorm Wind (G60)
------------------	----	---------	--	--	---	---	-----	---	-------------------------

A roof was damaged on a house on SR 25, northeast of Centreville.

Montgomery County

Montgomery	09	1500CST			0	0	10K	0	Thunderstorm Wind (G55)
------------	----	---------	--	--	---	---	-----	---	-------------------------

Trees and power lines were down in Montgomery. One tree fell on a home and damaged part of the roof. Also 13,000 residents were without power.

Lee County

Auburn	11	1450CST			0	0	10K	0	Lightning
--------	----	---------	--	--	---	---	-----	---	-----------

A bolt of lightning struck an apartment building on campus and did minor damage to the attic.

Lee County

Auburn	11	1450CST			0	0	20K	0	Thunderstorm Wind (G55)
--------	----	---------	--	--	---	---	-----	---	-------------------------

Trees and power lines were down in Auburn. A tractor trailer was blown over in the wind and did significant damage to a building.

Lauderdale County

7 NW Killen	14	0900CST 1400CST			0	2	30K	10K	Flash Flood
-------------	----	--------------------	--	--	---	---	-----	-----	-------------

Storm Data and Unusual Weather Phenomena

July 1998

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

ALABAMA, North Central

More than three inches of rain forced Shoal Creek out of its banks. Two men were injured when they drove around barricades and onto flooded CR 8. Their truck was washed off the road and two of the three men jumped into the water and were injured. Most of the flooding was contained to the Shoal Creek area near Goose Shoals. Several people were forced out of their homes due to the rising water.

Jefferson County

Birmingham	20	1130CST			0	0	5K	0	Thunderstorm Wind (G50)
-------------------	----	---------	--	--	---	---	----	---	--------------------------------

About 3000 residents lost power after power lines were knocked down.

Shelby County

Alabaster	20	1310CST			0	0	0	0	Hail (0.75)
------------------	----	---------	--	--	---	---	---	---	--------------------

Dime size hail was reported in Alabaster.

Bibb County

West Blocton	20	1345CST			0	0	8K	0	Thunderstorm Wind (G60)
---------------------	----	---------	--	--	---	---	----	---	--------------------------------

Trees were blown down and a few shingles were blown off.

Calhoun County

9 NW Jacksonville	20	1350CST			0	0	5K	0	Thunderstorm Wind (G50)
--------------------------	----	---------	--	--	---	---	----	---	--------------------------------

Trees were down in Duke and Read Mills, in the northern part of the county.

Clay County

Ashland	20	1415CST			0	0	10K	0	Thunderstorm Wind (G50)
----------------	----	---------	--	--	---	---	-----	---	--------------------------------

A few trees were down, including one on a house, which did minor roof damage.

Tuscaloosa County

Tuscaloosa	20	1438CST			0	0	20K	0	Thunderstorm Wind (G50)
-------------------	----	---------	--	--	---	---	-----	---	--------------------------------

Trees and power lines were down in Tuscaloosa. One fell on a home. About 1200 residents were without power.

Marshall County

7 SW Albertville	20	1450CST			0	0	10K	0	Thunderstorm Wind (G55)
-------------------------	----	---------	--	--	---	---	-----	---	--------------------------------

There were several trees down and several chicken houses were damaged.

Marion County

Winfield	20	1620CST			0	0	5K	0	Thunderstorm Wind (G50)
-----------------	----	---------	--	--	---	---	----	---	--------------------------------

Numerous trees and power lines were down.

Winston County

Arley	20	1615CST			0	0	5K	0	Thunderstorm Wind (G50)
--------------	----	---------	--	--	---	---	----	---	--------------------------------

Several trees were down in the southern Arley area.

Elmore County

Deatsville	20	1545CST			0	0	20K	0	Thunderstorm Wind (G55)
-------------------	----	---------	--	--	---	---	-----	---	--------------------------------

A mobile home was damaged and another was pushed off its blocks in the Deatsville community.

Madison County

Huntsville	20	1315CST			0	1	75K	0	Lightning
-------------------	----	---------	--	--	---	---	-----	---	------------------

Lightning struck a tree outside the Huntsville city hall. The tree split in half and collapsed, falling on four city vehicles. A man was struck by lightning while doing yard work, he was transported to the hospital in critical condition.

Madison County

Huntsville	20	1320CST			0	0	25K	0	Thunderstorm Wind (G60)
-------------------	----	---------	--	--	---	---	-----	---	--------------------------------

Wind knocked out several windows in the Huntsville Stars baseball stadium sky box. It also knocked over several signs in the outfield and the Marlboro Man was "decapitated." Several large limbs were also down in the area.

Chilton County

6 E Thorsby	20	1330CST			0	0	30K	0	Lightning
--------------------	----	---------	--	--	---	---	-----	---	------------------

Six horses were killed by lightning in the Mineral Springs community.

Perry County

Marion	20	1330CST			0	0	10K	0	Thunderstorm Wind (G60)
---------------	----	---------	--	--	---	---	-----	---	--------------------------------

A roof of a downtown building was damaged, blowing debris over the area. Several large trees were also uprooted as well.

Chambers County

Lafayette	20	1600CST			0	0	5K	0	Thunderstorm Wind (G50)
------------------	----	---------	--	--	---	---	----	---	--------------------------------

A few trees were down in the Five Points area of Lafayette.

Lauderdale County

4 N Florence	23	1545CST			0	0	5K	0	Thunderstorm Wind (G50)
---------------------	----	---------	--	--	---	---	----	---	--------------------------------

Several trees were down in the Petersville area.

Marshall County

7 NE Guntersville	23	1800CST			0	0	5K	0	Thunderstorm Wind (G50)
--------------------------	----	---------	--	--	---	---	----	---	--------------------------------

Several trees were down just west of the Guntersville State Park along SR 227.

Tuscaloosa County

Tuscaloosa	24	1726CST			0	0	10K	0	Lightning
-------------------	----	---------	--	--	---	---	-----	---	------------------

A downtown framing store was struck by lightning, causing a fire in the attic. The building had some water damage as well.

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Marshall County									
Boaz	24	1430CST			0	0	5K	0	Thunderstorm Wind (G50)
			A few trees were down in the Boaz community.						
Marion County									
3 W Hamilton	26	1750CST			0	0	5K	0	Thunderstorm Wind (G50)
			Power lines were reported down just west of Hamilton.						
Barbour County									
Clayton	29	1505CST			0	0	5K	0	Thunderstorm Wind (G50)
			Numerous power outages were reported in Clayton due to downed trees.						
Dallas County									
5 SE Selma	29	1445CST			0	0	20K	0	Thunderstorm Wind (G65)
			A downburst hit Craig Field and knocked down numerous trees, a few doors were blown out, there was roof damage to a few buildings and tractor trailer was over turned.						
Randolph County									
5 E Roanoke	31	1653CST			0	0	0	0	Hail (0.75)
			Dime size hail was reported at Rock Mills.						
Chambers County									
Lanett	31	1735CST			0	0	0	0	Hail (0.75)
			Dime size hail was reported in Lanett.						
Tallapoosa County									
Dadeville	31	1820CST			0	0	2K	0	Hail (1.00)
			Quarter size hail was reported in Dadeville.						
<u>ALABAMA, Southeast</u>									
Coffee County									
Southwest Portion	09	2000EST			0	0	5K		Thunderstorm Wind
			Three trees down and one roof damaged on CR 14.						
Houston County									
Cowarts	27	1800EST 1815EST			0	0	25K		Thunderstorm Wind
			Straight-line winds damaged at least 10 mobile homes at the Avon Trailer Court, several by downed trees. A portion of a mobile home roof in Cowarts was torn off after the structure was moved more than three feet.						
<u>ALABAMA, Southwest</u>									
Baldwin County									
Seminole	05	1600CST 1602CST			0	0	3K		Thunderstorm Wind (G50)
			Trees were blown down near Seminole.						
Escambia County									
Nokomis	26	1910CST 1912CST			0	0	5K		Thunderstorm Wind (G50)
Baldwin County									
Perdido	26	1912CST 1915CST			0	0	5K		Thunderstorm Wind (G50)
			Trees and power lines were blown down along U. S. Highway 31 near the Escambia and Baldwin county line from Nokomis to just south of Perdido.						
Crenshaw County									
Petrey	31	2050CST 2051CST			0	0			Hail (0.75)
			Dime size hail was reported near Petrey.						
Escambia County									
Atmore	29	1850CST 2015CST			0	0	20K		Flash Flood
			Heavy rainfall caused several streets in the Atmore area to flood. The streets had to be closed for a couple of hours because of motorists driving through them and creating wakes. The wakes caused water to enter some homes in low lying areas. Radar and surface reports estimated that around five inches of rain fell in a three hour period across the area.						
Escambia County									
Huxford	05	1445CST 1446CST			0	0	3K		Thunderstorm Wind (G50)
			A couple of trees were blown down near Huxford. Emergency management officials estimated that winds were 50 to 55 mph.						

Storm Data and Unusual Weather Phenomena

July 1998

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

ARIZONA, Central and Northeast

Yavapai County Bagdad	06	0000MST 0200MST			0	0	1K	0	Urban/Sml Stream Fld
Three homes and a few streets in low lying areas of Bagdad were damaged by mud and water. Observed rainfall amounts of 2 inches during the event period were reported.									
Coconino County Flagstaff	06	1520MST 1646MST			0	0	0	0	Urban/Sml Stream Fld
A rainfall amount of 1 inch in 60 minutes was measured in east Flagstaff. Local street flooding was reported in this area.									
Coconino County 10 SW The Gap	06	1545MST			0	0	0	0	Funnel Cloud
An Arizona Dept. of Public Safety worker and a Grand Canyon Park Ranger independently reported a funnel cloud between Highway 89 and the Grand Canyon.									
Coconino County Flagstaff	19	1325MST 1350MST			0	0	0	0	Hail (1.00)
A NWS employee reported 1 inch diameter hail in the vicinity of the Flagstaff Medical Center. Several reports of marble sized hail were received during the event time.									
Yavapai County Dewey	19	1602MST 1604MST			0	0	0	0	Hail (0.75)
A weather spotter reported 0.75 inch diameter hail covering the ground.									
Coconino County 70 SE Flagstaff	19	1705MST 1750MST			0	0	46.8K	0	Hail (3.00)
Hail from 1.75 to 3.0 inches in diameter fell during a 45 minute period at the Chevelon Ranger Station. 13 vehicles sustained broken windows and severe denting with a damage total of \$14,800. Damage to three metal roofs totalled \$32,000. Trees were stripped of needles and small branches. The hail accumulated to a depth of three inches.									
Yavapai County 15 SE Camp Verde	19	1759MST			0	0	1K		Thunderstorm Wind
A weather spotter reported down power lines due to thunderstorm outflow winds.									
Coconino County 45 SE Flagstaff	19	1900MST			0	0	0	0	Hail (1.75)
A weather spotter reported 1.75 inch diameter hail at Clints Well.									
Yavapai County Camp Verde	20	2045MST			0	0	0	0	Hail (1.25)
A weather spotter reported 1.25 inch diameter hail in Camp Verde.									
Navajo County Dilkon	21	2025MST 2125MST			0	0	0	0	Urban/Sml Stream Fld
The Dilkon Police Department reported water one foot deep across the intersection of highway 87 and Navajo Route 15 as Coyote Wash flooded. Minor road damage was also reported.									
Yavapai County Chino Vly	22	1230MST			0	0	0	0	Urban/Sml Stream Fld
Street flooding occurred in Chino after an estimated 5 inches of rain fell between 0930 and 1200.									
Coconino County Cosnino	22	1440MST			0	0	0	0	Funnel Cloud
Two separate spotter reports of a funnel cloud in the Cosnino Road/ Walnut Canyon area were received.									
Coconino County Sedona	22	1545MST 1830MST			0	0	0	0	Flash Flood
Highway 89a just north of Sedona was closed due to mudslides and 3 feet of water across the roadway. Highway 179 in Sedona was closed due to flooding.									
Coconino County 9 NE Flagstaff	22	1750MST			0	0	0	0	Funnel Cloud
The public reported a "low, fast rotating cloud about 100 to 200 feet above ground level, showing no other movement."									

Storm Data and Unusual Weather Phenomena

July 1998

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

ARIZONA, Central and Northeast

Coconino County 15 WSW Flagstaff

24 1027MST 0 0 0 0 **Funnel Cloud**
An Arizona Department of Public Safety helicopter pilot reported a funnel cloud.

Coconino County 4 NE Flagstaff

24 1100MST 0 0 0 0 **Funnel Cloud**
A weather spotter reported a short lived funnel cloud.

Yavapai County Paulden

28 1415MST 0 0 7K 0 **Thunderstorm Wind**
A mobile home was destroyed by thunderstorm outflow winds estimated at 58 mph.

Apache County 14 SW Navajo

31 1510MST 0 0 0 0 **Hail (1.75)**
1520MST
A park ranger at Petrified Forest National Park reported 1.75 inch diameter hail. They also reported 2.53 inches of rain in a two hour period that afternoon.

Navajo County Joseph City

31 1610MST 0 0 0 0 **Flash Flood**
1900MST
Afternoon thunderstorms dropped heavy rain in the Joseph City area. A rain gage in the area measured 3.23 inches of rain from 3:00 pm to 4:23 pm. Forty four homes in Joseph City were damaged by flood waters, with fourteen homes deemed receiving major damage. Interstate 40 at mile post 277 was closed for one hour as two feet of water rested on the roadway.

ARIZONA, Northwest

Mohave County 15 W Kingman

18 1825MST 0 0 **Thunderstorm Wind (G55)**

Mohave County Bullhead City

18 1830PST 0 0 2K **Thunderstorm Wind**
Thunderstorms in central Mohave County produced strong wind gusts which caused widespread blowing dust. A 63 mph wind gust was recorded in the Golden Valley west of Kingman. The winds also reached Bullhead City causing some roof and awning damage at a car dealership.

ARIZONA, South

AZZ035

Cochise County

01 1730MST 0 0 **Dust Storm**
1850MST

Outflow winds from nearby thunderstorms kicked up dust that reduced visibility to less than 1/4 mile at times along interstate 10 between San Simon and the New Mexico state line.

Pima County Tucson to Three Pts

05 0730MST 0 0 **Flash Flood**
1000MST

Thunderstorms dumping up to 3.5 inches of rain pounded an area extending from the western portion of the Tucson Metro area westward to around Three Points. Spotters reported flooding of washes and roadways.

Pima County Tucson

06 0730MST 0 0 **Flash Flood**
1000MST

Thunderstorm dumping up to 2.5 inches of rain across the west and northwest portion of the Tucson metro area caused flooding of washes and roadways.

Cochise County Bisbee to Sierra Vista

06 1100MST 0 0 **Flash Flood**
1300MST

Thunderstorms dumping heavy rain caused flooding in downtown bisbee with reports of water up to bumpers on cars with many street closures. Washes were reported running full in the Sierra Vista area.

Cochise County Bisbee

07 1410MST 0 0 **Flash Flood**
1500MST

A thunderstorm dumping over an inch of rain in one hour caused flooding of roads and streets in Bisbee making them impassable.

Pima County Tucson to Vail

07 1800MST 0 0 **Flash Flood**
2100MST

Thunderstorms dumping up to 3.5 inches of rain caused flooding of washes and roadways over the far eastern portion of the Tucson Metro area southeastward to the Vail area. A stream gage on Pantano wash reported a rise of 5 feet.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
ARIZONA, South									
Cochise County 7 N Willcox	10	1910MST 2000MST			0	0			Flash Flood
The Cochise county sheriff reported Apache Pass closed due to flooding.									
Pinal County Eloy to Picacho	16	2020MST 2055MST			0	0	50K		Thunderstorm Wind (G65)
A line of severe thunderstorms moving through south-central Pinal county knocked down several power poles and power lines.									
Pima County 10 SW Tucson to Tucson Ryan Fld Arpt	17	1800MST 1810MST			0	0			Thunderstorm Wind (G82)
A mobile home in the Tucson Estates had its roof ripped off. At the Ryan Field airport winds gusting up to 94 mph partially ripped the roof off of a hanger and flipped over several small planes.									
Cochise County 6 SE Sierra Vista	19	1545MST 1700MST			0	0			Flash Flood
Weather spotter reported wash rose 2 feet in 20 minutes due to very heavy rainfall. Street flooding was reported in residential areas.									
Pima County Green Vly	19	1815MST 1845MST			0	0			Urban/Sml Stream Fld
Street flooding was reported in Green Valley after 1.75 inches of rain fell in about 1 hour.									
Pima County 12 SE Tucson to Davis Monthan Afb	19	1845MST 1900MST			0	0			Thunderstorm Wind (G56)
A wind gust of 64 mph was reported at Davis Monthan AFB and a spotter at Rita road and interstate 10 reported 50-60 mph winds and some wind damage.									
Pima County Vail	19	1855MST 2000MST			0	0			Flash Flood
An automata gage near Vail reported a 3 foot rise in water in about 1 hour in the Pantano wash.									
Pima County 2 N Sasabe	20	1220MST 1230MST			0	0			Funnel Cloud
Custom officials at the Port of Customs in Sasabee reported several funnel clouds.									
Pima County Tucson	21	0400MST 0500MST			0	0			Urban/Sml Stream Fld
Low water crossing along the Canada Del Oro wash were reported flooded.									
Santa Cruz County Nogales	21	1515MST 1600MST			0	0	30K		Flash Flood
2-3 feet of water flooded the Monta Carlo neighborhood damaging many houses. The Nogales sheriff also reported flooding of South River Road and along highway 82 in Nogales.									
Graham County 2 E Ft Thomas	21	1730MST			0	0	15K		Thunderstorm Wind
Thunderstorm winds blew the roof off a bar and destroyed the north wall. Also a roof was taken off a storage shed and some trees were blown down.									
Pima County 10 W Tucson	21	1745MST			0	0			Flash Flood
Four vehicles were rescued out of a flooded low water crossing at Sandario and Mile Wide road.									
Pima County Tucson	22	0430MST 1300MST			0	0			Flash Flood
Up to 3 inches of rain in and around the Tucson area caused widespread flooding of roads and washes. A 1-2 foot wall of water rushed over Sabino Dam.									
Santa Cruz County Nogales	22	1015MST 1230MST			0	0			Flash Flood
Thunderstorms dumping heavy rain caused flooding of roadways.									
Cochise County 10 W Douglas	23	1155MST 1200MST			0	0			Funnel Cloud

Storm Data and Unusual Weather Phenomena

July 1998

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

ARIZONA, South

A funnel cloud was observed from Cochise college.

Cochise County 5 E Sierra Vista	23	1650MST 1730MST			0	0			Flash Flood
---	----	--------------------	--	--	---	---	--	--	--------------------

Mosen road closed due to 3 feet of water across roadway. Washes running bankfull.

Pima County Marana	23	2200MST 2315MST			0	0	5K		Flash Flood
------------------------------	----	--------------------	--	--	---	---	----	--	--------------------

Three homes sustained water damage and the occupants had to be temporarily evacuated. A couple of streets were also flooded.

Cochise County Sierra Vista	28	1820MST 1900MST			0	0	10K		Thunderstorm Wind
---------------------------------------	----	--------------------	--	--	---	---	-----	--	--------------------------

Cochise County Sierra Vista	28	1845MST 2100MST			0	0			Flash Flood
---------------------------------------	----	--------------------	--	--	---	---	--	--	--------------------

Thunderstorm winds blew the metal roof off a garage and into the windshield of a nearby truck, shattering the windshield and causing extensive damage to the garage. A few trees were also blown down and several power poles and lines were damaged causing electrical outage to 1200 customers. Heavy rains caused high flows in area washes.

Cochise County 8 W Benson	30	1640MST 1830MST			0	0			Flash Flood
-------------------------------------	----	--------------------	--	--	---	---	--	--	--------------------

Thunderstorms dumping up to 2 inches of rain in 1 hour caused flooding of washes with a weather spotter reporting a 11/2 foot rise in a nearby wash.

Cochise County Ft Huachuca	31	1917MST 1920MST			0	0			Thunderstorm Wind (G50)
--------------------------------------	----	--------------------	--	--	---	---	--	--	--------------------------------

Cochise County Sierra Vista	31	1955MST			0	0			Hail (1.25)
---------------------------------------	----	---------	--	--	---	---	--	--	--------------------

Severe thunderstorms produced 50kt winds and golf ball size hail.

ARIZONA, Southwest

La Paz County 23 E Quartzsite	06	1913MST			0	0			Thunderstorm Wind (G55)
---	----	---------	--	--	---	---	--	--	--------------------------------

Semi blew off Interstate 10.

Maricopa County Phoenix	06	2100MST			0	0			Thunderstorm Wind (G50)
-----------------------------------	----	---------	--	--	---	---	--	--	--------------------------------

Trees down on Union Hills between 7th and 19th Ave.

Maricopa County Phoenix	06	2100MST 2158MST			0	0			Urban/Sml Stream Fld
-----------------------------------	----	--------------------	--	--	---	---	--	--	-----------------------------

Widespread very heavy rainfall caused street flooding and flowing washes. A house in North Phoenix was damaged by water. One of the heaviest amounts was 1.45 inches in 50 minutes.

Gila County 1 WNW Roosevelt	07	1410MST			0	0			Heavy Rain
---------------------------------------	----	---------	--	--	---	---	--	--	-------------------

One inch rainfall in 20 minutes.

Maricopa County Phoenix	07	1757MST			0	0			Thunderstorm Wind (G50)
-----------------------------------	----	---------	--	--	---	---	--	--	--------------------------------

Power poles down on 19th Ave between Bell and Union Hills.

Pinal County Countywide	16	1955MST 2035MST			0	0			Thunderstorm Wind (G50)
-----------------------------------	----	--------------------	--	--	---	---	--	--	--------------------------------

Numerous power poles down in Florence, Coolidge, Casa Grande, Picacho and Eloy.

Maricopa County Sunnyslope	17	1823MST			0	0			Thunderstorm Wind (G50)
--------------------------------------	----	---------	--	--	---	---	--	--	--------------------------------

Power lines down.

Maricopa County Phoenix	17	2030MST			0	0			Thunderstorm Wind (G50)
-----------------------------------	----	---------	--	--	---	---	--	--	--------------------------------

Large tree, carport, and fences blown down in North Phoenix.

Gila County Roosevelt	17	2122MST			0	0			Thunderstorm Wind (G61)
---------------------------------	----	---------	--	--	---	---	--	--	--------------------------------

Storm Data and Unusual Weather Phenomena

July 1998

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 5 NE Apache Jct	17	2140MST			0	0			Thunderstorm Wind (G50)
									Trees and cacti blown down, shingles blown off.
Pinal County Apache Jct	17	2228MST			0	0			Thunderstorm Wind (G50)
									Sixty foot paging tower blown down.
Maricopa County Gilbert	17	2231MST			0	0			Thunderstorm Wind (G50)
									Two TV antennas blown down, street signs blown down.
Maricopa County Scottsdale	17	2242MST			0	0			Thunderstorm Wind (G50)
									Power lines down, numerous trees down.
Maricopa County Mesa	17	2252MST			0	0			Thunderstorm Wind (G50)
									Trees downed on Hwy 60.
Pinal County Apache Jct	17	2252MST			0	0			Thunderstorm Wind (G50)
									Trees downed on Hwy 60.
Maricopa County Wickenburg	19	2054MST			0	0			Thunderstorm Wind (G52)
									Strong winds toppled a few trees and power lines.
Maricopa County Buckeye	19	2230MST			0	0			Thunderstorm Wind (G55)
									Ham radio tower blown over by winds, power lines down.
Pinal County Casa Grande	22	0730MST 1000MST			0	0			Flash Flood
									Widespread flooding of streets with rainfall up to 2.82 inches in about 3 hours.
Pinal County 8 E Apache Jct	22	1225MST 1253MST			0	0			Flash Flood
									Wall of water 8 to 10 feet high on golf course. Roads flooded.
La Paz County Parker	22	1445MST			0	0			Thunderstorm Wind (G55)
									Trees and power lines down.
Yuma County Wellton	22	1750MST 2100MST			0	0			Flash Flood
									Streets flooded after 1.23 inches of rain fell in about an hour.
Yuma County Wellton	22	1750MST			0	0			Thunderstorm Wind (G60)
									Winds overturned a fifth wheel trailer and blew down power poles.
La Paz County Vicksburg	22	2102MST			0	0			Flash Flood
									Washes flooded.
La Paz County Vicksburg	28	2202MST 2245MST			0	0			Flash Flood
									Highway 72 flooded between Vicksburg and Hope.
Gila County Globe	31	1120MST 1200MST			0	0			Flash Flood
									Rock slides in Icehouse Canyon resulted from very heavy rains totalling as much as 3.7 inches. Streets in Globe flooded.
Maricopa County 3 NE Mesa	31	2211MST			0	0			Thunderstorm Wind (G55)
									Airplane parked at Falcon Field blown through fence and into nearby street.
Maricopa County 5 E Mesa	31	2304MST 2339MST			0	0	500K		Thunderstorm Wind
									About 60 power poles damaged or destroyed by winds gusting to at least 60 mph. Along Power Road some lines fell onto several cars.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>ARKANSAS, Central and North Central</u>									
Dallas County									
Ivan	01	1225CST			0	0			Hail (0.75)
Cleveland County									
Kingsland	01	1250CST			0	0			Hail (0.75)
Lincoln County									
Star City	01	1318CST			0	0			Hail (0.75)
Lincoln County									
6 SE Star City	01	1318CST			0	0			Hail (1.00)
Drew County									
Monticello	01	1340CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds knocked down several trees.
Drew County									
Collins	01	1350CST			0	0			Hail (0.75)
Garland County									
Hot Spgs	02	1405CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds knocked down large tree limbs and numerous power lines.
Independence County									
4 N Pleasant Plains	05	1200CST			0	0			Hail (0.75)
White County									
Bradford	05	1215CST			0	0			Hail (0.75)
Pike County									
1 W Daisy	09	1330CST			0	0	100K		Thunderstorm Wind (G50)
									Thunderstorm winds overturned a boat dock, damaged some boats, and sent other boats adrift at the Self Creek Marina on Lake Greeson.
Pulaski County									
Prothro Jct	09	1430CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds caused some roof damage at a truck stop.
Pulaski County									
Jacksonville	09	2047CST			0	0			Hail (0.75)
Pulaski County									
Jacksonville	09	2047CST			0	0			Thunderstorm Wind (G52)
									Thunderstorm winds estimated at 60 mph downed large limbs at Jacksonville. Dime size hail was also produced.
Hot Spring County									
11 S Malvern	09	1435CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds tore a roof from a mobile home.
Grant County									
Sheridan	09	1520CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds knocked down several trees. One tree fell on a mobile home.
Jefferson County									
1 NE Pine Bluff	09	1450CST			0	0			Thunderstorm Wind (G50)
Jefferson County									
Pine Bluff	09	1510CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds damaged several roofs on homes and businesses in Pine Bluff and tore a roof from a house just northeast of town.
Drew County									
Monticello	09	1508CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds knocked down a few trees.
Grant County									
Grapevine	09	1600CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds knocked down several trees and power lines.
Calhoun County									
1 E Hampton	09	1615CST			0	0			Thunderstorm Wind (G50)
									Thunderstorm winds knocked down a tree onto a road.
Pulaski County									
Little Rock	10	1130CST			0	0			Hail (0.75)
Pulaski County									
Cammack Vlg	10	1145CST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>ARKANSAS, Central and North Central</u>									
Pulaski County Little Rock	10	1145CST			0	0			Hail (0.88)
Pulaski County Little Rock	10	1145CST			0	0			Thunderstorm Wind (G50)
Pulaski County North Little Rock	10	1145CST			0	0			Thunderstorm Wind (G50)
					Thunderstorm winds downed numerous trees and large tree limbs in Little Rock, North Little Rock and Cammack Village. A tent was also blown down (Little Rock), with a roof partially removed from an apartment complex (North Little Rock). Windows were also blown out of cars in some areas. Large hail was also produced, with up to nickel size hail reported (Little Rock).				
Baxter County 5 SE Mountain Home	10	1217CST			0	0			Thunderstorm Wind (G50)
					Thunderstorm winds knocked a tree down on a boat dock. The dock was partially damaged.				
Jackson County Newport	10	1350CST			0	0			Flash Flood
Jackson County Newport	10	1350CST			0	0			Lightning
Jackson County Newport	10	1350CST			0	0			Thunderstorm Wind (G50)
					Thunderstorm winds knocked down a few tree limbs and power lines at Newport. 3 to 4 inches of rain was produced at Newport in less than an hour, with flooding reported along several city streets. There were also several fires started around the city by lightning.				
Saline County Avilla	11	1627CST			0	0			Hail (0.75)
Montgomery County 1 W Pencil Bluff	11	1700CST			0	0			Thunderstorm Wind (G50)
					Thunderstorm winds knocked a few trees down onto U.S. Highway 270.				
Faulkner County Palarm	11	1700CST			0	0			Thunderstorm Wind (G50)
					Thunderstorm winds knocked down a few trees.				
Drew County 9 S Monticello	11	1700CST			0	0			Thunderstorm Wind (G50)
					Thunderstorm winds knocked a few trees down onto Highway 172.				
Grant County 3 NW Belfast	11	1700CST			0	0			Hail (0.75)
Marion County 1 N Rea Vly	12	0140CST			0	0			Flash Flood
Marion County Flippin	12	0210CST			0	0			Flash Flood
					Rainfall amounts of 3 to 5 inches in less than 3 hours brought flash flooding to parts of Marion County. A car was flooded at a low water crossing near Flippin. Also, Crooked Creek overflowed its banks just north of Rea Valley with roads under water or washed away.				
Sharp County 5 S Evening Shade	12	0430CST			0	0			Flash Flood
					Rainfall amounts of 3 to 5 inches in less than 3 hours brought flash flooding to extreme southwest Sharp County. Several gravel roads were under water or washed away, with a concrete bridge damaged.				
Independence County 4 NE Cushman	12	0430CST			0	0			Flash Flood
Independence County Batesville	12	0440CST			0	0			Flash Flood
Independence County Thida	12	0440CST			0	0			Flash Flood
					Rainfall amounts of 3 to 5 inches in less than 3 hours brought flash flooding to much of Independence County. Roads were under water at Thida and just northeast of Batesville with a gravel road washed away between Cushman and Sandtown.				
Izard County East Portion	12	0700CST			0	0			Flash Flood
					Rainfall amounts of 3 to 5 inches in less than 3 hours brought flash flooding to much of eastern Izard County. Several roads were under water, with some roads washed away.				
Polk County Grannis	12	1648CST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1998

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									
Thunderstorm winds knocked down a few trees.									
Ouachita County 5 N Stephens	12	2145CST			0	0			Thunderstorm Wind (G50)
Ouachita County Stephens	12	2150CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked down a few trees in Stephens and blew a tree down on Highway 79 north of Stephens.									
Marion County 5 W Yellville	22	1300CST			0	0			Thunderstorm Wind (G50)
Marion County Summit	22	1310CST			0	0			Thunderstorm Wind (G50)
Marion County Yellville	22	1310CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds downed trees in Yellville...one on a home. A tin roof was also torn from a barn west of Yellville. Trees were downed in Summit.									
Baxter County 2 E Bigflat	22	1335CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked down a few large tree limbs.									
Clark County 8 NE Alpine	22	1400CST			0	0			Hail (0.88)
Hot Spring County Marcus	22	1405CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked a few large limbs onto Highway 84.									
Cleburne County 2 S Hopewell	22	1450CST			0	0			Hail (0.88)
White County Rose Bud	22	1452CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds removed a roof from a house.									
Jefferson County 2 W Whitehall	22	1555CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked down trees and power lines.									
Cleburne County 2 N Drasco	22	1525CST			0	0			Hail (1.00)
Cleburne County 2 N Drasco	22	1525CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked down a few large tree limbs north of Drasco. Quarter size hail was also produced.									
Sharp County 5 S Wirth	22	1600CST			0	0			Thunderstorm Wind (G50)
Sharp County 5 S Wirth to 8 S Wirth	22	1630CST			0	0			Flash Flood
A nearly stationary cluster of thunderstorms produced up to 5 inches of rain in about an hour in northern Sharp County. Several roads were under water between Sellers Store and Wirth. Before the flooding occurred, thunderstorm winds knocked down several trees.									
Polk County 3 SE Mena	22	1550CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds damaged a barn.									
Hot Spring County 3 S Donaldson	22	1555CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds knocked down a few large tree limbs.									
Pulaski County 5 SW Little Rock	22	1655CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds damaged several homes and buildings in Lawrence Road area.									
White County 7 W Beebe	22	1705CST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds tore a roof from a storage building.									
Lonoke County 5 W Ward	22	1705CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

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

Lonoke County 5 W Ward	22	1705CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds damaged the roof of a church west of Ward and knocked down a few trees. Quarter size hail was also produced.
Grant County 5 S Crossroad	22	1720CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few large tree limbs.
Van Buren County Scotland	23	1335CST			0	0			Hail (0.75)
Van Buren County Scotland	23	1335CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few trees at Scotland. Dime size hail was also produced.
Conway County 5 W Center Ridge	23	1355CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few trees.
White County Bald Knob	23	1405CST			0	0			Thunderstorm Wind (G50)
White County 1 E Bald Knob	23	1410CST			0	0			Thunderstorm Wind (G50)
White County Worden	23	1420CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down large tree limbs in Worden and blew down several trees and power lines in the Bald Knob area.
Pulaski County 5 W Cammack Vlg	23	1350CST			0	0			Hail (0.75)
Garland County Lonsdale	23	1430CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few large tree limbs.
Hot Spring County 5 NW Malvern	23	1445CST			0	0			Hail (0.88)
Faulkner County 5 N Mt Vernon	23	1500CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down several trees.
Cleveland County 4 W Pansy	23	1500CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds tore a tin roof from a barn and knocked down several trees.
Drew County 7 S Selma	23	1500CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down several trees.
White County Rose Bud	23	1510CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds damaged a barn and caused some roof damage.
Saline County Haskell	23	1510CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down trees and power lines.
Polk County Mena	23	1515CST			0	0			Hail (0.75)
Polk County Mena	23	1515CST			0	0			Thunderstorm Wind (G50)
Polk County 2 S Mena	23	1515CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down trees in Mena and heavily damaged a barn to the southwest of town. Dime size hail was also produced in Mena.
Montgomery County 2 W Oden	23	1535CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few large tree limbs.
Dallas County Bunn	23	1545CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down several trees.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>ARKANSAS, Central and North Central</u>									
Cleveland County 10 NW Kingsland	23	1545CST			0	0			Hail (0.88)
Cleveland County 10 NW Kingsland	23	1545CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down several trees northwest of Kingsland in Cleveland County. Nickel size hail was also produced.
Drew County 7 W Jerome	23	1545CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few trees.
Jefferson County Whitehall	23	1605CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds caused some roof damage.
Lonoke County 5 N Humnoke	23	1720CST			0	0			Hail (1.75)
Lonoke County Humnoke	23	1735CST			0	0			Hail (0.88)
Newton County 2 NW Swain	24	1235CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few trees.
Perry County 7 S Hollis	24	1345CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds blew down large tree limbs and knocked out a few tree tops.
Garland County 2 N Jessieville	24	1350CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds blew down large tree limbs and knocked out a few tree tops.
Garland County 5 SW Hot Spgs	24	1510CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds removed a roof from a business and knocked down a few trees.
Grant County 5 SW Sheridan	24	1540CST			0	0			Hail (0.75)
Grant County Crossroad	24	1545CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few large tree limbs at Cross Roads. The same storm produced dime size hail to the southwest of Sheridan.
Calhoun County Tinsman	24	1645CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down trees and power lines.
Ouachita County Amy	24	1725CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few trees.
Calhoun County Thornton	24	1745CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down trees and power lines.
Bradley County Hermitage	24	1830CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds damaged a roof at a school library and knocked down a few trees.
Newton County 7 S Jasper	25	1330CST			0	0			Hail (0.88)
Newton County 7 S Jasper	25	1330CST			0	0			Thunderstorm Wind (G56) Thunderstorm winds were estimated at 65 mph south of Jasper. Nickel size hail was also produced.
Pulaski County 5 W Little Rock	25	1618CST			0	0			Hail (0.88)
Pulaski County 5 W Little Rock	25	1630CST			0	0			Hail (0.88)
Scott County Waldron Muni Arpt	25	1725CST			0	0			Thunderstorm Wind (G50) A hangar was blown down at the Waldron Municipal Airport. Power lines were also knocked down.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>ARKANSAS, Central and North Central</u>									
Pike County Daisy	25	1750CST			0	0			Hail (0.75)
Pike County 2 N Kirby	25	1825CST			0	0			Hail (0.75)
Pike County 2 N Kirby	25	1825CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few large tree limbs north of Kirby. Dime size hail was also produced.
Pike County Delight	25	1940CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few trees.
Pulaski County 5 W Little Rock	26	1720CST			0	0			Thunderstorm Wind (G50)
Pulaski County North Little Rock	26	1720CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few large tree limbs in North Little Rock and blew down several trees in West Little Rock.
Izard County 1 E Melbourne	27	2003CST			0	0			Hail (0.88)
Izard County 1 E Melbourne	27	2003CST			0	0			Thunderstorm Wind (G50)
Izard County 2 S Melbourne	27	2011CST			0	0			Hail (0.88)
Izard County 3 E Melbourne	27	2017CST			0	0			Hail (0.75)
Izard County Melbourne	27	2017CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down trees and power lines around Melbourne, with dime to nickel size hail in town and in surrounding areas.
Sharp County Evening Shade	27	2045CST			0	0			Hail (0.75)
Independence County 8 N Batesville	27	2045CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down large tree limbs and power lines.
Jackson County 4 N Grubbs	27	2145CST			0	0			Thunderstorm Wind (G50)
Jackson County Grubbs	27	2155CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked a tree down onto Highway 37 north of Grubbs with a few trees and power lines down at Grubbs.
Baxter County 10 W Clarkridge	28	0605CST			0	0			Thunderstorm Wind (G50)
Baxter County Gamaliel	28	0615CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down trees at Gamaliel and west of Clarkridge on Highway 5.
White County Searcy	29	1430CST			0	0			Hail (0.75)
White County Searcy	29	1500CST			0	0			Thunderstorm Wind (G50)
White County Searcy	29	1500CST			0	0			Urban/Sml Stream Fld
White County Searcy	29	1549CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down trees and power lines at Searcy. Dime size hail was also produced, with some street flooding reported in town.
White County El Paso	29	1510CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down a few trees.
Cleburne County Drasco	29	1515CST			0	0			Thunderstorm Wind (G50) Thunderstorm winds knocked down some trees.

Storm Data and Unusual Weather Phenomena

July 1998

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

Van Buren County Morganton	29	1612CST			0	0			Hail (0.75)
Ouachita County Camden	12	2200CST			0	0			Urban/Sml Stream Fld
A thunderstorm brought between 2 and 3 inches of rain in less than an hour with some street flooding reported.									
Marion County Yellville	22	1310CST			0	0			Lightning
Lightning struck a hay barn which started a fire. The barn was destroyed.									
Grant County 5 N Sheridan	02	1600CST			0	0			Lightning
Lightning struck a hay barn on Grant County Highway 52. The barn was destroyed by fire.									
Pulaski County Jacksonville	08	1730CST			0	0	50K		Lightning
Lightning struck the 911 call center, burning 4 computer boards and knocking out service for the day.									
Sharp County Cherokee Vlg	31	0500CST			0	0			Lightning
Lightning struck the ground outside of a home, sending a chunk of the concrete driveway through the front door frame and into an interior wall.									

ARKANSAS, East

Cross County 1 W Cherry Vly	23	2150CST 2155CST			0	0	10K		Thunderstorm Wind
Several trees and power lines were knocked down.									
Poinsett County Lepanto	27	2252CST 2300CST			0	0	0.01K		Hail (0.75)
Crittenden County 6 W Marion	27	2325CST 2330CST			0	0	0.01K		Hail (0.75)
Crittenden County Crawfordsville	27	2330CST 2335CST			0	0	5K		Thunderstorm Wind
Several trees were knocked down.									
Crittenden County Marion	29	0450CST 0500CST			0	0	10K		Lightning
Three homes and one business caught on fire due to lightning strikes.									
Crittenden County West Memphis	29	0450CST 0455CST			0	0	5K		Thunderstorm Wind
Several trees were knocked down.									
Randolph County Pocahontas	30	0100CST 0200CST			0	0	1K		Urban/Sml Stream Fld
Several roads had water over them.									
Mississippi County Huffman	30	0230CST 0235CST			0	0	10K		Thunderstorm Wind
A factory lost part of its roof.									

ARKANSAS, Northwest

Sebastian County Ft Smith	09	1839CST			0	0			Hail (0.75)
Sebastian County Ft Smith	09	1840CST			0	0			Hail (1.00)
Sebastian County Ft Smith	09	1841CST			0	0			Hail (1.75)
Location: Fort Smith Police Department Summary of events for July 9 1998:									

An isolated, stationary severe thunderstorm developed over the city of Fort Smith around 730 PM CDT on July 9. This storm

Storm Data and Unusual Weather Phenomena

July 1998

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

ARKANSAS, Northwest

produced hail as large as golfballs before weakening below severe limits by 800 PM CDT.

Washington County
(Fyv)Fayetteville Ar

12 0116CST **0 0** **Tstm Wind/Hail**

The ASOS at Drake Field in Fayetteville measured a wind gust of 52 mph at 216 AM CDT with a passing thunderstorm. This was one in a series of thunderstorms that moved across the area during the early morning hours along a nearly stationary line. Rainfall at Drake Field totalled 2.26 inches from this event. (No hail was reported with this storm.)

ARZ001>002-010>011-019>020-029 **Benton - Carroll - Washington - Madison - Crawford - Franklin - Sebastian**

20 0000CST **2 0** **Excessive Heat**
31 2359CST

A blistering heat wave struck the south-central part of the nation in July 1998, including much of western and northwestern Arkansas. The second half of the month also saw little, if any, rainfall in northwest Arkansas. This was all brought about by a persistent upper level ridge of high pressure over the south-central and southwestern parts of the nation.

In the Arkansas River valley at Fort Smith, the temperature rose to at least 100 degrees Fahrenheit on 12 of the last 14 days of the month and reached as high as 107 on the 30th. Further north at Fayetteville, the temperature rose to at least 95 degrees on 12 of the last 14 days of the month and reached as high as 101 on the 30th. 100+ degree temperatures are certainly unusual in the higher elevations of northwest Arkansas. Neither Fort Smith nor Fayetteville saw measurable rainfall from the 13th through the end of the month.

Two deaths in northwest Arkansas are blamed on the heat. According the Arkansas Department of Health's Center for Health Statistics, two Benton County infants died from the heat. Newspaper articles did not list the gender of the victims, nor did they list the date or location of their deaths. ?OOT, ?OOT

ARKANSAS, Southeast

Ashley County
4 E Hamburg

01 1345CST **0 0 2K** **Thunderstorm Wind**
Several trees were blown down.

ARKANSAS, Southwest

Miller County
1 NW Fouke

23 1745CST **0 0 25K** **Thunderstorm Wind (G52)**
Trees and powerlines down.

Howard County
5 SW Galena

23 1730CST **0 0** **Thunderstorm Wind (G52)**
Several trees down.

Hempstead County
2 N Hope

02 1625CST **0 0** **Thunderstorm Wind (G52)**
Large trees down across County Roads 16 and 19.

Sevier County
4 E Gillham

09 1430CST **0 0** **Thunderstorm Wind (G52)**

Howard County
Dierks

11 1615CST **0 0** **Thunderstorm Wind (G52)**

Miller County
1 N Fouke

12 1925CST **0 0** **Thunderstorm Wind (G55)**

Sevier County
Gillham

12 1655CST **0 0** **Thunderstorm Wind (G52)**
Numerous trees down.

Howard County
5 SW Galena

22 1730CST **0 0** **Thunderstorm Wind (G52)**
Several large trees toppled.

CALIFORNIA, Extreme Southeast

NONE REPORTED.

CALIFORNIA, North Central

NONE REPORTED.

CALIFORNIA, Northeast

Lassen County
Plumas

30 1454PST **0 0** **Funnel Cloud**
1455PST

Storm Data and Unusual Weather Phenomena

July 1998

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

CALIFORNIA, Northeast

NWS Spotter reported a funnel cloud above Hallaujah Junction, CA at intersection of U.S. 395 and California Route 70. Also present were very heavy rain and gusty winds from a thunderstorm.

CALIFORNIA, Northwest

CAZ002	Mendocino Coast	08 0500PST			0	0			Fog
		1000PST							

Widespread visibility was reduced to between zero and 1/4 mile from Point Arena to Shelter Cove.

CALIFORNIA, South Central

CAZ025	Kern County Desert	24 0830PST			1	0			Excessive Heat
---------------	---------------------------	-------------------	--	--	----------	----------	--	--	-----------------------

While the temperature was not high on July 24, there had been a stretch of days from the 16th through the 20th that were quite hot in Central California, including the Kern Deserts. The fatality was reported on 7/24/98 but death occurred sometime earlier in the week (when warmer).

Record delays in reaching triple-digit temperatures occurred this year in Central California (records for the latest 100-degree occurrence were reset to July 16th in both Fresno and Bakersfield ... eclipsing records of the 6th and 5th in Fresno and Bakersfield, respectively). However, the onset of the "normal" summer temperatures began in earnest in mid-July with 9 of the last 15 days of the month 100 deg.F. or greater. M86PH

CALIFORNIA, Southeast

San Bernardino County									
Barstow		22 1700PST			0	0			Flash Flood
		2100PST							

Heavy rain showers around Barstow produced flash flooding making several streets impassable due to water and debris. One vehicle was stranded on Interstate 40 east of Montera Road. The passengers were assisted by officers from the California Highway Patrol.

San Bernardino County									
Twenty Nine Palms		22 1830PST			0	0			Flash Flood
		2000PST							

The Twentynine Palms Police Department reported several streets and roads flooded. Over one inch (1.07) of rain was reported in less than three hours by the weather observer at the Marine Corps Base.

San Bernardino County									
Twenty Nine Palms		28 1531PST			0	0	10K		Thunderstorm Wind

Thunderstorm winds snapped two power poles knocking electricity out in a two block area. Also, a storage shed was blown onto a roof of a nearby house and caught in electrical wires.

CALIFORNIA, Southwest

San Diego County									
Mission Beach		20 1300PST			0	0			Urban/Sml Stream Fld
		1430PST							

San Diego County									
Pacific Beach		20 1300PST			0	0			Urban/Sml Stream Fld
		1430PST							

An easterly wave moving over southern California helped to initiate rare thunderstorm activity along the San Diego County coast. The storms developed near Vista and moved south-southwest to coastal areas from LaJolla to Point Loma. Urban flooding was reported at Mission Beach and Pacific Beach. In addition, lightning strikes set several trees ablaze and knocked out power to 21,000 homes and businesses in Clairemont and Point Loma.

San Diego County									
5 NW Agua Caliente Spgs		07 1415PST			0	0			Hail (1.00)
		1445PST							

San Diego County									
5 NW Agua Caliente Spgs		07 1430PST			0	0			Urban/Sml Stream Fld
		1600PST							

Moist southeast flow aloft and unstable conditions resulted in scattered thunderstorms over the mountains and deserts of southern California. A particularly heavy cell northwest of Agua Caliente produced hail around one inch in diameter and local flooding.

CALIFORNIA, Upper

NONE REPORTED.

Storm Data and Unusual Weather Phenomena

July 1998

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

CALIFORNIA, West South Central

Los Angeles County

West Covina	20	0700PST			0	1			Lightning
-------------	----	---------	--	--	---	---	--	--	-----------

Lightning struck a 40 year-old woman at her home in West Covina. The lightning struck a antenna on the roof of her home, travelled down a wire attached to a plumbing vent, and then to the kitchen sink where she was standing. The woman sustained minor injuries.

CALIFORNIA, Western

NONE REPORTED.

COLORADO, Central and Northeast

Weld County

26 N Greeley	01	1643MST			0	0			Hail (1.00)
--------------	----	---------	--	--	---	---	--	--	-------------

Adams County

8 NNW Bennett	01	1648MST			0	0			Hail (1.50)
---------------	----	---------	--	--	---	---	--	--	-------------

Weld County

8 NNE Nunn	01	1650MST 1710MST			0	0			Hail (0.75)
------------	----	--------------------	--	--	---	---	--	--	-------------

Adams County

16 N Bennett	01	1700MST			0	0			Hail (1.00)
--------------	----	---------	--	--	---	---	--	--	-------------

Lincoln County

4 SE Karval	01	1710MST			0	0			Hail (1.75)
-------------	----	---------	--	--	---	---	--	--	-------------

Elbert County

6 E Kutch	01	1745MST			0	0			Hail (1.50)
-----------	----	---------	--	--	---	---	--	--	-------------

Lincoln County

15 NW Karval	01	1745MST			0	0			Thunderstorm Wind (G61)
--------------	----	---------	--	--	---	---	--	--	-------------------------

Lincoln County

25 S Limon	01	1745MST			0	0			Hail (1.50)
------------	----	---------	--	--	---	---	--	--	-------------

Weld County

5 E Cornish	01	1825MST			0	0			Hail (1.00)
-------------	----	---------	--	--	---	---	--	--	-------------

Morgan County

Wiggins	01	2055MST			0	0			Hail (0.75)
---------	----	---------	--	--	---	---	--	--	-------------

Adams County

2 SE Barr Lake	02	1710MST	0.1	25	0	0	0	0	Tornado (F0)
----------------	----	---------	-----	----	---	---	---	---	--------------

A small landspout touched down briefly but did no damage.

Weld County

21 N New Raymer	02	1850MST			0	0			Thunderstorm Wind (G50)
-----------------	----	---------	--	--	---	---	--	--	-------------------------

Sedgwick County

Ovid to Julesburg	02	2115MST 2125MST			0	0			Thunderstorm Wind (G51)
----------------------	----	--------------------	--	--	---	---	--	--	-------------------------

Weld County

10 E Gill	04	1612MST	0.1	25	0	0	0	0	Tornado (F0)
-----------	----	---------	-----	----	---	---	---	---	--------------

A small landspout touched down briefly but did no damage.

Weld County

8 SE Roggen	04	1615MST 1815MST			0	0	0		Urban/Sml Stream Fld
-------------	----	--------------------	--	--	---	---	---	--	----------------------

Heavy rain, up to 2.75 inches, combined with marble size hail to flood local roads and fields.

Denver County

South Denver	08	2000MST 2115MST			0	0		0	Urban/Sml Stream Fld
--------------	----	--------------------	--	--	---	---	--	---	----------------------

Heavy rain forced the closure of Hampden Avenue between Interstate 25 and Havana Street as high water made two of three lanes impassable.

Lincoln County

Hugo	08	2030MST 2230MST			0	0			Flash Flood
------	----	--------------------	--	--	---	---	--	--	-------------

Heavy rain caused a small creek in the town of Hugo to jump its banks. Several streets and buildings were flooded. A trained spotter measured 2.74 inches of rainfall in Hugo.

Elbert County

Matheson	09	1448MST			0	0			Hail (1.50)
----------	----	---------	--	--	---	---	--	--	-------------

Arapahoe County

12 SW Byers	09	1520MST 1525MST	0.1	50	0	0	10K		Tornado (F1)
-------------	----	--------------------	-----	----	---	---	-----	--	--------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>COLORADO, Central and Northeast</u>									
Logan County Iliff	21	1735MST			0	0			Hail (2.50)
Logan County 10 NNE Sterling	21	1741MST			0	0			Hail (2.50)
Washington County 20 NW Akron	21	1745MST			0	0			Thunderstorm Wind (G51)
Logan County 10 NE Sterling	21	1750MST			0	0	2.5K		Hail (2.50)
Logan County 1 W Sterling	21	1805MST			0	0			Hail (0.75)
Logan County 1 W Sterling	21	1805MST			0	0			Thunderstorm Wind (G61)
Washington County Otis	21	1825MST			0	0			Thunderstorm Wind (G51)
Washington County 17 NNE Platner	21	1842MST			0	0			Thunderstorm Wind (G51)
					Damaging hail, severe thunderstorm winds and heavy rain hammered extreme northeast Colorado. Tennis ball size hail caused extensive roof damage in Iliff and some windows were broken. A state trooper on patrol had his windshield shattered. Thunderstorm winds gusting to 70 mph downed trees and power lines. Up to 2.5 inches of rain also fell in the area. Lightning sparked several small fires along State Highway 61.				
Arapahoe County 6 N Deer Trail	23	1453MST	0.1	25	0	0	0	0	Tornado (F0)
Arapahoe County 5 N Deer Trail	23	1515MST	0.1	25	0	0	0	0	Tornado (F0)
					Two small landspouts touched down briefly but did no damage.				
Arapahoe County 15 E Byers	23	1630MST 1815MST			0	0			Flash Flood
					Heavy rain flooded some local arroyos as they swelled to 5 feet in depth. Some cattle were caught in the high water and carried downstream.				
Phillips County Amherst	23	1900MST 2200MST			0	0			Flash Flood
					Flash flooding forced the closure of U.S. Highway 385 south of Julesburg and State Highway 176 from Amherst northeast to the Nebraska border as over 3.5 inches of rain/3.61/ reportedly fell in the area.				
Sedgwick County 10 S Julesburg	23	1900MST 2200MST			0	0			Flash Flood
Weld County 5 NW Carr	25	1337MST	0.1	25	0	0	0	0	Tornado (F0)
					A small landspout touched down briefly but did no damage.				
Arapahoe County Deer Trail	25	1530MST			0	0		0	Lightning
					A telephone switchboard was damaged by lightning. Long distance service was knocked out for approximately 18 hours.				
Logan County Crook	25	1530MST 1830MST			0	0			Flash Flood
					Heavy rain, up to 4.5 inches, caused flash flooding problems in and around Crook. Extensive flooding was reported as parts of the town were under 2 feet of water. In addition, several county roads in the immediate area were washed out.				
Clear Creek County Idaho Spgs	25	1600MST 1700MST			0	0		0	Flash Flood
					Torrential rainfall, 2 to 3 inches in less than an hour, triggered a flash flood in Virginia Canyon. County Road 279 between Idaho Springs and Central City, was closed for 2 days to clear off debris from mudslides. Several cars in Idaho Springs were washed off the road and numerous basements in town flooded.				
Adams County Aurora	25	1700MST 1900MST			0	0		0	Flash Flood

Storm Data and Unusual Weather Phenomena

July 1998

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

COLORADO, Central and Northeast

Arapahoe County

Englewood 25 1700MST
1900MST 0 0 0 **Flash Flood**

Denver County

Denver 25 1700MST
1900MST 0 0 0 **Flash Flood**

Denver County

Denver 25 1700MST
1900MST 0 0 0 **Lightning**

Heavy rain caused flooding and flash flooding in eastern and southern sections of Denver, Englewood and Aurora as approximately 2 to 3 inches of rain inundated the area. Interstates 25 and 70 were closed for 2 to 3 hours as several low lying areas became impassable due to the highwaters. The water level was estimated to be 15 feet deep in one flooded underpass along I-25. As a result the interstate was closed from south of 6th Avenue to University Blvd. Standing water forced the closure of I-70 at the Gun Club Road exit. Lightning also knocked out 11 transformers across Denver causing several small fires and scattered power outages.

In Englewood, U.S. Highway 385 was closed when highwater made it impassable. Several cars were reportedly floating down the roadway near Sheridan Blvd. In Aurora, the intersection at Yale and Chambers was flooded by highwater, up to 4 feet deep, when a spillway on High Line Canal was breached.

Adams County

1 N Strasburg 25 1720MST
1820MST 0 0 0 **Flash Flood**

Flood and flash flooding occurred north of Strasburg as 2.51 inches of rain fell in an hour. The deluge resulted in considerable flooding of local streets and county roads.

Arapahoe County

Deer Trail 25 1945MST 0 1 0 **Lightning**

A woman was injured when lightning struck a nearby telephone pole. She sustained burns to her head and right shoulder.

Arapahoe County

Englewood 22 1800MST 0 0 0 **Lightning**

Lightning sparked a fire which caused extensive damage. Most of the second floor was destroyed.

Arapahoe County

4 W Byers 24 1450MST 0.2 25 0 0 0 0 **Tornado (F0)**
1453MST

A small landspout touched down but did no damage.

Arapahoe County

3 N Deer Trail 24 1730MST
2100MST 0 0 0 **Flash Flood**

Heavy rain caused flooding and flash flooding problems along small creeks and streams near Deer Trail. Some local roads and bridges were covered by the highwaters. A trained spotter, 3 miles north of Deer Trail, measured 3.5 inches of rainfall.

Washington County

5 S Last Chance 29 1440MST 0 0 0 **Hail (1.00)**

Washington County

18 S Akron 29 1645MST
1656MST 0 0 0 **Hail (1.75)**

Washington County

18 S Akron 29 1647MST 0 0 0 **Thunderstorm Wind (G58)**

Washington County

1 SW Elba 29 1648MST 0 0 0 **Hail (1.00)**

Douglas County

Castle Rock to Parker 30 1330MST
1430MST 0 0 0 **Flash Flood**

Heavy rain, up to 3 inches in an hour, caused flash flooding problems from Castle Rock to Parker. Interstate 25, north of Castle Rock, was closed as highwaters covered sections of the highway. Some cars were left floating in the floodwaters.

Elbert County

Elizabeth 30 1500MST 0 0 0 **Thunderstorm Wind (G70)**

Damaging thunderstorm winds, estimated to be at least 80 mph (70 kts) knocked over several 70-foot ponderosa pines. A 10-foot cement wall was also blown over and a garage door blown in.

Lincoln County

10 NW Karval to 25 SE Karval 30 1530MST 0 0 0 **Flash Flood**

Storm Data and Unusual Weather Phenomena

July 1998

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

COLORADO, Central and Northeast

Torrential rain, between 3 and 5 inches, along with hail caused flooding and flash flooding across southern Lincoln County. Hail, up to 8 inches deep, covered the roadway just east of Karval. Snowplows had to be called out to clear the road. Portions of the roadway were impassable due to floodwaters. Flash flooding also occurred along State Highway 71, 10 miles northwest of Karval. The highway had to be closed until the floodwaters safely receded.

Clear Creek County

2 W Idaho Spgs 31 1414MST 0 0 0 **Hail (1.75)**

Gilpin County

Black Hawk 31 1415MST
1515MST 0 0 500K 0 **Flash Flood**

Heavy rain triggered a mudslide in Blackhawk. The mudslide blocked Main Street and caused an estimated \$500,000 in damage to the Golden Gate Casino.

Jefferson County

Buffalo Creek 31 1620MST
1730MST 0 0 0 **Flash Flood**

Heavy rain, up to 3 inches in an hour, caused a flash flood along Buffalo Creek. Portions of County Road 126, just south of the town of Buffalo Creek, were washed out. The floodwaters near washed away the bridge as mud and debris slammed into the structure. It was almost 2 years to the day that a deadly flash flood rushed through the small town killing 2 residents.

COLORADO, East Central

Yuma County

5 N Wray 01 2315MST 0 0 **Funnel Cloud**

Yuma County

2.5 N Yuma 01 2320MST 0 0 **Thunderstorm Wind (G52)**
Law enforcement estimated 60 mph wind.

Kit Carson County

5.5 S Seibert 09 1738MST 0 0 **Hail (0.75)**

Yuma County

4 SE Eckley 11 1810MST 0 0 **Hail (1.00)**

Yuma County

2 N Wray 11 1830MST 0 0 **Hail (1.00)**

Kit Carson County

7 N Flagler 13 1230MST 0 0 **Hail (0.75)**

Kit Carson County

3 NW Flagler 13 1300MST 0 0 **Hail (0.75)**

Cheyenne County

16 NNE Kit Carson 13 1500MST 0 0 **Hail (1.00)**

Also, nickel sized hail reported 14 NNE Kit Carson at 1500 MST.

Cheyenne County

6 NW Cheyenne Wells 13 1815MST 0 0 6K **Dry Microburst**

A possible heat burst from high altitude blew a roof from a shed.

Cheyenne County

6 E Kit Carson 13 1815MST 0 0 3K **Dry Microburst**

A possible heat burst from high altitude blew a roof from a shed.

Kit Carson County

4 NNW Seibert 15 1935MST 0 0 **Hail (0.75)**

Yuma County

10 S Eckley 15 2018MST 0 0 **Thunderstorm Wind (G52)**

Wind estimated at 60 mph or greater brought down limbs 3 to 4 inches in diameter.

Cheyenne County

7.5 N Wild Horse 25 1945MST 0 0 **Thunderstorm Wind (G57)**

Estimated 60 to 70 mph winds.

Kit Carson County

14 N Burlington 25 2052MST 0 0 **Thunderstorm Wind (G52)**

Cheyenne County

Kit Carson 25 2146MST 0 0 **Flash Flood**

26 0045MST

Two to three feet of water west of Highway 287 junction.

Yuma County

2 S Hale 29 1535MST 0 0 **Hail (0.75)**

Storm Data and Unusual Weather Phenomena

July 1998

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

COLORADO, East Central

Kit Carson County

7 N Burlington	29	1745MST 2045MST							Flash Flood
----------------	----	--------------------	--	--	--	--	--	--	-------------

Water over U.S. Highway 385 from heavy rainfall.

COLORADO, South Central and Southeast

Pueblo County

5 WNW Pueblo West to 2 ESE Pueblo West	01	1645MST 1741MST	7	50	0	0	7K		Tornado (F0)
---	----	--------------------	---	----	---	---	----	--	--------------

A tornado touched down 5 miles west-northwest of Pueblo West and tracked east-southeast, finally dissipating 2 miles east-southeast of Pueblo West. The tornado tossed two overhead campers at a dealership into the air but produced little damage elsewhere.

Crowley County

15 W Ordway	01	1756MST 1801MST			0	0			Hail (0.75)
-------------	----	--------------------	--	--	---	---	--	--	-------------

Kiowa County

Haswell	01	1900MST 1905MST			0	0			Hail (1.00)
---------	----	--------------------	--	--	---	---	--	--	-------------

Kiowa County

9 E Haswell	01	2025MST 2030MST			0	0			Hail (1.00)
-------------	----	--------------------	--	--	---	---	--	--	-------------

Kiowa County

13 SW Haswell	01	2110MST 2115MST			0	0			Hail (0.75)
---------------	----	--------------------	--	--	---	---	--	--	-------------

El Paso County

5 W Colorado Spgs	01	1532MST 1605MST			0	0			Funnel Cloud
-------------------	----	--------------------	--	--	---	---	--	--	--------------

A long-lived funnel cloud was seen descending about 1/2 way to the ground by people in Colorado Springs as a thunderstorm moved off the mountains west of the city.

Kiowa County

Haswell	01	2030MST 2115MST			0	0			Flood
---------	----	--------------------	--	--	---	---	--	--	-------

1.43 inches of rain fell in one hour, causing flooding of Highway 96 and several roads in the town of Haswell.

Pueblo County

5 W Pueblo West	01	1648MST 1653MST			0	0			Hail (0.75)
-----------------	----	--------------------	--	--	---	---	--	--	-------------

El Paso County

3 E Colorado Spgs	03	1458MST 1503MST			0	0			Hail (0.75)
-------------------	----	--------------------	--	--	---	---	--	--	-------------

El Paso County

5 NE Colorado Spgs	03	1420MST 1425MST			0	0			Hail (1.50)
--------------------	----	--------------------	--	--	---	---	--	--	-------------

El Paso County

5 NE Colorado Spgs	03	1425MST 1430MST			0	0			Hail (1.00)
--------------------	----	--------------------	--	--	---	---	--	--	-------------

El Paso County

7 NE Colorado Spgs	03	1428MST 1433MST			0	0			Hail (0.75)
--------------------	----	--------------------	--	--	---	---	--	--	-------------

El Paso County

2 E Colorado Spgs	03	1430MST 1435MST			0	0			Hail (0.75)
-------------------	----	--------------------	--	--	---	---	--	--	-------------

El Paso County

6 NE Colorado Spgs	03	1431MST 1436MST			0	0			Hail (0.75)
--------------------	----	--------------------	--	--	---	---	--	--	-------------

El Paso County

5 E Colorado Spgs	03	1432MST 1437MST			0	0			Hail (0.75)
-------------------	----	--------------------	--	--	---	---	--	--	-------------

Kiowa County

3 N Towner	06	1409MST 1414MST			0	0			Hail (1.00)
------------	----	--------------------	--	--	---	---	--	--	-------------

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Huerfano County 3 SW Cuchara	06	1417MST 1422MST			0	0			Hail (0.75)
El Paso County 3 SSW Colorado Spgs	06	1600MST			0	0	50K		Lightning Lightning struck a roof and ignited a two-alarm fire in the attic of a second floor apartment unit. No one was injured.
Prowers County 26 SSW Holly	07	1605MST			0	0			Thunderstorm Wind (G70)
Prowers County 28 S Holly	07	1635MST 1640MST			0	0			Hail (1.50)
Baca County 30 ENE Springfield	07	1655MST 1700MST			0	0			Hail (1.25)
Baca County 25 ENE Springfield	07	1805MST 1810MST			0	0			Hail (0.75)
Baca County Vilas to Walsh	07	1830MST 2030MST			0	0			Flood Slow moving thunderstorms produced 2 to 6 inches of rainfall across Baca county, causing flooding of low-lying areas, ditches, and roads near the towns of Vilas and Walsh. Water 200 to 300 yards wide was moving across county roads near Vilas, and private homes, basements, and the high school in both Vilas and Walsh were flooded.
Crowley County 12 NW Ordway	09	1545MST			0	0			Thunderstorm Wind (G52)
Crowley County 14 NNW Ordway	09	1620MST			0	0			Thunderstorm Wind (G52)
El Paso County 5 NE Colorado Spgs	10	1300MST			0	0	85K		Lightning Two houses were damaged due to fires caused by lightning strikes. The strikes occurred between 2 p.m. and 2:45 p.m. One strike caused \$10,000 worth of damage; and the other caused \$75,000 worth of damage.
Baca County 15 ENE Two Buttes	12	1640MST 1645MST			0	0			Hail (1.00)
Baca County Bartlett	12	1720MST 1725MST			0	0			Hail (0.88)
Baca County 13 E Two Buttes	13	1556MST 1601MST			0	0			Hail (1.00)
Baca County Two Buttes	13	1725MST 1730MST			0	0			Hail (0.75)
Bent County 5 WSW Mc Clave	14	2033MST 2038MST			0	0			Hail (0.88)
El Paso County 2 SE Peyton	15	1425MST 1430MST			0	0			Hail (1.00)
Las Animas County 1 E Stonewall	16	1207MST 1212MST			0	0			Hail (0.75)
Las Animas County Hoehne	16	1435MST 1440MST			0	0			Hail (0.75)
Las Animas County Hoehne	16	1500MST 1505MST			0	0			Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Crowley County 15 NW Crowley	16	1610MST 1615MST			0	0			Hail (1.75)
Saguache County 3 S Crestone	16	1630MST 1635MST			0	0			Hail (0.75)
Pueblo County 18 E Pueblo	16	1705MST 1710MST			0	0			Hail (0.88)
Otero County 1 NW Timpas	16	1758MST 1803MST			0	0			Hail (0.75)
Alamosa County 18 NE Alamosa	18	1656MST 1701MST			0	0			Hail (0.75)
Otero County Timpas	23	1400MST 1405MST			0	0			Hail (0.75)
Bent County 5 ESE Mc Clave	23	1830MST			0	0			Thunderstorm Wind (G52)
Prowers County 2 WNW Wiley	23	1835MST 1840MST	50	50	0	0			Tornado (F0)
A tornado briefly touched down 2 miles west northwest of the town of Wiley. No known damage occurred.									
Prowers County 1 E Lamar	23	1855MST 1900MST			0	0			Hail (0.75)
Prowers County Holly	23	1935MST			0	0			Thunderstorm Wind (G52)
Bent County 9 S Caddoa	24	1420MST			0	0			Thunderstorm Wind (G61)
Prowers County Lamar	24	1527MST 1532MST			0	0			Hail (0.88)
El Paso County Security	24	1824MST 1829MST			0	0			Hail (0.75)
Prowers County 4 NW Lamar	24	2100MST 2200MST			0	0			Flash Flood
Scattered thunderstorms produced rainfall rates of 1 to 2 inches per hour over previously saturated ground. At least 6 inches of water was reported flowing across parts of highway 196 northwest of Lamar.									
Otero County Timpas	25	1719MST 1724MST			0	0			Hail (0.75)
Otero County La Junta Arpt	25	1758MST			0	0			Thunderstorm Wind (G52)
Kiowa County 1 W Haswell	25	1857MST 1902MST			0	0			Hail (0.75)
Baca County Walsh	26	1800MST 2100MST			0	0			Urban/Sml Stream Fld
Slow moving thunderstorms produced 3 to 5 inches of rain near the town of Walsh. Due to the already saturated ground from previous storms, the heavy rainfall produced flooding in basements and low lying areas in town.									
Rio Grande County Del Norte	29	1205MST 1210MST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

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

COLORADO, South Central and Southeast

El Paso County

7 NNE Colorado Spgs 29 1400MST 1405MST 0 0 Hail (0.75)

El Paso County

4 ENE Colorado Spgs 29 1404MST 1409MST 0 0 Hail (1.00)

El Paso County

6 ENE Colorado Spgs 29 1410MST 1415MST 0 0 Hail (1.00)

El Paso County

5 ENE Colorado Spgs 29 1413MST 1418MST 0 0 Hail (0.75)

Kiowa County

1 S Eads 29 1815MST 1820MST 0 0 Funnel Cloud

A funnel cloud was spotted by law enforcement 1 mile south of Eads crossing Highway 287.

Saguache County

10 WNW Saguache 31 1315MST 1320MST 0 0 Hail (0.75)

Custer County

5 NE Westcliffe 31 1535MST 1540MST 0 0 Hail (1.75)

Custer County

5 NE Westcliffe 31 1600MST 1920MST 0 0 Flash Flood

Slow moving thunderstorms brought heavy rain to parts of Custer county in the evening. Radar-estimated rainfall rates of 3 to 5 inches fell near the town of Westcliffe, washing out parts of Highway 255, 5 miles northeast of Westcliffe. In addition, heavy rain and 1/2 inch diameter hail, 5 inches deep on the ground, closed Highway 165 between mile marker 8 and 10 in eastern Custer county.

Custer County

10 ENE Westcliffe 30 1325MST 1330MST 0 0 Hail (0.75)

Custer County

10 SE Westcliffe 30 1435MST 1440MST 0 0 Hail (0.75)

Kiowa County

Galatea 30 1830MST 1840MST 0 0 Hail (1.00)

Pueblo County

Pueblo Muni Arpt 30 1801MST 1806MST 0 0 Hail (1.00)

Bent County

5 WNW Las Animas 30 1925MST 1935MST 200 50 0 0 Tornado (F0)

A fire department in Bent county reported a tornado touchdown 5 miles northwest of Las Animas. No known damage occurred.

Saguache County

Saguache 30 1135MST 1155MST 0 0 Small Hail

Pea to marble-sized hail fell, creating a 1 inch layer of hail on the ground on Highway 285 across Poncha Pass. The hail caused a car to slide off the highway.

El Paso County

Central Portion to Colorado Spgs 30 1500MST 2000MST 0 0 Flash Flood

Slow moving thunderstorms produced an estimated 4 to 5 inches of rainfall in central El Paso county and in Security in the afternoon and early evening. Flooding began at 4 pm when Brackett Creek, 3 miles southwest of Peyton, flowed out of its banks. At 5:15 pm numerous intersections in Security were reported flooded with as much as 2 to 3 feet of water. Many vehicles were stalled and businesses flooded as well. Flood waters left up to a foot of mud in low lying areas, swept away fencing and washed away landscaping. At 6:45 pm a 10-foot section of the on-ramp to the Hamisch-Ramah Highway, 2 miles north of Calhan, was reported washed out. At 6:49 pm a rock and mud slide caused by heavy rains blocked Highway 24, one mile north of Manitou Springs.

Storm Data and Unusual Weather Phenomena

July 1998

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

COLORADO, South Central and Southeast

Bent County

4 NE Hasty	01	2005MST 2007MST			0	0			Funnel Cloud
------------	----	--------------------	--	--	---	---	--	--	--------------

El Paso County

5 ENE Colorado Spgs	03	1437MST 1438MST	0.1	50	0	0			Tornado (F0)
---------------------	----	--------------------	-----	----	---	---	--	--	--------------

A brief tornado touched down at Henry Elementary School on the east side of Colorado Springs. A heating unit on the roof was knocked over, opening a large hole in the roof. Heavy rain then came in through the roof and caused some minor flood damage in the school.

Prowers County

1 N Lamar	27	1125MST 1130MST	0.5	25	0	0			Tornado (F0)
-----------	----	--------------------	-----	----	---	---	--	--	--------------

A brief tornado was witnessed slowly moving south through open country and between two mobile homes on separate properties.

El Paso County

10 SE Colorado Spgs	29	1352MST 1357MST			0	0			Funnel Cloud
---------------------	----	--------------------	--	--	---	---	--	--	--------------

COLORADO, West

Garfield County

3 SE Parachute	22	1800MST			0	0	50K		Lightning
----------------	----	---------	--	--	---	---	-----	--	-----------

Lightning struck the swamp cooler on a house, blowing holes in the water pipe connected to the swamp cooler. The perforated water pipe resulted in extensive damage to the interior of the house.

Ouray County

3 SW Ouray to .5 SW Ouray	26	1600MST 1630MST			0	0	20K		Flash Flood
------------------------------	----	--------------------	--	--	---	---	-----	--	-------------

Heavy rainfall caused a wall of water filled with boulders, logs, and sediment to race down Weehawken Creek, then into Canyon Creek, and finally into Box Canyon. A parked car near the Weehawken trailhead was half buried in mud and a 20-foot section of catwalk near Box Canyon Falls was destroyed. The flash flood also cut out a new channel near Box Canyon Falls.

Delta County

10 NW Delta	06	1415MST 1430MST			0	0			Funnel Cloud
-------------	----	--------------------	--	--	---	---	--	--	--------------

Mesa County

4 E Molina	30	1235MST 1310MST			0	0			Funnel Cloud
------------	----	--------------------	--	--	---	---	--	--	--------------

Three funnel clouds spawned by the same thunderstorm cell developed over the same general location. The first funnel cloud was described by many eyewitnesses as a "midwest type" funnel cloud, unusually large for western Colorado. The duration of the first funnel cloud was 18 minutes and it extended no more than a third of the way to the ground. The first funnel cloud was followed immediately by two smaller funnel clouds occurring simultaneously and close together. The hang distance of the two smaller funnel clouds was about the same as the first. The duration of the smaller funnel clouds was 12 minutes for one and 17 minutes for the other.

Archuleta County

15 ENE Chromo	07	1900MST 1930MST			0	0	1K		Flash Flood
---------------	----	--------------------	--	--	---	---	----	--	-------------

Heavy rainfall resulted in flash flooding and mudslides which damaged two roads on private land.

Eagle County

4.5 E Basalt	25	1500MST 1530MST			0	0	40K		Flash Flood
--------------	----	--------------------	--	--	---	---	-----	--	-------------

Monsoonal rains produced a ten foot wall of silt-laden water down Seven castles Creek, and into the Fryingpan River. The large quantity of silt in the river suffocated an undetermined amount of rainbow trout in the Fryingpan River in the five-mile stretch between the Seven Castles Creek and the Fryingpan's confluence with the Roaring Fork River. Several sediment traps were inundated with debris.

Lake County

Leadville	19	1310MST			0	0	10K		Lightning
-----------	----	---------	--	--	---	---	-----	--	-----------

Lightning struck a shed behind Westpark School initiating a fire. The fire consumed the shed and its contents.

Lake County

Leadville	04	1400MST			0	2	1K		Lightning
-----------	----	---------	--	--	---	---	----	--	-----------

Lightning struck a telephone junction box and traveled through the phone lines into two residences, destroying the phones and scorching the interior walls near the phones. One person in each residence was knocked down by the lightning strike, each receiving only very minor injuries.

Mesa County

4 SW Grand Jct	23	1600MST 1640MST			0	0	1K		Flash Flood
----------------	----	--------------------	--	--	---	---	----	--	-------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>COLORADO, West</u>									
Rio Blanco County 5 SW Rangely to 17 W Meeker	14	1700MST 1730MST			0	0			Wild/Forest Fire
									Lightning sparked at least a dozen fires primarily on public lands.
Archuleta County 12 NW Pagosa Spgs	24	2000MST 2200MST			0	0			Heavy Rain
									1.75 inches of rain fell within a two hour period.
Mesa County Grand Jct	29	1830MST 1930MST			0	0	400K		Heavy Rain
									Heavy rainfall estimated from radar to be about two inches within an hour fell in the downtown area of Grand Junction. Water accumulated up to three feet deep in places, resulting in flooding of many homes and businesses, as well as some damage to streets.
Garfield County 2 S Rifle	22	1600MST 1620MST			0	0			Wild/Forest Fire
									Lightning ignited several forest and brush fires on Grass Mesa.
Pitkin County 8.5 SSW Aspen	21	1620MST 1640MST			0	0			Flash Flood
									Heavy rainfall resulted in a flow of mud and debris several feet deep across a 25 foot stretch of Maroon Creek Road.
Pitkin County 4 S Aspen	27	0800MST 0830MST			0	0			Flash Flood
									Heavy rainfall over a two to three hour period caused a flow of mud and rock several feet deep to cover a 50 foot stretch of Castle Creek Road.
La Plata County 2 N Durango	08	1430MST 1530MST			0	0			Heavy Rain
									1.34 of an inch of rain fell within an hour.
Mesa County 1 S Fruita	10	1930MST 2010MST			0	0			Thunderstorm Wind (G50)
									An intense thunderstorm produced 1.12 inches of rain within 40 minutes as well as a gust to 50 knots (58 MPH). The storm knocked out electrical power for a while in Fruita, Glade Park and in the Redlands .
Montezuma County 15 W Cortez to 10 NW Cortez	19	1340MST			0	0			Wild/Forest Fire
									Lightning ignited two brush and forest fires.
Mesa County 4 W Grand Jct	23	1730MST 1735MST			0	0	0.30K		Thunderstorm Wind
									A microburst near the Redlands Parkway Bridge blew down large tree branches and a power line. The wind also blew over construction equipment and sent a large industrial dumpster rolling across a road.
Delta County Crawford	25	1300MST 1340MST			0	0			Heavy Rain
									1.10 inches of rain fell within 40 minutes.
Montrose County Paradox	26	1615MST 1630MST			0	0			Heavy Rain
									0.75 of an inch of rain fell within 15 minutes resulting in minor flooding of streets and small streams in the area.
Montezuma County 8 E Cortez	18	1712MST			0	0	2K		Lightning
									Lightning struck a transformer bank resulting in a power loss to nearly 1500 consumers in the east part of Cortez for about an hour.
Pitkin County 4 NE Redstone to 5 N Redstone	31	1400MST 1430MST			0	0			Flash Flood
									A four foot wall of water came roaring down Avalanche Creek and washed out a section of a trail near a campground.

Storm Data and Unusual Weather Phenomena

July 1998

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

COLORADO, West

Montezuma County 8 NE Dolores	16	1430MST			0	0			Wild/Forest Fire Lightning ignited a fire in the San Juan National Forest. Ten acres of Gambel Oak and Ponderosa Pine were burned.
Montezuma County Towaoc	31	1658MST			0	0			Lightning Lightning struck a substation, knocking out power to the entire town of Cortez and Towaoc for about one-half hour.
Montezuma County Cortez	16	1435MST 1445MST			0	0			Thunderstorm Wind (G50) A tree was blown against a power line, knocking out power to more than 400 consumers for about 45 minutes.
Montezuma County 1 SE Cortez	19	1300MST 1305MST			0	0			Thunderstorm Wind (G50) Power lines were blown together which knocked out power to 580 consumers for about 1.5 hours.

CONNECTICUT, Northeast

Hartford County Hartford	01	0000EST			0	0			Flood South Branch of Park River
Hartford County Southington	01	0000EST 0740EST			0	0			Flood Quinnipiac River Heavy rain which fell on June 30th resulted in the continued flooding of two small streams in Hartford County into July 1st. The South Branch of the Park River in Hartford had reached flood stage at 9:45 PM on June 30th, crested at 9.85 feet at 10:30 PM, and then fell back below flood stage right at midnight at the start of July 1st. The Quinnipiac River in Southington had reached flood stage at 6:10 PM on June 30th, crested at 4.24 feet at 8:39 PM, then fell below flood stage at 8:40 AM on July 1st. No other flooding was reported during the rest of the month of July.
Hartford County Windsor	20	1645EST			0	0			Hail (0.88) Nickel size hail was reported during a late afternoon thunderstorm. Time approximate.
Hartford County Suffield	23	1158EST			0	0			Hail (0.88)
Hartford County East Windsor	23	1210EST			0	0			Thunderstorm Wind (G50)
Hartford County New Britain	23	1245EST			0	0	8K		Lightning A severe thunderstorm produced nickel size hail in Suffield in Hartford County. Lightning hit a chimney in New Britain, starting a fire. The fire was quickly extinguished and confined to the attic, but two third floor apartments were rendered uninhabitable. Thunderstorms brought large tree limbs down onto wires in East Windsor. Power outages affected up to 1,500 customers in the Hartford area.

CONNECTICUT, Northwest

Litchfield County Washington	17	1945EST			0	0	9K		Thunderstorm Wind A cold front moving east from New York State touched off a severe thunderstorm in Litchfield County. Wind blew down trees in in the town of Washington.
Litchfield County Barkhamsted	20	1700EST			0	0	2.5K		Thunderstorm Wind
Litchfield County Colebrook	20	1700EST			0	0	3K		Thunderstorm Wind
Litchfield County Falls Vlg	20	1700EST			0	0	2K		Thunderstorm Wind A cold front moving east from New York State produced widely scattered severe thunderstorms across Litchfield County. The storms produced winds strong enough to down trees and power lines. Torrential rain also accompanied these storms.

CONNECTICUT, Southern

New Haven County Wallingford	01	0000EST 1235EST			0	0			Flood Heavy rain from thunderstorms caused the Quinnipiac River at Wallingford to rise above its' flood stage from June 30th at 2:20 pm EST until July 1st at 12:35 pm EST. The crest stage of 7.60 feet occurred at midnight and was 0.60 feet above flood stage.
--	----	--------------------	--	--	---	---	--	--	--

Storm Data and Unusual Weather Phenomena

July 1998

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

CONNECTICUT, Southern

New Haven County

Wolcott **17** **2030EST** **0** **0** **Lightning**
 As thunderstorms moved across the area, they produced frequent lightning and heavy rain. Lightning struck a chimney at 42 Paul Street in Wolcott. The chimney exploded causing bricks to fall on the front yard. Lightning also ignited a fire that spread to a wall closest to the chimney.

New Haven County

Meriden **20** **1816EST** **0** **0** **Thunderstorm Wind (G56)**
 As a severe thunderstorm moved across the area, a weather station at the School of Our Lady of Mt. Carmel (WxNet) measured a wind gust to 64 mph.

Fairfield County

Bridgeport **23** **1310EST** **0** **0** **Lightning**
 As thunderstorms moved across the area, they produced frequent lightning along with heavy rain. Lightning struck a house on Magnolia Street in Bridgeport. The extent of the damage is unknown.

DELAWARE

New Castle County

Wilmington **21** **1750EST** **0** **0** **0** **Thunderstorm Wind**
 A severe thunderstorm knocked down a few trees across New Castle County. The worst damage occurred within Wilmington where downed trees blocked at least one roadway.

DEZ001>004

New Castle - Kent - Inland Sussex - Delaware Beaches

20 **0900EST** **0** **8** **Excessive Heat**
24 **1700EST**

A heat wave affected Delaware during the work week of July 20th. The hottest day for the heat wave and the summer (in central and southern Delaware) was the 22nd. There were at least eight heat related injuries throughout the state. A weak trough brought in slightly cooler air on the 23rd. A strong cold front that moved through the Delmarva Peninsula early in the day on the 24th brought in a much drier and cooler air mass for the upcoming weekend (July 25th and 26th). The highest temperatures included 100 degrees in Lewes (Sussex County), 99 degrees in Georgetown (Sussex County), 98 degrees in Bridgeville (Sussex County), 96 degrees in Dover (Kent County), 94 degrees in Odessa (New Castle County) and 92 degrees at the New Castle County Airport. For three consecutive days, customers of Delmarva Power and Light set power usage records and reached 3,053 megawatts at 6 p.m. EDT on the 22nd.

DEZ001>004

New Castle - Kent - Inland Sussex - Delaware Beaches

31 **2359EST** **0** **0** **0** **Unseasonably Dry**

July 1998 started a run of drier than normal weather across much of Delaware. On a county weighted average, rainfall totals for the month of July were between 1.7 and 2.4 inches and averaged about half of normal. The driest conditions occurred across Sussex County. In Sussex County, only 45 percent of the normal July rainfall fell. The monthly rainfall total at the New Castle County Airport was 2.18 inches.

DISTRICT OF COLUMBIA

DCZ001

District Of Columbia

20 **1100EST** **0** **0** **Excessive Heat**
23 **1700EST**

After an unusually pleasant start to the month, a singular heat wave affected the Washington metropolitan region during the climatological peak of highest annual temperatures. The heat wave, caused by the combination of hot and humid air associated with "Bermuda" high pressure and increasingly dry ground, caused temperatures to soar into the mid and upper 90s. The heat index, however, equalled or exceeded 100 each afternoon.

Urban heat advisories were in effect in advance of the episode; the city employed a task force to operate emergency cooling centers and check on the at-risk elderly in un-air conditioned homes. This heat wave was less tolerable than those in recent years since much of the summer had been cooler and less humid than normal.

District Of Columbia

**Northwest Portion to
Northeast Portion**

21 **1745EST** **0** **0** **20K** **Thunderstorm Wind**
1755EST

A potent strong to severe thunderstorm whipped through the District of Columbia during the early evening, knocking down dozens of large limbs, some trees, and numerous wires from upper Northwest through portions of Northeast. Tens of trees were knocked down at the National Arboretum. Potomac Electric Power Co reported 95,000 customers were without power in the metropolitan region, 7,500 within the city proper.

FLORIDA, East Central

Orange County

2 SW Bithlo **03** **1630EST** **0** **0** **Hail (0.75)**

Storm Data and Unusual Weather Phenomena

July 1998

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

FLORIDA, East Central

Volusia County Orange City	19	1330EST			0	0			Thunderstorm Wind (G50)
Thunderstorm winds blew down trees in Orange City.									
Seminole County Sanford Arpt	19	1350EST			0	0	5K		Thunderstorm Wind (G50)
Thunderstorm winds flipped a small airplane at the Sanford Airport.									
Osceola County Kissimmee	19	1535EST			0	0			Thunderstorm Wind (G50)
A trained spotter measured wind gusts of 59 mph in Kissimmee.									
Seminole County Longwood	03	1630EST			0	0	65K		Thunderstorm Wind (G65)
Severe thunderstorm winds blew down trees and power lines, overturned 7 tractor trailer trucks and damaged the doors on a large warehouse near Longwood.									
Volusia County Port Orange	28	1450EST	0.3	50	0	0	100K		Tornado (F0)
An F0 tornado touched down in a mobile community near Port Orange damaging 33 mobile homes and producing severe damage to two. The tornado also blew down trees and power lines.									
Volusia County New Smyrna Beach	28	1530EST			0	0			Thunderstorm Wind (G50)
Strong thunderstorm winds blew down a large tree in New Smyrna Beach.									
Orange County 6 SW Orlando	31	1740EST			0	0			Hail (0.75)
Orange County 6 SW Orlando	31	1740EST			0	0	80K		Thunderstorm Wind (G70)
Strong thunderstorm winds blew down hundreds of trees and damaged the roof of a Mc Donalds fast food store at the Disney area of southwest Orange County. The roof of a Hyatt Hotel was also damaged.									
Brevard County Countywide	01 10	0000EST 0000EST			0	52	200M		Wild/Forest Fire
Seminole County Countywide	01 10	0000EST 0000EST			0	2	30M		Wild/Forest Fire
Volusia County Countywide	01 10	0000EST 0000EST			0	11	150M		Wild/Forest Fire
The excessive heat and lack of rain that existed over east central Florida for much of June and July resulted in wild fires beginning in June and spreading over huge areas of Volusia and Brevard counties in late June and early July. Wild fires were also reported in Orange and Seminole counties. Hundreds of firefighters were called in from all over the Nation to help battle the fires. No major population centres were threatened but a huge battle was waged to keep the fires out of the towns of Mims and Scottsmeer. Residents of the area suffered may days of breathing heavy smoke that significantly reduced visibility. At one point Interstate 95 was closed through northern Brevard and Volusia counties. Little could be done except to protect homes and populated areas until rains began to fall after the first week in July. In east central Florida about 300,000 acres of land burned including 62 homes and 7 businesses. About 70 people were injured while fighting or fleeing the fires. There were no fatalities. Total damages were estimated at \$300 million.									

FLORIDA, Northeastern

Putnam County Buffalo Bluff	06	1500EST			0	0			Hail (0.75)
---------------------------------------	-----------	----------------	--	--	----------	----------	--	--	--------------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Northeastern									
Putnam County									
Palatka	06	1530EST			0	0	2K		Thunderstorm Wind
			Large trees were uprooted.						
Alachua County									
Santa Fe	06	1645EST			0	0	2K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Marion County									
Ocala	05	1800EST			0	0	3.5K		Thunderstorm Wind
			Large trees were blown down between 8th and 10th Street.						
Duval County									
Arlington	31	1900EST			0	0	2.5K		Thunderstorm Wind
			Large trees were blown down near the Regency Mall.						
Putnam County									
Melrose	31	2000EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down SR-207.						
St. Johns County									
St Augustine	31	2015EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Duval County									
1 E Jacksonville Beach to 1 NE Jacksonville Beach	28	1830EST 1835EST			0	0			Waterspout
Putnam County									
Welaka	26	1630EST			0	0	5.5K		Thunderstorm Wind
			Roof was blown off a bakery.						
Putnam County									
East Palatka	22	1410EST			0	0			Hail (0.75)
St. Johns County									
Hastings	22	1440EST			0	0			Hail (0.75)
St. Johns County									
Hastings	21	1445EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down along CR-207.						
St. Johns County									
Hastings	20	1500EST			0	0	4.5K		Thunderstorm Wind
			Storage building and fence destroyed. Two semi's were moved.						
St. Johns County									
Switzerland	19	1515EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Duval County									
Bayard	19	1545EST			0	0			Hail (0.88)
Union County									
Worthington Spgs to Worthington	19	1411EST			0	0	15K		Thunderstorm Wind
			Barn damaged. Large trees and power lines were blown down.						
Duval County									
Jacksonville	19	1435EST			0	0	3K		Thunderstorm Wind
			Large trees and power lines were blown down along Phillips HWY on the Southside.						
Nassau County									
Yulee	19	1440EST			0	0	1K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Suwannee County									
Live Oak	15	1850EST 2000EST			0	0	15K		Flood
			Flooding caused a sink hole on CR-49.						
St. Johns County									
St Augustine	16	0824EST			0	0	10K		Flood
			San Carlos Avenue between San Marco and Ponce... Marine and King Streets, and portions of Old A1A from near SR-3 to SR-312 were closed.						

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Northeastern									
Putnam County 1 S Bostwick	11	1533EST			0	0	15K		Thunderstorm Wind
									Downbust. Porch roof ripped off a home along HWY 17. Trees were broken off and twisted.
Nassau County 1 SW American Beach to American Beach	12	1900EST			0	0			Waterspout
Columbia County Lake City	12	1300EST			0	0	1.5K		Thunderstorm Wind
									Large trees and power lines were blown down.
St. Johns County Hastings	03	1720EST			0	0	25K		Thunderstorm Wind
									Six homes with roof damage.
Putnam County East Palatka	03	1735EST			0	0	1.5K		Thunderstorm Wind
									Large trees and power lines were blown down.
Clay County Penney Farms	03	1834EST			0	0	1.5K		Thunderstorm Wind
									Large trees and power lines were blown down.
Putnam County Palatka	03	1834EST			0	0	2.5K		Thunderstorm Wind
									Large trees and power lines were blown down.
Flagler County 4 S Bunnell	03	1730EST			0	0	2.5K		Thunderstorm Wind
									Large trees and power lines were blown down.
Clay County Middleburg	02	1730EST			0	0			Thunderstorm Wind (G60)
Duval County Ft George Is	02	1830EST			0	0	3K		Thunderstorm Wind
									Large trees were blown down.
Nassau County Yulee	02	1830EST			0	0	1.5K		Thunderstorm Wind
									Large trees and power lines were blown down.
Hamilton County White Spgs	01	1855EST			0	0			Hail (0.88)
Hamilton County Jasper	01	1857EST			0	0			Hail (0.88)
Suwannee County Live Oak	01	1603EST			0	0			Hail (1.00)
Alachua County Gainesville	10	0001EST			0	0			Wild/Forest Fire
									7205 acres, One business destroyed.
Baker County Macclenny	10	0001EST			0	0			Wild/Forest Fire
									105 acres.
Bradford County Starke	10	0001EST			0	0			Wild/Forest Fire
									2100 acres, two homes destroyed, four vehicles destroyed or damaged.
Clay County Green Cove Spgs	10	0001EST			0	2			Wild/Forest Fire
									6,700 acres, two homes destroyed.
Columbia County Lake City	10	0001EST			0	4			Wild/Forest Fire
									19,500 acres
Duval County Jacksonville	10	0001EST			0	0			Wild/Forest Fire
									5,975 acres, one home and one business destroyed.
Flagler County Bunnell	10	0001EST			0	2			Wild/Forest Fire

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Northeastern									
75,000 acres, 51 homes destroyed, 179 damaged. Twelve vehicles destroyed or damaged. Mandatory evacuation.									
Gilchrist County									
Trenton	10	0001EST			0	0			Wild/Forest Fire
40 acres.									
Hamilton County									
Jasper	10	0001EST			0	0			Wild/Forest Fire
125 acres, 5 homes destroyed and two vehicles destroyed or damaged.									
Marion County									
Ocala	10	0001EST			0	0			Wild/Forest Fire
3,000 acres, 4 homes and one business destroyed.									
Nassau County									
Yulee	10	0001EST			0	0			Wild/Forest Fire
2,727 acres, 6 homes and 12 businesses destroyed.									
Putnam County									
Palatka	10	0001EST			0	5			Wild/Forest Fire
7,800 acres, four businesses destroyed, one vehicle.									
St. Johns County									
St Augustine	10	0001EST			0	1			Wild/Forest Fire
10,440 acres, 8 homes and three businesses destroyed									
Suwannee County									
Live Oak	10	0001EST			0	0			Wild/Forest Fire
Union County									
Lake Butler	10	0001EST			0	0			Wild/Forest Fire
13,000 acres.									
Florida's wildfires began on May 25, 1998 and burnt parts of Northeast Florida. A large area of high pressure settled over Florida in the late Spring, keeping the traditional thunderstorms from forming. Lightning sparked most of the brush fires in hard to reach dry woods. Total cost across Northeast Florida will exceed \$200 million.									
St. Johns County									
Ponte Vedra	02	1835EST			0	0	50K		Thunderstorm Wind
More than a dozen large trees were snapped off by the wind on Creek's Edge Court in Sawgrass Players Club. Several homes were damaged by falling trees and wind.									
St. Johns County									
1 E Ponte Vedra Beach to 1.2 E Ponte Vedra Beach	02	1840EST			0	0			Funnel Cloud
Suwannee County									
8 N Branford	09	1345EST			0	0	60K		Thunderstorm Wind
A thunderstorm downburst damaged several mobile homes in the Suwannee Rachettes subdivision. One mobile home was cut in half by a large pine trees, while other received structural or roof damage.									
Duval County									
Arlington	11	2259EST			0	0	60K		Lightning
Five families were evacuated from an apartment complex after a lightning strike. The six units at the third story, cinder block and stucco complex sustained, fire, water and smoke damage.									
FLORIDA, Northwest									
Liberty County									
Bristol	01	1418EST			0	0	2K		Thunderstorm Wind
Madison County									
Sirmans	01	1521EST			0	0	15K		Thunderstorm Wind
Leon County									
Killearn Estates	01	1540EST			0	0	40K		Thunderstorm Wind
Madison County									
Greenville	01	1540EST			0	0	1K		Thunderstorm Wind
Jefferson County									
Waukeenah	01	1610EST			0	0	1K		Thunderstorm Wind
Washington County									
Northeast Portion	01	1705EST			0	0	5K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

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

FLORIDA, Northwest

Estimated 60 to 70 mph winds downed numerous power lines in Bristol (Liberty County). Several large trees and power lines down along Thomasville Road near Lake Hall and Forsythe Roads (Leon County). One fallen tree damaged a vehicle and another a home in the Killlearn Lakes subdivision and several homes were damaged by fallen trees in the Lenox Mills and Highlands subdivisions (Leon County). Numerous downed trees along Interstate Highway 10 in the eastbound lane near exit 36 (Madison County). A few large trees down five miles west of Waukeenah on Upper Cody Road near U.S. Highway 27 (Jefferson County). Numerous trees and power lines down and roof damage to a home on CR 273 in the South Orange Hill Corners area (Washington County). Five large trees down near Alford (Jackson County).

Jackson County

Alford **01** **1721EST** **0** **0** **1K** **Thunderstorm Wind**

FLZ019

Madison
02 **1521EST** **0** **0** **1K** **High Wind**

Few large trees down near Sirmans on U.S. Highway 221.

Jefferson County

Northeast Portion **29** **1430EST** **0** **0** **5K** **Thunderstorm Wind**

A thunderstorm microburst uprooted 10 to 20 two-foot diameter trees including five pecan trees, and damaged several others. The damage path was divergent, centered along CR 149A about six miles northeast of Monticello. Electricity was interrupted due to fallen power lines. One cow was trapped, but uninjured.

Leon County

Tallahassee **13** **1600EST**
 1900EST **0** **0** **500K** **Urban/Sml Stream fld**

Thunderstorms produced torrential rainfall amounts from 3 to 8 inches within a two-hour period. 35 homes and businesses along Eppes, Hernando, and Pepper Streets in South Tallahassee sustained significant stormwater damage. 54 apartments at the Seminole Apartment Complex near Florida State University reported water levels up to one foot deep. Several low-lying intersections, poor drainage areas, and underpasses were flooded. The Tallahassee Fire and Police Departments responded to numerous calls of stranded motorists and downed power lines. About 4,000 customers in Northeast Tallahassee were without power for two hours when a falling tree shorted out a Centerville Road substation.

Dixie County

Cross City **20** **1430EST** **0** **0** **Hail (0.88)**

Nickel sized hail in Cross City. High winds toppled a few trees in Old Town.

Jackson County

Graceville **27** **1815EST**
 1820EST **0** **0** **35K** **Thunderstorm Wind**

Thunderstorm winds destroyed a barn off CR 169 about four miles southeast of Graceville.

Gadsden County

Countywide **28** **1945EST** **0** **0** **5K** **Thunderstorm Wind**

Several trees down countywide. A power outage reported in Quincy.

Leon County

Tallahassee **30** **1630EST**
 1830EST **0** **0** **50K** **Urban/Sml Stream fld**

Thunderstorms produced torrential rainfall over much of Tallahassee. Radar estimates of two to three inches fell from the Tallahassee Regional Airport to Monroe Street. Numerous low-lying areas, underpasses and businesses were flooded.

Leon County

Tallahassee **27** **1530EST** **0** **0** **100K** **Urban/Sml Stream fld**

Torrential rainfall inundates portions of Tallahassee with two to three inches of rain. Stormwaters seeped into low-lying homes and businesses and knocked out power to nearly 5,000 households scattered across the city. Two dozen city streets were flooded stranding numerous motorists.

Franklin County

Carrabelle **01** **1400EST**
 03 **1800EST** **0** **0** **Wild/Forest Fire**

A 100+ acre wildfire erupted on the Franklin-Liberty County line, 12 miles north of Carrabelle off SR 67. Two homes were protected. The DOF, Carrabelle FD and Florida National Guard supported the firefighting efforts.

Bay County

Southport **03** **1500EST**
 14 **1700EST** **0** **0** **Wild/Forest Fire**

A 800+ acre wildfire (through the merging of three separate fires), the "Hot Water Fire", located at intersection of CR 388 West and SH 77 North near Southport forced the mandatory evacuation of 150 residents in the Newpoint subdivision of Southport. A voluntary evacuation was implemented for areas east of SH 77, north of Deer Point Dam Rd, west of Resota Beach Rd and south of Edwards Rd. A Fire Suppression Grant was awarded. Four air tankers, DOF and Bay County FD battled the blazes.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Southern									
Broward County									
Davie	01	1800EST 1830EST			0	0			Tstm Wind/Hail
		Three quarter inch hail was reported in the City of Weston. Wind gusts estimated near 60 knots cause some roof damage. Half inch hail was also reported in Dania near Federal Highway and Sheridan St.							
Collier County									
Golden Gate	02	1740EST 1800EST			0	0			Tstm Wind/Hail
		Golf ball size hail(1.75 inch) was reported near SR 951 and Everglades Blvd. A Collier County employee reported his car was blown adrift while driving due to winds estimated to be in excess of 60 knots.							
Broward County									
Countywide	03	1611EST 1640EST			0	0			Hail (1.75)
		Golf ball size hail was reported in Weston. Pea size hail was reported in Silver Lakes and Pembroke Pines. Most of the hail was west of I75.							
Dade County									
Homestead	03	1735EST 1740EST			0	0			Thunderstorm Wind (G52)
		52 knot winds reported by ranger at Everglades National Park west of Homestead. 2-3 inch diameter trees downed in the Pinelands area of the park. This is located 4 miles south of the Royal Palm ranger station. The downed trees blocked the roadway and marble size hail was also reported.							
Monroe County									
Marathon	04	1620EST 1640EST			1	0			Thunderstorm Wind (G65)
		ASOS at Marathon Airport recorded 50 knots at 1620 EDT. The C-MAN at Sombrero Key recorded 59 knots. A storm spotter estimated wind gusts of 65 knots. Signs and trees were downed throughout the Marathon area. Several boats were swamped. Five people were knocked overboard from their sailboat. Four were rescued by the USCG. A 34 year old man was found drowned two days later. M34IW							
Broward County									
Hollywood	07	1255EST			0	0			Thunderstorm Wind (G56)
		Wind gust recorded at uncommissioned HWO ASOS at North Perry Field.							
Broward County									
Hollywood	07	1320EST 1330EST			0	0			Hail (0.75)
		Three quarter inch hail reported along Hollywood Blvd near I95.							
Broward County									
Coral Spgs	07	1420EST			0	0			Funnel Cloud
		Funnel cloud sighted east of University Dr on Sample Rd.							
Broward County									
Pembroke Pines	07	1500EST			0	0			Funnel Cloud
Broward County									
Pompano Beach	07	1501EST			0	0			Waterspout
		Waterspout just offshore Pompano Beach near Atlantic Blvd.							
Dade County									
(Hst)Homestead Afb	10	1000EST			0	0			Waterspout
		Waterspout 13nm east southeast of Homestead.							
Monroe County									
Key West	10	1346EST			0	0			Waterspout
		Waterspout observed several miles southeast of Key West.							
Monroe County									
Key West	10	1635EST 1645EST			0	0			Funnel Cloud
		Three funnel clouds were observed 3 nm north of Key West.							
Monroe County									
Key West	10	1702EST 1740EST			0	0			Waterspout
		Observed just north northwest of Key West.							
Dade County									
Surfside	11	1345EST			0	0			Waterspout
		Pilot reported Waterspout 10nm east of Surfside.							

Storm Data and Unusual Weather Phenomena

July 1998

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									
Marco	12	0918EST			0	0			Funnel Cloud
		Observed 1nm west southwest of Marco Island.							
Collier County									
Marco	12	1015EST 1030EST			0	0			Heavy Rain
		One inch of rain fell in 15 minutes.							
Palm Beach County									
West Central Portion	12	1600EST 1830EST			0	0			Flood
		Six inches of rain fell in two and one half hours.							
Monroe County									
Key West	14	0710EST 0716EST			0	0			Waterspout
		Waterspout observed 5nm southeast of Key West.							
Monroe County									
Big Pine Key	14	1630EST			0	0			Funnel Cloud
		Funnel cloud observed northwest of Sugarloaf Key.							
Monroe County									
Key West	14	1657EST 1659EST			0	0			Waterspout
Collier County									
Naples Park	15	0923EST			0	0			Waterspout
		Pilot reported 15nm west.							
Monroe County									
Key West	15	1515EST			0	0			Funnel Cloud
		Observed 7-8 nm northwest of Key West.							
Palm Beach County									
Boynton Beach	16	0835EST			0	0			Waterspout
		USCG reported three waterspouts 20 to 30 nm east of Boynton Beach.							
Collier County									
Immokalee	17	1815EST 1825EST			0	0			Funnel Cloud
		Funnel cloud observed south of Immokalee.							
Glades County									
Moore Haven	17	1815EST 1825EST			0	0			Funnel Cloud
		Funnel cloud observed south of Moore Haven.							
Hendry County									
La Belle	17	1815EST 1825EST			0	0			Funnel Cloud
Dade County									
Miami Beach	18	0810EST			0	0			Funnel Cloud
		Funnel cloud observed by Beach Patrol offshore 80th St.							
Dade County									
Miami Beach	18	0821EST 0830EST			0	0			Waterspout
		Waterspout observed about one and one half miles offshore 100th St.							
Dade County									
Miami	18	0900EST			0	0			Funnel Cloud
		Funnel reported by Miami International Airport tower personnel 12nm east northeast of KMIA.							
Broward County									
Ft Lauderdale	18	1120EST 1130EST			0	0			Funnel Cloud
		Florida Highway Patrol reported the funnel near the ground at SR 441 and Orange Dr. Controller at Fort Lauderdale International Airport reported the funnel cloud on final approach.							
Dade County									
Miami Beach	19	0740EST			0	0			Waterspout
		Waterspout observed by Miami Beach Patrol 2nm offshore from 74th St.							
Palm Beach County									
Mangonia Park	19	0915EST			0	0			Funnel Cloud

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, Southern									
Funnel cloud observed east of US1.									
Dade County Florida City	19	0930EST			0	0			Waterspout
Waterspout observed by Everglades National Park ranger offshore Turkey Point.									
Collier County Marco Is Arpt	20	1345EST 1411EST			0	0			Heavy Rain
Rainfall was estimated at three inches in one half hour. Pea size hail and wind gust to 48 knots were also observed.									
Monroe County Key Largo	22	0044EST			0	0			Thunderstorm Wind (G52)
Wind sustained 42 gusting to 52 knots at Molasses Reef C-MAN.									
Dade County Countywide	22	0130EST 0200EST			0	0			Thunderstorm Wind (G64)
Wind gusted to 64 knots at Fowey Rocks C-MAN at 0131 AM EST. Wind gusted to 53 knots at Miami Beach (MIBF). Miami Pilot reported wind gusts to 62 knots. Virginia Key recorded a wind gust of 47 knots. Trees were downed along Coral Way and SW 27th Ave. A church steeple was damaged by lightning and trees were uprooted in Coconut Grove. Downed powerlines in Miami Beach caused a fire that destroyed two cars. Wind gust recorded at HRD(Hurricane Reasearch Division) of 50 knots. 55,000 customers lost commercial power.									
Broward County Hollywood	22	0200EST 0300EST			0	0			Thunderstorm Wind (G55)
Tree branches four to five inches in diameter downed. Tropical wave was passing south of Florida. Strong outflow boundary moved north from Cuba. Areas along the immediate coastline and over the coastal waters were affected by the strongest winds.									
Palm Beach County Delray Beach	24	1748EST			0	0			Waterspout
Waterspout just offshore Delray Beach.									
Palm Beach County Jupiter	26	0935EST			0	0			Waterspout
Waterspout sighted 3nm east of Jupiter. Also reported in a Pilot Report.									
Monroe County Key West Intl Arpt to Key West	26	1209EST 1230EST			0	0			Waterspout
Waterspout observed 3nm west of KEYW with little movement noted.									
Monroe County Big Pine Key	26	1405EST			0	0			Waterspout
Two waterspouts were observed over Florida Bay.									
Dade County Miami Beach	26	1830EST 1930EST			0	0			Waterspout
Pilot reported several waterspouts had formed over waters west of the Bimini Islands.									
Monroe County Key West	29	1830EST			0	0			Funnel Cloud
Funnel cloud observed just northwest of Key West.									
Collier County Marco	30	1350EST			0	0			Funnel Cloud
Funnel cloud observed 1nm east of Marco Island.									
Monroe County Key West	30	1515EST 1540EST			0	0			Waterspout
Waterspout observed 5nm north of Key West. Also reported as large waterspout north of Key West at 1330 EST by Monroe County Sheriffs office.									
Monroe County Key West	31	1925EST			0	0			Waterspout
Waterspout observed 7nm northwest of Key West.									
Dade County South Miami	07	1400EST			0	1			Lightning
Female was injured by lightning strike at SW 152 St and 99 Ct.									

Storm Data and Unusual Weather Phenomena

July 1998

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

FLORIDA, Southern

Broward County

West Hollywood	31	1600EST			0	1			Lightning
-----------------------	-----------	----------------	--	--	----------	----------	--	--	------------------

55 year old male was injured while inspecting roof for leaks in Weston.

Broward County

Sunrise Golf Vlg	21	1630EST 1640EST	0.2	20	0	0	30K		Tornado (F1)
-------------------------	-----------	----------------------------------	------------	-----------	----------	----------	------------	--	---------------------

Brief F1 tornado touched down near the Sawgrass Mills Mall damaging roofs, fences and awnings. A wall cloud was observed west of the city prior to the event. Some street flooding resulted from heavy rainfall.

FLORIDA, West Central

Manatee County

Bradenton	02	1420EST			0	0	0	0	Hail (1.00)
------------------	-----------	----------------	--	--	----------	----------	----------	----------	--------------------

Quarter sized hail was observed on the 7000 block of 211th Street in the Panther Ridge subdivision in Bradenton.

Polk County

Bradley Jct	02	1515EST			0	0	0	0	Hail (1.00)
--------------------	-----------	----------------	--	--	----------	----------	----------	----------	--------------------

Lee County

Buckingham	02	1527EST			0	0	0	0	Hail (0.88)
-------------------	-----------	----------------	--	--	----------	----------	----------	----------	--------------------

Sumter County

Wildwood to Bushnell	04	1900EST 2000EST			0	0	10K	0	Urban/Sml Stream Fld
---------------------------------	-----------	----------------------------------	--	--	----------	----------	------------	----------	-----------------------------

Heavy rainfall of up to four inches in less than an hour caused localized flooding of low lying areas between Wildwood and Bushnell. A few vehicles incurred water damage along U.S. Highway 301 in Wildwood from the heavy rain.

Hillsborough County

Lutz	05	1400EST			0	0	100K	0	Lightning
-------------	-----------	----------------	--	--	----------	----------	-------------	----------	------------------

Lightning struck and caused \$100,000 dollars worth of fire damage to an apartment complex on the 14000 block of Turtle Creek Circle in Lutz.

Pinellas County

St Petersburg	05	1520EST 1530EST			0	0	50K	0	Thunderstorm Wind
----------------------	-----------	----------------------------------	--	--	----------	----------	------------	----------	--------------------------

Thunderstorm winds damaged the roof of a commercial building, a few mobile homes and carports on 28th Street and downed a few large trees on 31st Street, 46th and 54 Avenues in St. Petersburg.

Pinellas County

St Petersburg	05	1520EST			0	0	0	0	Hail (0.75)
----------------------	-----------	----------------	--	--	----------	----------	----------	----------	--------------------

Dime sized hail was reported at the corner of 28th Street and 58th Avenue. Also, dime sized hail was observed on Chrissman Road in St. Petersburg.

Hillsborough County

14 NE Tampa	06	1345EST			0	0	0	0	Lightning
--------------------	-----------	----------------	--	--	----------	----------	----------	----------	------------------

Lightning ignited and burned twelve acres of woodlands in New Tampa.

Polk County

2 N Lakeland	06	1400EST			2	0	0	0	Lightning
---------------------	-----------	----------------	--	--	----------	----------	----------	----------	------------------

Two men were killed, aged 43 and 37, while standing under a tree that was struck by lightning at the Huntington Hills Golf Club in North Lakeland. The lightning strike occurred near a grove of eight trees near the 12th hole of the golf course. Light rain had been falling prior to the lightning strike.
M43UT, M37UT

Pasco County

7 E New Port Richey	06	1415EST			0	0	0	0	Lightning
----------------------------	-----------	----------------	--	--	----------	----------	----------	----------	------------------

Lightning ignited and burned 1,500 acres of woodlands in the Jay B. Starkey Wilderness Park between State Roads 52 and 54, east of County Road 587.

Polk County

2 N Lakeland	06	1600EST			0	0	6K	0	Lightning
---------------------	-----------	----------------	--	--	----------	----------	-----------	----------	------------------

Lightning struck a tree and killed three Appaloosa horses that were standing under it.

Polk County

4 S Lakeland	07	1235EST			0	0	80K	0	Lightning
---------------------	-----------	----------------	--	--	----------	----------	------------	----------	------------------

Lightning struck and burned to the ground a four bedroom home off West Alamo Road near State Road 37 in Lakeland.

Pinellas County

5 S Indian Rocks Beach	07	1915EST			0	0	0	0	Waterspout
-------------------------------	-----------	----------------	--	--	----------	----------	----------	----------	-------------------

Pasco County

New Port Richey	09	0130EST 0400EST			0	0	25K	0	Urban/Sml Stream Fld
------------------------	-----------	----------------------------------	--	--	----------	----------	------------	----------	-----------------------------

Heavy rainfall caused localized flooding of intersections and a few homes in low-lying areas of New Port Richey.

Storm Data and Unusual Weather Phenomena

July 1998

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 1 W Venice	09	0744EST			0	0	0	0	Waterspout
		An aircraft reported a waterspout one mile west of Venice.							
Pinellas County Clearwater to Dunedin	10	0800EST 1100EST			0	0	50K	0	Urban/Sml Stream Fld
		Six to eight inches of heavy rain in less than three hours caused localized flooding of roadways and low lying areas from Clearwater to Dunedin. A few vehicles incurred water damage in the Doral Village mobile home park and the Meese Dunedin Hospital suffered minor damage from the floodwaters.							
Citrus County Crystal River to Chassahowitzka	10	0800EST 1100EST			0	0	10K	0	Urban/Sml Stream Fld
Hernando County Spring Hill to Brooksville	10	0800EST 1100EST			0	0	10K	0	Urban/Sml Stream Fld
		Five to six inches of rain in less than two hours caused localized flooding of roadways and low lying areas from Crystal River southeast to Brooksville. A few vehicles and homes incurred water damage in low lying areas along the U.S. Highway 19 and 41 corridors in Citrus and Hernando counties.							
Pinellas County 6 NW St Petersburg	10	1029EST	0.1	5	0	0	0	0	Tornado (F0)
		A weak tornado briefly touched down six miles northwest of St. Petersburg.							
Hillsborough County Citrus Park	10	1030EST 1215EST			0	0	50K	0	Flood
Pinellas County Safety Harbor to Tarpon Spgs	10	1030EST 1215EST			0	0	200K	0	Flood
		Seven to eight inches of heavy rainfall caused flooding of low lying areas of northern Pinellas county from Safety Harbor northwest to Tarpon Springs. Several mobile homes and vehicles incurred water damage from floodwaters near the intersection of County Roads 611 (Mc Mullen-Booth Road) and 638 (Enterprise Road).							
		In Hillsborough county, up to five inches of heavy rainfall caused flooding of homes, vehicles and low lying areas along County Roads 589 and 587 near Citrus Park.							
Lee County 17 WNW Cape Coral	11	1130EST			0	1	0	0	Lightning
		Lightning struck and injured a 42 year old man that was boating near Cabbage Key. The man suffered full cardiac arrest from the lightning strike and was later resuscitated with CPR administered by a nurse.							
Polk County Auburndale	12	1320EST			0	0	1K	0	Thunderstorm Wind
		Thunderstorm winds downed a few large branches in Auburndale.							
Polk County 1 S Winter Haven	12	1330EST			0	0	2K	0	Thunderstorm Wind
		A few large trees were downed by thunderstorm winds on Eagle Lake Road in Winter Haven.							
Polk County 2 N Frostproof	12	1400EST			0	0	0	0	Thunderstorm Wind (G52)
		A thunderstorm wind gust of 60 mph was observed by a Skywarn Spotter.							
Hillsborough County Brandon	12	1437EST			0	0	15K	0	Thunderstorm Wind
		Thunderstorm winds downed several large trees and power lines on Lithia Pinecrest Road in Brandon.							
De Soto County Arcadia	12	1513EST			0	0	5K	0	Thunderstorm Wind
		A downburst removed a large portion of the roof of a home at the corner of Garvin and Horseshoe Roads in Arcadia.							
De Soto County Ft Ogden	12	1520EST			0	2	0	0	Lightning
		Lightning struck the ground and injured a nearby female adult and a male child that were standing outdoors in the rain.							
De Soto County Arcadia	12	1530EST			0	0	0	0	Thunderstorm Wind (G52)
		A thunderstorm wind gust of 60 mph was reported near the Arcadia Airport.							
De Soto County Arcadia to 10 W Arcadia	12	1530EST 1830EST			0	0	2K	0	Urban/Sml Stream Fld

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, West Central									
Three to six inches of heavy rain caused localized flooding of roadways over rural portions of western De Soto county from Arcadia west to the county line.									
Charlotte County Charlotte Harbor	12	1545EST			0	0	75K	0	Lightning
Lightning struck and burned to the ground a home on the 4300 block of U.S. Highway 41 (Kings Highway) in Charlotte Harbor.									
Charlotte County Port Charlotte	12	1630EST 1930EST			0	0	10K	0	Urban/Sml Stream Fld
Four to eight inches of heavy rain in less than three hours caused localized street flooding in Port Charlotte. A few vehicles incurred water damage at low lying areas in Port Charlotte.									
Sarasota County Sarasota	13	1630EST 1900EST			0	0	15K	0	Urban/Sml Stream Fld
Heavy rain of five to seven inches in less than three hours caused localized flooding of roads between the Interstate 75 and U.S. Highway 41 corridors north of County Road 780. A few vehicles incurred water damage at low lying areas in Sarasota.									
Highlands County Sebring to Lake Placid	13	1730EST 1900EST			0	0	10K	0	Urban/Sml Stream Fld
Heavy rain of up to three inches caused localized flooding of roadways and low lying areas along the U.S. Highway 27 corridor between Sebring and Lake Placid.									
Lee County 25 SW Ft Myers	15	0905EST			0	0	0	0	Waterspout
A waterspout was observed 25 miles southwest of Ft. Myers by the pilot of a DC-9 aircraft.									
Citrus County Crystal River to Homosassa	16	0930EST 1230EST			0	0	5K	0	Urban/Sml Stream Fld
Two to four inches of heavy rain fell in less than two hours and caused localized flooding of low lying areas west of U.S. Highway 19 between Crystal River and Homosassa.									
Highlands County Avon Park to Sebring	18	1800EST 2100EST			0	0	50K	0	Urban/Sml Stream Fld
Four to six inches of heavy rain fell in less than three hours and caused localized flooding of low lying areas along the U.S. Highway 17 corridor between Avon Park and Sebring. A few homes and several vehicles incurred water damage in the Highland Lakes area near Avon Park.									
Lee County Ft Myers to Bonita Beach	19	1400EST 1500EST			0	0	20K	0	Urban/Sml Stream Fld
Three to five inches of heavy rain fell in less than two hours and caused localized flooding of low lying areas west of the Interstate 75 corridor between Ft Myers and Bonita Beach. A few vehicles and homes in low lying areas incurred water damage in Ft Myers and Bonita Beach.									
Lee County Cape Coral	19	1400EST			0	0	1K	0	Lightning
Lightning struck a vehicle and damaged its onboard computer system near the intersection of Miracle Parkway and Chiquita Boulevard in Cape Coral. Two passengers inside the vehicle struck by lightning were uninjured.									
Charlotte County Punta Gorda to Port Charlotte	19	1430EST 1600EST			0	0	10K	0	Urban/Sml Stream Fld
Two to four inches of heavy rain fell in less than two hours and caused localized flooding of low lying areas between Interstate 75 and U.S. Highway 41 from Punta Gorda to Port Charlotte. A few vehicles and homes incurred water damage in low lying areas of Punta Gorda and Port Charlotte.									
Hillsborough County Tampa to Lutz	19	1600EST 1800EST			0	0	10K	0	Urban/Sml Stream Fld
Pasco County Dade City to Wesley Chapel	19	1600EST 1800EST			0	0	10K	0	Urban/Sml Stream Fld
Polk County Lakeland to Socrum	19	1600EST 1800EST			0	0	10K	0	Urban/Sml Stream Fld
Three to five inches of heavy rain fell in less than two hours and caused localized flooding of homes and vehicles between Interstate 75 and U.S. Highway 98 from Tampa northeast to Dade City.									

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
FLORIDA, West Central									
Polk County 5 SSE Lakeland	19	1533EST 1558EST			0	0	0	0	Hail (0.75)
									Dime sized hail was reported at the intersection of County Roads 37B and 540 by a Skywarn Spotter.
Polk County 6 S Lakeland	19	1540EST			0	0	15K	0	Thunderstorm Wind
									Thunderstorm winds downed several large trees and power lines along State Road 37 between Scott Lake Road and Lake Miriam Drive.
Lee County 5 SW Ft Myers	20	1450EST			0	0	0	0	Hail (0.75)
									Dime sized hail was reported near Cypress Lake Drive and Macgregor Boulevard by a Skywarn Spotter.
Charlotte County Englewood to Port Charlotte	20	1600EST 1830EST			0	0	10K	0	Urban/Sml Stream Fld
									Heavy rain of three to four inches in less than two hours caused localized flooding of a few homes and vehicles in Englewood and Port Charlotte.
Lee County Sanibel to Cape Coral	20	1615EST 1900EST			0	0	0	0	Urban/Sml Stream Fld
									Heavy rain of three to four inches in less than three hours caused localized flooding of low lying areas from Sanibel to Cape Coral. A few vehicles incurred water damage at low lying intersections in Cape Coral.
Pinellas County Clearwater	20	1650EST			0	0	0	0	Hail (0.75)
									Dime sized hail was reported on Curlew Road between U.S. Highway 19 and Belcher Road by a Skywarn Spotter.
Pinellas County Dunedin	20	1700EST			0	1	20K	0	Lightning
									Lightning struck a building and injured a 44 year-old firefighter while indoors near the intersection of U.S. Highway 19 and Republic Drive. The firefighter suffered muscle and nerve damage in his right arm and shoulder from the lightning shock.
									The lightning injury occurred while the firefighter was holding open an elevator door when lightning struck and travelled through the elevator shaft of the building. The lightning also damaged electrical equipment within the building.
Pinellas County Clearwater to Tarpon Spgs	20	1730EST 1900EST			0	0	15K	0	Urban/Sml Stream Fld
									Heavy rain of three to four inches in less than two hours caused localized flooding of low lying areas along the U.S. Highway 19 corridor from Clearwater north to Tarpon Springs.
Hillsborough County 14 NE Tampa to Temple Terrace	20	1800EST 1930EST			0	0	10K	0	Urban/Sml Stream Fld
Pasco County Land O Lakes to Wesley Chapel	20	1800EST 1930EST			0	0	10K	0	Urban/Sml Stream Fld
									Heavy rain of three to five inches in less than two hours caused localized flooding of low lying areas from Tampa's northern suburbs to Land O' Lakes in southern Pasco county.
Lee County Boca Grande	20	1515EST			0	0	25K	0	Thunderstorm Wind
									Thunderstorm winds downed power lines, trees and large branches and slightly damaged roofs and windows in Boca Grande.
Pinellas County Gulfport	21	1540EST			0	2	5K	0	Lightning
									Two police officers were shocked and slightly injured when lightning struck the Gulfport City Hall. The officers had their hands on pieces of metal attached to an office cubicle when lightning struck the exterior of the building. The lightning strike damaged two surveillance cameras and temporarily disabled the City Hall computers.
Pasco County Jasmine Estates	21	1611EST			0	0	1K	0	Tstm Wind (G45)
									Thunderstorm winds estimated at 50 mph downed a tree onto powerlines at Osceola and Star Roads.
Charlotte County Port Charlotte	22	1600EST			0	0	90K	0	Lightning
									Lightning struck and ignited a home on the 18,000 block of Klinger Circle in Port Charlotte.
Charlotte County Punta Gorda	22	1730EST			0	0	110K	0	Lightning
									Lightning struck and ignited a home on the 2900 block of Valolla Street in Punta Gorda.

Storm Data and Unusual Weather Phenomena

July 1998

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

FLORIDA, West Central

Highlands County

Sebring	22	1900EST			0	0	3K	0	Lightning
---------	----	---------	--	--	---	---	----	---	-----------

Lightning struck and damaged the transmitter of station WOCX-TV (Channel 5) in Sebring.

Hillsborough County

Brandon	26	1430EST 1445EST			0	0	10K	0	Tstm Wind (G45)
---------	----	--------------------	--	--	---	---	-----	---	-----------------

Thunderstorm winds estimated at up to 50 mph removed the tin roof of a automotive body shop, downed a tree atop a vehicle and blew an empty 18-wheel moving truck on its side near the intersection of Adamo Drive and 50th Street.

Manatee County

12.5 NW Myakka City	30	1515EST			0	0	0	0	Lightning
---------------------	----	---------	--	--	---	---	---	---	-----------

Lightning struck, ignited and burned 50 acres of brush near the Saddlehorn Estates in the 22,000 block area of State Road 64 and County Road 675.

FLORIDA, West Panhandle

Okaloosa County

Crestview	03	1735CST 1736CST			0	0	3K		Thunderstorm Wind (G50)
-----------	----	--------------------	--	--	---	---	----	--	-------------------------

Trees and power lines were blown down just east of Crestview.

Okaloosa County

Crestview	29	1900CST 2015CST			0	0	4K		Flash Flood
-----------	----	--------------------	--	--	---	---	----	--	-------------

Heavy rains caused flooding of several secondary roads around the Crestview area. The roads had to be closed for about an hour. Radar estimated that four to five inches of rainfall fell across the area in a two to three hour period.

Okaloosa County

Crestview	07	1330CST			0	0	10K		Lightning
-----------	----	---------	--	--	---	---	-----	--	-----------

Lightning struck a water tower and blew a hole in it. Lightning also hit a home in the same area and started a fire. The fire was quickly put out.

Santa Rosa County

Gulf Breeze	16	1500CST			0	0	40K		Lightning
-------------	----	---------	--	--	---	---	-----	--	-----------

Lightning started a fire in a wooded area around Gulf Breeze. The fire burned for about five hours and destroyed 150 acres of land. No one was injured and no homes were damaged.

Okaloosa County

Ft Walton Beach	21	1400CST 1401CST			0	0	3K		Lightning
-----------------	----	--------------------	--	--	---	---	----	--	-----------

Lightning struck a vacant house in Fort Walton Beach. The strike started a fire in the home that was quickly extinguished.

Santa Rosa County

Navarre	29	1830CST 1832CST			0	0			Waterspout
---------	----	--------------------	--	--	---	---	--	--	------------

A waterspout was observed in the sound, just west of Navarre Bridge. The waterspout was observed for a couple of minutes before dissipating. No damage was found.

GEORGIA, East Central

NONE REPORTED.

GEORGIA, Lower

Camden County

St Marys	05	2300EST			0	0	5K		Thunderstorm Wind
----------	----	---------	--	--	---	---	----	--	-------------------

Roof blown off house.

Glynn County

Arco	27	1430EST			0	0	100K		Thunderstorm Wind
------	----	---------	--	--	---	---	------	--	-------------------

Downbust uprooted large trees and damaged 10 homes.

Appling County

Baxley	31	1700EST			0	0	2.5K		Thunderstorm Wind
--------	----	---------	--	--	---	---	------	--	-------------------

Large trees and power lines were blown down.

Atkinson County

Pearson	31	1755EST			0	0	1.5K		Thunderstorm Wind
---------	----	---------	--	--	---	---	------	--	-------------------

Large trees and power lines were blown down.

Ware County

Waycross	31	1800EST			0	0	1.5K		Thunderstorm Wind
----------	----	---------	--	--	---	---	------	--	-------------------

Large trees and power lines were blown down.

Pierce County

Bristol	31	1815EST			0	0	2.5K		Thunderstorm Wind
---------	----	---------	--	--	---	---	------	--	-------------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
GEORGIA, Lower									
			Large trees and power lines were blown down.						
Ware County 8 N Waycross	31	1820EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Brantley County Hortense	31	1845EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Atkinson County Willacoochee	29	1848EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Brantley County Hickox	29	2000EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Camden County Woodbine	28	1500EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Charlton County Folkston to 3 W Folkston	28	1630EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down along HWY 121.						
Coffee County 5 SW Douglas	28	1800EST			0	6	250K		Thunderstorm Wind
			Three mobile homes destroyed, eight damaged. Large trees and power lines were blown down.						
Atkinson County Pearson	28	1815EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Ware County Waycross	28	1840EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Clinch County Homerville	28	1850EST			0	0	1K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Wayne County Mc Kinnon	27	1230EST			0	0			Hail (0.75)
Camden County Woodbine	23	1530EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Charlton County Folkston	22	1525EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Camden County Woodbine	22	1536EST			0	0	2K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Glynn County Brunswick	18	1645EST 1845EST			0	0	5K		Flood
			Flooding closed portions of Beach Street and Sea Gate Subdivision.						
Camden County 5 E Kingsland	03	1903EST			0	0			Funnel Cloud
Bacon County Alma	03	1849EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Pierce County Blackshear	03	1905EST			0	0	2.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Appling County Baxley	03	1842EST			0	0	1.5K		Thunderstorm Wind
			Large trees and power lines were blown down.						
Appling County Baxley	03	1900EST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1998

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									
Butts County									
Jackson	03	1430EST			0	0	0.50K		Thunderstorm Wind
			Butts county 911 reported trees were blown down.						
Pickens County									
3 S Jasper	08	1355EST			0	0			Hail (0.75)
Cobb County									
Dobbins Afb	08	1404EST 1407EST			0	0			Thunderstorm Wind (G58)
			Wind gusts to 52 and 58 knots were recorded at Dobbins ARB.						
Crisp County									
Cordele to Arabi	09	1615EST			0	0	2K		Thunderstorm Wind
			Crisp county 911 reported trees and power lines were knocked down by thunderstorm winds in Cordele. Crisp county power reported a pecan tree down in Arabi.						
Dodge County									
5 W Eastman	19	1650EST			0	0	0.50K		Thunderstorm Wind
			Dodge county 911 reported several trees down across secondary roads near highway 341.						
Cherokee County									
2 W Free Home	19	1723EST			0	0			Hail (0.75)
Cherokee County									
2 W Free Home	19	1723EST			0	0	0.50K		Thunderstorm Wind
			The public reported dime size hail and several trees blown down.						
Dodge County									
3 W Rhine	19	1725EST			0	0	0.50K		Thunderstorm Wind
			Dodge county 911 reported several trees were blown down.						
Walker County									
Rock Spg to La Fayette	19	1730EST 1800EST			0	0	1K		Thunderstorm Wind
			Walker county 911 reported trees down.						
Whitfield County									
Dalton	19	1740EST			0	0			Hail (0.75)
Gordon County									
Fairmount	19	1755EST			0	0			Hail (1.25)
			The public reported half dollar size hail.						
Catoosa County									
7 W Ringgold	19	1806EST			0	0			Hail (1.00)
Fayette County									
Inman to Woolsey	19	1815EST			0	0	1K		Thunderstorm Wind
			The public reported several trees were blown down.						
Wilcox County									
Countywide	19	1815EST 1830EST			0	0	5K		Thunderstorm Wind
			WMGX radio station reported dime size hail and numerous trees down in Rochelle. One tree was blocking Georgia highway 215. A Dairy Queen sign was also blown down. Wilcox county 911 reported trees down and power outages countywide.						
Wilcox County									
Rochelle	19	1815EST 1820EST			0	0			Hail (0.75)
Walker County									
Rock Spg to La Fayette	19	1845EST 1900EST			0	0			Hail (0.75)
Walker County									
Rock Spg to La Fayette	19	1845EST 1900EST			0	0	5K		Thunderstorm Wind
			A spotter reported trees and power lines down. Dime size hail was also reported. The 911 office reported trees down and numerous power outages.						
Cherokee County									
5 S Canton to Woodstock	19	1850EST 1900EST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

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									
Cherokee County 7 W Woodstock to Woodstock	19	1855EST 1920EST			0	0	20K		Thunderstorm Wind
									A public report indicated a quarter-mile long path of straight-line wind damage about 3 miles west of Woodstock. Numerous large trees were downed and one inch hail fell. Other public and spotter reports indicated dime to nickel size hail and trees down. A mobile home was damaged by a falling tree and another home sustained roof damage.
Chattooga County Countywide	19	1900EST 1930EST			0	0	5K		Thunderstorm Wind
									The Chattooga county sheriff's office reported trees and power lines were knocked down county-wide.
Wilkinson County Countywide	19	1900EST			0	0	5K		Thunderstorm Wind
									The Wilkinson county sheriff's office reported trees and power lines down county-wide.
Cobb County Acworth to Kennesaw	19	1910EST 1930EST			0	0			Hail (0.88)
Cobb County Acworth to Kennesaw	19	1910EST 1930EST			0	0	20K		Thunderstorm Wind
									Several public reports indicated dime to nickel size hail fell. At least a couple of homes sustained roof and chimney damage from falling trees.
Hall County Gainesville	19	1920EST 1945EST			0	0	50K		Thunderstorm Wind
									Thunderstorm winds knocked trees and power lines down. Some trees fell on houses, causing damage. A church steeple collapsed, a car was turned upside down, and the awning at a service station was damaged. Hall county 911 reported trees were knocked down from Gainesville to the Forsyth county line, with debris all along the route. A 175 foot tower was knocked down.
Henry County Stockbridge	19	2000EST 2020EST			0	0			Hail (1.75)
									Several public reports indicated dime to golf ball size hail fell in and around Stockbridge.
De Kalb County Decatur	19	2015EST 2028EST			0	0			Hail (0.75)
De Kalb County Stone Mtn to Decatur	19	2029EST 2030EST			0	0			Hail (0.88)
Clayton County Lovejoy	19	2030EST 2100EST			0	0			Hail (1.75)
Clayton County Lovejoy	19	2030EST 2100EST			0	0	1K		Thunderstorm Wind
									Clayton county 911 reported golf ball size hail and trees down.
Henry County 5 S Stockbridge	19	2030EST			0	0			Hail (0.88)
Henry County 5 S Stockbridge	19	2030EST			0	0	1K		Thunderstorm Wind
									The public reported nickel size hail. Several trees were blown down and power outages were also reported.
Monroe County Forsyth	19	2050EST 2054EST			0	0	1K		Thunderstorm Wind
									A HAM operator reported trees down just north of Forsyth.
Jackson County Center to Arcade	19	2100EST			0	0	1K		Thunderstorm Wind
									Jackson county 911 reported trees down in the south half of the county.
Clayton County Jonesboro to Riverdale	19	2104EST 2120EST			0	0			Hail (0.88)

Storm Data and Unusual Weather Phenomena

July 1998

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									
Clayton County Jonesboro to Riverdale	19	2104EST 2120EST			0	0	1K		Thunderstorm Wind
									HAM radio operators and the public reported nickel size hail and several trees blown down.
Monroe County Berner to Blount	19	2105EST			0	0	3K		Thunderstorm Wind
									The Monroe county sheriff's office reported trees and power lines were knocked down in the north half of the county.
Clarke County 5 N Athens	19	2115EST			0	0	1K		Thunderstorm Wind
									The Athens Police reported trees were knocked down in the north half of Clarke county.
Houston County Warner Robins	19	2120EST			0	0	1K		Thunderstorm Wind
									Houston county 911 reported trees down.
Lamar County Barnesville	19	2130EST			0	0	15K		Thunderstorm Wind
									Lamar county 911 reported numerous trees were blown down by thunderstorms winds. There were numerous power outages as well.
Fulton County Hapeville	19	2140EST			0	0	1K		Thunderstorm Wind
									Fulton county 911 reported trees down in south Fulton county.
Spalding County Griffin	19	2200EST			0	0	2K		Thunderstorm Wind
									The public reported several trees were blown down and numerous power outages.
Morgan County Bostwick to Madison	19	2230EST			0	0	2K		Thunderstorm Wind
									Morgan county 911 reported trees were knocked down along highway 83 between Bostwick and Madison.
Clayton County 3 N Riverdale to Riverdale	19	2314EST 2315EST			0	0			Hail (0.88)
Cobb County 2 NW Austell to Marietta	20	0017EST 0025EST			0	0	2K		Hail (2.75)
									Numerous public reports indicated hail ranging from dime size to as large as baseball size fell in Cobb county. The hail covered the ground in some areas. One large tree was also reportedly blown down.
Dawson County Dawsonville	20	1344EST			0	0	2K		Thunderstorm Wind
									Dawson county 911 reported several trees down and power outages.
Hall County Lula to 7 NW Gainesville	20	1405EST 1410EST			0	0	1K		Thunderstorm Wind
									The public reported dime size hail and trees blown down across a road.
Hall County 7 NW Gainesville	20	1410EST			0	0			Hail (0.75)
Dade County Rising Fawn	20	1412EST			0	0	1K		Thunderstorm Wind
									Dade county 911 reported trees down and power outages.
Clarke County Athens	20	1530EST			0	0			Hail (0.88)
Clarke County Athens	20	1530EST			0	0	5K		Thunderstorm Wind
									The Flight Service Station in Athens reported nickel size hail and several 100 foot oak trees down. Winds were estimated at 80 mph.
Douglas County Lithia Spgs to 2 S Douglasville	20	1530EST 1535EST			0	0	20K		Thunderstorm Wind
									The Douglas county EMA director reported lots of damage to several homes and 1 church. The public reported dime size hail and a few trees blown down.
Douglas County Lithia Spgs to Douglasville	20	1533EST 1555EST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1998

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									
Cobb County Powder Spgs	20	1536EST			0	0			Hail (0.75)
Gwinnett County Duluth	20	1555EST			0	0	1K		Thunderstorm Wind
The public reported 3 trees blown down by thunderstorm winds.									
Carroll County Villa Rica	20	1615EST 1620EST			0	0	10K		Thunderstorm Wind
A HAM operator and the public reported trees and power lines down and damage to the roof of a house.									
De Kalb County Brookhaven	20	1615EST 1630EST			0	0			Hail (0.75)
Fulton County Sandy Spgs to 5 SW Sandy Spgs	20	1615EST 1630EST			0	0			Hail (1.25)
The public reported dime to half dollar size hail.									
Lamar County Barnesville	20	1615EST			0	0	2K		Thunderstorm Wind
The public reported trees knocked down.									
Putnam County Eatonton to Willard	20	1640EST			0	0	2K		Thunderstorm Wind
The Eatonton Fire department reported several power lines were blown down, causing widespread power outages.									
Baldwin County 7 NW Milledgeville	20	1700EST			0	0	2K		Thunderstorm Wind
The Baldwin county sheriff's office reported a few trees were knocked down in the northwest part of the county, causing power outages.									
Lamar County Aldora to Milner	20	1715EST			0	0	50K		Thunderstorm Wind
A slow moving thunderstorm continued to produce damaging winds over Lamar county. High winds caused a tractor-trailer to jackknife and overturn at Aldora near the intersection of highways 341 and 18. Road signs were twisted and nearly toppled. Several people in the area reported seeing a funnel cloud. The winds also toppled a brick sign and damaged the roof at a grocery store. A greenhouse at a nursery was also destroyed.									
Putnam County Eatonton	20	1735EST			0	0	0.50K		Thunderstorm Wind
The Eatonton fire department reported large limbs were blown down and blocked traffic.									
Coweta County Thomas Xrds	20	1740EST			0	0			Hail (0.75)
Coweta County Sharpsburg	20	1745EST			0	0			Hail (1.75)
The public reported ping pong to golf ball size hail.									
Jasper County 5 W Monticello to Monticello	20	1745EST 1800EST			0	0	2K		Thunderstorm Wind
Jasper county 911 reported trees were knocked down along highway 16 between Monticello and Jackson.									
Fayette County Peachtree City	20	1750EST			0	0			Hail (0.75)
Coweta County 4 S Newnan	20	1752EST			0	0			Thunderstorm Wind (G62)
The public reported a wind gust of 72 mph.									
Coweta County Newnan	20	1800EST 1815EST			0	0	200K		Lightning
Fires started by lightning damaged residences in Olympia Park subdivision, on Summers-McKoy Road, and on Westside School Road. Also a mobile home on highway 29 was slightly damaged. A shop building and a utility building also suffered damage.									
Taylor County Butler	20	1800EST			0	0	2K		Thunderstorm Wind
The Taylor county sheriff reported a few trees were downed by thunderstorm winds.									

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Jasper County Monticello to 5 N Monticello	20	1801EST 1815EST			0	0	2K		Thunderstorm Wind
									Jasper county 911 reported trees down along highway 11 and on some back roads.
Houston County Warner Robins	20	2000EST 2015EST			0	0			Hail (0.75)
Houston County Warner Robins	20	2000EST 2015EST			0	0	2K		Thunderstorm Wind
									Houston county 911 reported dime size hail and trees and power lines down.
Hall County Flowery Branch	22	1358EST			0	0	5K		Thunderstorm Wind
									Hall county 911 reported trees were knocked down on a mobile home.
Jackson County Maysville	22	1400EST			0	0			Hail (1.75)
Jackson County Maysville	22	1400EST			0	0	1K		Thunderstorm Wind
									The public reported golf ball size hail and 3 trees down.
Wilkinson County Mc Intyre	23	1330EST			0	0	10K		Lightning
									A lightning strike started a fire in the ceiling of a building that houses training center facilities at the Englehard's Edgars plant.
Dade County Trenton	23	1440EST			0	0			Hail (0.75)
Peach County Byron	24	1330EST 1345EST			0	0	10K		Thunderstorm Wind
									WMAZ TV in Macon reported thunderstorm winds damaged outbuildings in a mobile home park on White Road. The winds also blew a hole in a storage shed and damaged trees.
Henry County 2 NE Stockbridge	24	1832EST			0	0			Hail (0.75)
Coweta County 2 N Newnan	27	1030EST			0	0	3K		Lightning
									Lightning hit a home on highway 29 and knocked a hole in the roof. There was no fire, just damage from the force of the lightning.
Laurens County 4 W Dublin	27	1415EST			0	0			Hail (0.75)
Dade County 7 NE Trenton	28	1740EST			0	0	1K		Thunderstorm Wind
									A Trenton fire station reported several trees blown down.
Coweta County Grantville	29	1310EST			0	0			Hail (0.88)
Harris County Mulberry Grove	29	1410EST			0	0	1K		Thunderstorm Wind
									The public reported 5 trees down.
Harris County 4 NE Hamilton	29	1420EST			0	0			Hail (0.75)
									Harris county 911 reported dime size hail and several large trees down.
Bibb County Macon	30	1545EST			0	0	1K		Thunderstorm Wind
									Bibb county 911 reported several trees downed on the east side of Macon.
Bibb County Macon	30	1615EST			0	0	2K		Thunderstorm Wind
									Bibb county 911 reported more trees down on the east side of Macon.
<u>GEORGIA, Northeast</u>									
Habersham County 7 SW Clarkesville	20	1415EST			0	2			Thunderstorm Wind (G50)
									In a cluster of thunderstorms across extreme northeast Georgia, one pulsed upward quickly and became severe. A damaging downburst caused a house under construction to collapse. Two people seeking shelter in the house, sustained minor injuries.

Storm Data and Unusual Weather Phenomena

July 1998

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

GEORGIA, Northeast

GAZ010-017>018-026-028>029 Rabun - Habersham - Stephens - Franklin - Hart - Elbert

	01	0000EST		0	0	
	31	2300EST				Dry Weather

Dry weather continued through much of the month of July, affecting crops during the critical part of the growing season. Corn and other vegetable sustained the most damage, but a dollar amount was not available at the time of this writing.

GEORGIA, Southeast

Chatham County

	04	1510EST 1514EST		0	0	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Trees and powerlines down.

Chatham County

	04	1600EST 1604EST		0	0	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Trees down.

Effingham County

	11	1610EST 1613EST		0	0	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Powerlines down

Bulloch County

	11	1700EST 1704EST		0	0	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Trees and powerlines down countywide.

Bulloch County

	11	1714EST 1718EST		0	1	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Tree fell on a car and injured 1 person.

Effingham County

	11	1715EST 1718EST		0	0	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Bryan County

	11	1723EST 1728EST		0	0	Hail (1.25)
--	----	--------------------	--	---	---	-------------

Effingham County

	31	1510EST 1513EST		0	0	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Trees down.

Bulloch County

	31	1530EST 1534EST		0	0	Thunderstorm Wind (G55)
--	----	--------------------	--	---	---	-------------------------

Trees down.

Effingham County

	31	1540EST 1544EST		0	0	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Trees down.

Chatham County

	31	1630EST 1633EST		0	0	Thunderstorm Wind (G50)
--	----	--------------------	--	---	---	-------------------------

Powerlines down.

GEORGIA, Southwest

Decatur County

	13	1630EST 1645EST		0	0	Urban/Sml Stream Fld
--	----	--------------------	--	---	---	----------------------

Thunderstorms produced torrential rainfall with NWS Doppler radar three-hour estimates of 4 to 5 inches across south-central and southeast portions of the county. Numerous streets, low-lying areas, and intersections were flooded in Bainbridge.

Dougherty County

	28	1705EST		0	0	Hail (1.00)
--	----	---------	--	---	---	-------------

Quarter size hail in the vicinity of Georgia Highway 300 and U.S. Highway 82.

Grady County

	28	1850EST		0	0	10K Thunderstorm Wind
--	----	---------	--	---	---	--------------------------

Power lines down countywide.

Storm Data and Unusual Weather Phenomena

July 1998

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

GEORGIA, Southwest

Dougherty County

Putney **30** **1925EST** **0** **0** **Hail (0.75)**
Dime size hail reported by a WALB-TV meteorologist in Albany.

Tift County

Tifton **28** **1800EST** **0** **1** **75K** **Lightning**
Lightning struck the Tift County E911 tower, briefly knocking out emergency radio communications during a severe thunderstorm. Lightning struck several trees and a gymnasium in Tifton causing minor damage.
A woman was injured when lightning struck her Tifton home.

GEORGIA, West Central

Muscogee County

Columbus **20** **1605EST** **0** **0** **2K** **0** **Hail (1.00)**
Quarter size hail was reported in Columbus.

HAWAII

HIZ002>005

Oahu - Maui - Island Of Hawaii - Molokai

01 **0000HST** **0** **0** **Drought**
31 **2359HST**

Rainfall amounts were generally less than average across the state. This was after two months of near to above average precipitation in many locations. This is a dry time of year in most areas, with the main exception being the Kona section of the Big Island of Hawaii where July is usually one of the wetter months. The Kona area was the place in July, however, having the greatest negative precipitation anomaly in the state. Since this a drier time of year for most locales in Hawaii, it does not take too much rainfall to make average. Therefore, those sections that were below average were often receiving very small amounts of rain. Also, in those areas where dependence on catchment water is critical, such as windward parts of Maui and the Big Island, below average rainfall occurred. Reports from other locations, however, indicated that sufficient precipitation fell to avoid serious short term water deficits.

During the month, a ridge of high pressure remained strong north-northwest of the state. The position of the high was more to the northwest than average for July, and this kept Hawaii in an average, to slightly above average, trade wind regime for the month. Some locales received higher the average amounts of rainfall, while others were missed by most of the precipitation. One tropical system, the remnants of Hurricane Darby, moved by about 100 miles north of the islands as a disturbance. This increased showers in the state, with Kauai receiving the most rain.

Below are rainfall statistics for selected locations from around the state. The first column is rainfall for July. The second has the 30-year average for each location, while the third column is the percent of average rainfall for the month of July.

	July 98	Avg.	% Avg.
Oahu			
Honolulu	0.19	0.59	32
Waianae	0.03	0.3	10
Hawaii Kai	0.80	0.8	100
Manoa Lyon A.	6.59	13.2	50
Waialua	0.19	1.3	15
Ahuimanu (windward)	3.45	4.9	70
Maui			
Kahului	0.18	0.4	45
Hana	M	5.6	M
Kihei	0.02	0.1	20
Lahainaluna	0.00	0.3	0
Wailuku	1.32	1.5	88
Island of Hawaii			
Hilo	6.09	9.7	63
Pahala	0.01	2.1	0
Honaunau (Captain Cook)	2.49	7.3	34
Kamuela (Higher Elev.)	9.08	4.4	206
Kamuela	6.02	3.7	163
Laupahoehoe	M	10.0	M
Molokai			
Kaunakakai	0.09	0.2	45

Storm Data and Unusual Weather Phenomena

July 1998

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

HAWAII

HIZ001>006

Kauai - Oahu - Maui - Island Of Hawaii - Molokai - Lanai

11	1200HST			0	0				
13	0500HST								High Surf

Storm low east of New Zealand caused surf of 4 to 6 feet along south shores of all Hawaiian Islands.

Honolulu County

Makakilo City

05	1500HST			0	0				
07	2200HST								Wild/Forest Fire

A brush fire burned an estimated 2000 acres from Makakilo to Nanakuli in Leeward Oahu. Firefighters were able to prevent any structure damage, and there were no serious injuries. Several families near Kahe Point briefly fled their homes as the flames moved into their vicinity.

IDAHO, Extreme Southeast

NONE REPORTED.

IDAHO, North

Idaho County

Kooskia

03	2230PST			0	0				
									Thunderstorm Wind (G52)

Thunderstorm winds blew down a 4 foot diameter tree.

Idaho County

Grangeville

04	1655PST			0	0				
	1658PST								Hail (1.25)

Two reports of nickle to quarter sized hail were received during a thunderstorm.

Idaho County

Lowell

08	1545PST			0	0				
									Hail (1.50)

Hail to 1.5 inches in diameter occurred at Coolwater Ridge, 7 miles east of Lowell.

Idaho County

Lowell

10	1520PST			0	0				
									Thunderstorm Wind (G52)

Many trees were blown down from Lolo Pass to 18 miles west on US Highway 12...which is around 65 miles northeast of Lowell.

Idaho County

Keuterville

11	1115PST			0	0				
	1130PST								Hail (2.50)

Up to tennis ball sized hail broke windows west of Cottonwood, at Keuterville. Trees were down, and grain fields were totally destroyed.

Clearwater County

Orofino

10	2330PST			0	0				
									Thunderstorm Wind (G52)

Thunderstorm winds blew down trees near Ahsahka on Sunnyside Ridge.

IDAHO, Northwest

Benewah County

St Maries

02	1710PST			0	0	20K	0		
	1900PST								Wild/Forest Fire

a 2 acre wildfire threatened St. Maries High School.

Benewah County

2 S Santa

02	2153PST			0	0	0	0		
									Hail (0.75)

three quarter inch diameter hail

Nez Perce County

Lapwai

09	1814PST			0	1	25K	0		
									Thunderstorm Wind

power lines down and trees blown down. one tree blown down onto trailer house. 1 male injured.

Nez Perce County

Kendrick

09	1832PST			0	0	0	0		
									Thunderstorm Wind

strong wind bending large tree branches and trees blown down.

Latah County

Juliaetta

09	1840PST			0	0	20K	0		
									Thunderstorm Wind

trees and power lines blown down. small fire started from downed power line.

Latah County

Moscow

09	1857PST			0	0	5K	0		
									Thunderstorm Wind

8 inch diameter trees snapped. many power lines down.

Benewah County

Emida

09	1931PST			0	0	0	0		
									Hail (1.00)

1 inch diameter hail.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
IDAHO, Northwest									
Benewah County									
St Maries	09	1945PST 1950PST			0	0	50K	0	Thunderstorm Wind
									numerous trees down along St. Joe River. tree down on pickup truck. high winds forced car off the road into a sewer pond.
Latah County									
Potlatch	09	1955PST 1958PST			0	0	20K	0	Thunderstorm Wind
									many power lines and trees down. possible funnel cloud.
Kootenai County									
Cataldo	09	2020PST 2045PST			0	0	20K	0	Thunderstorm Wind (G52)
									60 mph wind gust at 4th of July Pass. Highway 3 closed from Cataldo to Medimont due to downed trees.
Kootenai County									
Spirit Lake	09	2050PST			0	0	10K	0	Thunderstorm Wind
									small fire started from trees blowing onto power lines.
Boundary County									
Bonners Ferry	10	1405PST 1408PST			0	0	0	0	Tstm Wind/Hail
									half inch diameter hail and wind estimated to 60 mph.
Boundary County									
Copeland	10	1430PST 1435PST			0	0	5K	0	Thunderstorm Wind (G52)
									60 mph wind gust with small trees down.
Nez Perce County									
(Lws)Nez Perce Muni	10	1850PST			0	0	40K	0	Thunderstorm Wind (G55)
									63 mph wind gust at the airport while 15 - 12 inch diameter trees blown down crushing a car. a roof of a shed was torn off.
Latah County									
Genesee	10	1900PST 1930PST			0	0	10K	5M	Tstm Wind/Hail
									heavy rain, large hail and winds over 60 mph wiped out 50% of wheat, peas and lentil crops.
Nez Perce County									
Lewiston	10	1900PST 2000PST			0	0	100K	0	Flood
									an inch of rain in 30 minutes caused several streets to flood in downtown Lewiston. a couple of basements were flooded as up to a foot of water flowed in the streets.
Nez Perce County									
Lewiston Orchards	10	2000PST 2003PST			0	0	5K	0	Thunderstorm Wind
									power lines blown down.
Shoshone County									
Kellogg	30	1200PST 1230PST			0	0	5K	0	Tstm Wind/Hail
									marble size hail and wind gusts to 60 mph in downtown Kellogg.
Shoshone County									
Kellogg	30	1230PST 1335PST			0	0	100K	0	Flood
									over 2 inches in less than an hour lead to locally flooding in the city of Kellogg with I90 temporarily shut down between Kellogg and Cataldo. Main Street was flooding including many businesses, the library, the police department and the fire station.
Kootenai County									
Coeur D Alene	31	1645PST 1715PST			0	0	5K	0	Flood
									heavy rains and local flooding in downtown Coeur d'Alene.
IDAHO, Southeast									
Bingham County									
Blackfoot	01	2035MST 2100MST			0	0			Thunderstorm Wind (G58)
									Trees blown down.
Bingham County									
Springfield	30	2030MST			0	0			Lightning
									Harvested hay stack destroyed.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
IDAHO, Southeast									
Bannock County Pocatello to 2 E Pocatello	30	2145MST			0	0			Lightning
									Ignited brush fire that burned several hundred acres.
Bingham County 5 W Blackfoot	31	1400MST			0	0			Lightning
									Ignited brush fire that burned 23,360 acres.
Butte County 15 SE Arco	31	1700MST			0	0	20K		Flash Flood
									BLM reported road washed out on Big Southern Butte by 1 to 2 inches of rain from a thunderstorm. BLM estimated the storm caused a 50 year flood on the butte.
IDAHO, Southwest									
Elmore County Glenns Ferry	02	1740MST			0	0			Hail (1.25)
Boise County 1 W Garden Vly	02	2002MST			0	0			Hail (0.75)
									Scattered thunderstorms developed over south west Idaho during the afternoon and evening hours. A thunderstorm produced 3/4 inch hail near Garden Valley. Another thunderstorm dropped 1.25 inch hailstones at Glenns Ferry.
Valley County 25 SE Cascade	03	1830MST			0	2			Lightning
									On the evening of July 3rd two men were struck by lightning while fishing in a boat on Deadwood Reservoir. The men, ages 32 and 44 were flown to a hospital in Boise. Both men survived and were released from the hospital by the next day.
Payette County Payette to Fruitland	04	1845MST 1910MST			0	0	200K		Tstm Wind/Hail
									During the evening of July 4th a thunderstorm produced damaging winds in Payette and Fruitland. Winds officially measured from 45 to 50 mph uprooted trees and downed power lines while small hail damaged potato and onion crops.
Twin Falls County Filer	07	1900MST			0	0	25K		Thunderstorm Wind (G50)
									A strong thunderstorm produced wind gusts which peeled the roof off of a business in Filer.
Canyon County Melba	09	1550MST			0	0			Thunderstorm Wind (G50)
Ada County Kuna	09	1555MST			0	0			Thunderstorm Wind (G52)
									A severe thunderstorm produced damaging winds in southern Canyon and Ada counties. Trees were uprooted in Melba and a spotter in Kuna reported a 60 mph wind gust.
Owyhee County Homedale	09	1535MST			0	0			Thunderstorm Wind (G50)
									Severe thunderstorm winds downed trees in Homedale.
Boise County 20 SE Idaho City	27	2000MST			0	0			Flash Flood
Owyhee County 10 S Reynolds	27	2020MST			0	0			Flash Flood
									Scattered thunderstorms dumped local heavy rains over south west Idaho, producing two flash floods. In Owyhee County a spotter reported part of Reynolds Creek Road washed out. In Boise County the Forest Service reported evidence that a flood had occurred on the Middle Fork of the Boise Road.
Owyhee County Oreana	29	1800MST			0	0			Tstm Wind/Hail
Ada County Boise	29	1845MST			0	0			Thunderstorm Wind (G50)
									During the afternoon of July 29th scattered thunderstorms produced damaging winds over south west Idaho. In Oreana pieces of siding were stripped off of a house and in Boise a few trees were knocked over.
Ada County Boise	30	1450MST 1521MST			0	0			Hail (0.88)
									A severe thunderstorm produced 3/4 to 7/8 inch hail in Boise. 7/8 inch hail was observed at the Boise National Weather Service Office.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
IDAHO, Southwest									
Elmore County Glenns Ferry	30	1455MST			0	0			Funnel Cloud
					A spotter reported a brief funnel cloud near Glenns Ferry. The Funnel Cloud lasted only a minute or so.				
Twin Falls County Filer to Twin Falls	30	1514MST 1615MST			0	0	200K		Thunderstorm Wind (G61)
Jerome County Jerome Co Arprt	30	1735MST			0	0			Thunderstorm Wind (G50)
					Outflow winds from nearby thunderstorms gusted up to 70 mph across Twin Falls and Jerome Counties on the evening of July 30th. Numerous trees were uprooted and power was cut to about 15,000 customers. Twenty storm related fires were caused, one of which destroyed a home in Twin Falls. A few sheds and outbuildings around the Magic Valley were damaged and destroyed by the winds.				
Canyon County Caldwell	29	1748MST			0	0	3K		Tstm Wind/Hail
					A thunderstorm produced gusty winds which knocked out power to over a thousand customers in Caldwell. A tree was knocked onto a house causing moderate damage to the structure.				
Boise County 20 SE Idaho City to 20 SW Idaho City	31	1800MST			0	0			Flash Flood
					A National Weather Service storm survey team found evidence of a flash flood across the Middle Fork of the Boise River Road which happened on the evening of the 31st. A small creek flowing under the road through a culvert apparently swelled to over 30 feet wide and 10 feet deep depositing debris over the road.				
Owyhee County Oreana	10	1600MST	0.2	50	0	1	30K		Tornado (F0)
					During the evening of July 10th a manufactured home was flipped over in the town of Oreana. One man inside the home was slightly injured. A NWS storm survey team determined that the damage was caused by an F0 tornado. The tornado was short lived and did no other significant damage.				
ILLINOIS, Central									
Effingham County 3 SW Moccasin to Effingham	07	1250CST 1315CST			0	0		0	Thunderstorm Wind
					As a severe thunderstorm moved through Effingham county, numerous trees were blown down, some of which fell across roadways in the area. Also, one tree fell onto an unoccupied mobile home in Effingham causing moderate damage. No injuries were reported and no damage estimate was available.				
Richland County 1 W Olney	07	1405CST			0	0		0	Thunderstorm Wind
					Thunderstorm winds blew down several power lines 1 mile west of Olney.				
Lawrence County St Francisville	07	1435CST			0	0			Thunderstorm Wind (G61)
					As a severe thunderstorm moved through the St. Francisville area, the winds blew the roofs off of several hangers at the local airport. No injuries were reported and no damage estimate was available.				
Richland County Countywide	07	1400CST 1600CST			0	0			Flash Flood
Lawrence County Countywide	07	1415CST 1600CST			0	0			Flash Flood
					A series of thunderstorms moved across Richland and Lawrence counties over a three hour period. Between 3 to 6 inches of rain fell causing isolated flash flooding in both counties. Water was over numerous roads, including Highway 130 in Richland county. No property damage was reported.				
Douglas County Tuscola to Camargo	20	0958CST 1017CST			0	0		0	Thunderstorm Wind
					As a severe thunderstorm moved across Douglas County, several trees were blown down in Tuscola and Camargo. One tree fell through the roof of a home in Camargo. Some tree limbs and power lines were blown down as well. No injuries were reported and no damage estimate was available.				
Coles County Oakland	20	1025CST			0	0		0	Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

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

ILLINOIS, Central

Trees, tree limbs, and power lines were blown down in Oakland as a severe thunderstorm moved through the area. On one building a portion of the tin roof was blown off and one tree fell against a home causing little damage. No injuries were reported and no damage estimate was available.

Vermilion County **Hoopeston**

20 1400CST 0 0 0 Thunderstorm Wind

Thunderstorm winds blew some siding off of one house and blew down several small trees and tree limbs. Also, the post office window was pushed out slightly but not blown out from the winds. No injuries were reported and no damage estimate was available.

Mason County **Havana to Bath**

22 0800CST 0 0 0 Thunderstorm Wind
0805CST

Thunderstorm winds blew down trees and power lines down in Bath, along Route 78 between Bath and Havana, and in Havana. Also, a grain wagon was blown across the road in Havana and the shed doors were blown in at the Havana city disposal plant. No injuries were reported.

Schuyler County **Rushville**

22 1030CST 0 0 Thunderstorm Wind (G52)

Thunderstorm winds blew down trees, tree limbs, and power lines down in Rushville. Some of the trees caused minor structural damage to a few homes and outbuildings. No injuries were reported.

Cass County **Newmansville**

22 1125CST 0 0 0 Thunderstorm Wind

Thunderstorm winds blew down 4 large trees in Newmansville.

Menard County **Petersburg to 3 N Athens**

22 1144CST 0 0 0 Thunderstorm Wind
1155CST

Thunderstorm winds blew down several trees and numerous tree limbs in an area between Petersburg and 3 miles north of Athens. No injuries were reported.

Logan County **Mt Pulaski to Beason**

22 1235CST 0 0 0 Thunderstorm Wind
1240CST

Several trees, numerous tree limbs, and power lines were blown down in Mt. Pulaski, Chestnut, and Beason. No injuries were reported.

De Witt County **Wapella**

22 1305CST 0 0 0 Thunderstorm Wind

Large tree limbs were blown down in Wapella.

Champaign County **Tolono to Sidney**

22 1342CST 0 0 0 Thunderstorm Wind
1405CST

Several trees and power lines were blown down in Tolono and Sidney.

Edgar County **Chrisman**

22 1420CST 0 0 0 Thunderstorm Wind

Thunderstorm winds blew down numerous large tree limbs in Chrisman.

Sangamon County **Divernon**

22 1420CST 0 0 0 Thunderstorm Wind

Several large trees were blown down and a grain bin was moved off its foundation in Divernon.

Vermilion County **1 E Danville**

22 1420CST 0 0 0 Thunderstorm Wind
1430CST

Thunderstorm winds blew down several trees, took part of a tin roof off of a building, and blew a garage off its foundation and destroyed it one mile east of Danville. Also, a barn door was blown in and a grain trailer was blown over.

Christian County **Kincaid to Morrisonville**

22 1427CST 0 0 0 Thunderstorm Wind
1457CST

Several trees were blown over in Kincaid and Morrisonville, some of which knocked down a few power lines.

Edgar County **1 WNW Bell Ridge to 1 SE Bell Ridge**

22 1507CST 0 0 0 Thunderstorm Wind
1512CST

Thunderstorm winds blew down numerous trees in the Bell Ridge area. Two homes sustained minor to moderate damage from the fallen trees. Also, a barn was destroyed and a chimney was knocked down through the roof of a home one mile southeast of Bell Ridge. The south wall of the house was pushed out and a garage door was blown in. Nearby a mobile home sustained moderate damage. No injuries were reported.

Storm Data and Unusual Weather Phenomena

July 1998

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

ILLINOIS, Central

Clark County 2.5 NE Clarksville	22	1517CST			0	0	0		Thunderstorm Wind
									Thunderstorm winds blew down several trees and power lines 2.5 miles northeast of Clarksville. Also, an old school house was moved three feet off its foundation. No injuries were reported.
Clark County Casey to Martinsville	22	1648CST 1705CST			0	0	0		Thunderstorm Wind
									Thunderstorm winds blew down several trees and power lines in the Casey and Martinsville areas.
Effingham County Countywide	22	1658CST 1733CST			0	0	0		Thunderstorm Wind
									Numerous trees and power lines were blown down throughout the county.
Champaign County Rantoul	22	1712CST			0	0	0		Thunderstorm Wind
									Thunderstorm winds blew down numerous tree limbs and power lines in Rantoul.
Crawford County Robinson	22	1715CST			0	0	0		Thunderstorm Wind
									A large section of a tree was blown down in Robinson, it blocked a nearby street for a time. No structural damage was reported.
Clay County Sailor Spgs to Clay City	22	1911CST 1922CST			0	0	0		Thunderstorm Wind
									Several large trees were blown down in the Sailor Springs and Clay City areas.

ILLINOIS, Northeast

Mchenry County Woodstock to Mc Henry	03	1749CST 1800CST			0	0			Thunderstorm Wind (G50)
									Trees were blown down in Woodstock. Trees were uprooted and limbs blown down in Mc Henry. One tree fell through the roof of a house. A metal shed was blown 150 yards.
Kane County Maple Park to Elburn	03	1800CST 1810CST			0	0			Thunderstorm Wind (G50)
Kane County Batavia	03	1835CST			0	0			Thunderstorm Wind (G50)
Kane County Aurora	03	1854CST			0	0			Thunderstorm Wind (G50)
									Trees, li9mbs and power lines were downed throughout Kane County. A tree fell on a house at Maple Park. Lightning started a fire at a house in Batavia, causing \$100,000 in damage.
Ford County Countywide	06	0500CST 0800CST			0	0			Urban/Sml Stream Fld
Iroquois County Countywide	06	0500CST 0800CST			0	0			Urban/Sml Stream Fld
La Salle County Countywide	06	0500CST 0800CST			0	0			Urban/Sml Stream Fld
Livingston County Countywide	06	0500CST 0800CST			0	0			Urban/Sml Stream Fld
									A narrow band of thunderstorms dumped between three and four inches of rain in less than three hours over parts of north central and east central Illinois. In La Salle County the heavy rain caused a portion of the Spring Valley Road to collapse, leaving a hole about 12 feet wide and 10 feet deep. Street and basement flooding and flooding of farm fields occurred in Streator, Piper City, Chatsworth, Onarga, and Cissna Park. State Road 115 was closed in Piper City. Some rainfall amounts included 3.25 inches at Piper City, 3.2 inches at Pontiac, 3.8 inches at Cissna Park and 3.1 inches at Streator.
Boone County Belvidere	07	0500CST 0800CST			0	0			Urban/Sml Stream Fld
									Heavy rain from thunderstorms caused flooding in a trailer park on the southeast side of Belvidere. A cooperative observer on the southwest side of Belvidere recorded 1.3 inches of rain.
Winnebago County Rockford	19	0302CST			0	0			Thunderstorm Wind (G53)

Storm Data and Unusual Weather Phenomena

July 1998

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

ILLINOIS, Northeast

A 61 mph wind gust was recorded at the airport. A barn was leveled and a house roof damaged near Winnebago.

Boone County
Countywide 19 0330CST 0 0 **Thunderstorm Wind (G50)**
Trees and power lines were downed.

De Kalb County
Kirkland to 19 0320CST 0 0 **Thunderstorm Wind (G50)**
Sycamore 0330CST
Trees and limbs were blown down.

Du Page County
Lombard 19 0400CST 0 0 **Thunderstorm Wind (G50)**
A wall was blown down at a construction site.

Cook County
Chicago Midway Arpt 19 0438CST 0 0 **Thunderstorm Wind (G50)**

Mchenry County
Mc Henry 19 0345CST 0 0 **Thunderstorm Wind (G50)**
Two trees were blown down.

Boone County
Countywide 20 1820CST 0 0 **Thunderstorm Wind (G50)**

Mchenry County
Woodstock to 20 1834CST 0 0 **Thunderstorm Wind (G58)**
Lakemoor 1849CST

Lake County
Volo to 20 1848CST 0 0 **Thunderstorm Wind (G61)**
Mundelein 1900CST

Thunderstorms produced damaging winds. Power lines were downed in Boone County. A 67 mph wind gust was reported at Woodstock, 60 mph at Volo Bog, 68 mph at Lake Villa and 65 to 70 mph at Mundelein. In Antioch a 4 foot diameter tree fell on a house and four 50 foot, 60 year old ash trees were blown down. At Fox Lake two 85 foot poplar trees were downed. In Mundelein branches were knocked down.

Boone County
Poplar Grove 20 1910CST 0 0 **Thunderstorm Wind (G50)**
Estimated 65 mph winds snapped 2 to 3 foot diameter trees.

Kane County
Carpentersville 20 1852CST 0 0 **Thunderstorm Wind (G52)**

Mchenry County
Harvard to 21 1210CST 0 0 **Thunderstorm Wind (G54)**
Woodstock 1217CST

Lake County
Fox Lake 21 1235CST 0 3 **Thunderstorm Wind (G50)**
Trees, branches and power lines were downed at Harvard and the roof of a house was damaged. Trees were uprooted at Hebron. A gust to 62 mph was recorded by a spotter. Trees and power lines were blown down at Fox Lake. A wall fell on a man at a construction site. Two women were injured, one of them seriously, by a falling tree at a Lake Villa park.

Kane County
Elgin 19 0345CST 0 0 **Thunderstorm Wind (G50)**
Thunderstorm winds knocked down trees and limbs. A large limb crushed a parked car.

ILZ014
Cook
01 2000CST 2 0 **Excessive Heat**
02 0020CST

A heat wave in late June caused 10 heat deaths between June 26 and June 29 in Chicago. Tow more deaths occurred in early July even though the heat had subsided.
M75PH, M55PH

ILZ014
Cook
14 1200CST 3 0 **Excessive Heat**
15 2000CST

A minor heat wave with heat indices in the middel 90s resulted in 3 heat related deaths in suburban Cook County.
F40PH, M55PH, M75PH

ILLINOIS, Northwest

Stephenson County
Freeport to 03 1810CST 0 0 **Thunderstorm Wind (G52)**
German Vly 1820CST

Gusty thunderstorm winds downed branches causing power outages from Freeport through Eastern Stephenson County.

Storm Data and Unusual Weather Phenomena

July 1998

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

ILLINOIS, Northwest

Stephenson County 7 NW Freeport to 2 W Cedarville	20	1813CST			0	0			Funnel Cloud
Bureau County Countywide	21 22	2257CST 0300CST			0	0			Urban/Sml Stream Fld
Henry County Countywide	21 22	2257CST 0300CST			0	0			Urban/Sml Stream Fld
Mercer County Countywide	21 22	2257CST 0300CST			0	0			Urban/Sml Stream Fld
Putnam County Countywide	21 22	2257CST 0300CST			0	0			Urban/Sml Stream Fld
Rock Island County Countywide	21 22	2257CST 0300CST			0	0			Urban/Sml Stream Fld

Thunderstorms with heavy rain developed and moved across rainsoaked areas overnight. Ponding of water on roadways and flooded drainage ditches were reported in Putnam County. From midnight to 3 AM a swath of 2 inch rainfall with isolated 3 inch amounts fell across Southern Rock Island, central Henry, Southern Bureau and most of Putnam Counties.

ILLINOIS, South

ILZ087-092	Gallatin - Alexander				0	0			Flood
	01	0001CST							
	09	2200CST							
	The Ohio River, which had been above flood stage at Cairo in late June, finally fell below flood stage there on the 9th of July. The flood stage at Cairo is 40 feet, and a crest of 42.6 feet was observed on the 6th. Further upstream at Shawneetown, the Ohio River was above flood stage from the 3rd to the 7th as a result of heavy rain on the 3rd. Flood stage at Shawneetown is 33 feet, and a crest of 35.8 feet was observed on the 5th. This resulted in minor flooding of agricultural bottomland.								
ILZ092	Alexander				0	0			Flood
	04	0200CST							
	06	2200CST							
	The Mississippi River crested just a few inches above the flood stage of 33 feet at Thebes. The crest occurred late in the evening of the 5th. Very minor flooding of low-lying agricultural bottomland occurred.								
ILZ084	Jackson				0	0	5K		Flood
	01	0001CST							
	15	1000CST							
	The Big Muddy River, which had been above flood stage since mid June, crested at 23.8 feet at Murphysboro on the 4th. Flood stage at Murphysboro is 16 feet. Flooding was mainly confined to low-lying farm fields and parks near the river. Backwater from flooding on the Mississippi River contributed to the high levels on the Big Muddy River.								
Pulaski County Countywide	03	1140CST 1300CST			0	0	10K		Urban/Sml Stream Fld
	A slow-moving area of thunderstorms dumped very heavy rain across the county. A spotter reported up to 5 inches of rain in the Mound City area.								
<u>ILLINOIS, Southwest</u>									
St. Clair County (Cps)East Stl Arpt C	03	1555CST			0	0			Hail (0.75)
St. Clair County Cahokia	03	1555CST			0	0			Thunderstorm Wind (G50)
	Thunderstorm wind gusts downed a few trees along Highway 157. 3/4 inch hail was reported at Bi-State Parks Airport.								
Fayette County Vandalia	07	1310CST			0	0			Thunderstorm Wind (G52)
	Thunderstorm wind gusts downed a few trees and utility lines.								
Macoupin County Atwater	22	1630CST			0	0			Thunderstorm Wind (G56)
	Thunderstorm wind gusts damaged trees and outbuildings.								
Fayette County Ramsey	22	1715CST			0	0			Thunderstorm Wind (G61)

Storm Data and Unusual Weather Phenomena

July 1998

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

ILLINOIS, Southwest

Fayette County Vandalia	22	1715CST			0	0			Thunderstorm Wind (G61)
Fayette County Brownstown	22	1717CST			0	0			Thunderstorm Wind (G61)
Thunderstorm wind gusts downed trees in the Ramsey, Vandalia and Brownstown areas.									
Madison County 7 N Edwardsville	22	1748CST			0	0			Thunderstorm Wind (G58)
Madison County Troy	22	1750CST			0	0			Thunderstorm Wind (G58)
Madison County Marine	22	1752CST			0	0			Thunderstorm Wind (G58)
Madison County St Jacob	22	1752CST			0	0			Thunderstorm Wind (G58)
Thunderstorm wind gusts downed trees, utility lines and caused minor damage to roofs in the area. A couple of vehicles were also damaged in St. Jacob by falling trees.									
Bond County Greenville	22	1750CST			0	0			Thunderstorm Wind (G56)
Thunderstorm wind gusts downed several trees,									
St. Clair County Fairview Hgts	22	1825CST			0	0			Thunderstorm Wind (G55)
Thunderstorm wind gusts downed several trees.									
St. Clair County Dupo	22	1835CST			0	0			Thunderstorm Wind (G55)
Thunderstorm wind gusts downed some trees.									
Madison County Granite City	22	1913CST			0	0			Thunderstorm Wind (G55)
Madison County Mitchell	22	1915CST			0	0			Thunderstorm Wind (G55)
Madison County Edwardsville	22	1917CST			0	0			Thunderstorm Wind (G55)
Thunderstorm wind gusts downed some trees and power lines across east and central Madison County.									
Madison County Countywide	30	0900CST 1200CST			0	0			Urban/Sml Stream Fld
St. Clair County Countywide	30	0900CST 1200CST			0	0			Urban/Sml Stream Fld
Rainfall of 2 to 3 inches caused some minor flooding across the area. A few roads were closed for short periods due to the flooding. One of the harder hit areas was the town of Mitchell, in Madison County. Several roads had to be closed into the next day due to an overflowing drainage creek.									

ILZ100>101

Madison - St. Clair	18	1200CST			0	19			Excessive Heat
	22	1800CST							
High temperatures in the middle to upper 90s along with Heat Index readings around 110 resulted in some heat related injuries in Madison and St. Clair counties.									

INDIANA, Central

Tippecanoe County West Lafayette	04	0130EST 0140EST	8	120	0	0	200K		Tornado (F1)
Tornado damaged several houses and blew down numerous trees and power lines near North River Road and Happy Hollow Road.									
Daviess County Countywide	07	0600EST 1100EST			0	0			Urban/Sml Stream Fld
Greene County Countywide	07	0600EST 1100EST			0	0			Urban/Sml Stream Fld
Knox County Countywide	07	0600EST 1100EST			0	0			Urban/Sml Stream Fld

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
INDIANA, Central									
Sullivan County Countywide	07	0600EST 1100EST			0	0			Urban/Sml Stream Fld
									Rain amounts of two to four inches caused widespread street flooding and brought many streams above bankfull.
Knox County Vincennes	07	0745EST			1	0			Lightning
									Lightning struck and killed a 45 year old male in a parking lot at the Southwest Indiana Regional Youth Village. M45OU
Daviess County Countywide	07	1700EST 1900EST			0	0			Flood
Knox County Countywide	07	1700EST 1900EST			0	0			Flood
Sullivan County Countywide	07	1700EST 1900EST			0	0			Flood
									A second round of thunderstorms during the afternoon added several more inches of rainfall to these counties which experienced two to four inch rains that morning. This resulted in a round of flash flooding that placed many streams out of their banks and across roadways. County sheriffs reported many roads under water during the early evening. Several other roads running near streams were also washed out by high water levels, especially in Knox County.
Hendricks County Brownsburg	19	0900EST			0	1			Lightning
									Lightning struck a man at a golf course.
Hamilton County Arcadia	19	0919EST			0	0			Thunderstorm Wind (G65)
Marion County Oaklandon	19	0940EST			0	0			Hail (0.75)
									Reported by TV meteorologist.
Marion County Beech Grove	19	0950EST			0	0			Hail (1.75)
Clinton County Forest	19	1830EST 1835EST			0	0			Hail (1.75)
									Hail reportedly covered the ground.
Tipton County Windfall	19	1855EST 1857EST			0	0			Hail (1.00)
Howard County Russiaville	19	1847EST 1850EST			0	0			Hail (0.75)
Boone County Lebanon	19	1900EST			0	1	10K		Thunderstorm Wind
									Tree blown down on house trapped man underneath, seriously injuring him.
Hamilton County Sheridan	19	1935EST 1937EST			0	2	5K		Thunderstorm Wind
									Thunderstorm winds blew down the second story of a building under construction injuring two.
Hamilton County 2 W Noblesville	19	2019EST 2020EST			0	0			Hail (0.75)
Rush County Rushville	19	2034EST 2040EST			0	0	1K		Thunderstorm Wind (G51)
									Thunderstorm winds to 60 mph blew down trees and power lines.
Delaware County Central Portion	19	2114EST 2119EST			0	0			Hail (1.75)
Hamilton County Cicero	19	2204EST 2206EST			0	0			Hail (0.88)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
INDIANA, Central									
Henry County Middletown	19	2222EST 2224EST			0	0	0.50K		Thunderstorm Wind
		Two foot diameter tree blown down.							
Hancock County Westland to 6 W Westland	19	2310EST			0	0			Hail (1.00)
Rush County 1 E Arlington	19	2343EST 2345EST			0	0	0.50K		Thunderstorm Wind
		Trees blown down.							
Rush County Central Portion	20	0004EST 0014EST			0	0	5K		Thunderstorm Wind
		Gas pumps blown over in Rushville while trees were blown down in Arlington.							
Marion County (Ind)Indnpls Intl Ar	20	0117EST			0	0			Thunderstorm Wind (G52)
Johnson County Greenwood	20	0130EST 0132EST			0	0			Thunderstorm Wind (G52)
Marion County Beech Grove	20	0145EST			0	0	1K		Thunderstorm Wind
		Trees and power lines blown down.							
Morgan County Countywide	20	0140EST 0145EST			0	0	3K		Thunderstorm Wind
		Numerous trees and power lines downed.							
Shelby County Central Portion	20	0200EST 0205EST			0	0	2K		Thunderstorm Wind
		Tree limbs and power lines taken down.							
Bartholomew County Countywide	20	0228EST 0245EST			0	0	3K		Thunderstorm Wind
		Trees and power lines blown down.							
Johnson County Central Portion	20	0225EST			0	0	2K		Thunderstorm Wind
		Trees downed.							
Decatur County Greensburg	20	0220EST 0240EST			0	0	3K		Thunderstorm Wind
		Trees blown down. Windows in apartments blown out.							
Decatur County Greensburg	20	0300EST			0	0	1K		Thunderstorm Wind
		More trees downed by another storm.							
Bartholomew County Hope	20	0330EST 0332EST			0	0	0.50K		Thunderstorm Wind
		Several trees blown down again.							
Johnson County Countywide	20	0300EST 0700EST			0	0			Urban/Sml Stream Fld
		Thunderstorms occurring over a 5 hour period producing up to 4 inches of rain caused widespread ponding of water on county roads.							
Johnson County Countywide	20	0330EST 0335EST			0	0	1K		Thunderstorm Wind
		Yet another round of storms brought down trees and power lines.							
Bartholomew County Countywide	20	0600EST 1700EST			0	0			Flash Flood

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
INDIANA, Central									
Decatur County Southwest Portion to Countywide	20	0600EST 1700EST			0	0			Flash Flood
Jackson County Countywide	20	0600EST 1700EST			0	0			Flash Flood
Jennings County West Portion	20	0600EST 1700EST			0	0			Flash Flood
<p>Rainfall amounts of two to over eight inches falling in a four to six hour time frame resulted in widespread flash flooding across these counties. The heaviest rainfall was near Columbus where over eight inches of rain fell during the early morning hours of the 20th. This turned out to be the worst flooding ever for parts of Bartholomew County. In Columbus, numerous homes and businesses were flooded, requiring evacuations in some cases. Despite the rapid and significant flooding, no injuries or deaths were reported. The rapid runoff also led to very quick flooding of the East Fork White River tributaries in the area.</p>									
Vermillion County Cayuga	19	1800EST 1808EST			0	0	2K		Thunderstorm Wind
<p>Thunderstorm winds blew down trees and power lines in Cayuga and neighboring Eugene.</p>									
Hancock County New Palestine	19	2000EST 2008EST			0	0	1.5K		Thunderstorm Wind
<p>Thunderstorm winds blew down several trees, one which landed on a pickup truck.</p>									
Howard County Countywide	22	0430EST 0700EST			0	0			Flood
<p>Rapid rainfall amounts of 1 to 3 inches quickly flooded streets and smaller streams across the county, especially in Greentown.</p>									
Carroll County Countywide	22	0430EST 0930EST			0	0			Urban/Sml Stream Fld
Delaware County Countywide	22	0500EST 0930EST			0	0			Urban/Sml Stream Fld
Madison County Countywide	22	0500EST 0930EST			0	0			Urban/Sml Stream Fld
Randolph County Countywide	22	0500EST 0830EST			0	0			Urban/Sml Stream Fld
Tipton County Countywide	22	0500EST 0930EST			0	0			Urban/Sml Stream Fld
<p>Rainfall up to two inches in less than two hours resulted in rapid flooding of streets in these counties. This was the south extent of a more significant rain across Wabash county. Many streams overtopped their banks due to rain within their county and due to water levels from upstream rains.</p>									
Madison County 4 S Anderson	22	0430EST 0435EST			0	0	0.50K		Thunderstorm Wind
<p>Thunderstorm winds blew down trees and blew the roof off a lean-to.</p>									
Vermillion County Eugene	22	1456EST			0	0	0.50K		Thunderstorm Wind
<p>Tree blown down across road.</p>									
Delaware County 5 SE Muncie	22	0500EST			1	0			Lightning
<p>Man fatally struck by lightning while fishing at Prairie Creek Reservoir during pre-dawn hours. M71BO</p>									
Parke County Marshall	22	1605EST 1607EST			0	0			Thunderstorm Wind (G56)

Storm Data and Unusual Weather Phenomena

July 1998

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

INDIANA, Central

INZ028>029-035-043>044-051-060-067>068 **Warren - Tippecanoe - Fountain - Vermillion - Parke - Vigo - Sullivan - Knox - Daviess**

01	0000EST								
12	0700EST			0	0				Flood

Flooding continued from the end of June in these counties. Additional rainfall of several inches occurring on both the 4th and the 7th kept the Wabash and River and lower portions of the White River anywhere from one to over six foot above flood stage. This again affected mainly agricultural lands and low lying roads near the rivers. Once again, as in June, these high water levels impacted the same crop areas either destroying or significantly impacting the eventual harvests this year.

INZ028>029-035-043>044-051-060 **Warren - Tippecanoe - Fountain - Vermillion - Parke - Vigo - Sullivan**

22	0000EST								
31	0700EST			0	0				Flood

Heavy rainfall from two to ten inches on the 22nd in the Eel River basin of North Central Indiana resulted in another round of flooding of the Wabash River from Lafayette to Sullivan. Water levels reached up to six foot over flood stage and were comparable to the June 1998 floods along this stretch of river. Once again, agricultural lands and low lying roads were the only areas affected. And once again, the flooded crops were either destroyed or severely damaged. Fortunately, the affected crops only account for a small percentage of Indiana's tillable lands.

INZ064-071 **Bartholomew - Jackson**

20	1500EST								
22	0700EST			0	0				Flood

Rainfall amounts from two to nearly ten inches across Bartholomew and northern Jackson Counties resulted initially in flash flooding, particularly in Columbus, as described in an associated Flash Flood entry. This water quickly brought the East Fork White River and many of its tributaries up to as much as six feet above flood stage impacting agricultural lowlands and low lying roads along these streams. As in other cases this summer, this did impact crop yields but this floods duration was rather short and had a lesser affect than did the June 1998 floods in these counties.

INDIANA, Northeast

Marshall County

Plymouth	03	2130EST							
	04	2130EST			0	0			Thunderstorm Wind (G50)

SEVERAL TREES DOWN IN COUNTY WITH SOME MINOR ROOF DAMAGE MAINLY NORTHEAST THROUGH SOUTHEAST OF PLYMOUTH.

St. Joseph County

3 NW Walkerton	03	2130EST	0.1	10	0	0			Tornado (F0)
----------------	----	---------	-----	----	---	---	--	--	--------------

ST JOSEPH COUNTY POLICE REPORTED TORNADO TOUCHDOWN AT ROUTE 104 AND BARLEY ROAD. SHED WAS BLOWN APART AND A BOAT WAS BLOWN ACROSS A FIELD WHICH WAS LATER CONFIRMED BY A NWS EMPLOYEE.

St. Joseph County

1 N Mishawaka	03	2138EST			0	0			Thunderstorm Wind (G50)
---------------	----	---------	--	--	---	---	--	--	-------------------------

NUMEROUS TREES DOWN ALONG WITH POWER OUTAGES.

La Porte County

La Porte	03	2141EST			0	0			Thunderstorm Wind (G50)
----------	----	---------	--	--	---	---	--	--	-------------------------

WIND DAMAGE - POWER LINES DOWN.

La Porte County

South Center	03	2142EST			0	0			Thunderstorm Wind (G50)
--------------	----	---------	--	--	---	---	--	--	-------------------------

POWER LINES DOWN.

Kosciusko County

3 SW Warsaw	03	2244EST			0	0			Thunderstorm Wind (G50)
-------------	----	---------	--	--	---	---	--	--	-------------------------

WIND DAMAGE - POWER LINES DOWN AT SR-25 AND CR-100 SOUTH AND NEAR ETNA GREEN.

Noble County

1 N Ligonier	03	2319EST			0	0			Thunderstorm Wind (G50)
--------------	----	---------	--	--	---	---	--	--	-------------------------

2 TREES DOWN.

Kosciusko County

Beaver Dam	03	2345EST			0	0			Thunderstorm Wind (G50)
------------	----	---------	--	--	---	---	--	--	-------------------------

POWER LINES DOWN.

Cass County

Countywide to Adamsboro	04	0444EST			0	0			Flood
-------------------------	----	---------	--	--	---	---	--	--	-------

COUNTY ROADS UNDER WATER.

Storm Data and Unusual Weather Phenomena

July 1998

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

INDIANA, Northeast

Fulton County Countywide

04 0444EST **0** **0** **Flood**
MANY COUNTY ROADS UNDER WATER. STATE ROAD 25 IMPASSABLE.

Miami County Countywide

04 0444EST **0** **0** **51K** **Flash Flood**
HOMES EVACUATED IN PERU WITH WATER UP TO CAR ROOFTOPS. FLOODING IN MACY IN NORTHWEST PART OF COUNTY AS WELL AS IN DENVER AND JUST NORTHWEST OF MEXICO.

Blackford County Hartford City to Countywide

04 0454EST **0** **0** **Flash Flood**
RESIDENCES FLOODED. WATER 1 TO 2 FEET DEEP ON ROADS WITH STALLED VEHICLES.
Synoptic and mesoscale conditions for July 4th...

A cold front moved into southern Michigan and northern Indiana early in the morning on July 4th. Severe thunderstorms developed along this front over the southern part of lake Michigan and quickly transformed into a bow echo as the system raced southeastward at 50 mph. Most unstable parcel Cape values exceeded 2500 J/kg. Deep layer shear was impressive but unidirectional as a mid level speed max of 60 knots and left over mesoscale vorticity max moved out of northeast Illinois that morning. Deviant storm motions to the southeast produced impressive storm relative helicity values but the elevated nature of the convection and stable boundary layer helped to prevent most of the rear inflow jet momentum from mixing down to the surface. Where the rear flank downdraft was able to mix to the surface... one weak, brief tornado touchdown was observed near Walkerton.

As the outflow along the western edge of the bow became stationary... thunderstorms with heavy rain redeveloped and trained southeast producing flash flooding across a few counties.

Starke County 2 N Toto

19 1618EST **0** **0** **Thunderstorm Wind (G57)**

La Porte County 2 S South Center

19 1625EST **0** **0** **Thunderstorm Wind (G50)**
TREES DOWN REPORTED BY SHERIFFS DEPT.

Marshall County 5 S Culver

19 1639EST **0** **0** **Thunderstorm Wind (G52)**

Marshall County 1 S Bourbon

19 1645EST **0** **0** **Thunderstorm Wind (G56)**
TREES DOWN NEAR BOURBON 1 TO 2 AND A HALF FEET IN DIAMETER. TREES AND POWER LINES DOWN COUNTYWIDE.

Kosciusko County Warsaw

19 1708EST **0** **0** **Thunderstorm Wind (G52)**
NUMEROUS TREES DOWN THROUGHOUT WARSAW AND ALONG STATE ROAD 15 FROM WARSAW TO LEESBURG.

Fulton County Akron

19 1715EST **0** **0** **Thunderstorm Wind (G52)**

Wabash County North Manchester

19 1720EST **0** **0** **Thunderstorm Wind (G52)**
TREES DOWN.

Whitley County 6 N Columbia City

19 1735EST **0** **0** **Thunderstorm Wind (G52)**

Miami County Peru

19 1737EST **0** **0** **Hail (0.75)**

Allen County (Fwa)Baer Fld Ft Way

19 1738EST **0** **0** **Thunderstorm Wind (G60)**

Jay County 5 W Center

19 1738EST **0** **0** **Thunderstorm Wind (G50)**
TREES DOWN NEAR STATE ROAD 26 AND STATE ROAD 1.

Allen County Ft Wayne

19 1746EST **0** **0** **Thunderstorm Wind (G50)**
TREES DOWN IN CITY.

Adams County .5 W Decatur

19 1801EST **0** **0** **Thunderstorm Wind (G52)**
ROOF DAMAGE JUST WEST OF DECATUR.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
INDIANA, Northeast									
Grant County Marion	19	1819EST			0	0			Hail (1.00)
		HAIL IN MARION AND ON NORTH SIDE OF CITY.							
Blackford County .5 N Hartford City	19	1838EST			0	0			Hail (0.75)
		HAIL JUST NORTH OF CITY ALONG WITH TREES DOWN.							
Grant County Swayzee	19	1928EST			0	0			Hail (0.75)
Grant County Gas City	19	1930EST			0	0			Hail (1.25)
		ONE TO ONE AND A QUARTER INCH MEASURED IN GAS CITY.							
Grant County 3 E Gas City	19	1935EST			0	0			Hail (1.75)
		GOLFBALL SIZE HAIL NEAR I-69 AND STATE ROADS 22 AND 35.							
La Porte County 1 S La Crosse	19	2025EST 2027EST	1.5	25	0	0			Tornado (F0)
		TORNADO DAMAGE RECORDED BY CHANNEL 16 IN SOUTH BEND. PATH WAS 1 MILE SOUTH OF LA CROSSE AND EASTWARD NEAR STATE ROAD 421 AND COUNTY ROAD 2100 SOUTH. 2 FARMS WERE DAMAGED; ONE BARN LOST A ROOF, A SILO WAS DESTROYED, AND A TREE FELL ON A HOUSE.							
St. Joseph County Granger	21	1902EST			0	0			Hail (0.88)
		SKYWARN SPOTTER REPORT.							
La Porte County La Porte	21	1930EST			0	0			Thunderstorm Wind (G52)
		NUMEROUS TREES DOWN ACROSS COUNTY.							
St. Joseph County Mishawaka	21	1930EST			0	0			Thunderstorm Wind (G52)
St. Joseph County New Carlisle	21	1930EST			0	0			Thunderstorm Wind (G61)
St. Joseph County South Bend	21	1930EST			0	1	500K		Thunderstorm Wind (G60)
		SEVERAL REPORTS OF HIGH WINDS AND WIND DAMAGE. ONE WOMAN WAS SERIOUSLY INJURED WHEN A LARGE TREE FELL ON HER CAR.							
Lagrange County Shipshewana	21	1955EST			0	0			Hail (0.75)
Kosciusko County Syracuse	21	2010EST			0	0			Thunderstorm Wind (G50)
		TREES DOWN.							
Kosciusko County Warsaw	21	2010EST			0	0	500K		Thunderstorm Wind (G50)
		NUMEROUS TREES DOWN IN TOWN. ONE HOME COMPLETELY DESTROYED BY LARGE FALLEN TREE WHICH CRUSHED THE THEN UNOCCUPIED HOME. A TENTS AT THE COOK CHAPEDL CHURCH WERE BLOWN AWAY AND NEVER FOUND. SEVERAL OTHER HOMES SUFFERED MINOR TO MODERATE DAMAGE ESPECIALLY TO ROOFS FROM FALLEN TREES AND LIMBS.							
Elkhart County Goshen	21	2015EST			0	0	300K		Thunderstorm Wind (G56)
		NUMEROUS TREES AND POWER LINES DOWN. SIDING RIPPED OFF HOUSES.							
INZ007-007 Steuben	21	2015EST 2020EST			0	0			Flood
		OVER 2 INCHES OF RAIN IN 35 TO 40 MINUTES IN FREMONT AND HAMILTON.							
Kosciusko County Pierceton	21	2015EST			0	0	200K		Thunderstorm Wind
		A HOUSE WAS FLATTENED BY A LARGE OAK TREE. NO ONE WAS HOME AT THE TIME FORTUNATELY.							
Steuben County Angola	21	2015EST			0	0			Thunderstorm Wind (G50)
		TREES AND LARGE LIMBS DOWN.							
Steuben County Fremont	21	2015EST			0	0	312K		Lightning

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
INDIANA, Northeast									
LIGHTNING INDUCED FIRES DESTROYED A BARN AND KENNEL AT 3580 S CR RD 800 E. ANOTHER LIGHTNING INDUCED FIRE DESTROYED ANOTHER BARN AND FARM TRACTORS AT 3285 N CR RD 650 E WHICH TOOK FIRE FIGHTERS 40 MINUTES TO GET UNDER CONTROL.									
Lagrange County Lagrange	21	2030EST			0	0			Thunderstorm Wind (G50)
									NUMEROUS TREES AND POWER LINES DOWN.
De Kalb County Waterloo	21	2040EST			0	0			Thunderstorm Wind (G55)
Kosciusko County Warsaw	21	2042EST			0	0			Thunderstorm Wind (G64)
									NUMEROUS TREES DOWN.
Stauben County Angola	21	2050EST			0	4	250K		Thunderstorm Wind (G50)
									WIND DAMAGE TO 4-H BUILDING AND STRUCTURE HIT BY LIGHTNING. SEVERAL PEOPLE WERE INJURED WHEN LIGHTNING STRUCK THE 4-H BUILDING.
Marshall County Plymouth	21	2055EST			0	0			Thunderstorm Wind (G50)
									TREES AND POWER LINES DOWN THROUGHOUT THE COUNTY.
Fulton County Rochester	21	2100EST			0	0			Thunderstorm Wind (G52)
Kosciusko County Pierceton	21	2100EST			0	0	10K		Thunderstorm Wind (G50)
									TREE FELL ON HOME AND DAMAGED ROOF AND PORCH.
Whitley County South Whitley	21	2100EST			0	0			Thunderstorm Wind (G50)
									MANY LIMBS DOWN IN COLLAMER AND SOUTH WHITLEY. 2 TREES DOWN IN SOUTH WHITLEY.
Huntington County Huntington	21	2135EST 2250EST			0	0			Thunderstorm Wind (G52)
									NUMEROUS TREES AND POWER LINES DOWN IN COUNTY.
Wabash County North Manchester	21	2145EST			0	0	100K		Thunderstorm Wind (G50)
									TREE FELL ON HOME AND DESTROYED PORCH. COAST TO COAST STORE LOST THEIR GREEN HOUSE AND SECURITY FENCE AS IT BECAME AIRBORNE IN THE HIGH WINDS.
Miami County Peru	21	2150EST			0	0			Hail (0.75)
Allen County Ft Wayne	21	2155EST			0	0			Thunderstorm Wind (G52)
									NUMEROUS TREES AND POWER LINES DOWN IN CITY.
Kosciusko County Packerton to (Fwa)Baer Fld Ft Way	21	2200EST			0	0	250K		Lightning
									A LIGHTNING INDUCED FIRE COMPLETELY DESTROYED THE PACKERTON FOREST PRODUCTS PLANT.
Miami County Denver	21	2200EST			0	0			Hail (1.75)
Adams County Monroe	21	2210EST			0	0			Hail (0.75)
Miami County 1 N Mexico	21	2213EST			0	0			Hail (0.88)
Cass County Logansport	21	2215EST			0	0			Thunderstorm Wind (G50)
									NUMEROUS TREES AND POWER LINES DOWN ACROSS COUNTY.
Wells County Bluffton	21	2230EST			0	0			Hail (0.75)
Blackford County Hartford City	21	2300EST			0	0			Thunderstorm Wind (G50)
									NUMEROUS TREES AND POWER LINES DOWN THROUGHOUT COUNTY.
Grant County Marion	21	2300EST			0	0			Thunderstorm Wind (G52)
									TREES DOWN IN TOWN.

Storm Data and Unusual Weather Phenomena

July 1998

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

INDIANA, Northeast

Jay County

Portland	21	2300EST			0	0			Thunderstorm Wind (G52)
----------	----	---------	--	--	---	---	--	--	-------------------------

NUMEROUS TREES AND POWER LINES DOWN THROUGHOUT COUNTY.

Noble County

Albion	21	2300EST			0	0			Thunderstorm Wind (G50)
--------	----	---------	--	--	---	---	--	--	-------------------------

NUMEROUS TREES DOWN THROUGHOUT COUNTY.

Whitley County

2 SW Laud to 2 NE Laud	21	2328EST			0	0			Hail (0.75)
---------------------------	----	---------	--	--	---	---	--	--	-------------

Adams County

Decatur	22	0030EST			0	0	50K		Lightning
---------	----	---------	--	--	---	---	-----	--	-----------

A DOUBLE WIDE TRAILER AT THE CALVARY WORSHIP CENTER BURNED TO THE GROUND DUE TO A LIGHTNING STRIKE.

Huntington County

Huntington	22	0100EST			0	0	1.5M	500K	Flood
------------	----	---------	--	--	---	---	------	------	-------

TWO INCHES OF RAIN FELL IN LESS THEN 40 MINUTES IN HUNTINGTON WHICH FLOODED MANY BASEMENTS IN TOWN. A TREE FELL ONTO A VAN CRUSHING IT SEVERLY. MANY COUNTY ROADS WERE COMPLETELY WASHED OUT AS WELL INCLUDING US 24.

Wabash County

Wabash	22	0130EST			0	0	6M	2M	Flood
--------	----	---------	--	--	---	---	----	----	-------

6 TO 8 INCHES OF RAIN FELL ACROSS THE SOUTHERN HALF OF WABASH COUNTY SENDING THE NORMALLY DOCILE CHARLEY CREEK INTO A RAGING ONE-HALF MILE WIDE TORRENT THROUGH TOWN. MANY PEOPLE WHO WERE NOT STRANDED BY THE FLOOD WATERS WERE EVACUATED TO HIGHER GROUND. TWO BRIDGES AND 15 COUNTY ROADS WERE COMPLETELY WASHED OUT. MANY HOMES ALONG THE EEL AND SALAMONIE RIVERS WERE EVACUATED AS WELL AS THOSE RIVERS APPROACHED RECORD FLOOD LEVELS. DAMAGE ESTIMATES WERE IN THE MILLIONS DUE TO COUNTLESS FLOODED HOMES... BASEMENTS AND VEHICLES.

Fulton County

Grass Creek	22	0200EST			0	1	150K		Flood
-------------	----	---------	--	--	---	---	------	--	-------

40 PERCENT OF THE COUNTIES ROADS WERE REPORTED WASHED OUT. ONE MAN WAS INJURED WHEN HE DROVE HIS VEHICLE INTO A FALLEN TREE LIMB. HE SUFFERED CUTS AND BRUISES.

Miami County

Peru	22	0200EST			0	0	1M	500K	Flood
------	----	---------	--	--	---	---	----	------	-------

MAUGANS ROAD MOBILE HOME PARK SUSTAINED SEVERE FLOODING. SEVERAL MOBILE HOMES WERE INUNDATED WITH WATER UP TO 4 FEET DEEP. MANY OF THE RESIDENTS SUFFERED FLOODED VEHICLES INCLUDING ONE MAN WHO LOST A VAN, A TRUCK AND A HARLEY DAVIDSON MOTORCYCLE. MANY HOMES IN PERU WERE FLOODED WITH RAW SEWAGE AS STORM SEWERS FLOODED AND BACKED UP INTO HOMES.

Wells County

Bluffton	22	0200EST			0	0	250K		Flood
----------	----	---------	--	--	---	---	------	--	-------

MANY ROADS AND BASEMENTS WERE FLOODED IN BLUFFTON AND WELLS AS 6 INCHES OF RAIN FELL IN LESS THEN 5 HOURS.

Adams County

Geneva	22	0230EST			0	0	150K		Flood
--------	----	---------	--	--	---	---	------	--	-------

35 MOBILE HOMES IN A TRAILER PARK SUSTAINED MINOR TO MODERATE FLOODING. 200 PEOPLE WERE EVACUATED ALONG THE UPPER WABASH RIVER.

Cass County

Logansport	22	0300EST			0	0	500K		Flood
------------	----	---------	--	--	---	---	------	--	-------

THE LOGANSPORT IMPLEMENT STORE WAS INUNDATED WITH WATER UP TO FOUR FEET DEEP. SEVERAL HOMES IN TOWN SUSTAINED FLOODED BASEMENTS. ONE RESIDENT IN THE TOWN OF GALVESTON HAD THEIR BASEMENT WALL COLLAPSE DUE TO THE PRESSURE OF THE WATER.

Jay County

Portland to 2 S Bryant	22	0300EST			0	0	500K		Flood
---------------------------	----	---------	--	--	---	---	------	--	-------

SEVERAL ROADS ACROSS THE COUNTY SUSTAINED DAMAGE DUE TO PARTIAL OR COMPLETE WASHOUTS. MANY HOMES IN LOW LYING AREAS HAD THEIR BASEMENTS FLOODED ESPECIALLY SOUTH OF BRYANT.

INDIANA, Northwest

NONE REPORTED.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>INDIANA, South Central</u>									
Dubois County Countywide	07	1600EST 2000EST			0	0			Flash Flood
Crawford County Countywide	07	1730EST 1900EST			0	0			Flash Flood
Perry County Countywide	07	1730EST 1900EST			0	0			Flash Flood
Harrison County Countywide	07	1900EST 2030EST			0	0			Flash Flood
		State police reported several county roads were water covered.							
Clark County Jeffersonville	29 30	2200EST 0000EST			0	0			Flash Flood
		Several streets were water covered as 4 inches of rain fell in less than 2 hours.							
<u>INDIANA, Southeast</u>									
Franklin County Countywide	19	2100EST 2120EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Union County Liberty to Countywide	19	2110EST 2125EST			2	6	25K		Thunderstorm Wind (G60)
		Numerous trees downed across the county, one of which fell across a tent, injuring six campers. Also, two people were killed when a boat overturned in the storm on Brookville Lake. M46BO, F30BO							
Fayette County Countywide	19	2115EST 2130EST			0	0	10K		Thunderstorm Wind (G60)
		Many trees downed across the county.							
Union County Countywide	19	2218EST 2225EST			0	0	10K		Thunderstorm Wind (G60)
		Trees downed across the county.							
Wayne County Richmond	19	2225EST 2235EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Union County Countywide	20	0015EST 0030EST			0	0	5K		Thunderstorm Wind (G50)
		Trees downed.							
Union County Countywide	20	0045EST 0200EST			0	0	5K		Flood
		Heavy rainfall caused several county roads to be covered by water.							
Ripley County Napoleon	20	0245EST 0255EST			0	0	5K		Thunderstorm Wind (G50)
		Trees downed.							
Franklin County Brookville	20	0250EST 0300EST			0	0	5K		Thunderstorm Wind (G50)
		Trees downed.							
Dearborn County Countywide	20	0320EST 0500EST			0	0			Flood
		Heavy rainfall caused water to flood across county roads including US Rte 50.							
Ripley County Countywide	20	0410EST 0800EST			0	0			Flood

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Wapello County Ottumwa	06	0330CST 0800CST			0	0	25K	5K	Urban/Sml Stream Fld
Warren County Carlisle	06	0330CST 0800CST			0	0	25K	5K	Urban/Sml Stream Fld
A fairly small area of thunderstorms moved across Wapello County during the early morning hours of the 6th. Though there was no severe weather associated with the storms, rainfall of 1 to 2 inches in under two hours time did produce urban flooding in the area as soil was nearly saturated before the rain fell. Isolated reports of up to 4 inches in three hours time were received as well. The storms did produce some minor urban and small stream flooding in the Warren, Marion, and Mahaska County areas as well.									
Carroll County Carroll	06	1800CST 2200CST			0	0	50K	10K	Urban/Sml Stream Fld
Sac County Sac City	06	1800CST 2200CST			0	0	50K	10K	Urban/Sml Stream Fld
Carroll County 1 W Coon Rapids	06	1827CST	0.2	30	0	0	0.10K	0.20K	Tornado (F0)
Carroll County 1 W Coon Rapids	06	1850CST			0	0	2K		Thunderstorm Wind (G50)
Audubon County Audubon	06	1900CST			0	0	20K	1K	Thunderstorm Wind (G55)
Greene County Jefferson	06	1900CST 2100CST			0	0	25K	5K	Urban/Sml Stream Fld
Dallas County Dallas Center	06 07	1930CST 0200CST			0	0	100K	25K	Flash Flood
Dallas County Waukee	06	2000CST			0	0	5K		Thunderstorm Wind (G52)
Guthrie County Guthrie Center	06 07	2000CST 0200CST			0	0	100K	20K	Flash Flood
Polk County Ankeny	06	2015CST			0	0	5K		Thunderstorm Wind (G52)
Polk County 4 N Johnston	06	2016CST			0	0	5K	0.50K	Thunderstorm Wind (G56)
Story County Slater	06	2025CST			0	0	5K	1K	Thunderstorm Wind (G57)
Polk County Des Moines	06 07	2030CST 0100CST			0	0	150K	15K	Flash Flood
Polk County Ankeny	06	2036CST			0	0	5K	0.50K	Thunderstorm Wind (G55)
Warren County Norwalk	06	2052CST			0	0	3K		Thunderstorm Wind (G52)
Polk County 5 S Ankeny	06	2054CST			0	0	5K	1K	Thunderstorm Wind (G55)
Black Hawk County Cedar Falls	06	2100CST			0	0	5K		Lightning
Polk County Des Moines	06	2105CST			0	0	5K		Thunderstorm Wind (G52)
Jasper County Colfax	06	2118CST			0	0	3K		Thunderstorm Wind (G52)

Very warm and humid air was in place over Iowa in advance of an approaching frontal system. Dew point temperatures were approaching 80 degrees F. over a large part of Iowa. Initially, a line of thunderstorms developed from southwest Minnesota, southwest into Nebraska. This line progressed southeast during the evening. A couple of things happened during the mid evening hours. The first was the formation of a line of thunderstorms from west central Iowa into central Iowa. The storms produced winds

Storm Data and Unusual Weather Phenomena

July 1998

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

IOWA, Central

of up to 65 MPH as they moved across Audubon County during the initial development stage. The storms formed along a convergence zone and were slow moving. The second was an acceleration of the line moving in from the west as a speed max approached. During the mid and late evening hours, the portion of the northeast to southwest oriented line over northwest Iowa turned into a bow echo and raced southeast across the state. A small tornado touched down in Carroll County. The main severe weather feature with the storms was high winds as the bow echo advanced south and east across Iowa. Winds of 60 to 70 MPH were common along the line. Numerous trees and power lines were downed by the winds. The winds resulted in scattered power outages, the worst of which was in the Des Moines metropolitan area where 9000 were without power for several hours after the storms passed. The other problem was with flooding. The main problem was with the northwest to southeast oriented line since it was very slow moving. The airmass being fairly tropical in nature resulted in large amounts of rainfall over several counties. Flash flooding occurred in Dallas, Polk, and Guthrie Counties. Widespread rainfall of 2 to 3 inches occurred, with some areas receiving around 5 inches. Much of the rain fell in about an hour, causing very rapid rises in streams as the ground was saturated at the time it rained. In Guthrie County, evacuations took place in the Lake Panorama area as water overtopped the dam there. Rainfall of 2 to 5 inches occurred in Sac, Carroll, and Greene Counties. This resulted in fairly widespread urban flooding, however rainfall in these areas took several hours to fall and with soils there not as saturated, flooding was not as serious. As the storms moved through Black Hawk County, lightning struck a house in Cedar Falls. Though no serious damage occurred, appliances were damaged and the window frame of one window was blown out. Shreds of the frame flew across the room as the lightning struck.

Jasper County 6 NW Kellogg

09	1705CST	0.2	25	0	0	0.50K	Tornado (F0)
-----------	----------------	------------	-----------	----------	----------	--------------	---------------------

The airmass over Iowa was very unstable with dew point temperatures in the low 70s F. and several weak surface boundaries in the area. A line of thunderstorms formed along one of the boundaries. Most of the storms were not severe, however several did exhibit rotation on the WSR-88D. One of the cells dropped a tornado briefly in Jasper County northwest of Kellogg. The tornado was actually more of a landspout rather than a tornado. It touched down in a field, damaging part of the crop along its brief path.

Kossuth County Algona

14	2300CST			0	0	75K	15K	Thunderstorm Wind (G61)
----	---------	--	--	---	---	-----	-----	-------------------------

Emmet County Wallingford

14	2310CST			0	0	50K	5K	Thunderstorm Wind (G72)
----	---------	--	--	---	---	-----	----	-------------------------

Emmet County Estherville

14	2330CST			0	0	15K	1K	Thunderstorm Wind (G56)
----	---------	--	--	---	---	-----	----	-------------------------

Kossuth County 2 SW Swea City

14	2335CST			0	0	20K	20K	Thunderstorm Wind (G61)
----	---------	--	--	---	---	-----	-----	-------------------------

Winnebago County Buffalo Center

14	2355CST			0	0	10K	2K	Thunderstorm Wind (G52)
----	---------	--	--	---	---	-----	----	-------------------------

Palo Alto County Graettinger

14	2356CST			0	0	10K	1K	Thunderstorm Wind (G59)
----	---------	--	--	---	---	-----	----	-------------------------

Winnebago County 1 NW Scarville

15	0010CST			0	0	35K	5K	Thunderstorm Wind (G78)
----	---------	--	--	---	---	-----	----	-------------------------

Kossuth County Whittemore

15	0015CST			0	0	30K	10K	Thunderstorm Wind (G56)
----	---------	--	--	---	---	-----	-----	-------------------------

Palo Alto County Graettinger

15	0029CST			0	0	15K		Thunderstorm Wind (G56)
----	---------	--	--	---	---	-----	--	-------------------------

Palo Alto County Ruthven

15	0035CST			0	0	20K	10K	Thunderstorm Wind (G54)
----	---------	--	--	---	---	-----	-----	-------------------------

Pocahontas County Rolfe

15	0040CST			0	0	75K	10K	Thunderstorm Wind (G65)
----	---------	--	--	---	---	-----	-----	-------------------------

Humboldt County Pioneer

15	0046CST			0	0	3K		Thunderstorm Wind (G52)
----	---------	--	--	---	---	----	--	-------------------------

Pocahontas County Pocahontas

15	0050CST			0	0	1K		Thunderstorm Wind (G50)
----	---------	--	--	---	---	----	--	-------------------------

Wright County Belmond

15	0055CST			0	0	30K	15K	Thunderstorm Wind (G61)
----	---------	--	--	---	---	-----	-----	-------------------------

Carroll County 2 NW Wiley

15	0100CST			0	0	25K	5K	Thunderstorm Wind (G56)
----	---------	--	--	---	---	-----	----	-------------------------

Hancock County Britt

15	0105CST			0	0	50K	10K	Thunderstorm Wind (G56)
----	---------	--	--	---	---	-----	-----	-------------------------

Wright County Clarion Arpt

15	0105CST			0	0	5K	0.50K	Thunderstorm Wind (G60)
----	---------	--	--	---	---	----	-------	-------------------------

Wright County Belmond

15	0108CST			0	0	3K		Thunderstorm Wind (G52)
----	---------	--	--	---	---	----	--	-------------------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
IOWA, Central									
Wright County Belmond	15	0108CST			0	0	3K		Thunderstorm Wind (G52)
Webster County Ft Dodge	15	0109CST			0	0	2K		Thunderstorm Wind (G50)
Calhoun County Rockwell City	15	0115CST			0	0	3K		Thunderstorm Wind (G52)
Hancock County Garner	15	0115CST			0	0	10K	15K	Thunderstorm Wind (G56)
Hancock County 1 E Goodell	15	0120CST			0	0	10K	1K	Thunderstorm Wind (G61)
Worth County Manly	15	0126CST			0	0	1K		Thunderstorm Wind (G50)
Cerro Gordo County Mason City	15	0128CST			0	0	10K	0.50K	Thunderstorm Wind (G52)
Greene County Jefferson	15	0130CST			0	0	3K	0.50K	Thunderstorm Wind (G52)
Webster County Ft Dodge	15	0130CST			0	0	10K	2K	Thunderstorm Wind (G52)
Crawford County Denison	15	0132CST			0	0	20K	15K	Hail (1.75)
Cerro Gordo County Meservey	15	0135CST			0	0	105K	30K	Thunderstorm Wind (G61)
Franklin County Hampton	15	0137CST			0	0	5K	0.50K	Thunderstorm Wind (G54)
Franklin County Hampton	15	0200CST			0	0	60K	10K	Thunderstorm Wind (G56)
<p>A very unstable airmass was located over Iowa the afternoon temperatures near 90 degrees F. and dewpoint temperatures in the low 70s. A cold front was located well to the north of the state across North Dakota and northern Minnesota. During the late afternoon and evening hours, thunderstorms fired along the cold frontal boundary. The storms initially moved east, but the entire line began sinking slowly south during the early evening. The flow aloft was northwest as Iowa was on the east side of a large upper level ridge of high pressure located in the southern and central Rockies. During the late evening hours, the line of thunderstorms turned nearly due south and advanced into Iowa. The event turned into a Derecho event as the line bowed south into the state. The first reports came from the far northern counties where high winds took the roof off of a house in Emmet County at Wallingford. Trees were downed in many areas from northwest, north central, into parts of central Iowa. Winds of 90 MPH were recorded in Winnebago County northwest of Scarville, with numerous reports of winds near 70 MPH as the storms moved south. A semi-tractortrailer truck was tipped over east of Goodell in Hancock County by the high winds. As the storms moved through the Algona area in Kossuth County, high winds did \$10,000 to \$15,000 damage at a golf course there. Winds lifted and destroyed two sheds there. Though some small hail was reported with many of the storms, very little of it was in the severe category. Golf ball size hail did fall in Crawford County at Denison however. The storm weakened rapidly once the approached central Iowa, however the line did move south well into Missouri by sunrise. The outflow boundary swept across much of the northwest and north central parts of Iowa. The reports mentioned above were from confirmed reports, however news reports indicate that vast areas of these counties were affected with widespread crop damage. Thousands of acres of corn and soy beans were flattened by the high winds with damage in the millions of dollars. The corn was quite susceptible to damage due to where it was in the growing stage. Much of the damage was due to what is known as "green snap". Green snap is caused when high winds hit corn that is in a very rapid stage of its growth. Because of the high water content in the plant, it tends to break off more easily at this point in the growth cycle.</p>									
Emmet County Estherville	18	2225CST			0	0	200K	25K	Thunderstorm Wind (G78)
Kossuth County Algona	18	2250CST			0	0	5K	10K	Thunderstorm Wind (G52)
<p>A very stable airmass was located over Iowa. A warm front extended from eastern South Dakota, southeast across southwest Iowa, into Missouri. Moisture pooled near the warm front with dew point temperatures in the mid 70s to low 80s quite common. A short wave dropped southeast through the Dakotas and set off thunderstorm development to the northwest of Iowa. As the mesoscale convective system advanced southeast, high winds entered northwest Iowa. Winds around 90 MPH ripped through the town of Estherville in Emmet County. The winds tore the roof off of a D.O.T. garage and partially destroyed a downtown business. The storms continued to move southeast, but weakened rapidly as they did. In Kossuth County, gusty winds caused tree damage in many areas of the county and flattened several corn stands.</p>									
Emmet County Estherville	21	0635CST			0	0	100K	25K	Thunderstorm Wind (G65)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Pocahontas County									
Varina	21	0637CST			0	0	10K	1K	Thunderstorm Wind (G61)
Pocahontas County									
Pocahontas Muni Arpt	21	0639CST			0	0	1K		Thunderstorm Wind (G52)
Palo Alto County									
Ayrshire	21	0645CST			0	0	5K	1K	Thunderstorm Wind (G61)
Emmet County									
Estherville	21	0649CST			0	0		5K	Hail (0.75)
Kossuth County									
Whittemore	21	0700CST			0	0	35K	5K	Thunderstorm Wind (G56)
Kossuth County									
Algona	21	0701CST			0	0	10K	1K	Thunderstorm Wind (G61)
Kossuth County									
Algona Muni Arpt	21	0708CST			0	0	1K	1K	Thunderstorm Wind (G58)
Cerro Gordo County									
7 NE Mason City	21	0802CST			0	0	5K	1K	Thunderstorm Wind (G57)
<p>A very warm, humid, and unstable airmass was located over Iowa. Dew point temperatures were in the mid to upper 70s ahead of a weak windshift line. Thunderstorms erupted during the night over western Nebraska and advanced into Iowa. Though the storms were in the dissipating as they moved east, a bow echo formed on the east edge of the mesoscale convective system. High winds advanced into northwest Iowa as the bow echo raced quickly east across the north two to three tiers of counties. Though many areas reported winds of 50 to 55 MPH, only a few actually reached severe criteria. Seventy mile per hour winds occurred in Palo Alto and Kossuth Counties for example. Numerous trees were downed by the winds, but no extreme damage occurred. High winds blew down trees and several grain bins in Pocahontas County at Varina. High winds blew over a heavy crane in Estherville in addition to other damage around the city. Two sheds were blown over in Kossuth County by high winds in Whittenmore. Hail was limited with the storms. Numerous reports of pea size hail were received with a report of three quarter inch diameter hail in Emmet County at Estherville.</p>									
Polk County									
West Des Moines	21	2140CST			0	0		1K	Hail (1.00)
Cass County									
Atlantic	21	2200CST			0	0	50K	10K	Flash Flood
	22	0200CST							
Adair County									
Adair	21	2230CST			0	0	10K	5K	Urban/Sml Stream Fld
	22	0030CST							
Audubon County									
Audubon	21	2230CST			0	0	10K	5K	Urban/Sml Stream Fld
	22	0030CST							
Dallas County									
Dallas Center	21	2230CST			0	0	10K	5K	Urban/Sml Stream Fld
	22	0100CST							
Guthrie County									
Guthrie Center	21	2230CST			0	0	10K	5K	Urban/Sml Stream Fld
	22	0030CST							
Polk County									
Des Moines	21	2230CST			0	0	15K	5K	Urban/Sml Stream Fld
	22	0100CST							
Mahaska County									
Oskaloosa	22	0000CST			0	0	10K	5K	Urban/Sml Stream Fld
		0230CST							

A rather complex weather situation was in place over Iowa. An outflow boundary drifted south across the state during the day from convection that had taken place earlier in the day. The boundary became stationary over the southern sections of the state. The airmass to the south of the boundary was extremely unstable. Thunderstorms developed explosively after sunset in a line from eastern Iowa all the way back to central Nebraska. The storms were moving east, however the line was moving only slowly southward. There was very little severe weather associated with the storms with only one report of one inch diameter hail in West Des Moines in Polk County. There were numerous reports of pea to marble size hail and 40 to 50 MPH winds however. Rainfall was very heavy with many areas receiving 2 to 3 inches in one to two hours time. This caused urban and small stream flooding in several counties along Interstate 80. The most significant flooding took place in Cass County where up to 5 inches of rain fell in less than three hours time. Flash flooding closed some highways and flooded numerous farm fields there.

Storm Data and Unusual Weather Phenomena

July 1998

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

IOWA, Central

IAZ034-037>038-045>046-049-058>062-073>075-084>086-095 **Calhoun - Hardin - Grundy - Carroll - Greene - Marshall - Guthrie - Dallas - Polk - Jasper - Poweshiek - Warren - Marion - Mahaska - Lucas - Monroe - Wapello - Wayne**

06	0300CST								
10	1800CST			0	0	900K	1.8M	Flood	

For the most part, July was a welcome end to the very wet pattern that dominated Iowa during the month of June. However, during the first week of the month the wet pattern of June did continue. The heaviest rainfall occurred over west central Iowa with Atlantic picking up 5.07 inches of rain on the 5th. Surprisingly, the East Fork of the Nishnabotna River at Atlantic did not reach flood state from these rains. Rainfall from this system in the Raccoon River basin amounted to two to four inches, causing another significant rise on both the North and South branches of the Raccoon, and eventually downstream on the mainstem river. The crest at Van Meter was 18.83 feet on the 7th, quite respectable for an annual peak in most years, but almost 4.5 feet below the crest that occurred in June of 1998. Southwest 18th Street in Des Moines on the Raccoon River crested 14 hours later at 16.51 feet on the 8th, nearly closing Fleur Drive, a major artery into downtown Des Moines. Flood stages were also reached on numerous smaller tributaries in the Des Moines basin from this storm. Damage was relatively minor from this event. The rest of the month was relatively dry with no further flooding recorded.

Worth County

Northwood

20	1430CST								
				0	0	5K		Thunderstorm Wind (G50)	

Thunderstorms moved across north central Iowa during the afternoon hours. For the most part, they were not severe, however one of the cells produced 58 MPH winds as it moved through the Northwood area. Some minor damage was reported.

IOWA, East Central and Southeast

Washington County

Countywide

09	1644CST								
	1830CST			0	0			Urban/Sml Stream Fld	

A ten mile wide band of slow moving thunderstorms dumped 1.5 to 2.5 inches of rain over central and southern sections of Washington County. West of Crawfordsville, near the junction of the east and west branches of Crooked Creek, rainfall was estimated at 3 inches. Streets and ditches in and around the city of Washington were flooded.

Keokuk County

Countywide

21	2247CST								
22	0300CST			0	0			Urban/Sml Stream Fld	

Louisa County

Countywide

21	2247CST								
22	0300CST			0	0			Urban/Sml Stream Fld	

Muscatine County

Countywide

21	2247CST								
22	0300CST			0	0			Urban/Sml Stream Fld	

Washington County

Countywide

21	2247CST								
22	0300CST			0	0			Urban/Sml Stream Fld	

Heavy rain fell over sections of Southeast Iowa overnight. Over 4 inches of rain fell in the heaviest band from east of Sigourney to Washington. Ponding of water on roadways and flooded drainage ditches were reported in Muscatine.

IOWA, Northeast

Allamakee County

Waukon

07	1525CST								
				0	0	20K		Thunderstorm Wind (G52)	

Law enforcement officials reported winds gusting to 60 mph, which downed trees and power lines.

Clayton County

Garnavillo

19	0120CST								
				0	0	50K		Thunderstorm Wind (G70)	

Winds gusting to 80 mph blew the topper off a pickup truck, tore a billboard in half and blew the porch off a house.

Howard County

Lime Spgs

20	1506CST								
				0	0	35K	40K	Hail (2.00)	

Howard County

2 S Lime Spgs

20	1508CST								
				0	0	15K	40K	Hail (1.50)	

Howard County

3 E Lime Spgs

20	1510CST								
				0	0	30K	75K	Hail (3.00)	

Winneshiek County

7 N Decorah

20	1532CST								
				0	0	25K		Hail (1.75)	

Allamakee County

2 N Waukon

20	1550CST								
				0	0	20K	55K	Hail (1.00)	

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>IOWA, Northeast</u>									
Allamakee County 2 N Waukon	20	1550CST			0	0	35K		Thunderstorm Wind (G61)
									Spotters and law enforcement officials reported hail ranging in size from golf balls to as large as baseballs along with 70 mph winds.
<u>IOWA, Northwest</u>									
Woodbury County Sloan	06	1725CST			0	0			Thunderstorm Wind (G61)
Woodbury County Sioux City	09	1709CST 1710CST	0.1	50	0	0			Tornado (F0)
									A brief and weak tornado caused no reported damage. The tornado occurred in an area where numerous funnel clouds were sighted.
Osceola County Melvin	14	2345CST			0	0			Hail (0.75)
Clay County Spencer	14	2352CST			0	0			Thunderstorm Wind (G56)
									A thunderstorm wind gust to 64 mph was recorded by wind equipment at a radio station.
O'Brien County Sanborn	14	2330CST			0	0	10K		Thunderstorm Wind (G52)
									Thunderstorm winds caused tree damage, with some damage to roofs occurring when large tree limbs fell on houses.
Sioux County Hull to 5 E Boyden	18	2100CST 2120CST			0	0	50K		Thunderstorm Wind (G61)
									Thunderstorm winds caused widespread tree damage, including numerous large trees blown down, some of which blocked roads. The winds also blew the camper portion off a pickup.
Lyon County Larchwood to 6 NE George	18	2040CST 2110CST			0	0	10K		Thunderstorm Wind (G61)
									Thunderstorm winds caused tree damage, including a 20 inch diameter tree knocked down and numerous 4 to 5 inch limbs blown down. The winds also blew over outbuildings, partly tipped over a silo, and tore the door off a machine shed.
O'Brien County Sanborn to Archer	18	2100CST 2129CST			0	0			Thunderstorm Wind (G52)
									Thunderstorm winds caused tree damage.
Osceola County Sibley	18	2100CST 2115CST			0	0	200K		Thunderstorm Wind (G65)
									Thunderstorm winds caused extensive tree damage, blew down power lines, blew a garage off its foundation into another garage, and damaged playground equipment at the city park. Several vehicles and homes were damaged by wind blown tree debris and other wind blown objects.
Dickinson County West Okoboji	18	2145CST			0	0			Thunderstorm Wind (G52)
									Thunderstorm winds blew down large tree branches.
Sioux County Sioux Center	21	0500CST 0530CST			0	0			Thunderstorm Wind (G57)
									Thunderstorm winds blew down trees, including one which was two feet in diameter.
Lyon County 6 S Rock Rapids	21	0525CST			0	0			Thunderstorm Wind (G57)
									Thunderstorm winds caused tree damage.
Plymouth County 3 N Le Mars	21	0535CST			0	0			Thunderstorm Wind (G65)
Cherokee County Cherokee	21	0530CST 0600CST			0	0	100K		Thunderstorm Wind (G61)
									Thunderstorm winds blew down numerous trees, several of which were large. One large tree severely damaged the second floor of a house when it fell.
Buena Vista County 5 SW Storm Lake	21	0607CST			0	0			Thunderstorm Wind (G52)
Clay County 3 W Royal	21	0615CST			0	0			Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>IOWA, Northwest</u>									
Clay County Spencer Arpt	21	0621CST			0	0			Thunderstorm Wind (G53)
Dickinson County Spirit Lake	21	0626CST			0	0			Hail (1.25)
<u>IOWA, Southwest</u>									
Harrison County Little Sioux	03	0555CST			0	0			Thunderstorm Wind (G56)
Monona County Turin	03	0630CST			0	0			Thunderstorm Wind (G60)
					Wall blown off restaurant. Grain elevators damaged. Double wide mobile home destroyed.				
Monona County Onawa	03	0630CST			0	0			Thunderstorm Wind (G60)
					Numerous trees downed.				
Monona County Moorhead	06	1745CST			0	0			Thunderstorm Wind (G55)
					Trees blown down.				
Harrison County Little Sioux	06	1815CST			0	0			Thunderstorm Wind (G52)
					Tree limbs downed.				
Harrison County 3 NE Logan	06	1820CST			0	0			Thunderstorm Wind (G52)
Monona County Mapleton	15	0230CST			0	0			Thunderstorm Wind (G52)
					Tree fell on house.				
Pottawattamie County Avoca	21	2040CST			0	0			Hail (1.75)
Monona County 1.5 NE Blencoe	06	1740CST 1741CST	0	50	0	0			Tornado (F0)
					Brief tornado touchdown.				
<u>KANSAS, East</u>									
Cloud County 3 SE Glasco	12	2225CST			0	0			Hail (0.75)
Ottawa County 1 N Delphos	12	2251CST			0	0			Hail (1.25)
Jefferson County Oskaloosa	26	0430CST 0700CST			0	0			Urban/Sml Stream Fld
					Sheriff's office reported that locally heavy rain between 3 and 4 inches in less than two hours time caused flooding of several rural roads in the county.				
Nemaha County Centralia	29	2000CST 2030CST			0	0			Urban/Sml Stream Fld
					County sheriff reported flooding on several county roads in rural areas surrounding the town of Centralia.				
Ottawa County Minneapolis	29 30	2130CST 0500CST			0	0			Flash Flood
					Heavy rain caused flooding of several lower lying areas in Minneapolis.				
Shawnee County 4 N Topeka	30	0245CST			0	0			Flash Flood
					Widespread heavy rain in excess of 2 inches with local amounts over 4 inches produced flooding of several low lying areas. Flooding on roads was reported near the intersection of 39th Street and Green Hills Road north of Topeka.				
Dickinson County 2.5 NE Abilene	30	0200CST 0400CST			0	0			Flash Flood
					Flooding of roads was reported between Abilene and Chapman.				
Jefferson County Oskaloosa	30	0345CST			0	0			Flash Flood
					Locally heavy rain in excess of three inches in the southern half of the county resulted in flooding of several roads...mainly south of				

Storm Data and Unusual Weather Phenomena

July 1998

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

KANSAS, East

Oskaloosa.

Riley County Manhattan

06 0310CST **0** **0** **Lightning**
Two separate lightning strikes both hit power lines and briefly knocked out power to the police department and 1000 other residences in town.

Brown County Hiawatha

10 0550CST **0** **0** **Lightning**
A lightning strike left a large hole in the metal antenna of a radio station broadcast tower.

Pottawatomie County St George

15 0830CST **0** **0** **218K** **Lightning**
Lightning ignited a fire which completely destroyed a house and its contents.

KANSAS, Extreme Southeast

Crawford County 2 W Mc Cune

02 0950CST **0** **0** **Hail (0.88)**

KANSAS, North Central

Jewell County Formoso

04 1630CST **0** **0** **12K** **250K** **Thunderstorm Wind (G52)**
A severe thunderstorm struck the Formoso area near 530 p.m. CDT and dumped up to four inches of rain along with 60 mph winds. The wind tore a part of a porch roof from one home and downed numerous tree limbs. The wind teamed with nickel sized hail north of town to damage corn in the area.

Smith County Womer

04 1830CST **0** **0** **75K** **200K** **Heavy Rain**
2200CST

Smith County Womer

04 1830CST **0** **0** **10K** **50K** **Thunderstorm Wind (G52)**
A nearly stationary thunderstorm northeast of Smith Center dumped from 5 to 9 inches of rain in the Womer area of northern Smith county. The rain and resulting runoff into the Walnut Creek damaged at least 5 bridges and several roads were under water. Corn fields near the creek were damaged and under water for a time. No homes or other personal property were damaged due to the heavy rain. Early in the storms history, wind gusts to 60 mph caused some roof damage on the Womer church roof. A pole barn on a nearby farmstead was heavily damaged by the wind.

Phillips County Phillipsburg

15 0830CST **0** **0** **3K** **0** **Thunderstorm Wind (G52)**

Rooks County 14 NW Stockton

15 0917CST **0** **0** **2K** **0** **Hail (1.75)**

Smith County 1 SW Smith Center

22 0900CST **0** **0** **10K** **0** **Lightning**
A lightning bolt hit a barn and started it and hay on fire. A driver passing by, seeing the flames, called the fire department.

Smith County North Portion

26 0316CST **0** **0** **500K** **250K** **Flash Flood**
0700CST

Early morning thunderstorms dropped 3 to 6 inches of rain over the northern portions of Smith county. At a residence northwest of Smith Center, the five and a half inch rain gauge overflowed. Other reports include 4.75 at Athol and 3.68 in Smith Center. These heavy rains caused the Cedar and Beaver creeks to run out of their banks. The runoff caused damage to area roads and bridges. The rains appeared to weaken a section of rail track bed which lead to a train derailment. Twelve of the 61 car train were derailed which spilled an estimated 35,000 bushels of wheat.

KANSAS, Northeast

Johnson County Overland Park

30 0441CST **0** **0** **Urban/Sml Stream Fld**

Heavy rains resulted in flooding of numerous streets and roadways across Overland Park. Roe and Metcalf avenues were closed as a result of the high water.

Leavenworth County Lansing

30 0500CST **0** **0** **Urban/Sml Stream Fld**

The Leavenworth County Emergency Manager reported street flooding in sections of Lansing.

Wyandotte County Bonner Spgs

30 0500CST **0** **0** **Urban/Sml Stream Fld**

Heavy rains resulted in flooding of roadways and intersections across Wyandotte County. High water resulted in road closures in Bonner Springs at the intersection of Highways K7 and 32. In Kansas City, KS, high water closed the intersection of 14th Street and Washington Blvd.

Storm Data and Unusual Weather Phenomena

July 1998

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

KANSAS, Northeast

KSZ103-105

Leavenworth - Johnson

30	0000CST	0	0	Flood
31	2359CST			

Minor river flooding occurred in Northeast Kansas at the end of July as a result of heavy rainfall.

Indian Creek
Overland Park, KS

Flood Stage	13 ft
Above Flood Stage	7/30
Crest	14.02 ft

Stranger Creek
Eastern, KS

Flood Stage	17 ft
Above Flood Stage	7/30 to 7/31
Crest	Estimated 18.0 ft on 7/30

KANSAS, Northwest

Cheyenne County

13 NNE Wheeler	02	0005CST	0	0	Hail (1.25)
----------------	----	---------	---	---	-------------

Gove County

2 E Grainfield	05	1652CST	0	0	Hail (1.00)
----------------	----	---------	---	---	-------------

Also, limbs down at rest stop.

Gove County

Grainfield	05	1700CST	0	0	Hail (0.75)
------------	----	---------	---	---	-------------

Sheridan County

14.5 SSW Hoxie	05	1700CST	0	0	Thunderstorm Wind (G52)
----------------	----	---------	---	---	-------------------------

Limbs, 4 to 5 inches in diameter downed.

Gove County

Grainfield	05	1715CST	0	0	Thunderstorm Wind (G52)
------------	----	---------	---	---	-------------------------

Limbs, 4 to 5 inches in diameter downed.

Gove County

Quinter	05	1820CST	0	0	Hail (0.75)
---------	----	---------	---	---	-------------

Wichita County

9.5 NNE Leoti	05	1930CST	0	0	Hail (0.88)
---------------	----	---------	---	---	-------------

Greeley County

14 NNW Tribune	06	1430MST	0	0	Hail (0.88)
----------------	----	---------	---	---	-------------

Gove County

23 S Quinter	06	1850CST	0	0	Hail (1.75)
--------------	----	---------	---	---	-------------

Sherman County

Goodland	08	2000MST	0	0	Hail (0.75)
----------	----	---------	---	---	-------------

Sherman County

4 S Goodland to	08	2150MST	0	0	Flash Flood
6 S Goodland	09	0300MST			

Two feet of water reported over the state highway 27 from 6 to 7 inches of rainfall.

KSZ013

Sherman

09	0600MST	0	0	Flood
	2100MST			

Flood damaged bridges and road in southern Sherman County

Logan County

9 SW Winona	09	1830CST	0	0	Hail (0.75)
-------------	----	---------	---	---	-------------

Sherman County

4 NW Goodland	09	1905MST	0	0	30K Thunderstorm Wind (G70)
---------------	----	---------	---	---	--------------------------------

Trailer home destroyed. Debris scattered 1/4 mile.

Storm Data and Unusual Weather Phenomena

July 1998

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

KANSAS, Northwest

Sherman County

Goodland Arpt	09	1910MST			0	0			Thunderstorm Wind (G54)
---------------	----	---------	--	--	---	---	--	--	-------------------------

Also, 65 mph wind gust at Goodland CATV 2 miles south of Goodland.

Wallace County

4 N Sharon Spgs	09	1950MST			0	0			Flash Flood
-----------------	----	---------	--	--	---	---	--	--	-------------

10 0200MST
Kansas highway 27 flooded from 2 to 4 inches of rainfall.

Logan County

Mc Allaster	09	2125MST			0	0			Flash Flood
-------------	----	---------	--	--	---	---	--	--	-------------

2330MST
Five inches of rain in northwest Logan county produced flash flooding. Water reported in a home near McAllaster.

Logan County

2 N Russell Spgs to 8 N Russell Spgs	10	0100CST			0	0			Flash Flood
---	----	---------	--	--	---	---	--	--	-------------

0400CST
Kansas highway 25 flooded. Rainfall of 5 inches or more reported in the Winona area.

Sherman County

Goodland	12	0130MST			0	0			Thunderstorm Wind (G52)
----------	----	---------	--	--	---	---	--	--	-------------------------

Estimated 60 mph thunderstorm wind gust brought down branches up to 2 inches in diameter.

Cheyenne County

17 NW St Francis	13	1610CST			0	0			Hail (0.75)
------------------	----	---------	--	--	---	---	--	--	-------------

Cheyenne County

12 SW St Francis	29	1700CST			0	0			Hail (1.00)
------------------	----	---------	--	--	---	---	--	--	-------------

Norton County

New Almelo	29	1941CST			0	0			Thunderstorm Wind (G55)
------------	----	---------	--	--	---	---	--	--	-------------------------

Thunderstorm winds brought down tree limbs that were three to five inches in diameter.

Graham County

16 NW Hill City	29	2000CST			0	0			Thunderstorm Wind (G55)
-----------------	----	---------	--	--	---	---	--	--	-------------------------

Thunderstorm winds broke off tree limbs four inches in diameter.

Greeley County

8 NNE Whitelaw	29	2035MST			0	0	0.50K		Thunderstorm Wind (G61)
----------------	----	---------	--	--	---	---	-------	--	-------------------------

Spotter estimated 70 MPH winds which blew a horse trailer into a shed and downed two sections of fence. Tree limbs up to eight inches in diameter were broken.

Wichita County

9 N Selkirk	29	2145CST			0	0			Thunderstorm Wind (G50)
-------------	----	---------	--	--	---	---	--	--	-------------------------

Thunderstorm winds brought down one inch diameter tree limbs.

Decatur County

Southwest Portion	29	1900CST			0	0			Flash Flood
-------------------	----	---------	--	--	---	---	--	--	-------------

30 2200CST
Two to four inches of rainfall produced flash flooding along Sappa Creek drainage.

KSZ002>003

Rawlins - Decatur

29	1900CST			0	0	10K		Flood
----	---------	--	--	---	---	-----	--	-------

31 2359CST
Undermining of roads and washing of gravel from roads occurred due to flooding of Sappa Creek. Damage estimated at \$5 thousand each county by Road and Bridge Department. Flooding continued into August.

KANSAS, Southeast

Sumner County

South Haven	02	1033CST			0	0	50K		Lightning
-------------	----	---------	--	--	---	---	-----	--	-----------

Lightning struck a small church, setting fire to the roof and rafters. Water and smoke also damaged the pulpit.

Ellsworth County

10 E Lorraine	06	2240CST			0	0			Thunderstorm Wind (G52)
---------------	----	---------	--	--	---	---	--	--	-------------------------

Kingman County

6 E Cunningham	10	1420CST			0	0			Hail (0.75)
----------------	----	---------	--	--	---	---	--	--	-------------

Kingman County

Kingman	10	1438CST			0	0			Thunderstorm Wind (G52)
---------	----	---------	--	--	---	---	--	--	-------------------------

Reno County

Pretty Prairie	10	1445CST			0	0			Hail (1.00)
----------------	----	---------	--	--	---	---	--	--	-------------

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Sedgwick County Cheney	10	1456CST			0	0			Thunderstorm Wind (G54)
Reno County 10 S Haven	10	1501CST			0	0			Thunderstorm Wind (G52)
Sedgwick County Goddard	10	1506CST 1525CST			0	0	500K		Thunderstorm Wind (G70)
Severe thunderstorm winds, ranging from 51-70 KT, ripped across Goddard, inflicting widespread damage to trees, roofs, power lines and power poles.									
Sedgwick County Colwich	10	1509CST			0	0			Thunderstorm Wind (G52)
Sedgwick County Mt Hope	10	1515CST			0	0			Hail (1.00)
Sedgwick County Wichita	10	1516CST 1541CST			0	0	3M		Thunderstorm Wind (G80)
Severe thunderstorm winds, ranging from 52-80KT, ripped across the Wichita Metropolitan area, inflicting widespread damage to trees, roofs, power lines and power poles. Approximately 60,000 people lost power, about 15,000 of which remained without power for 3 days. While most of the reports were from off-duty NWS staff, reports were also received from law enforcement, trained spotters and amateur radio operators.									
Sedgwick County Valley Center	10	1520CST			0	0			Thunderstorm Wind (G61)
Sedgwick County Maize	10	1522CST			0	0			Thunderstorm Wind (G64)
Sedgwick County Valley Center	10	1522CST			0	0			Thunderstorm Wind (G61)
Butler County 2 NE Rose Hill	10	1541CST			0	0			Thunderstorm Wind (G61)
Butler County Benton	10	1547CST			0	0			Thunderstorm Wind (G61)
Numerous trees blown down.									
Butler County Potwin	10	1601CST			0	0			Thunderstorm Wind (G52)
Butler County 5 E Potwin	10	1606CST			0	0			Hail (0.75)
Butler County 5 E Potwin	10	1606CST			0	0			Thunderstorm Wind (G65)
Greenwood County 10 S Neal	10	1645CST			0	0			Thunderstorm Wind (G70)
Five hundred gallon tank blown over and numerous 3-inch diameter tree limbs blown down along northeast shore of Fall River Lake.									
Lincoln County 1 N Shady Bend	12	2343CST			0	0			Hail (0.75)
Lincoln County 2 W Lincoln	13	0032CST			0	0			Hail (1.75)
Lincoln County Vesper	13	0032CST			0	0			Hail (0.88)
Reno County 2 NW Yoder	13	0415CST			0	0			Hail (0.75)
Harper County 2 SE Bluff City	25	2000CST			0	0			Thunderstorm Wind (G61)
Power lines blown down.									
Kingman County 2 E Norwich	25	2045CST			0	0			Thunderstorm Wind (G61)
Sedgwick County 2 N Viola	25	2046CST			0	0			Hail (1.25)
Sedgwick County 2 N Viola	25	2046CST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Sedgwick County 4 NE Goddard	25	2120CST			0	0			Hail (1.00)
Sedgwick County 2 NE Goddard	25	2122CST			0	0			Hail (2.00)
Sedgwick County 5 SW Maize	25	2127CST			0	0			Hail (1.25)
Sedgwick County 5 SW Maize	25	2127CST			0	0			Thunderstorm Wind (G61)
Sedgwick County Wichita	25	2130CST			0	0			Hail (1.25)
Sedgwick County Wichita	25	2132CST			0	0			Hail (1.00)
Sedgwick County 3 S Maize	25	2137CST			0	0			Hail (0.75)
Sedgwick County 3 NE Valley Center	25	2203CST			0	0			Hail (0.75)
<u>KANSAS, Southwest</u>									
Finney County Garden City	02	0204CST			0	0			Thunderstorm Wind (G55)
Pawnee County 10 NNW Rozel to 11 SSW Rozel	02	0215CST			0	0			Hail (1.00)
Rush County 11 SSW La Crosse	02	0220CST			0	0			Hail (0.88)
Stevens County 11 SSW Feterita	05	1850CST			0	0			Thunderstorm Wind (G52)
Ness County Utica	05	1913CST			0	0			Thunderstorm Wind (G57)
		Five inch tree limbs blown down.							
Seward County 15 NNW Liberal	05	2320CST			0	0			Thunderstorm Wind (G70)
Hodgeman County 5 W Hanston	06	1820CST			0	0			Thunderstorm Wind (G52)
Hodgeman County 2 E Hanston	06	1835CST			0	0			Hail (0.75)
Kearny County Lakin	06	1837CST			0	0			Thunderstorm Wind (G54)
Trego County 23 SSW Wakeeney	06	1930CST			0	0			Thunderstorm Wind (G65)
		Field cultivator blown over. Corn stripped.							
Kearny County 12 N Deerfield	06	1932CST			0	0			Thunderstorm Wind (G53)
Ness County 5 NW Ransom	06	1950CST			0	0			Thunderstorm Wind (G52)
		Two to three inch tree limbs blown down.							
Ness County 9 NE Ness City	06	2000CST			0	0			Thunderstorm Wind (G61)
Trego County 22 SSE Wakeeney	06	2030CST			0	0			Hail (0.75)
Trego County 22 SSE Wakeeney	06	2030CST			0	0			Thunderstorm Wind (G70)
		Four to six inch tree limbs blown down.							
Ellis County 5 S Munjor	06	2130CST			0	0			Lightning
		Oil tank battery was struck by lightning and caught fire. It took fire fighters 3 1/2 hours to put the fire out.							

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Rush County 1 S Otis	06	2130CST			0	0	0.50K		Lightning
									Light caused a fire that destroyed 200 bales of hay.
Morton County 9 NW Richfield	07	2000CST			0	0			Hail (1.00)
									Crops shredded in a path 4 miles long and 1 mile wide.
Stanton County 17 SW Johnson	07	2000CST			0	0			Hail (0.75)
Haskell County 11 NNE Sublette	10	1620CST			0	0			Thunderstorm Wind (G52)
Barber County 3 E Kiowa	10	1700CST			0	0	1K		Thunderstorm Wind
									Eight inch tree limbs blown down.
Finney County 6 ESE Kalvesta	10	1730CST			0	0			Thunderstorm Wind (G61)
									Large tree branch blown down.
Hodgeman County 13 W Jetmore	10	1745CST			0	0			Thunderstorm Wind (G52)
Lane County 8 E Dighton	10	1812CST			0	0			Thunderstorm Wind (G52)
Clark County 12 NE Ashland	10	1820CST			0	0			Hail (0.88)
Comanche County 8 N Protection	10	1840CST			0	0			Hail (2.50)
Kiowa County 12 S Mullinville	10	1845CST			0	0			Hail (0.88)
Scott County 13 NNW Scott City	10	1935CST			0	0			Thunderstorm Wind (G70)
									Six inch tree limbs blown down.
Pawnee County 8 S Larned	10	2015CST			0	0			Thunderstorm Wind (G61)
Ford County Dodge City Arpt	10	2040CST			0	0			Thunderstorm Wind (G54)
Ness County 1 S Beeler	12	1408CST			0	0			Hail (1.00)
Lane County 2 S Alamota	12	1410CST			0	0			Hail (1.00)
Lane County 2 S Alamota	12	1425CST			0	0			Hail (1.25)
Hamilton County Kendall	12	1450MST			0	0			Hail (1.00)
Morton County 16 N Rolla	12	1500CST			0	0			Hail (4.50)
Morton County 12 ENE Richfield	12	1502CST			0	0			Hail (1.75)
Morton County 14 N Rolla	12	1510CST			0	0			Hail (3.00)
									Most windows broken out.
Morton County 12 N Rolla	12	1520CST			0	0			Hail (1.75)
									Corn was stripped and broken over.
Hamilton County 15 SSE Syracuse	12	1530MST			0	0			Hail (1.25)
Morton County 6 N Rolla	12	1542CST			0	0			Hail (1.75)
Hamilton County 16 SW Syracuse	12	1553MST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Kearny County 11 SW Lakin to 11 SW Lake Mc Kinney	12	1610CST			0	0			Hail (0.88)
Stevens County 11 SW Hugoton	12	1630CST			0	0			Hail (0.75)
Stanton County 6 NE Johnson	12	1656CST			0	0			Hail (1.00)
Stanton County 8 N Johnson	12	1704CST			0	0			Hail (0.88)
Stanton County 1 S Saunders	12	1815CST			0	0			Hail (0.88)
Morton County 16 N Rolla	15	1215CST			0	0			Flash Flood
		Water was over highway 27.							
Morton County 16 N Rolla	15	1218CST			0	0			Flash Flood
		The north fork of the Cimarron river was 1.5 above the bridge.							
Morton County 7 NE Elkhart	15	1230CST			0	0			Hail (1.75)
Barber County 9 N Sharon	15	1257CST			0	0			Hail (0.75)
Gray County 3 NNW Ingalls	15	1648CST			0	0			Hail (1.00)
Ford County 3 NW Dodge City	15	1711CST			0	0			Hail (1.00)
Ford County 3 NW Dodge City	15	1714CST			0	0			Hail (1.25)
Finney County 15 WSWNW Kalvesta	15	1732CST			0	0			Hail (0.88)
Gray County Ingalls	15	1733CST			0	0			Hail (1.00)
Ford County 3 N Howell	15	1735CST			0	0			Hail (1.00)
Ford County 1 NW Howell	15	1745CST			0	0			Hail (0.88)
Gray County 16 WSW Cimarron	15	1820CST			0	0			Thunderstorm Wind (G52)
		Several limbs broken.							
Haskell County 13 N Sublette	15	1840CST			0	0			Thunderstorm Wind (G52)
Clark County 10 NW Englewood	22	1738CST			0	0			Thunderstorm Wind (G70)
		Many shingles blown off. Large tree blown down.							
Clark County 9 NW Englewood	22	1743CST			0	0			Hail (0.88)
Seward County 5 E Liberal	23	1923CST			0	0			Hail (0.75)
Meade County 6 ESE Plains	23	2010CST			0	0			Hail (0.75)
Meade County 6 ESE Plains	23	2010CST			0	0			Thunderstorm Wind (G52)
Meade County 2 SE Missler	23	2025CST			0	0			Hail (0.88)
Meade County Missler	23	2025CST			0	0			Hail (3.00)
Meade County Missler	23	2025CST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Clark County 9 S Ashland	25	1545CST			0	0			Hail (0.75)
Clark County 8 S Minneola	25	1640CST			0	0			Hail (1.00)
Clark County 7 S Minneola	25	1642CST			0	0			Hail (0.88)
Clark County 7 S Minneola	25	1642CST			0	0			Thunderstorm Wind (G57)
Clark County 7 S Minneola	25	1650CST			0	0			Hail (0.75)
		Hail completely covered the ground.							
Ford County 4 S Ft Dodge	25	1729CST			0	0			Hail (0.75)
Morton County 3 S Wilburton	26	1634CST			0	0			Hail (0.88)
Clark County Ashland	26	1742CST			0	0			Hail (1.00)
Clark County 3 SSW Ashland	26	1748CST			0	0			Hail (1.75)
Seward County Liberal	26	1808CST			0	0			Hail (0.75)
Comanche County 3 SW Protection	26	1835CST			0	0			Lightning
		House was struck and blew out the television.							
Seward County 18 N Liberal	26	1840CST			0	0			Hail (0.75)
Kiowa County 5 S Greensburg	26	2321CST			0	0			Thunderstorm Wind (G52)
Hodgeman County 7 S Jetmore	28	1725CST			0	0			Thunderstorm Wind (G57)
Ford County 10 SSW Dodge City	28	1815CST			0	0			Hail (0.75)
Ford County 10 S Dodge City	28	1838CST			0	0			Hail (1.00)
Ford County 7 SSW Dodge City	28	1845CST			0	0			Flash Flood
		Water was running out of a ditch and across a road.							
Ford County 10 S Dodge City	28	1845CST			0	0			Hail (1.25)
Ford County Bloom	28	1921CST			0	0			Hail (1.25)
Ford County 3 E Bloom	28	1928CST			0	0			Thunderstorm Wind (G57)
Comanche County 8 SE Protection	29	1557CST			0	0			Hail (0.88)
Scott County 1 N Scott City	29	2235CST			0	0			Thunderstorm Wind (G52)
Ness County 7 SSW Utica	29	2330CST			0	0			Thunderstorm Wind (G57)
Lane County 12 SW Dighton	29	2345CST			0	0			Thunderstorm Wind (G57)
Lane County 5 ESE Pendennis	30	0000CST			0	0			Thunderstorm Wind (G61)
Finney County 1 W Kalvesta	30	0015CST			0	0			Thunderstorm Wind (G57)
Ellis County 7 S Walker	30	0225CST			0	0			Flash Flood

Storm Data and Unusual Weather Phenomena

July 1998

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

KANSAS, Southwest

Water was three feet over the road.

KENTUCKY, Central

Bourbon County

Clintonville

19 1235EST

0 0

Hail (0.75)

Local dispatch reported dime size hail.

Edmonson County

Central Portion

16 0830EST
0930EST

0 0

Urban/Sml Stream Fld

Minor street flooding reported across central parts of the county.

Anderson County

Countywide

20 0600EST
0800EST

0 0

1M Flash Flood

Bourbon County

Countywide

20 0600EST
1030EST

0 0

1M Flash Flood

Clark County

Countywide

20 0600EST
1030EST

0 0

1M Flash Flood

Franklin County

Countywide

20 0600EST
1030EST

0 0

1M Flash Flood

Harrison County

Countywide

20 0600EST
0800EST

0 0

1M Flash Flood

Jessamine County

Countywide

20 0600EST
0800EST

0 0

1M Flash Flood

Nicholas County

Countywide

20 0600EST
1030EST

0 0

1M Flash Flood

Woodford County

Countywide

20 0600EST
1030EST

0 0

1M Flash Flood

Fayette County

Countywide

20 0615EST
1030EST

0 0

1M Flash Flood

Scott County

Countywide

20 0630EST
1030EST

0 0

1M Flash Flood

East central Kentucky saw widespread flooding as anywhere from 3 to 6 inches of rain fell over a 3 hour span. Numerous roads were closed due to high water across this area, and many basements were flooded as well. Over 100 evacuations were made to residence of mobile homes and apartments, and a few rescues were also made as motorists were trapped in high water.

Henry County

Countywide

20 0900EST
1000EST

0 0

Urban/Sml Stream Fld

Jefferson County

Countywide

20 0900EST
1000EST

0 0

Urban/Sml Stream Fld

Oldham County

Countywide

20 0900EST
1000EST

0 0

Urban/Sml Stream Fld

Shelby County

Countywide

20 0900EST
1000EST

0 0

Urban/Sml Stream Fld

Spencer County

Countywide

20 0900EST
1000EST

0 0

Urban/Sml Stream Fld

1 to 2 inches of rain fell over a 2-3 hour period which caused minor street flooding.

Jefferson County

Countywide

07 1900EST
2100EST

0 0

Flash Flood

Storm Data and Unusual Weather Phenomena

July 1998

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

KENTUCKY, Central

Law enforcement, media and the public reported numerous water covered roads.

KYZ042

Bourbon

20 0100EST

0 0

Flood

22 0100EST

Stoner Creek at Paris crested at 22.3 feet (flood stage is 18 feet) at 10 pm est on July 20. Moderate flooding occurred as a park and several homes succumbed to the advancing water.

Jefferson County

Louisville

29 2200EST

0 0

Flash Flood

30 0000EST

4 inches of rain fell in less than 2 hours causing street flooding and water in the basements of the Palace Theater and the Browns Hotel.

Trimble County

Milton

29 2200EST

0 0

Thunderstorm Wind (G55)

Numerous trees down in the Cutshaw Lane area.

KENTUCKY, Eastern

Menifee County

8 SE Frenchburg

18 2105EST

0 0 0 0

Hail (0.75)

Johnson County

South Portion

19 0030EST

0 0

10K

0

Flash Flood

0330EST

Spotters indicated that up to 4.5 inches of rain fell over southern portions of the county during a three hour period. Many roads were water covered. One stream overflowed its banks onto Route 302 in Van Lear. Route 1750 was water covered near the East Point community, and the Greer Branch Road was washed out in the Hagerhill area. A few mudslides were also reported in these areas. The flash flooding led to evacuations in the Hagerhill and East Point communities.

Letcher County

Mayking

19 1430EST

0 0 0 0

Hail (0.75)

Breathitt County

Clayhole

19 1355EST

0 0 0 0

Hail (0.75)

Estill County

Palmer

19 1300EST

0 0 0 0

Thunderstorm Wind (G52)

Estill County

West Irvine

20 0704EST

0 0

5K

0

Lightning

Windows were blown out and a tree was splintered. Some of the wood splinters pierced the garage door of a house.

Whitley County

Corbin

22 2200EST

0 0

2K

0

Thunderstorm Wind

A carport was damaged, and a tree was downed.

Montgomery County

Countywide

20 0545EST

0 0

5K

0

Flash Flood

1240EST

Numerous county roads were water covered and closed.

KENTUCKY, Northeast

Greenup County

Countywide

19 2330EST

0 0

5K

Thunderstorm Wind

2340EST

The county sheriff reported trees or large branches down in scattered locations throughout the county.

Greenup County

Greenup

20 0128EST

0 0

Hail (0.88)

Boyd County

Ashland

20 0155EST

0 0

15K

Thunderstorm Wind

One building sustained minor wind damage.

KENTUCKY, Northern

Campbell County

Alexandria

20 0130EST

0 0

Hail (1.75)

0135EST

Campbell County

Highland Hgts

20 0200EST

0 0

25K

Lightning

Storm Data and Unusual Weather Phenomena

July 1998

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

KENTUCKY, Northern

Lightning struck an apartment building, causing the roof and top floor to catch on fire.

Campbell County Newport	20	0200EST 0205EST			0	0	20K		Thunderstorm Wind (G50)
-----------------------------------	----	--------------------	--	--	---	---	-----	--	--------------------------------

Strong winds caused a roof to be blown off a structure.

Owen County Countywide	20	0400EST 0420EST			0	0	5K		Thunderstorm Wind (G50)
----------------------------------	----	--------------------	--	--	---	---	----	--	--------------------------------

Numerous trees downed.

Carroll County Countywide	20	0530EST 0800EST			0	0			Flood
-------------------------------------	----	--------------------	--	--	---	---	--	--	--------------

Several hours of heavy rainfall caused county creeks to rise out of their banks. People were evacuated from a few mobile homes. Also, numerous county roads were covered by the high water.

Gallatin County Countywide	20	0600EST 0800EST			0	0			Flood
--------------------------------------	----	--------------------	--	--	---	---	--	--	--------------

Several hours of heavy rainfall left roads covered in water and some creeks out of their banks.

Owen County Countywide	20	0600EST 0800EST			0	0			Flood
----------------------------------	----	--------------------	--	--	---	---	--	--	--------------

Heavy rainfall caused several county roads to be covered with water.

KENTUCKY, Southwest

Mccracken County Paducah	30	1700CST			0	0	20K		Lightning
------------------------------------	----	---------	--	--	---	---	-----	--	------------------

Nearly continuous lightning from a very strong thunderstorm caused scattered damage in and near Paducah. Two direct lightning strikes on the runway lighting system at Barkley Regional Airport caused the cancellation of the only two evening commercial passenger flights. Small electrical fires were started by lightning at two separate houses in Paducah, and a tree was downed by lightning in the city.

Mccracken County East Portion	15	1230CST 1500CST			0	0	50K		Flash Flood
---	----	--------------------	--	--	---	---	-----	--	--------------------

Major flash flooding was reported in Reidland. Three to four feet of water covered parts of Calvert Drive. An unofficial rainfall report of 11 inches was received from Reidland, and at the Reidland Sewer Plant, the rain gage overflowed at 5 inches. The Canterbury subdivision received considerable flooding. Two parking lots and other low-lying areas were flooded. Five cars were damaged after floating into each other in a parking lot.

Graves County Mayfield	15	1830CST 2300CST			0	0	30K		Flash Flood
----------------------------------	----	--------------------	--	--	---	---	-----	--	--------------------

Marshall County Calvert City	15	1830CST 2300CST			0	0	10K		Flash Flood
--	----	--------------------	--	--	---	---	-----	--	--------------------

Slow-moving thunderstorms dumped about one inch of rain per hour, and isolated locations received 2 inches of rain in 45 minutes. In Graves County, four families were evacuated from their homes in Mayfield. Two streets in Mayfield were closed for about two hours because they became impassable. Extensive flooding took place around bridges on Tenth and 12th Streets in Mayfield. At the Sedalia Y near Mayfield, three families were evacuated due to rapidly rising water. In the Symsonia area of Graves County, 3 to 4 feet of water was over State Route 534. Rainfall totals ranged from 4 to 4.5 inches in many areas of Mayfield. In Marshall County, street flooding occurred in Calvert City.

Crittenden County South Portion	15	1830CST 2100CST			0	0			Flash Flood
---	----	--------------------	--	--	---	---	--	--	--------------------

Livingston County South Portion	15	1830CST 2100CST			0	0	15K		Flash Flood
---	----	--------------------	--	--	---	---	-----	--	--------------------

Lyon County North Portion	15	1900CST 2100CST			0	0			Flash Flood
-------------------------------------	----	--------------------	--	--	---	---	--	--	--------------------

Slow-moving thunderstorms dumped very heavy rain, with estimates of up to 2 inches in 45 minutes. Driveways were washed out in Livingston County.

Storm Data and Unusual Weather Phenomena

July 1998

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

KENTUCKY, Southwest

Calloway County Countywide	15	2115CST 2300CST			0	0			Flash Flood
Mccracken County Countywide	30	1800CST 2100CST			0	0	50K		Flash Flood
Calloway County Countywide	30	1830CST 2200CST			0	0			Flash Flood
Fulton County Countywide	30	1830CST 2200CST			0	0	20K		Flash Flood
Marshall County Countywide	30	1830CST 2200CST			0	0	20K		Flash Flood

Thunderstorms produced very heavy rain over parts of far west Kentucky. Rainfall rates at the National Weather Service in Paducah were close to 2.5 inches in one hour. Flooding occurred in the terminal building at Barkley Regional Airport. Water covered parts of U.S. Highway 60 near Barkley Airport. Culverts and streets were overflowing in Marshall County. Numerous roads were under water in Fulton County.

Ballard County Wickliffe	03	1100CST			0	0	30K		Lightning
A home burned after its radio antenna tower was struck by lightning, which ignited a blaze in the attic.									
Ballard County Countywide	03	1145CST 1300CST			0	0	5K		Urban/Sml Stream Fld
Mccracken County Countywide	03	1145CST 1300CST			0	0	5K		Urban/Sml Stream Fld

Thunderstorms dumped 2.8 inches of rain in three to four hours at the Paducah National Weather Service office. Minor street flooding occurred in the Paducah area, and some secondary roads were briefly flooded in Ballard County.

LOUISIANA, Northeast

Madison Parish Tallulah	01	1515CST			0	0	1K		Thunderstorm Wind
Several trees were blown down.									
Franklin Parish Crowville	25	1615CST			0	0	2K		Thunderstorm Wind
Several trees were blown down									
West Carroll Parish Oak Grove	24	1715CST			0	1	30K		Thunderstorm Wind
Wind destroyed mobile home injuring one person.									

LOUISIANA, Northwest

Union Parish Marion	02	0554CST			0	0			Thunderstorm Wind (G52)
Trees down along Hwy 33.									
Caddo Parish Shreveport	04	1643CST			0	3			Lightning
Lightning struck and injured three individuals standing under a tree while waiting for 4th of July celebration events. A woman, age 33, was struck directly. The lightning struck her head travelling through the red barrette she had clasped around her ponytail, singed her hair near her left ear, hopped over to her left hip, jumped to her right leg, went down her right leg and and left a hole in her right foot as the lightning continued into the ground. Two other persons standing next to her were struck by the side flash and hospitalised.									
Jackson Parish Jonesboro	10	1650CST			0	0	25K		Thunderstorm Wind (G52)
Trees down and two houses damaged from fallen trees.									
Caddo Parish Hosston	12	2000CST			0	0			Thunderstorm Wind (G52)
Numerous trees down.									

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
LOUISIANA, Northwest									
Caddo Parish Oil City	12	2008CST			0	0	1K		Thunderstorm Wind (G61)
Bossier Parish 1 NE Benton	12	2005CST			0	0			Thunderstorm Wind (G52)
Bossier Parish 1 SW Plain Dealing	12	2007CST			0	0			Thunderstorm Wind (G52)
Webster Parish Leton	13	2015CST			0	0			Thunderstorm Wind (G52)
Caddo Parish Shreveport	13	0115CST			0	0	25K		Thunderstorm Wind (G52)
					At Southpark Mall two large light poles and two cast iron walls were blown down. A few shingles were blown off a restaurant roof. A few fences were blown down and several large tree limbs were blown down.				
Caddo Parish Greenwood	16	1650CST			0	0			Lightning
					Numerous grass fires ignited by lightning.				
Caddo Parish Bethany	16	1655CST			0	0			Thunderstorm Wind (G55)
Caddo Parish Shreveport Rgnl Arprt	25	1647CST			0	0			Thunderstorm Wind (G58)
					Wind gust from the south 180 degrees shifted to the east 080 degrees at 1655 CST. Both gusts 1647 CST and 1655 CST were at 58 knots.				
Caddo Parish 9 SW Shreveport	25	1700CST			0	0	4K		Thunderstorm Wind (G61)
					Several trees, well house, and fence blown over.				
Winn Parish Winnfield	28	1710CST 1715CST			0	0	23K		Thunderstorm Wind (G61)
					A new roof was ripped off of Deano's Sporting Goods Store and shingles were ripped from a Church and several other structures. Several large trees were also uprooted in downtown.				
LAZ001>006-010>014-017>022			Caddo - Bossier - Webster - Claiborne - Lincoln - Union - De Soto - Red River - Bienville - Jackson - Ouachita - Sabine - Natchitoches - Winn - Grant - Caldwell - La Salle						
	01	0000CST			0	0			Drought
	31	0000CST							
LAZ001			Caddo						
	01	0000CST			6	0			Excessive Heat
	31	2359CST							
					July started off where June ended. Another month for the record book concerning the excessive heat wave of 1998. The average temperature was 88.5 degrees or the warmest July on record and the warmest month on record for any year. The previous record was 87.9 degrees in July 1984. Shreveport also set a record for the highest average monthly maximum temperature of 100.7 degrees as well as any month. The previous record was 100.3 degrees set in July 1875. July in Shreveport reached or exceeded 27 days greater than 100 degrees and 5 days equalled or exceeded 105 degrees.				
					M92PH, F72PH, M58OU, F84PH, M84PH, M60OU				
LAZ002			Bossier						
	01	0000CST			2	0			Excessive Heat
	31	2359CST							
					July started off where June ended as yet another month for the record book with excessive heat. A total of 27 days were 100 degrees or higher and 5 days reached 105 degrees or higher.				
					F95PH, F87PH				
LOUISIANA, Southeast									
Plaquemines Parish Empire	22	0730CST			0	0			Lightning
					Lightning set two oil field water storage tanks on fire.				
Tangipahoa Parish Hammond	28	1450CST			0	0	0.50K		Thunderstorm Wind
					Thunderstorm winds blew down several trees around the city.				
Lafourche Parish Thibodaux	25	1600CST			0	0	0.50K		Thunderstorm Wind
					Thunderstorm winds blew down several trees.				

Storm Data and Unusual Weather Phenomena

July 1998

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

LOUISIANA, Southeast

Ascension Parish

Prairieville to Gonzales	14	1000CST			0	0	2K	Thunderstorm Wind
--------------------------	----	---------	--	--	---	---	----	-------------------

Thunderstorm winds blew down several trees and tree limbs.

LAZ034>040-046>050-056>070 **Pointe Coupee - West Feliciana - East Feliciana - St. Helena - Tangipahoa - Washington - St. Tammany - Iberville - West Baton Rouge - East Baton Rouge - Ascension - Livingston - Assumption - St. James - St. John The Baptist - Upper Lafourche - St. Charles - Upper Jefferson - Orleans - Upper Plaquemines - Upper St. Bernard - Upper Terrebonne - Lower Terrebonne - Lower Lafourche - Lower Jefferson - Lower Plaquemines - Lower St. Bernard**

01	0000CST			0	0		Drought
31	2359CST						

Unusually hot and dry weather conditions continued across much of southeast Louisiana during July. Average temperature departures were around 3 degrees above normal across the region. Three daily maximum temperatures records were set at New Orleans International Airport and five were set or tied at New Orleans Audubon Park. Although increased precipitation across the region during July resulted in some improvement of the dry conditions from the past two months, drought conditions continued with the Palmer Drought Index placing most of southeast Louisiana in moderate to mild drought at the end of July. However, severe drought conditions persisted in the immediate Baton Rouge area and areas to the west. Below normal precipitation occurred south of Lake Pontchartrain and near the coast, where an average monthly rainfall of 5.73 inches was observed compared to the normal of 6.82 inches. Near normal precipitation fell north of Lake Pontchartrain where an average monthly rainfall of 6.38 inches was measured. Damage estimates for crops will be described in a later issuance of Storm Data at the end of the growing season.

St. Tammany Parish

Covington	14	0900CST 1030CST		0	0		Urban/Sml Stream Fld
-----------	----	--------------------	--	---	---	--	----------------------

A thunderstorm that produced 3.55 inches of rain in 90 minutes flooded 3 buildings and numerous streets in downtown Covington.

LOUISIANA, Southwest

Calcasieu Parish

Lake Charles	17	1613CST		0	0	150K	Thunderstorm Wind
--------------	----	---------	--	---	---	------	-------------------

A severe thunderstorm moving south across Calcasieu Parish resulted in wind damage in Lake Charles, DeQuincy and Sulphur. Trees and power lines were knocked down across a wide area. Four cows were electrocuted near DeQuincy when lightning struck a tree they were standing under.

Rapides Parish

Alexandria	01	1800CST		0	0	25K	Thunderstorm Wind
------------	----	---------	--	---	---	-----	-------------------

Local newspaper reported trees and power lines downed across Alexandria and Pineville in northern Rapides Parish.

Iberia Parish

New Iberia	03	1100CST		0	1		Lightning
------------	----	---------	--	---	---	--	-----------

Lightning struck a crane in New Iberia, slightly injuring a man on the crane.

St. Mary Parish

Centerville	14	0645CST		0	0		Lightning
-------------	----	---------	--	---	---	--	-----------

Lightning struck an oil storage tank near Centerville in St. Mary Parish, causing it to catch on fire. No injuries were reported. Barge traffic on the Intracoastal Waterway had to be halted for two hours while the fire was put out. The 25,000 barrel tank contained heavy oil, but none leaked into the water.

Acadia Parish

Branch	13	2000CST		0	0		Lightning
--------	----	---------	--	---	---	--	-----------

Lightning struck an oil storage tank near Branch. The lightning hit a fiberglass tank situated between two steel tanks. Firefighters had the fire out in two hours, and no injuries were reported.

LAZ027>028-030>032-041>043 **Vernon - Rapides - Beauregard - Allen - Evangeline - Calcasieu - Jefferson Davis - Acadia**

01	0000CST			0	0		Drought
31	2359CST						

A mild to severe drought continued for the third straight month across southwest Louisiana. Most places only saw 2 to 3 inches of rain the entire month of July. Specific dollar figure damages will be listed in the August 1998 Storm Data.

MAINE

NOT RECEIVED.

Storm Data and Unusual Weather Phenomena

July 1998

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

MARYLAND, Central

Damage was first noted in Washington Co, where dozens of trees/large limbs and wires fell. Problems were concentrated across the southern portion of the county near Antietam and Sharpsburg, where some roads were temporarily closed. The storm gained strength as it plowed southeast into Frederick and Montgomery Cos. In Frederick Co, damage included felled scattered trees and power lines in the Middletown/Braddock Heights area. More substantial damage occurred in the south portion of Frederick city, where two roofs partially collapsed at a shopping center near the intersection of state route 85 and Interstate 270. An unfastened trailer was flipped off cinder block supports and fell onto an automobile, pinning the car against a curb. Homes at a nearby neighborhood sustained minor damage, including one whose garage was partially destroyed.

Damage in Montgomery Co began along state route 355 near the Gaithersburg/Rockville line, where a portion of an aluminum roof was lifted from a storage facility and blown across the top of an automobile dealership, destroying a satellite dish. Pieces of the roof then fell onto three vehicles below, causing extensive damage to one of them. On the west side of the highway, an unsecured trailer was blown down, and roofing material was peeled off a partially built apartment house. Bricks within the building's elevator shaft were shifted slightly. Four grounded pilots reported witnessing funnel clouds, but an actual tornado sighting could not be confirmed.

Several large tree limbs were also blown down in the area. A bit farther east, in Derwood, the tops of several large tulip poplars were snapped; some of the debris caused damage to a resident's patio. More damage occurred in Kensington, when a large hickory tree fell onto a used book business (which was attached to a residence). The tree crushed the roof, scattering thousands of books and destroying two personal computers. In all, there were hundreds of scattered large limbs and/or trees down between Rockville and Silver Spring, several which blocked area thoroughfares. Montgomery Co fire and rescue logged 300 calls between 1700 and 2000EST.

The storm began weakening as it approached the eastern suburbs of Washington, DC. Still, damage to trees and power lines continued across much of Prince George's Co, especially between Bowie and Upper Marlboro. A few wires were blown down along the Prince George's/southern Anne Arundel Co line in Wayson's Corner.

Frederick County New Market to 2 E Kemptown	30	1930EST 1940EST			0	0	5K	Thunderstorm Wind
Howard County North Portion	30	2000EST 2015EST			0	0	12K	Thunderstorm Wind
Harford County 1 W Perryman to Perryman	30	2025EST 2026EST	0.6	100	0	0	15K	Tornado (F0)
Baltimore City (C) 1 SW Highlandtown	30	2030EST 2130EST			0	0	8K	Urban/Sml Stream Fld

An isolated rotating thunderstorm moved out of the eastern West Virginia panhandle and into north central Maryland, producing some wind damage during the evening. Other storms developed later in the evening, including another very small supercell which dropped a brief tornado along the western shore of the Chesapeake Bay. The storms formed at the juxtaposition of a weak surface low pressure area along a stationary front parked over north central Maryland.

Some large limbs and numerous wires were blown down in southeastern Frederick Co along Penns Shop Road between New Market and Mt Airy. A swath of damage to trees and wires continued across northern Howard Co, with tree limbs blocking a portion of Interstate 70 and the intersection of state route(s) 97 and 144. More tree limbs and wires were reported down in Ellicott City.

A small tornado developed along the northeast shoreline of the Bush River and moved along a main road near Perryman, snapping dozens of tree tops. One residence sustained damage when a large limb was driven through siding.

Heavy rains of 1 to 2 inches, combined with poor drainage, caused sidewalk flooding in the Fells Point section of Baltimore City. At least two poorly draining intersections reported water "up to car windows" in the south portion of town.

Baltimore Gas and Electric reported 15,000 customers lost power during the storm.

MARYLAND, Northeast

Cecil County Crystal Beach to Cecilton	30	2105EST 2120EST			0	0		Thunderstorm Wind (G50)
---	----	--------------------	--	--	---	---	--	--------------------------------

Storm Data and Unusual Weather Phenomena

July 1998

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

MARYLAND, Northeast

A severe thunderstorm caused wind damage across southwestern areas of Cecil County from Crystal Beach to Cecilton. A few trees and numerous large limbs were knocked down. Hardest hit was Elkview Shores with moderate damage to three homes. One large tree limb crushed a trailer home. Downed limbs caused roof damage to one home in Crystal Beach. Fallen trees caused damage to one home near Cecilton. A second home near Cecilton was set on fire by a lightning strike. Choptank Electric reported about 1,100 homes lost power for several hours.

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

20	0900EST								
24	1800EST			0	0				Heat Wave

A heat wave affected the Maryland Eastern Shore during the work week of July 20th. The hottest day for the heat wave and the summer for most areas was the 22nd. A weak trough brought in slightly cooler air on the 23rd. A strong cold front that moved through the Delmarva Peninsula early in the day on the 24th brought in a much drier and cooler air mass for the upcoming weekend (July 25th and 26th). The highest temperatures included 99 degrees at the Baltimore-Washington International Airport and Salisbury and 98 degrees in Bridgeville (Delaware). The combination of the heat and high ozone concentrations caused about a 30 to 40 percent increase in cardiac and respiratory emergencies in Cecil County. For three consecutive days customers of Delmarva Power and Light set power usage records and reached 3,053 megawatts at 6 p.m. EDT on the 22nd.

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

31	2359EST								
				0	0	0			Unseasonably Dry

July 1998 started a run of drier than normal weather across most of the Maryland Eastern Shore. On a county weighted average, rainfall totals for the month of July were between 1.2 and 2.4 inches and were about half of normal. The driest conditions occurred across Talbot and Caroline Counties. In Talbot County, only 30 percent of the normal July rainfall fell. The lack of rain contributed to two small brush fires along U.S. Route 50 in Easton on July 24th and 25th.

MARYLAND, South

NONE REPORTED.

MARYLAND, West

NONE REPORTED.

MASSACHUSETTS, Central and East

Bristol County

Norton	01	0000EST							
	02	1000EST			0	0			Flood

Wading River

Bristol County

Taunton	01	0000EST							
	02	0700EST			0	0			Flood

Ten Mile River

Heavy rain fell on June 30th and resulted in the continued flooding of at least two small streams in Bristol County, which lasted into the first couple of days of July. The Ten Mile River in Taunton had reached flood stage at 1:30 PM on June 30th and then fell below flood stage at 8 AM on July 2nd. The Wading River in Norton had reached flood stage at 10:30 PM on June 30th, crested at 10.35 feet at 10:15 PM on July 1st, and then fell below flood stage at 11 AM on July 2nd. No other flooding was reported during the rest of the month of July.

Franklin County

Greenfield to Montague	16	1400EST							
		1405EST			0	0			Hail (1.00)

Franklin County

Greenfield	16	1425EST							
					0	0			Hail (0.75)

Franklin County

Erving	16	1530EST							
					0	0			Thunderstorm Wind (G50)

A severe thunderstorm affected several communities in Franklin County. Quarter size hail fell in Greenfield and Montague. About 20 minutes later, dime size hail was reported in Greenfield. Local police reported that thunderstorm winds blew down some trees, which brought down wires in Erving.

Hampden County

West Springfield	17	2017EST							
					0	0			Hail (0.75)

Hampden County

Springfield	17	2033EST							
					0	0			Hail (0.88)

A mid-evening thunderstorm produced large hail in Springfield. Dime size hail was reported in West Springfield, while nickel size hail fell in the northeast part of Springfield.

Storm Data and Unusual Weather Phenomena

July 1998

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 Millville to Milford	20	1120EST			0	0			Lightning
Norfolk County Bellingham to Franklin	20	1130EST			0	0			Thunderstorm Wind (G50)
Norfolk County Norfolk	20	1130EST			0	0	100K		Lightning
Norfolk County Plainville	20	1130EST			0	0	15K		Lightning
Norfolk County Wrentham	20	1130EST			0	0	20K		Lightning
Plymouth County West Bridgewater	20	1205EST			0	0			Hail (1.00)
Plymouth County Pembroke to Marshfield	20	1210EST			0	0	5K		Lightning
Plymouth County Pembroke to Marshfield	20	1215EST			0	0			Thunderstorm Wind (G50)
Barnstable County Provincetown	20	1245EST			0	0			Thunderstorm Wind (G50)

Tree damage caused by severe thunderstorm winds resulted in power outages in the Norfolk County towns of Medway, Franklin, and Bellingham. In addition, many lightning strikes were reported, contributing to the power outages. As many as six buildings, including one house, were struck by lightning in Milford in extreme southeast Worcester County. In Norfolk County, lightning strikes resulted in some damage. In the town of Norfolk, a lightning strike caused an electrical surge which ignited a fire that caused an estimated \$100,000 damage to a house. Lightning struck a public building in Wrentham, resulting in an estimated \$20,000 damage to equipment. A chapel was struck in Plainville and the resulting fire caused an estimated \$10,000 to \$15,000 damage. No injuries were reported from any of the lightning strikes, but up to 4,000 area electric customers lost service. Lightning also struck the Upton Town Hall and the Millville Fire Station, both towns in extreme southeast Worcester County. No serious damage was reported.

In Plymouth County, 40 to 50 large tree branches were blown down in Marshfield. Also in Marshfield, lightning knocked out communications at the local fire department. In neighboring Pembroke, many trees were knocked down in the northern part of town and one tree crushed a parked automobile. Also, in Pembroke, a lightning strike set a garage afire and destroyed the car parked inside. Dime to quarter size hail was reported in West Bridgewater. At about 1:45 PM, thunderstorm winds overturned a small plane at Provincetown Airport on the outer tip of Cape Cod.

Hampden County Holyoke	20	1558EST			0	0			Thunderstorm Wind (G50)
Hampshire County Easthampton	20	1559EST			0	0			Thunderstorm Wind (G50)
Hampden County Blandford	20	1600EST			0	0	8K		Lightning
Hampden County Springfield	20	1613EST			0	0			Hail (0.88)
Hampden County Holyoke	20	1615EST			0	0			Thunderstorm Wind (G50)
Hampden County Ludlow	20	1621EST			0	0			Thunderstorm Wind (G50)

In Hampden County, thunderstorm winds knocked down trees and wires in Holyoke. Also, the strong winds bent a 1.5 inch aluminum pipe on a ground plane antenna in Ludlow. Nickel size hail was reported in Springfield. In Hampshire County, numerous 4-inch diameter tree limbs were reported covering a road in Easthampton. Lightning strikes caused only minor damage, except in Blandford, where two buildings were set on fire. An apartment building sustained extensive damage to the attic and 2nd floor. A shed was set on fire, but was quickly extinguished.

Middlesex County Acton	23	1212EST			0	0			Hail (0.75)
Hampden County East Longmeadow	23	1218EST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1998

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

Hampden County									
Monson	23	1235EST			0	0			Thunderstorm Wind (G50)
Worcester County									
Spencer	23	1240EST			0	0			Thunderstorm Wind (G50)
Worcester County									
Webster	23	1240EST			0	0			Thunderstorm Wind (G50)
Worcester County									
Millbury to Grafton	23	1255EST 1301EST			0	0			Thunderstorm Wind (G50)
Worcester County									
Uxbridge	23	1310EST			0	0			Thunderstorm Wind (G50)
Middlesex County									
Stow	23	1315EST			0	0			Hail (0.75)
Middlesex County									
Stow	23	1315EST			0	1			Lightning
Middlesex County									
Concord to Lincoln	23	1320EST			0	11	70K		Lightning
Middlesex County									
Hopkinton	23	1320EST			0	0			Thunderstorm Wind (G50)
Middlesex County									
Lexington	23	1320EST			0	0			Hail (1.00)
Essex County									
Marblehead	23	1330EST			0	0	5K		Lightning
Norfolk County									
Medway to Wrentham	23	1335EST 1342EST			0	0			Thunderstorm Wind (G50)

An isolated early afternoon thunderstorm produced dime size hail in Acton in Middlesex County. Then, severe thunderstorms moved eastward across Massachusetts from Hampden County to Worcester, Middlesex, and Norfolk Counties during the afternoon. Severe weather was first reported in Hampden County where local law enforcement officials reported trees blown down in East Longmeadow. A short time later, trees and large tree limbs were blown down in Monson. In Worcester County, trees and power lines were downed in Spencer and small trees were downed in Webster. One tree and several large limbs were blown down in Grafton. Trees were reported down in Millbury. Large branches, 6 to 12 inches in diameter, were reported down in Uxbridge. Public reports of a possible tornado in Dudley were not confirmed.

In Middlesex County, in West Concord, three campers were injured while seated in a tent at a local campsite. Six others in the tent were visibly shaken by the lightning strike and all were transported to the nearest hospital. One staff member and two campers were held at the hospital. None of the victims showed any burns and none was seriously injured. Lightning strikes caused some serious damage in Concord. A house sustained \$20,000 damage when a chimney and a portion of the roof were blown off. A business establishment reported \$50,000 damage to their alarm system. In Stow, a 7-year-old boy was injured by a bolt of lightning which struck his house while he was in contact with a dehumidifier. He was admitted for observation at the local hospital. In Lincoln, one person was struck by lightning at the airport at Hanscom Field while holding the ground wire for a blimp and was transported to the local hospital.

Also, in Middlesex County, two to three foot diameter branches were blown down in Hopkinton. Dime size hail was observed at an apple orchard in Stow and quarter size hail was reported in Lexington. Farther east, in Essex County, the storms were not severe, but pea size hail fell at Manchester-by-the-Sea along with 2.85 inches of rain. Lightning struck the steeple of a church in Marblehead and started a fire which resulted in several thousand dollars in damage. Small limbs were downed on the Danvers-Middleton town line. Severe thunderstorms did continue east into western Norfolk County, where large branches were reported blown down in Medway, Franklin, and Wrentham. Large tree limbs were reported down on wires in Franklin.

MAZ010

Eastern Hampshire

29	1213EST	0	0	Strong Winds
----	---------	---	---	--------------

A thunderstorm produced a wind gust estimated at 50 mph. It blew down some small tree limbs and one power line.

MASSACHUSETTS, West

Berkshire County								
Lenox	17	1835EST			0	0		Hail (0.88)
Berkshire County								
Pittsfield	17	1835EST			0	0	5K	Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

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

MASSACHUSETTS, West

Berkshire County Lenox	17	1848EST			0	0			Hail (0.88)
Berkshire County Great Barrington	17	1855EST			0	0	3K		Thunderstorm Wind
A cold front moving east into the Berkshires resulted in scattered severe thunderstorms. Wind from the storms downed powerlines and trees in Pittsfield and Great Barrington. Nickel size hail fell twice within thirteen minutes time in the town of Lenox.									
Berkshire County Pittsfield	20	1512EST			0	0	5K		Thunderstorm Wind
A cold front moving east into Berkshire County triggered widely scattered severe thunderstorms. The storms brought down large limbs and power lines in the town of Pittsfield.									

MICHIGAN, East

Wayne County 1 E Belleville to Taylor	07 08	2030EST 0430EST			0	0	100K		Flash Flood
A stationary front was located across far southeast Michigan during the evening of the 7th. A weak area of low pressure was moving slowly east along the front, in response to a strong shortwave approaching the area. A very moist and unstable airmass was across the region, and a number of thunderstorms developed as a result. The stationary front acted as a focusing mechanism, allowing thunderstorms to move repeatedly over the same area.									

Heavy rain occurred in a band from just east of Ypsilanti to east of Flat Rock, where an average of 2 to 3 inches of rain fell during the evening. This rain was not enough to cause significant flooding, although some standing water developed in places with poor drainage. However, a small area within this band saw substantially more rainfall. The heaviest rain fell near the intersection of Interstate 275 and Eureka Road, on the southwest edge of Detroit Metropolitan Airport. Radar estimated 4.9 inches of rainfall near this location. On Metro Airport proper, 4.34 inches of rain fell.

The resultant flash flooding caused substantial damage to the Davey Terminal at Metro Airport. The baggage handling area was flooded with 3 feet of water. In the parking area outside, water 6 feet deep floated some cars. An electrical room inside the terminal was flooded, cutting power to 19 gates. About fifty Northwest Airlines flights had to be cancelled as a result of the flooding and electrical outage, and as Metro Airport is the largest hub for that airline, the effects rippled across the country.

Flash flooding also occurred in the suburban communities around the airport. Some primary roads on the west side of Taylor were closed for hours, including Beech Daly and Monroe. Three feet of water covered parts of Telegraph Road (US-24) near Interstate 94. Water was also several feet deep on Mayfair Street in Brownstown Township, Wayne Road in Romulus, and Belleville Road near Belleville. It took until the morning of the 8th for high water to recede.

Midland County Hope	14	1350EST			0	0			Hail (1.00)
Saginaw County 3 S Freeland to 2 NW Saginaw	14	1640EST 1645EST			0	0			Hail (1.00)
Saginaw County 1 NW Saginaw to Saginaw	14	1650EST 1930EST			0	0			Flash Flood
Bay County 1 NE Bay City	14	1710EST			0	0			Thunderstorm Wind (G51)
Genesee County 5 W Flint	14	1806EST			0	0	3K		Thunderstorm Wind (G52)

A weakening cold front stretched from northern Wisconsin to central lower Michigan. A cluster of thunderstorms developed in northwest Wisconsin during the early morning hours. These storms moved southeast along the cold front, crossing Lake Michigan by early afternoon. Abundant sunshine allowed the atmosphere to become very unstable in southeast Michigan, and the storms pulsed to severe levels as they crossed the Saginaw Valley during the afternoon and early evening hours.

Quarter sized hail was reported in Midland and Saginaw Counties. A county sheriff reported 58 mph winds near Bay City. Along Corunna Road (M-21) in Flint Township, power lines were downed, and a construction trailer was moved off of its foundation.

Training of thunderstorms produced some marginal flash flooding in and just west of the city of Saginaw. Up to three inches of rain fell in this area in less than two hours. Numerous underpasses and several city streets were flooded as a result.

Lenawee County 4 S Tecumseh	21	0705EST			0	0	2K		Thunderstorm Wind (G52)
A warm front moved north into southeast Michigan during the early morning hours. The atmosphere in the area was already quite									

Storm Data and Unusual Weather Phenomena

July 1998

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

MICHIGAN, East

moist and unstable, and the front provided a focus for thunderstorm development.

A tornadic supercell developed in Jackson County at around sunrise. This storm lost supercell characteristics as it moved into southeast Michigan, and evolved into a bow echo. The windows were blown out of a residence as the bow echo passed.

Lenawee County Addison to 1 NW Cambridge Jct	21	1639EST 1647EST			0	1	65K		Thunderstorm Wind (G58)
Washtenaw County 6 S Chelsea to Manchester	21	1640EST 1648EST			0	0	22K		Thunderstorm Wind (G55)
Oakland County Highland	21	1645EST			0	0	7K		Thunderstorm Wind (G52)
Shiawassee County 3 NW Carland	21	1645EST			0	0	9K		Thunderstorm Wind (G55)
Lenawee County Hudson	21	1646EST			0	0	100K		Thunderstorm Wind (G65)
Lenawee County Adrian to Tecumseh	21	1650EST 1657EST			0	0	145K		Thunderstorm Wind (G58)
Washtenaw County Chelsea to Dexter	21	1650EST 1657EST			0	0	9K		Thunderstorm Wind (G52)
Washtenaw County 4 SW Saline to 1.5 N Ann Arbor Arpt	21	1650EST 1657EST			0	0	200K		Thunderstorm Wind (G65)
Oakland County 1 S Oakland Pontiac Arpt to 1 NW Bloomfield Hills	21	1700EST 1713EST			0	0	20K		Thunderstorm Wind (G65)
Oakland County Waterford	21	1700EST			0	1			Lightning
Washtenaw County Ann Arbor to 2 E Ypsilanti	21	1702EST 1712EST			0	0	4.5M		Thunderstorm Wind (G65)
Lenawee County Ridgeway to Deerfield	21	1703EST 1712EST			0	0	40K		Thunderstorm Wind (G55)
Oakland County Farmington	21	1705EST			0	0	13K		Thunderstorm Wind (G52)
Lenawee County Britton	21	1712EST			0	0			Hail (1.75)
Washtenaw County Milan to 3 S Ypsilanti	21	1712EST 1715EST			0	0	65K		Thunderstorm Wind (G58)
Macomb County Sterling Hgts	21	1713EST			0	0			Hail (0.75)
Monroe County Azalia	21	1715EST			0	0	15K		Thunderstorm Wind (G52)
Macomb County Warren to Roseville	21	1717EST 1730EST			0	0	5.8M		Thunderstorm Wind (G70)
Oakland County Troy to Hazel Park	21	1720EST 1730EST			0	0	35K		Thunderstorm Wind (G55)
Wayne County 5 S Plymouth to Detroit Metro Arpt	21	1722EST 1733EST			0	0	3.3M		Thunderstorm Wind (G60)
Macomb County Sterling Hgts	21	1724EST			0	0	275K		Lightning

Separate lightning strikes started fires that destroyed a house and an apartment building. Sixteen people were left homeless.

Storm Data and Unusual Weather Phenomena

July 1998

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

MICHIGAN, East

Lenawee County

Morenci	21	1727EST			0	0	18K		Lightning
----------------	----	---------	--	--	---	---	-----	--	------------------

A barn burned to the ground after being struck by lightning.

Monroe County

3 NE Maybee to Carleton	21	1727EST 1732EST			0	0	50K		Thunderstorm Wind (G60)
-------------------------	----	--------------------	--	--	---	---	-----	--	--------------------------------

Macomb County

Mt Clemens to St Clair Shrs	21	1728EST 1737EST			0	1	1.4M		Thunderstorm Wind (G70)
-----------------------------	----	--------------------	--	--	---	---	------	--	--------------------------------

Wayne County

Garden City	21	1731EST			0	0			Hail (0.75)
-------------	----	---------	--	--	---	---	--	--	--------------------

Wayne County

Redford to Dearborn	21	1731EST 1740EST			0	0	18M		Thunderstorm Wind (G68)
---------------------	----	--------------------	--	--	---	---	-----	--	--------------------------------

Wayne County

Taylor to River Rouge	21	1731EST 1745EST			0	0	4.5M		Thunderstorm Wind (G62)
-----------------------	----	--------------------	--	--	---	---	------	--	--------------------------------

Monroe County

2.5 SW Monroe to Stony Pt	21	1734EST 1737EST			0	0	315K		Thunderstorm Wind (G60)
---------------------------	----	--------------------	--	--	---	---	------	--	--------------------------------

Wayne County

Allen Park to Dearborn	21	1734EST 1740EST			0	0	200K		Lightning
------------------------	----	--------------------	--	--	---	---	------	--	------------------

Two homes burned after being struck by lightning.

Monroe County

Temperance	21	1735EST			0	0	9K		Thunderstorm Wind (G52)
------------	----	---------	--	--	---	---	----	--	--------------------------------

Wayne County

Flat Rock to Grosse Ile Nas	21	1735EST 1740EST			2	2	825K		Thunderstorm Wind (G55)
-----------------------------	----	--------------------	--	--	---	---	------	--	--------------------------------

M70U, M300U

Wayne County

Harper Woods to Grosse Pt Park	21	1737EST 1745EST			0	0	250K		Thunderstorm Wind (G65)
--------------------------------	----	--------------------	--	--	---	---	------	--	--------------------------------

Wayne County

Detroit	21	1740EST 1742EST			0	0	200K		Thunderstorm Wind (G55)
---------	----	--------------------	--	--	---	---	------	--	--------------------------------

Oakland County

Rochester Hills	21	1745EST			0	0			Thunderstorm Wind (G52)
-----------------	----	---------	--	--	---	---	--	--	--------------------------------

July 21st was one of the hottest days of the summer in southeast Michigan, as temperatures soared into the middle to upper 90s. An extremely humid airmass was also in place, with dew points in the upper 70s. The above produced an extraordinarily unstable atmosphere, with CAPE values approaching 7000 J/kg. A weak trough of low pressure moved east into western lower Michigan during the afternoon. It was on this trough that thunderstorms first developed. Thanks to the amount of instability present, these storms rapidly became severe. Winds aloft were rather strong for mid-summer, with 40 knot winds less than a mile above ground level (at 850 mb). Thus, the storms were prodigious producers of damaging wind gusts.

Tragedy struck during the early evening in the downriver suburbs of Detroit. A family of four attempted to leave a video store in Woodhaven during the height of the storm. As the group left the building, a severe wind gust struck an awning located above the exit. The awning was ripped off the building, and the brickwork the awning was attached to came with it. The falling bricks proved deadly, as a young boy was killed instantly when his head was crushed. His father suffered serious injuries to internal organs and his pelvic region, and succumbed to those injuries two and a half weeks later. The other two children in the group were treated at the scene for minor injuries.

Three other individuals were injured during the severe thunderstorm episode. Ironically, the first injury of the event was also due to an awning collapse - this one in northwest Lenawee County. Severe winds struck a campground near Michigan Speedway, where a major auto race would take place during the upcoming weekend. The awning of a camper was blown down, injuring a bystander. In Waterford (Oakland County), a young woman was struck by lightning at a park. She required an overnight hospitalization. In Macomb County, a man in St Clair Shores was knocked unconscious when a falling tree struck the car he was in. His injuries also necessitated a brief hospital stay.

The damage was almost exclusively confined to the southern three tiers of counties in southeast Michigan. The one exception was in extreme western Shiawassee County, just east of Elsie, where a thunderstorm outflow downed large limbs and power lines. Most

Storm Data and Unusual Weather Phenomena

July 1998

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

MICHIGAN, East

of the damage was located in the heavily populated Detroit area. Downed trees and power lines were common, and there were a few reports of large hail.

The first county in southeast Michigan to be affected by severe weather was Lenawee. Trees were downed in Ridgeway, Britton, Addison, and Deerfield. Britton also received the largest hail during the entire severe weather episode. In Tecumseh, two vehicles were damaged by fallen trees. Roof damage at Tecumseh City Hall led to computer systems inside being destroyed by exposure to the elements. Adrian was hit hard as well. Numerous homes were damaged by fallen trees, and a radio tower at the sheriff department was knocked out of service. Trees were downed just northeast of town. Many trees, limbs, and power lines were downed in Hudson, with numerous cars hit by debris, and the roof of a business destroyed. Amateur radio operators north of Addison and northeast of Adrian both estimated 65 mph winds.

Severe thunderstorms struck Washtenaw County just minutes after first impacting Lenawee. The communities of Chelsea, Dexter, and Manchester all saw some tree damage, but wind damage was more extensive between Chelsea and Manchester. Thunderstorm winds laid over a corn field in Lodi Township, northwest of Saline. Saline itself saw substantial damage: many trees were downed, heavily damaging a home and a vehicle; store windows were blown out in town; and, a screened-in porch was removed from its house.

The thunderstorms continued to intensify as they moved east into the densely populated Ann Arbor-Ypsilanti area. Ann Arbor Municipal Airport measured a 75 mph wind gust, which blew two hangars off their foundations, damaged the doors of three hangars, and damaged several planes. At least 75 trees were downed in Ann Arbor, most on the south side of town. Ypsilanti was hit even harder. Falling trees damaged numerous homes and vehicles, and several traffic signals came crashing down. Gas pumps just south of the city were blown over. Cleanup efforts in Ypsilanti took five weeks to complete. South of Ypsilanti, several trees were downed in Milan, one of which demolished a car. Many trees were uprooted in Augusta Township, just east of Milan.

In Oakland County, thunderstorm winds downed a traffic signal in Highland. Trees, limbs, and power lines were downed in a number of suburban communities, including Farmington, Bloomfield Township, Royal Oak, Troy, Clawson, Madison Heights, and Hazel Park. Power lines fell on Interstate 75 near Rochester Road, closing that busy highway for more than an hour. In Pontiac, a replica of the Vietnam Veterans Memorial Wall was toppled; it was constructed to withstand 80 mph gusts. A spotter in Rochester Hills estimated 60 mph winds with one thunderstorm.

The south half of neighboring Macomb County was hit hard by severe thunderstorms. Spotters in the south part of Sterling Heights reported dime sized hail and 76 mph winds. In Warren, spotters reported gusts up to 75 mph. The stretch of county between 10 and 12 Mile Roads, from Warren east to St Clair Shores, took the brunt of the storms. Damage was extensive in Warren, Roseville, and St Clair Shores, with hundreds of downed trees and power lines. Newspaper stands and store signs were knocked over in Warren. In Roseville and Fraser, windows and roofs were removed from stores. Further north, an office building in Mt Clemens was declared a total loss after it was deroofed by severe winds. In nearby Harrison Township, power lines were downed.

Damage was not quite as extensive in Monroe County. Trees and power lines were downed in several locations in the county. The electrical connections of several homes in Temperance were damaged. Many trees were downed in the city of Monroe, where a home was damaged by a falling tree, while another had its porch destroyed. A home was also heavily damaged by a falling tree in Stony Point. Barns were deroofed in both Carleton and Exeter Township, while a garage was moved off its foundation in Carleton.

However, the most intense damage of the episode occurred in the most populated county in the state: Wayne County. The worst destruction was in Dearborn and Dearborn Heights. Between the two cities, over 500 trees were downed, almost a thousand homes suffered some sort of damage, and thirty vehicles were destroyed. In Dearborn, large chunks of the city were essentially defoliated, with over ten thousand trees damaged. The worst damage was around the Michigan Avenue/Cherry Hill Road intersection. Dearborn Heights reported over twelve hundred wires downed, and fifteen water mains were broken by uprooted trees. Cleanup in the Dearborns was expected to continue into October.

Damage was widespread, but not quite as intense, in the communities surrounding the Dearborns. Some stores along Telegraph Road were damaged on the far northwest side of Detroit. Dozens of limbs and power lines were downed in Redford. The southeast part of Livonia saw trees uprooted, power lines down, and cars and homes damaged. In Westland, forty trees were toppled, and the roof of an automobile showroom was blown away. Many trees were downed in Garden City, especially on the east side. Some roofs were damaged, windows were broken, and the deck of a home was destroyed. There were many downed lines in Canton Township, with downed trees and lines in the city of Wayne. In Inkster, one home was considered a total loss after a tree fell on it, and five other homes were damaged.

Another swath of damaging winds began further south, around Detroit Metropolitan Airport. Wind gusts of 58 mph caused the control tower to be evacuated, resulting in dozens of flights being cancelled or rerouted. Two out of the three electrical feeds to the airport were disabled, resulting in continued problems into the next day. Substantial damage also took place in the nearby cities of Romulus and Taylor. This damage swath continued east to the Detroit River, with damage reported in the cities of Southgate, Lincoln Park, Ecorse, and River Rouge. Two homes suffered major damage in Allen Park, while in Wyandotte, thirty homes and six businesses were damaged.

An additional damage swath occurred across the far downriver suburbs. This included Woodhaven, where the two fatalities occurred. Storm damage also occurred in Flat Rock, Gibraltar, and Trenton. On Grosse Ile, one hundred homes suffered some sort

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MICHIGAN, Extreme Southwest</u>									
Branch County Coldwater	21	1836EST			0	0			Hail (1.75)
St. Joseph County Centreville	21	1836EST			0	0			Hail (1.75)
Berrien County Bridgman	21	1910EST SHERIFF REPORT.			0	0			Hail (0.75)
Berrien County Sawyer	21	1910EST			0	0			Hail (0.75)
Branch County Gilead	21	1913EST TREES DOWN THROUGHOUT COUNTY.			0	0			Thunderstorm Wind (G50)
Cass County Dowagiac	21	1948EST NUMEROUS LARGE TREES DOWN AROUND COUNTY.			0	0			Thunderstorm Wind (G52)
Berrien County Buchanan	21	2015EST TREES AND POWER LINES DOWN.			0	0			Thunderstorm Wind (G50)
<u>MICHIGAN, North</u>									
Chippewa County 1 W Sault Ste Marie	19	1340EST Wind gusts to 60 mph were reported by ships along the Soo Locks.			0	0			Thunderstorm Wind (G52)
Chippewa County Sault Ste Marie	19	1343EST			0	0			Hail (0.75)
Chippewa County Sault Ste Marie	19	1344EST			0	0			Hail (0.75)
Chippewa County Sault Ste Marie	19	1350EST			0	0			Hail (0.75)
<u>MICHIGAN, Upper</u>									
Baraga County Watton	14	1755EST Two large trees downed. One landed on a garage.			0	0			Thunderstorm Wind (G55)
Baraga County Covington	14	1830EST 65 mph wind gusts downed 18 to 24 inch diameter trees.			0	0	10K		Thunderstorm Wind (G59)
Iron County Iron River to Crystal Falls	14	1840EST 1845EST Several trees downed between Iron River and Crystal Falls.			0	0			Thunderstorm Wind (G55)
Marquette County (Mqt)Marquette Co Ar	14	1900EST			0	0			Thunderstorm Wind (G53)
Marquette County 2 W Ishpeming	14	1905EST Several trees down along US 41 west of Ishpeming.			0	0			Thunderstorm Wind (G53)
Dickinson County 7 N Iron Mtn	14	1911EST Downed trees blocked several roads.			0	0			Thunderstorm Wind (G55)
Marquette County 5 NW Big Bay	14	1912EST 70 mph wind gust.			0	0			Thunderstorm Wind (G62)
Marquette County Harvey	14	1930EST 2 large trees downed.			0	0			Thunderstorm Wind (G55)
Marquette County 3 SSE Marquette to 6 SSE Marquette	14	1940EST 1945EST Funnel cloud extended 100-200 feet below cloud base on the edge of Marquette Bay.			0	0			Funnel Cloud

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Clare County Harrison	14	1505EST			0	0	0		Thunderstorm Wind
									Clare County Central Dispatch reported trees downed on north-bound interchange of U.S. Highway 27. A damage estimate was not available.
Clare County 9 N Harrison	14	1505EST			0	0	0		Thunderstorm Wind
									Clare County Central Dispatch reported trees downed at the intersection of Pierce and Mullett Roads, thus blocking the intersection. This is located in Frost Township, approximately 9 miles north of Harrison. A damage estimates was not available.
Clare County Farwell	14	1545EST			0	0	0		Thunderstorm Wind
									A trained weather spotter reported a large oak tree downed in Farwell. A damage estimate was not available.
Isabella County Mt Pleasant	14	1630EST			0	0	0		Thunderstorm Wind
									A meteorology student at Central Michigan University reported two 1.5-2 foot diameter trees downed in downtown Mount Pleasant. A damage estimate was not available.
Clare County Farwell	14	1630EST 1715EST			0	0			Flood
									Spotters reported flooded roadways in the Farwell area and across portions of southwest Clare County between 5:30 and 6:15 pm EDT. National Weather Service doppler radar indicated rainfall estimates of nearly 3.5 inches over a one hour period from slow-moving thunderstorms. No injuries or property damage was reported with this flood event.
Allegan County Allegan	20	2115EST 2125EST			0	0			Thunderstorm Wind (G52)
									Trees and power lines down. No damage estimates available. Numerous reports across the southern half of Allegan County.
Ottawa County Hudsonville	20	2115EST			0	0	0		Thunderstorm Wind
									Power lines were downed near Hudsonville, in Georgetown Township. A damage estimate was not available.
Van Buren County Bangor	20	2120EST			0	0	0		Thunderstorm Wind
									12 inch diameter tree limb down.
Barry County Gun Lake	20	2145EST			0	0	0		Thunderstorm Wind
									Tree limb down.
Kalamazoo County Vicksburg	20	2145EST			0	0	0		Thunderstorm Wind
									Power lines and trees down around Vine and Pearl Streets. A damage estimate was not available.
Calhoun County Battle Creek	20	2220EST			0	0	0		Thunderstorm Wind
									Tree down on house, unknown property damage. A narrow line of thunderstorms developed ahead of an advancing warm front over southeast Wisconsin and northeast Illinois during the evening of Monday, July 20th. The thunderstorms moved east along the warm front around 35 mph and passed across southwest Lower Michigan between 8:00 pm and Midnight EDT. The thunderstorms produced scattered reports of wind damage across Allegan, Ottawa, Van Buren, Barry, Kalamazoo, and Calhoun Counties. A wind gust to 60 mph was measured in Allegan. Most reports consisted of downed trees and power lines with scattered power outages the result. No injuries were reported and the only structural damage reported took place in the City of Battle Creek, when a tree fell over onto a house.
Muskegon County Muskegon	21	0313EST			0	0			Thunderstorm Wind (G52)
									A trained spotter measured a 60-mph wind gust with his local anemometer.
Muskegon County Muskegon	21	0315EST			0	0	40K		Lightning
									The Muskegon Chronicle reported lightning strikes caused 2 separate fires in the area and resulted in power outages affecting 7,500 people in the Muskegon service area. A house fire at 2862 Evanston Avenue in Muskegon Township was caused by a lightning strike. The fire burned the attic and damage was estimated at \$40,000. Lightning was also the cause of a fire at an 18-unit storage building at Boxer Store and Lock in Egelston Township. The sheet metal and wood frame building and all of its contents were completely destroyed. A damage estimate for this fire was not available.
Kent County Kentwood	21	0500EST			0	0	500K		Lightning

Storm Data and Unusual Weather Phenomena

July 1998

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

MICHIGAN, West

The Grand Rapids Press reported that a lightning strike at a Kentwood apartment building caused a fire that heavily damaged the building. Fire Chief Jim Carr said that the blaze was started by a lightning strike and caused more than \$500,000 in structural damage to the complex. Six apartments, on the top floor of a building at Wingate Apartments on Schafer Avenue SE, were destroyed when the roof caved in and at least 10 more apartments were damaged. No injuries were reported. The thunderstorm knocked out electricity to about 15,000 homes in the Grand Rapids metropolitan area, mostly caused by lightning strikes.

Ottawa County Hudsonville

21	0510EST	0	0	0	Lightning
----	---------	---	---	---	------------------

Lightning struck the roof of a three-bedroom home at 7836 Mooring Court in the Hidden Ridge Estate Complex in Georgetown Township at 6:10 am EDT. Most of the house was destroyed in the blaze touched off by the strike. No injuries were reported. A damage estimate was not available.

Calhoun County 6.7 S Battle Creek

21	0630EST	0	0	0	Thunderstorm Wind
----	---------	---	---	---	--------------------------

Trees and power lines were downed in Leroy Township near the intersection of Michigan Highway 66 and E Drive South and near 4-Mile Road and F Drive South. Power outages were reported in the Battle Creek area, where approximately 1,180 residential and business customers were affected. Most power loss was blamed on lightning strikes. Calhoun County Central Dispatch also reported several trees were downed in the eastern half of Calhoun County. No damage estimate was available.

Jackson County Jackson

21	0630EST	0	0	0	Thunderstorm Wind
----	---------	---	---	---	--------------------------

The Jackson Citizen Patriot newspaper reported tree limbs and power lines were downed across Jackson County. According to the Patriot, the Jackson County Road Commission reported tree limbs downed on Pulaski, Lansing, Sargent, and County Farm Roads, with most of the damage north of the city of Jackson in northern Jackson County. Approximately 1,500 homes lost power in the Jackson Area, including a section of N. West Avenue in the city. Damage estimates were not available. Thunderstorms developed along a nearly stationary warm frontal boundary across southern Lower Michigan during the early morning hours of Tuesday, July 21st. The most notable occurrence with these thunderstorms was the frequent lightning associated. Lightning strikes caused several major fires across Muskegon, Kent, and Ottawa Counties, causing over half a million dollars in damages. Winds gusted to 60-mph in Muskegon and wind gusts downed trees or limbs in Calhoun and Jackson Counties. No injuries were reported with any of these events.

Allegan County Allegan

21	1507EST	0	0		Thunderstorm Wind (G52)
----	---------	---	---	--	--------------------------------

Allegan County Ganges

21	1509EST	0	0		Thunderstorm Wind (G70)
----	---------	---	---	--	--------------------------------

Allegan County Central Dispatch relayed a report from Ganges Township Fire Department of an 80-mph wind gust measured at the fire station on Lakeshore Drive in Ganges.

Van Buren County Lawton

21	1510EST	0	0	0	Thunderstorm Wind
----	---------	---	---	---	--------------------------

Trees downed in Lawton, with some minor structural damage to homes. No damage estimate was available.

Allegan County Allegan

21	1515EST	0	0		Thunderstorm Wind (G52)
----	---------	---	---	--	--------------------------------

Amateur radio operators estimated winds gusted to 60-mph just south of the town of Allegan. Many trees and power lines were reportedly downed in the area. Approximately 6,400 people lost power in the immediate area. No damage estimate was available.

Van Buren County Lawrence

21	1520EST	0	0	0	Thunderstorm Wind
----	---------	---	---	---	--------------------------

Bloomington law enforcement reported trees and power lines were downed in Lawrence Township. A damage estimate was not available.

Kalamazoo County Kalamazoo

21	1540EST	0	0		Thunderstorm Wind (G52)
----	---------	---	---	--	--------------------------------

Van Buren County Mattawan

21	1540EST	0	0		Thunderstorm Wind (G52)
----	---------	---	---	--	--------------------------------

Kalamazoo County Portage

21	1542EST	0	0		Thunderstorm Wind (G61)
----	---------	---	---	--	--------------------------------

Barry County Nashville

21	1546EST	0	0		Thunderstorm Wind (G61)
----	---------	---	---	--	--------------------------------

An amateur radio operator reported an estimated wind gust to 70-mph and pea-sized hail (1/8").

Kalamazoo County Vicksburg

21	1547EST	0	0		Thunderstorm Wind (G56)
----	---------	---	---	--	--------------------------------

Amateur radio operators reported an estimated 65-mph wind gust in Vicksburg, which downed up to 10 trees. Two 24" diameter trees were snapped of 8 feet above the ground and landed on a bowling alley. A damage estimate was not available. This severe thunderstorm downed trees and power lines scattered across Kalamazoo County, which resulted in power outages for approximately 26,000 customers of Consumers Energy.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MICHIGAN, West									
Barry County									
Dowling	21	1548EST			0	0			Thunderstorm Wind (G52) A local radio news announcer (also trained weather spotter) in Barry County reported a 60-mph wind gust in Dowling, located in Baltimore Township, 7 miles south of Hastings. Numerous trees were reportedly downed in the Dowling area. Approximately 4,600 homes lost power at the height of the storm in Barry County.
Calhoun County									
(Btl)Kellog Arpt Btl	21	1552EST			0	0			Thunderstorm Wind (G50) The Automated Surface Observing System (ASOS) at Kellogg Regional Airport in Battle Creek recorded a 50-knot (58-mph) wind gust at 4:52 pm EDT.
Barry County									
Hastings	21	1557EST			0	0			Hail (0.75)
Eaton County									
Bellevue	21	1600EST			0	0			Thunderstorm Wind (G52) An amateur radio operator reported an estimated 60-mph wind gust.
Calhoun County									
Burlington	21	1601EST			0	0			Thunderstorm Wind (G56) Calhoun County Emergency Manager reported a 65-mph wind gust measured in Burlington, with significant wind damage across Calhoun County. The Calhoun County Road Commission reported many fallen trees and limbs blocked dozens of rural roads, mostly across the southern portion of the county including Union City, Burlington, Leroy Township, and Homer. The Battle Creek Enquirer reported 12,400 homes and businesses lost power during the storm, which downed over 100 power lines in the county. Damage estimates were not available.
Calhoun County									
Marshall	21	1605EST			0	0	0		Thunderstorm Wind The Battle Creek Enquirer reported tree damage on a house in the 500 block of North Marshall Street. A large tree fell down and punched a hole in the roof of the home's front porch. No one was injured. A damage estimate was not available.
Eaton County									
Charlotte	21	1607EST			0	0	0		Thunderstorm Wind Eaton County Central Dispatch reported trees downed in the Charlotte area. Damage estimates were not available.
Calhoun County									
Homer	21	1615EST			0	0	0		Thunderstorm Wind A local newspaper, the Homer Index, reported trees and power lines were downed across Homer Township in southeast Calhoun County. Power was out for up to 26 hours across portions of the township. Loss of power knocked out a pair of sewer system lift stations in Homer. Damage estimates were not available.
Ionia County									
Clarksville	21	1615EST			0	0	0		Thunderstorm Wind The Clarksville Record reported downed trees and power lines with widespread power outages. A tree fell on a 500 gallon propane gas tank at a residence on West Cross St. in the village of Clarksville. It punctured the tank and released 250 gallons of gas. The surrounding area was evacuated for fear of explosion. A tree fell on a residence on South Main St. and did considerable damage to the home. Damage estimates were not available.
Ionia County									
Saranac	21	1619EST			0	0			Thunderstorm Wind (G52) An amateur radio operator reported an estimated 60-mph wind gust in Saranac.
Calhoun County									
Albion	21	1620EST			0	0	0		Thunderstorm Wind The Albion Recorder reported downed trees and power lines in the city of Albion. One tree fell in front of the Masonic Temple at Center and Clinton Streets. The tree fell on a power line which sparked a small fire on the utility pole. Damage estimates were not available.
Jackson County									
Jackson	21	1630EST			0	0	0		Thunderstorm Wind Jackson area law enforcement reported numerous trees and power lines downed in Blackman Township and the city of Jackson. The Jackson Citizen Patriot reported a Jackson woman was trapped when the wind dropped a large branch and live power lines over her car on Sixth Street, just north of W. Morrell. Damage to the car was minor and the woman was not injured. Over 200 power lines were downed by the storm and transformers were damaged by lightning strikes. Approximately 5,000 residents lost power in Jackson County. Damage estimates were not available.
Allegan County									
Plainwell	21	1635EST			0	0	0		Flood A trained spotter reported street flooding in the city of Plainwell, where 2.71 inches of rain had fallen in less than 2 hours. No injuries or property damage was reported.
Allegan County									
Plainwell	21	1635EST			0	0	0		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

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									
Renville County									
Sacred Heart	14	2040CST			0	0			Thunderstorm Wind (G55)
			Street lamps blown over. Estimated windspeed.						
Anoka County									
Fridley	14	2100CST			0	0			Thunderstorm Wind (G50)
			Tree blown down along East River Rd. Estimated windspeed.						
Yellow Medicine County									
Clarkfield	14	2100CST			0	0			Thunderstorm Wind (G61)
Yellow Medicine County									
Granite Falls	14	2101CST			0	0			Thunderstorm Wind (G60)
			Trees and power lines blown down. Estimated windspeed.						
Yellow Medicine County									
Echo	14	2110CST			0	0			Hail (0.75)
Hennepin County									
Minnetonka	14	2113CST			0	0			Thunderstorm Wind (G51)
Hennepin County									
Mound	14	2118CST			0	0			Thunderstorm Wind (G70)
			Trees and power lines blown down.						
Carver County									
Waconia	14	2125CST			0	0			Thunderstorm Wind (G60)
			Golf dome blown down and deflated. Estimated windspeed.						
Ramsey County									
Vadnais Hgts	14	2125CST			0	0			Thunderstorm Wind (G55)
			Trees blown down. Estimated windspeed.						
Scott County									
Shakopee	14	2135CST			0	0			Thunderstorm Wind (G50)
			Large branches and power lines down. Also reported in Savage. Estimated windspeed.						
Dakota County									
Apple Vly	14	2140CST			0	0			Thunderstorm Wind (G50)
			Trees blown down. Estimated windspeed.						
Washington County									
Afton	14	2150CST			0	0			Thunderstorm Wind (G50)
			Trees and power lines down. Estimated windspeed.						
Brown County									
Comfrey	14	2220CST			0	0			Thunderstorm Wind (G60)
			House under construction blown down. Large trees blown down. Estimated windspeed.						
Kandiyohi County									
Willmar	14	2300CST			0	0			Lightning
			House destroyed by fire caused by lightning strike.						
Faribault County									
Minnesota Lake	14	2330CST			0	0			Thunderstorm Wind (G50)
			Trees down. Estimated windspeed.						
Martin County									
Fairmont	14	2330CST			0	0			Thunderstorm Wind (G50)
			Garage roof partially torn off. Trees down. Estimated windspeed.						
Redwood County									
Wabasso	18	2100CST			0	0			Thunderstorm Wind (G52)
Redwood County									
Walnut Grove	18	2100CST			0	0			Thunderstorm Wind (G52)
Watonwan County									
Lewisville	18	2150CST 2330CST			0	0			Thunderstorm Wind (G50)
			Trees blown down. Estimated windspeed.						
Martin County									
9 N Fairmont	18	2203CST			0	0			Thunderstorm Wind (G50)
			Trees and power lines down. Estimated windspeed.						

Storm Data and Unusual Weather Phenomena

July 1998

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									
Rice County Dundas	18	2230CST			0	0			Thunderstorm Wind (G50)
			Power lines blown down. Estimated windspeed.						
Rice County 15 SW Faribault	18	2230CST			0	0			Thunderstorm Wind (G50)
			Trees blown down. Estimated windspeed.						
Le Sueur County Elysian	18	2245CST			0	0			Thunderstorm Wind (G50)
			Large branches and a power line down. Estimated windspeed.						
Redwood County 8 S Milroy	20	0930CST			0	0			Hail (1.75)
			Large swath of hail damage across southern Redwood county.						
Redwood County 3 NW Lamberton	20	0949CST			0	0			Hail (0.75)
Redwood County Sanborn	20	0955CST			0	0			Thunderstorm Wind (G52)
			Roof ripped off bldg. Severe hail damage to areas across southern Redwood county.						
Brown County Comfrey	20	1000CST			0	0			Thunderstorm Wind (G60)
			New building construction blown down. Power poles snapped. Estimated windspeed.						
Redwood County 3 NW Clements	20	1000CST			0	0			Thunderstorm Wind (G65)
			Trees blown onto houses and vehicles. Estimated windspeed.						
Redwood County Clements	20	1000CST			0	0			Thunderstorm Wind (G65)
			Power lines down. Estimated windspeed.						
Brown County Springfield	20	1008CST			0	0			Thunderstorm Wind (G75)
			Roof torn off several homes and businesses. Plate glass windows blown out of auto dealership. Torrential rainfall also resulted in street flooding. Estimated windspeed.						
Watonwan County Darfur	20	1015CST			0	0			Thunderstorm Wind (G55)
			Large branches down. Estimated windspeed.						
Brown County New Ulm	20	1040CST			0	0	7M	4M	Thunderstorm Wind (G83)
			4,000 trees blown down. 10 businesses lost portions of their roof. Mobile home destroyed. Maintenance hangar at airport destroyed, damaging several airplanes. 400 ft TV tower blown down. Poultry bldg levelled at fairgrounds. Reception hall lost its roof. Large trees blown down at local cemeteries. The statue of Hermann the German damaged. Estimated 5% of crops or about 50,000 acres in county destroyed. Damage estimate for entire county.						
Brown County 1 SW New Ulm	20	1040CST			0	0			Thunderstorm Wind (G80)
			Windows blown out at Flandreau State Park Bldg. 300 trees down. Two trees blown onto camper. Estimated windspeed.						
Nicollet County 2 N Courtland	20	1050CST			0	0			Thunderstorm Wind (G80)
			Garages and barns destroyed. Estimated windspeed.						
Nicollet County Courtland	20	1050CST			0	0			Thunderstorm Wind (G80)
			Grain elevator sustained extensive damage. Apartment building garage damaged. Firehall damaged. Trees down. Estimated windspeed						
Nicollet County 2 N Courtland	20	1050CST			0	0			Thunderstorm Wind (G80)
			Extensive farm damage. Shed destroyed. Roof to chicken house blown off. Estimated windspeed.						
Nicollet County 1.5 SE Courtland	20	1051CST			0	0			Thunderstorm Wind (G75)
			Roof torn off barn. Shed destroyed. Estimated windspeed.						
Nicollet County 2.5 N Nicollet	20	1100CST			0	0			Thunderstorm Wind (G75)
			Hog barn destroyed. 500 acres of corn flattened.						
Nicollet County Nicollet	20	1100CST			0	0	4M	8M	Thunderstorm Wind (G80)

Storm Data and Unusual Weather Phenomena

July 1998

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

Roof torn off high school gymnasium resulting in water damage to floor. Garage walls blown down at pair of houses in northwestern part of town. High winds affected 100,000 to 115,000 acres across Nicollet county. 50,000 acres of crops severely damaged. Damage estimate for entire county. Estimated windspeed.

Nicollet County 2 E Nicollet	20	1104CST			0	0			Thunderstorm Wind (G80)
									Shingles off roof. Trees blown down. Estimated windspeed.
Blue Earth County Lake Crystal	20	1105CST			0	0			Thunderstorm Wind (G55)
									Trees blown down. Estimated windspeed.
Nicollet County 2.5 E Nicollet	20	1105CST			0	0			Thunderstorm Wind (G80)
									Barns and sheds blown down. Estimated windspeed.
Nicollet County St Peter	20	1110CST			0	0			Thunderstorm Wind (G52)
									Trees blown down. New roof construction destroyed. Several homes and businesses had roof damage. Mobile homes damaged in Summit Park. Windows broken at Gustavus Adolphus College. Stronger wind gusts in surrounding areas.
Rice County 5 NW Morristown	20	1125CST			0	0			Thunderstorm Wind (G55)
Le Sueur County Cleveland	20	1130CST			0	0			Thunderstorm Wind (G65)
									Trees and power lines down.
Le Sueur County Kasota	20	1130CST			0	0			Thunderstorm Wind (G65)
									Trees and power lines down. Estimated windspeed.
Rice County 5 W Faribault	20	1138CST			0	0			Thunderstorm Wind (G52)
									Trees down across county per sheriffs department.

MINNESOTA, Northeast

Itasca County Squaw Lake	14	1218CST			0	0			Hail (0.75)
Cass County Remer	14	1342CST			0	0			Thunderstorm Wind (G50)
									Large trees were blown down. Wind speed is estimated.
Cass County Longville	14	1400CST			0	0			Hail (1.25)
Cass County Walker	14	1235CST 1243CST			0	0			Waterspout
									A waterspout was spotted over Leech Lake near Walker. No damage or injuries were reported.
Cass County Remer	14	1405CST			0	0			Thunderstorm Wind (G50)
									Large trees were blown down. The wind speed is estimated.
Cass County Hackensack	14	1500CST			0	0			Hail (1.50)
Cass County Backus	14	1500CST			0	0			Hail (1.00)
St. Louis County 14 W Duluth	14	1655CST			0	0			Thunderstorm Wind (G52)
St. Louis County Saginaw	14	1655CST			0	0			Thunderstorm Wind (G52)
St. Louis County Saginaw	14	1655CST			0	0			Hail (0.75)
St. Louis County Hermantown	14	1655CST			0	0			Thunderstorm Wind (G52)
St. Louis County Hermantown	14	1655CST			0	0			Hail (0.88)
Lake County 45 N Silver Bay	20	1500CST			0	0			Thunderstorm Wind (G55)

Storm Data and Unusual Weather Phenomena

July 1998

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

MINNESOTA, Northeast

Ten-inch diameter trees and power lines were blown down. The wind speed is estimated.

Crow Wing County 6 N Pequot Lakes	20	1730CST			0	0			Thunderstorm Wind (G50)
									Eight-inch diameter trees were blown down. The wind speed is estimated.
Crow Wing County 5 N Crosby	20	1815CST			0	0			Hail (0.75)
Crow Wing County 5 N Crosby	20	1815CST			0	0			Thunderstorm Wind (G50)
									A few trees were blown down. The wind speed is estimated.
Crow Wing County Crosby	20	1835CST			0	0			Hail (1.00)
Crow Wing County Cross Lake	20	1715CST			0	0			Thunderstorm Wind (G55)
									Hundreds of trees and power lines were blown down in the vicinity of Cross and Lower Whitefish Lakes. A few buildings, vehicles, and boats were also damaged, some by falling trees. The wind speed is estimated.
St. Louis County Mountain Iron	14	1325CST			0	0	400K		Lightning
									Lightning struck the steeple of an 81-year-old wooden church, toppling the steeple and starting a fire that destroyed the building.
St. Louis County Ely	20	1400CST			0	0			Thunderstorm Wind (G50)
									Many trees and power lines were blown down. There was also some roof and sign damage. The wind speed is estimated.
St. Louis County Ely	20	1400CST			0	1			Lightning
									A 15-year-old boy was struck by lightning outside a cabin at Camp Widjiwagan. He had no heartbeat or respiration, so a group leader administered CPR. The boy was transported to an Ely hospital where he was treated and released the next day.

MINNESOTA, Northwest

Otter Tail County Battle Lake	03	0040CST			0	0	3K		Thunderstorm Wind
									Trees were blown down and boats blown off lifts.
Otter Tail County 1 N Underwood	03	0044CST			0	0	0.50K		Thunderstorm Wind
									A tree was blown down across a road north of Underwood.
Otter Tail County Pelican Rapids	03	0045CST			0	0	3K		Thunderstorm Wind
									The strong wind blew down power lines in Pelican Rapids.
Becker County Detroit Lakes	07	0300CST 0430CST			0	0	25K		Urban/Sml Stream Fld
									1.6 inches of rain in 90 minutes flooded low spots around Detroit Lakes, including US Highway 10 and the industrial park. Several cars stalled in the deep water.
Otter Tail County Pelican Rapids	07	0550CST			0	0	75K		Flash Flood
									Several basements in Pelican Rapids filled with up to 4 feet of water.
Otter Tail County 5 E Pelican Rapids	07	0550CST			0	0	100K		Flash Flood
									Rain falling across the same track produced a band of 3 to 5 inches of rain between Pelican Rapids and Dent. A section of the road bank along highway 108 east of Pelican Rapids washed out. Other mud slides occurred in the Lake Lida area on highway 108. The highway was closed for 2 days as the Minnesota DOT assessed the safety of the road. Resort lift stations failed, so vacationers could not use toilets and sinks.
Norman County 2 N Shelly	07	1805CST			0	0			Funnel Cloud
									A funnel cloud formed from a towering cumulus cloud and was visible from over 30 miles away.
Hubbard County Park Rapids	14	0210CST			0	0			Hail (0.75)
Marshall County 2 NW Holt	14	0620CST			0	0			Hail (0.75)
Polk County 3 N Gully	14	1033CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
MINNESOTA, Northwest									
Beltrami County 25 N Bemidji	14	1035CST			0	0			Hail (0.75)
Wilkin County 5 SE Rothsay	14	1245CST			0	0			Hail (0.75)
Otter Tail County 3 SE Elizabeth	14	1320CST			0	0			Hail (0.75)
Otter Tail County Phelps	14	1335CST			0	0			Hail (1.75)
Otter Tail County 5 W Phelps	14	1400CST			0	0			Hail (1.75)
Otter Tail County Phelps	14	1416CST			0	0			Hail (1.75)
Otter Tail County 5 W Phelps	14	1425CST			0	0			Flash Flood
Otter Tail County Phelps	14	1435CST			0	0			Hail (1.00)
Otter Tail County 5 W Phelps	14	1453CST			0	0			Hail (2.75)
Otter Tail County 3 W Phelps	14	1453CST			0	0			Hail (4.00)
			Grapefruit-sized hail fell at West Lost Lake. As the hail hit the water, plumes jumped up 3 feet high.						
Otter Tail County Phelps	14	1453CST			0	0			Hail (1.75)
Otter Tail County 5 N Battle Lake	14	1500CST			0	0			Hail (0.75)
Otter Tail County 4 W Pelican Rapids	14	1524CST			0	0			Hail (1.00)
Otter Tail County Pelican Rapids	14	1525CST			0	0			Hail (0.75)
Otter Tail County 4 W Pelican Rapids	14	1530CST			0	0			Hail (0.75)
Otter Tail County 15 E Pelican Rapids	14	1530CST			0	0			Hail (0.75)
Otter Tail County Pelican Rapids	14	1530CST			0	0			Hail (1.00)
Otter Tail County 5 NNE Phelps	14	1537CST			0	0			Hail (1.75)
Otter Tail County Dent	14	1540CST			0	0			Hail (1.00)
Otter Tail County Dent	14	1540CST			0	0			Hail (1.00)
Otter Tail County 15 E Pelican Rapids	14	1543CST			0	0			Hail (1.00)
Otter Tail County Underwood	14	1545CST			0	0			Flash Flood
			5 1/2 inches of rain flattened many crops and filled ditches around Underwood.						
Otter Tail County 10 NE Fergus Falls	14	1600CST			0	0			Hail (1.75)
			Every car in the parking lot at Fish Lake Polaris was damaged by golfball-sized hail.						
Otter Tail County Underwood	14	1600CST			0	0			Hail (0.75)
Otter Tail County Phelps	14	1605CST			0	0			Hail (0.75)
Otter Tail County 6 SW Fergus Falls	14	1615CST			0	0			Hail (1.00)
Otter Tail County Dalton	14	1640CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northwest									
Otter Tail County Battle Lake	14	1641CST			0	0			Hail (0.75)
Grant County 3 N Wendell	14	1645CST			0	0	15K		Thunderstorm Wind
A trailer home was flipped over in the strong wind at Lightning Lake.									
Otter Tail County 8 N Pelican Rapids	14	1645CST			0	0			Hail (1.50)
Clearwater County Lake Itasca	14	1650CST			0	0	3K		Thunderstorm Wind
Trees were blown down at Lake Itasca.									
Otter Tail County 9 N Pelican Rapids	14	1655CST			0	0			Hail (0.75)
Grant County Ashby	14	1700CST			0	0			Hail (0.75)
Grant County Ashby	14	1715CST			0	0	10K		Thunderstorm Wind
Trees were blown down and a roof was blown off.									
Grant County 6 S Elbow Lake	14	1715CST			0	0	2K		Thunderstorm Wind
Large trees were blown down.									
Otter Tail County Dalton	14	1715CST			0	0			Hail (1.00)
Wilkin County Wolverton	14	1720CST			0	0			Hail (1.75)
Otter Tail County 7 SW Battle Lake	14	1725CST			0	0			Hail (1.00)
Wilkin County Kent	14	1740CST			0	0			Hail (4.50)
The large hail damaged a few vehicles and smashed some house windows.									
Grant County Hoffman	14	1742CST			0	0	1K		Thunderstorm Wind
A windmill was blown over in the strong wind.									
Grant County Elbow Lake	14	1810CST			0	0			Hail (1.00)
Grant County Elbow Lake	14	1810CST			0	0	3K		Thunderstorm Wind
Numerous trees around Elbow Lake were blown over in the strong wind.									
Wilkin County Breckenridge	14	1814CST			0	0			Hail (0.75)
Wilkin County Breckenridge	14	1819CST			0	0			Hail (0.75)
Wilkin County Kent	14	1830CST			0	0			Hail (1.00)
Grant County 3 W Barrett	14	1850CST			0	0			Hail (0.75)
Wilkin County Tenney	18	1015CST			0	0			Hail (0.75)
Kittson County Lancaster	18	1036CST			0	0			Hail (0.75)
Kittson County 6 NW Lancaster	18	1045CST			0	0			Hail (0.75)
Grant County Herman	18	1049CST			0	0			Hail (0.75)
Roseau County Badger	18	1130CST			0	0			Hail (0.75)
Marshall County Grygla	18	1300CST			0	0	10K		Thunderstorm Wind
Many trees were blown down in the strong wind, one landing on top of a house. A trailer home was moved off its foundation.									

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MINNESOTA, Northwest									
Beltrami County Hines	18	1427CST			0	0	5K		Thunderstorm Wind
									Power lines were blown down at Hines.
Beltrami County Tenstrike	18	1427CST			0	0			Hail (0.75)
Pennington County 6 W Thief River Falls	18	1618CST	0.2	25	0	0			Tornado (F0)
									A tornado touched down briefly in a field.
Red Lake County 5 N Oklee	18	1720CST			0	0			Hail (1.75)
Polk County Gully	18	1748CST			0	0			Hail (1.00)
Clearwater County 2 W Gonvick	18	1815CST			0	0			Hail (0.75)
Polk County 3 S Angus	20	1310CST			0	0			Hail (1.00)
Red Lake County Red Lake Falls	20	1344CST			0	0			Hail (0.75)
Polk County Maple Bay	20	1405CST			0	0			Hail (1.75)
Polk County 7 NE Fertile	20	1428CST	0.2	25	0	0			Tornado (F0)
Norman County Ranum	20	1430CST			0	0			Hail (1.00)
Polk County 5 NE Winger	20	1430CST	0.2	25	0	0			Tornado (F0)
Red Lake County Oklee	20	1430CST			0	0			Hail (1.00)
Polk County 3 E Winger	20	1438CST			0	0			Hail (1.75)
Polk County Fosston	20	1443CST			0	0			Hail (0.75)
Mahnomen County Mahnomen	20	1450CST	0.5	25	0	0			Tornado (F0)
									A tornado was picked up on video near the Shooting Star Casino in Mahnomen by a parking lot security camera.
Mahnomen County 6 NE Mahnomen	20	1455CST	0.3	25	0	0	30K		Tornado (F0)
									A retired farmer was looking out his back door and saw a swirling cloud come down. He headed for the basement and was not hurt. His home lost power and his house and outbuildings were damaged. Witnesses said the tornado was a high-based rope tornado.
Clearwater County Shevlin	20	1500CST			0	0			Hail (0.75)
Lake Of The Woods County Williams	20	1505CST			0	0			Hail (0.75)
Mahnomen County 2 N Waubun	20	1520CST	0.2	25	0	0			Tornado (F0)
Becker County Ogema	20	1530CST	0.5	25	0	0			Tornado (F0)
Becker County Ponsford	20	1545CST			0	0			Hail (1.00)
Clearwater County 10 S Zerkel	20	1545CST	0.2	25	0	0			Tornado (F0)
Becker County 5 NE Rochert	20	1605CST 1620CST	1	25	0	0	20K		Tornado (F0)

Storm Data and Unusual Weather Phenomena

July 1998

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

MINNESOTA, Northwest

2 tornadoes touched down on the east side of Height of Land Lake, blowing down many trees and damaging 6 homes. 2 trees fell on one cabin and another tree fell on a garage. Boat lifts and docks were smashed and power was knocked out. One home reported several broken windows due to the tornadoes with everything in the house covered with fine sand. The tornadoes crossed highway 34 and dissipated.

Hubbard County

5 N Park Rapids 20 1620CST 0 0 Hail (1.00)

Hubbard County

Park Rapids 20 1620CST 0 0 Thunderstorm Wind (G52)
Trees were blown down in the strong wind. One tree fell on a parked car. Park Rapids was without power for an hour.

Becker County

2 S Osage 20 1630CST 0 0 Hail (1.00)

Wadena County

Menahga 20 1657CST 0 0 Hail (1.00)

Wadena County

8 NE Sebeka 20 1710CST 0 0 Hail (0.75)

MINNESOTA, Southeast

Dodge County

1 N Mantorville 18 2312CST 0 0 Thunderstorm Wind (G52)

Fillmore County

Spring Vly 18 2345CST 0 0 Thunderstorm Wind (G52)

Storm spotters reported 60 mph wind gusts, but no structural or crop damage was observed.

Olmsted County

Oronoco 20 1230CST 0 0 15K Thunderstorm Wind (G52)

Wabasha County

Zumbro Falls 20 1240CST 0 0 27K Thunderstorm Wind (G52)

Olmsted County

2 W Potsdam 20 1245CST 0 0 12K Thunderstorm Wind (G52)

Winona County

Minnesota City 20 1310CST 0 0 18K Thunderstorm Wind (G52)

Winona County

Winona 20 1315CST 0 0 20K Thunderstorm Wind (G52)

Olmsted County

Predmore 20 1320CST 0 0 Thunderstorm Wind (G52)

Winona County

1 W Winona 20 1338CST 0 0 15K 25K Thunderstorm Wind (G74)

Fillmore County

Harmony 20 1520CST 0 0 30K Hail (0.88)

Law enforcement and spotter groups reported winds gusts to 60 mph, with a gust to 85 mph on a ridgetop near Winona. Large trees and power lines were blown down.

MINNESOTA, Southwest

Rock County

2 N Hills 02 2010CST 0 0 Hail (0.75)

Rock County

Hills 02 2019CST 0 0 Hail (1.00)

Cottonwood County

Mountain Lake to 14 2200CST 0 0 150K Thunderstorm Wind (G61)
5 SE Mountain Lake 2215CST

Thunderstorm winds destroyed small farm buildings, damaged a few homes, and caused widespread tree damage with some building damage resulting from wind blown tree debris. One of the farm buildings destroyed was a barn with an estimated 14 thousand turkeys; 1 or 2 thousand of the turkeys perished. The winds also caused crop damage, but the amount of crop damage was not determined.

Murray County

3 NE Dovray 14 2215CST 0 0 Hail (0.75)

Pipestone County

Edgerton 14 2239CST 0 0 Thunderstorm Wind (G52)

Nobles County

Rushmore 14 2320CST 0 0 Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1998

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

MINNESOTA, Southwest

Cottonwood County

Jeffers to Mountain Lake	18	2118CST 2145CST			0	0	50K	Thunderstorm Wind (G61)
-------------------------------------	----	--------------------	--	--	---	---	-----	--------------------------------

Thunderstorm winds damaged many trees, some large, with at least one highway closed by tree debris. The winds also blew over 2 empty 100,000 bushel grain bins, with one of the bins hitting and damaging a building. The winds also damaged farm buildings.

Lincoln County

Ivanhoe	18	2000CST			0	0		Thunderstorm Wind (G52)
----------------	----	---------	--	--	---	---	--	--------------------------------

Thunderstorm winds blew off numerous 3 to 5 inch tree branches and one 12 inch branch.

Rock County

Luverne to 5 E Luverne	18	2035CST 2100CST			0	0	50K	Thunderstorm Wind (G57)
-----------------------------------	----	--------------------	--	--	---	---	-----	--------------------------------

Thunderstorm winds caused widespread tree damage, including 25 foot tall trees uprooted. the winds also damaged power lines, causing power outages.

Pipestone County

Pipestone	18	2000CST			0	0		Thunderstorm Wind (G61)
------------------	----	---------	--	--	---	---	--	--------------------------------

Thunderstorm winds caused widespread tree damage. The amount of damage was not determined.

Rock County

Luverne	18	1700CST			0	0	10K	Lightning
----------------	----	---------	--	--	---	---	-----	------------------

Lightning struck the Rock County agricultural building, damaging computers and the telephone system.

Nobles County

Ellsworth to Worthington	18	2100CST 2130CST			0	0	100K	Thunderstorm Wind (G52)
-------------------------------------	----	--------------------	--	--	---	---	------	--------------------------------

Thunderstorm winds caused widespread tree damage and heavily damaged the top of a grain elevator.

Lincoln County

Arco	20	0857CST			0	0		Hail (0.75)
-------------	----	---------	--	--	---	---	--	--------------------

Lyon County

4 N Balaton to 3 SW Amiret	20	0910CST 0920CST			0	0		Hail (1.00)
---------------------------------------	----	--------------------	--	--	---	---	--	--------------------

Large hail broke windows in a house, covered the ground, and caused crop damage. The amount of damage was not determined.

MINNESOTA, West

NONE REPORTED.

MINNESOTA, West Central

Traverse County

5 SE Collis	14	1810CST			0	0		Hail (1.75)
--------------------	----	---------	--	--	---	---	--	--------------------

Big Stone County

1 NW Johnson	14	1815CST			0	0		Hail (2.75)
---------------------	----	---------	--	--	---	---	--	--------------------

Big Stone County

2 W Johnson	14	1825CST			0	0		Hail (1.00)
--------------------	----	---------	--	--	---	---	--	--------------------

Big Stone County

3 NE Clinton	14	1845CST			0	0		Hail (2.75)
---------------------	----	---------	--	--	---	---	--	--------------------

Traverse County

7 SW Tintah	18	0945CST			0	0		Hail (1.00)
--------------------	----	---------	--	--	---	---	--	--------------------

Traverse County

13 NE Wheaton	18	1030CST			0	0		Hail (1.75)
----------------------	----	---------	--	--	---	---	--	--------------------

Big Stone County

Graceville	18	2030CST			0	0		Thunderstorm Wind (G52)
-------------------	----	---------	--	--	---	---	--	--------------------------------

Winds gusting to 60 mph downed a large tree at Tocqua Park near Graceville. The tree fell on a camper and destroyed it.

MISSISSIPPI, Central

Forrest County

2 NE Petal	01	1325CST			0	0		Hail (0.88)
-------------------	----	---------	--	--	---	---	--	--------------------

Jefferson Davis County

Bassfield	01	1346CST			0	0		Hail (1.00)
------------------	----	---------	--	--	---	---	--	--------------------

Washington County

Greenville	01	1455CST			0	0	30K	Thunderstorm Wind (G63)
-------------------	----	---------	--	--	---	---	-----	--------------------------------

Several buildings sustained roof damage. A set of bleachers were destroyed at a race track. Several power lines and trees were blown down, and some trees fell on cars.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MISSISSIPPI, Central									
Humphreys County									
Belzoni	01	1530CST			0	0	1K		Thunderstorm Wind
		Several trees were blown down.							
Sunflower County									
Countywide	01	1545CST			0	0	50K		Thunderstorm Wind
		Numerous power lines and trees were blown down.							
Warren County									
Countywide	01	1615CST			0	0	10K		Thunderstorm Wind
		Several power lines were blown down.							
Holmes County									
Countywide	01	1630CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Leake County									
1 N Carthage	01	1720CST			0	0	1K		Thunderstorm Wind
		A few trees were blown down.							
Hinds County									
Jackson	01	1730CST			0	0	10K		Thunderstorm Wind
		Power lines were blown down near Terry and Mcdowell roads.							
Oktibbeha County									
Starkville	09	1445CST			0	0	1K		Thunderstorm Wind
		Several trees were blown down across Highway 82.							
Grenada County									
Grenada	09	1530CST			0	0	35K		Thunderstorm Wind
		A few cars were moved around at a dealership. A shed at a lumber company had its roof blown off. The wind picked up a truck and threw it into a van. Cars were blown off the road. Numerous trees were blown down.							
Montgomery County									
Kilmichael	09	1615CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Kemper County									
Scooba	09	1620CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Carroll County									
7 NE Carrollton	09	1630CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Montgomery County									
Duck Hill	09	1630CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Lauderdale County									
5 NE Meridian	09	1655CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Choctaw County									
Weir	09	1710CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Carroll County									
Carrollton	09	1745CST			0	0	15K		Thunderstorm Wind
		Several power lines and trees were blown down. Several cars were blown off the road.							
Leflore County									
Greenwood	09	1810CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Leake County									
3 SW Carthage	09	1820CST			0	0	1K		Thunderstorm Wind
		A few trees and large limbs were blown down.							
Holmes County									
Lexington	09	1840CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down along Highway 17.							
Madison County									
3 N Canton	09	1915CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MISSISSIPPI, Central									
Rankin County Brandon	09	2045CST			0	0	1K		Thunderstorm Wind
		A few trees were blown down.							
Rankin County Florence	09	2050CST			0	0	5K		Thunderstorm Wind
		Wind blew a tree down onto a car. Several trees were blown down.							
Leake County 3 SW Carthage	10	1700CST			0	0	1K		Thunderstorm Wind
		A few trees and large limbs were blown down.							
Forrest County Fruitland Park	10	1707CST			0	0	10K		Thunderstorm Wind
		Several power lines were blown down.							
Forrest County 3 NE Petal	10	1707CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Bolivar County Cleveland	10	1715CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Leflore County 3 S Greenwood	10	1715CST			0	0	8K		Thunderstorm Wind
		Wind removed a roof.							
Leflore County 10 S Greenwood	10	1730CST			0	0	5K		Thunderstorm Wind
		Several power lines and trees were blown down .							
Madison County Madison	10	1900CST			0	0	1K		Thunderstorm Wind
		A few trees were blown down.							
MSZ042-047>048		Yazoo - Warren - Hinds							
	10	1910CST			0	0	7K		High Wind
		1930CST							
		Several trees were blown down.							
Simpson County Magee	11	1445CST			0	0	5K		Thunderstorm Wind
		Several power lines blown down.							
Warren County Vicksburg	11	1515CST			0	0	20K		Thunderstorm Wind
		A few store signs and several trees blown down.							
Jasper County Paulding	11	1545CST			0	0	10K		Thunderstorm Wind
		Several trees blown down.							
Copiah County Crystal Spgs	11	1645CST			0	0	2K		Thunderstorm Wind
		Several trees blown down.							
Copiah County Hazlehurst	11	1735CST			0	0	2K		Thunderstorm Wind
		Several trees blown down.							
Washington County Greenville	11	1840CST			0	0			Thunderstorm Wind (G52)
Hinds County Byram	12	1545CST			0	0	10K		Thunderstorm Wind
		Numerous trees were blown down.							
Warren County Vicksburg	12	1545CST			0	0	10K		Thunderstorm Wind
		Numerous trees were blown down.							
Hinds County Jackson	12	1645CST			0	0	2K		Thunderstorm Wind
		Several trees were blown down.							
Hinds County Raymond	12	1700CST 1800CST			0	0	35K		Flash Flood

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MISSISSIPPI, Central									
									Water reported in several homes.
Franklin County Meadville	14	1200CST 1300CST			0	0			Flash Flood
									Flooding occurred on Highway 84 causing an automobile accident.
Hinds County Jackson	14	1400CST 1600CST			0	0	25K		Flash Flood
									Water was reported in house and apartment complex.
Hinds County Jackson	14	1400CST 1600CST			0	0			Flash Flood
									Hanging Moss and Purple creeks were in flood causing several roads to be flooded.
Hinds County Jackson	14	1400CST 1600CST			0	0			Flash Flood
									Numerous roads were flooded causing several automobile accidents.
Madison County Madison	14	1400CST			0	0	25K		Flash Flood
									Annandale Country Club was flooded.
Neshoba County 6 SE Philadelphia	20	1758CST			0	0			Hail (0.75)
Neshoba County Countywide	24	1715CST			0	0	5K		Thunderstorm Wind
									Several trees were blown down.
Yazoo County Yazoo City	24	1845CST			0	0	1K		Thunderstorm Wind
									A few trees were blown down.
Madison County Madison	25	1800CST			0	0	2K		Thunderstorm Wind
									Several trees were blown down.
Hinds County Jackson	25	1830CST 2000CST			0	0	2K		Flash Flood
									Several roads were flooded casing a few automobile accidents.
Madison County Madison	25	1830CST 2000CST			0	0	2K		Flash Flood
									Several roads were flooded causing a few automobile accidents.
Madison County Ridgeland	25	1830CST 2000CST			0	0	2K		Flash Flood
									Several roads were flooded causing a few automobile accidents.
Rankin County Flowood	25	1830CST			0	0	1K		Thunderstorm Wind
									A few trees were blown down.
Hinds County Jackson	25	1845CST			0	0	3K		Thunderstorm Wind
									Several trees were blown down.
MISSISSIPPI, North									
Union County 3 N New Albany	03	1630CST 1635CST			0	0	10K		Thunderstorm Wind
									Several power poles were snapped. A kitchen stove was blown off a front porch.
Union County 5 N New Albany	03	1700CST			0	0	1K		Lightning
									A vehicle flipped over after a lightning strike occurred in front of it.
Itawamba County Clay	09	1100CST 1105CST			0	0	5K		Thunderstorm Wind
									Several trees were blown down.

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Alcorn County Farmington	10	1230CST 1235CST			0	0	25K		Thunderstorm Wind
									A front porch and one-third of a roof to a house was blown off.
Lee County Tupelo Arpt to Belden	10	1445CST 1500CST			0	0	20K		Thunderstorm Wind (G55)
									Wind gusts to 64 mph were recorded at the Tupelo airport. A trailer was blown over and several cars and sheds were damaged. A few trees were knocked down as well.
Chickasaw County Okolona	10	1500CST 1505CST			0	0	10K		Thunderstorm Wind
									A covered patio was destroyed. A large tree was also knocked down.
Alcorn County Corinth	14	0200CST 0300CST			0	0	0.50K		Urban/Sml Stream Fld
									Several ditches and underpasses were flooded after heavy rains hit the Corinth area.
Lee County Countywide	20	1730CST 1735CST			0	0	5K		Tstm Wind/Hail
									A radio tower was toppled. A few trees were blown down across the county.
Lee County Tupelo	24	1230CST 1430CST			0	0	1K		Flash Flood
									Street flooding occurred in Tupelo after over 2 inches of rain fell in a 20 minute period.
De Soto County South Haven	13	1200CST 1230CST			0	0	1K		Urban/Sml Stream Fld
									One street had up to two feet of water accumulate on it.
Lafayette County Oxford	23	1701CST 1740CST			0	0	50K		Lightning
									Two fires sparked by lightning within one block of each other occurred in a 40 minute time span. The two fires forced the evacuation of 20 apartments and three businesses in the area.
<u>MISSISSIPPI, South</u>									
Jackson County Escatawpa	05	1710CST			0	0	10K		Lightning
									Lightning hit a church blowing out most of the lights, destroying the security system, and cracking windows.
Harrison County 2 W De Lisle to De Lisle	01	1520CST			0	0			Funnel Cloud
									Harrison County CD reported a funnel cloud near the Harrison County and Hancock County border.
Pearl River County Poplarville to Picayune	10	1830CST 1900CST			0	0	5K		Thunderstorm Wind
									Thunderstorm winds knocked down trees across the county.
Harrison County Gulfport	16	1350CST			0	0			Lightning
									A lightning strike caused a fire that damaged four condominiums.
Hancock County Bay St Louis	14	1100CST			0	0	0.50K		Thunderstorm Wind
									Thunderstorms winds knocked down power lines.
Pearl River County Poplarville	10	1830CST			0	0			Hail (1.50)
									Hail up to the size of golfballs was reported near Poplarville and various other locations around the county.
Amite County Liberty	10	1600CST			0	0	1K		Thunderstorm Wind
									A large tree limb was blown down on a car.
Jackson County Pascagoula	16	1430CST			0	0	5K		Thunderstorm Wind
									Thunderstorm winds knocked down a large tree, destroyed a carport, blew shingles off roofs, and damaged a sign.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MISSISSIPPI, South</u>									
Pearl River County									
Picayune	24	1530CST 1600CST			0	0	0.50K		Thunderstorm Wind
Thunderstorm winds knocked down telephone poles, uprooted trees, and caused minor damage to a residence.									
<u>MISSISSIPPI, Southeast</u>									
Greene County									
Sand Hill	06	1850CST 1852CST			0	0	5K		Thunderstorm Wind (G50)
Trees and power lines were blown down near Sand Hill.									
Stone County									
Central Portion	03	1809CST 1812CST			0	0	7K		Thunderstorm Wind (G50)
Several trees were blown down in the central part of the county. One of the trees fell on a car and damaged it.									
Wayne County									
Waynesboro	22	1500CST			0	0	10K		Lightning
Lightning struck a florist shop in Waynesboro.									
<u>MISSOURI, East</u>									
St. Louis (C)									
St Louis	03	1530CST			0	0			Hail (0.75)
St. Louis (C)									
St Louis	03	1538CST			0	0			Hail (0.88)
St. Louis (C)									
St Louis	03	1538CST			0	2			Thunderstorm Wind (G50)
St. Louis (C)									
St Louis	03	1545CST			0	0			Thunderstorm Wind (G50)
A severe thunderstorm blew into downtown St. Louis during the Fair St. Louis 4th of July celebration causing an estimated 200,000 people to scurry for shelter. The wind and hail blew down tree branches, billboards, and destroyed numerous vendor booths set up on the Gateway Arch grounds for the Fair. Two people received minor burns when the wind blew over a fryer filled with hot oil. The Fair was cancelled for the remainder of the day, but re-opened the following day. Several windows on homes and vehicles were also broken by the wind and hail just south of the Arch grounds.									
St. Louis County									
Florissant	04	1515CST			0	0			Thunderstorm Wind (G50)
Thunderstorm wind gusts downed some trees and utility lines in parts of north St. Louis County. About 20,000 to 30,000 people lost electrical power.									
Marion County									
West Portion	04	0200CST 0530CST			0	0			Flash Flood
Pike County									
West Portion	04	0200CST 0530CST			0	0			Flash Flood
Ralls County									
West Portion	04	0200CST 0530CST			0	0			Flash Flood
Rainfall of 2 to 4 inches caused flooding of some roads across the west portion of the area.									
Knox County									
Countywide	04	0200CST 0900CST			0	0			Flash Flood
Rainfall of 3 to 5 inches flooded roads across the county. Highway 151 east of Novelty had to be closed due to high water.									
Monroe County									
Countywide	04	0200CST 1230CST			0	0			Flash Flood
Shelby County									
West Portion	04	0200CST 1230CST			0	0			Flash Flood
Rainfall of 4 to 6 inches flooded roads across the area. Highway 151 had to be closed near Clarence and Leonard. Highway 15 north of the Audrain County line was also closed.									
Boone County									
Central Portion	04	0800CST 1230CST			0	0			Flash Flood

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MISSOURI, East									
Callaway County West Portion	04	0800CST 1230CST			0	0			Flash Flood
Cole County North Portion	04	0800CST 1230CST			0	0			Flash Flood
Moniteau County East Portion	04	0800CST 1230CST			0	0			Flash Flood
Osage County Southeast Portion	04	0800CST 1230CST			0	0			Flash Flood
	Rainfall of 2 to 6 inches caused scattered flooding across the area. Many county roads and low-water crossings became impassable. Several streets and intersections in Columbia were covered with water ranging from 6 inches to 2 feet.								
Boone County Columbia	05	0650CST			0	0	80K		Lightning
	A lightning strike was blamed for a fire at a residence in southwest Columbia. Firefighters arrived to find flames shooting through a hole in the roof.								
Gasconade County 4 SW Hermann	22	1725CST			0	0			Thunderstorm Wind (G61)
Gasconade County Hermann	22	1730CST			0	0			Thunderstorm Wind (G61)
	A severe thunderstorm packing wind gusts up to 70 mph damaged hundreds of trees and left most of the town without power for over 3 hours. Local officials commented that it was the worst tree damage they have seen in 10 years. Highways 100, 19 and Route H were temporarily blocked due to downed trees or limbs. The skirting on a portable building at the Hermann Middle School was also damaged.								
Franklin County Berger	22	1738CST			0	0			Thunderstorm Wind (G61)
	Thunderstorm wind gusts downed numerous trees.								
Warren County Marthasville	22	1745CST			0	0			Thunderstorm Wind (G60)
	Several large trees were downed by thunderstorm wind gusts.								
MOZ041-052-060>061-063>064-084	Boone - Lincoln - Warren - St. Charles - St. Louis - St. Louis (C) - Iron								
	18	1200CST			0	137			Excessive Heat
	22	1800CST							
	High temperatures in the middle to upper 90s along with Heat Index readings around 110 resulted in numerous heat related injuries across the region. Fortunately, there were no deaths attributed to the heat.								
St. Louis County Lemay	22	1750CST			0	0			Thunderstorm Wind (G51)
	Thunderstorm winds caused tree damage in south St. Louis County, specifically near Lemay Ferry and Butler Hill roads.								
Warren County Holstein	22	1810CST			0	0			Thunderstorm Wind (G51)
	Thunderstorm wind gusts downed a few trees,								
St. Charles County Lake St Louis	22	1810CST			0	0			Thunderstorm Wind (G52)
St. Charles County St Peters	22	1815CST			0	0			Thunderstorm Wind (G52)
St. Charles County Portage Des Sioux	22	1817CST			0	0			Thunderstorm Wind (G52)
	Thunderstorm wind gusts downed trees and some power lines.								
St. Louis County Lemay	22	1825CST			0	0			Thunderstorm Wind (G61)
Jefferson County Arnold	22	1830CST			0	0	5K		Thunderstorm Wind (G61)
	Thunderstorm wind gusts estimated near 70 mph downed numerous trees and power lines across parts of south St. Louis County and north Jefferson County. A local deli in Arnold lost about \$4000 worth of food due to the length of the power outage. Over 100,000 customers were without power in the area, with about 15,000 still without power 2 days later. Some minor structural damage also occurred. primarily to some roofs and carports.								

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MISSOURI, East									
St. Louis County									
Bellefontaine Neighb	22	1903CST			0	0			Thunderstorm Wind (G55)
									Thunderstorm winds downed trees along Chambers Road and also near I-270 and Lilac Avenue.
Crawford County									
Countywide	26	0630CST 1230CST			0	0	100K		Flash Flood
									Rainfall close to 6 inches caused widespread flooding across the county. Numerous roads were closed much of the day. Many roads and bridges were damaged from the runoff from the heavy rain. The Department of Natural Resources reported that Onondaga Cave State Park suffered significant damage from the rain as well.
Iron County									
Countywide	26	0800CST 1300CST			0	0	200K		Flash Flood
Madison County									
Countywide	26	0800CST 1300CST			0	0			Flash Flood
Reynolds County									
Countywide	26	0800CST 1300CST			0	0	400K		Flash Flood
									Rainfall of at least 6 inches caused widespread flooding across the area. Numerous roads and bridges were either washed out or damaged by the water. Preliminary estimates of damages to public facilities were around \$200,000 in Iron County and close to \$400,000 in Reynolds County. The Missouri Department of Conservation reported that the Logan Creek Conservation Area in Reynolds also suffered significant damage. In Ironton, Stout's Creek flooded part of Main Street and part of the Meadowbrook subdivision. The creek also flooded parts of the town of Arcadia Valley. The Governor declared a state of emergency for all 3 counties.
Cole County									
Countywide	26	1030CST 1300CST			0	0	5K		Flash Flood
Moniteau County									
Countywide	26	1030CST 1300CST			0	0	350K		Flash Flood
Osage County									
Countywide	26	1030CST 1300CST			0	0			Flash Flood
									Rainfall up to 6 inches caused widespread flooding across the area. Besides flooding of small streams and creeks, the Osage, Maries, and Gasconade Rivers all surged over their banks. A construction crane being used to build a new bridge over the Osage River was ripped from its moorings and washed about 2 miles downstream. Countless gravel roads across the area suffered significant wash-out damage.
Reynolds County									
Countywide	27	0400CST 1000CST			0	0			Flash Flood
									Rainfall of 2 to 4 inches sent small creeks and streams, already full from the previous days rain, flowing over their banks again. Roads and bridges continued to suffer damage from the rapid runoff of water.
Franklin County									
Countywide	30	0530CST 1730CST			0	0			Flash Flood
									Heavy rainfall caused widespread flooding across Franklin County. Up to 35 roads were closed during the early morning hours due to the flooding. Meramec State Park suffered damage as did other recreation areas along the Meramec River. Farmland along the river was also flooded destroying much of the corn and soy bean crops.
Jefferson County									
North Portion	30	0915CST 1200CST			0	0			Flash Flood
St. Louis County									
South Portion	30	0915CST 1200CST			0	0			Flash Flood
St. Louis (C)									
South Portion	30	0915CST 1200CST			0	0			Flash Flood
									Rainfall ranging from 2 to 4 inches caused widespread flooding across the area. In south St. Louis City and County, the major problem was flooded basements from overflowing storm drainage systems. Up to 1300 homes or businesses were affected. In Jefferson County, the Meramec and Big rivers flooded, closing some roads and destroying crops planted in the floodplains.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MISSOURI, East</u>									
Cole County North Portion	29	0500CST 1100CST			0	0			Flash Flood
Moniteau County Countywide	29	0500CST 1100CST			0	0			Flash Flood
Osage County South Portion	29	0500CST 1100CST			0	0			Flash Flood
Heavy rain returned to Central Missouri again causing flooding across the area. One of the hardest hit areas was the town of Elston, Cole County. Gray's Creek surged out of its banks sending a wall of water several feet deep through the town. Some vehicles were flooded, and a few outbuildings swept away. A few homes had water inside just under 1 foot deep. Otherwise, county roads suffered additional damage that was started during the heavy rain event on Sunday 7/26.									
Reynolds County 1 N Ellington	30	0403CST			0	0			Thunderstorm Wind (G52)
Thunderstorm wind gusts downed some trees near the intersection of Route K and Highway 21 just north of Ellington.									
<u>MISSOURI, Lower</u>									
Dunklin County Kennett	24	0730CST 0800CST			0	0	0.05K		Urban/Sml Stream Fld
Some minor urban flooding occurred in the Kennett area.									
Dunklin County Kennett	30	0215CST 0400CST			0	0	5K		Flash Flood
Numerous streets in Kennett were flooded.									
Pemiscot County Caruthersville	30	0215CST 0220CST	0.1	10	0	0	0		Tornado (F0)
A tornado briefly touched producing little damage.									
Pemiscot County Caruthersville	30	0325CST 0500CST			0	0	10K		Flash Flood
Several businesses in Caruthersville had up to 6 inches of water in them. A few roads were flooded as well.									
Dunklin County Kennett	30	1800CST 1805CST			0	0	5K		Thunderstorm Wind
An emergency management radio tower was blown over. Several power lines were knocked down.									
Dunklin County Glennonville	30	1820CST 1825CST			0	0	5K		Thunderstorm Wind
Some trees were blown down.									
Pemiscot County Hayti	30	1910CST 1915CST			0	0	5K		Thunderstorm Wind
A few trees were knocked down.									
<u>MISSOURI, Northwest</u>									
Nodaway County Hopkins	15	0515CST			0	0			Thunderstorm Wind (G60)
Thunderstorm winds knocked down a tree two feet in diameter.									
Nodaway County Maryville	15	0515CST			0	0			Hail (0.75)
The Nodaway County Sheriff's Office reported dime-size hail at Maryville during a severe thunderstorm.									
Andrew County 1.5 W Fillmore	15	0525CST			0	0			Thunderstorm Wind (G60)
A storm spotter reported a 60 MPH wind gust during a severe thunderstorm 1.5 miles west of Fillmore.									
Jackson County Blue Spgs	26	0400CST			0	0			Flash Flood
Rainfall amounts of 2 to 5 inches resulted in numerous reports of flooded roads in Independence and Blue Springs. Kansas City Fire Department reported that a water rescues of a stranded driver was need at Kingsridge apartments just east of Woods Chapel.									

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MISSOURI, Northwest									
Pettis County Sedalia	26	0558CST			0	0			Flash Flood
									Between 4 and 6 inches of rain fell in the Sedalia area resulting in widespread flooding of streets and intersections. A driver had to be rescued when his car stalled in high water underneath an overpass along New York Avenue near the southern border of the city.
Jackson County Kansas City	26	0742CST 0803CST			0	0			Flash Flood
									Rainfall amounts of 2 to 4 inches over the Northeast section of Kansas City resulted in numerous reports of flooded streets and intersections. Kansas City Fire Department reported about a dozen water rescues of stranded cars. Two rescues of note took place at 9th and Hardesty and at Gardner and Chouteau Trafficway. No serious injuries were reported.
Lafayette County Odessa	26	0800CST			0	0			Flash Flood
									Between 2 and 4 inches of rain fell over much of Lafayette County resulting in several reports of flash flooding. In Odessa, Highway U which is just east of Highway M, was under 2 feet of water for a half mile stretch.
Adair County Kirksville to 10 SW Gibbs	04	0123CST 0230CST			0	0			Flash Flood
									Rainfall amounts of 2 to 4 inches were recorded over portions of Adair County during the early morning hours. The heavy rainfall resulted in numerous reports of flash flooding and significant flooding of the roadway along Highway 63. Numerous rescues of people trapped in their cars were reported along Highway 63 where the water depth reached 3.5 feet at the junction of Route KK in Millard. Eventually Highway 63 was closed all the way from Kirksville to the county line about 10 miles southwest of Gibbs between 1:23 and 2:29 AM CST.
Macon County Macon to La Plata	04	0123CST 0230CST			0	0			Flash Flood
									Rainfall amounts of 2 to 4 inches over sections of Macon County resulted in significant road flooding especially along Highway 63 which was closed between 1:23 AM and 2:29 AM CST. Highway 63 was closed from Macon northward to the Adair County line.
Adair County Kirksville to 10 SW Gibbs	04	0430CST 0800CST			0	0			Flash Flood
									A second round of heavy rain continued to produce flooding of roadways. Highway 63 was closed again until 8 AM and Highway 11 was also shut down east of Kirksville due to high water. The Adair County Sheriff's Office reported that all roads were reopened after 8 AM.
Macon County Macon to La Plata	04	0430CST 0800CST			0	0			Flash Flood
									Heavy rainfall continued through daybreak resulting in continued flooding of numerous roadways across Macon County, including Highway 63. The Macon County Sheriff's office reported a total of 5 road closures as a result of the flooding, including Highway 165 west of La Plata. All roads were reopened after 8 AM.
Pettis County Sedalia	30	0300CST			0	0			Urban/Sml Stream Fld
									One to two inches of rain in less than two hours resulted in numerous reports of street flooding in Sedalia. Highway 50 was closed in both directions out of Sedalia until 4:15 AM CST.
Cass County 7 NE Harrisonville	30	0610CST			0	0			Urban/Sml Stream Fld
									A National Weather Service employee reported a water depth of approximately 3 feet covering Route P, 7 miles northeast of Harrisonville. The highwater was adjacent to the entrance of a public golf course.
Jackson County Unity Vlg	30	0622CST			0	0			Urban/Sml Stream Fld
									Very heavy rain resulted in the overtopping of several small lakes in Unity Village. The excess water from the overtopping lakes flowed into and contributed to the river flooding along the Blue River.
Johnson County Knob Noster	30	0840CST			0	0			Urban/Sml Stream Fld
									One to three inches of rain fell in less than 3 hours across much of Johnson County. This heavy rain resulted in numerous reports of flooded roadways and intersections. In Knob Nobster, Highway 23 was closed northward to the Blackwater River and Highway 50 to the Lafayette County line were closed due to high water.
MOZ037 Jackson	16 21	0800CST 2359CST			1	0			Excessive Heat

Storm Data and Unusual Weather Phenomena

July 1998

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

MISSOURI, Northwest

Temperatures climbed into the 90s for six straight days from July 16-21. Numerous hospitals in Kansas City reported treating heat related illnesses during this period. The temperature at the Downtown Kansas City airport reached 100, 102 and 101 degrees on July 19, 20 and 21 respectively with afternoon heat indices between 110 and 115 degrees. An 89 year old woman died in her home at the 4500 block of Forrest Avenue as a result of the heat.

F89PH

MOZ001-038

Atchison - Lafayette

08 0000CST

0 0

Flood

Heavy rains across Southeast Nebraska and Southern Iowa resulted in minor river flooding along the Tarkio and Missouri Rivers on July 8-12.

Tarkio River
Fairfax, MO

Flood Stage	17 ft
Above Flood Stage	7/10
Crest	17.0 ft

Missouri River
Napoleon, MO

Flood Stage	17.0 ft
Above Flood Stage	7/10 to 7/12
Crest	17.28 ft on 7/11

Waverly, MO

Flood Stage	20 ft
Above Flood Stage	7/8 to 7/12
Crest	20.37 ft on 7/8

Miami, MO

Flood Stage	18.0 ft
Above Flood Stage	7/8 to 7/12
Crest	20.37 ft on 7/12

MOZ020-032-040-046

Buchanan - Chariton - Howard - Cooper

04 0000CST

0 0

Flood

Minor to moderate river flooding occurred across Northern Missouri July 4-10.

Petite Saline Creek
Boonville, MO

Flood Stage	16 ft
Above Flood Stage	7/6
Crest	18.27 ft

Moniteau Creek
Fayette, MO

Flood Stage	16 ft
Above Flood Stage	7/4 to 7/5
Crest	17.35 ft on 7/4

Chariton River
Prairie Hill, MO

Flood Stage	15 ft
Above Flood Stage	7/4 to 7/5

Storm Data and Unusual Weather Phenomena

July 1998

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

MISSOURI, Northwest

Crest 19.27 ft on 7/4

Grand river
Sumner, MO

Flood Stage 26 ft
Above Flood Stage 7/5 to 7/6
Crest 28.38 ft on 7/6

Missouri River
St. Joseph, MO

Flood Stage 17 ft
Above Flood Stage 7/5 to 7/11
Crest 19.5 ft on 7/11

MOZ037>039-044-046-054

Jackson - Lafayette - Saline - Johnson - Cooper - Henry

27	0000CST								
31	2359CST			0	0				Flood

A second episode of heavy rain in less than a week resulted in moderate river flooding at month's end.

Petite Saline Creek
Boonville, MO

Flood Stage 16 ft
Above Flood Stage 7/30 to 7/31
Crest 19.15 ft on 7/31

Blackwater River
Valley City, MO

Flood Stage 22 ft
Above Flood Stage 7/29 to 7/31
Crest 27.0 ft on 7/30

Blue Lick, MO

Flood Stage 24 ft
Above Flood Stage 7/27 to 7/31
Crest 30.57 ft on 7/31

Lamine River
Otterville, MO

Flood Stage 15 ft
Above Flood Stage 7/30 to 7/31
Crest 20.71 ft on 7/31

South Grand River
Urich, MO

Flood Stage 24 ft
Above Flood Stage 7/31
Crest 24.8 ft

Big Creek
Blairstown, MO

Storm Data and Unusual Weather Phenomena

July 1998

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

MISSOURI, Northwest

Boonville, MO

Flood Stage	21 ft
Above Flood Stage	7/1
Crest	21.11 ft

MOZ037-046

Jackson - Cooper

26	0000CST	0	0	Flood
27	2359CST			

Up to 2 to 5 inches of rain fell on the morning of July 26 resulting in minor to moderate river flooding in parts of West Central Missouri.

Lamine River
Otterville, MO

Flood Stage	15 ft
Above Flood Stage	7/26 to 7/27
Crest	25.52 ft on 7/26

Little Blue river
Lake City, MO

Flood Stage	18 ft
Above Flood Stage	7/26 to 7/27
Crest	Estimated 21.0 ft

MOZ046

Cooper

29	0000CST	0	0	Flood
	2359CST			

After falling below flood stage on July 27, flooding re-occurred along the Lamine River at Otterville on July 29 after another round of heavy rain.

Lamine River
Otterville, MO

Flood Stage	15 ft
Above Flood Stage	7/29
Crest	16.68 ft

MISSOURI, Southeast

Carter County

Van Buren	22	1438CST	0	0	3K	Thunderstorm Wind (G52)
------------------	----	---------	---	---	----	--------------------------------

Numerous trees were downed in Van Buren.

Ripley County

3 S Doniphan	22	1615CST	0	0		Thunderstorm Wind (G50)
--------------	----	---------	---	---	--	--------------------------------

Two trees were down on Y Highway.

Carter County

Van Buren	22	1510CST	0	2		Lightning
------------------	----	---------	---	---	--	------------------

Two river enthusiasts were injured by lightning on the Current River.

Wayne County

Greenville	30	1630CST	0	0	20K	Thunderstorm Wind (G55)
-------------------	----	---------	---	---	-----	--------------------------------

A trailer was blown over, and trees were down.

Wayne County

5 E Williamsville	30	1639CST	0	0		Hail (2.75)
-------------------	----	---------	---	---	--	--------------------

Baseball size hail was reported by Wayne County Emergency Management.

Butler County

Poplar Bluff	30	1751CST	0	0		Hail (1.00)
---------------------	----	---------	---	---	--	--------------------

Ripley County

Gatewood	30	1830CST	0	0	3K	Thunderstorm Wind (G52)
-----------------	----	---------	---	---	----	--------------------------------

Trees were down across a road.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
MISSOURI, Southeast									
New Madrid County									
.5 W Risco	30	1800CST			0	0			Funnel Cloud
	Spotters indicated a funnel cloud came very near to touching ground. This funnel cloud was on the leading edge of a line of thunderstorms. This indicates it was a "gustnado" type of phenomenon.								
Wayne County									
Piedmont	30	1645CST			0	0	3K		Thunderstorm Wind (G50)
	Trees were blown down.								
Butler County									
Poplar Bluff	30	1730CST			0	0			Thunderstorm Wind (G52)
	Wind gusts near 60 MPH were reported by an off-duty National Weather Service meteorologist.								
MOZ087									
	Cape Girardeau								
01	01	0001CST			0	0			Flood
16	16	0800CST							
	The Mississippi River remained above flood stage at Cape Girardeau from late June through July 16. A crest of 33.8 feet on the 5th of July was less than two feet over flood stage. Flooding was generally limited to bottomland agricultural areas and river roads.								
Butler County									
Countywide	24	0630CST 0900CST			0	0			Flash Flood
	At the Poplar Bluff automated observing station, 1.34 inches of rain fell in 40 minutes, with almost 2.5 inches in two hours.								
Stoddard County									
Countywide	27	0500CST 0930CST			0	0	20K		Flash Flood
	A band of thunderstorms remained stationary from central Missouri to the Missouri Bootheel. Rain quickly flooded many low-lying parts of Stoddard County, especially the Dexter area. Water was over Business Route 60 in Dexter and Highway 25 south of Dexter. Some gravel roads were washed out west of Bloomfield. A weather watcher for a television station reported 4.25 inches of rain in Dexter.								
Butler County									
East Portion	27	0500CST 0730CST			0	0	20K		Flash Flood
New Madrid County									
West Portion	27	0500CST 0730CST			0	0			Flash Flood
Wayne County									
South Portion	27	0500CST 0730CST			0	0	20K		Flash Flood
	A band of thunderstorms persisted for several hours from central Missouri to the Bootheel of Missouri. This resulted in very heavy rainfall totals, with estimates of up to 1.5 inches per hour. Over some areas of eastern Butler County, rainfall estimates were as much as 4 to 5 inches within a 6 hour period. According to a local radio station in Poplar Bluff, 8.5 inches of rain was recorded within a 24 hour period. In eastern Butler County, some shoulders along roads were damaged, and secondary roads were water covered. In Wayne County, a section of T Highway and another secondary road near Wappapello were flooded. At Wappapello Lake, over 4.5 inches of rain fell, causing the lake level to rise fairly quickly. A beach on the lake was closed.								
Ripley County									
Countywide	29	0545CST 0800CST			0	0	10K		Flash Flood
	Thunderstorms produced very heavy rainfall over much of the county. A cooperative observer in Doniphan recorded 1.26 inches of rain in 20 minutes. Up to 2 feet of water was reported over an extensive stretch of Highway 160 in western parts of the county.								
Butler County									
Countywide	30	1800CST 2200CST			0	0			Flash Flood
Ripley County									
Countywide	30	1800CST 2200CST			0	0	20K		Flash Flood
	Thunderstorms produced very heavy rain. A cooperative observer in Poplar Bluff measured 3.2 inches of rain in about two hours. Highway H in Ripley County was under water.								

Storm Data and Unusual Weather Phenomena

July 1998

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

MISSOURI, Southeast

MOZ076-086>087-100-107>112-114 Perry - Bollinger - Cape Girardeau - Wayne - Carter - Ripley - Butler - Stoddard - Scott - Mississippi - New Madrid

18	1200CST	0	3	Excessive Heat
21	2200CST			

Several days of excessive heat and humidity caused heat stress on those who were unprepared. Daytime highs were in the middle 90s with afternoon heat indices up to 110 degrees. Three heat-related illnesses were reported at local hospitals. The Salvation Army distributed 20 fans at no charge to needy persons suffering from the heat.

Perry County

Perryville 04 0020CST 0 0 **Thunderstorm Wind (G52)**
Trees were down in Perryville.

MISSOURI, Southwest

**Howell County
Southwest Portion**

12	0728CST 1200CST	0	0	Flash Flood
----	--------------------	---	---	-------------

A slow moving thunderstorm dropped up to two and one half inches of rain near and just west of Caulfield in southwest Howell County. Highway 160 near Caulfield was reported flooded.

**Taney County
3 SW Forsyth**

20	1415CST 1430CST	0	0	5K Thunderstorm Wind
----	--------------------	---	---	---------------------------

Thunderstorm winds damaged trees and downed power lines. A small shed was also blown 100 feet just northwest of Forsyth.

**Ozark County
Dora**

22	0258CST	0	0	3K Thunderstorm Wind
----	---------	---	---	---------------------------

A cooperative observer reported trees and power lines down in Dora.

**Taney County
Forsyth**

22	1305CST	0	0	1K Thunderstorm Wind
----	---------	---	---	---------------------------

The sheriff's office reported that thunderstorm winds downed trees in Forsyth

**Ozark County
12 SW Gainesville**

28	0610CST	0	0	1K Thunderstorm Wind
----	---------	---	---	---------------------------

The county sheriff's office reported trees down near the intersection of Hwy 5 and W Hwy.

**Ozark County
Howards Ridge**

28	0620CST	0	0	Thunderstorm Wind (G52)
----	---------	---	---	-------------------------

Thunderstorm winds estimated at 52 knots produced minor tree damage.

MOZ055>058-068>071-083-098 Benton - Morgan - Miller - Maries - Hickory - Camden - Pulaski - Phelps - Dent - Shannon

26	0300CST	0	0	2.3M 6.2M Flood
30	0700CST			

A series of thunderstorm complexes over central and south central Missouri produced widespread flooding. Cooperative weather stations reported over 8 inches of rain at Versailles (Morgan County), Rolla (Phelps County, and Salem (Dent County). Flooding caused widespread damage to roads and low water crossings and bridges. The Missouri Governor declared a state of emergency for several counties in central Missouri including Benton, Dent, Maries, Miller, Morgan, Phelps, and Shannon.

In Miller County, flooding caused widespread damage to roads and low water bridges. Significant damage occurred to corn (50% damaged), soybean (50% damaged), hay (35% damaged) crops. Cattle (300 head) and poultry (3000 turkeys or chickens) were lost. Extensive damage to farm property and equipment was also reported.

In Morgan County, widespread flooding significantly damaged roads and bridges. One state bridge on Hwy TT (Gravois Mills Bridge) was destroyed. Several cars were washed off of roads. No injuries or deaths were reported. Homes and campgrounds near Versailles and Gravois Mills required evacuations. Some homes and businesses received flooding of lower floors or basements. Damage to crops included soybeans (20% loss), corn (20 to 30% loss), and hay. Some livestock was lost. There was also extensive damage to farmland and equipment. The Lamine River Conservation Area suffered some flood damage.

In Phelps County, flooding damaged some roads and low water bridges. Some damage to the hay crop was reported. Flooding of basements and lower floors of some homes was reported in Rolla. The Meramec Spring Fish Hatchery suffered damage from flooding.

In Maries County, three bridges were destroyed including a local landmark "swinging rope" bridge near Vienna which was built in 1930.

In Shannon County, flooding caused widespread damage to roads and low water bridges. Flooding also washed away a large number of hay bails.

Storm Data and Unusual Weather Phenomena

July 1998

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

MISSOURI, Southwest

MOZ090

Greene

21 2000CST

1 0

Excessive Heat

An elderly women (exact age unknown) was overcome by excessive heat. She lived in Springfield, MO (Greene County) and had a history of health problems.

F70PH

MONTANA, Central

Fergus County

15 S Grassrange

01 1515MST

0 0

Hail (0.75)

Judith Basin County

Windham

01 1515MST

0 0

Hail (1.00)

Gallatin County

Three Forks

02 2000MST

0 0

Thunderstorm Wind (G55)

GIANT COTTONWOOD TREES DOWNED

Jefferson County

3 E Cardwell to
10 E Cardwell

02 2000MST

0 0

100K

Flash Flood

MILLIGAN CANYON AREA

Glacier County

Cutbank

03 1810MST

0 0

50K

Tstm Wind/Hail

Wind 70kt...Hail 2.00 inches

Jefferson County

2 N Clancy

03 1835MST

0 0

Hail (1.75)

Lewis And Clark County

5 W Helena

03 1830MST

0 0

Hail (1.00)

Lewis And Clark County

Helena

03 1900MST

0 0

Hail (1.75)

Gallatin County

Bozeman

03 1800MST

0 0

Hail (1.75)

Cascade County

.5 SW Vaughn to
Vaughn

03 1915MST

0.5 50

0 0

28K

Tornado (F1)

1 INCH HAIL

Teton County

8 N Fairfield

03 1857MST

0 0

Thunderstorm Wind (G65)

Cascade County

(Gfa)Malmstrom Afb

03 1921MST

0 0

Tstm Wind/Hail

Wind 54kt...hail 1.25 inches

Meagher County

40 NW White Sulphur
Spgs

03 2000MST

0 0

Hail (2.00)

Chouteau County

1 W Loma

03 2020MST

0 0

Thunderstorm Wind (G52)

Judith Basin County

Stanford

03 2050MST

0 0

Hail (1.00)

Gallatin County

16 S Three Forks

04 1508MST

0 0

Hail (1.75)

Gallatin County

Bozeman

04 1544MST

0 0

Hail (1.75)

Meagher County

White Sulphur Spgs

04 1642MST

0 0

Thunderstorm Wind (G51)

Meagher County

White Sulphur Spgs

04 1805MST

0 0

Thunderstorm Wind (G61)

Pondera County

Brady

04 1815MST

0 0

Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Toole County Shelby	04	1832MST			0	0			Hail (1.75)
Fergus County Winifred	04	1730MST			0	0			Thunderstorm Wind (G63)
Cascade County 1 NE Simms	04	1800MST			0	0			Hail (0.75)
Toole County Shelby	04	1900MST			0	0	10K		Flash Flood
Toole County Galata	04	2000MST			0	0			Flash Flood
Teton County 8 N Fairfield	05	1537MST			0	0			Hail (1.75)
Teton County 4 E Power	05	1615MST			0	0			Thunderstorm Wind (G52)
Teton County 12 E Power	05	1625MST			0	0			Hail (1.00)
Liberty County Chester	05	1640MST			0	0			Hail (0.75)
Chouteau County Floweree	05	1700MST			0	0			Hail (1.75)
Hill County 10 S Havre	05	1845MST			0	0			Hail (1.75)
Teton County 10 W Bynum	09	1350MST			0	0			Hail (1.00)
Teton County Bynum	05	1405MST			0	0			Hail (0.75)
Blaine County 11 S Chinook	01	1351MST			0	0			Thunderstorm Wind (G56)
Blaine County 11 S Chinook	03	2155MST			0	0			Thunderstorm Wind (G57)
Gallatin County Bozeman	11	1430MST Wind 55 kt...Hail 0.75 inches			0	0			Tstm Wind/Hail
Madison County Virginia City	11	1327MST			0	0			Hail (1.75)
Cascade County Great Falls	10	1640MST Wind 57 kt...Hail 0.75 inches...garage destroyed			0	0	5K		Tstm Wind/Hail
Fergus County Valentine	10	1845MST GARAGE AND OLD BUILDING BLOWN OVER			0	0	5K		Thunderstorm Wind (G52)
Jefferson County Jefferson City	27	1140MST			0	0			Hail (0.75)
Beaverhead County Lima	11	1300MST			0	0			Hail (1.00)
<u>MONTANA, East</u>									
Phillips County 25 S Malta	01	1535MST			0	0			Hail (0.75)
Petroleum County 8 SW Flatwillow	01	1635MST			0	0			Hail (0.75)
Valley County 46 SW Glasgow	01	1720MST 1725MST			0	0			Hail (0.75)
Garfield County 22 E Cohagen	01	1925MST			0	0			Thunderstorm Wind (G52)
Phillips County 20 S Sun Prairie	03	2108MST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Phillips County 5 S Sun Prairie	03	2145MST			0	0			Hail (1.75)
Garfield County 42 NW Jordan	03	2215MST			0	0			Hail (0.75)
Phillips County Content	03 04	2345MST 0100MST			0	0	5K	10K	Flash Flood
Coop observer and trained spotter in Content could not make it home the night of July 3rd due to the road being washed out from water running across it. When the observer arrived home, she found that 1400 pound hay bales had been moved by flowing water and a bundle of 200 wood fence posts had been swept away.									
Valley County 45 SW Glasgow	04	0100MST			0	0			Hail (0.75)
Valley County 2 S Glasgow	04	0230MST			0	0			Hail (0.75)
Daniels County Richland	04	1610MST			0	0			Hail (0.75)
Daniels County Richland	04	1615MST			0	0			Hail (0.88)
Valley County 15 ESE Opheim	04	1630MST			0	0		6K	Hail (1.00)
Large hail destroyed a wheat field.									
Daniels County 10 S Peerless	04	1639MST			0	0			Hail (2.00)
Daniels County 10 S Peerless	04	1700MST			0	0			Hail (2.75)
Daniels County Peerless	04	1710MST 1830MST			0	0			Flash Flood
Businesses in Peerless reported Front Street, which is the main street in Peerless, under one foot of water.									
Daniels County 5 W Richland	04	1730MST			0	0		30K	Hail (4.00)
Tennis ball sized hail and severe thunderstorm winds levelled wheat fields.									
Daniels County 3 E Richland	04	1757MST 1800MST			0	0			Flash Flood
A section of Highway 248 under one foot of water.									
Roosevelt County 25 N Wolf Pt	04	1815MST			0	0			Hail (1.00)
Roosevelt County 30 NE Wolf Pt to 29 ENE Wolf Pt	04	1815MST 1818MST	2	300	0	0	12K	30K	Tornado (F1)
Spotter reported winds over 100 miles an hour and damage to outbuildings .									
Roosevelt County 18 NW Poplar to 15 NW Poplar	04	1838MST	3	200	0	0	100K	50K	Tornado (F1)
Tornado damage was done to a ranch 18 miles northwest of Poplar. One steel pole barn was completely destroyed and farm equipment was tossed around and damaged. Windows were blown out of the house and the wheat crop was a total loss.									
Roosevelt County 5 NE Wolf Pt	04	1845MST			0	0			Hail (1.00)
Roosevelt County 5 N Poplar	04	1850MST			0	0			Funnel Cloud
Roosevelt County 15 N Wolf Pt	04	1855MST			0	0			Hail (1.00)
Roosevelt County 22 N Wolf Pt	04	1929MST 2130MST			0	0			Flash Flood
Highway 13 north of Wolf Point under water and impassible.									
McCone County 5 S Vida	04	2004MST			0	0			Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Roosevelt County Culbertson	04	2007MST			0	0			Hail (0.75)
Roosevelt County Culbertson	04	2007MST			0	0			Thunderstorm Wind (G52)
Roosevelt County Bainville	04	2100MST			0	0			Hail (0.88)
Richland County 40 N Sidney	04	2101MST			0	0			Hail (0.88)
Roosevelt County Brockton	04	2113MST 2230MST			0	0			Flash Flood
Roosevelt County Culbertson	04	2113MST 2245MST			0	0	1M	300K	Flash Flood
Rain falling at the rate of more than 5 inches in an hour inundated the town of Culbertson. Forty-three homes sustained damage with 20 basements completely filled with water and sewage which backed up during the storm. Two homes were moved completely off of their foundations. Highway 2 was flooded and closed from Poplar to the North Dakota line until the next morning. At 11 PM local time, Highway 2 was under three feet of water which caused cars to float off of the road.									
Roosevelt County Bainville	04	2150MST 2300MST			0	0			Flash Flood
Main street flooded in Bainville.									
Daniels County 4 S Scobey	05	1254MST			0	0			Hail (0.75)
Daniels County 4 S Scobey	05	1305MST			0	0			Hail (0.88)
Daniels County Scobey	05	1305MST			0	0			Hail (0.75)
Daniels County Scobey	05	1315MST			0	0			Hail (0.75)
Phillips County 15 NE Loring	05	1455MST			0	0			Hail (1.50)
Phillips County 1 E Whitewater	05	1555MST			0	0			Hail (0.75)
Valley County 40 N Hinsdale	05	1630MST			0	0			Hail (0.88)
Phillips County 35 N Saco	05	1635MST			0	0			Hail (0.88)
Roosevelt County 25 N Poplar	05	1640MST			0	0			Hail (0.75)
Roosevelt County 15 N Poplar	05	1717MST			0	0			Hail (1.00)
Roosevelt County 15 N Brockton	05	1720MST			0	0			Hail (0.75)
Roosevelt County 14 N Brockton	05	1735MST			0	0			Hail (1.00)
Roosevelt County 10 N Brockton	05	1742MST 2030MST			0	0	10K		Flash Flood
Water was running over Highway 344. The highway was closed to traffic.									
Valley County 19 N Glasgow	05	1807MST			0	0			Hail (1.00)
Daniels County 5 S Peerless	05	1820MST			0	0			Hail (1.00)
Daniels County 16 S Peerless	05	1855MST			0	0			Hail (1.00)
Roosevelt County 18 N Wolf Pt	05	1859MST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Roosevelt County 18 N Wolf Pt	05	1915MST			0	0			Thunderstorm Wind (G73)
Sheridan County Plentywood	05	1920MST			0	0			Hail (0.75)
Daniels County 10 S Scobey	05	2000MST 2130MST			0	0			Flash Flood
Rain falling at the rate of three inches an hour caused the West Fork of the Poplar River to overflow its banks. A wagon train on its way to Wolf Point for the Wild Horse Stampede became bogged down. Water levels reached as high as the wagon's axles.									
Roosevelt County 21 N Poplar	05	2000MST			0	0			Hail (1.75)
Roosevelt County 1 E Froid	05	2010MST			0	0			Hail (1.50)
Roosevelt County Froid	05	2015MST			0	0			Hail (0.75)
Sheridan County 2 S Homestead	05	2030MST			0	0			Hail (0.75)
Roosevelt County 10 N Bainville	05	2055MST			0	0			Hail (0.75)
McCone County 38 NW Weldon	06	1025MST			0	0			Hail (0.75)
Valley County 1 S Ft Peck	06	1025MST			0	0			Hail (0.75)
Valley County 3 SW Ft Peck	06	1030MST			0	0			Hail (0.88)
Richland County 3 S Fairview	06	1310MST			0	0			Hail (1.75)
Richland County 15 NW Sidney	06	1310MST			0	0			Hail (0.75)
Daniels County 12 N Peerless	06	1355MST			0	0			Hail (0.75)
Daniels County 5 N Peerless	06	1421MST			0	0			Hail (0.75)
Daniels County 1 NW Peerless	06	1425MST			0	0			Hail (1.00)
Valley County 1 NW Larslan	06	1440MST			0	0			Hail (0.75)
McCone County Circle	06	1450MST 1520MST			0	0			Hail (0.75)
McCone County 4 SE Circle	06	1500MST			0	0			Hail (1.00)
Prairie County 25 NW Terry	06	1510MST			0	0			Hail (0.88)
Dawson County 5 NW Lindsay	06	1520MST 1535MST			0	0			Hail (0.88)
McCone County Circle	06	1520MST			0	0			Hail (0.75)
Valley County 13 N Glasgow	06	1530MST			0	0			Hail (0.75)
Richland County 10 W Crane	06	1535MST			0	0			Hail (0.75)
Richland County Crane	06	1600MST			0	0			Hail (1.25)
Richland County Sidney	06	1602MST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<u>MONTANA, East</u>									
Prairie County 11 SW Mildred	06	1606MST			0	0			Hail (0.75)
Dawson County 5 NW Lindsay to 8 S Bloomfield	06	1610MST			0	0	68K		Hail (0.88)
A hail storm moved from north of Lindsay to south of Bloomfield. Quarter sized hail pummelled area wheat fields. Two farms reported a 100% crop loss and as many as twelve crop insurance claims were filed.									
Prairie County 27 SE Terry Arpt	06	1610MST			0	0			Hail (1.75)
Prairie County 11 SW Mildred	06	1615MST			0	0	12K	30K	Hail (1.75)
A severe thunderstorm produced golf ball sized hail and gusty winds. A large dead elm tree was blown down and a roof was blown off of a steel building. Several small trees were also blown down. Wheat crops in the area suffered devastating damage.									
Roosevelt County 10 N Wolf Pt	08	1257MST			0	0			Hail (0.75)
Roosevelt County 2 NE Volt	08	1355MST			0	0			Flash Flood
Daniels County 5 NW Peerless	08	1503MST			0	0			Hail (1.00)
Garfield County 10 NNW Cohagen	09	1515MST			0	0			Hail (0.75)
Wibaux County 21 SSW Wibaux	09	1740MST			0	0			Hail (1.00)
Wibaux County 22 SW Wibaux	09	1900MST			0	0			Flash Flood
Cedar Creek overflowed its banks for about 8 miles above Pine Unit Road.									
Petroleum County 8 NNW Winnett	10	1800MST			0	0			Hail (0.75)
Petroleum County 18 NNW Winnett	10	1830MST			0	0			Thunderstorm Wind (G57)
Richland County 18 N Sidney	11	1220MST			0	0			Thunderstorm Wind (G52)
Garfield County 40 WNW Jordan	11	1825MST			0	0			Thunderstorm Wind (G53)
Valley County 35 SW Glasgow	11	1851MST			0	0			Thunderstorm Wind (G66)
McCone County Brockway	11	1903MST			0	0	8K		Thunderstorm Wind
Roof damage done to businesses in Brockway.									
Valley County Ft Peck	11	1905MST			0	0	10K		Thunderstorm Wind (G52)
Shingles were ripped off of a roof in Fort Peck.									
Valley County Glasgow Intl Arpt	11	1914MST			0	0			Thunderstorm Wind (G56)
Valley County 2 W Ft Peck	11	1931MST			0	0			Thunderstorm Wind (G52)
Roosevelt County Wolf Pt	11	1949MST			0	0			Thunderstorm Wind (G52)
Roosevelt County 3 N Poplar	11	2027MST			0	0			Thunderstorm Wind (G68)
Sheridan County 10 N Raymond	13	1918MST			0	0			Hail (1.00)
Dawson County Dawson Arpt Glendive	13	2214MST			0	0			Thunderstorm Wind (G53)
Wibaux County 8 S Wibaux	13	2305MST			0	0			Thunderstorm Wind (G56)
Valley County Larslan	18	1810MST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Roosevelt County 5 NE Volt	18	1825MST			0	0			Hail (1.00)
Roosevelt County 24 N Wolf Pt	18	1830MST			0	0			Hail (0.75)
Valley County 5 W Lustre	18	1850MST			0	0			Hail (0.75)
<u>MONTANA, South</u>									
Sweet Grass County Mc Leod	01	1540MST 1543MST			0	0			Hail (1.25)
		A coop observer reported half dollar sized hail.							
Wheatland County 10 S Twodot	01	1653MST			0	0			Hail (0.88)
Stillwater County Columbus	01	1657MST 1700MST			0	0			Hail (0.88)
Powder River County 12 SW Biddle	01	1701MST			0	0			Funnel Cloud
Stillwater County Park City	01	1732MST			0	0			Hail (0.75)
Stillwater County Park City	01	1745MST			0	0			Hail (0.75)
		Two spotters reported dime sized hail in Park City.							
Yellowstone County 5 S Billings	01	1809MST			0	0			Hail (0.88)
		A farmer reported nickel sized hail.							
Rosebud County 6 NE Ingomar	01	1900MST 1915MST			0	0			Heavy Rain
		A spotter reported a half inch of rain in 15 minutes.							
Custer County 7.5 E Miles City	01	2044MST 2105MST			0	0	0.20K		Tstm Wind/Hail
		A spotter reported 3/4 inch hail and 60 mph wind gusts from a thunderstorm which dropped 1.5 inches of rain in 30 minutes. The wind gusts picked up a swing set and bent a TV antenna.							
Custer County Mizpah	01	2100MST			0	0	1K		Thunderstorm Wind (G52)
		A spotter reported winds gusts to 60 mph which blew branches off trees and shingles off of a roof.							
Custer County 4 NW Mizpah	01	2104MST			0	0	1K		Thunderstorm Wind (G52)
		A spotter reported winds gusts to 60 mph which blew branches off trees and shingles off of a roof. This storm also produced 1.57 inches of rainfall in 30 minutes.							
Wheatland County 6 E Harlowton	03	0230MST 0330MST			0	0			Flash Flood
		A slow moving thunderstorm with heavy rain produced water up to a foot deep 6 miles east of Harlowton on Highway 12.							
Musselshell County Roundup	03	0330MST 0530MST			0	0	200K		Flash Flood
		A slow moving thunderstorm with heavy rain caused water to run over roads on the east end of Roundup. Over one inch of rain fell during a ten minute period. The Roundup Tribune reported that several basements were flooded.							
Wheatland County Twodot	04	1645MST 1730MST			0	0			Heavy Rain
Wheatland County Harlowton	04	1730MST			0	0			Funnel Cloud
Wheatland County Twodot	04	1730MST			0	0			Hail (0.88)
		A thunderstorm produced three quarters of an inch of rain in 15 minutes in and nickel sized hail in Twodot. This same storm produced a funnel cloud just to the north of Harlowton.							

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Yellowstone County Laurel to 8 NE Laurel	04	1928MST 1956MST			0	0			Funnel Cloud
									Several spotters and amateur radio operators reported funnel clouds in and around Laurel.
Rosebud County Forsyth	04	2000MST 2130MST			0	0	10K		Thunderstorm Wind
									A blowing tree branch severed a high voltage power line cutting off power to most of the Forsyth area for 90 minutes.
Yellowstone County 1 N Billings Hgts	04	2005MST 2006MST	0.1	5	0	0			Tornado (F0)
									A spotter reported that a small tornado briefly touched down near the intersection of Alexander Road and Highway 87.
Yellowstone County 2 E Billings Hgts to 3 E Billings Hgts	04	2010MST			0	0			Funnel Cloud
									Several spotters and amateur radio operators reported funnel a funnel cloud to the east of Billings Heights.
Yellowstone County 2 E Shepherd	04	2010MST			0	0			Hail (0.75)
Yellowstone County Billings	04	2013MST			0	0	1K		Thunderstorm Wind (G52)
									An eight inch tree limb fell across the southbound lane on main street in Billings.
Yellowstone County 3.5 E Huntley	04	2013MST 2043MST			0	0			Heavy Rain
									1.5 inches of rain fell in 30 minutes.
Yellowstone County Billings	04	2015MST 2035MST			0	0	4M	1M	Hail (1.75)
									Several reports of hail up to 1.75 inches in diameter were reported in and around Billings from spotters, amateur radio operators and law enforcement. The hail severely damaged several cars and roofs. The hail also caused heavy damage to crops in the Billings area.
Yellowstone County Lockwood	04	2020MST 2035MST			0	0			Hail (1.00)
									Several reports of quarter sized hail in the Lockwood area.
Yellowstone County 2 W Worden	04	2025MST			0	0			Funnel Cloud
									A 911 operator reported a funnel cloud two miles west of Worden.
Yellowstone County 3.5 E Huntley	04	2030MST 2043MST			0	0	500K		Hail (1.00)
									Nickel sized hail covered the ground two inches deep near the Osbourne Project. The hail also did crop damage to wheat, corn and barley.
Yellowstone County 1 S Worden	04	2030MST			0	0			Hail (0.75)
Custer County 20 NW Miles City	04	2055MST 2155MST			0	0			Flash Flood
									About an inch of rain in one hour caused water to cover Dead Mans Road in several places because of flash flooding.
Custer County 4 N Miles City	04	2055MST			0	0			Hail (0.75)
Yellowstone County Huntley	04	2100MST 2130MST			0	0	2M		Hail (2.50)
									Numerous reports of tennis ball sized hail causing numerous damages to vehicles and homes in and around Huntley.
Rosebud County 20 S Rosebud	04	2120MST 2140MST			0	0			Heavy Rain
									Close to two-thirds of an inch of rain fell in a 20 minute period.

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Big Horn County									
Hardin	04	2130MST 2145MST			0	0			Hail (0.88)
		Several reports of nickel to dime sized hail and heavy rains in Hardin.							
Custer County									
Miles City	04	2130MST 2230MST			0	0	1M		Flash Flood
		Several streets were closed in Miles City because of flash flooding. Basements of several homes and businesses were flooded.							
Rosebud County									
12 E Colstrip	04	2225MST			0	0	1K		Hail (1.50)
		Golf ball sized hail broke several windows in a house.							
Big Horn County									
Wyola	05	1630MST			0	0			Hail (1.00)
Carbon County									
Fromberg	05	1730MST 1737MST			0	0			Hail (1.25)
		Dime to quarter sized hail reported.							
Powder River County									
8 SW Biddle	05	1803MST 1848MST			0	0			Heavy Rain
		A spotter reported 0.80 inches of rainfall in 45 minutes.							
Yellowstone County									
2 E Shepherd	05	1810MST			0	0			Hail (0.75)
Big Horn County									
Pryor	05	1830MST			0	0			Hail (0.75)
Powder River County									
Biddle	05	1830MST 1856MST			0	0			Hail (1.00)
		Several reports of dime to quarter sized hail in and around Biddle.							
Powder River County									
8 SW Biddle	05	1848MST			0	0			Hail (0.75)
Carter County									
Alzada	05	1915MST			0	0			Hail (0.75)
Big Horn County									
15 N Hardin	05	1928MST 1935MST			0	0	100K		Hail (2.75)
		Baseball sized hail damaged numerous vehicles and broke several windows and yard lights.							
Rosebud County									
Forsyth	05	2200MST 2300MST			0	0	10K		Lightning
		Lightning hit a high voltage power line causing a one hour power outage in the Forsyth area.							
Carbon County									
Rockvale	07	1930MST			0	0			Hail (0.88)
Powder River County									
8 SW Biddle	09	1620MST 1635MST			0	0			Heavy Rain
		A spotter reported an inch of rainfall in 15 minutes.							
Big Horn County									
Pryor	11	1405MST			0	0			Hail (1.00)
Big Horn County									
3 N Wyola	11	1610MST			0	0			Hail (1.00)
Rosebud County									
Birney	11	1710MST			0	0			Thunderstorm Wind (G52)
		A spotter reported thunderstorm wind gusts to 60 mph.							
Stillwater County									
Absarokee	13	1900MST 2000MST			0	0	25K	500K	Thunderstorm Wind
		A strong microburst knocked down two 50 foot cottonwood trees. One tree hit power lines and cut power to two houses. The gusty winds caused considerable crop damage near Absarokee. Some minor damage was sustained by homes and businesses.							

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Carter County									
Ekalaka	13	2300MST 2345MST			0	0			Heavy Rain
		A spotter reported 0.72 inches of rainfall in 45 minutes.							
Carter County									
Ekalaka	13	2320MST			0	0			Hail (0.75)
Carter County									
Ekalaka	13	2330MST			0	0			Thunderstorm Wind (G52)
		A spotter reported a thunderstorm with wind gusts to 60 mph.							
Carter County									
Alzada	18	1610MST			0	0			Hail (1.75)
		Two spotters reported golf ball sized hail.							
Yellowstone County									
Billings Logan Arprt to Billings	27	1542MST			0	1			Thunderstorm Wind (G52)
		A 60 mph wind gust was reported by the ASOS at Logan International Airport. The storm also knocked down several branches. One of which injured a 16 year old girl. Some power outages were reported in Billings as well.							
Yellowstone County									
Billings	27	1553MST			0	0			Hail (1.00)
Golden Valley County									
Lavina	27	1620MST			0	0			Thunderstorm Wind (G52)
		A spotter reported a 60 mph wind gust.							
Sweet Grass County									
9 N Greycliff	28	1513MST 1613MST			0	0			Heavy Rain
		A spotter reported 2.60 inches of rainfall in one hour.							
Yellowstone County									
Billings	30	1740MST 1800MST			0	0			Urban/Sml Stream Fld
		A strong thunderstorm produced street flooding on 14th street between Lewis and Clark.							
Big Horn County									
Pryor	31	1440MST			0	0			Hail (0.88)
Yellowstone County									
Billings	31	1515MST 1545MST			0	0	8M	1M	Hail (1.25)
		Numerous observations of large hail were reported by spotters, amateur radio operators and National Weather Service personnel. The hail damaged several vehicles in the Billings area, and also caused heavy damage to crops.							
Park County									
Wilsall	31	1525MST			0	0			Hail (0.75)
Yellowstone County									
Billings	31	1530MST			0	0			Thunderstorm Wind (G52)
		A spotter estimated a 60 mph wind gust in Billings. The Billings communications center reported that a tree was downed at 15th and Poly, and an amateur radio operator reported several tree limbs were down at 17th and Lewis.							
Yellowstone County									
Billings	31	1530MST 1700MST			0	0			Urban/Sml Stream Fld
		Street flooding was reported throughout Billings. Several underpasses were flooded and about a dozed manhole covers were flooded off.							
Park County									
15 NE Livingston	31	1550MST			0	0			Hail (0.75)
Rosebud County									
Birney	31	1755MST			0	0			Hail (0.75)
Rosebud County									
Ashland	31	1847MST 1915MST			0	0			Heavy Rain
		A spotter reported one inch of rainfall in 28 minutes from a thunderstorm.							
Carbon County									
12 SW Red Lodge	17 23	1800MST 1200MST			0	0	525K		Wild/Forest Fire
		Dry lightning set off a wildfire which burned 133 acres near the Parkside Campground in the Beartooth National Forest.							

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Rosebud County									
20 SW Colstrip	17	1800MST			0	0	200K		Wild/Forest Fire
	19	1200MST							
A wildfire which was believed to have been set by lightning burned 1850 acres on the Northern Cheyenne Reservation.									
<u>MONTANA, West</u>									
Missoula County									
Lolo Hot Spgs	03	1425MST			0	0			Hail (1.75)
Golf ball sized hail was reported.									
Missoula County									
Huson	03	1504MST			0	0			Thunderstorm Wind (G56)
55-65 mph wind gusts were reported in a thunderstorm.									
Missoula County									
Missoula	03	1507MST			0	0			Hail (2.50)
		1532MST							
A thunderstorm caused a 59 mph wind gust, recorded at the Missoula airport at 307 pm MST, and many reports of large hail were received, the largest being tennis ball sized in the Target Range area at 315 pm. Many trees were blown down, homes had extensive roofing damage, and vehicles had damage from the hail. Nine-tenths of an inch of rain was recorded at the airport in 20 minutes, causing flooding of low lying areas.									
Ravalli County									
Victor	03	1535MST			0	0			Thunderstorm Wind (G52)
A thunderstorm wind gust was reported to 60 mph.									
Ravalli County									
Hamilton	03	1540MST			0	0			Thunderstorm Wind (G59)
A wind gust to 68 mph from a thunderstorm was reported in Hamilton.									
Lake County									
St Ignatius	03	1640MST			0	0			Thunderstorm Wind (G52)
Thunderstorm winds caused a Cottonwood tree to be blown onto an office building in St. Ignatius.									
Powell County									
Deer Lodge	03	1655MST			0	0			Hail (0.75)
Hail to 3/4 inch fell in a thunderstorm.									
Granite County									
Nimrod	03	1720MST			0	0			Thunderstorm Wind (G52)
Thunderstorm winds caused fallen Cottonwood trees and Douglas Fir trees uprooted, occurred 13 miles southwest of Nimrod on Rock Creek. Lightning caused a brief fire in a yard after it hit a tree and downed a power line.									
Lake County									
Big Arm	04	1552MST			0	0			Hail (0.75)
Hail reported in a thunderstorm covered the ground.									
Missoula County									
Lolo to Missoula	04	1710MST			0	0			Hail (0.75)
		1751MST							
Thunderstorms produced 3/4 inch hail from Lolo to Missoula.									
Missoula County									
Evaro	04	1943MST			0	0			Hail (1.00)
One inch diameter sized hail was reported.									
Deer Lodge County									
Anaconda	03	1630MST			0	0			Hail (1.50)
		1640MST							
Hail to one and a half inches in diameter fell 3 miles west of Anaconda.									
Powell County									
Central Portion	03	1700MST			0	0			Flash Flood
		1800MST							
Thunderstorms caused 10 to 15 feet of water to wash out mainly dirt roads between Nevada Lake and Avon, with damage to Montana Highway 141.									
Sanders County									
Noxon	09	0535MST			0	0			Hail (0.75)
Hail to 3/4 inch occurred at Noxon.									
Missoula County									
Clinton	03	1715MST			0	0			Thunderstorm Wind (G56)
Thunderstorm wind gusts were estimated to 65 mph at Clinton.									

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>MONTANA, West</u>									
Lincoln County									
Libby	10	1223MST			0	0			Tstm Wind/Hail
Half inch hail and wind gusts in excess of 40 mph caused 2-foot diameter trees to be broken in half.									
Ravalli County									
Darby	10	1610MST			0	0			Thunderstorm Wind (G52)
Thunderstorm winds caused structural damage inside a house as stress on the roof made its walls buckle.									
Missoula County									
Missoula	10	1625MST 1645MST			1	0	260K		Thunderstorm Wind (G60)
Thunderstorm wind gusts ranging from 55 to 69 mph were reported from Frenchtown through Missoula. A large portion of the roof of the fire lab at the Smokejumper Center was blown off with damage estimate of \$250,000. One man died in Frenchtown as he sought shelter under a tree and it fell on him. A house trailer was blown on its side a half mile north of exit 96 of Interstate 90, while 8 or 9 power poles were broken in half near the Stone Container plant. A wind gust to 61 mph was recorded at Missoula Airport. M70UT									
Ravalli County									
Hamilton	10	1655MST			0	0			Thunderstorm Wind (G59)
A 68 mph thunderstorm wind gust was reported.									
Lake County									
Arlee to Polson	10	1658MST 1919MST			0	0			Thunderstorm Wind (G61)
An estimated 60-70 mph wind gust blew an Elm tree down in Arlee while other trees had 4 inch diameter limbs broken off. Houses lost roofs in Ravalli and also near Polson. Thirty to forty boats were damaged or sunk on Flathead Lake along Rocky Point Rd between 515-530 PM MST.									
Missoula County									
Seeley Lake	10	1715MST			0	0			Thunderstorm Wind (G52)
Trees were blown down in Seeley Lake during a thunderstorm.									
Deer Lodge County									
Anaconda	11	0345MST			0	2			Thunderstorm Wind (G60)
Three cars were destroyed and two people hospitalized with minor injuries. About 20 trees were blown down in Washoe Park.									
Powell County									
Deer Lodge	11	1238MST			0	0			Hail (0.75)
Hail to 3/4 inch was reported in a thunderstorm.									
Missoula County									
Missoula	08	1155MST			1	1			Lightning
Two people were struck by lightning on Blue Mountain and one died. M19UT									
Mineral County									
Superior	22	1840MST			0	0			Hail (1.75)
Hail to 1.75 inches in diameter fell in a thunderstorm									
Silver Bow County									
Butte	30	1500MST			0	0			Flash Flood
Torrents of rain and hail fell on Butte in an hour-long thunderstorm which dumped over 2 inches of rain and hail over most of urban Butte. Blacktail Creek was over its banks in many areas. Silver Bow Creek, which normally has little or no water in the summer, was running like a river. Montana and Harrison Ave. streets were flooded and impassable during the peak of the storm. Debris from the hill washed down large rocks and boulders, which covered many of the streets in the up-town area. Underground power lines were washed out with residents without power for two to three days. Many private homes suffered flooded basements, yards and garages. Two trailer parks, located at the bottom of hills, suffered major damage. Centerville Volunteer Fire Dept. had major water damage.									
<u>NEBRASKA, Central</u>									
Cherry County									
5 NNW Valentine	01	2104CST			0	0	5K		Hail (1.75)
Cherry County									
Valentine	01	2130CST			0	0			Hail (0.75)
Garden County									
4 N Oshkosh	02	2100MST			0	0	10K		Thunderstorm Wind
Thunderstorm winds caused extensive tree damage.									
Blaine County									
9 NNW Brewster	03	0020CST			0	0			Hail (0.75)
Rock County									
6 SW Rose	03	0205CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEBRASKA, Central									
Garfield County 19 N Burwell	03	0240CST			0	0	5K		Thunderstorm Wind
									Several large trees blown down.
Arthur County Arthur	04	2230MST 2345MST			0	0	50K		Flash Flood
									Rainfall of approximately 2.50 inches in 20 minutes caused flash flooding in the community of Arthur. There was extensive damage to streets and roads, basements flooded, and water in homes and businesses.
Brown County 9 SW Johnstown to 9 SSE Johnstown	06	1312CST 1328CST	10	200	0	0	15K		Tornado (F1)
									Tornado traveled through open rangeland, damaging several windmills and trees.
Brown County 9 S Ainsworth	06	1340CST	0.1	25	0	0			Tornado (F0)
									Brief tornado touch down in open rangeland.
Brown County 4 S Ainsworth	06	1355CST			0	0			Hail (0.88)
Brown County 12 S Long Pine	06	1400CST	0.1	25	0	0			Tornado (F0)
									Brief tornado touch down in open rangeland.
Holt County O Neill	06	1515CST			0	0	50K		Thunderstorm Wind
									Thunderstorm downburst winds blew several large trees onto homes and vehicles. Several small buildings were damaged.
Holt County 11 E O Neill to 18 ENE O Neill	06	1530CST 1545CST			0	0	75K	50K	Thunderstorm Wind
									Thunderstorm winds damaged several farms. A large barn was destroyed, center pivot irrigation system destroyed. Extensive tree and crop damage.
Garden County 15 N Oshkosh	11	1815MST			0	0	5K		Thunderstorm Wind
									Several large trees blown down.
Lincoln County 5 N Wallace	14	1915CST			0	0			Hail (0.75)
Lincoln County 2 E North Platte	14	1935CST			0	0			Hail (0.75)
Lincoln County 10 S North Platte	14	1935CST			0	0			Hail (1.00)
Lincoln County 6 S North Platte	14	2000CST			0	0			Hail (0.75)
Cherry County 40 SSW Merriman	14	2020MST			0	0			Hail (0.75)
Cherry County 32 S Merriman	15	0115MST			0	0	5K		Thunderstorm Wind
									Large tree branches blown down.
Cherry County 39 SSE Merriman	15	0215MST			0	0	10K		Hail (0.75)
									Extensive tree damage due to thunderstorm winds. Tree blown onto roof of house.
Hooker County Mullen	15	0245MST			0	0	10K		Thunderstorm Wind
									Thunderstorm winds caused extensive tree damage in the community of Mullen.
Logan County Stapleton	15	0455CST			0	0			Hail (0.88)
Lincoln County 25 NE North Platte to 25 NE Nichols	15	0510CST			0	0	5K	75K	Hail (1.75)
									Hail broke windows and damaged roof of house. Extensive crop damage.
Cherry County Valentine Arpt	18	2021CST			0	0			Thunderstorm Wind (G61)
Keya Paha County 22 NW Springview	18	2040CST			0	0	5K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NEBRASKA, Central</u>									
Several large tree limbs blown down.									
Keith County 3 SSE Paxton	21	1852MST			0	0			Hail (0.88)
Lincoln County North Platte	21	2015CST			0	0			Hail (0.75)
Lincoln County 2 N North Platte	21	2035CST			0	0			Hail (0.75)
Custer County 5 SW Merna	21	2105CST			0	0			Hail (0.75)
Lincoln County 10 S North Platte	21	2118CST			0	0			Hail (1.50)
Lincoln County 20 NE Maxwell	21	2130CST			0	0			Hail (0.75)
<u>NEBRASKA, East</u>									
Colfax County Howells	03	0457CST			0	0			Thunderstorm Wind (G56)
Knox County Niobrara	06	1535CST			0	0			Thunderstorm Wind (G52)
Cedar County 1 W Menominee	06	1605CST			0	0			Thunderstorm Wind (G61)
Knox County Creighton	06	1540CST			0	0			Thunderstorm Wind (G70) Part of firehall roof caved in. Silo destroyed. Grain bin destroyed. Numerous trees downed and some uprooted. A barn roof was damaged.
Cedar County Bow Vly	06	1610CST			0	0			Thunderstorm Wind (G60) Roofs damaged. Trees downed.
Cedar County St Helena	06	1612CST			0	0			Thunderstorm Wind (G61) Dog house destroyed.
Pierce County 5 NW Pierce	06	1615CST			0	0			Thunderstorm Wind (G52)
Pierce County Osmond	06	1630CST			0	0	20K		Thunderstorm Wind (G52) Large trees downed. One of the trees fell on a home. Barn damaged.
Wayne County Wayne	06	1646CST			0	0			Thunderstorm Wind (G61) Trees downed.
Madison County 6 W Norfolk	06	1700CST			0	0			Thunderstorm Wind (G58) At least one six inch diameter tree limb blown down.
Cuming County Wisner	06	1708CST			0	0			Thunderstorm Wind (G52)
Thurston County Winnebago	06	1722CST			0	0			Thunderstorm Wind (G65)
Platte County 9.5 SE Creston	06	1730CST			0	0			Thunderstorm Wind (G61)
Cass County 4 SSE Plattsmouth	16	1605CST			0	0			Hail (0.75)
Cass County Elmwood	16	1610CST			0	0			Hail (1.75)
Cass County Weeping Water	16	1610CST			0	0			Hail (0.88)
Otoe County Syracuse	16	1620CST			0	0			Hail (1.75)
Saunders County Wahoo	16	1715CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEBRASKA, East									
Saunders County									
Wahoo	16	1730CST			0	0			Hail (1.00)
Lancaster County									
Waverly	16	1809CST			0	0			Hail (0.75)
Douglas County									
Valley	16	1817CST			0	0			Thunderstorm Wind (G50)
Douglas County									
Elkhorn to 1 E Elkhorn	16	1826CST 1835CST			0	0			Hail (1.25)
Otoe County									
1 W Syracuse	16	1921CST			0	0			Hail (1.00)
Cedar County									
3 S Obert	21	0500CST			0	0			Hail (0.88)
Douglas County									
1 NW Bennington	21	2242CST			0	0			Hail (0.75)
Stanton County									
1 N Stanton to .5 SE Stanton	06	1710CST			0	0			Thunderstorm Wind (G56)
									Trees downed just north of Stanton and in the Stanton city park.
Knox County									
4 WSW Wausa to 2 WSW Wausa	06	1550CST 1552CST	2	50	0	0			Tornado (F0)
									Windows blown out of pumper truck.
Dodge County									
Countywide	05	0330CST 0830CST			0	0			Flash Flood
Washington County									
Countywide	05	0330CST 0830CST			0	0	240K	100K	Flash Flood
									Heavy rain from thunderstorms produced flash flooding. Sewer systems in the Fremont area backed up into basements of homes causing damage. York Creek near Herman and Bell Creek just east of Arlington overflowed their banks. Some homes east of Arlington had to be evacuated. Eight of these homes were flooded. A portion of U.S. highway 30 near Arlington had to be closed for a period of time. Nearly 3000 acres of soybeans were destroyed near Arlington.
Pierce County									
Mc Lean	06	1643CST			0	0			Thunderstorm Wind (G57)
									Many trees downed.
Pierce County									
3 N Plainview to 6 N Plainview	06	1615CST			0	0	20K		Thunderstorm Wind (G56)
									One grain bin destroyed and another damaged.
Cedar County									
Randolph	06	1620CST			0	0	70K		Thunderstorm Wind (G64)
									50 X 80 foot honey storage barn on the west side of Randolph was destroyed. Roof on the Randolph High School was damaged.
Knox County									
2 E Lindy to Crofton	06	1553CST			0	0			Thunderstorm Wind (G65)
									High winds caused some damage to farms. Trees downed.
Washington County									
1.5 NE Arlington	05	0715CST			0	0	20K		Thunderstorm Wind (G55)
									Hog confinement building destroyed.
Platte County									
6.5 NNE Columbus	07	2240CST			0	0	20K		Lightning
									Lightning struck a home causing a fire.
Saline County									
Countywide	29	1840CST 2300CST			0	0	50K	80K	Flash Flood
									Thunderstorm produced 5 to 7 inches of rain along the Turkey Creek just west of Wilber resulting in extensive agricultural damage and a number of secondary road closures. Some roads, bridges, and culverts were damaged.
Stanton County									
11 NW Stanton	03	0400CST			0	0			Lightning

Storm Data and Unusual Weather Phenomena

July 1998

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

NEBRASKA, East

Lightning struck a tree.

Saunders County									
Yutan	15	0330CST			0	0			Thunderstorm Wind (G52)
		Large tree downed.							

NEBRASKA, Extreme Northeast

Dixon County									
6 S Maskell	06	1650CST			0	0			Thunderstorm Wind (G52)

Dixon County									
9 N Dixon	06	1700CST			0	0	5K		Thunderstorm Wind (G52)
		Thunderstorm winds caused tree damage.							

Dakota County									
2 S Hubbard	06	1710CST			0	0			Thunderstorm Wind (G52)

NEBRASKA, Extreme Southwest

Hitchcock County									
8 SSE Culbertson	03	1650CST			0	0			Hail (0.75)
		1655CST							

Red Willow County									
6 N Danbury	15	0727CST			0	0			Hail (0.75)

Hitchcock County									
4.5 S Culbertson	15	0753CST			0	0			Hail (0.88)
		Also, reported 2.5 South of Culbertson.							

Red Willow County									
4 WNW Lebanon	29	1530CST			0	0			Hail (0.75)
		Tree limbs one inch in diameter were also blown down in Lebanon at 1530 CST.							

NEBRASKA, South Central

Thayer County									
Chester	04	1640CST			0	0	0	75K	Hail (0.88)

Dawson County									
5 E Cozad	06	1525CST	0.5	20	0	0	0	20K	Tornado (F0)

Dawson County									
8 N Lexington to 8.5 N Lexington	06	1545CST	0.5	20	0	0	0	20K	Tornado (F0)

Two small and short lived tornadoes were spawned from an isolated thunderstorm over central Dawson county. In each case, reports indicated the tornadoes lasted only a few seconds and touched down in the middle of cornfields.

Dawson County									
Lexington Arpt	14	2330CST			0	0	5K	0	Thunderstorm Wind (G61)
		Outflow winds from nearby decaying thunderstorms gusted to 70 mph at the Lexington airport causing minor tree and power line damage.							

Fillmore County									
Ohioa	21	1850CST			0	0	0	0	Thunderstorm Wind (G52)

Greeley County									
4 E Greeley	21	2105CST			0	0	0	0	Hail (0.75)

Webster County									
6 S Blue Hill	21	1810CST			1	0	0	0	Lightning
		A Hastings, NE man who died while working on a road construction project was killed by a lightning strike. He was operating an asphalt roller at the time of the strike. He was taken to a Hastings hospital where he was pronounced dead on arrival. M42EQ							

NEBRASKA, West

Dawes County									
Chadron Arpt	01	2357MST			0	0	0	0	Thunderstorm Wind (G53)
		A storm produced a wind gust of 61 mph at the Chadron Airport.							

Scotts Bluff County									
Scottsbluff	02	1925MST			0	0	0	0	Hail (0.75)
		1944MST							

Kimball County									
9 N Dix	02	1938MST			0	0	3K	0	Thunderstorm Wind (G69)
		1939MST							

A storm produced a wind gust of 80 mph 9 miles north of Dix, which damaged a roof of a home.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEBRASKA, West									
Cheyenne County Potter	02	0746MST 0747MST			0	0	0	0	Thunderstorm Wind (G52)
Cheyenne County Dalton	02	2017MST 2019MST			0	0	0	0	Thunderstorm Wind (G52)
Dawes County Whitney	02	2205MST 2212MST			0	0	6K	0	Hail (1.75)
		A storm produced golfball size hail in Whitney.							
Kimball County Kimball	02	1918MST			0	0	0	0	Thunderstorm Wind (G52)
		A wind gust of 60 mph occurred in a thunderstorm that moved through the town of Kimball.							
Morrill County 15 SW Bridgeport	02	2002MST 2004MST	0.1	10	0	0	0	0	Tornado (F0)
		A tornado briefly touched down over open country 15 miles southwest of Bridgeport.							
Morrill County 11 SE Redington	02	2025MST			0	0	0	0	Thunderstorm Wind (G69)
		A thunderstorm produced a gust of 80 mph 11 miles southeast of Redington.							
Morrill County 8 SE Broadwater	02	2039MST			0	0	0	0	Thunderstorm Wind (G52)
		A storm produced wind gusts up to 60 mph 8 miles southeast of Broadwater.							
Dawes County 3 W Whitney	02	2155MST 2159MST			0	0	5K	0	Hail (1.75)
		A storm produced golf ball size hail 3 miles west of Whitney.							
Kimball County 12 W Kimball	05	1455MST 1457MST	0.5	10	0	0	0	0	Tornado (F0)
		A tornado touched down 12 miles west of Kimball over open country and quickly dissipated.							
Box Butte County 15 W Hemmingford	07	1655MST 1659MST			0	0	0	0	Hail (1.00)
		A storm produced quarter size hail 15 miles west of Hemmingford.							
Scotts Bluff County Scottsbluff	07	1820MST 2015MST			0	0	1K	0	Urban/Sml Stream Fld
		A thunderstorm moved through Scottsbluff and dropped 1 to 2 inches of rainfall in the area. Urban flooding was reported by the local law enforcement agency.							
Box Butte County 15 WSW Alliance	07	1755MST			0	0	0	0	Thunderstorm Wind (G50)
Scotts Bluff County 10 NE Scottsbluff	07	1955MST 2005MST			0	0	10K	0	Thunderstorm Wind (G50)
		Trees were blown down by thunderstorm winds along county roads 10 miles northeast of Scottsbluff.							
Dawes County 20 SW Chadron	08	1148MST 1153MST	0.1	10	0	0	0	0	Tornado (F0)
		A tornado briefly touched down over open country 20 miles southwest of Chadron.							
Dawes County 20 SW Chadron	08	1332MST 1600MST			0	0	0	0	Urban/Sml Stream Fld
		Up to 4 inches of rain fell from thunderstorms 20 miles southwest of Chadron, which caused local flooding of streams in the area.							
Kimball County Countywide	08	1842MST 2040MST			0	0	2K	0	Urban/Sml Stream Fld
		Stationary thunderstorms produced up to 2.5 inches of rain across Kimball County. Water was flowing over roads in northern Kimball County.							
Kimball County 20 W Kimball to 13 E Kimball	11	1450MST 1457MST			0	0	0	0	Thunderstorm Wind (G56)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEBRASKA, West									
Kimball County Bushnell	11	1449MST 1450MST			0	0	0	0	Thunderstorm Wind (G56)
Banner County 11 W Harrisburg	11	1632MST 1640MST			0	0	0	0	Hail (0.88)
Kimball County 25 NW Kimball	15	1635MST 1639MST			0	0	4K	0	Hail (1.75)
		A storm produced golfball size hail 25 miles northwest of Kimball.							
Kimball County 15 W Kimball	15	1700MST 1702MST	0.1	10	0	0	0	0	Tornado (F0)
		A short lived-weak tornado occurred 15 miles west of Kimball.							
Kimball County 12 NW Kimball	15	1754MST			0	0	0	0	Thunderstorm Wind (G61)
Kimball County 17 SW Kimball	15	1720MST			0	0	0	0	Thunderstorm Wind (G55)
Kimball County 12 NW Kimball	21	1455MST			0	0	0	0	Thunderstorm Wind (G62)
Kimball County 5 N Kimball	21	1525MST 1530MST			0	0	7K	0	Hail (1.75)
		A thunderstorm produced golfball size hail, 5 miles north of Kimball.							
Kimball County Kimball Arpt	21	1550MST			0	0	0	0	Thunderstorm Wind (G54)
Kimball County 7 S Dix to 11 S Dix	21	1555MST 1605MST			0	0	0	0	Hail (1.00)
Kimball County 2 N Kimball to 1 S Dix	21	1810MST 2205MST			0	0	15K	20K	Flash Flood
		Thunderstorms produced rainfall amounts of 3 to 6 inches around the Kimball area. Flood waters covered roads from 2 miles north of Kimball to 1 mile south of Dix. The flood waters also damaged or destroyed bean, wheat and corn crops around the area.							
Banner County Countywide	21	1910MST 2100MST			0	0	2K	25K	Urban/Sml Stream Fld
		Thunderstorms produced 2 to 4 inches of rain over Banner County, which resulted in small stream flooding and water flowing over county roads. The flood waters also damaged or destroyed sunflower, millet, corn, dry bean and wheat crops.							
Kimball County 15 N Kimball	21	1525MST 1529MST			0	0	0	10K	Tstm Wind/Hail
		A storm produced 70 mph wind gusts and quarter size hail 15 miles north of Kimball. The wind driven hail damaged or destroyed wheat, corn and bean crops in the area.							
Cheyenne County 23 W Sidney	21	1655MST 1705MST			0	0	0	11K	Tstm Wind/Hail
		A storm produced a wind gust of 70 mph and walnut size hail 23 miles west of Sidney. The wind driven hail damaged wheat, beans and millert crops in the area.							
Banner County Countywide	25	1437MST 1645MST			0	0	3K	0	Urban/Sml Stream Fld
		Thunderstorms produced up to 2 inches of rainfall across Banner County which resulted in flooding of some county roads. Mudslides were also reported in the Rocky Hollow Area.							
Cheyenne County Countywide	25	1655MST 1900MST			0	0	1K	0	Urban/Sml Stream Fld
		Thunderstorms produced 2 to 3 inches of rainfall over Cheyenne County, with isolated amounts of 4.5 inches. Some streets in Sidney were covered with 6 to 18 inches of water. Other roads around the county had water flowing over them.							

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NEBRASKA, West</u>									
Kimball County 7.5 S Bushnell	29	1425MST 1730MST			0	0	0	0	Flash Flood
									Thunderstorms produced 1 to 2 inches of rainfall 7.5 miles south of Bushnell. County road 17 was closed in this area due to the flood waters.
Cheyenne County Sidney	01	0030MST			0	0	1K	0	Lightning
									Half of the town of Sidney was without power after a lightning bolt hit one of the main lines coming from a substation north of Sidney.
Kimball County Kimball	15	1830MST 1930MST			0	0	15K	0	Flash Flood
									Thunderstorms produced up to 2 inches of rain in the Kimball area, resulting in the shutting down of the underpass of Highway 71 and the Union Pacific tracks. A few local businesses received damage as well.
Cheyenne County Countywide	21	1900MST 2230MST			0	0	2K	0	Urban/Sml Stream Fld
									Thunderstorms produced 3 inches of rain across Cheyenne County, which caused the flooding of two county roads.
<u>NEVADA, North</u>									
Eureka County Eureka Arpt	23	1430PST 1530PST			0	0			Flash Flood
									State Highway 278 was under water due to flash flooding at mile marker 27, north of Eureka in the Garden Pass area.
White Pine County Southwest Portion	23	1430PST 1530PST			0	0			Flash Flood
									A 10 foot section of State Highway 379 (Duckwater Road) was washed out, 3 miles before the end of pavement.
Elko County Jiggs	22 26	1600PST 1600PST			0	0			Wild/Forest Fire
									A lightning caused wild fire on Cedar Ridge, just northwest of Jiggs burned 700 acres of a federally protected wild land study area.
White Pine County Ely	23	1155PST 1200PST	0.1	.1	0	0			Tornado (F0)
									A brief tornado touched down in Mosier Canyon, 5 miles southeast of Ely. No damage occurred as this tornado remained over open country.
Humboldt County (Wmc)Winnemucca Muni	29 31	1600PST 2000PST			0	0			Wild/Forest Fire
									A lightning caused wild fire 7 miles north of Winnemucca airport burned 2700 acres and destroyed 1 outbuilding but no injuries were reported.
<u>NEVADA, South</u>									
Clark County Henderson	09	1215PST			0	0	1.5M		Lightning
Clark County Henderson	09	1300PST 1830PST			0	1	10K		Flash Flood
Clark County Henderson	09	1325PST			0	0			Flash Flood
									Heavy rain producing thunderstorms formed over the southeast side of the Las Vegas Valley during a two hour period. At the onset of the storms, a lightning strike set fire to a large house which completely destroyed the structure. Over one inch of rainfall led to flash flooding which forced the closure of several streets in Henderson and East Las Vegas. One car was stranded and damaged by flood waters early in the afternoon and another car was caught in flood waters in the Las Vegas Wash during the evening, long after the thunderstorms had ended.
Clark County Logandale	19	2215PST			0	0			Thunderstorm Wind (G52)
									A weather spotter reported several tree limbs breaking off in thunderstorm winds estimated at 60 mph.
Clark County Mead Lake	19	2252PST			0	0	1.3M		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
NEVADA, South									
Clark County Las Vegas	19	2315PST			0	0			Thunderstorm Wind (G53)
Clark County Las Vegas to Henderson	20	0030PST 0630PST			1	0	50K		Flash Flood
		M?VE							
Clark County Las Vegas	20	0100PST			0	0	11M		Heavy Rain
Clark County Las Vegas	20	0530PST			0	0	250K		Lightning
			Severe thunderstorms moved into the Las Vegas Valley and nearby Lake Mead bringing wind gusts in excess of 60 mph and heavy showers which dumped between 1.50 and 2.25 inches of rain overnight. Several marinas on Lake Mead suffered extensive wind damage and numerous roads were washed out. In the Las Vegas Valley, heavy rain and flooding produced the majority of damage. Major flooding began in the early morning of July 20 and kept washes filled for several hours with numerous swift water rescues performed during the period. One man apparently died of a heart attack while rescue personnel were trying to remove him from his car. Rapidly accumulating water and a clogged drainage system caused the roof of the Palace Station Hotel and Casino to collapse...causing millions of dollars in damage. A few hours later, the same hotel and casino caught fire when it was struck by lightning.						
Clark County Las Vegas	21	1455PST 1700PST			0	0	30K		Flash Flood
			A series of thunderstorms dumped heavy rain on the Las Vegas Valley producing significant street flooding and flowing washes. Three occupants of a car caught in flood waters at Desert Inn and Durango had to be rescued by the fire department. Another person drove a luxury car into deep water at the intersection of Pecos and Twain Avenue, essentially totalling the vehicle. She escaped without injury. Several other streets and intersections were inundated for a few hours.						
Esmeralda County West Central Portion	23	1750PST 1900PST			0	0	40K		Flash Flood
			Strong thunderstorms with very heavy rain produced significant flooding which washed out several roads including Highway 266, between Lida and Palmetto, and Highway 264 in the Fish Lake Valley. Twelve people were rescued from stranded vehicles and at least three cars were swept away by flood waters.						
Clark County Sloan	24	1430PST			0	5			Lightning
Clark County 8 S Las Vegas	24	1445PST			0	0			Thunderstorm Wind (G56)
Clark County Henderson	24	1540PST			0	0	15K		Lightning
			A severe thunderstorm formed near Sloan and moved north into the Las Vegas Valley. Lightning from the storm struck five rescue personnel as they rendered aid to occupants of an overturned truck along Interstate 15 near Sloan. As the storm moved north, outflow winds estimated at 65-70 mph were observed by a NWS meteorologist near Lake Mead Drive and Interstate 15. Before dissipating, the thunderstorm produced another lightning strike which set fire to an apartment building in Henderson.						
Clark County 7 SE Nelson	21	1530PST			0	0	15K		Flash Flood
			Flood waters washed out two access roads in the Lake Mead National Recreation Area. Eldorado Canyon and Aztec Wash roads were closed for a few weeks while debris was removed and repairs were made.						
NEVADA, West									
Lyon County Fernley	23	2200PST			0	0	0		Thunderstorm Wind (G60)
			Storm survey on 07/24/98 reported 6 inch diameter limbs blown off trees with evidence of mud and water across roads from previous night's thunderstorms. Estimated peak wind gust 60 knots.						
Carson City (C) Central Portion	26	1345PST 1347PST			0	0	1K		Thunderstorm Wind (G60)
			Thunderstorm winds estimated to 60 knots knocked over a tree which downed power and telephone lines near the Carson River 3 miles east of Carson City NV.						
Lyon County Yerington	28	1659PST 1700PST			0	0			Thunderstorm Wind (G52)
			Peak wind gusts in thunderstorm estimated at 52 knots. No damage reported.						

Storm Data and Unusual Weather Phenomena

July 1998

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

NEVADA, West

Churchill County

Fallon 29 2129PST
2130PST 0 0 0.50K **Thunderstorm Wind (G60)**

Estimated peak wind gusts to 60 knots from thunderstorm outflow. Power lines, trees and a shed blown over.

Washoe County

Black Spgs 30 1335PST 2 50 0 0 **Tornado (F0)**
1337PST

Weak tornado observed from NWS office near Black Springs and Raleigh Heights north of Reno NV. Tornado remained on ground for two minutes before dissipating. No damage reported.

Washoe County

Stead Afb 30 1224PST 0 0 **Thunderstorm Wind (G50)**
1225PST

Peak wind gust of 50 knots from thunderstorm recorded on Desert Research Institute wind gust recorder. No damage reported.

Storey County

Sppc Tracy Pwr Stn 30 1713PST 0 0 **Hail (0.75)**
1714PST

Golf ball size hail reported by Storey County Sheriff near Lockwood NV. No damage reported.

NEW HAMPSHIRE, North and Central

NOT RECEIVED.

NEW HAMPSHIRE, Southern

NHZ011

Cheshire
10 1438EST 0 0 **Strong Winds**

In Cheshire County in the town of Swanzey, wind gusts associated with a heavy rain shower were estimated up to 40 to 50 mph. The strong winds knocked down one tree, which subsequently fell onto a power line, bringing down some wires.

NEW JERSEY, Northeast

Passaic County

West Milford 17 1620EST 0 3 **Lightning**

As thunderstorms moved northeast across the area, they produced lightning. Lightning struck near 3 people (2 adults and 1 child) at the Awosting Section of Greenwood Lake in West Milford. The people suffered from burned feet, arms, and faces.

NEW JERSEY, South and Northwest

Somerset County

5 SE Mt Bethel 17 1920EST 0 0 0 0 **Hail (0.75)**

Cumberland County

Bridgeton 23 2145EST 0 0 **Thunderstorm Wind (G50)**

A severe thunderstorm pulled down numerous large limbs in and around Bridgeton.

NJZ008>010-012>026

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

20 0900EST 0 0 **Excessive Heat**
23 1700EST

A heat wave affected Central and Southern New Jersey from July 20th through the 23rd. This heat wave brought the highest temperatures of the year, mainly across the central and eastern parts of the state. The hottest days of the heat wave were the 21st and 22nd. Cloudiness on the 22nd prevented temperatures from rising even higher around the local Philadelphia area as the center of the hot air mass was over the Middle Atlantic States. A weak trough brought in slightly cooler air on the 23rd. A stronger cold front moved through the region late in the day on the 23rd and brought in a much drier and cooler air mass through the upcoming weekend (July 25th and 26th). Although a few locations still reached 90 degrees on the 24th, humidity levels were very low and tolerable. Atlantic Electric set a new usage record on the 22nd with 2,230 megawatts/hour. The highest temperatures included 98 degrees at the Atlantic City International Airport in Pomona and Pennsauken (Camden County), 97 degrees in Manahawkin and Toms River (Ocean County), and Belle Mead (Somerset County), 96 degrees at the Marina in Atlantic City (a new record for the day) and in Mount Laurel (Burlington County), 96 degrees in New Brunswick (Middlesex County) and Morristown (Morris County), 95 degrees in Millville (Cumberland County) and Freehold and Howell (Monmouth County), 94 degrees in Wertsville (Hunterdon County) and Cape May Courthouse and Dennis Township (Cape May County), 93 degrees in Piney Hollow (Gloucester County) and 92 degrees in Trenton (Mercer County).

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 0 **Unseasonably Dry**

July 1998 started a run of drier than normal weather across New Jersey. On a county weighted average, rainfall totals for the month

Storm Data and Unusual Weather Phenomena

July 1998

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

of July were between 1.5 and 3.0 inches and averaged about half of normal. The driest conditions occurred across Hunterdon, Somerset and Middlesex Counties where only about 30 percent of the normal July rainfall fell. The lack of rain started to stress crops in Central New Jersey. Farmers in Central New Jersey rely more on rainfall than irrigation. The dry weather also forced Chester, Mount Olive and Parsippany in Morris County to impose some water use restrictions. The July monthly rainfall total at the Atlantic City International Airport was 1.40 inches. In nearby Pennsylvania, monthly rainfall totals were only 1.79 inches at the Philadelphia International Airport and 1.18 inches at the Lehigh Valley International Airport.

NEW MEXICO, Central and North

Bernalillo County

Isleta **01** **0156MST** **0** **0** **Hail (1.00)**

Socorro County

Magdalena **01** **1238MST** **0** **0** **Hail (1.00)**

A brief hail storm damaged trees and broke several winds.

Colfax County

18 S Raton **01** **1534MST** **0** **0** **Hail (0.75)**

Torrance County

Moriarty **01** **1605MST** **0** **0** **2K** **Thunderstorm Wind**

Thunderstorm winds caused barn roof damage in Moriarty.

Rio Arriba County

Espanola to El Rito **04** **1730MST**
1930MST **0** **0** **100K** **Flash Flood**

Brief heavy rain across southern Rio Arriba County produced considerable arroyo and acequia irrigation system flooding. Several homes and two elementary schools were damaged in Espanola, while county roads and bridges suffered washouts near El Rito.

Socorro County

Alamo **06** **1700MST**
1900MST **0** **0** **50K** **Flash Flood**

A major road near the Alamo Navajo Headquarters was washed out by heavy rain and swift runoff. Nearly 100 families on the reservation northwest of Socorro were forced into a 15 mile detour.

Rio Arriba County

Espanola to Abiquiu **07** **1600MST**
1930MST **0** **0** **300K** **Flash Flood**

Heavy rain and fast runoff again flooded arroyos and small channels some of which had not been cleared of debris from rain on July 4th. Damage to homes, personal property losses, plus county road washouts were reported at Abiquiu, Coyote, Lindrieth and San Pedro. Losses and damage due to flooding during the week in southern Rio Arriba County were estimated near \$400,000.

Colfax County

Eagle Nest **07** **1145MST** **0** **1** **Lightning**

A 38 year old man was injured slightly when struck by lightning while working outside at Eagle Nest.

Union County

Clayton Arpt **07** **1705MST** **0** **0** **Thunderstorm Wind (G56)**

Colfax County

17 SW Raton **08** **1645MST** **0** **0** **Flash Flood**

A car was washed off the road southwest of Raton.

Quay County

Logan **08** **1722MST** **0** **0** **Hail (0.88)**

Guadalupe County

Pastura **08** **1724MST** **0** **0** **Thunderstorm Wind (G61)**

Union County

Amistad **08** **1830MST** **0** **0** **Thunderstorm Wind (G52)**

Isolated strong thunderstorms moved across northeastern New Mexico producing brief heavy rain, downbursts of 55 to 70 mph and mostly small hail.

Rio Arriba County

El Rito **16** **1418MST** **0** **0** **Hail (0.88)**

Colfax County

4 W Angel Fire **16** **1425MST** **0** **0** **Hail (0.88)**

Small hail with some nickel sized stones covered the ground to 3 inches deep at Palo Flechado Pass (el. 9101ft) west northwest of Angel Fire.

Unusually strong thunderstorms developed over north central New Mexico along the Colorado border and then moved southward producing brief heavy rain and copious amounts of mostly small hail. Rare severe size hail was reported near El Rito and Angel Fire in the north central mountains. A rare squall line formed as the storms moved south into eastern Sandoval and northern Santa Fe counties. The line began to bow slightly as it moved over the Albuquerque Metro area producing gusty winds of 40 to 55 mph and several periods of hail over the Northeast Heights section of the city.

Storm Data and Unusual Weather Phenomena

July 1998

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

NEW MEXICO, Central and North

Rio Arriba County

Dulce	19	1830MST			0	0			Dry Microburst
--------------	-----------	----------------	--	--	----------	----------	--	--	-----------------------

Several sheds were damaged in Dulce where the Bureau of Indian Affairs office reported a microburst of 67 mph.

Rio Arriba County

15 NW Abiquiu	16	1530MST			0	0	5K		Flash Flood
----------------------	-----------	----------------	--	--	----------	----------	-----------	--	--------------------

Flash flooding along Arroyo Del Yeso filled roads with mud and clogged the bridge to Ghost Ranch with heavy debris.

Socorro County

Socorro	17	1500MST 1900MST			0	0	5K		Flash Flood
----------------	-----------	----------------------------	--	--	----------	----------	-----------	--	--------------------

Isolated heavy rain of near 1 inch an hour produced heavy street flooding in Socorro. Several small arroyos, filled with weeds and other debris overflowed and caused damage to several homes.

Socorro County

Bingham	23	1552MST 1800MST			0	0			Flash Flood
----------------	-----------	----------------------------	--	--	----------	----------	--	--	--------------------

Up to four inches of standing water was reported near Bingham after heavy rain of 0.90 inch in about 15 minutes. Low water crossings were flooded for about 2 hours.

Mckinley County

9 NE Gallup	19	1845MST			0	0	25K		Dry Microburst
--------------------	-----------	----------------	--	--	----------	----------	------------	--	-----------------------

A trailer home was overturned and destroyed by a microburst near the Springstead Trading Post.

Socorro County

Alamo	23	1700MST 1745MST			0	0	10K		Flash Flood
--------------	-----------	----------------------------	--	--	----------	----------	------------	--	--------------------

A downpour at Alamo Navajo Reservation washed out some of the repairs to a road damaged by flooding earlier in the month.

Santa Fe County

Santa Fe	23	1530MST 1630MST			0	1			Flash Flood
-----------------	-----------	----------------------------	--	--	----------	----------	--	--	--------------------

Santa Fe County

Santa Fe	23	1600MST			0	1	1K		Thunderstorm Wind
-----------------	-----------	----------------	--	--	----------	----------	-----------	--	--------------------------

A brief heavy thunderstorm produced copious small hail and gusty winds at Santa Fe. Runoff into the Santa Fe River nearly swept away a truck. A man, rescued by a tow truck, was slightly injured. Another man was slightly injured when a large tree blew down on his construction truck.

Valencia County

Belen	24	1455MST			0	0	3K		Flash Flood
--------------	-----------	----------------	--	--	----------	----------	-----------	--	--------------------

Heavy rain of 2.00 inches in about an hour produced widespread street flooding and minor flood damage to several homes and businesses in Belen.

Bernalillo County

Albuquerque	25	1515MST 1615MST			0	0	30K		Flash Flood
--------------------	-----------	----------------------------	--	--	----------	----------	------------	--	--------------------

Brief, but heavy rain flooded city streets in northeast Albuquerque. Ten to 15 cars stalled in flooded underpasses. Two women were trapped and had to be rescued by city fire department crews.

Torrance County

Clines Corners	30	1515MST 1535MST			0	0			Hail (0.75)
-----------------------	-----------	----------------------------	--	--	----------	----------	--	--	--------------------

San Miguel County

Las Vegas to Gallinas	30	1525MST 1630MST			0	0	2K		Flash Flood
------------------------------	-----------	----------------------------	--	--	----------	----------	-----------	--	--------------------

Heavy thunderstorms produced small hail and brief flash flooding from near Gallinas southeast into Las Vegas. Damage was limited to rural road washouts.

Quay County

San Jon to Ragland	30	1820MST 2000MST			0	0	1K		Flash Flood
---------------------------	-----------	----------------------------	--	--	----------	----------	-----------	--	--------------------

Quay County

Logan	30	1834MST			0	0			Hail (0.88)
--------------	-----------	----------------	--	--	----------	----------	--	--	--------------------

Quay County

Logan	30	1900MST 1930MST			0	1	60K		Thunderstorm Wind
--------------	-----------	----------------------------	--	--	----------	----------	------------	--	--------------------------

Two separate lines of thunderstorms formed over eastern New Mexico and then merged into a complex that produced very heavy rain, brief hail and strong wet microbursts over Quay County. One line of storms began at mid-afternoon from Raton to Las Vegas. This line moved southeastward and merged with a northward moving line which began south of Portales to north of Roswell. Torrential rains of 2 to 4 inches caused extensive road flooding as the line of storm merged over southern Quay County from San Jon and Wheatland west to Ragland. Storms bowed northward over the Logan and Ute Lake area of northern Quay County. A large

Storm Data and Unusual Weather Phenomena

July 1998

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

NEW MEXICO, Central and North

microburst overturned several recreational vehicles and destroyed a number of boat sheds west of Logan. Damage to lighter storage buildings and utilities extended along a path of about 1 mile. One minor injury was reported.

NMZ019

Chaves County Plains

13	1530MST 1600MST			0	8			Dust Storm
----	--------------------	--	--	---	---	--	--	-------------------

A sudden and localized dust storm along Highway 70-380 about 5-8 miles west of Roswell caused a six car pileup in low visibilities. At least 2 people required hospitalisation with 6 other minor injures. The dust was aggravated by gusty winds of 25-30 mph blowing over nearby fire-scorched rangeland.

NEW MEXICO, South Central and Southwest

Luna County

Deming	01	1820MST 1840MST		0	0			Tstm Wind/Hail
--------	----	--------------------	--	---	---	--	--	-----------------------

A severe thunderstorm produced wind gusts of 55 knots and hail to 3/4 inches in the city of Deming.

Dona Ana County

Ft Selden	08	1718MST 1722MST		0	0			Thunderstorm Wind (G72)
-----------	----	--------------------	--	---	---	--	--	--------------------------------

A wet microburst, associated with a strong thunderstorm, produced significant damage to a barn and several mobil homes in addition to several trees. Several utility poles were also damaged and there was localized street flooding. The damage path was roughly 200 yards by 500 yards.

Dona Ana County

Organ	22	1730MST 1830MST		0	0			Thunderstorm Wind (G50)
-------	----	--------------------	--	---	---	--	--	--------------------------------

A wet microburst produced damage to several mobile homes in a small area about 5 miles west of Organ. Three mobile homes were either tipped over or rolled, with two others shifted off their cinder block foundations. None of the mobile homes were tied down. In at least one case, localized flooding contributed to the damage.

NEW MEXICO, Southeast

Eddy County

Malaga	05	1800MST		0	0	0.50K		Thunderstorm Wind
--------	----	---------	--	---	---	-------	--	--------------------------

Several trees were uprooted along Duarte Road in Malaga.

Eddy County

Otis	05	1800MST		0	0	8K		Thunderstorm Wind
------	----	---------	--	---	---	----	--	--------------------------

Two barns and a carport were destroyed and three utility poles were downed near Otis.

Eddy County

3 E Malaga	05	1810MST 1830MST		0	0	10K		Thunderstorm Wind
------------	----	--------------------	--	---	---	-----	--	--------------------------

A wet microburst caused damage along Duarte Rd. east of Malaga. A mobile home lost its roof, two pole barns were destroyed, and a carport was heavily damaged.

Eddy County

Otis	05	1810MST		0	0	2.5K		Thunderstorm Wind
------	----	---------	--	---	---	------	--	--------------------------

A wet microburst knocked down 3 utility poles along U.S. Highway 285 in Otis.

Eddy County

(Cnm)Carlsbad Arpt	14	1730MST		0	0			Thunderstorm Wind (G54)
--------------------	----	---------	--	---	---	--	--	--------------------------------

The Cavern City Airport Observer reported a thunderstorm wind from 300 degrees at 54 knots.

NMZ027>029

Guadalupe Mountains Of Eddy County - Eddy County Plains - Lea

01	0000MST			0	0			Drought
31	2359MST							

Drought conditions continued in Southwest Texas and Southeast New Mexico. Agricultural losses will be great but will not be included until the end of the drought or the end of the harvest when totals are calculated. Rains were a little more plentiful in July than in the April through June period, but not nearly enough for the drought conditions to be eased.

NEW YORK, Central

Steuben County

North Portion	08	0900EST 1100EST		0	0	400K		Flash Flood
---------------	----	--------------------	--	---	---	------	--	--------------------

Storm Data and Unusual Weather Phenomena

July 1998

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

NEW YORK, Central

Slow moving thunderstorms with torrential rains affected northern sections of the county during the early and mid morning hours. Reports from skywarn spotters and cooperative observers indicated that anywhere from 2 to 3.5 inches of rain fell in less than a two hour period over the northern tier communities of the county.

Since ground conditions were already saturated from recent rain events, this heavy rainfall was more than adequate to send many creeks and streams out of their banks. The Mill Creek, Twelvemile Creek, and Kirkwood Creek all caused significant flooding over adjacent roadways. Routes 35 and 371 in Cohocton Township were closed for several hours. Meanwhile, a state of emergency was declared in Prattsburg as different branches of the Fivemile Creek washed out bridges and roadways. Yards and homes were also inflicted with water damage in this vicinity. Runoff from the aforementioned creeks and other local brooks caused road closures and substantial lowland flooding in sections of Wheeler, Bath, Avoca, and Pultney as well.

By early afternoon, water levels were declining. An assessment of damages following clean up efforts showed tallies approaching a half million dollars.

Tioga County Countywide

08	1030EST 1500EST	0	0	500K	Flash Flood
-----------	----------------------------	----------	----------	-------------	--------------------

The same batch of thunderstorms that dumped very heavy rainfall in Steuben county earlier in the morning proceeded gradually into Tioga county. These storms reorganized during the midday period and produced more excessive rainfall. Again, cooperative observers recorded between 2 and 4 inches of rain in many portions of the county.

Western and central sections of the county appeared to bear the brunt of the torrential rains and flash flooding. Among many others, the Catatonk Creek, the Hoyt Creek, and the Bliven Creek caused the most significant problems. The bridge that crosses the intersection of the Owego and Catatonk Creeks at routes 96 and 38 in Owego was closed for several hours as water levels topped the bottom of the bridge. Six different bridges were washed out from late morning into the afternoon hours in Spencer and Candor Townships alone. Numerous roads were closed and water had to be pumped out of the first floor of homes in Spencer near the Owl Creek.

By late afternoon, rainfall had since subsided and water levels were receding. Emergency management personnel slapped a price tag of a half million dollars on flood damages.

Broome County Triangle

08	1245EST 1400EST	0	0	75K	Flash Flood
-----------	----------------------------	----------	----------	------------	--------------------

A cluster of nearly stationary showers and thunderstorms developed over far northern sections of the county during the midday period. Rainfall amounts of 1.5 to 2.5 inches occurred in less than two hours in this vicinity and resulted in flash flooding given already wet soil conditions.

In the town of Triangle, Page Brook left its banks after 12 noon EDT. Sections of route 26 just east of Whitney Point Reservoir had to be closed for several hours as nearly two feet of water covered the roadway. Further upstream, a few homes along Page Brook Road had severe basement flooding as well.

By mid afternoon, showers and storms had diminished with water levels on the decline.

Chenango County South Portion

08	1245EST 1430EST	0	0	125K	Flash Flood
-----------	----------------------------	----------	----------	-------------	--------------------

A cluster of nearly stationary showers and thunderstorms developed during the midday hours across southern portions of the county. Within a two to three hour time frame, more than two inches of rain had fallen in many localities. Several reports of 2.5 to 3.5 inches were received from Greene in the southwestern corner of the county. Given already saturated ground conditions, rapid flash flooding resulted.

Most of the flooding problems occurred near Mill Brook and along route 12 from Greene northeastward into the Oxford area. Sections of route 12 were under water and closed during the early afternoon hours. Several homes adjacent to Mill Brook in Preston and Oxford townships took on water into the first floor and sustained damage.

By mid afternoon, showers and storms had weakened and water levels had receded.

Delaware County Sidney Center

08	1300EST 1530EST	0	0	650K	Flash Flood
-----------	----------------------------	----------	----------	-------------	--------------------

Storm Data and Unusual Weather Phenomena

July 1998

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

NEW YORK, Central

The same group of heavy showers and thunderstorms which affected southern Chenango and northern Broome counties earlier in the afternoon moved into northern Delaware county. Rainfall amounts ranging from 2 to 4 inches were experienced in and around Sidney early in the afternoon. This caused very sharp rises on Carrs Creek and resulted in significant flash flooding.

Several homes in Sidney Center were severely affected. For a time, water levels had risen to the tops of front doors with extensive damage into the basements and first floors of these houses. Local fire department personnel dispatched to the scene quickly and were able to warn residents to move to higher ground in time. Many yards and driveways suffered damage as large divets were carved out by the rushing water and blacktop sections completely crumbled. Most of route 35 through downtown Sidney Center was closed as several feet of water covered the roadway during the height of the flood.

By late afternoon, water levels began to recede as rainfall subsided. Route 35 was reopened by the end of the day with most residents also able to return to their homes. Emergency management personnel that inspected the scene estimated that more than a half million dollars worth of damage occurred.

Onondaga County De Witt to Fayetteville

10	0322EST 0330EST								
		0	0						Hail (1.00)

A thunderstorm briefly reached severe limits during the predawn hours over eastern sections of the Syracuse metropolitan area. Skywarn spotters observed hail to one inch in diameter in De Witt and dime sized hail in Fayetteville.

Otsego County Edmeston to Richfield Spgs

20	1305EST 1315EST								
		0	0		15K				Thunderstorm Wind

A thunderstorm strengthened to severe limits over northern sections of the county. The cell was responsible for downing trees and power lines in Edmeston shortly after 200 pm EDT. Several more trees were blown down in Richfield Springs thereafter.

Tompkins County Groton

22	0400EST								
		0	0		25K				Thunderstorm Wind

A thunderstorm quickly intensified to severe limits across northern portions of the county just before sunrise. Trees and power lines were downed in the town of Groton around 500 am EDT. A couple of roadways were closed for a short time in the center of town until crews were able to clear fallen trees.

NEW YORK, Coastal

Rockland County Nyack

23	1230EST								
		0	0						Lightning

Westchester County Armonk

23	1245EST								
		0	0						Lightning

As thunderstorms moved across the area, they produced frequent lightning along with heavy rain.

Lightning struck the steeple of the First Reformed Church in Nyack. It ignited a fire, but caused minimal damage to the top of the steeple.

Lightning struck the roof of a house at 5 Cobblers Lane in Armonk. It ignited a fire that charred half the attic and put a hole in the bedroom ceiling.

NEW YORK, East

Schoharie County Middleburg

20	0601EST								
		0	0		5K				Thunderstorm Wind

A weak warm front moving north from eastern New York produced an isolated severe thunderstorm in Schoharie County. The storm downed power lines in the town of Middleburgh.

Saratoga County Edinburg

23	1920EST								
		0	0		4K				Thunderstorm Wind

Saratoga County Galway

23	1925EST								
		0	0		5K				Thunderstorm Wind

Saratoga County Malta

23	1935EST								
		0	0						Hail (0.88)

Saratoga County Ballston Spa

23	1940EST								
		0	0		6K				Thunderstorm Wind

Washington County Cambridge

23	2007EST								
		0	0		4K				Thunderstorm Wind

A weak cold front moving southeast across New York State interacted with a very humid air mass in place. The result was scattered

Storm Data and Unusual Weather Phenomena

July 1998

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

NEW YORK, East

severe thunderstorms in Saratoga and Washington Counties. The storms brought down trees and powerlines in various portions of these counties. Nickel size hail fell in Malta. The storms also produced damage from frequent lightning strikes.

NEW YORK, North

Clinton County

Altona

16	1652EST			0	0			Hail (0.75)
----	---------	--	--	---	---	--	--	--------------------

Clinton County

North Portion

16	1715EST 1800EST			0	0	50K		Flash Flood
----	--------------------	--	--	---	---	-----	--	--------------------

A warm and moist unstable airmass across northern New York was in place ahead of a cold front. Late afternoon and evening thunderstorms were accompanied by locally torrential downpours. These downpours resulted in numerous road washouts in the New York towns of Mooers and Altona.

Clinton County

South Portion

16	1850EST 2000EST			0	0	50K		Flash Flood
----	--------------------	--	--	---	---	-----	--	--------------------

A warm and moist airmass was in place across northern New York ahead of a cold front. Late afternoon and evening thunderstorms developed with locally torrential rainfall. Numerous reports of road flooding with some washouts were reported especially in the towns of Peru and Harkness.

Essex County

North Portion

16	1845EST 2000EST			0	0	30K		Flash Flood
----	--------------------	--	--	---	---	-----	--	--------------------

A warm and moist airmass was in place across northern New York ahead of a cold front. Late afternoon and evening thunderstorms developed with locally torrential rainfall. Numerous reports of road flooding with some washouts were reported especially in the towns of AuSable Forks and Keeseville.

Clinton County

Plattsburgh

23	1700EST			0	0	10K		Thunderstorm Wind
----	---------	--	--	---	---	-----	--	--------------------------

A cold front which moved across the area triggered afternoon and evening thunderstorms with locally strong winds and small hail. In Plattsburgh, NY thunderstorm winds blew down trees and power lines.

Franklin County

Brushton

23	1700EST			0	0	75K		Thunderstorm Wind
----	---------	--	--	---	---	-----	--	--------------------------

A cold front which moved across the area triggered afternoon and evening thunderstorms with locally strong winds. In Brushton (Franklin county), NY thunderstorm winds blew down trees and resulted in structural damage to buildings. In addition, shingles were blown off homes with window damage.

St. Lawrence County

Norfolk

29	0115EST			0	0	50K		Thunderstorm Wind
----	---------	--	--	---	---	-----	--	--------------------------

A cold front moved across northern New York during the early morning hours of July 29th. Thunderstorms developed along and ahead of the front with strong winds and heavy rainfall. In St Lawrence county, a silo was moved off its foundation and a truck camper was blown over and damaged.

St. Lawrence County

Potsdam

29	0120EST			0	0	15K		Thunderstorm Wind (G52)
----	---------	--	--	---	---	-----	--	--------------------------------

A cold front moved across northern New York during the early morning hours of July 29th. Thunderstorms developed along and ahead of the front with strong winds and heavy rainfall. In Potsdam, New York (St Lawrence county), numerous trees and limbs were blown down. Pea size hail was also reported.

Franklin County

Moira

29	0130EST			0	0	5K		Thunderstorm Wind
----	---------	--	--	---	---	----	--	--------------------------

A cold front moved across northern New York during the early morning hours of July 29th. Thunderstorms developed along and ahead of the front with strong winds and heavy rainfall. In St Lawrence county, a tree and tree limbs were blown down in Moira, New York.

Clinton County

Countywide

01	0650EST 1106EST			0	0	2M		Flash Flood
----	--------------------	--	--	---	---	----	--	--------------------

A storm system tracked across New England with steady rainfall. The previous month was very wet so soil conditions remained saturated. Rivers and streams rose rapidly with many exceeding flood stage. By 6:50 AM EST roads were flooded in Plattsburgh, NY. The Salmon River was flooding by 8:28 AM EST with extensive flooding in Schuyler Falls, NY. Numerous roads were washed out by mid morning in Peru, NY with the Little AuSable River flooding. The Great Chazy River was flooding in places by late morning with many road washouts in Altona, NY. The Saranac River was bankful or out of its banks in places through the morning.

Essex County

Countywide

01	0830EST 1106EST			0	0	1M		Flash Flood
----	--------------------	--	--	---	---	----	--	--------------------

A storm system tracked across New England with steady rainfall. The previous month was very wet so soil conditions remained saturated. Rivers and streams rose rapidly with many exceeding flood stage. By 8:30 AM EST roads were flooded with numerous

Storm Data and Unusual Weather Phenomena

July 1998

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

NEW YORK, North

washouts in and around Lake Placid, NY. The AuSable River was flooding along portions with road washouts reported.

Franklin County Countywide

01	0900EST 1206EST					0	0	500K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	-------------

A storm system tracked across New England with steady rainfall. The previous month was very wet so soil conditions remained saturated. Rivers and streams rose rapidly with many at or exceeding flood stage. By 9:00 AM EST roads were flooded in and around the Malone, NY area with road erosion and washouts reported.

Clinton County East Portion

01	1106EST					0	0	500K	Flood
02	0650EST								

Steady rains during the day resulted in rivers remaining high or flooding into the early morning hours of July 2nd. In particular flooding resulted in road closures and washouts with the towns of Peru, Altona and Schuyler Falls particularly hard hit. The Great Chazy, Little AuSable and Saranac Rivers specifically were in flood stage into the evening before gradually receding. However, the Great Chazy remained in flood until early on July 2nd including the Perry Mills area.

Essex County Countywide

01	1106EST 1800EST					0	0	100K	Flood
----	--------------------	--	--	--	--	---	---	------	-------

Earlier steady rains resulted in saturated soil conditions. Rivers and streams remained very high with some flooding along stretches of the AuSable River as well as in the Lake Placid area. The rivers receded during the afternoon and evening.

Franklin County Countywide

01	1106EST 1800EST					0	0	50K	Flood
----	--------------------	--	--	--	--	---	---	-----	-------

Soil conditions remained saturated with river levels at or above flood stage into the afternoon before slowly receding. Some erosion of roads continued into the afternoon along with field flooding.

St. Lawrence County Waddington

07	1515EST					0	3	10K	Lightning
----	---------	--	--	--	--	---	---	-----	-----------

Repair workers were injured by a lightning strike. One man was hit directly by the lightning, while two nearby workers received periphery shocks from the lightning. A building structure was also damaged.

NEW YORK, West

Monroe County Penfield

08	1600EST 1800EST					0	0	100K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	-------------

Nearly three inches of rain fell at the Rochester airport with slightly higher amounts reported over the southern suburbs. Urban flooding resulted in Rochester, Pittsford and Penfield. In Penfield, basements of the Forest Hills Condominium complex flooded for the second time this year. Many of the basements and appliances had just been repaired and replaced following floods in January.

Chautauqua County Ripley

19	2002EST					0	0	3K	Hail (0.75)
----	---------	--	--	--	--	---	---	----	-------------

Thunderstorms developed over Lake Erie and moved onshore during the evening hours. One of these storms produced 0.75" hail in Ripley.

Chautauqua County Hartfield

15	1445EST					0	0	5K	Hail (0.75)
----	---------	--	--	--	--	---	---	----	-------------

Cattaraugus County Gowanda

15	1515EST					0	0	25K	Thunderstorm Wind
----	---------	--	--	--	--	---	---	-----	-------------------

Thunderstorms developed across the western southern tier during the afternoon hours. In addition to producing large hail, the storms produced damaging winds which downed trees and tree limbs. In Gowanda, an unoccupied automobile was damaged by a falling tree.

Wayne County Lyons

16	1940EST 2130EST					0	0	8K	Flash Flood
----	--------------------	--	--	--	--	---	---	----	-------------

A cluster of thunderstorms moved across the county during the evening hours. Spotters reported rainfall rates of over two inches in less than an hour. The torrential rains resulted in flooding of low-lying areas near Lyons.

Jefferson County Clayton

29	0040EST					0	0	5K	Thunderstorm Wind
----	---------	--	--	--	--	---	---	----	-------------------

Jefferson County Orleans Four Corners

29	0050EST					0	0	12K	Thunderstorm Wind
----	---------	--	--	--	--	---	---	-----	-------------------

Lewis County Castorland

29	0115EST					0	0	4K	Thunderstorm Wind
----	---------	--	--	--	--	---	---	----	-------------------

Thunderstorms during the overnight hours moved onshore from Lake Ontario and across the eastern Lake Ontario region. The thunderstorm winds downed trees and limbs as well as several telephone poles and their lines. Scattered power outages were

Storm Data and Unusual Weather Phenomena

July 1998

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

NEW YORK, West

reported.

Niagara County Hartland

23	1403EST					0	0	5K	Thunderstorm Wind
----	---------	--	--	--	--	---	---	----	--------------------------

An isolated afternoon thunderstorm produced torrential downpours and damaging winds. The thunderstorm winds blew down a utility pole and the attached wires in Hartland.

Niagara County Lockport

21	2312EST					0	0	15K	Thunderstorm Wind
----	---------	--	--	--	--	---	---	-----	--------------------------

An isolated thunderstorm hit Niagara county during the early morning hours. The severe thunderstorm produced damaging winds that downed several trees. Lightning from the storms damaged a transformer resulting in some power outages in Lockport.

Wyoming County Arcade

08	0855EST 1025EST					0	0	250K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	--------------------

Livingston County Dansville

08	1021EST 1400EST					0	0	250K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	--------------------

Wyoming County Attica

08	1047EST 1400EST					0	0	250K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	--------------------

Erie County Boston

08	1200EST 1500EST					0	0	100K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	--------------------

NYZ010-010-010>011-011-011>012-012-012

Erie - Genesee - Wyoming										
08	1230EST					2	0	1.7M	100K	Flood
10	1600EST									

F28BU, M17BU

Wyoming County Warsaw

08	1330EST 2100EST					0	0	250K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	--------------------

Genesee County Corfu

08	1340EST 1900EST					0	0	75K	Flash Flood
----	--------------------	--	--	--	--	---	---	-----	--------------------

Erie County Depew

08	1435EST 1600EST					0	0	15K	Flash Flood
----	--------------------	--	--	--	--	---	---	-----	--------------------

Livingston County Dansville

08	1540EST 1830EST					0	0	250K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	--------------------

Monroe County Pittsford

08	1600EST 1800EST					0	0	150K	Flash Flood
----	--------------------	--	--	--	--	---	---	------	--------------------

Localized thunderstorms early in the morning of the 8th dropped three to five inches of rain across parts of Erie, Genesee, Wyoming and Livingston counties. Over five inches fell in just a few hours over much of Wyoming county. This resulted in rare, widespread devastating flash flooding. Many small streams and creeks became raging torrents and the upper reaches of the Tonawanda Creek rose drastically--faster than at any time in at least 30 years according to locals--and flooded out much of the Village of Attica. Two deaths resulted from the flooding. A 28 year-old female and a 17 year-old male drowned while attempting to rescue animals from the basement of an animal clinic. More thunderstorms during the afternoon aggravated the flooding on the Tonawanda creek which rose well above flood stage downstream to Batavia the following day. The crest dissipated further downstream with limited flooding reported near Newstead. Cayuga creek at Lancaster rose above flood stage for several hours on the 8th. Oatka creek in Garbutt, rose above flood stage the afternoon of the 9th and remained so through the afternoon of the 10th. A State of Emergency was declared for all of Wyoming County. Nearly 400 buildings were damaged in Wyoming county and damage to crop land was severe. The extensive flooding closed numerous roads throughout the multi-county area. Several were completely washed out. Specific road closures included: Rte.78 in Depew, Rte.98 in Arcade, Four Rod and Old Three Rod Roads in Alden, Rte.63 in Dansville, and Rte.20 in Darien. In Attica alone, nearly one hundred homes and businesses were evacuated. Evacuations also occurred in Sardinia, Dansville, Warsaw and Alexander. In the aftermath, Wyoming, Genesee, Livingston and Monroe counties were declared Federal Disaster Areas.

NORTH CAROLINA, Central

Wake County Knightdale

04	2009EST					0	0		Hail (0.75)
----	---------	--	--	--	--	---	---	--	--------------------

Storm Data and Unusual Weather Phenomena

July 1998

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

NORTH CAROLINA, Central

Montgomery County

Biscoe	16	1620EST 1820EST			0	0			Flash Flood
--------	----	--------------------	--	--	---	---	--	--	-------------

Numerous secondary roads were flooded in and around the Biscoe area in Montgomery county due to very slow moving thunderstorms. Rainfall of up to 3.5 inches fell in less than 2 hours over east-central Montgomery county.

NCZ007>011-021>028-038>043-073>078-083>086-088>089 **Person - Granville - Vance - Warrren - Halifax - Forsyth - Guilford - Alamance - Orange - Durham - Franklin - Nash - Edgecombe - Davidson - Randolph - Chatham - Wake - Johnston - Wilson - Stanly - Montgomery - Moore - Lee - Harnett - Wayne - Anson - Richmond - Scotland - Hoke - Cumberland - Sampson**

	22	1100EST			0	0			Excessive Heat
	23	2300EST							

Excessive heat plagued central North Carolina during July 22 through July 23. Maximum temperatures reached the 98 to 103 degree range combined with dew points in the 78 to 80 degree range with little wind to give heat index values of around 110 degrees for several hours each afternoon. To make matters worse, the minimum temperatures did not fall below 80 at several locations and those that did achieved that feat for only an hour or two. Strong thunderstorms ended the 2 day excessive heat ordeal on the evening of the 23 when rain cooled the environment enough to send temperatures into the lower 70s at most locations.

Cumberland County

Fayetteville	19	1650EST			0	0			Hail (1.25)
--------------	----	---------	--	--	---	---	--	--	-------------

Montgomery County

5 W Troy	19	1713EST 1724EST			0	0			Thunderstorm Wind (G50)
----------	----	--------------------	--	--	---	---	--	--	-------------------------

Several trees were uprooted and snapped off due to a thunderstorm downburst over western Montgomery county.

Scotland County

10 N Laurinburg	19	1950EST			0	0			Hail (0.88)
-----------------	----	---------	--	--	---	---	--	--	-------------

Hoke County

4 S Raeford	19	2001EST			0	0			Hail (0.75)
-------------	----	---------	--	--	---	---	--	--	-------------

Chatham County

5 SE Moncure	20	1900EST			0	0	20K		Thunderstorm Wind (G50)
--------------	----	---------	--	--	---	---	-----	--	-------------------------

Trees were downed and there was damage to several roofs of homes 5 miles southeast of Moncure.

Randolph County

5 NW Asheboro	20	1725EST			0	0			Thunderstorm Wind (G50)
---------------	----	---------	--	--	---	---	--	--	-------------------------

Several trees were downed in northwest Randolph county near Asheboro.

Randolph County

5 E Ramseur	20	1800EST			0	0	5K		Thunderstorm Wind (G50)
-------------	----	---------	--	--	---	---	----	--	-------------------------

Several trees were downed in southeast Randolph county. One large limb fell onto a car traveling on Highway 64 breaking the front glass and causing an accident. No one was injured.

Halifax County

10 SW Roanoke Rapids	20	1815EST			0	0			Thunderstorm Wind (G50)
----------------------	----	---------	--	--	---	---	--	--	-------------------------

Numerous trees were damaged or uprooted 10 miles southwest of Roanoke Rapids on NC-48 in Halifax county.

Stanly County

15 SW Albemarle	20	2000EST			0	0			Thunderstorm Wind (G50)
-----------------	----	---------	--	--	---	---	--	--	-------------------------

Several trees were downed by strong thunderstorm winds 15 miles southwest of the city of Albemarle near NC-24/27.

Johnston County

10 SE Benson	22	1405EST			0	0			Hail (1.25)
--------------	----	---------	--	--	---	---	--	--	-------------

Johnston County

2 E Benson	22	1620EST			0	0			Hail (1.00)
------------	----	---------	--	--	---	---	--	--	-------------

Lee County

5 SW Sanford to 5 SE Sanford	22	1730EST 1745EST			0	0	215K		Thunderstorm Wind (G50)
---------------------------------	----	--------------------	--	--	---	---	------	--	-------------------------

An isolated severe thunderstorm produced a downburst and considerable rainfall near Sandford.

The county Emergency Manager reported that 2 storage buildings were destroyed, 3 mobile homes sustained heavy damage due to falling trees, and a single engine airplane was turned upside down at the local airport. There were numerous trees downed in the same area.

Harnett County

7 N Lillington	22	1600EST			0	0			Thunderstorm Wind (G50)
----------------	----	---------	--	--	---	---	--	--	-------------------------

Several trees were downed along Kipling Road north of Lillington.

Granville County

Oxford	22	1814EST			0	0			Thunderstorm Wind (G50)
--------	----	---------	--	--	---	---	--	--	-------------------------

Several trees were downed on Sunset Road and US-158.

Storm Data and Unusual Weather Phenomena

July 1998

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

NORTH CAROLINA, Central

Davidson County

Lexington	20	1700EST			0	1			Lightning
------------------	----	---------	--	--	---	---	--	--	------------------

One man was struck by lightning. He was treated at the scene by local EMS.

NORTH CAROLINA, Central Coastal

Pitt County

Falkland	05	0050EST			0	0			Thunderstorm Wind (G50)
-----------------	----	---------	--	--	---	---	--	--	--------------------------------

Pitt County

Greenville	05	0055EST			0	0	90K		Heavy Rain
-------------------	----	---------	--	--	---	---	------------	--	-------------------

Tree reported down near Dupree Crossroads and highway 43. Heavy rain in Greenville caused a roof to collapse at the Mental Health Association destroying \$10,000 worth of computer equipment. Heavy rain also caused a church roof to collapse.

Carteret County

1 SE Stacy	07	1250EST			0	0			Waterspout
-------------------	----	---------	--	--	---	---	--	--	-------------------

Public reported a waterspout over the Core Sound just east of Stacy.

Martin County

5 SW Jamesville	22	1705EST			0	0			Hail (0.75)
------------------------	----	---------	--	--	---	---	--	--	--------------------

Martin County

5 SW Jamesville	22	1705EST			0	0			Thunderstorm Wind (G50)
------------------------	----	---------	--	--	---	---	--	--	--------------------------------

Large tree blown down on Highway 171.

Dare County

1 W Kill Devil Hills	25	0726EST			0	0			Waterspout
-----------------------------	----	---------	--	--	---	---	--	--	-------------------

Public reported a waterspout over Roanoke Sound.

Hyde County

6 S Swanquarter	26	1030EST			0	0			Waterspout
------------------------	----	---------	--	--	---	---	--	--	-------------------

Public reported a couple of waterspouts over the Pamlico Sound.

Hyde County

Ocracoke	01	2037EST			0	0	20K		Waterspout
-----------------	----	---------	--	--	---	---	------------	--	-------------------

Waterspout came ashore and moved across the north side of Silver Lake. A wind gust to 80 mph was recorded at the ferry station. Some structural and vehicular damage.

Carteret County

3 N Williston	31	1445EST	0.2	20	0	0	0		Tornado (F0)
----------------------	----	---------	-----	----	---	---	---	--	---------------------

At 245 PM EST the general public, law enforcement and spotters reported a brief tornado touchdown over the Open Ground Farms north of Williston. No damage was reported.

NORTH CAROLINA, Extreme Southwest

NONE REPORTED.

NORTH CAROLINA, North Coastal

Chowan County

Ryland	23	2028EST			0	0	10K		Thunderstorm Wind
---------------	----	---------	--	--	---	---	------------	--	--------------------------

Barn blown down.

NORTH CAROLINA, Northwest and North Central

NONE REPORTED.

NORTH CAROLINA, South Coastal

New Hanover County

Wilmington	05	0350EST 0515EST			0	0			Flash Flood
-------------------	----	--------------------	--	--	---	---	--	--	--------------------

Heavy rains measured 2 to 4 inches, causing flooding in the pre-dawn hours.

Brunswick County

1 N Caswell Beach	05	1240EST			0	0			Waterspout
--------------------------	----	---------	--	--	---	---	--	--	-------------------

U.S. Coast Guard reported a waterspout at marker #35, north of Oak Island on the Cape Fear River. No damage.

Columbus County

Whiteville	15	1405EST 1530EST			0	0			Flash Flood
-------------------	----	--------------------	--	--	---	---	--	--	--------------------

Heavy rain, falling at 3 inches per hour caused Flooding along Madison St, with water running into businesses.

New Hanover County

Wilmington	18	1415EST 1545EST			0	0			Flash Flood
-------------------	----	--------------------	--	--	---	---	--	--	--------------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NORTH CAROLINA, South Coastal</u>									
Afternoon thunderstorms rained 3-4 inches in an hour, causing flooding reports from near Wrightsville Beach to Pine Valley.									
Pender County Rocky Pt to Long Creek	24	1457EST			0	0			Thunderstorm Wind (G60)
Thunderstorm winds downed trees onto power lines along highway NC 210.									
Columbus County 5 S Whiteville	24	1715EST 1720EST			0	0			Hail (0.75)
A thunderstorm brought heavy rain, intense lightning and small hail.									
Robeson County Maxton to Alma	31	1545EST 1630EST			0	0			Flash Flood
Thunderstorm rains measured 3 to 4 inches across the area. Police reported flooding on North Patterson and East Graham Streets.									
Columbus County 3 N Whiteville to Delco	31	1634EST 1655EST			0	0	50K		Thunderstorm Wind (G70)
Thunderstorms downed trees on power lines, cutting power to more than 600 customers in the county.									
Brunswick County Maco to Leland	31	1645EST 1715EST			0	0	50K		Thunderstorm Wind (G65)
Thunderstorm winds downed trees, cutting power, and a person was struck and briefly injured by lightning.									
Bladen County Tar Heel to White Oak	31	1715EST 1730EST			0	0	200K		Thunderstorm Wind (G65)
Thunderstorm winds damaged trees, but the most significant effect was from lightning, which caused fires reported in White Oak, Dublin and Elizabethtown.									
Columbus County 10 N Whiteville	24	1700EST			0	0	250K		Lightning
Severe lightning caused cooling system failure at a Coastal Farms Number 1, a feeder pig operation resulting in the death of hundreds of hogs.									
<u>NORTH CAROLINA, Southwest</u>									
Rutherford County Rutherfordton to Forest City	04	1700EST 1710EST			0	0			Thunderstorm Wind (G50)
Mecklenburg County 1 E Charlotte	04	1930EST			0	0			Thunderstorm Wind (G50)
Straight-line winds from a severe thunderstorm moved from Rutherfordton to Forest City, downing trees and power lines. Part of a porch was blown off and never found. Another severe thunderstorm downed several trees just east of downtown Charlotte.									
Catawba County Hickory	16	2011EST			0	0	15K		Lightning
Lightning struck a house causing quite a bit of damage. The Fire Department received several other lightning related calls.									
Rowan County Salisbury	19	1800EST			0	0	15K		Thunderstorm Wind (G50)
Mcdowell County 1 SE Old Ft	19	1810EST			0	0			Thunderstorm Wind (G52)
Union County Monroe to Wingate	19	1915EST			0	0			Thunderstorm Wind (G50)
Union County Waxhaw	19	1930EST			0	0	600K		Thunderstorm Wind (G50)
Scattered thunderstorms developed across western North Carolina during the late afternoon and a few became severe during the early evening. At least one tree fell across a house in Salisbury. Five trees were blown down across Interstate 40, blocking the lanes for a short time. Trees were downed from the east side of Monroe to Wingate. In the Waxhaw vicinity, trees were downed, some on structures and two chicken houses were destroyed, killing a number of chickens.									
Iredell County Mooreville	20	1800EST			0	0	20K		Lightning
Cleveland County Fallston to Lawndale	20	1810EST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NORTH CAROLINA, Southwest</u>									
Cabarrus County 10 NW Concord to 10 NE Concord	20	1900EST 1914EST			0	0			Thunderstorm Wind (G50)
Haywood County Waynesville	20	1900EST			0	0			Thunderstorm Wind (G50)
Cabarrus County Concord to Mt Pleasant	20	1915EST 1929EST			0	0			Thunderstorm Wind (G50)
Gaston County Cherryville to Bessemer City	20	1915EST 1925EST			0	0			Thunderstorm Wind (G50)
Gaston County Central Portion to Cramerton	20	1925EST 1935EST			0	0			Thunderstorm Wind (G50)
Cabarrus County South Portion	20	1930EST 1944EST			0	0			Thunderstorm Wind (G50)
Cabarrus County Central Portion	20	1945EST 1959EST			0	0			Thunderstorm Wind (G50)
Cabarrus County Countywide	20	2000EST 2200EST			0	0	250K		Lightning
Cabarrus County South Portion	20	2000EST 2014EST			0	0			Thunderstorm Wind (G50)
Mecklenburg County Countywide	20	2000EST 2230EST			0	0	1M		Lightning
Mecklenburg County Charlotte	20	2015EST			0	0			Thunderstorm Wind (G50)
Union County Countywide	20	2100EST 2300EST			0	0	250K		Lightning
Union County 6 W Monroe	20	2106EST			0	0			Hail (0.75)
Mecklenburg County Charlotte	20 21	2200EST 0300EST			0	1			Flash Flood
<p>An isolated severe thunderstorm in Waynesville downed numerous limbs and power lines. One thousand people power lost power as well. A cluster of thunderstorms moved from northern Cleveland county, east-southeast and became severe in the eastern portions, downing numerous trees. This cluster of severe thunderstorms moved across Gaston county, continuing to down trees and some power lines and leaving 6500 people without power for a while. The storms then moved into southern Mecklenburg county, blowing down 6 trees on the southwest side of Charlotte. Intense cloud to ground lightning from these storms that became nearly stationary struck 15 dwellings ranging from apartments to condominiums to houses in the Charlotte area. Damage was estimated near 1 million dollars as many homes were destroyed. Flash flooding occurred in South Charlotte late in the evening and continued into the early morning hours. One injured woman had to be rescued from her auto on South Blvd by a firefighter.</p> <p>Another cluster of severe thunderstorms developed west into Cabarrus county, producing numerous microbursts that downed trees and power lines as they moved slowly south over the course of an hour and fifteen minutes. Especially hard hit was the area from Concord into the southern and eastern portions of the county. The storms eventually moved into Union county and produced dime size hail west of Monroe. Lightning strikes also caused several house fires in Iredell, Cabarrus and Union counties until late in the evening. One house in Union county was a total loss.</p>									
Buncombe County 2 S Swannanoa	21	1418EST			0	0			Thunderstorm Wind (G52)
Buncombe County Swannanoa	21	1500EST			0	0			Hail (0.75)
Medowell County Ashford	21	1535EST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1998

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

NORTH CAROLINA, Southwest

Burke County Glen Alpine	21	1550EST			0	0			Thunderstorm Wind (G50)
Burke County Linville Falls	21	1600EST			0	0			Thunderstorm Wind (G50) Scattered thunderstorms developed in the mountains and foothills during the afternoon. A few became severe and produced damaging straight-line winds that downed several trees and power lines. Trees fell on a house in Linville Falls. A National Weather Service cooperative observer measured a 60 mph gust on Flat Top Mountain. Dime size hail fell near Swannanoa.
McDowell County Sugar Hill	22	1620EST			0	0			Thunderstorm Wind (G50) An isolated severe thunderstorm produced damaging wind that downed trees and power lines.
Rutherford County Cliffside	23	1705EST			0	0			Thunderstorm Wind (G50) Trees were blown down by an isolated severe thunderstorm.
Catawba County Newton	25	1900EST			0	0	30K		Lightning Lightning damaged a home after entering through a breaker box and stereo system.
Mecklenburg County South Portion	27	0700EST 0900EST			0	0			Flash Flood
Union County Countywide	27	0700EST 0900EST			0	0			Flash Flood Up to four inches of rain fell in just a few hours during the morning of the 27th, causing flash flooding across southern Mecklenburg county and much of Union county. McAlpine Creek, McMullen Creek, and several other creeks flooded in these areas, flooding numerous streets and roads. A brick wall collapsed, 52 auto accidents occurred and 6 motorists required rescue in the southern part of Mecklenburg county. One house was severely damaged and two subdivisions were flooded and cut off by high water in Union county.

NCZ033>037-048>059-062>072-082 - **Avery - Caldwell - Alexander - Iredell - Davie - Madison - Yancey - Mitchell - Swain - Haywood - Buncombe - McDowell - Burke - Catawba - Rowan - Graham - Northern Jackson - Macon - Southern Jackson - Transylvania - Henderson - Polk - Rutherford - Cleveland - Lincoln - Gaston - Mecklenburg - Cabarrus - Union**

01	0000EST			0	0				Dry Weather
31	2300EST								Dry weather continued through much of the month of July, affecting crops during the critical part of the growing season. Corn and other vegetables sustained the most damage, but a dollar amount was not available at the time of this writing.

NORTH DAKOTA, Central and West

Williams County Williston	04	2309CST			0	0			Thunderstorm Wind (G54)
NDZ009 Williams	05	0100CST 0400CST			0	0			Flood Numerous roads in Williston impassable due to water. Parts of highways 2 and 85 also under water due to the heavy rain. Spring Brook also flooded.
Mountrail County Stanley	05	0130CST 0300CST			0	0			Flood Heavy rain made streets impassable in Stanley. reports of 3 to 4 inches of rain fell.
Ward County Minot	05	0200CST			0	0			Lightning Tree in Oak park exploding, spreading bark for 250 feet.
Stutsman County Jamestown	05	0430CST			0	0			Lightning The lightning melted the electrical relays in two warning sirens causing the sirens to activate for 20 to 40 minutes before they could be turned off manually. Otter Tail Power company had damage to a transformer and two 'primary' wires.
Burke County 6 NW Portal to 2 NW Portal	05	1800CST 1805CST	4	20	0	0			Tornado (F0) Tornado formed in Canada and moved south into the US. multiple funnels were reported.
Burke County Lignite	05	1900CST			0	0			Lightning

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>NORTH DAKOTA, Central and West</u>									
Lightning ignited a 400 gallon oil storage tank.									
Burke County 8 NW Bowbells to 2 S Bowbells	05	1915CST 1930CST	9	20	0	0			Tornado (F0)
Numerous reports were received of this tornado, the first report coming from Minot Airforce Base personnel. Numerous brief touchdowns were reported along its path but no damage was reported.									
Ward County Niobe	05	1937CST			0	0			Hail (0.75)
Mountrail County 25 N Blaisdell	05	2008CST			0	0			Thunderstorm Wind (G52)
Williams County 20 NNW Williston	05	2126CST			0	0			Hail (1.75)
Hail combined with strong winds to increase damage.									
Williams County 20 NNW Williston	05	2126CST			0	0			Thunderstorm Wind (G70)
Twentyone trailers/cabins were damaged at the trailer park near the Black Tail dam. Roofs were torn off trailers, north side windows were broken, trees were knocked over, and trailers were moved off their foundations.									
Williams County 2 NE Epping	05	2150CST			0	0			Thunderstorm Wind (G98)
Reported as a tornado but no tornado or funnel cloud reported. Damage and eye witness reports suggest a very strong downburst wind. A line of 85 empty rail cars were tipped over between Epping and Wheelock. There was also some damage to a grain elevator and a blacksmith shop in Epping. A farmer lost the roof off a barn 2 miles southeast of Epping. Wind speeds of 98 kts (113 mph) have the force necessary to tip over box cars according to the Fujita scale.									
Williams County Grenora	05	2200CST			0	0			Hail (0.75)
Mountrail County 7 N White Earth	05	2230CST			0	0			Hail (1.00)
Mountrail County 2 E New Town	05	2325CST			0	0			Thunderstorm Wind (G70)
Ward County Ryder	05	2350CST			0	0			Thunderstorm Wind (G61)
Mountrail County 2 S Stanley	05	2355CST			0	0			Thunderstorm Wind (G70)
Ward County Berthold	06	1520CST			0	0			Hail (1.75)
Ward County Foxholm	06	1530CST			0	0			Hail (2.75)
Damage to cars and roofs of homes.									
Ward County 2 SW Foxholm	06	1532CST			0	0			Hail (2.75)
Ward County 2 W Makoti	06	1549CST	0.5	20	0	0			Tornado (F0)
Ward County 2 N Douglas	06	1550CST	0.5	20	0	0			Tornado (F0)
Morton County Mandan	06	1620CST			0	0			Hail (1.00)
Ward County 19 S Minot	06	1620CST			0	0			Hail (1.75)
Ward County 14 W Minot	06	1620CST			0	0			Hail (1.75)
Burleigh County Bismarck	06	1625CST			0	0			Hail (1.00)
Burleigh County 5 N Bismarck	06	1630CST			0	0			Hail (1.00)
Emmons County 4 W Strasburg to 1 S Strasburg	06	1640CST 1650CST			0	0	200K	80K	Thunderstorm Wind (G87)

Storm Data and Unusual Weather Phenomena

July 1998

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

NORTH DAKOTA, Central and West

Downburst winds of 87 kts (100 mph) caused widespread damage to numerous weak or high profile buildings in parts of southeast Emmons county. Even though there was heavy property damage, there were no fatalities or injuries. No one reported a tornado although there were unconfirmed reports of funnel clouds. Two trailer houses near Strasburg were destroyed as well as grain bins, pole barns, and farm machinery. The county emergency manager reported no damage in the city of Strasburg, just heavy rain and gusty winds. Monetary damage estimates are likely underestimated.

Emmons County
4 W Hague

06	1655CST	0.5	20	0	0				Tornado (F0)
----	---------	-----	----	---	---	--	--	--	---------------------

Brief touchdown reported near Rice Lake. One eye witness reported a wall of water rapidly approaching his farm. His rain guage measured 1.75 inches in less than 8 minutes and every building on his farm had some kind of damage.

Emmons County
Hague

06	1700CST			0	0	50K	100K		Hail (1.00)
----	---------	--	--	---	---	-----	------	--	--------------------

Damage was surveyed by the Sheriff and a deputy. Most of the damage was due to wind driven hail. Very little damage due to wind alone. The power went out in Hague near 6 PM CDT and their was minor damage to the Hague Grain Elevator.

Mclean County
Ruso

06	1710CST			0	0				Hail (0.75)
----	---------	--	--	---	---	--	--	--	--------------------

1725CST
Trees stripped of leaves.

Mclean County
1 W Raub

06	1715CST			0	0				Hail (1.75)
----	---------	--	--	---	---	--	--	--	--------------------

Ward County
23 S Minot

06	1752CST			0	0				Hail (1.75)
----	---------	--	--	---	---	--	--	--	--------------------

1758CST

Bowman County
25 S Rhame

06	1810MST			0	0				Thunderstorm Wind (G65)
----	---------	--	--	---	---	--	--	--	--------------------------------

Winds also combined with 3/4 inch hail. damage to most of crops.

Mclean County
1 W Turtle Lake

06	1811CST			0	0				Hail (0.75)
----	---------	--	--	---	---	--	--	--	--------------------

Bowman County
Rhame

06	1815CST			0	0		30K		Hail (0.75)
----	---------	--	--	---	---	--	-----	--	--------------------

Bowman County
Rhame

06	1815CST			0	0	5K			Thunderstorm Wind (G69)
----	---------	--	--	---	---	----	--	--	--------------------------------

Two corrals were destroyed and a highline power line was down.

Mchenry County
22 S Velva

06	1815CST			0	0				Hail (1.75)
----	---------	--	--	---	---	--	--	--	--------------------

Damage to roofs and boats around a lake. People used hail stones as ice cubes.

Sheridan County
5 N McClusky

06	1840CST			0	0				Hail (0.75)
----	---------	--	--	---	---	--	--	--	--------------------

Damage occurred to sunflower crop.

Bottineau County
Lansford

06	1910CST			0	0				Hail (1.00)
----	---------	--	--	---	---	--	--	--	--------------------

Emmons County
8 N Hazelton

06	2030CST			0	0		800K		Hail (0.75)
----	---------	--	--	---	---	--	------	--	--------------------

Sixty percent of 24,000 acres of crops were damaged by hail and 55 mph wind as reported by the Farm Service agency.

Mchenry County
10 E Bantry

06	2110CST			0	0	3K			Hail (0.75)
----	---------	--	--	---	---	----	--	--	--------------------

Ward County
8 E Kenmare

09	1415CST			0	0				Hail (0.75)
----	---------	--	--	---	---	--	--	--	--------------------

Renville County
Tolley

09	1555CST			0	0				Hail (0.75)
----	---------	--	--	---	---	--	--	--	--------------------

Adams County
10 NE Hettinger

09	2015MST	0.5	20	0	0				Tornado (F0)
----	---------	-----	----	---	---	--	--	--	---------------------

Ward County
Minot

11	2042CST			0	0				Lightning
----	---------	--	--	---	---	--	--	--	------------------

Lightning disrupted power service to 2,300 NSP electrical customers.

Golden Valley County
Golva

13	2314MST			0	0				Thunderstorm Wind (G52)
----	---------	--	--	---	---	--	--	--	--------------------------------

Foster County
Carrington

14	0005CST			0	0				Hail (1.00)
----	---------	--	--	---	---	--	--	--	--------------------

Brief event with no damage.

Storm Data and Unusual Weather Phenomena

July 1998

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

Bowman County 2 NW Bowman	14	0010MST			0	0			Funnel Cloud
Warning sirens were sounded in the city of Bowman but the funnel did not touch down.									
Foster County Carrington	14	0015CST			0	0			Hail (0.88)
Rolette County 3 W St John	20	0720CST			0	0	5K	100K	Hail (2.50)
At least 2 vehicle were damaged. Numerous trees lost their leaves. Crops also damaged.									

NORTH DAKOTA, East

Cass County Horace	14	0645CST			0	0			Hail (1.75)
Richland County Abercrombie	14	1740CST			0	0			Hail (1.75)
Richland County Abercrombie	14	1745CST			0	0			Hail (4.50)
Richland County 5 W Wahpeton	14	1830CST			0	0			Hail (3.00)
Richland County 10 SW Fairmount	14	1915CST			0	0			Hail (1.00)
Benson County Maddock	18	0600CST			0	0			Hail (0.75)
Cavalier County Mt Carmel	18	0700CST			0	0			Hail (1.75)
Barnes County Valley City	18	0705CST			0	0			Hail (1.00)
Nelson County Tolna	18	0715CST			0	0			Hail (0.75)
Barnes County Oriska	18	0720CST			0	0			Hail (1.00)
Barnes County Fingal	18	0730CST			0	0			Hail (1.25)
Griggs County Hannafor	18	0730CST			0	0			Hail (0.75)
Barnes County Valley City	18	0801CST			0	0			Hail (1.75)
Cass County 4 NE Tower City	18	0810CST			0	0			Hail (1.00)
Ransom County 8 SE Sheldon	18	0815CST			0	0			Hail (1.00)
Walsh County Fordville	18	0815CST			0	0			Hail (0.75)
Cass County 8 SW Alice	18	0825CST			0	0			Hail (1.00)
Ransom County 1 S Enderlin	18	0825CST			0	0			Hail (1.00)
Ransom County Mc Leod	18	0835CST			0	0			Hail (1.75)
Richland County 4 N Wyndmere	18	0839CST			0	0			Hail (1.00)
Richland County 13 NW Walcott	18	0857CST			0	0			Hail (0.75)
Richland County Barney	18	0915CST			0	0			Hail (1.00)
Richland County Great Bend	18	0915CST			0	0			Hail (0.75)
Richland County 3 W Fairmount	18	1004CST			0	0			Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1998

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 4 NE Lisbon	18	1830CST 1835CST	3	25	0	0	250K		Tornado (F1)
									A tornado touched down on a farmstead, destroying numerous buildings. One barn was destroyed and 60 hogs inside were killed. Power was knocked out. The tornado crossed highway 27 and dissipated.
Richland County Wyndmere	18	1857CST			0	0			Thunderstorm Wind (G52)
Richland County 4 SW Wyndmere	18	1920CST			0	0			Hail (0.75)
Richland County Hankinson	18	1930CST			0	0	75K		Thunderstorm Wind
									Strong straightline winds crumpled several large metal grain bins at the town elevator. Hundreds of trees were blown down, one landing on a house. Power was knocked out and phone service was disrupted.
Richland County Hankinson	18	1945CST			0	0			Hail (0.75)
Pembina County Neché	20	0925CST			0	0			Hail (0.75)
Ransom County 8 SE Sheldon	20	1440CST			0	0			Hail (2.25)
Ransom County 3 E McLeod	20	1448CST			0	0			Hail (1.00)
Richland County Mantador	20	1600CST			0	0			Hail (0.75)
Richland County 3 W Hankinson	20	1617CST			0	0			Hail (1.00)
Richland County 5 E Hankinson	20	1625CST			0	0			Hail (0.75)
Richland County 6 SW Fairmount	05	0900CST			0	0	35K		Thunderstorm Wind
									Strong winds completely demolished a 50x100 foot pole shed, and scattered debris for a half mile. Many trees were blown down, windows were broken, and a propane tank was blown over. Another barn at a neighboring farm was also destroyed.
NDZ049									
		Ransom							
	09	1100CST			0	0	100K		Flood
									Excessive rainfall during the months of June and early July left the area around McLeod with a high water table. Overland flooding caused several homes to be sandbagged. All 14 homes in the town of McLeod suffered water damage.
<u>OHIO, East</u>									
Muskingum County 2 SW Hopewell	19	2115EST			0	0	2K		Thunderstorm Wind
									A few trees were downed by thunderstorm winds.
Coshocton County Warsaw	19	2120EST			0	0	2K		Thunderstorm Wind
									A few trees were downed by thunderstorm winds.
Coshocton County Warsaw	19	2120EST			0	0	2K		Lightning
									Lightning sparked a transformer fire in Warsaw.
Tuscarawas County Strasburg	19	2155EST			0	0	3K		Thunderstorm Wind
									Several trees were downed by thunderstorm winds.
Columbiana County Salem	21	2100EST			0	0	1K		Thunderstorm Wind
									Thunderstorm winds downed 2 trees.
Tuscarawas County Stone Creek	21	2330EST			0	0	2K		Thunderstorm Wind
									A few trees were downed, including a tree and large branches onto a county road.
Coshocton County Coshocton	21	2330EST			0	0	1K		Thunderstorm Wind
									A tree was downed onto a county road.

Storm Data and Unusual Weather Phenomena

July 1998

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

OHIO, East

Harrison County Countywide

22	0025EST 0040EST			0	0	6K	Thunderstorm Wind
----	--------------------	--	--	---	---	----	-------------------

Numerous trees were downed throughout the county, especially in Tippecanoe, Deersville and between Hopedale and Hurford.

Columbiana County Homeworth

21	2300EST			0	0	10K	Lightning
----	---------	--	--	---	---	-----	-----------

Lightning struck a house and sparked a fire in the roof.

Tuscarawas County Yorktown

22	0023EST			0	0	2K	Thunderstorm Wind
----	---------	--	--	---	---	----	-------------------

Thunderstorm winds downed trees in Gilmore and Yorktown.

Columbiana County 1 S Columbiana

22	0020EST			0	0	1K	Thunderstorm Wind
----	---------	--	--	---	---	----	-------------------

A large tree and some branches were downed by thunderstorm winds.

Tuscarawas County Dover

22	2305EST			0	0	4K	Thunderstorm Wind
----	---------	--	--	---	---	----	-------------------

Several trees were downed by thunderstorm winds.

Carroll County Malvern

22	2325EST			0	0	4K	Thunderstorm Wind
----	---------	--	--	---	---	----	-------------------

Several trees were downed by thunderstorm winds.

Columbiana County Salem

22	2330EST			0	0	3K	Thunderstorm Wind
----	---------	--	--	---	---	----	-------------------

Columbiana County Lisbon

22	2340EST			0	0	3K	Thunderstorm Wind
----	---------	--	--	---	---	----	-------------------

Several trees were downed by thunderstorm winds in Salem and Lisbon.

Coshocton County Countywide

01 14	0000EST 0800EST			0	0		Flood
----------	--------------------	--	--	---	---	--	-------

Guernsey County Countywide

01 07	0000EST 0800EST			0	0		Flood
----------	--------------------	--	--	---	---	--	-------

Noble County Countywide

01 14	0000EST 0800EST			0	0		Flood
----------	--------------------	--	--	---	---	--	-------

Tuscarawas County Countywide

01 03	0000EST 0800EST			0	0		Flood
----------	--------------------	--	--	---	---	--	-------

Continued flooding from heavy severe thunderstorm rains in late June continued across parts of east central Ohio. Countywide average rainfalls in East Central Ohio from 7 am EDT June 26th to 7 am EDT June 29th ranged from 2.5 to 6 inches. Point rainfall amounts included, the Cambridge Cooperative Observer report of 9.71 inches from June 26th-29th and 7.76 inches at Derwent in the headwaters of the Wills Creek. Record flooding occurred on Wills Creek at Cambridge, Ohio.

Flooding was also reported on the Tuscarawas River at Uhrichsville, Ohio and on the Muskingum River at Coshocton, Ohio. The Tuscarawas River at Uhrichsville went above flood stage (FS 5 ft) at 1 pm EDT June 28th, crested at 11.10 feet at 9 am EDT June 30th, and went below flood stage at 8 am EDT July 3rd. The Muskingum River at Coshocton rose above flood stage (FS 13 ft) at 5 am EDT June 28th, crested at 15.05 feet at 11 am EDT July 1st and went below flood stage at 7 pm EDT July 5th.

Several roads remained closed well into July in low-lying and flood control areas. Flood waters were especially slow to recede in the Seneca Lake area in Guernsey and Noble counties and near the Mohawk Dam in Coshocton County.

OHZ058

Guernsey

01 04	0000EST 1400EST			0	0		Flood
----------	--------------------	--	--	---	---	--	-------

Over two days of heavy thunderstorm rains in late June across east central Ohio led to record flooding on the Wills Creek at Cambridge, Ohio. The Cambridge Cooperative Observer recorded 9.71 inches of rain from June 26th-29th. Also, 7.76 inches of rain fell in Derwent in the headwaters of Wills Creek.

Wills Creek went above its 15 foot flood stage at 7 am EDT June 28th and crested at 26.92 feet at 6 pm EDT June 29th. This was nearly 2.5 feet above the previous record of 25.41 feet in August 1980. The stage fell below flood stage at 3 pm EDT July 4th.

OHIO, North

Hancock County Rawson

19	1800EST			0	0	100K	Thunderstorm Wind
----	---------	--	--	---	---	------	-------------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Trees, power lines and power poles were downed, some on roads and houses. Trees were also downed approximately ten miles northeast of Rawson near Findlay									
Wood County									
Weston	19	1809EST			0	0			Thunderstorm Wind (G51)
					A wind gust was measured at 59 miles per hour.				
Ottawa County									
Genoa	19	1823EST			0	0			Hail (0.75)
Ottawa County									
Graytown	19	1835EST			0	0	75K		Thunderstorm Wind
					Several large trees, branches and power lines were downed, some on houses.				
Sandusky County									
Fremont	19	1835EST			0	0	30K		Thunderstorm Wind
					Large limbs and power lines were downed. Trees and large branches were also downed approximately 15 miles northwest of Fremont in Woodville.				
Sandusky County									
Woodville	19	1835EST			0	0			Hail (0.88)
Wood County									
Perrysburg	19	1805EST			0	0			Hail (0.75)
Geauga County									
Auburn Corners	19	1525EST			0	0	150K		Thunderstorm Wind (G56)
					Winds estimated gusting to 64 miles per hour capsized five sailboats at LaDue Reservoir.				
Hancock County									
Countywide	19	1910EST			0	0	100K		Thunderstorm Wind
					Trees and power lines were downed, some on houses, especially in the southwest portion of the county.				
Crawford County									
Countywide	19	1920EST			0	0	30K		Thunderstorm Wind
					Trees, large limbs and power lines were downed, especially in the Galion area.				
Marion County									
Countywide	19	1925EST			0	0	150K		Thunderstorm Wind
					Numerous trees were downed, especially around Prospect. In Grand Township, a tree fell on a bridge, collapsing the main span.				
Richland County									
Lexington	19	1945EST			0	0	80K		Thunderstorm Wind
					Trees and power lines were downed. Part of a barn roof was blown off and a pole barn was downed.				
Morrow County									
Countywide	19	2005EST			0	0	10K		Thunderstorm Wind
					Trees were downed.				
Knox County									
Countywide	19	2050EST			0	0	10K		Thunderstorm Wind
					Trees were downed, especially in the western half of the county.				
Wood County									
Countywide	21	0600EST			0	0	10K		Thunderstorm Wind
					Several trees were downed, particularly in the northern portion of the county.				
Ottawa County									
Oak Harbor	21	0600EST			0	0	50K		Thunderstorm Wind
					A barn and trees were downed in Salem Township, south of Oak Harbor.				
Sandusky County									
Countywide	21	0605EST			0	0	50K		Thunderstorm Wind
					Trees, power poles and power lines were downed, especially in the Fremont area.				
Erie County									
Vermillion	21	0650EST			0	0	15K		Thunderstorm Wind
					Power poles and power lines were downed in Vermillion Township.				
Huron County									
Countywide	21	0700EST			0	0	30K		Thunderstorm Wind
					Trees were downed throughout the county and the roof was blown off a barn in Willard.				
Wood County									
Wayne	21	0355EST			0	0	40K		Lightning
					Lightning struck and started a fire at a sawmill.				
Lorain County									
La Grange	21	0730EST			0	0	10K		Thunderstorm Wind
					Trees were downed.				

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Richland County Shiloh	21	0705EST			0	0	12K		Thunderstorm Wind
			Trees and power lines were downed.						
Ashland County Jeromesville	21	0737EST			0	0	10K		Thunderstorm Wind
			Trees and power lines were downed.						
Lucas County Countywide	21	0745EST			0	0	12K		Thunderstorm Wind
			Trees and power lines were downed.						
Ashland County Countywide	21	0830EST			0	0	10K		Thunderstorm Wind
			Trees were downed.						
Wood County Bowling Green	21	1803EST			0	0			Hail (1.00)
			Large hail fell just north of Bowling Green.						
Ottawa County Clay Center	21	1840EST			0	0	10K		Thunderstorm Wind
			Trees were downed.						
Erie County Milan	21	1900EST			0	0	750K		Thunderstorm Wind (G61)
			Strong thunderstorm winds estimated to 70 miles per hour produced widespread damage in Milan. An estimated one thousand or more trees were downed in the area and the roofs of the town hall and police station were badly damaged.						
Erie County Castalia	21	1845EST			0	0	20K		Thunderstorm Wind (G52)
			Numerous trees were downed by wind gusts estimated at 60 miles per hour.						
Sandusky County Countywide	21	1900EST			0	0	20K		Thunderstorm Wind
			Trees were downed, especially in the Bellevue area.						
Lorain County Lorain	21	1906EST			0	0	50K		Thunderstorm Wind (G52)
			Trees and power lines were downed. One large limb fell on a house. Wind gusts were estimated at 60 miles per hour.						
Huron County Countywide	21	1900EST			0	1	150K		Thunderstorm Wind (G52)
			Numerous trees were downed, particularly in the Norwalk area, where a 58 year old man was taken to the hospital after being seriously injured when a tree fell on his car. In Peru Township, a medium size barn was picked up and dropped on its top and three hay wagons were tossed around by the wind. Wind gusts were estimated at 60 miles per hour.						
Cuyahoga County Countywide	21	1904EST			0	0	100K		Thunderstorm Wind (G52)
			Numerous trees, limbs and power lines were downed. In Bay Village, where a tree fell on a house and a car, wind gusts were estimated at 60 miles per hour. Ten houses were damaged in Westlake. A 58 mile per hour wind gust was measured at Cleveland Lighthouse.						
Ashtabula County Countywide	21	1925EST			0	0	20K		Thunderstorm Wind
			Numerous trees were downed.						
Lake County Mentor	21	1928EST			0	0	10K		Thunderstorm Wind
			Trees were downed, some closing the westbound lane of State Route 2.						
Geauga County Countywide	21	1920EST			0	0	70K		Thunderstorm Wind
			Trees and power lines were downed, one on a mobile home and one on a house.						
Medina County Hinckley	21	1930EST			0	0	10K		Thunderstorm Wind
			Trees were downed in Hinckley and Sharon Center.						
Portage County Ravenna	21	2005EST			0	0	10K		Thunderstorm Wind
			Trees were downed.						
Summit County Countywide	21	1932EST			0	1	50K		Thunderstorm Wind (G52)
			Numerous trees were downed, mostly in the northern portion of the county. A measured wind gust of 60 miles per hour was reported at Twinsburg. A woman was injured when a tree fell on her car in Northfield Village.						

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Erie County Sandusky	21	2025EST			0	0	10K		Thunderstorm Wind
									Numerous trees were downed south of Sandusky.
Lorain County Lorain	21	1936EST 2300EST			0	0	10K		Flood
									Heavy thunderstorm rain caused flooding of many roads.
Trumbull County Countywide	21	2000EST			0	0	10K		Thunderstorm Wind
									Trees and large branches were downed.
Huron County Countywide	21	2015EST			0	0	10K		Thunderstorm Wind
									Trees were downed, particularly in the northern portion of the county.
Mahoning County Central Portion	21	2030EST			0	0	50K		Thunderstorm Wind
									Trees were downed in Canfield, blocking several roads and damaging a house. Trees were also downed in Boardman.
Wood County Countywide	21	2045EST			0	0	25K		Thunderstorm Wind (G52)
									An estimated 60 mile per hour wind gust was reported at Bowling Green. Power lines and large limbs were downed in Fostoria.
Wood County Perrysburg	21	2045EST			0	0	250K		Lightning
									Lightning struck and nearly destroyed a house in Perrysburg Township.
Lucas County Countywide	21	2100EST			0	0	10K		Thunderstorm Wind
									Trees were downed.
Lucas County Maumee	21	2055EST			0	0	50K		Heavy Rain
									Heavy rain collected on the flat surfaced roof of a department store, causing part of it to collapse from the added weight.
Sandusky County Central Portion	21	2115EST			0	0	10K		Thunderstorm Wind
									Trees and power lines were downed around Fremont and Clyde
Sandusky County Clyde	21	2121EST			0	0			Hail (0.75)
Ottawa County Port Clinton	21	2116EST			0	0			Hail (1.00)
									Large hail fell in the north central portion of the county approximately 10 miles west of Port Clinton.
Ottawa County Countywide	21	2100EST			0	0	10K		Thunderstorm Wind
									Trees were downed.
Erie County Sandusky	21	2135EST			0	0			Hail (0.75)
Erie County Countywide	21	2130EST			0	0	10K		Thunderstorm Wind
									Trees were downed.
Huron County Willard	21	2140EST	9	30	0	0	100K		Tornado (F0)
									A tornado touched down northwest of Willard and traveled southeast to Plymouth. Homes along the route sustained shingle and antenna damage. Two railroad cars were blown off the track and many trees were downed or their tops were broken off.
Lorain County North Ridgeville	21	2210EST			0	0			Hail (0.75)
Huron County Countywide	21	2225EST			0	0	15K		Thunderstorm Wind
									Many trees were downed, especially at Strongs Ridge.
Huron County Willard	21	2255EST			0	0	75K		Thunderstorm Wind
									Trees, large limbs and power lines were downed and roofs were damaged.
Medina County Lodi	21	2254EST			0	0	10K		Thunderstorm Wind
									Trees were downed in Harrisville Township.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, North									
Richland County Shelby	21	2255EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Wayne County Countywide	21	2306EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Holmes County Berlin	21	2315EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Summit County Countywide	21	2255EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Portage County New Milford	21	2315EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Stark County Hartville	21	2310EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Trumbull County Countywide	21	2310EST			0	0	12K		Thunderstorm Wind
		Trees and power lines were downed, mainly in the southern half of the county in the vicinities of Brookfield, Champion and Warren Townships.							
Ashland County Sullivan	21	2216EST			0	0			Thunderstorm Wind (G52)
		Estimated wind gusts of 60 miles per hour were reported at Sullivan and also at Savannah approximately 10 miles to the southwest.							
Lorain County Camden	21	2259EST			0	0	600K		Lightning
		Lightning struck and the ensuing fire destroyed a church.							
Holmes County Countywide	22	2250EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Holmes County Millersburg	22	2200EST			0	0			Hail (1.50)
Holmes County Glenmont	22	2200EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Knox County Countywide	22	2200EST			0	0	10K		Thunderstorm Wind
		Trees were downed.							
Mahoning County Washingtonville	22	2338EST			0	0			Thunderstorm Wind (G61)
		An estimated wind gust of 70 miles per hour was reported.							
Lake County Lakeshore	25	0600EST			0	0			Waterspout
		The Coast Guard reported a waterspout on Lake Erie near Fairport Harbor. It did not come ashore or cause any damage.							
Cuyahoga County Lakeshore	25	0600EST			0	0			Waterspout
		A waterspout was reported on Lake Erie north of Cleveland. It did not come ashore or cause any damage.							
Cuyahoga County Lakeshore	25	0650EST			0	0			Waterspout
		A waterspout was reported on Lake Erie north of Cleveland. It did not come ashore or cause any damage.							
Cuyahoga County Lakeshore	25	1040EST			0	0			Waterspout
		Waterspouts were reported on Lake Erie 10 miles north of Euclid. They did not come ashore or cause any damage.							
Lucas County Lakeshore	26	0747EST			0	0			Waterspout
		Waterspouts were reported on Lake Erie 10 miles north of Crane Creek, between Toledo and Port Clinton. They did not come ashore or cause any damage.							
Lucas County Lakeshore	26	1032EST			0	0			Waterspout

Storm Data and Unusual Weather Phenomena

July 1998

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

OHIO, Northwest

Putnam County Leipsic

21	2100EST	0	1	250K	Thunderstorm Wind
----	---------	---	---	------	--------------------------

ONE MAN ENDED UP PARALYZED WHEN A LARGE TREE LIMB FELL ONTO HIS CAR. COUNTLESS LARGE TREES WERE BLOWN DOWN ACROSS THE COUNTY. ONE HOUSE AND TWO BARNS WERE DESTROYED ON ROAD J-3 AND ROAD K. ANOTHER TWO STORY HOUSE COMPLETELY LOST ITS UPPER FLOOR. ANOTHER BARN ALONG ROAD 7-D AND X WAS FLATTENED WHILE THE LEPSIC ELEMENTARY SCHOOL SUSTAINED EXTENSIVE DAMAGE TO ITS ROOF AND WATER DAMAGE TO THE INTERIOR.

Van Wert County Middle Pt

21	2209EST	0	0	Hail (0.75)
----	---------	---	---	--------------------

Allen County Lima

21	2245EST	0	0	50K	Thunderstorm Wind (G50)
----	---------	---	---	-----	--------------------------------

TELEPHONE POLES DOWN ON CABLE RD.
Synoptic and mesoscale conditions for July 21st...

A stationary front draped across southern Lake Michigan into northern Ohio began to shift slowly southward during the 21st. A weak shortwave trough would interact with this boundary by late afternoon producing another outbreak of severe thunderstorms. Capes the afternoon of the 21st exceeded 5000 J/kg thanks in part to surface dewpoints in the mid 70s and mid level cold air advection under the approaching mid level shortwave. An east-west line of multicellular severe thunderstorms quickly developed along the front by late afternoon. As the convectively generated cold pool deepened... a large outflow boundary developed and began to spread southward generating new convection along the leading edge. Very heavy rain fell within this line of storms as they pushed slowly south as evidenced by reported rainfall amounts. Many locations experienced wet microbursts within the stronger multicell storms. Freezing level temperatures and wet bulb zero temperatures were quit high which greatly inhibited large hail formation.

The convective outflow weakened later that evening with echo training developing across central Indiana which went on to produce widespread flash flooding during the morning of July 22nd.

OHIO, Southeast

Lawrence County Waterloo

02	1540EST	0	0	Hail (1.00)
----	---------	---	---	--------------------

Lawrence County Arabia

02	1605EST	0	0	10K	Hail (1.75)
----	---------	---	---	-----	--------------------

Jackson County 2 S Wellston

19	2301EST	0	0	3K	Thunderstorm Wind
----	---------	---	---	----	--------------------------

Trees were down along Route 124.

OHIO, Southwest

Mercer County Neptune

04	0310EST 0315EST	0	0	3K	Thunderstorm Wind (G50)
----	--------------------	---	---	----	--------------------------------

Trees downed.

Butler County West Chester

19	0030EST 0400EST	0	0	Lightning
----	--------------------	---	---	------------------

Several hours of thunderstorms resulted in 17 homes being hit by lightning in West Chester alone.

Hamilton County Cincinnati

19	0130EST	0	0	40K	Lightning
----	---------	---	---	-----	------------------

Lightning struck a home causing a fire, which caused significant damage.

Mercer County Celina

19	1840EST 1845EST	0	0	10K	Thunderstorm Wind (G60)
----	--------------------	---	---	-----	--------------------------------

Numerous trees downed.

Auglaize County Countywide

19	1850EST 1855EST	0	0	10K	Thunderstorm Wind (G60)
----	--------------------	---	---	-----	--------------------------------

Many trees and large limbs downed due to estimated wind gusts of 60-80 mph.

Hardin County 4 S Roundhead

19	1850EST 1855EST	0	0	10K	Thunderstorm Wind (G60)
----	--------------------	---	---	-----	--------------------------------

Trees and large limbs downed.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, Southwest									
Darke County									
Greenville	19	1930EST 1935EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Logan County									
Bellefontaine	19	1935EST 1940EST			0	0	10K		Thunderstorm Wind (G60)
		Many trees downed.							
Shelby County									
Sidney	19	1940EST 1945EST			0	0	10K		Thunderstorm Wind (G60)
		Trees downed.							
Champaign County									
Mechanicsburg	19	2000EST 2005EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Union County									
Richwood	19	2000EST 2005EST			0	0	10K		Thunderstorm Wind (G60)
		Several trees downed.							
Delaware County									
Ashley	19	2005EST 2010EST			0	0			Thunderstorm Wind (G59)
		Winds gusted to 70 mph.							
Miami County									
Countywide	19	2005EST 2025EST			0	0	20K		Thunderstorm Wind (G60)
		Trees downed across the county.							
Darke County									
Greenville	19	2015EST 2025EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Mercer County									
Ft Recovery	19	2015EST 2020EST			0	0	10K		Thunderstorm Wind (G60)
		Trees downed.							
Clark County									
Countywide	19	2027EST 2045EST			0	0	10K		Thunderstorm Wind (G60)
		Trees and power lines.							
Franklin County									
Countywide	19	2030EST 2050EST			0	0	20K		Thunderstorm Wind (G60)
		Trees and power lines downed across the county.							
Madison County									
5 S Plain City	19	2030EST 2040EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Miami County									
Countywide	19	2100EST 2120EST			0	0	10K		Thunderstorm Wind (G60)
		Trees downed.							
Preble County									
Camden	19	2110EST 2115EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Montgomery County									
(Day)Cox Dayton Intl	19	2115EST			0	0	25K		Thunderstorm Wind (G64)
		Winds gusted to 74 mph causing some damage to the airport facility.							
Licking County									
Gratiot	19	2118EST 2130EST			0	0	10K		Thunderstorm Wind (G60)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OHIO, Southwest									
		Trees downed.							
Pickaway County									
Five Pts	19	2118EST 2120EST			0	0			Thunderstorm Wind (G68)
		Winds gusted to an estimated 80 mph.							
Fairfield County									
Baltimore to Sugar Grove	19	2130EST 2155EST			0	0	10K		Thunderstorm Wind (G60)
		Trees and power lines downed.							
Fayette County									
Countywide	19	2130EST 2145EST			0	0	10K		Thunderstorm Wind (G60)
		Trees downed.							
Madison County									
Countywide	19	2135EST 2200EST			0	0	20K		Thunderstorm Wind (G60)
		Numerous trees downed across the county.							
Greene County									
5 NW Xenia	19	2149EST 2155EST			0	0			Thunderstorm Wind (G59)
		Winds gusted to 70 mph.							
Hamilton County									
Springdale	19	2149EST 2155EST			0	0			Hail (1.75)
Pickaway County									
Circleville	19	2158EST 2205EST			0	0	10K		Thunderstorm Wind (G60)
		Trees downed.							
Butler County									
Hamilton	19	2200EST 2210EST			0	0	10K		Thunderstorm Wind (G60)
		Many trees downed.							
Warren County									
Harveysburg	19	2210EST 2215EST			0	0	10K		Thunderstorm Wind (G60)
		Trees downed.							
Clinton County									
3 NE Clarksville	19	2215EST 2220EST			0	0	20K		Thunderstorm Wind (G70)
		Numerous trees downed, some of which fell across Lebanon Road.							
Hamilton County									
Newtown	19	2215EST 2220EST			0	0			Hail (0.75)
Butler County									
Oxford	19	2221EST 2230EST			0	0	10K		Thunderstorm Wind (G60)
		Trees downed.							
Clermont County									
Countywide	19	2230EST 2250EST			0	0	20K		Thunderstorm Wind (G60)
		Numerous trees downed across the county.							
Ross County									
Chillicothe	19	2242EST 2250EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Highland County									
Countywide	19	2245EST 2305EST			0	0	10K		Thunderstorm Wind (G60)
		Numerous trees downed.							
Adams County									
Countywide	19	2300EST 2330EST			0	0	10K		Thunderstorm Wind (G60)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>OHIO, Southwest</u>									
Brown County Countywide	19	2300EST 2315EST			0	0	20K		Thunderstorm Wind (G60)
Pike County Countywide	19	2300EST 2320EST			0	0	10K		Thunderstorm Wind (G60)
Scioto County Portsmouth	19	2326EST 2335EST			0	0	20K		Thunderstorm Wind (G60)
Preble County Southwest Portion	20	0020EST 0200EST			0	0			Flood
Butler County Oxford	20	0050EST 0400EST			0	0			Flood
Hamilton County Cincinnati	20	0215EST 0345EST			0	0			Flood
Hardin County Kenton	21	2205EST 2210EST			0	0	5K		Thunderstorm Wind (G50)
Logan County Northwood	21	2240EST 2245EST			0	0	5K		Thunderstorm Wind (G50)
Pike County Waverly	22	1700EST 1705EST			0	0	3K		Thunderstorm Wind (G50)
Ross County Chillicothe	22	1725EST 1730EST			0	0	3K		Thunderstorm Wind (G50)
Auglaize County St Marys to New Bremen	22	2000EST 2130EST			0	0			Flood
Mercer County Countywide	22	2000EST 2100EST			0	0			Flood
<u>OKLAHOMA, Eastern</u>									
Creek County 3 NW Bristow	02	0230CST			0	0	10K		Hail (2.75)
Tulsa County Broken Arrow	02	0715CST			0	0			Hail (0.75)
Latimer County Wilburton	02	1530CST			0	0			Hail (0.88)

Summary of events for July 2 1998:

Storm Data and Unusual Weather Phenomena

July 1998

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

OKLAHOMA, Eastern

Leftover outflow boundaries from non-severe thunderstorms on July 1 combined with an upper level trough caused isolated severe thunderstorms to develop early on the morning of July 2. The main threat with these isolated storms was hail as large as baseballs near Bristow. Another isolated severe thunderstorm developed during the afternoon along another old leftover boundary.

Pawnee County 3 ENE Pawnee

08	0140CST	0	0	Thunderstorm Wind (G75)
-----------	----------------	----------	----------	--------------------------------

Summary for July 8 1998:

A weakening area of showers and thunderstorms moved southeast out of Kansas during the early morning of July 8. Most all of these thunderstorms remained below severe limits. However, the Pawnee mesonet site measured a gust to 86 mph in what could have been a small-scale wet microburst. To demonstrate the small scale of this event, the Pawnee Police Department logged 40 mph winds in town, and there was no damage reported with this event, despite the severity of the winds at the mesonet site.

Le Flore County 2 W Summerfield

11	1944CST	0	0	Hail (1.00)
-----------	----------------	----------	----------	--------------------

Rogers County Inola

12	0110CST	0	0	Hail (0.75)
-----------	----------------	----------	----------	--------------------

Rogers County Inola

12	0110CST	0	0	Thunderstorm Wind (G52)
-----------	----------------	----------	----------	--------------------------------

Summary of events for July 11-12 1998:

An isolated severe thunderstorm developed on the evening of July 11 over central Le Flore County near a weak surface boundary with the approach of a weak upper level disturbance. This storm produced hail as large as quarters.

Later after midnight, the weak upper level disturbance in northwest flow aloft kicked off more thunderstorms from near Ponca City to just north of Tulsa to near Fayetteville. One of these thunderstorms became severe over southern Rogers County between 145 and 215 AM CDT as it moved to the southeast, producing marginally severe wind and hail near Inola.

OKZ049-053-065>066-071-073>076 Pushmataha - Choctaw - Okfuskee - Okmulgee - McIntosh - Pittsburg - Haskell - Latimer - Le Flore

06	0000CST	0	0	500M Drought
31	2359CST			

A devastating drought and heat wave affected southeastern Oklahoma farmers during the month of July. At McAlester, the only rainfall during July was 0.19" on the first two days of the month. The southeast Oklahoma climate division (which includes Choctaw, Pushmataha, Latimer and Le Flore Counties) received 50 percent of normal rainfall from May 1 through July 31. By the end of July, southeast Oklahoma was classified by the Palmer Drought Index as being in the midst of a "severe drought", while east central Oklahoma was experiencing "moderate drought". From a historical perspective, the period from June 1-July 31 was the third driest on record in southeast Oklahoma, while the period from April 1-July 31 was the fourth driest on record in east central Oklahoma.

When combined with 100+ degree temperatures on 24 out of 31 days during the month (at McAlester) and relative humidities under 25 percent on many afternoons, crops stood little chance of survival. The Oklahoma Agriculture Secretary estimated crop damage throughout Oklahoma at \$2 billion, of which \$500 million might have taken place in southeast and east central Oklahoma. The President declared the counties listed here as a drought disaster area, nine of sixty-six counties throughout southern and central Oklahoma receiving this designation.

For more information on the heat wave, please refer to the Excessive Heat entry in eastern Oklahoma's July Storm Data.

OKZ049-053-060-064>068-070>076 Pushmataha - Choctaw - Tulsa - Creek - Okfuskee - Okmulgee - Wagoner - Cherokee - Muskogee - McIntosh - Sequoyah - Pittsburg - Haskell - Latimer - Le Flore

06	0000CST	5	0	Excessive Heat
31	2359CST			

A blistering heat wave struck the south-central part of the nation during July 1998, including much of eastern Oklahoma. A drought also accompanied the heat wave in southeast Oklahoma, combining with the heat wave to cause devastating crop damage. (For specific information on the drought aspect and crop damage, see the Drought entry in eastern Oklahoma's July Storm Data.) This was all brought about by a persistent upper level ridge of high pressure over the south-central and southwestern parts of the nation.

Temperatures in some portion of southeast Oklahoma rose above 100 degrees on all but two days of the month, particularly further south in Choctaw and Pushmataha Counties. At the McAlester ASOS, 100+ degree temperatures were recorded on 24 out of 31 days during July. In fact, there were 15 consecutive days above the century mark from the 17th through the 31st, and the mercury soared to at least 105 degrees every day from the 23rd through the 31st, rising as high as 107 on three days. The average high temperature for the entire month of July in McAlester was 102.0 degrees. The average monthly temperature was 89.3 degrees, or 7.4 degrees above normal. The temperature failed to fall below 80 degrees on eight days of the month.

Storm Data and Unusual Weather Phenomena

July 1998

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

OKLAHOMA, Eastern

Further north at the Muskogee ASOS, conditions were similar as temperatures reached at least 100 degrees on all but one day from the 18th through the 31st. The temperature rose as high as 107 on the 26th.

In Tulsa, weak cold fronts put a damper on the extreme heat for two to four days at a time, but temperatures reached at least 100 degrees eight times in July. The temperature rose as high as 106 on the 30th.

Five deaths in eastern Oklahoma during July are blamed on the heat, not including a 40-year old man who suffered a heat stroke in June and died on July 13. The first was a 40-year old Tulsa man who suffered a heat stroke near 800 S. Boulder Avenue in downtown Tulsa on July 10. The high temperature that day in Tulsa reached 99 degrees after a morning low of 80 with afternoon heat indices near 110 degrees. An 86-year old Hugo man died on July 15 after suffering from dehydration and heat. Another 40-year old Tulsa man and a 63-year old Broken Arrow man had also died of heat stroke through July 20, but the exact day of these two deaths was not included in newspaper articles and is unknown. On the 30th, a 39-year old Henryetta woman died of hyperthermia. The temperature at Tulsa rose that day to 106, and McAlester rose to 105.

The State Health Department reported that Emergency Medical Services throughout Oklahoma had responded to 452 heat-related injuries during the period June 1 to July 31, but it is unknown when and how many of those took place in the eastern portion of Oklahoma.

M40OU, M40OT, M62OT, M86PH, F39OT

Pittsburg County

Mc Alester	24	1845CST	0	0	1.5K	Thunderstorm Wind
-------------------	-----------	----------------	----------	----------	-------------	--------------------------

An isolated thunderstorm produced an apparent downburst wind on the north side of McAlester, blowing down several trees and privacy fences.

OKLAHOMA, Extreme Southeast

Mccurtain County

2 S Idabel	02	1515CST	0	0		Hail (0.75)
------------	----	---------	---	---	--	--------------------

OKLAHOMA, Panhandle

Beaver County

Knowles	10	1715CST	0	0		Thunderstorm Wind (G61)
---------	----	---------	---	---	--	--------------------------------

A severe thunderstorm over the eastern Oklahoma panhandle produced high winds which broke four to six inch tree limbs from trees.

Texas County

8 N Eva	05	1944CST	0	0		Hail (0.75)
---------	----	---------	---	---	--	--------------------

A severe thunderstorm over the central Oklahoma panhandle produced an isolated report of hail during the evening hours.

Texas County

1 W Hooker	07	1850CST	0	0		Thunderstorm Wind (G51)
------------	----	---------	---	---	--	--------------------------------

Texas County

Adams	07	1915CST 1930CST	0	0	50K	Thunderstorm Wind (G56)
-------	----	--------------------	---	---	------------	--------------------------------

The roof of a mobile home was reported to have been taken off. Power lines were reported down along with several barns destroyed.

Beaver County

5 E Forgan	07	2023CST	0	0		Thunderstorm Wind (G52)
------------	----	---------	---	---	--	--------------------------------

Severe thunderstorms across the central and eastern Oklahoma panhandle caused high winds along with some damage during the evening hours.

Texas County

Adams	23	1820CST	0	0		Thunderstorm Wind (G52)
-------	----	---------	---	---	--	--------------------------------

Beaver County

7 E Turpin	23	1855CST	0	0		Thunderstorm Wind (G52)
------------	----	---------	---	---	--	--------------------------------

Trees were reported uprooted and a livestock feeder had overturned.

Severe thunderstorms marched across the central and eastern Oklahoma panhandle during the evening hours producing high winds.

Texas County

Hardesty	26	1705CST	0	0		Thunderstorm Wind (G52)
----------	----	---------	---	---	--	--------------------------------

Texas County

Adams	26	1723CST	0	0		Hail (1.00)
-------	----	---------	---	---	--	--------------------

Beaver County

Beaver	26	1732CST	0	0		Hail (0.88)
--------	----	---------	---	---	--	--------------------

Severe thunderstorms containing hail and high winds moved across the central and eastern Oklahoma panhandle during the early evening hours.

Storm Data and Unusual Weather Phenomena

July 1998

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

OKLAHOMA, Western, Central and Southeast

observer in the same location also recorded 3 inches of rain during the storm. As the severe thunderstorm moved north to near Arnett, large limbs were blown off of 2 elm trees. In Caddo County near Eakly, severe thunderstorm winds damaged a school, blew down barns and fences, damaged many other barn roofs, and also blew the roof off from a set of bleachers at the ballpark. The same severe thunderstorm was responsible for ripping a barn roof off and destroying several awnings at a baseball park in Alfalfa, also in Caddo County. In Vici in Dewey County a 300 gallon tank was blown into a nearby house. Lastly, a severe thunderstorm 11 miles east of Buffalo in Harper County lasted for 20 minutes knocking large tree limbs from 2015 CST to 2035 CST.

Cotton County Walters	13	1720CST			0	0	1.5K		Thunderstorm Wind
Tillman County Grandfield	13	1730CST			0	0	0.50K		Thunderstorm Wind
Cotton County 9 E Randlett	13	1740CST			0	0			Thunderstorm Wind (G52)
Cotton County Temple	13	1740CST			0	0	0.60K		Thunderstorm Wind
Cotton County 6 SW Randlett	13	1745CST			0	0			Hail (0.75)

Scattered severe thunderstorms developed over Cotton and Tillman Counties the afternoon of the 13th resulting in power lines being blown down in Grandfield in Tillman County leaving three hundred residents without power for several hours, while in Cotton County, a trampoline blew into some trees in Walters, and several utility poles and large tree limbs were blown down in Temple leaving 200 residents without electricity for several hours.

Dewey County Aledo	15	1425CST			0	0			Hail (0.75)
Ellis County 9 SE Harmon	15	1455CST			0	0			Hail (0.88)
Ellis County 3 E Harmon	15	1455CST			0	0			Hail (0.88)
Custer County 11 NW Arapaho	15	1500CST			0	0			Hail (0.75)
Custer County 5 SW Butler	15	1510CST			0	0			Thunderstorm Wind (G52)
Roger Mills County 5 W Angora	15	1520CST			0	0			Hail (1.00)

Scattered severe thunderstorms developed over western Oklahoma the afternoon of the 15th resulting in several occurrences of large hail including dime, nickel and quarter size. There was also one report of severe thunderstorm winds, an Oklahoma Mesonet measurement of 60 mph 5 miles southwest of Butler in Custer County at 1510 CST.

Blaine County 4 W Okeene	23	1510CST	0.1	10	0	0			Tornado (F0)
Blaine County Okeene	23	1510CST			0	0	0.50K		Thunderstorm Wind
Blaine County Okeene	23	1530CST	0.2	50	0	0	3K		Tornado (F0)
Blaine County 1.5 N Okeene	23	1530CST			0	0	1K		Thunderstorm Wind
Major County 18 N Chester	23	1725CST 1740CST			0	0			Hail (0.75)

An isolated severe thunderstorm in Blaine County was responsible for spawning a short-lived tornado 4 miles west of Okeene at 1510 CST, and was witnessed by a trained spotter on the ground in an open field for less than 1 minute. No damage was reported and thus was rated an F0. Numerous trees were also uprooted in Okeene at 1510 CST. One tree fell across 6th St. blocking traffic until it could be removed by city employees. This damage was associated with damaging straight-line winds. Another F0 tornado was spotted near the hospital in Okeene at 1530 CST. A radio communications tower was destroyed, and one vehicle was damaged in the parking lot due to flying debris. Additional damage was reported 1.5 miles north of Okeene where a large metal shed was destroyed by damaging straight-line winds.

Woodward County 21 NNE Mooreland	25	1600CST			0	0			Thunderstorm Wind (G65)
Woods County Lookout	25	1610CST			0	0			Hail (0.75)
Major County 3 E Meno	25	1800CST			0	0			Thunderstorm Wind (G60)

Storm Data and Unusual Weather Phenomena

July 1998

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

OKLAHOMA, Western, Central and Southeast

Isolated severe thunderstorms developed over northwest Oklahoma during late afternoon of the 25th resulting in measured wind gusts of 75 mph 21 miles north-northeast of Mooreland in Woodward County and 69 mph 3 miles east of Meno in Major County, both measured by Oklahoma Mesonet. There was also one report of large hail, dime size at 1610 CST in Lookout in Woods County.

Oklahoma County Oklahoma City	26	1300CST 1310CST			0	0	25K		Thunderstorm Wind
Harper County 7 NW Laverne	26	2130CST			0	0			Thunderstorm Wind (G52)
Ellis County 9 NE Catesby	26	2215CST			0	0			Thunderstorm Wind (G56)
Washita County Burns Flat	27	2015CST			0	0			Thunderstorm Wind (G52)
Washita County 1 S Foss	27	2100CST			0	0			Thunderstorm Wind (G52)
Ellis County 8 N Shattuck	28	1735CST			0	0			Thunderstorm Wind (G61)
Woodward County 20 NE Woodward	28	1855CST			0	0			Thunderstorm Wind (G61)
Woods County 1 W Lookout	28	1915CST			0	0			Hail (0.75)
Woodward County 4 SE Woodward	28	2110CST			0	0			Thunderstorm Wind (G52)
Cotton County Walters	11	0100CST 0300CST			0	0	40K		Lightning
Lincoln County 4 W Prague	11	0430CST 0445CST			0	0	12K		Thunderstorm Wind

Isolated thunderstorms developed over central and southwest Oklahoma the morning of the 11th. One thunderstorm was responsible for a lightning strike at the Historic Eagle Park in Walters in Cotton County resulting in a fire that destroyed a skating rink, ghost mine, carousel, and several bumper cars. Also, a severe thunderstorm containing damaging straight line winds 4 miles west of Prague in Lincoln County snapped a tree, destroyed a barn, damaged a trailer home, and blew a camper from a pickup truck over a fence and into some trees.

Oklahoma County Oklahoma City	24	2005CST			0	0	3K		Lightning
Lightning struck the roof of a house at 1500 NW 48th in Oklahoma City causing it catch on fire. Extent of damage was unknown.									
Kingfisher County Kingfisher	07	0100CST			0	0	0.20K		Lightning
Lightning struck a power pole behind Southside Auto Body causing power to be out for 4 hours on the south side of the city.									
OKZ025	Oklahoma 09	1100CST			1	0			Excessive Heat
A 73 year-old man died in his home in Oklahoma City due to the excessive heat.									
M73PH									
OKZ019	Logan 10	1100CST			1	0			Excessive Heat
A 79 year-old man died in his mobile home in Mulhall due to the excessive heat.									
M79MH									
OKZ031	Seminole 11	1100CST			1	0			Excessive Heat
A 51 year-old woman died in her home in Wewoka due to the excessive heat.									

Storm Data and Unusual Weather Phenomena

July 1998

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

OKLAHOMA, Western, Central and Southeast

OKZ036	F51PH Jackson 17 1100CST				1	0			Excessive Heat
A 79 year-old man died in his home in Altus due to the excessive heat.									
OKZ019-025-025	M79PH Logan - Oklahoma 19 1100CST				3	0			Excessive Heat
Three people died on the 19th due to the excessive heat. The first fatality occurred to a man of unknown age. He was found dead in his vehicle in Oklahoma City (Oklahoma County). A 55 year-old woman was found dead in her Guthrie (Logan County) home, and a 78 year-old woman was found dead in her Oklahoma City apartment. M?VE, F55PH, F78PH									
OKZ039	Stephens 20 1100CST				1	0			Excessive Heat
A 78 year-old woman died in her house in Duncan due to the excessive heat.									
OKZ019	F78PH Logan 21 1100CST				1	0			Excessive Heat
A 78 year-old woman died in her home in Guthrie due to the excessive heat. Reports indicated she rejected numerous offers of an air conditioner.									
OKZ038	F78PH Comanche 22 1100CST				0	3			Excessive Heat
Three US Army troop members from Fort Sill were rushed to a local hospital and treated for heat related injuries.									
OKZ025-031	Oklahoma - Seminole 27 1100CST				2	0			Excessive Heat
Two persons died on the 27th due to the excessive heat. The first victim was a 61 year-old man who was found dead in his Oklahoma City (Oklahoma County) home. The other victim was also found dead in his home, this time in Cromwell (Seminole County). M61PH, M67PH									
OKZ025	Oklahoma 30 1100CST				1	0			Excessive Heat
Excessive heat and drought conditions affected western and central Oklahoma from May through early October with the most intense heat and severe drought conditions occurring from mid-June through early September across central and southern Oklahoma. The excessive heat and drought was less severe across northwest and north central Oklahoma. There were 19 fatalities and at least 3 injuries directly related to the heat. Agricultural losses are estimated at nearly 2 billion dollars for the entire state of Oklahoma. Sixty of Oklahoma's 77 counties were declared federal disaster areas.									

Heat and drought conditions began in May, intensified in July and August, and diminished in September and early October. Oklahoma City experienced its 6th warmest and 16th driest May on record. Heat and drought conditions escalated after June 11th, which was the last day of widespread rainfall across western and central Oklahoma until early September. The heat and drought then ended in early October when widespread rain and cooler temperatures returned.

The first fatality directly related to the heat occurred on June 21st, when an 81 year-old woman was found dead in her house in Oklahoma City (Oklahoma County). A 76 year-old man was then found dead in his Del City (Oklahoma County) home on June 29th. The heat claimed 15 lives in July. Two persons died on the 9th. A 46 year-old man was found dead in a hotel room in Oklahoma City with no air conditioning. The temperature in the room was 115 degrees. A 73 year-old man was then found dead in his Oklahoma City home. On July 10th, a 79 year-old man was found dead in his mobile home in Mulhall (Logan County). Another heat related fatality occurred on the 11th, when a 51 year-old woman was found dead in her home in Wewoka (Seminole County).

On July 17th, in Altus (Jackson County), a 79 year-old man was found dead in his home, while on the 19th, there were 3 heat related deaths reported. The first fatality occurred to a man of unknown age. He was found dead in his vehicle in Oklahoma City. The second fatality occurred in Guthrie (Logan County) when a 55 year-old man was found dead in his house, while the 3rd fatality occurred to a 78 year-old woman when she was found dead in her Oklahoma City apartment. On July 20th, a 78 year-old woman was found dead in her Duncan (Stephens County) home, while on the 21st, another 78 year-old woman was found dead in her home, this time in Guthrie (Logan County). Two persons died in their homes from the heat on the 27th, the first, a 61 year-old man from Oklahoma City, the second, a 67 year-old man found from Cromwell (Seminole County). The last heat related fatality occurred on the 30th, when a 62 year-old woman was found dead in her Oklahoma City home.

Storm Data and Unusual Weather Phenomena

July 1998

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

OKLAHOMA, Western, Central and Southeast

Three heat related fatalities were reported in August. The first occurred on the 2nd when a 53 year-old man was found dead inside his Oklahoma City home. The second heat related fatality occurred on the 3rd, when an 82 year-old man was found dead inside his Oklahoma City home. The last heat related fatality in August occurred on the 5th in Gene Autry (Carter County) when a 76 year-old man was found dead inside his home. Only one heat related fatality was reported in September, and occurred on the 4th. A 76 year-old man was found dead outside of a retirement home in Oklahoma City. He was found after he went for a walk and did not return.

Only 3 heat related injuries were reported during the 5 month-long heat and drought. Three US Army troop members from Fort Sill (Comanche County) were rushed to a local hospital on July 22nd and treated for heat related injuries.

Statistics provided by the Oklahoma State Department of Agriculture indicate economic losses of approximately 2 billion dollars to Oklahoma's agriculture business. Figures were not available for individual counties. Hay and cotton crops were particularly affected. Hay producers harvested only 30 to 80 percent of the normal yield, a loss of perhaps 80 million dollars. Cotton production was reduced by about 70 percent, a loss of 38 million dollars. Other crops such as grain sorghum, peanuts and soybeans also suffered major losses. In total, crop losses across Oklahoma were near 500 million dollars, but because of the multiplying effect on the overall economy, the economic impact is closer to 2 billion dollars.

The summer of 1998 (June-August) was the 4th hottest and 5th driest on record in Oklahoma City. The drought ended gradually in September and early October, but record warm temperatures continued through September. Oklahoma City recorded an average temperature of 81.2 degrees in September, 2nd hottest September on record. The summer of 1980, considered to be the last major period of excessive heat and drought to affect central and western Oklahoma, still ranks as the hottest summer ever for Oklahoma City, however Oklahoma City did experience a drier summer in 1998 than in 1980.
F62PH

OREGON, Central and East

Union County

Starkey

09	1405PST	0	0	Heavy Rain
	1520PST			

0.54 inches of rain fell in 75 minutes with 1/2 inch hail.

Grant County

**Canyon City to
Granite**

02	1330PST	0	0	Hail (2.50)
	1510PST			

A thunderstorm produced up to 2 1/2 in hail, wind gusts to 60 mph, and heavy rain. At least two windshields were broken in Granite with 2 inch hail. Hail was 4 inches deep in some places and snow plows were used to clear hail off Highway 26. As much as 1.15 inches of rain fell in 15 minutes. Water and mud ran through two houses and road side ditches filled causing water to run down roads. Pine trees and numerous tree branches were blown down and metal roofs were damaged by the wind.

Union County

La Grande Arpt

02	1600PST	0	0	Hail (1.00)
-----------	----------------	----------	----------	--------------------

One inch hail was reported ten miles south of La Grande in Ladd Canyon.

Union County

**La Grande to
Summerville**

02	1625PST	0	0	Heavy Rain
	1710PST			

Up to 1.50 inches of rain fell in 20 minutes. 0.25 inches of rain fell in only two minutes. Wind gusts to 50 mph were also reported. The result was a flooded underpass and several inches of water flowing along La Grande streets. Eight hundred to a thousand residents had power outages for several hours. The storm nearly wiped out crops in a 1 1/2 to 2 mile wide by 6 to 7 mile long strip between Island City and Cove.

Wallowa County

Minam

02	1720PST	0	0	Hail (0.75)
-----------	----------------	----------	----------	--------------------

Dime sized (3/4 inch) hail fell in Minam.

Umatilla County

Meacham

09	1655PST	0	0	Hail (0.75)
	1710PST			

A thunderstorm produced 3/4 inch hail and 0.25 inches of rain in 15 minutes. Lightning from this storm caused at least 11 spot fires to start. Lightning and wind blown trees also caused scattered power outages.

Deschutes County

**Bend to
Terrebonne**

09	1800PST	0	0	2M	Hail (1.75)
	1825PST				

A spotter reported hail up to 1 3/4 inch in Redmond along with heavy rain. 1/2 inch hail was reported in Bend. A local newspaper reported 2 inch hail in Terrebonne with damage to roofs, patio furniture, trees, windows, cars, satellite dishes, solar panels, corn and hay fields. The hail piled up more than four inches deep in places. Damage claims are estimated to be near two million dollars.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
OREGON, Central and East									
Jefferson County									
Ashwood	10	1540PST 1600PST			0	0			Tstm Wind/Hail
Up to ten inch diameter tree branches blew down along the Jefferson-Wheeler County line. 1/2 inch hail was also reported.									
Wheeler County									
Fossil	10	0515PST			0	0			Hail (0.75)
Dize sized hail fell in Fossil with heavy rain.									
Wallowa County									
Joseph Arpt	10 11	2230PST 0100PST			0	0			Flash Flood
Flash flooding along Hurricane Creek about four miles west of Joseph Airport washed out several roads and stranded some campers. The flash floods caused four mud slides. About 25 people were stranded when the largest slide went across the road and change the course of Hurricane Creek. The slide was estimated to be 150 feet wide and 4 feet deep. One of the mud slides pushed a Chevy Geo about 12 feet into the side of the owners' tent. No one was injured.									
Gilliam County									
Central Portion	10 11	1700PST 1800PST			0	0			Wild/Forest Fire
Lightning caused a range fire about ten miles north of Condon on the evening of July 10. That fire was put out a few hours later then lightning struck again and started a wild fire that lasted into the evening of the 11th. Four caterpillars, a road grader, a spray plane, and numerous volunteers helped control the fire.									
Gilliam County									
Blalock	12	1200PST 1700PST			0	0			Wild/Forest Fire
A range fire started near Blalock when a bird caused an arch between two power lines. In the process of resetting the power, a line sparked which caused another fire that eventually burnt a couple hundred acres of wheat, several outbuildings and grain storage facilities.									
Jefferson County									
Warm Spgs	21	1300PST 1500PST			0	0			Wild/Forest Fire
A brush fire burned about 100 acres on the Warm Springs Indian Reservation. Highway 26 was closed for about an hour to give fire fighters quick access to the area. High wind complicated fire fighting efforts. The source of the fire appeared to be a dump site.									
Union County									
Elgin	27	1715PST			0	0			Lightning
Lightning struck a power pole near a plywood mill in Elgin. The strike blew up a transformer and caused a pole fire and damaged electronic equipment in the plant. Part of the plant was not operating for a day because of the damaged equipment.									
Morrow County									
Boardman	29 31	2000PST 0130PST			0	0			Wild/Forest Fire
Lightning caused a brush fire on the Naval Bombing range south of Boradman that burned more than 30,000 acres. Strong shifting wind, difficult terrain, and heavy brush hampered fire fighting efforts. One hundred fifty Naval and civilian fire fighters fought the fire.									
Jefferson County									
Madras	27 28	1300PST 2200PST			0	0			Wild/Forest Fire
Wasco County									
Simmasho	27 29	1300PST 2200PST			0	0			Wild/Forest Fire
Two large fires and several small fires were touched off by lightning during the last week in July on the Warm Springs Indian Reservation in southwestern Wasco and northwestern Jefferson Counties. The largest fire burned nearly 1,000 acres. A 4-H camp near Peter's Place was placed on evacuation standby for six hours but was not threatened by the fire.									
Deschutes County									
Redmond	29	1340PST 1400PST			0	0	200K		Thunderstorm Wind
A powerful storm moved through the Deschutes County Fair injuring at least four people, flipping a large tent, and lifting an inflated laser tag game into a tree. A 40-by-40-foot tent flipped over and struck two people with 2 to 3 inch pipes, one went to the hospital. Two young men were playing in a 900 pound laser tag "bag" when a gust of wind picked up the balloon-like structure, with the men inside, and threw them into a tree. One of the young men received a bloody nose. The owner of the laser tag game estimated equipment losses as high as 100,000 dollars. Vendors' displays also were blown over and merchandise was damaged.									
Deschutes County									
Millican	29	1342PST			0	0			Hail (0.75)
A spotter six miles south of Millican reported dime (3/4 inch) hail.									

Storm Data and Unusual Weather Phenomena

July 1998

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

OREGON, Southeast

Scattered thunderstorms produced minor flash floods over several county roads in the Ironside area. No damage or injuries were reported.

Malheur County

Ontario	04	1845MST 2015MST			0	0	100K	900K	Tstm Wind/Hail
----------------	-----------	----------------------------	--	--	----------	----------	-------------	-------------	-----------------------

During the evening of the 4th a severe thunderstorm struck Ontario with strong winds and 3/4 inch hail. Winds of 45 to 50 mph were reported which overturned two airplanes at the Ontario airport and knocked down power lines and trees while hail damaged onion and potato crops.

OREGON, Southwest

Lake County

9 N Silver Lake	03	1530PST 1830PST			0	0	Flash Flood		
------------------------	-----------	----------------------------	--	--	----------	----------	--------------------	--	--

Stationary thunderstorm with heavy rain and small hail produced nearly an inch of rainfall in three hours. The resulting flash flood caused mudslides on Hwy 31 north of Silver Lake, with one inch of water and 6-8 inch diameter rock covering a half mile stretch of the roadway.

Jackson County

Ashland	10	1717PST			0	0	Hail (0.75)		
----------------	-----------	----------------	--	--	----------	----------	--------------------	--	--

Thunderstorm produced dime size hail in north Ashland.

PACIFIC

NOT RECEIVED.

PENNSYLVANIA, Central

Huntingdon County

Alexandria	07	2100EST 2359EST			0	0	Flash Flood		
-------------------	-----------	----------------------------	--	--	----------	----------	--------------------	--	--

A small stream overflowed a dike and flooded a house.

Huntingdon County

North Portion	08	2030EST 2300EST			0	0	Flash Flood		
----------------------	-----------	----------------------------	--	--	----------	----------	--------------------	--	--

A couple of roads were closed by heavy rains.

Mifflin County

North Portion	08	2030EST 2300EST			0	0	Flash Flood		
----------------------	-----------	----------------------------	--	--	----------	----------	--------------------	--	--

Heavy rain flooded roads and basements across the county.

Warren County

Columbus	15	1720EST			0	0	Thunderstorm Wind (G51)		
-----------------	-----------	----------------	--	--	----------	----------	--------------------------------	--	--

A tree was blown down on a house.

Columbia County

Catawissa	17	1540EST			0	0	Thunderstorm Wind (G51)		
------------------	-----------	----------------	--	--	----------	----------	--------------------------------	--	--

Trees down in Catawissa and Mainville.

Centre County

Julian	17	1705EST			0	0	Thunderstorm Wind (G51)		
---------------	-----------	----------------	--	--	----------	----------	--------------------------------	--	--

Winds blew a utility pole over, damaging a house.

Somerset County

Somerset	21	1530EST			0	0	Thunderstorm Wind (G51)		
-----------------	-----------	----------------	--	--	----------	----------	--------------------------------	--	--

Somerset County

Shanksville	21	1535EST			0	0	Thunderstorm Wind (G51)		
--------------------	-----------	----------------	--	--	----------	----------	--------------------------------	--	--

Trees were down in Somerset and other spots in the county. A tree also fell on a home in Shanksville.

Bedford County

Everett	21	1555EST			0	0	Thunderstorm Wind (G51)		
----------------	-----------	----------------	--	--	----------	----------	--------------------------------	--	--

Trees down.

Lebanon County

Myerstown	21	1618EST			0	0	Thunderstorm Wind (G51)		
------------------	-----------	----------------	--	--	----------	----------	--------------------------------	--	--

Downburst winds struck across Jackson Township, taking down trees and utility poles as the storm moved southeast through the Country Acres Trailer Park and crossed Route 422, just west of Myerstown. A tree fell on a mobile home, providing the bedroom with a view of the sky. The owner, who was home at the time, was unhurt. Winds also blew part of a roof off of a barn and collapsed another. About 10 utility poles in a row were blown down across Route 422.

Fulton County

Amaranth	21	1619EST			0	0	Thunderstorm Wind (G51)		
-----------------	-----------	----------------	--	--	----------	----------	--------------------------------	--	--

A tree was blown onto Interstate 70.

Storm Data and Unusual Weather Phenomena

July 1998

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

PENNSYLVANIA, Central

Lancaster County

Quarryville 21 1720EST 0 0 **Thunderstorm Wind (G51)**
Trees down.

Cambria County

Johnstown 21 2235EST 0 0 **Thunderstorm Wind (G51)**
Large limbs blown out of trees.

PENNSYLVANIA, East

Montgomery County

Glenside 17 1415EST 0 0 0 0 **Hail (0.75)**

PAZ067>071

Chester - Montgomery - Bucks - Delaware - Philadelphia
20 0900EST 11 75 **Excessive Heat**
23 1700EST
M88PH, ??OT, F1OT, M79OT, F51OT, M77OT, F61PH, F84OT, M46OT, M50OT, F76OT

PAZ061

Lehigh
21 0900EST 0 0 **Hot Weather**
22 1700EST

A heat wave affected Southeast Pennsylvania from July 20th through the 23rd. Eleven persons died (Eight in Philadelphia and three in Montgomery County.) from the heat. They were usually discovered in homes with closed windows and inadequate ventilation. A 21-month-old Philadelphia baby was inadvertently left in a car overnight and died the next day. When the child was discovered in the car that next day, her body temperature had risen to 109 degrees. There were at least around 75 dispatches for heat related emergencies within the city of Philadelphia. Two firefighters also suffered heat exhaustion after fighting a blaze the afternoon of the 20th. The city of Allentown also issued a hot weather advisory for the 21st and 22nd. While no new energy usage records were set, PECO Energy reported energy usage was 20 percent above normal for July. The hottest days of the heat wave were the 21st and 22nd. Cloudiness on the 22nd prevented temperatures from rising even higher as the center of the hot air mass was over the Middle Atlantic States. A weak trough brought in slightly cooler air on the 23rd. A stronger cold front moved through the region late in the day on the 23rd and brought in a much drier and cooler air mass through the upcoming weekend (July 25th and 26th). The highest temperatures included 95 degrees at the Franklin Institute within Philadelphia, 94 degrees in Crum Creek (Delaware County) and at the Philadelphia International Airport and 93 degrees in Neshaminy Falls (Bucks County) and the Northeast Philadelphia Airport.

PAZ054>055-060>062-067>071 **Carbon - Monroe - Berks - Lehigh - Northampton - Chester - Montgomery - Bucks - Delaware - Philadelphia**

31 2359EST 0 0 0 **Unseasonably Dry**

July 1998 started a run of drier than normal weather across Southeastern Pennsylvania. On a county weighted average, rainfall totals for the month of July were between 1.7 and 2.8 inches and averaged about half of normal. The driest conditions occurred across Bucks and Lehigh Counties. In Lehigh County, only 40 percent of the normal July rainfall fell. Monthly precipitation totals included 1.79 at the Philadelphia International Airport and 1.18 inches at the Lehigh Valley International Airport. The lack of rain started to stress the corn and hay crops across Southeast Pennsylvania.

PENNSYLVANIA, Northeast

Wyoming County

Laceyville 17 1445EST 0 0 10K **Thunderstorm Wind**
A thunderstorm intensified to severe limits briefly over the northwestern corner of the county. Strong wind gusts toppled several trees in and near Laceyville.

Luzerne County

Conyngham to West Hazleton 21 1300EST 0 0 400K **Thunderstorm Wind**
1310EST

A thunderstorm intensified over extreme southern portions of the county early in the afternoon. Severe downburst winds caused extensive damage in a swath from Conyngham southeastward towards West Hazleton.

Several dozen homes sustained damage as the storm ripped through the region. Most suffered roof and siding damage as trees were toppled onto them. A couple of homes in Hazle Township just west of Interstate 81 had their roofs completely torn off and one also had a storage garage flattened by the strong wind gusts. Many vehicles in the parking lot of Laurel Mall in West Hazleton took on damage as large light poles were blown down. Pennsylvania Power and Light Company estimates that thousands of customers in the area were without power for a 2 to 3 hour period that afternoon.

Post storm damage surveys indicate that a 3 to 4 mile long swath of straight line wind damage resulted. From the character of the damage, it is estimated that wind speeds fell within the 70 to 90 mph range.

Lackawanna County

Clarks Summit 21 1335EST 0 0 10K **Thunderstorm Wind**

Storm Data and Unusual Weather Phenomena

July 1998

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

PENNSYLVANIA, Northeast

Part of the same squall line that inflicted widespread wind damage over southern Luzerne county worked its way eastward into Lackawanna county. More isolated damage occurred in northern portions of Lackawanna county as a few trees were toppled in Clarks Summit shortly after 230 pm EDT.

PENNSYLVANIA, Northwest

Crawford County

Linesville	20	2355EST	5	100	0	0	75K	Tornado (F1)
	21	0005EST						

A tornado touched down two miles west of Linesville and moved sporadically along its path. A livestock shed was destroyed. A house and barn suffered minor damage and numerous trees were downed.

Erie County

Countywide	21	1953EST			0	0	25K	Thunderstorm Wind
-------------------	-----------	----------------	--	--	----------	----------	------------	--------------------------

Numerous trees and power lines were downed, especially in the Edinboro area.

Crawford County

Countywide	21	1943EST			0	0	25K	Thunderstorm Wind
-------------------	-----------	----------------	--	--	----------	----------	------------	--------------------------

Numerous trees and power lines were downed, particularly in the Titusville area.

Erie County

Union City	21	2037EST			0	0	10K	Thunderstorm Wind
-------------------	-----------	----------------	--	--	----------	----------	------------	--------------------------

Trees were downed.

Crawford County

Titusville	21	2040EST			0	0	20K	Thunderstorm Wind
-------------------	-----------	----------------	--	--	----------	----------	------------	--------------------------

Trees were downed in Titusville, at least one falling on a car. Trees were also downed in Townville located about 10 miles west of Titusville.

Erie County

Lakeshore	25	0600EST			0	0		Waterspout
------------------	-----------	----------------	--	--	----------	----------	--	-------------------

A waterspout was reported on Lake Erie four miles north of the Northeast Pennsylvania Yacht Club. It did not come ashore or cause any damage.

PENNSYLVANIA, West

Westmoreland County

Greensburg	21	1445EST			0	0	35K	Thunderstorm Wind
-------------------	-----------	----------------	--	--	----------	----------	------------	--------------------------

Numerous trees and power lines were downed, especially in the cities Underwood section and along Maple Avenue. A car was damaged by a fallen tree on Maple Avenue. Some homes were damaged by falling trees and large limbs. Power outages affected 9000 residents.

Mercer County

Greenville	21	2020EST			0	0	6K	Thunderstorm Wind (G52)
-------------------	-----------	----------------	--	--	----------	----------	-----------	--------------------------------

Numerous trees and power lines were downed by thunderstorm winds. Wind gusts were estimated up to 60 mph.

Mercer County

5 N Sharon	21	2015EST			0	0		Thunderstorm Wind (G52)
-------------------	-----------	----------------	--	--	----------	----------	--	--------------------------------

Lawrence County

Countywide	21	2050EST			0	0	30K	Thunderstorm Wind
-------------------	-----------	----------------	--	--	----------	----------	------------	--------------------------

Thunderstorm winds downed numerous trees and power lines throughout the county. The northern part of the county and the northern part of New Castle were particularly hard hit.

Venango County

Franklin	21	2034EST			0	0	2K	Thunderstorm Wind (G52)
-----------------	-----------	----------------	--	--	----------	----------	-----------	--------------------------------

Thunderstorm winds downed large branches and power lines.

Butler County

Slippery Rock	21	2110EST			0	0	1K	Thunderstorm Wind
----------------------	-----------	----------------	--	--	----------	----------	-----------	--------------------------

Thunderstorm winds downed a tree onto Route 108.

Butler County

Countywide	21	2110EST			0	0	10K	Thunderstorm Wind
-------------------	-----------	----------------	--	--	----------	----------	------------	--------------------------

Numerous trees and large branches were downed by thunderstorm winds across the northern part of the county.

Butler County

1 N Zelienople	21	2120EST			0	0	1K	0	Thunderstorm Wind
-----------------------	-----------	----------------	--	--	----------	----------	-----------	----------	--------------------------

Thunderstorm winds downed a tree just north of Zelienople.

Beaver County

1 E North Sewickley	21	2130EST			0	0	4K	Thunderstorm Wind
----------------------------	-----------	----------------	--	--	----------	----------	-----------	--------------------------

Several trees were downed in Lillyville, just east of North Sewickley.

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Beaver County New Brighton	21	2130EST			0	0	2K		Thunderstorm Wind
			Power lines were downed by thunderstorm winds.						
Beaver County Ohioville	21	2130EST			0	0	3K		Thunderstorm Wind
			A few trees were downed by thunderstorm winds, onto Fairview, Brady's Run and Park roads.						
Clarion County Countywide	21	2055EST 2110EST			0	0	5K		Thunderstorm Wind
			Numerous trees were downed throughout the county.						
Forest County 2 E Tionesta	21	2140EST			0	0	3K		Thunderstorm Wind
			Several trees were downed by thunderstorm winds.						
Forest County Gultonville	21	2140EST			0	0	3K		Thunderstorm Wind
			Several trees were downed by thunderstorm winds.						
Jefferson County Sigel	21	2133EST			0	0	3K		Thunderstorm Wind
			Several trees were downed by thunderstorm winds.						
Jefferson County Summerville	21	2133EST			0	0	4K		Thunderstorm Wind
			Several trees and some lines were downed by thunderstorm winds.						
Jefferson County Hazen	21	2139EST			0	0	4K		Thunderstorm Wind
			Several trees and wires were downed by thunderstorm winds.						
Armstrong County Countywide	21	2125EST 2135EST			0	0	6K		Thunderstorm Wind
			Numerous trees were downed, mainly across the northern part of the county. Trees were down onto a road, just north of Kittanning.						
Allegheny County Harmerville	21	2215EST			0	0	3K		Thunderstorm Wind
			Power lines and large branches were downed by thunderstorm winds.						
Westmoreland County Weinel Xrds	21	2210EST			0	0	1K		Thunderstorm Wind
			A few trees were downed by thunderstorm winds at Weinel Crossroads.						
Indiana County Countywide	21	2210EST 2220EST			0	0	6K		Thunderstorm Wind
			Several trees were downed, mainly in the northern half of the county. West Mahoning and North Mahoning Townships were particularly hard hit.						
Butler County Mars	21	2140EST			0	0	2K		Thunderstorm Wind
Butler County Sarver	21	2145EST			0	0	2K		Thunderstorm Wind
			Thunderstorm winds downed several trees in and near Mars and Sarver.						
Westmoreland County Avonmore	21	2300EST			0	0	3K		Thunderstorm Wind
			Large branches and wires were downed by thunderstorm winds.						
Mercer County Sharon	22	0005EST			0	0	2K		Thunderstorm Wind
			A few trees were downed by thunderstorm winds.						
Washington County Mc Murray	22	2025EST			0	0	10K		Lightning
			Lightning struck a house and sparked a fire in Peters Township.						
Mercer County 2 E Sharon	23	0000EST			0	0			Thunderstorm Wind (G52)
			A wind gust to 60 mph was reported in Hermitage.						
Lawrence County Countywide	23	0020EST 0030EST			0	0	8K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

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

PENNSYLVANIA, West

Thunderstorm winds downed numerous trees throughout the county. Parkstown to East Moravia, including the west side of New Castle was particularly hard hit.

Venango County Polk	23	0030EST			0	0	4K		Thunderstorm Wind
Venango County Seneca	23	0040EST			0	0	4K		Thunderstorm Wind
Thunderstorm winds downed numerous trees and wires in Polk and Seneca.									
Butler County Slippery Rock	23	0025EST			0	0	4K		Thunderstorm Wind
Thunderstorm winds downed power lines and sparked pole fires.									
Clarion County New Bethlehem	23	0115EST			0	0			Thunderstorm Wind (G52)
Washington County Stockdale	30	1237EST			0	0	2K		Thunderstorm Wind
Thunderstorm winds downed a few trees.									

PUERTO RICO

Mayaguez Las Marias to Mayaguez	02	1500AST 1900AST			0	0			Urban/Sml Stream Fld
Strong thunderstorms produced heavy rains leading to urban and small stream flooding across Mayaguez and Las Marias.									
San Juan San Juan	12	1230AST 1430AST			0	0			Urban/Sml Stream Fld
Urban flooding was reported over Isla Verde sector in San Juan.									
Ponce North Portion	16	1650AST 1950AST			0	0			Flash Flood
Strong thunderstorms produce flash flooding and hail over parts of Adjuntas and Jayuya. Rio Grande de Arecibo river went out of its banks over Adjuntas affecting a small bridge.									
Mayaguez Anasco to Rincon	17	1600AST 1800AST			0	0	15K		Thunderstorm Wind (G61)
A severe thunderstorm over Anasco and Rincon downed power lines and trees and damaged some houses along roads 115 and 401. A spotter from Rincon reported wind gust up to 70 mph.									
Humacao Naguabo	27	1215AST 1230AST			0	0			Waterspout
Two waterspouts were observed southeast of Naguabo.									
Arecibo Central Portion	31	1500AST 1700AST			0	0			Heavy Rain
Heavy rains produced several landslides between Utuado and Lares.									

RHODE ISLAND

Providence County North Providence	01	0000EST 0600EST			0	0			Flood
Woonasquatucket River									
Providence County South Foster	01	0000EST 0200EST			0	0			Flood
Ponaganset River									
Providence County Cranston	01 02	0915EST 0900EST			0	0			Flood
Pawtuxet River									
Heavy rainfall on June 30th resulted in flooding of small streams with at least two streams continuing above flood stage into July 1st. In Providence County, the Ponaganset River in South Foster had reached flood stage at 1 PM on June 30th, crested at 6.31 feet at 5 PM, then fell below flood stage at 3 AM on July 1st. The Woonasquatucket River in North Providence had reached flood stage at 8:10 PM on June 30th and then fell below flood stage at 7 AM on July 1st. In Cranston, the Pawtuxet River did not reach flood stage until 10:15 AM on July 1st, crested at 9.40 feet at 8 PM on the 1st, and then fell below flood stage at 10 AM on July 2nd. No									

Storm Data and Unusual Weather Phenomena

July 1998

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

RHODE ISLAND

other flooding was reported during the rest of the month of July.

SOUTH CAROLINA, Central

SCZ022

Kershaw

02 2200EST

2

0

Excessive Heat

An 84 year old male and a 63 year old female were found dead in their mobile home in Elgin of heat stress. The home was not air conditioned and the temperature inside reached to at least 100 degrees with no ventilation. M84MH, F63MH

Orangeburg County

Springfield

17 1820EST

0

0

0 Thunderstorm Wind (G50)

Highway Patrol reported trees down in Springfield on Highway 3.

Fairfield County

9 S Winnsboro

19 1755EST

0

0

0 Thunderstorm Wind (G50)

Sheriff reported trees down on US 321.

Lancaster County

8 SSW Lancaster

19 2045EST

0

0

0 Thunderstorm Wind (G65)

Sheriff reported numerous trees and powerlines down.

Kershaw County

Westville

19 2110EST

0

0

0 Thunderstorm Wind (G55)

Sheriff reported trees down around Westville.

Lexington County

4 SE Lexington

19 2255EST

0

0

0 Thunderstorm Wind (G50)

EPD reported trees down in Crystal Springs area.

Orangeburg County

2 W Orangeburg

19 2325EST

0

0

0 Thunderstorm Wind (G50)

Sheriff reported a couple of trees down on highway 400.

Clarendon County

6 S Summerton

27 1755EST

0

0

0 Thunderstorm Wind (G55)

Summerton Police reported trees down on Francis Marion road.

Bamberg County

Bamberg

16 1630EST

0

0

12K 0 Thunderstorm Wind (G70)

A home off Hunters Chapel Road had minor damage to the porch and roof and moderate damage to the carport. Trees were also down and debris from the carport was found 30 yds away.

Orangeburg County

Springfield

17 1820EST

0

0

0 Thunderstorm Wind (G50)

State Highway Patrol reported couple trees down on highway 3.

Aiken County

Aiken

19 2350EST

0

0

Thunderstorm Wind (G60)

Newspaper reported trees down on homes and power outages.

SOUTH CAROLINA, North Coastal

Marlboro County

Wallace

16 1810EST

0

0

Flash Flood

1910EST

Heavy rains measured 3 to 5 inches during the early evening, causing flooding and difficult navigation at the intersection of highways US 9 and NC 177.

Marlboro County

Bennettsville

24 1450EST

0

0

80K Thunderstorm Wind (G60)

Thunderstorm winds caused damage to buildings and sheds at Gold Kist, cotton trailers were overturned at McColl Ginnery, and the sign, a light pole and car windows were broken at a car dealership.

Horry County

Conway

24 1645EST

0

0

75K Lightning

1724EST

Lightning struck the county 911 center, causing damage to electronics. Also, a lightning-caused fire caused heavy damage to a manufactured home on Old Railroad Road.

Georgetown County

Andrews to

Pawleys Is

24 2100EST

0

0

Flash Flood

2230EST

Heavy rains measured 3 to 5 inches in 3 hours across the county. Flooding occurred across streets from Andrews to Georgetown to Pawleys Island.

Horry County

Bucksport to

Socastee

27 1330EST

0

0

25K Thunderstorm Wind (G70)

1350EST

Storm Data and Unusual Weather Phenomena

July 1998

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

SOUTH CAROLINA, Northwest

Pickens County									
5 N Pickens	20	2015EST			0	0			Thunderstorm Wind (G50)
York County									
12 N Rock Hill	20	2018EST			0	0			Thunderstorm Wind (G50)
Greenville County									
6 N Greer	20	2040EST			0	0			Thunderstorm Wind (G53)
Pickens County									
3 N Pickens	20	2040EST			0	0			Thunderstorm Wind (G50)
Oconee County									
5 N Newry	20	2050EST			0	0			Thunderstorm Wind (G50)
Spartanburg County									
Spartanburg	20	2115EST			0	0			Thunderstorm Wind (G50)
York County									
Bethany	20	2125EST			0	0			Thunderstorm Wind (G50)
York County									
York	20	2200EST 2210EST			0	0	75K		Thunderstorm Wind (G50)

Scattered thunderstorms developed across the Upstate during the evening hours and some became severe. All the damage was the result of straight-line winds and resulted mainly in downed trees and power lines. However, there was some structural damage. In Greenville, a house was damaged by a falling tree off Augusta Road. A tree demolished a house in York and other trees fell on homes and cars. Lightning ignited a fire which burned a mobile home in Roebuck.

Spartanburg County									
2 E Spartanburg	19	1728EST			0	0			Thunderstorm Wind (G50)
Spartanburg County									
Moore	19	1800EST			0	0			Thunderstorm Wind (G50)
Anderson County									
Townville	19	1840EST			0	0			Thunderstorm Wind (G70)
Greenville County									
Fountain Inn	19	1840EST			0	0			Thunderstorm Wind (G70)
Oconee County									
Westminster	19	1842EST			0	0			Thunderstorm Wind (G50)
Greenville County									
3 S Simpsonville	19	1910EST			0	0			Thunderstorm Wind (G50)
Laurens County									
Gray Court	19	1910EST			0	0			Hail (0.75)
Chester County									
Leeds	19	1919EST			0	0			Thunderstorm Wind (G50)
Laurens County									
8 NW Laurens	19	1926EST			0	0			Hail (0.88)
Greenville County									
3 S Simpsonville	19	1930EST			0	0			Thunderstorm Wind (G50)
Laurens County									
Hickory Tavern to Fountain Inn	19	1934EST			0	0			Thunderstorm Wind (G50)
Laurens County									
4 W Laurens	19	1934EST			0	0			Hail (1.00)
Laurens County									
4 W Laurens	19	1934EST			0	0			Thunderstorm Wind (G50)
Laurens County									
6 S Hickory Tavern	19	1950EST			0	0			Hail (0.88)
Greenwood County									
Ware Shoals	19	2010EST			0	1			Thunderstorm Wind (G61)
Anderson County									
Starr	19	2026EST			0	0			Thunderstorm Wind (G50)
Greenwood County									
Ware Shoals	19	2026EST			0	0			Thunderstorm Wind (G52)
Abbeville County									
1 SW Due West	19	2030EST			0	0			Thunderstorm Wind (G50)

Storm Data and Unusual Weather Phenomena

July 1998

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

SOUTH CAROLINA, Northwest

Abbeville County Antreville

19 2035EST **0 0** **Thunderstorm Wind (G50)**

Showers and thunderstorms developed in a warm and humid airmass during the late afternoon across the Upstate, then became more numerous and occasionally severe during the evening. Damage from straight-line winds was primarily in the form of downed trees and power lines. However, some trees fell on houses in Moore and Townville. Fountain Inn was particularly hard hit with trees down all over the city and numerous power outages. In addition a grocery store roof was partially blown off. Twelve thousand people were left without power just east of Spartanburg. A tree fell on a man in Ware Shoals, breaking his arm.

SCZ001>014-019

Northern Oconee - Northern Pickens - Northern Greenville - Southern Oconee - Southern Pickens - Southern Greenville - Spartanburg - Cherokee - York - Anderson - Abbeville - Laurens - Union - Chester - Greenwood

01 0000EST **0 0** **Dry Weather**
31 2300EST

Dry weather continued through most of the month of July, affecting crops during the critical part of the growing season. Corn and other vegetables sustained the most damage, but a dollar amount was not available at the time of this writing.

SOUTH CAROLINA, South Coastal

Berkeley County Moncks Corner

04 1315EST **0 0** **Thunderstorm Wind (G50)**

1318EST

Several trees down along U.S. 17A.

Jasper County 3 S Hardeeville

04 1455EST **0 0** **Thunderstorm Wind (G50)**

1458EST

Trees down.

Beaufort County 11 E Port Royal

11 1530EST **0 0** **Thunderstorm Wind (G50)**

1533EST

Powerlines down.

Jasper County Tarboro

11 1600EST **0 0** **Thunderstorm Wind (G50)**

1604EST

Beaufort County Yemassee

11 1445EST **0 0** **Lightning**

1745EST

A diesel tank at a convenience store was struck by lightning . The fire caused by the first strike then ignited a second tank. Each tank held approximately 5000 gallons of fuel.

Dorchester County Summerville

19 1630EST **0 0** **Thunderstorm Wind (G55)**

1633EST

Trees down.

Beaufort County 8 E Beaufort

24 1805EST **0 0** **Thunderstorm Wind (G50)**

1808EST

Trees and powerlines down.

Beaufort County Hilton Head Is

27 1415EST **0 1** **Lightning**

Lightning struck a 21 year old female while riding a bicycle.

Beaufort County Hilton Head Is

27 1445EST **0 1** **Lightning**

Lightning struck a 12 year old boy while riding a bicycle.

Hampton County Estill

31 1510EST **0 0** **Thunderstorm Wind (G50)**

1513EST

Powerlines down.

Colleton County Islandton

31 1515EST **0 0** **Thunderstorm Wind (G55)**

1518EST

Colleton County Walterboro

31 1525EST **0 0** **Lightning**

1545EST

A barn was struck by lightning, which started a fire.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>SOUTH CAROLINA, South Coastal</u>									
Colleton County Walterboro	31	1525EST 1528EST			0	0			Thunderstorm Wind (G55)
									Trees and powerlines down.
Jasper County Ridgeland	31	1550EST 1554EST			0	0			Thunderstorm Wind (G50)
									Trees down near I-95.
Beaufort County 5 W Beaufort	31	1610EST 1613EST			0	0			Thunderstorm Wind (G50)
									Trees down along Highway 170.
Beaufort County Beaufort	31	1625EST 1628EST			0	0			Thunderstorm Wind (G50)
									Trees down.
Berkeley County Bonneau	31	1700EST 1704EST			0	0			Thunderstorm Wind (G50)
									Powerlines down.
Dorchester County St George	31	1550EST 1554EST			0	0			Thunderstorm Wind (G50)
									Trees and powerlines down.
Beaufort County Hilton Head Is	27	1415EST			1	0			Lightning
									Female who was injured on July 27 when lightning hit a nearby tree and "jumped" over to her, died several days four days later. F21OU
<u>SOUTH DAKOTA, Central and North</u>									
Lyman County Presho	02	1900CST			0	0			Hail (1.75)
Hyde County 10 N Highmore	05	1610CST			0	0			Hail (1.75)
									Golfball size hail dented the pickup truck of the spotter while on Highway 47.
Hand County Ree Hgts	05	1640CST			0	0			Hail (0.75)
Hand County Ree Hgts	05	1700CST			0	0			Thunderstorm Wind (G52)
Hand County 10 SW Miller	05	1705CST			0	0			Hail (1.00)
Hand County 12 SW Miller	05	1715CST			0	0			Hail (1.75)
Hand County 10 NE Polo	05	1735CST			0	0			Hail (0.75)
Buffalo County 3 N Gann Vly	05	1815CST			0	0			Thunderstorm Wind (G65)
									Winds gusting to near 75 mph blew a car off the road on the Highway 34 northwest of Gann Valley.
Edmunds County 5 SE Ipswich to 13 SE Ipswich	06	1910CST 1920CST			0	0			Hail (1.00)
Edmunds County 5 SE Ipswich to 13 SE Ipswich	06	1910CST 1920CST			0	0			Thunderstorm Wind (G61)
									Large hail and winds gusting to 70 mph damaged or destroyed a widespread area of crops from the Pembroke Colony southeast of Ipswich to a farm 13 miles southeast of Ipswich. At the farm, a picture window was broken by the large hail, a grain bin was blown several hundred feet and a pickup was moved.
Jones County 8 NW Okaton	06	1100CST			0	0			Thunderstorm Wind (G52)
									Sixty mph winds blew down some power lines.

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Edmunds County									
12 S Mina	06	1940CST			0	0			Thunderstorm Wind (G52)
Corson County									
Keldron to 10 S Keldron	10	1608CST 2130CST			0	0			Flash Flood
Flash flooding occurred from Keldron south during the late afternoon and evening as result of up seven inches of rain that had fallen from slow moving thunderstorms. Willow creek and several small tributaries went out of their banks causing the inundation of low areas and county roads. Many county roads were damaged with one farmer losing several pigs and cows as a result of the flooding.									
Dewey County									
14 NE Lantry	13	1656CST			0	0			Hail (1.75)
Dime to golfball size hail fell at Green Grass northeast of Lantry.									
Dewey County									
14 NE Lantry	13	1717CST			0	0			Hail (0.75)
Dewey County									
Parade	13	1805CST			0	0			Hail (1.75)
Codington County									
2 N Watertown	14	1930CST			0	0			Hail (0.88)
Codington County									
Watertown	14	1930CST			0	0			Lightning
One-third of Watertown residents were without power for up to four hours when lightning struck a major electrical transmission line on 3rd street northwest. Seven circuits were lost, three overhead lines were burned along with other switches and cutouts.									
Grant County									
7 W Milbank	14	1931CST			0	0			Hail (1.75)
Codington County									
Watertown	14	1935CST 1940CST			0	0			Hail (1.75)
Grant County									
Milbank	14	1948CST			0	0			Thunderstorm Wind (G52)
Codington County									
3 E Watertown	14	1950CST			0	0			Hail (0.75)
Hamlin County									
Bryant	14	2010CST			0	0			Hail (1.00)
Deuel County									
Clear Lake	14	2040CST			0	0			Thunderstorm Wind (G61)
Winds gusting to 70 mph brought several trees down in Clear Lake.									
Codington County									
Watertown	17	0607CST			0	0			Hail (1.50)
Codington County									
Watertown	17	0607CST			0	0			Thunderstorm Wind (G61)
Thunderstorm winds gusting to 70 mph brought down many large tree limbs in northeast Watertown.									
Sully County									
Agar	18	1633CST			0	0			Hail (0.75)
Hand County									
Miller	18	1730CST			0	0			Hail (1.75)
Edmunds County									
6 W Roscoe	18	1710CST			0	0			Thunderstorm Wind (G52)
Edmunds County									
10 SW Ipswich	18	1720CST			0	0			Thunderstorm Wind (G52)
Edmunds County									
10 S Ipswich	18	1725CST			0	0			Hail (2.75)
Faulk County									
Cresbard	18	1735CST			0	0			Thunderstorm Wind (G61)
Faulk County									
2 N Cresbard	18	1738CST			0	0			Hail (1.75)
Faulk County									
Chelsea	18	1740CST			0	0			Thunderstorm Wind (G52)
Spink County									
Mellette	18	1803CST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1998

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

SOUTH DAKOTA, Central and North

Spink County Ashton	18	1815CST			0	0			Thunderstorm Wind (G61)
Spink County Turton	18	1825CST			0	0			Thunderstorm Wind (G52)
Clark County 10 W Clark	18	1840CST			0	0			Thunderstorm Wind (G61)
Clark County Clark	18	1845CST			0	0			Thunderstorm Wind (G87)
Hamlin County Hayti	18	1923CST			0	0			Thunderstorm Wind (G52)
Hamlin County Lake Norden	18	1925CST			0	0			Thunderstorm Wind (G52)

A very powerful supercell thunderstorm left a 5 to 10 mile wide path of damage and destruction as it moved from south central Edmunds county through northeast Faulk, most of Spink and Clark, then finally exited southern Hamlin county. Hail up to baseball size and winds of 60 to 100 mph affected many communities and their surrounding areas as well as several Hutterite colonies. The communities affected included, Roscoe, Faulkton, Cresbard, Chelsea, Mellette, Ashton, Redfield, Turton, Doland, Raymond, Clark, Carpenter, Willow Lake, Vienna, Hazel, Hayti, and Lake Norden. Also, the Hillcrest, Clark, Fordham, Hillside, and Mayfield colonies were affected.

Thousands of acres of crops were damaged or destroyed along with tens of homes, campers, barns, sheds, silos, grain bins, and road signs. A lot of equipment housed in the outbuildings was damaged or destroyed. At one farm north of Willow Lake, all of the outbuildings were destroyed, many of the house windows were broken with six feet of the chimney taken off. At another farm, a fairly large camper trailer was upside down in a tree. Five mobile homes were severely damaged or destroyed along the path of the storm while hundreds of trees were uprooted, snapped off, or lost large branches. Some of these trees fell on and damaged several vehicles and homes. The high winds also lifted the roofs off of some of the houses. Many power lines and poles were downed resulting in extensive power outages for several communities for up to a day. Telephone service was also interrupted across some of the area. Many twelve hundred pound hay bales were rolled hundreds of feet. Several semi tractor trailers were also blown over by the high winds. On Highway 28, west of Carpenter, a mail truck was blown over, blocking the road for several hours. The tractor was totaled. The largest hail occurred mainly across south central Edmunds and northeast Faulk counties where the hail combined with the winds and took out many windows on homes, vehicles, buildings, and also dented several vehicles. At one farm in south central Edmunds, thirteen vehicle windshields were broken. There were only minor injuries reported with this storm with millions of dollars in damage.

Marshall County 1.5 NE Eden	20	1625CST			0	0			Hail (1.75)
Day County 4 NE Grenville to 7 E Grenville	20	1708CST 1715CST	3	10	0	0			Tornado (F0)

A landspout tornado touched down northeast of Grenville near Enemy Swim Lake. The tornado pulled up two fence posts, some water, and some hay was spread around as it moved southeast. Path length and width were estimated.

Jones County Okaton to 8 NW Okaton	25	0700CST 1330CST			0	0			Flash Flood
---	----	--------------------	--	--	---	---	--	--	-------------

Very heavy rains of five to seven inches fell in western Jones County west and northwest of Okaton. One lady had a spot on the road to her driveway wash out by a creek running fast and fierce. Much of the pasture by her house was flooded. Also, three miles northwest of Okaton a dam and a bridge were washed out. There were also some spots on other roads that were washed out along with damage to some fences.

SOUTH DAKOTA, Southeast

Lake County 2 SE Winfred	03	0530CST			0	0	5K		Thunderstorm Wind (G52)
Thunderstorm winds blew down trees and broke storm windows.									
Brule County 10 N Kimball	05	1840CST			0	0			Thunderstorm Wind (G52)
Aurora County 8 N White Lake	05	1850CST			0	0			Thunderstorm Wind (G61)
Aurora County White Lake	05	1908CST			0	0			Thunderstorm Wind (G52)
Douglas County 15 NW Corsica	05	2010CST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>SOUTH DAKOTA, Southeast</u>									
Douglas County Armour	05	2035CST			0	0			Thunderstorm Wind (G52)
Charles Mix County 10 N Wagner	05	2045CST			0	0			Hail (0.75)
Charles Mix County 10 N Wagner	05	2045CST			0	0			Thunderstorm Wind (G52)
Brule County 3 E Chamberlain	06	0745CST			0	0			Thunderstorm Wind (G52)
Charles Mix County 7 N Platte	06	0828CST			0	0			Hail (0.75)
Charles Mix County 7 N Platte	06	0828CST			0	0	5K		Thunderstorm Wind (G52)
					Thunderstorm winds caused tree damage including 8 inch diameter branches blown down.				
Charles Mix County 7 NE Platte to 12 N Lake Andes	06	0835CST 0923CST			0	0	100K	500K	Hail (1.75)
					Large hail damaged crops, totally destroying some acreage, broke windows, dented vehicles, and damaged roofs.				
Douglas County 3 SW Joubert to 5 W Armour	06	0845CST 0917CST			0	0	200K	1M	Hail (3.00)
					Large hail devastated crops, broke windows, and caused other damage to buildings and vehicles.				
Brule County 15 E Bijou Hills	06	0800CST			0	0			Hail (0.88)
Brule County 12 S Chamberlain to 5 E Bijou Hills	06	1200CST 1300CST			0	0		500K	Hail (1.00)
					Large hail, accompanied by heavy rain and 50 mph winds, caused crop damage over southern Brule County.				
Aurora County 8 W Stickney to Stickney	06	1300CST 1315CST			0	0		200K	Hail (0.75)
					Large hail, accompanied by 55 mph winds and heavy rain, damaged crops over the southern edge of Aurora County.				
Charles Mix County 1 N Platte to Lake Andes	06	1310CST 1350CST			0	0	1M	2.2M	Hail (1.75)
					Large hail destroyed or damaged crops, broke windows, and damaged vehicles and many farm buildings. The hail covered the ground in places and was accompanied by strong winds and heavy rain.				
Charles Mix County 7 NE Platte	06	1324CST			0	0			Thunderstorm Wind (G52)
Davison County 10 S Mt Vernon	06	1330CST 1340CST			0	0			Hail (1.75)
Douglas County Corsica to 4 S Armour	06	1330CST 1407CST			0	0			Hail (2.00)
					Large hail damaged crops and broke some windows. The hail covered the ground in places. The amount of damage was not determined.				
Hutchinson County 5 NW Parkston to 2 N Parkston	06	1350CST 1407CST			0	0			Hail (1.75)
					Large hail accompanied by strong winds damaged crops. The amount of damage was not determined.				
Hutchinson County 5 NW Parkston to Parkston	06	1350CST 1410CST			0	0			Thunderstorm Wind (G61)
					Thunderstorm winds damaged trees and crops.				
Charles Mix County Wagner	06	1430CST			0	0			Hail (1.00)
Charles Mix County Wagner	06	1431CST			0	0			Thunderstorm Wind (G61)
Bon Homme County 2 W Avon	06	1435CST			0	0			Thunderstorm Wind (G52)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>SOUTH DAKOTA, Southeast</u>									
Yankton County 2 W Lesterville	06	1500CST			0	0			Thunderstorm Wind (G52)
Bon Homme County Tabor	06	1510CST			0	0			Thunderstorm Wind (G52)
Yankton County 6 SE Utica	06	1545CST			0	0			Thunderstorm Wind (G52)
Yankton County Yankton	06	1600CST			0	0	5K		Thunderstorm Wind (G61)
Thunderstorm winds caused minor tree damage.									
Yankton County Lesterville to Yankton	06	1630CST 1840CST			0	0	50K		Flash Flood
2 to 5 inches of rain in an hour or less caused flash flooding of lowlands and small streams, including Marne Creek in Yankton. Some roads were flooded. Damage occurred to a few homes from water seepage, mainly in the Lesterville and Utica areas where the heaviest rain fell.									
Clay County 5 W Vermillion	06	1625CST			0	0			Thunderstorm Wind (G52)
Lincoln County 7 SW Canton	09	1530CST 1531CST	0.1	50	0	0			Tornado (F0)
A brief and weak tornado caused no reported damage. The tornado occurred in an area where numerous funnel clouds were sighted.									
Kingsbury County De Smet	14	2014CST			0	0			Hail (0.75)
Kingsbury County 2 N Manchester	14	2014CST			0	0			Hail (1.00)
Kingsbury County De Smet	14	2030CST 2050CST			0	0			Hail (0.75)
Kingsbury County 4 W De Smet	14	2040CST			0	0			Hail (1.75)
Minnehaha County 5 S Hartford to Valley Spgs	18	2019CST 2040CST			0	0	200K		Thunderstorm Wind (G61)
Thunderstorm winds caused damage to trees and power lines in southern Minnehaha County including the city of Sioux Falls. There was damage to buildings and vehicles from wind blown tree and other debris. There was also damage to tents, food equipment, and other equipment at a large jazz festival in Sioux Falls.									
Beadle County Huron	18	1900CST			0	0	10K		Lightning
Lightning struck a church, damaging the roof and a computer.									
Turner County Parker	18	2035CST 2050CST			0	0			Thunderstorm Wind (G57)
Thunderstorm winds damaged trees and power lines, including a 50 foot tall spruce tree and other large trees which were blown over. The winds also tipped over a pickup camper. The amount of damage was not determined.									
Lincoln County Sioux Falls to Tea	18	2030CST 2035CST			0	0	20K		Thunderstorm Wind (G57)
Thunderstorm winds caused tree damage and damaged storage sheds.									
Lincoln County Canton	18	2050CST			0	0	10K		Thunderstorm Wind (G61)
Thunderstorm winds caused tree damage, with one large branch falling on to and damaging a car.									
Moody County Flandreau	18	1630CST			0	0	5K		Lightning
A lightning strike damaged trees, a sprinkler system, a water softener, and ruined two television sets.									
Jerauld County 5 NE Crow Lake	18	1845CST			0	0			Thunderstorm Wind (G52)
Thunderstorm winds caused tree damage including 4 inch diameter limbs blown down.									
Kingsbury County 5 SE Esmond	18	1910CST			0	0			Hail (0.75)

Storm Data and Unusual Weather Phenomena

July 1998

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

SOUTH DAKOTA, Southeast

Kingsbury County 5 SE Esmond	18	1910CST			0	0			Thunderstorm Wind (G52)
					Thunderstorm winds caused tree damage including 3 inch diameter limbs blown down.				
Brookings County 6 N Bruce	18	1940CST			0	0			Hail (1.00)
Gregory County Burke	18	2135CST			0	0			Thunderstorm Wind (G52)
					Thunderstorm winds caused tree damage and other property damage. The amount of damage was not determined.				
Davison County Mitchell	18	1935CST			0	0	10K		Thunderstorm Wind (G52)
					Thunderstorm winds blew down numerous large tree branches and also blew a satellite dish off the roof of the Mitchell Technical Institute.				
Hanson County Fulton	18	1945CST			0	0			Thunderstorm Wind (G52)
					Thunderstorm winds caused tree damage including 6 to 8 inch diameter limbs blown down.				
Mccook County Salem	18	2010CST			0	0			Hail (0.88)
Brookings County Volga	20	0615CST			0	0	5K		Lightning
					Lightning destroyed a tree and damaged a garage.				
Beadle County 2 N Virgil	20	0410CST			0	0			Thunderstorm Wind (G52)
Clay County Vermillion	21	0445CST			0	2			Thunderstorm Wind (G57)
					Thunderstorm winds caused tree damage, with a car heavily damaged when a large branch fell on it. The winds also blew a television antenna off a house and bent a flagpole.				
Lincoln County Worthing	21	0503CST			0	0			Hail (1.50)
Union County Elk Pt	21	0600CST			0	0	10K		Thunderstorm Wind (G52)
					Thunderstorm winds blew down part of a wall of a school under construction, blew over a shed anchored in concrete, and caused tree damage.				

SOUTH DAKOTA, West

Shannon County 4 N Manderson	03	0140MST			0	2			Flash Flood
					HEAVY RAINS WASHED OUT A PORTION OF BIA ROAD #33 AND TWO AGENCY OFFICIERS DROVE INTO THE WASH OUT.				
Lawrence County Roubaix	01	1405MST			0	0			Hail (1.75)
Lawrence County 5 SW Nemo	01	1415MST			0	0			Hail (1.50)
Pennington County 2 NE Silver City	01	1420MST 1430MST			0	0			Hail (1.75)
Mellette County 5 E Norris	01	1808MST	0	0	0	0			Tornado (F0)
Todd County Rosebud	01	1815MST 1915MST			0	0			Flash Flood
					HEAVY RAINS UP TO THREE INCHES IN ONE HOUR CAUSED MINOR FLOODING IN THE AREA.				
Todd County Rosebud	01	1915MST			0	0			Hail (1.75)
Todd County 4 SW St Francis	01	1926MST	0.1	.1	0	0	50K		Tornado (F1)
					A SMALL TRAILER WAS TURNED OVER.				
Butte County 2 W Belle Fourche	05	2053MST			0	0			Hail (1.50)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Butte County 2 W Belle Fourche	05	2053MST			0	0			Thunderstorm Wind (G60)
Butte County Belle Fourche	05	2100MST			0	3	3M		Hail (4.00) NEARLY EVERY HOME, BUSINESS AND VEHICLE IN THE CITY WAS BADLY DAMAGED.
Butte County Belle Fourche	05	2104MST			0	0			Tstm Wind/Hail LARGE HAIL DRIVEN BY OVER 60 MPH WINDS CAUSED MAJOR DAMAGE ACROSS THE CITY AND SURROUNDING AREA.
Butte County Newell	05	2130MST			0	0			Thunderstorm Wind (G60) MANY BROKEN TREE BRANCHES.
Pennington County 5 W Rapid City	06	1645MST			0	0			Hail (0.75)
Butte County .5 N Belle Fourche	06	1650MST			0	0			Thunderstorm Wind (G75) ALSO RECEIVED 1.55 INCHES OF RAIN IN 25 MINUTES.
Ziebach County Cherry Creek	06	1837MST			0	0			Funnel Cloud
Meade County Faith	06	2038MST 2045MST			0	0	500K		Thunderstorm Wind (G80) MANY TREES AND STRUCTURAL DAMAGE.
Ziebach County 10 S Glad Vly	06	0607MST			0	0			Hail (1.00)
Haakon County 1 W Midland	06	0933MST			0	0			Hail (1.00)
Haakon County 1 SW Nowlin	06	0944MST			0	0			Hail (1.75) ACCOMPANIED BY 1.2 INCHES OF RAIN IN 20 MINUTES.
Lawrence County Cheyenne Crossing	08	1040MST			0	0			Hail (1.00)
Mellette County 9 SE Norris to 6 NE Wood	08	1134MST 1200MST			0	0			Funnel Cloud NUMEROUS REPORTS OF FUNNEL CLOUDS ACROSS SOUTHERN MELLITTE COUNTY.
Tripp County 25 NNW Winner to 10 NW Winner	08	1150MST	0	0	0	0			Tornado (F0) BRIEF TOUCHDOWN NEAR LONG VALLEY.
Tripp County 20 NNW Winner to Winner	08	1200MST			0	1			Funnel Cloud FUNNEL CLOUDS CONTINUED AS THE STORMS MOVED INTO TRIPP COUNTY.
Pennington County Rapid City	08	1215MST			0	0			Hail (1.25) OVER NORTH RAPID CITY
Harding County Buffalo Arpt	11	2026MST			0	0			Thunderstorm Wind (G67)
Meade County Piedmont to Ellsworth Afb	14	0215MST 1623MST			0	0			Hail (1.75) STORMED MOVED EAST ACROSS SOUTHERN MEADE CONUTY.
Pennington County Rapid City to 5 E Rapid City	14	1740MST 1751MST			0	0			Hail (1.00) STORMED MOVED EAST ACROSS NORTHERN PENNINGTON COUNTY AND RAPID CITY.
Pennington County Rochford	15	1030MST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Pennington County 3 SE Deerfield	15	1506MST			0	0			Hail (1.00)
Pennington County Hill City to 3 WSW Keystone	17	0215MST 0240MST			0	0			Hail (1.00)
Custer County 5 W Hermosa	20	2230MST			0	0			Thunderstorm Wind (G70)
Lawrence County 7 SW Deadwood	23	1320MST			0	0			Hail (1.25)
Mellette County Countywide	24 25	2000MST 0620MST			0	0			Heavy Rain
		2.5 TO 7 INCHES OF RAIN OVERNIGHT CAUSED SOME MINOR FLOODING PROBLEMS.							
Tripp County Countywide	24 25	2000MST 0620MST			0	0			Heavy Rain
	" " "								
Fall River County 2 W Hot Spgs	01	1630MST 1645MST	0.1	.1	0	1	150K		Tornado (F1)
		HOUSE DESTROYED ON PROPERTY OF EMERGENCY MANAGER; NEARBY HOUSES AND OTHER STRUCTURES HAD ROOF DAMAGE.							
Pennington County Rochford	08	1155MST			0	1			Lightning
		A VOL. FIREMAN ACTING AS A STORM SPOTTER, WAS STRUCK BY LIGHTNING; SUFFERING SUSTAINING MAJOR INTERNAL INJURIES.							
Lawrence County 2 E Deadwood	18	2100MST			0	0			Lightning
		LIGHTNING FIRE BURNED .2 ACRES OF GRASS AND PINE TREES.							
Lawrence County Spearfish	23	0700MST 0730MST			0	0			Lightning
		LIGHTNING STRIKE CAUSE HOUSE FIRE.							
Custer County 5 E Custer	19 20	2300MST 0800MST			0	0			Lightning
		LIGHTNING CAUSED .5 ACRE FIRE IN PINE TREES AND GRASS, IN CUSTER STATE PARK.							
Perkins County 50 SSW Lemmon	06	1700MST 1710MST			0	0	200K		Thunderstorm Wind (G90)
		DAMAGE OCCURRED TO THE KOLB AIR SPRAYING SERVICE. TOTALED WERE TWO AIRPLANES AND A HANGER, WITH ANOTHER AIRPLANE SEVERLY DAMAGED. IN ADDITION TREES WERE UPROOTED AND THE STORM SUCKED THE WATER OUT OF A STOCK DAM 5 NW.							
<u>TENNESSEE, Central</u>									
Sumner County Portland	02	1445CST			0	0			Thunderstorm Wind (G50)
		Sheriff's department reported 3 trees were blown down on Switchboard Rd.							
Davidson County Countywide	03	1340CST 1343CST			0	0			Thunderstorm Wind (G50)
		A few trees, large limbs, and power lines were blown down across the county.							
Sumner County Hendersonville	03	1415CST			0	0			Thunderstorm Wind (G50)
		3 large tree limbs were down.							
Maury County South Portion	03	1430CST 1600CST			0	0			Flash Flood
		Extensive flooding was reported in the southern part of the county by local law enforcement.							
Smith County Carthage	04	1300CST			0	0	10K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

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

TENNESSEE, Central

Newspaper account of numerous trees were blown down in Carthage. Part of a roof was blown off a factory on Industrial Dr.

Smith County Elmwood	04	1315CST			0	0			Hail (0.88)
									Nickel size hail reported by SKYWARN Spotter.
Rutherford County South Portion	04	1340CST			0	0	10K		Thunderstorm Wind (G50)
									Local law enforcement reported a roof was blown off a Texaco service station.
Bedford County Countywide	04	1500CST			0	0			Thunderstorm Wind (G50)
									Trees and power lines were blown down around the county.
Grundy County Monteagle	04	1515CST			0	0			Thunderstorm Wind (G50)
									Trees were blown down on U.S. Highway 41 near Monteagle Mt.
Lincoln County Countywide	04	1515CST			0	0			Thunderstorm Wind (G50)
									Power lines were down across the county.
Cannon County 2 WSW Ivy Bluff	04	1517CST			0	0	5K		Thunderstorm Wind (G50)
									Trees were blown down onto a road and also on a house. The location was at the town of Midway, located on Hollow Springs Road and Highway 53.
Moore County Countywide	04	1530CST			0	0			Thunderstorm Wind (G50)
									Trees and power lines were down across the county.
Lawrence County Leoma	04	1605CST			0	0			Thunderstorm Wind (G50)
									Trees were blown down on U.S. Highway 43, just south of Leoma.
Lawrence County Lawrenceburg	13 14	1715CST 1200CST			2	20	4M		Flash Flood
									Synoptic conditions near the surface and aloft, set the stage for serious flooding problems in Lawrenceburg. A strong cut off low, located west of Lawrenceburg, caused a series of thunderstorms to train or move across Lawrence county. These thunderstorms contained very heavy rains. Precipitable water values were in excess of 2 inches that evening. There was a strong 850 mb moisture convergence field, along with 300 mb divergence, and also Lawrence county was in the right rear quadrant of the jet stream. Nashville Doppler Radar estimated about 8 inches of rain at Lawrenceburg Monday night and early Tuesday morning. 4 inches of rain fell in about an hour at one point Monday night. The Lawrenceburg Filtration Plant received 8.76 inches in a 24 hour period ending 7 AM CDT Tuesday, July 14. The Filtration Plant is a cooperative observer site for Lawrenceburg. Numerous roads were closed due to high water. There were 2 people killed and 20 injured. A 63 year old female was swept away in her car just east of David Crockett State Park on U.S. Highway 64 West bridge. The other fatality, a 74 year old male, was swept away in his car on U.S. Highway 43 bridge near the railroad trestle. The report of the fatalities was received at 1035 PM CDT from the emergency management office. 122 homes were damaged or destroyed, 13 mobile homes and several small bridges were swept away. 100 people had to be evacuated from their homes. 18 businesses sustained water damage. One home had 29 inches of water in it. The water and sewage plant was left inoperable, and residents had no water or bath facilities. Bottled water was distributed. Portable toilets were set up around town. Life was starting to return to normal on Saturday, July 18.
									F63VE, M74VE
Maury County Countywide	13	1737CST 2200CST			0	0			Flash Flood
									Local emergency manager reported numerous roads closed and bridges washed out around the county due to high water.
Marion County Jasper	20	1255CST			0	0			Thunderstorm Wind (G50)
									Sheriff's department reported a power line was down east of town on U.S. Highway 41.
Lawrence County Loretto	20	1920CST			0	0			Thunderstorm Wind (G50)
									Lawrence county EMA reported some tree limbs and free standing signs were blown down. Also, there were many power outages.
White County 9 W Sparta	22	1615CST			0	0			Thunderstorm Wind (G50)
									County EMA director reported trees were blown down.
Smith County West Central Portion	23 24	0000CST 0100CST			0	0	20K		Flash Flood

Storm Data and Unusual Weather Phenomena

July 1998

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

TENNESSEE, Central

At the intersection of Old Highway 53 and Highway 70N between Rock City and Rome, the roads were closed due to high water. Newspaper accounts tell of homes being evacuated and roads closed at Rome and Rock City. Raging waters from Plunkett's Creek and Rawl's Creek combined to flood Plunkett's Creek Circle, located off Highway 70 in the Rock City community. A mobile home and Plunkett's Creek Baptist Church were flooded.

Giles County

11 NW Pulaski	23	1545CST			0	0			Thunderstorm Wind (G50)
---------------	----	---------	--	--	---	---	--	--	-------------------------

Sheriff's office reported a tree down on power lines on Rose Hill Rd.

Montgomery County

Clarksville	23	1943CST 2100CST			0	0	50K		Flash Flood
-------------	----	--------------------	--	--	---	---	-----	--	-------------

Sheriff's department reported 10-15 houses flooded in the northern part of town.

Houston County

5 S Erin	30	1945CST			0	0			Thunderstorm Wind (G50)
----------	----	---------	--	--	---	---	--	--	-------------------------

Local law enforcement reported trees were blown down.

Houston County

3 N Mc Kinnon	30	1945CST			0	0			Thunderstorm Wind (G50)
---------------	----	---------	--	--	---	---	--	--	-------------------------

Trees were blown down.

Benton County

3 S Big Sandy	30	2015CST			0	0			Thunderstorm Wind (G50)
---------------	----	---------	--	--	---	---	--	--	-------------------------

Public report of trees blown down.

Hickman County

East Portion	30	2110CST			0	0			Hail (0.88)
--------------	----	---------	--	--	---	---	--	--	-------------

Nickel size hail was reported at the intersection of Highway 100 and Highway 46.

Perry County

7 W Linden	30	2120CST			0	0			Thunderstorm Wind (G50)
------------	----	---------	--	--	---	---	--	--	-------------------------

A few trees were blown down on U.S. Highway 412.

Giles County

Lynnville	30	2257CST			0	0			Thunderstorm Wind (G50)
-----------	----	---------	--	--	---	---	--	--	-------------------------

Trees were blown down.

Putnam County

5 S Cookeville	31	2338CST			0	0			Thunderstorm Wind (G50)
----------------	----	---------	--	--	---	---	--	--	-------------------------

Sheriff's department reported tree limbs were blown down.

Giles County

Minor Hill	21	1715CST			0	0	50K		Lightning
------------	----	---------	--	--	---	---	-----	--	-----------

Lightning struck a home in Minor Hill. The home was completely ravaged by fire. The home was located at 522 Jackson Clinic Rd.

Coffee County

Tullahoma	28	1530CST			0	0	2K		Thunderstorm Wind (G70)
-----------	----	---------	--	--	---	---	----	--	-------------------------

Strong thunderstorm winds hit near the Parkland subdivision on the north side of Tullahoma toppling 12 to 15 trees. The largest tree fell on a 6-year-old Arabian mare. Even though she had no broken bones, she was never able to get up and had to be euthanized.

Williamson County

Fairview	30	2120CST			0	0			Thunderstorm Wind (G50)
----------	----	---------	--	--	---	---	--	--	-------------------------

Newspaper related story of trees and power lines being blown down.

TENNESSEE, East

Mcminn County

3 W Athens	04	1624EST			0	0			Hail (0.88)
------------	----	---------	--	--	---	---	--	--	-------------

Polk County

Reliance	04	1705EST			0	0	5K		Thunderstorm Wind
----------	----	---------	--	--	---	---	----	--	-------------------

Trees down on Highway 30 near Reliance.

Mcminn County

Athens	04	1652EST			0	0			Thunderstorm Wind (G67)
--------	----	---------	--	--	---	---	--	--	-------------------------

Mcminn County

Athens	04	1652EST			0	0			Hail (0.75)
--------	----	---------	--	--	---	---	--	--	-------------

Hawkins County

Church Hill	19	1545EST			0	0	15K		Thunderstorm Wind
-------------	----	---------	--	--	---	---	-----	--	-------------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TENNESSEE, East									
									Trees down around the city.
Carter County Elizabethton	19	1615EST			0	0	5K	7K	Thunderstorm Wind
									Power lines and tree limbs down with power outages.
Washington County Gray	19	1625EST			0	0			Hail (1.00)
									Tree limbs also reported down in the area.
Jefferson County Chestnut Hill	19	1640EST			0	0			Hail (0.88)
Knox County Knoxville	19	1647EST			0	0			Hail (0.88)
Sevier County Sevierville	19	1655EST			0	0		5K	Thunderstorm Wind
									Trees down on Jones Cove Rd.
Hamblen County Morristown	19	1711EST			0	0			Hail (0.75)
									Dime size hail in the city. Also, dime size hail at 25E and Morris Blvd., and at Highway 160 and 25E.
Sullivan County Kingsport	19	1605EST			0	0	15K	10K	Thunderstorm Wind
									Trees and power lines down throughout the city.
Sullivan County Bluff City	19	1625EST			0	0		15K	Thunderstorm Wind
									Trees down.
Blount County Alcoa	19	1715EST			0	0		1K	Thunderstorm Wind
									Tree down on Louisville Rd.
Hamblen County Morristown	19	1735EST			0	0			Hail (1.75)
									Golf ball size hail on Davey Crockett Parkway and two large trees down on West 2nd North St.
Meminn County Calhoun	19	1830EST			0	0			Urban/Sml Stream Fld
									Street and minor urban flooding.
Monroe County Tellico Plains to Vonore	19	1820EST			0	0	10K	15K	Thunderstorm Wind
									Trees and power lines down.
Hamilton County Lookout Mtn	22	1650EST			0	0	5K	10K	Thunderstorm Wind
									Numerous trees and power lines down.
TENNESSEE, West									
Dyer County Dyersburg	27	0325CST 0530CST			0	0	1K		Flash Flood
									Some roads were closed due to flash flooding.
Lauderdale County Ripley	27	0325CST 0530CST			0	0	1K		Flash Flood
									Several roads were closed due to flash flooding.
Madison County Jackson	27	0330CST 0335CST			0	0	0.10K		Hail (1.00)
Madison County Jackson	27	0330CST 0335CST			0	0	5K		Thunderstorm Wind
									Several outbuildings were destroyed and a few trees were knocked down.
Haywood County Brownsville	27	0600CST 0830CST			0	0	1K		Flash Flood
									Some streets were closed due to flooding.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TENNESSEE, West									
Crockett County									
Alamo	27	0700CST 0830CST			0	0	1K		Flash Flood
		Some roads were closed in the Alamo area due to flash flooding.							
Madison County									
Mercer	27	0715CST 0830CST			0	0	1K		Flash Flood
		Several roads were closed because of flooding.							
Lauderdale County									
Ripley	28	0610CST 0615CST			0	0	25K		Lightning
		A building housing a pharmacy, hair salon and child abuse center was destroyed by a fire started by lightning.							
Shelby County									
Bolton	27	2320CST 2325CST			0	0	5K		Thunderstorm Wind
		Several trees were knocked down.							
Shelby County									
Memphis	29	0500CST 0600CST			0	0	1K		Urban/Sml Stream Fld
		Several streets in the south part of Memphis were flooded by locally heavy rainfall.							
Shelby County									
Memphis	29	0515CST 0520CST			0	0	5K		Thunderstorm Wind
		Several power lines and a transformer were blown down in the south part of Memphis.							
Shelby County									
Germantown	29	0530CST 0535CST			0	0	5K		Thunderstorm Wind
		Several power lines and a transformer were knocked down.							
Dyer County									
Dyersburg	30	0400CST 0500CST			0	0	1K		Urban/Sml Stream Fld
		A few roads were covered with water.							
Gibson County									
Dyer to Rutherford	30	0400CST 0500CST			0	0	10K		Flash Flood
		Several families had to evacuate their homes in both Dyer and Rutherford.							
Lake County									
Ridgely	30	0400CST 0500CST			0	0	5K		Flash Flood
		One road was flooded with water reaching up to the headlights.							
Weakley County									
Martin to Gleason	30	1930CST 1935CST			0	0	10K		Thunderstorm Wind
		Several trees and a utility pole were blown down in Martin. Some tree limbs were also blown down between Martin and Gleason.							
Lake County									
Tiptonville	30	1845CST 1850CST			0	0	10K		Thunderstorm Wind
		Several trees and power lines were blown down.							
Henry County									
Paris to 3 N Paris	30	1920CST 1935CST			0	0	10K		Thunderstorm Wind
		Part of a canopy at a convenience store collapsed. Some trees and power lines were knocked down.							
Carroll County									
Mc Kenzie to Huntingdon	30	2015CST 2025CST			0	0	10K		Thunderstorm Wind
		Trees and power lines were blown down in McKenzie and Huntingdon.							
Henderson County									
Juno	30	2030CST 2035CST			0	0	15K		Thunderstorm Wind
		Some buildings were damaged. A few trees were knocked down.							

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>TENNESSEE, West</u>									
Lauderdale County									
Henning	31	0220CST 0400CST			0	0	1K		Flash Flood
		Between 5 and 6 inches of water covered several roads in the area.							
Tipton County									
Brighton	31	0230CST 0235CST			0	0	1K		Thunderstorm Wind
		A couple of cars were damaged by fallen trees.							
Henry County									
Paris	27	0600CST 0800CST			0	0	14K		Flash Flood
		Several roads were covered with water.							
Shelby County									
Millington	23	2000CST 2010CST			0	0	25K		Thunderstorm Wind
		A garage was demolished. Several trees were knocked down with one tree falling through the roof of a house.							
Carroll County									
Mc Kenzie	23	2100CST 2105CST			0	0	10K		Thunderstorm Wind
		Several large trees were knocked down. One large tree fell on a house.							
Tipton County									
Covington	13	1500CST 1600CST			0	0	1K		Urban/Sml Stream Fld
		One road was covered with water after several days of heavy rainfall.							
<u>TEXAS, Central</u>									
Brown County									
12 S Brownwood	04	1020CST 1440CST			0	0			Flash Flood
		County Road 45 flooded and impassable in southern Brown county							
Brown County									
Brownwood	04	1140CST 1530CST			0	0	5K		Flash Flood
		Vehicles stranded in high water...with floodwaters also entering a few homes							
Concho County									
7 N Eden	04	1435CST 1600CST			0	0			Flash Flood
		Highway 83 flooded and impassable north of Eden A weak upper level disturbance produced heavy rainfall across the eastern sections of the area. The heaviest rain fell across the Heartland and the eastern sections of the Concho Valley, where high water closed Highway 83 in Concho County and County Road 45 in Brown County. The worst flooding occurred in the city of Brownwood, where floodwaters entered a few homes and cars became stranded at several intersections.							
Throckmorton County									
10 NW Throckmorton	05	0930CST 1300CST			0	0			Flash Flood
		State Highway 222 flooded and impassable							
Haskell County									
10 E Haskell	05	1000CST 1200CST			0	0			Flash Flood
		Several secondary roads east of Haskell flooded and impassable The upper level disturbance that produced flooding across the Heartland on the 4th moved northward into the northern sections of the Big Country during the morning of the 5th. Once again, heavy rainfall and flooding were the result, with roads closed across parts of Haskell and Throckmorton counties.							
Taylor County									
Trent	12	1845CST			0	0	2K		Thunderstorm Wind
		Winds estimated at 60 mph toppled power poles and damaged mobile homes.							
Taylor County									
Tye	12	1950CST			0	0	1K		Thunderstorm Wind
		A carport was blown over							
Taylor County									
Dyess Afb	12	2000CST			0	0	3.3M		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TEXAS, Central									
Winds estimated at 105 mph did extensive damage across Dyess AFB. Several buildings suffered extensive roof damage and 3 airplanes were damaged.									
Taylor County Abilene	12	2001CST			0	0			Thunderstorm Wind (G51)
Taylor County (Abi)Abilene Muni Ar	12	2004CST			0	0			Thunderstorm Wind (G52)
Taylor County Abilene	12	2005CST			0	0	10K		Thunderstorm Wind
A roof was torn off a building and tossed into an adjacent parking lot.									
Callahan County Clyde	12	2024CST			0	0	1.5K		Thunderstorm Wind
Winds estimated at 60 mph downed power poles and broke large tree limbs.									
Brown County Brownwood	12	2130CST			0	0	2K		Thunderstorm Wind
Six trees uprooted									
Scattered severe thunderstorms raced across the Big Country during the evening of the 12th. The strongest storm moved from Trent to Tye to Abilene in northern Taylor County, where winds up to 100 mph ripped roofs off and downed power poles. Dyess Air Force Base took the brunt of the storm, with damage to buildings and airplanes totalling over 3 million dollars.									
Callahan County 5 SE Baird	13	2350CST			0	0			Hail (1.75)
Coleman County Talpa	14	1215CST			0	0			Hail (0.88)
Runnels County Miles	16	1500CST			0	0	55K		Thunderstorm Wind
A microburst damaged a grain elevator and cotton gin, destroyed 2 empty grain silos, and damaged numerous roofs and carports across the community of Miles. One exterior wall of a house was penetrated by a two-by-four from a carport damaged nearby. Wind speeds were estimated at 80 mph.									
Mason County Fredonia	16	1640CST			0	0	3K		Thunderstorm Wind
A barn suffered roof damage and a shed was partially destroyed.									
Mitchell County 8 NE Colorado City	16	2000CST			0	0	6K		Thunderstorm Wind
High winds downed 10 to 12 power poles.									
Scattered thunderstorms produced a series of microbursts across West Central Texas during the evening of the 16th. The community of Miles suffered the the most extensive damage, with two empty grain silos destroyed, a cotton gin severely damaged, and numerous windows reported broken throughout the community. Damage in Miles was estimated at over 50 thousand dollars.									
Nolan County Sweetwater	17	1330CST			0	0	5K		Thunderstorm Wind
The roof of a commercial building was ripped off by high winds, with debris from the roof damaging a passing car.									
San Saba County San Saba	17	1620CST			0	0	0.50K		Thunderstorm Wind
A television antennae was blown down and destroyed.									
Jones County Hamlin	17	1650CST 1700CST			0	0	6K		Thunderstorm Wind
A carport was destroyed and portions of a neighbouring home severely damaged. Several large tree limbs were also snapped off. For the second consecutive day, scattered thunderstorms produced damaging microbursts across West Central Texas.									
Mcculloch County Brady	18	1440CST			0	0	1K		Thunderstorm Wind
Power lines knocked down across the city									
San Saba County San Saba	18	1510CST			0	0	5K		Thunderstorm Wind
Winds estimated at 60 mph uprooted trees and disrupted power lines throughout the community.									
Coleman County Coleman	18	1516CST			0	0	10K		Thunderstorm Wind
High winds damaged the football stadium in Coleman, knocked power lines down, and tore a roof off of a mobile home.									
San Saba County San Saba	18	1530CST			0	0	2K		Thunderstorm Wind
A hay shed was damaged by high winds.									
For the third consecutive day, scattered thunderstorms produced damaging microbursts across the Heartland of West Central Texas.									

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TEXAS, Central Southeast									
TXZ213	Harris	13	0505CST			1	0		Excessive Heat
			Heat related death at residence (no a/c). M76PH						
Trinity County									
Apple Spgs	13	1800CST			0	0	3K		Thunderstorm Wind
			Trees blown down.						
Polk County									
Goodrich	13	1817CST			0	0	5K		Thunderstorm Wind
			Trees and powerlines blown down in the Goodrich/Mt Rose area.						
Houston County									
Kennard	13	1915CST			0	0	3K		Thunderstorm Wind
			Trees blown down.						
TXZ213	Harris	14	0920CST			1	0		Excessive Heat
			Heat related death (no a/c). M56PH						
Montgomery County									
5 S Conroe	14	1400CST			0	0	10K		Hail (1.75)
Grimes County									
Navasota	14	1405CST			0	0	60K		Thunderstorm Wind
			Ticket booth at Navasota Raceway destroyed and prison barns sustained wind damage.						
Harris County									
2 N Aldine	14	1450CST			0	0	5K		Thunderstorm Wind (G61)
			70 mph gust reported at I-45 & Beltway 8.						
Harris County									
Kingwood	14	1455CST			0	0	10K		Thunderstorm Wind
			Large trees uprooted.						
Harris County									
Houston	14	1456CST			0	0	10K		Thunderstorm Wind
			Large tree fell on church at key map 296Y.						
Montgomery County									
Countywide	14	1505CST 1520CST			0	0	10K		Thunderstorm Wind
			Numerous trees blown down mainly in the eastern half of the county.						
Harris County									
Houston	14	1512CST			0	0	10K		Thunderstorm Wind (G61)
			70 mph gusts in the Greenspoint area.						
Liberty County									
6 E Dayton	14	1512CST			0	0	3K		Hail (0.75)
Liberty County									
Dayton	14	1512CST			0	0	10K		Thunderstorm Wind
			Numerous trees down. Billboards and street signs damaged from high wind						
Harris County									
Katy	14	1535CST			0	0	5K		Thunderstorm Wind
			Trees blown down at key map 485G.						
Harris County									
Houston	14	1540CST 1608CST			0	0	25K		Thunderstorm Wind
			Many trees, powerlines, and utility poles blown down throughout the Houston metropolitan area.						
Brazoria County									
Pearland	14	1600CST			0	0	2K		Thunderstorm Wind
			Large limbs blown down throughout city.						
Galveston County									
Bacliff	14	1610CST			0	0	5K		Thunderstorm Wind (G61)
			70 mph wind gusts.						
Galveston County									
Dickinson	14	1610CST			0	0	5K		Thunderstorm Wind
			Trees blown down.						
Colorado County									
Columbus	14	1620CST			0	0	75K		Lightning
			Lightning induced fire destroyed Po' Boy's restaurant.						

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TEXAS, Central Southeast									
Colorado County									
Frelsburg	14	1620CST			0	0	3K		Thunderstorm Wind
		Trees blown down.							
Galveston County									
Texas City	14	1625CST			0	0	20K		Thunderstorm Wind
		Trees down throughout the city. Gas station canopy at Logan & Palmer St. blown over.							
Galveston County									
Port Bolivar	14	1635CST			0	0	2K		Thunderstorm Wind (G55)
		63 mph wind gust recorded by ferry operator.							
Colorado County									
Columbus	14	1645CST 1650CST			0	4	100K		Thunderstorm Wind (G80)
		Walmart sign blown down on several cars. Three 18-wheelers blown over on several parked cars on I-10. While DPS investigated the accident, 90 mph winds blew a 9000 lb/27 foot long culvert 1/2 mile across I-10.							
Colorado County									
Columbus	14	1700CST 1715CST			0	0	10K		Thunderstorm Wind
		Numerous trees blown down.							
TXZ213									
		Harris							
	15	1545CST			1	0			Excessive Heat
		Heat related death. Deceased lived in a metal shed. M36OT							
Harris County									
Houston	15	1632CST			0	0	3K		Hail (0.75)
		Hail at Federal Rd & I-10.							
Madison County									
Madisonville	17	1326CST			0	0	5K		Tstm Wind/Hail
		Hail (unknown size) and trees blown.							
Walker County									
2 E Huntsville	17	1420CST			0	0	10K		Hail (1.75)
		Hail on HWY 190.							
Polk County									
2 SW Moscow	17	1538CST			0	0	3K		Hail (1.00)
Houston County									
Kennard	17	1545CST			0	0	5K		Thunderstorm Wind
		Trees blown down in the Kennard and Lake Ratcliff areas.							
San Jacinto County									
Shepherd	17	1600CST			0	0	5K		Thunderstorm Wind
		Wind damage to homes in Shepherd.							
Harris County									
5 SE Cypress	17	1715CST			0	0	3K		Thunderstorm Wind
		Wind damage to structures at FM 1960 & U.S. 290.							
Harris County									
Jersey Village	17	1727CST			0	0	40K		Thunderstorm Wind
		Apartment complex under construction blown down.							
Liberty County									
1 N Daisetta	17	1730CST			0	0	3K		Thunderstorm Wind
		Trees down on HWY 834.							
Burleson County									
Countywide	17	1731CST			0	0	3K		Thunderstorm Wind
		Trees blown down in SW parts of the county.							
Harris County									
Houston	17	1735CST			0	0	15K		Thunderstorm Wind
		Wind damage at the FOX Studios on U.S. 59 and also at the Compaq Center.							
Harris County									
Baytown	17	1750CST			0	0	15K		Thunderstorm Wind
		Trees blown down (one onto a roof).							
Chambers County									
Wallisville	17	1810CST			0	0	3K		Thunderstorm Wind
		Trees blown down on Glenwood Rd.							

Storm Data and Unusual Weather Phenomena

July 1998

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

TEXAS, Central Southeast

Brazoria County Pearland	17	1835CST			0	0	3K		Thunderstorm Wind
		Large limbs blown down at HWY 35 & FM 518.							
Brazoria County Pearland	17	1900CST			0	0	3K		Hail (0.75)
Fort Bend County Missouri City	17	1900CST			0	0	5K		Tstm Wind/Hail
		3/4" hail and 60 mph winds at U.S. 90A & Gessner.							
Harris County Houston	17	1900CST			0	0	3K		Hail (0.75)
		Hail at Post Oak & Braeswood.							
Harris County Houston	17	1900CST			0	0	10K		Thunderstorm Wind
		Trees down and structural damage to shopping center at Stells Link & Wood Valley.							
Harris County Pasadena	17	1910CST			0	0	10K		Thunderstorm Wind
		Powerlines and trees down in downtown Pasadena.							
TXZ213	Harris 21	0830CST			1	0			Excessive Heat
		Heat related death (no a/c). M47PH							
TXZ213	Harris 26	1800CST			1	0			Excessive Heat
		Heat related death (no a/c). M70PH							
TXZ213	Harris 27	2025CST			1	0			Excessive Heat
		Heat related death (no a/c). M74PH							
TXZ213-213	Harris 29	0900CST 1330CST			2	0			Excessive Heat
		Heat related death (no a/c). F76PH, F39PH							
TXZ163>164-176>179- 195>200-210>214- 226>227-235>238	Houston - Trinity - Madison - Walker - San Jacinto - Polk - Burleson - Brazos - Washington - Grimes - Montgomery - Liberty - Colorado - Austin - Waller - Harris - Chambers - Wharton - Fort Bend - Jackson - Matagorda - Brazoria - Galveston	01 31	0000CST 2359CST		0	0			Drought
		Drought conditions continue from June. Very little rainfall across SE TX combined with soaring temperatures continue to plague agricultural and medical conditions. With the exception of one day in July, afternoon highs remained above 96 degrees each and every day at IAH as well as many other locations across the region. Little relief at night, with overnight lows in the 75-80 degree range. Eight heat-related deaths were posted in Harris County alone this month. Drought conditions will continue into August.							

TEXAS, Extreme West

El Paso County El Paso	08	1630MST			0	0	50K		Lightning
		Lightning struck a communications tower used for regional emergency communications, resulting in considerable electrical damage and producing a shutdown of the facility lasting several days.							
Hudspeth County Cornudas	08	1344MST 1415MST			0	0			Hail (1.75)

TEXAS, Mid - South

Webb County Laredo	14	2055CST			0	0			Thunderstorm Wind (G50)
------------------------------	----	---------	--	--	---	---	--	--	-------------------------

Storm Data and Unusual Weather Phenomena

July 1998

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

TEXAS, North

TXZ091>095-100>107-115>123-129>135-141>148-156>162-174>175 **Montague - Cooke - Grayson - Fannin - Lamar - Young - Jack - Wise - Denton - Collin - Hunt - Delta - Hopkins - Stephens - Palo Pinto - Parker - Tarrant - Dallas - Rockwall - Kaufman - Van Zandt - Rains - Eastland - Erath - Hood - Somervell - Johnson - Ellis - Henderson - Comanche - Mills - Hamilton - Bosque - Hill - Navarro - Freestone - Anderson - Lampasas - Coryell - Bell - McLennan - Falls - Limestone - Leon - Milam - Robertson**

01	0000CST	32	0	Excessive Heat
31	2359CST			

A prolonged excessive heat event continued across north Texas in July. This heat wave was the result of existing drought conditions combined with a persistent upper level ridge of high pressure. For the month of July, Dallas/Fort Worth International Airport (DFW) recorded an average high of 102.4 degrees, which was the second warmest for the month on record and the fourth warmest ever. The average low of 80.8 degrees was the warmest average low for any month. The monthly average temperature of 91.6 degrees was the second warmest month on record, second only to the 92.0 degrees recorded during the heat wave in July of 1980. DFW reported 28 days with high temperatures at or above 100 degrees and 26 days with low temperatures at or above 80 degrees. The high temperature of 110 degrees reported at DFW on July 12th was the warmest high temperature recorded since July 18, 1980. In Waco, the average temperature of 90.4 degrees was the third warmest on record, with highs averaging 102.4 degrees and lows averaging 78.3 degrees. Waco also reported 26 days with highs at or above 100 degrees. The warmest high temperature for the month for north Texas was reported in Fort Worth on July 13th, when the mercury topped out at 112 degrees.

During July, the heat wave claimed at least 32 lives in north Texas, with most of the fatalities occurring in the Dallas/Fort Worth metroplex. Most of the fatalities were elderly, and many fatalities listed other complicating factors, such as heart disease and hypertension. Below are the dates and listings of each fatality.

July 3:

An 85 year old woman was found dead in her home in east Dallas. Cause of death was hyperthermia, with hypertension and severe heart disease listed as contributing factors.

A 34 year old man collapsed and died while working on a roof in Denton. Cause of death was hyperthermia.

July 5:

A 70 year old man was found dead in his home in northwest Dallas. Cause of death was hyperthermia, with heart disease and hypertension listed as contributing factors.

July 8:

A 63 year old woman was found dead in her home in east Dallas. Cause of death was hyperthermia, with severe heart disease listed as a contributing factor.

July 9:

An 80 year old woman was found dead in her home in Lancaster (Dallas County). Cause of death was hyperthermia, with severe heart disease listed as a contributing factor.

July 10:

An 83 year old man was found alongside a road near his home in Irving (Dallas County). Cause of death was hyperthermia, with Parkinson's Disease listed as a contributing factor.

July 12:

A 59 year old man was found dead in a boarding house in east Dallas. The cause of death was hyperthermia, with heart disease listed as a contributing factor.

A 37 year old man was found dead in his home in southeast Dallas County. Cause of death was hyperthermia, with heart disease listed as a contributing factor.

An 82 year old woman was found dead in her home in the Oak Lawn area of Dallas. Cause of death was hyperthermia, with heart disease listed as a contributing factor.

A 58 year old man was found dead in his home in the Pleasant Grove area of Dallas. Cause of death was hyperthermia, with arthritis listed as a contributing factor.

A 64 year old woman was found dead in her home in the Pleasant Grove area of Dallas. Cause of death was hyperthermia, with heart disease and cirrhosis listed as contributing factors.

An 83 year old man was found dead in his home in the Pleasant Grove area of Dallas. Cause of death was hyperthermia, with congestive heart failure and emphysema listed as contributing factors.

An 85 year old man and his 80 year old wife were found dead in their home in Sanger (Denton County). Hyperthermia was listed as a contributing factor.

July 13:

An 85 year old woman was found dead in her home in east Dallas. Cause of death was hyperthermia, with heart disease listed as a contributing factor.

Storm Data and Unusual Weather Phenomena

July 1998

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

TEXAS, North

A 62 year old man was found dead in a field in the Oak Lawn area of Dallas. Cause of death was hyperthermia, with heart disease listed as a contributing factor.

July 14:

A 75 year old man was found dead in his home in Kaufman County. Hyperthermia was listed as a contributing factor.
A 76 year old man was found dead in his home in Denton County. Hyperthermia was listed as a contributing factor.

July 15:

An 80 year old woman was found dead in her home in south Dallas. Cause of death was hyperthermia, with heart disease listed as a complicating factor.
An 81 year old man was found dead in Fort Worth. Hyperthermia was listed as a contributing factor.

July 16:

A 39 year old man was collapsed and died while working on his car in Fort Worth. Hyperthermia was listed as a contributing factor.
A 64 year old male was found dead in his home in Garland (Dallas County). Cause of death was hyperthermia, with hypertension and heart disease listed as contributing factors.
A 90 year old woman was found dead in her home in Lancaster (Dallas County). Cause of death was hyperthermia, with heart disease listed as a contributing factor.

July 17:

A 75 year old man was found dead in his home in Irving (Dallas County). Cause of death was hyperthermia, with heart disease listed as a contributing factor.

July 19:

An 83 year old woman was found dead in her home in the Knox-Henderson area of Dallas. Cause of death was hyperthermia, with heart disease listed as a contributing factor.
A 67 year old woman was found dead in her home near Fair Park in Dallas. Cause of death was hyperthermia, with heart disease and hypertension listed as contributing factors.

July 20:

A 76 year old man was found dead in his home in south Dallas. Cause of death was hyperthermia, with heart disease listed as a contributing factor.

July 26:

An 87 year old woman was found dead in her home in Fort Worth. Hyperthermia was listed as a contributing factor.

July 28:

An 87 year old woman was found dead in her home in Fort Worth. Hyperthermia was listed as a contributing factor.
A 98 year old woman was found dead in her home in the Pleasant Grove area of Dallas. Cause of death was hyperthermia, with heart disease listed as a contributing factor.

July 29:

A 48 year old man was found in his east Dallas home suffering from hyperthermia and later died at a hospital. Cause of death was hyperthermia.

F85PH, M70PH, F63PH, F80PH, M83OU, M58MH, M37MH, M59PH, F82PH, F64PH, M83PH, M62OU, F85PH, F85PH, F80PH, F90PH, M64PH, M75PH, F83PH, F67PH, M76PH, F98PH, M48PH, M34OU, F80PH, M85PH, M76PH, M75PH, M81PH, M39VE, F87PH, F80PH

**TXZ091>095-100>107-
115>123-129>135-
141>148-156>162-
174>175** **Montague - Cooke - Grayson - Fannin - Lamar - Young - Jack - Wise - Denton - Collin - Hunt - Delta -
Hopkins - Stephens - Palo Pinto - Parker - Tarrant - Dallas - Rockwall - Kaufman - Van Zandt - Rains -
Eastland - Erath - Hood - Somervell - Johnson - Ellis - Henderson - Comanche - Mills - Hamilton - Bosque -
Hill - Navarro - Freestone - Anderson - Lampasas - Coryell - Bell - McLennan - Falls - Limestone - Leon -
Milam - Robertson**

01 0000CST 0 0 0 Drought
31 2359CST

The severe drought that began across north Texas in April persisted through July. In the period from April 1, 1998 through July 31, 1998, Dallas/Fort Worth International Airport was 8.18 inches below normal on rainfall, while Waco was running 9.84 inches below normal. The Drought Severity Index (Long Term, Palmer) showed north Texas under extreme drought conditions, with the Crop Moisture Index indicating extremely dry soil moisture conditions. The dry and hot conditions across north Texas placed a high stress on crops, and an increase in grasshopper infestation caused additional reductions in crop yields. Excessive heat, combined with empty stock tanks and a near total loss of the alfalfa crop, severely stressed the ranching and dairy industries.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TEXAS, North									
The drought of 1998 has caused an estimated \$1.5 billion dollars damage to the agribusiness industry statewide through July. However, specific damage amounts by county in north Texas in July were unavailable.									
Delta County									
Cooper	12	1605CST			0	0			Hail (1.75)
Delta County									
Cooper	12	1625CST			0	0	0.50K		Thunderstorm Wind
A portable sign was blown down onto a road.									
Hopkins County									
Sulphur Spgs	12	1700CST			0	0	20K		Thunderstorm Wind
Thunderstorm winds unroofed houses and blew down trees and power lines.									
Rains County									
10 SE Emory	12	1800CST			0	0			Hail (1.00)
Ellis County									
Bardwell Lake	12	1839CST			0	0			Thunderstorm Wind (G69)
Navarro County									
Emhouse	12	1910CST			0	0	2K		Thunderstorm Wind
Thunderstorm winds blew down trees and caused minor structural damage to buildings.									
Comanche County									
5 N Comanche	13	1558CST			0	0			Hail (0.75)
Comanche County									
De Leon	14	1344CST			0	0			Thunderstorm Wind (G52)
Bell County									
Pendleton	14	1645CST			0	0	15K		Thunderstorm Wind
Two barns were blown down from thunderstorm winds.									
Bell County									
Troy	14	1702CST			0	0	1K		Thunderstorm Wind
Thunderstorm winds blew down a tree.									
Hamilton County									
5 W Hamilton	16	1412CST			0	0			Thunderstorm Wind (G52)
Tarrant County									
Ft Worth	16	1415CST			0	0	10K		Thunderstorm Wind
A food preparation warehouse had windows blown in and an exhaust stack blown off the roof.									
Tarrant County									
North Richland Hills	16	1430CST			0	0	5K		Thunderstorm Wind
Thunderstorm winds blew down several power lines.									
Tarrant County									
Blue Mound	16	1435CST			0	0	5K		Thunderstorm Wind
Thunderstorm winds peeled off the roof from a building.									
Limestone County									
Groesbeck	16	1718CST			0	0			Thunderstorm Wind (G52)
Limestone County									
Thornton	16	1718CST			0	0	2K		Thunderstorm Wind
Power poles were blown down by thunderstorm winds.									
Bosque County									
Meridian	17	1300CST			0	0	0.50K		Thunderstorm Wind
Large tree limbs were blown down by thunderstorm winds.									
Mclennan County									
Lorena	17	1400CST			0	0			Hail (0.75)
Hamilton County									
Hamilton	17	1415CST			0	0	15K		Thunderstorm Wind
An apartment building was unroofed and powerlines were blown down from thunderstorm winds.									
Mclennan County									
Woodway	17	1425CST			0	0	25K		Lightning
A house was struck by lightning.									
Bell County									
Killeen	17	1515CST			0	0	2K		Thunderstorm Wind
Powerlines were blown down from thunderstorm winds.									
Kaufman County									
Kaufman	17	1515CST			0	0	0.50K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>TEXAS, North</u>									
Thunderstorm winds blew down large tree limbs.									
Collin County 1 N Royse City	17	1547CST			0	0	1K		Thunderstorm Wind
									Several trees were blown down.
Van Zandt County Edgewood	17	1556CST			0	0	10K		Thunderstorm Wind
									A house was unroofed by thunderstorm winds.
Anderson County Elkhart	17	1615CST			0	0	15K		Thunderstorm Wind
									Thunderstorm winds blew trees down onto buildings. Road signs were blown down and a small shed was blown over.
Henderson County Athens	17	1627CST			0	0	2K		Thunderstorm Wind
									Powerlines were blown down from thunderstorm winds.
Ellis County Waxahachie	17	1700CST			0	0	5K		Thunderstorm Wind
									A garage was damaged by high thunderstorm winds.
Grayson County Whitesboro	17	1700CST			0	0			Hail (0.75)
Coryell County Gatesville	18	1432CST			0	0	1K		Thunderstorm Wind
									Thunderstorm winds blew down a large tree.
Hamilton County 10 W Hamilton	16	1419CST			0	0	1K		Thunderstorm Wind
									Thunderstorm winds blew down large trees west of Hamilton and in Pottsville.
McLennan County Mc Gregor	16	1722CST			0	0	2K		Thunderstorm Wind
									Power poles were blown down by strong thunderstorm winds.
<u>TEXAS, North Panhandle</u>									
Deaf Smith County 15 N Hereford	12	1515CST			0	0		75K	Hail (1.75)
									Large hail damaged several corn crops in Deaf Smith county.
Randall County Umbarger	12	1518CST			0	0			Hail (1.75)
Potter County 10 N Amarillo	12	1535CST			0	0			Thunderstorm Wind (G52)
Carson County 2 N Pantex	12	1537CST			0	0			Hail (1.00)
Carson County 2 W Conway	12	1600CST			0	4			Thunderstorm Wind (G65)
									Four tractor trailer rigs were blown over on Interstate 40. Four people were taken to the hospital for treatment.
Hansford County Gruver	12	1657CST			0	0			Hail (0.75)
Hansford County 8 NW Spearman	12	1658CST			0	0			Hail (0.75)
Hansford County 4 E Gruver	12	1700CST			0	0			Hail (0.75)
Hansford County 1 W Spearman	12	1716CST			0	0			Hail (0.75)
Hansford County 1 E Gruver	12	1718CST			0	0			Thunderstorm Wind (G52)
									Two highline poles were reported down.
Hutchinson County Borger	12	1759CST 1807CST			0	0	10K		Thunderstorm Wind (G61)
									Several large tree branches along with signs and power poles were reported down. A tree was also reported down on a house. Severe thunderstorms moved from the western Texas panhandle into the central Texas panhandle during the late afternoon and evening hours. These storms produced large hail and wind damage.
Hutchinson County Bunavista	08	1637CST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>TEXAS, North Panhandle</u>									
Hutchinson County									
Bunavista	08	1637CST			0	0			Thunderstorm Wind (G52)
Hutchinson County									
Borger	08	1645CST			0	0			Hail (1.00)
Hutchinson County									
Borger	08	1645CST			0	0			Thunderstorm Wind (G52)
									Large tree limbs were reported knocked down.
Hutchinson County									
3 W Borger	08	1645CST			0	0			Thunderstorm Wind (G61)
									Mainly strong and damaging winds with some large hail accompanied severe thunderstorms which moved across the central Texas panhandle during the early evening hours.
Gray County									
Pampa	06	1426CST 1515CST			0	0	25K		Thunderstorm Wind (G61)
Gray County									
Pampa	06	1435CST			0	0			Hail (0.88)
									A severe thunderstorm over the eastern Texas panhandle produced damaging winds which broke off three to four inch diameter limbs off of trees and downed power lines. A roof was reported blown off of a house.
Moore County									
Dumas	07	1637CST			0	0			Hail (1.00)
Ochiltree County									
2 SW Farnsworth	07	1716CST			0	0			Thunderstorm Wind (G52)
TXZ004									
									Ochiltree
	07	2145CST			0	0			Flood
									State Highway 70 reported to have water over the road.
									Severe thunderstorms across the north central and northeast Texas panhandle produced some hail and strong winds along with some flooding.
Ochiltree County									
Perryton	26	1555CST			0	0			Thunderstorm Wind (G52)
Ochiltree County									
Perryton	26	1608CST			0	0			Thunderstorm Wind (G56)
Ochiltree County									
Perryton	26	1620CST 1621CST			0	0			Thunderstorm Wind (G56)
									An awning was reported blown off a building along U.S. Highway 83 North.
Ochiltree County									
Perryton	26	1630CST			0	0			Thunderstorm Wind (G56)
									Roof damage to a vacant building was reported as well as power outages all over town.
Ochiltree County									
Perryton	26	1647CST			0	0			Thunderstorm Wind (G56)
									A small storage building was reportedly blown over.
									Severe thunderstorms with damaging winds moved across the northeast Texas panhandle during the late afternoon and early evening hours.
<u>TEXAS, Northeast</u>									
Red River County									
Annona	12	1712CST			0	0			Thunderstorm Wind (G52)
Red River County									
2 W Avery	12	1722CST			0	0			Thunderstorm Wind (G57)
Wood County									
5 N Quitman	12	1745CST			0	0			Thunderstorm Wind (G61)
Bowie County									
De Kalb	12	1745CST			0	0			Thunderstorm Wind (G52)
Wood County									
5 W Quitman	12	1745CST			0	0			Hail (0.75)
Bowie County									
Maud	12	1830CST			0	0			Thunderstorm Wind (G52)
Cass County									
Hughes Spgs	12	1847CST			0	0			Thunderstorm Wind (G61)

Storm Data and Unusual Weather Phenomena

July 1998

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

TEXAS, Northeast

Numerous trees down.

Cass County Atlanta	12	1855CST			0	0			Thunderstorm Wind (G56)
-------------------------------	----	---------	--	--	---	---	--	--	-------------------------

Morris County 2 S Daingerfield	12	1855CST			0	0	15K		Thunderstorm Wind (G52)
--	----	---------	--	--	---	---	-----	--	-------------------------

Numerous trees and powerlines down.

Upshur County East Mtn	16	1340CST			0	0			Hail (0.75)
----------------------------------	----	---------	--	--	---	---	--	--	-------------

Smith County Tyler	16	1535CST			0	0	5K		Thunderstorm Wind (G52)
------------------------------	----	---------	--	--	---	---	----	--	-------------------------

Tree fell on a house in the Chapel Hill Subdivision.

Marion County Jefferson	16	1545CST			0	0			Thunderstorm Wind (G52)
-----------------------------------	----	---------	--	--	---	---	--	--	-------------------------

Smith County Whitehouse	16	1600CST			0	0			Thunderstorm Wind (G52)
-----------------------------------	----	---------	--	--	---	---	--	--	-------------------------

Panola County 6 NE De Berry	16	1607CST			0	0			Thunderstorm Wind (G55)
---------------------------------------	----	---------	--	--	---	---	--	--	-------------------------

TXZ096>097-108>112-124>126-136>138-149>153-165>167 Red River - Bowie - Franklin - Titus - Camp - Morris - Cass - Wood - Upshur - Marion - Smith - Gregg - Harrison - Cherokee - Rusk - Panola - Nacogdoches - Shelby - Angelina - San Augustine - Sabine

	01	0000CST			0	0			Drought
	31	0000CST							

TXZ165 Angelina	01	0000CST			5	0			Excessive Heat
	31	2359CST							

Northeast Texas saw much of the same heat in July as they did in June with record or near record heat. July was the hottest month for most of northeast Texas since 1980.
M46OU, M75PH, F74PH, M76PH, M80PH

TEXAS, South

NONE REPORTED.

TEXAS, South Central

Comal County Countywide	03	2330CST			0	0	5K	0	Flash Flood
	04	0200CST							

Hays County Countywide	03	2330CST			0	0	20K	0	Flash Flood
	04	0500CST							

Blanco County Countywide	04	0030CST			0	0	10K	0	Flash Flood
		0600CST							

Burnet County Countywide	04	0300CST			0	0	10K	0	Flash Flood
		0700CST							

Williamson County Countywide	04	0330CST			0	0	5K	0	Flash Flood
		0400CST							

Llano County Countywide	04	0430CST			0	0	10K	0	Flash Flood
		0700CST							

Rainfall of up to 5 inches in Burnet, 3 inches in Williamson, 4 inches over Llano, Hays and Comal and about 6 inches in Blanco Counties caused widespread flash flooding over a large part of the sic county area.

Blanco County West Portion	04	1400CST			0	0	3K	0	Flash Flood
		1500CST							

Comal County West Portion	04	1400CST			0	0	3K	0	Flash Flood
		1500CST							

Additional rainfall of up to 2 inches in western Blanco County and western Comal County caused a brief redevelopment of flash

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
TEXAS, South Central									
flooding over numerous low water crossings.									
Williamson County 5 E Round Rock to 5.2 E Round Rock	04	1200CST 1202CST	0.2	100	0	0	30K	0	Tornado (F1)
A small and very brief tornado touched down near a group picnicking at a ranch just east of Round Rock. The tornado knocked trailers into nearby vehicles and scattered pieces of wood from a pile before dissipating.									
Travis County Lake Travis	04	1300CST 1301CST			0	6	0	0	Lightning
Lightning struck a group of swimmers, injuring six at a local park near Lake Travis. All were treated and quickly released.									
Uvalde County 2 S Uvalde	13	1530CST 1535CST			0	0	10K	0	Thunderstorm Wind
A brief downburst blew down tree limbs and knocked over trees near Uvalde.									
Bexar County 5 SW Helotes	13	1632CST 1640CST			0	0	20K	0	Thunderstorm Wind
A severe thunderstorm knocked down tree limbs and damaged sheds at the Sea World theme part on the western edge of San Antonio.									
Burnet County Bertram	14	1345CST 1350CST			0	0	0	0	Hail (1.00)
Bastrop County Paige	14	1535CST 1540CST			0	0	20K	0	Thunderstorm Wind
Severe thunderstorm winds blew down power poles and blocked roads.									
Gonzales County 3 E Gonzales	14	1605CST 1610CST			0	0	10K	0	Thunderstorm Wind
Gonzales County 3 E Gonzales	14	1610CST 1615CST			0	0	0	0	Hail (1.50)
Gonzales County 2 E Gonzales to 1 E Gonzales	14	1615CST 1617CST	1	50	0	0	10K	0	Tornado (F1)
A small and short-lived tornado struck just east of Gonzales, destroying one mobile home while also damaging 5 homes and wrapping tin roofs around poles. The tornado was preceded by severe winds that also damaged sheds and the roofs of outbuildings, as well as by large hail.									
Fayette County Fayetteville	14	1625CST 1630CST			0	0	20K	0	Thunderstorm Wind
Trees were blown down by severe winds, blocking FM955 for nearly 1 hour.									
Lee County Giddings	14	1700CST 1705CST			0	0	20K	0	Thunderstorm Wind
Severe thunderstorm winds struck the Northrup area near Giddings, knocking down trees and taking the roofs off mobile homes and small sheds.									
Caldwell County Luling	14	1715CST 1720CST			0	0	0	0	Hail (1.00)
Caldwell County Luling	14	1715CST 1720CST			0	0	50K	0	Thunderstorm Wind
Severe thunderstorm winds blew down power lines in the Luling area. One building collapsed as a result of the downburst. The storms also produced large hail across the county.									
Caldwell County Lockhart	14	1735CST 1740CST			0	0	0	0	Hail (1.00)
Williamson County Georgetown	19	1700CST			1	0	0	0	Lightning
Lightning struck a 38-year old man as he was cleaning his pool in Georgetown. He died about one hour later. M38OU									

Storm Data and Unusual Weather Phenomena

July 1998

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

TEXAS, South Panhandle

Parmer County 3 NW Black	12	1540CST			0	0	5K	50K	Hail (1.00)
Swisher County 10 NE Tulia	12	1540CST			0	0	10K	250K	Hail (1.75)
Swisher County Kress	12	1605CST			0	0	10K	0	Thunderstorm Wind
Crosby County 7 E Crosbyton	12	1615CST			0	0	35K	50K	Hail (1.75)
Castro County 10 SSW Dimmitt	12	1625CST			0	0	0	50K	Hail (1.00)
Floyd County 5 W Floydada	12	1720CST			0	0	15K	75K	Thunderstorm Wind
Floyd County 9 SE Floydada	12	1730CST			0	0	50K	0	Thunderstorm Wind (G57)
Childress County (Cds)Childress Arprt	12	1815CST			0	0	0	0	Thunderstorm Wind (G55)
Childress County (Cds)Childress Arprt	12	1832CST			0	0	10K	0	Thunderstorm Wind (G53)

Severe thunderstorms affected parts of the extreme southern Texas Panhandle and the northern South Plains (between Amarillo and Lubbock) on the afternoon and evening of the 12th. In Kress, the roof of a restaurant was blown off. Golfball-sized hail fell northeast of Tulia (where cotton, corn, and milo crops were heavily damaged) and east of Crosbyton (where 10 vehicles sustained damage). Quarter-sized hail fell in Parmer and Castro Counties, where cotton and corn fields were damaged.

The NWS co-operative observer southeast of Floydada reported 65 mph wind gusts that downed numerous large tree branches. The roof was ripped off a large building in Floydada. This same storm caused significant wind damage to crops (cotton, corn, and pumpkins) and snapped utility poles near Sand Hill and Sterley.

In Childress, the ASOS measured a wind gust to 63 mph. Light damage occurred in Childress, where a street light was blown over, and numerous large branches were blown off trees.

Lubbock County Lubbock

15	1904CST	0	0	0	0	Thunderstorm Wind (G53)
----	---------	---	---	---	---	-------------------------

Texas Tech University's weather station recorded a thunderstorm wind gust to 53 knots (61 mph).

TXZ021>044

Parmer - Castro - Swisher - Briscoe - Hall - Childress - Bailey - Lamb - Hale - Floyd - Motley - Cottle - Cochran - Hockley - Lubbock - Crosby - Dickens - King - Yoakum - Terry - Lynn - Garza - Kent - Stonewall

01	0000CST	0	0	Drought	
31	2300CST				

The ongoing West Texas drought continued to cause significant crop damage across the Texas South Plains, the extreme southern Panhandle, and the Low Rolling Plains in July. This event will be better described in later months after the impact on crops is more accurately determined.

TEXAS, Southeast

Tyler County 3 S Colmesnelle

13	1500CST	0	0	75K	Thunderstorm Wind
----	---------	---	---	-----	-------------------

Severe thunderstorms blew down between 50 and 100 trees across Tyler County. The worst hit areas were near Colmesneil and Doucette. Several homes and trailers had trees fall on them, and a few out buildings were destroyed by the wind.

Jefferson County China

14	1350CST	0	0	150K	Thunderstorm Wind
----	---------	---	---	------	-------------------

Trees were blown down across China in western Jefferson County. A home under construction was leveled due to the estimated 60 mph winds. Houses and barns next door were not damaged. The China Elementary School had parts of its roof torn off, and debris from the roof went through the windows of a classroom. No injuries were reported.

Orange County Bridge City

17	1641CST	0	0	30K	Thunderstorm Wind
----	---------	---	---	-----	-------------------

Severe thunderstorms blew down trees and power lines across southern Orange County, especially the Bridge City area.

Jefferson County Nederland TXZ180>182-201- 215>216

17	1722CST	0	0	Hail (0.88)	
----	---------	---	---	-------------	--

Tyler - Jasper - Newton - Hardin - Jefferson - Orange

01	0000CST	0	0	Drought	
31	2359CST				

A mild to severe drought continued for the third straight month across southeast Texas. Most places saw less than two to three

Storm Data and Unusual Weather Phenomena

July 1998

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

TEXAS, Southeast

inches of rain the entire month of July.

TEXAS, West

Andrews County

Andrews

16 1530CST 0 0 Hail (0.75)

A multicell storm produced dime size hail in Andrews.

Andrews County

Andrews

16 1530CST 0 0 1K Thunderstorm Wind

The storm that dropped the hail in Andrews also caused scattered light wind damage across town.

Dawson County

6 NW Lamesa

12 1515CST 0 0 80K Hail (1.25)

A hailstorm hit a cotton field and destroyed over 300 acres of the crop.

Dawson County

6 NW Lamesa

12 1520CST 0 0 10K Thunderstorm Wind

The same storm that hailed on the cotton took the roof off a barn and knocked down 6 utility poles.

Scurry County

3 NW Snyder

12 1700CST 0 0 10K Thunderstorm Wind

Winds from a downbursting thunderstorm took a large metal roof off a barn and also ripped the roof off a mobile home.

Pecos County

2 NW Ft Stockton

06 1605CST 0 0 70K Thunderstorm Wind (G74)

A wet microburst hit the northwest side of Fort Stockton with damaging winds and blinding rains. Damage was scattered but locally impressive. The storm was moving from about 190 degrees with its first damage being apparently on the apex of the outflow. A strongly divergent pattern to the damage was noted with winds from 185 degrees on the west end versus 95 degrees on the east end. The damage path was approximately 3/4 mile wide.

The apex of the outflow hit the La Quinta Hotel at the intersection of I-10 and U.S. 285. A large part of the roof was taken off the hotel. The roof was on the second story of the structure and was oriented such that it caught the wind along this apex. The section of roof covered 13 rooms on the second floor and was both a cover for the walkway and roof for the rooms. The roof section broke loose, went over the building and crashed into the parking lot on the other side. The roof section was moving fast enough to force itself under the rear tires of a vehicle and under a storage shed.

To the east, other damage included a storage shed behind a car dealership that was broken loose from tie-down straps. The building was torn apart as it crossed a field with the roof catching in utility lines. A mobile home was rolled off its trailer at a Truck Stop. The main structure on a small lumber yard was destroyed by the winds as it took the corrugated metal roof off and pushed in an outside wall. Behind the lumber yard, much of a roof of storage building was torn off and trees were downed.

The last damage on the extreme east side of the path was part of a convenience store roof that broke loose and struck the convenience store next door. The second store suffered large dents in its metal wall.

A survey of the damage site was performed and an estimate of 85 mph winds was estimated at the La Quinta with 65 mph winds on the extreme east side of the damage.

Pecos County

11 W Ft Stockton

13 2211CST 0 0 10K Thunderstorm Wind
2225CST

Colliding outflow boundaries initiated explosive multicellular thunderstorm development near the intersection of U.S. Highway 285 and FM 1776. The storms moved to the south-southwest near the Firestone Test Track where 5 utility poles were knocked down. When the storm reached I-10, 15 highway signs were blown down including one large "exit" sign that lost 7 panels.

Pecos County

34 SW Ft Stockton

13 2330CST 0 0 0.50K Thunderstorm Wind

This same storm moved to the southwest along Highway 67 where a highway sign was blown down 20 miles south of the I-10 interchange.

Culberson County

5 NW Pine Spgs

13 1430MST 0 0 Hail (0.75)

A multicell storm developed in the Guadalupe Mountains and caused dime size hail in the vicinity of "The Bowl". Fire fighters attempting to complete a controlled burn were pelted by the hail.

Brewster County

17 SW Marathon

20 1920CST 0 0 5K Thunderstorm Wind (G85)

Three utility poles were knocked down by thunderstorm outflow winds. Power company officials estimated the wind to have been near 100 mph since the poles were a higher grade than most utility poles. Power was knocked out to customers over a vast area in parts of Brewster County.

Storm Data and Unusual Weather Phenomena

July 1998

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

TEXAS, West

Midland County

(Maf) Midland Intl	21	1737CST			0	0	11K		Thunderstorm Wind (G51)
--------------------	----	---------	--	--	---	---	-----	--	--------------------------------

A downburst from a multicell thunderstorm had a measured gust of 59 mph on the KMAF ASOS. Also, wind damage occurred to a metal storage building on the grounds of the airport and 12 utility poles were knocked down in the vicinity of the airport.

Midland County

6 SW (Maf) Midland Intl	21	1750CST			0	0	10K		Thunderstorm Wind
-------------------------	----	---------	--	--	---	---	-----	--	--------------------------

The storm complex that caused the strong winds at the airport moved slowly to the west and another downburst uprooted gas pumps and the attached canopy at a convenience store.

Ector County

Goldsmith	21	1835CST			0	0	3K		Thunderstorm Wind
-----------	----	---------	--	--	---	---	----	--	--------------------------

Thunderstorm downburst winds knocked down several utility poles in Goldsmith.
A tropical upper level low pressure center was moving westward near the Sanderson area. Water Vapor imagery showed the low and a large shield of lift and moisture moving into the region. At max heating, the temperature at KMAF was 100 degrees with a dew point of 57 degrees. A modified 12Z sounding indicated 2200 J/kg of CAPE and Precipitable water of 1.53". Low level winds were mostly over 20 kt on the 00Z sounding, but were very weak aloft. The 00Z sounding thermodynamic readings were tainted by thunderstorms at or near the station.

TXZ045>048-050>052-057>063-067>070-074>075-079>082 - Gaines - Dawson - Borden - Scurry - Andrews - Martin - Howard - Van Horn/Guadalupe Mountains Area - Reeves County And Upper Trans Pecos - Loving - Winkler - Ector - Midland - Glasscock - Ward - Crane - Upton - Reagan - Davis Mountains - Pecos - Presidio Valley - Marfa Plateau - Big Bend Area - Terrell

01	0000CST			0	0				Drought
31	2359CST								

Drought conditions continued in Southwest Texas and Southeast New Mexico. Agricultural losses will be great but will not be included until the end of the drought or the end of the harvest when totals are calculated. Rains were a little more plentiful in July than in the April through June period, but not nearly enough for the drought conditions to be eased. Some locations in the southwest Mountains received over 3 inches of rain during July, but for most of the area less than an inch fell for the month.

TEXAS, Western North

Baylor County

5 W Seymour	05	1305CST			0	0			Flash Flood
-------------	----	---------	--	--	---	---	--	--	--------------------

Many county roads were closed 5 miles west of Seymour in Baylor County due to high water. A spotter 1 mile northeast of Red Springs reported 5.2 inches of rain at 1100 CST.

Knox County

Knox City	12	1945CST 2000CST			0	0	0.50K		Thunderstorm Wind (G52)
-----------	----	--------------------	--	--	---	---	-------	--	--------------------------------

Knox County

Goree	12	2005CST			0	0			Thunderstorm Wind (G65)
-------	----	---------	--	--	---	---	--	--	--------------------------------

An isolated severe thunderstorm developed over Knox County the evening of the 12th resulting in power lines being blown down in Knox City.

Wichita County

Burkburnett	13	1715CST			0	1	3K		Lightning
-------------	----	---------	--	--	---	---	----	--	------------------

Wichita County

4 NW Wichita Falls	13	1720CST			0	0			Thunderstorm Wind (G69)
--------------------	----	---------	--	--	---	---	--	--	--------------------------------

Wichita County

Burkburnett	13	1745CST			0	0			Hail (0.75)
-------------	----	---------	--	--	---	---	--	--	--------------------

Wichita County

1.5 N Sheppard Afb	13	1745CST 1750CST			0	0			Hail (1.00)
--------------------	----	--------------------	--	--	---	---	--	--	--------------------

Wichita County

Sheppard Afb	13	1750CST			0	0			Hail (1.00)
--------------	----	---------	--	--	---	---	--	--	--------------------

Wichita County

5 N Wichita Falls	13	1800CST			0	0			Thunderstorm Wind (G61)
-------------------	----	---------	--	--	---	---	--	--	--------------------------------

Archer County

Holliday	13	1810CST			0	0			Hail (1.00)
----------	----	---------	--	--	---	---	--	--	--------------------

Clay County

3 SW Dean	13	1811CST			0	0			Thunderstorm Wind (G61)
-----------	----	---------	--	--	---	---	--	--	--------------------------------

Wichita County

Burkburnett	13	1815CST			0	0	7K		Thunderstorm Wind
-------------	----	---------	--	--	---	---	----	--	--------------------------

Storm Data and Unusual Weather Phenomena

July 1998

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

TEXAS, Western North

Archer County 8 S Holliday	13	1830CST			0	0			Hail (0.88)
Clay County 10 W Henrietta	13	1830CST			0	0	0.50K		Thunderstorm Wind
Archer County 10 SE Megargel	13	1903CST			0	0			Thunderstorm Wind (G52)

Numerous severe thunderstorms developed over western portions of north Texas during the late afternoon and early evening of the 13th. A roof was blown off of 5 bays of a vehicle garage at the Wichita County Precinct in Burkburnett (Wichita County). In addition, two telephone poles were blown down; eight inch tree limbs were blown down, one through the windshield of a car; two, three-foot diameter trees were blown over between the campuses of Hardin Elementary and Burkburnett Junior High School, and sheet metal roofing was blown off of a building on West 3rd St. One man was injured at a local gas station when he was standing near a utility pole as it was struck by lightning. Paramedics checked him out at the scene and released him. A house was also struck by lightning and caught on fire. The fire department quickly extinguished the fire resulting in only minimal damage. Lastly, power lines were downed 10 west of Henrietta in Clay County.

TXZ086 Wichita 03	1100CST				1	0			Excessive Heat
---------------------------------------	---------	--	--	--	---	---	--	--	----------------

A 75 year-old man died in his house in Wichita Falls due to the excessive heat.

M75PH

TXZ086 Wichita 14	1100CST				1	0			Excessive Heat
---------------------------------------	---------	--	--	--	---	---	--	--	----------------

Excessive heat and drought conditions affected western portions of north Texas from May through early October with the most intense heat and severe drought conditions occurring from mid-June through early September. There were 2 fatalities and at least 2 injuries directly related to the heat. Agricultural losses are estimated at 2.1 billion dollars for the entire state of Texas. All of Texas's counties were declared federal disaster areas.

Heat and drought conditions began in May, intensified in July and August, and diminished in September and early October. Wichita Falls experienced its 3rd warmest and 3rd driest May on record. Heat and drought conditions escalated after June 11th, which was the last day of widespread rainfall across western portions of north Texas until early September. The heat and drought then ended in early October when widespread rain and cooler temperatures returned.

The first fatality directly related to the heat occurred on July 3rd, when a 75 year-old man was found dead in his home in Wichita Falls (Wichita County). The second and last report of a heat related fatality occurred on July 14th, when a 74 year-old man was found dead in his home, also in Wichita Falls.

Only 2 heat related injuries were reported during the 5 month-long heat and drought. Two persons from Wichita Falls were treated for heat related injuries on June 2nd at United Regional Health Care. Agricultural losses across Texas totaled about 2.1 billion dollars with no specific statistics available on a county-by-county basis, however cotton losses are expected to contribute significantly to the total loss.

The summer of 1998 (June-August) was the 2nd hottest and 7th driest on record in Wichita Falls. The drought ended gradually in September and early October, but record warm temperatures continued through September. Wichita Falls recorded an average temperature of 83.4 degrees in September, 2nd hottest September on record. The summer of 1980, considered to be the last major period of excessive heat and drought to affect western portions of north Texas, still ranks as the hottest summer ever for Wichita Falls.

F74PH

UTAH, North, Central and South

Juab County 15 W Nephi	05	1240MST			0	0	0	0.50K	Thunderstorm Wind (G50)
Utah County 4 NW American Fork	05	1300MST			0	0	1K	1K	Thunderstorm Wind (G56)
Salt Lake County (SLC)Salt Lake City	05	1450MST			0	8	50K	0.80K	Thunderstorm Wind (G58)

Dry microburst winds from severe thunderstorms caused areas of blowing dust to develop across northern Utah. Around 1400 MST visibilities dropped to near zero on I-15 in southern Salt Lake City and resulted in a several multi-vehicle accidents. Downed power lines and trees occurred in Utah and Juab counties as well. A microburst wind gust to 67 mph (58kts) was measured at the NWSFO SLC.

Tooele County 15 SE Delle	10	1300MST			0	0	0	1K	Thunderstorm Wind (G62)
-------------------------------------	----	---------	--	--	---	---	---	----	-------------------------

Storm Data and Unusual Weather Phenomena

July 1998

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

UTAH, North, Central and South

Salt Lake County

Draper

10 1430MST **1** **2** **0** **0** **Lightning**

M46OU

A microburst wind gust to 72 mph (62kts) was measured at the Muskrat Springs RAWS from a severe thunderstorm. Lightning claimed the life of a construction worker in Draper and injured 2 co-workers.

Wayne County

Southwest Portion

10 1345MST **0** **0** **20K** **2K** **Flash Flood**

1500MST

Capitol Reef National Park officials reported a flash flood from the Grand Wash across Scenic Drive and SR24. SR24 had to be closed for 3 hours and a motor home in the area was damaged.

Tooele County

Wendover

19 1745MST **0** **0** **4K** **2K** **Thunderstorm Wind (G61)**

The Utah Highway patrol at the Wendover port of entry measured a severe thunderstorm wind gust to 70 mph (61kts). Minor damage was reported in the area.

Iron County

Enterprise Arpt

21 1505MST **0** **0** **0** **0.20K** **Hail (0.75)**

1512MST

Washington County

Zion National Park

21 1530MST **0** **0** **10K** **1K** **Flash Flood**

1615MST

A flash flood occurred in the Zion National Park area and caused road damage and closures. 1.13" of rain fell in an hours time at the park headquarters. Earlier, a spotter in Enterprise reported hail 3/4" in diameter from a severe thunderstorm.

Sanpete County

5 S Spring City

22 1700MST **0** **0** **900K** **300K** **Flash Flood**

1800MST

A flash flood moved down Canal Creek Canyon just south of Spring City. Several roads were damaged and 4 bridges were washed out. Crops were ruined in the area as well.

Iron County

5 SE Newcastle

23 1015MST **0** **0** **0** **0** **Tornado (F0)**

1025MST

0.1

20

San Juan County

47 W Blanding

23 1830MST **0** **0** **0** **0.50K** **Flash Flood**

1900MST

A weak tornado was reported about 5 miles southeast of Newcastle. This tornado touched down in an uninhabited area and no damage occurred. A flash flood was also reported at Natural Bridges National Monument by rangers.

Summit County

5 W Kimball Jct

24 1500MST **0** **0** **100K** **30K** **Heavy Rain**

1700MST

Sanpete County

5 S Spring City

24 1530MST **0** **0** **200K** **20K** **Flash Flood**

1600MST

More flooding occurred just south of Spring City as monsoon thunderstorm rains continued in Utah. Both Canal Canyon Creek and Oak Creek experienced flash flooding. Several families had to be evacuated and their homes were flooded. Extensive basement flooding also occurred in the Jeremy Ranch area as over 1.5" of rain fell in an hours time. Several mudslides also were reported in the canyons of Utah county.

Weber County

Countywide

25 0000MST **0** **0** **40K** **1K** **Heavy Rain**

0500MST

Kane County

Mt Carmel to

Mt Carmel Jct

25 1400MST **0** **0** **0.50K** **0** **Heavy Rain**

1500MST

Wayne County

Fruita

25 1500MST **0** **0** **0.40K** **0** **Heavy Rain**

1530MST

Monsoon rains continued to cause minor flooding across Utah. Several homes in Weber county experienced basement flooding as 1-2" of rain fell in the morning. Minor flooding was also reported in Capitol Reef National Park and across Highway 89 near Mountain Green in the afternoon.

Utah County

Countywide

27 1500MST **0** **0** **20K** **4K** **Heavy Rain**

1700MST

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>UTAH, North, Central and South</u>									
Sanpete County									
5 S Spring City	27	1600MST 1800MST			0	0	100K	200K	Flash Flood
Washington County									
Zion National Park	27	1600MST 1800MST			2	0	0	0.20K	Flash Flood
		M27IW, M31IW							Flash flooding killed 2 California hikers in the Narrows of Zion National Park. Flash flooding occurred again on the Canal Canyon Creek just south of Spring City causing even more damage. Heavy rains in Utah county caused minor basement flooding in Pleasant Grove and mudslides in Spanish Fork Canyon.
Emery County									
Green River	28	1630MST 1715MST			0	0	45K	2K	Heavy Rain
									Heavy rain fell in the Green River area and caused flooding in the area. The spotter there measured 1.05" of rain in 45 minutes and reported basement flooding in several homes.
Davis County									
Countywide	29	1700MST 1900MST			0	0	60K	2K	Flash Flood
Salt Lake County									
(Slc)Salt Lake City	29	1830MST			0	0	0.20K	0	Thunderstorm Wind (G50)
									Flooding occurred in 11 homes in Davis county as heavy rains pummelled the area. 1.10" of rain fell in 30 minutes. A portion of I-15 had to be closed due to water on the roadway and power outages occurred. A microburst wind gust to 58 mph (50kts) was also recorded at the NWSFO.SLC.
Salt Lake County									
Salt Lake City	30	1500MST 1545MST			0	0	10K	1K	Thunderstorm Wind (G50)
Utah County									
Provo	30	1545MST			0	0	0.60K	2K	Thunderstorm Wind (G56)
									A microburst wind gust to 65 mph (56kts) was measured at the BYU weather station in Provo. Thunderstorm winds also caused a 20' tree to fall on a 2 story home in South Salt Lake.
<u>UTAH, Northeast</u>									
Daggett County									
20 W Manila	25	1450MST 1525MST			0	0			Heavy Rain
									1.25 inches of rain fell within 35 minutes.
Uintah County									
Vernal	25	1355MST 1440MST			0	0			Heavy Rain
									1.25 inches of rain fell within 45 minutes.
Daggett County									
13 E Dutch John	25	1500MST 1530MST			0	0	1K		Flash Flood
									A short section of the Browns Park Road was washed out.
Uintah County									
2 E Vernal	25	1515MST 1545MST			0	0	1K		Flash Flood
									A short section of state road 121 was washed out.
<u>VERMONT, North and Central</u>									
Chittenden County									
Hinesburg	16	2015EST 2145EST			0	0	15K		Flash Flood
									A warm and moist unstable airmass was in place across Vermont ahead of a cold front. Thunderstorms developed during the late afternoon and early night hours with locally torrential rainfall. Several roads were washed out in the Vermont town of Hinesburg.
Essex County									
Concord to Lunenburg	16	1730EST 1745EST			0	0	15K		Thunderstorm Wind
									A warm and moist airmass was in place across Vermont ahead of a cold front. Late afternoon and evening thunderstorms developed with locally torrential rainfall. Strong winds associated with these thunderstorms resulted in numerous downed tree limbs with power outages between the Vermont towns of Concord and Lunenburg.

Storm Data and Unusual Weather Phenomena

July 1998

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									
Orleans County									
North Troy to Newport	17	1930EST 1935EST			0	0	5K		Hail (1.75)
A warm and moist airmass was in place across Vermont as a cold front moved across the area during the afternoon and evening. Thunderstorms associated with the front resulted in locally large hail and torrential rainfall. In Orleans county between the towns of North Troy and Newport golf ball size hail was reported.									
Orleans County									
Newport	17	1935EST 1940EST			0	0	10K		Thunderstorm Wind
A warm and moist airmass was in place across Vermont as a cold front moved across the area during the afternoon and evening. Thunderstorms associated with the front resulted in locally large hail, strong winds and torrential rainfall. In Newport, Vermont (Orleans county) strong winds blew down numerous trees with power outages reported.									
Caledonia County									
Walden	17	1820EST			0	0			Hail (1.25)
A warm and moist airmass was in place across Vermont as a cold front moved across the area during the afternoon and evening. Thunderstorms associated with the front resulted in locally large hail and torrential rainfall with half dollar size hail in Walden, Vermont (Caledonia county).									
Chittenden County									
Bolton	17	1730EST 1850EST			0	0	20K		Flash Flood
Chittenden County									
Hinesburg	17	1730EST 1850EST			0	0	20K		Flash Flood
A cold front moving across the area triggered afternoon and evening thunderstorms with torrential downpours. Roads were washed out in the towns of Hinesburg and Bolton.									
Chittenden County									
Richmond	17	1715EST			0	0			Tstm Wind/Hail
Thunderstorms developed in a warm and moist airmass across Vermont as a cold front moved across the area during the afternoon and evening. A thunderstorm in Richmond, Vermont caused pea sized hail and torrential rainfall.									
Caledonia County									
Danville	20	1520EST			0	0			Tstm Wind/Hail
Pea size hail was reported in Danville, Vermont associated with thunderstorms.									
Essex County									
Lunenburg	20	1405EST			0	0	5K		Thunderstorm Wind
A complex area of low pressure and a cold front moved across Vermont with thunderstorms resulting in locally strong winds and torrential rainfall. Strong winds associated with thunderstorms resulted in numerous trees and power lines blown down in Lunenburg, Vermont along with pea sized hail.									
Washington County									
Plainfield	20	1500EST			0	0	5K		Thunderstorm Wind
A complex area of low pressure and a cold front moved across Vermont with thunderstorms resulting in locally strong winds and torrential rainfall. Strong winds associated with thunderstorms resulted in numerous trees blown down in Plainfield, Vermont. In addition, pea size hail was reported in Plainfield at 3 PM EST and in Marshfield at 305 PM EST.									
Windsor County									
Norwich	20	1510EST			0	0			Tstm Wind/Hail
Pea size hail was reported in Norwich, Vermont associated with a thunderstorm.									
Lamoille County									
Eden	20	1400EST			0	0			Tstm Wind/Hail
Pea size hail was reported in Eden, Vermont associated with a thunderstorm.									
Franklin County									
St Albans	23	1725EST			0	0	10K		Thunderstorm Wind (G52)
A cold front which moved across the area triggered afternoon and evening thunderstorms with locally strong winds and small hail. In St Albans, Vermont thunderstorm winds blew down some trees with winds reported as 60 mph or greater (52 knots or greater) along with pea size hail.									
Caledonia County									
West Burke	23	1900EST			0	0	5K		Thunderstorm Wind
A cold front which moved across the area triggered afternoon and evening thunderstorms with locally strong winds. In West Burke, Vermont (Caledonia county) thunderstorm winds blew down trees.									
Chittenden County									
Burlington	29	0251EST			0	0	90K		Thunderstorm Wind (G60)
A cold front moved across Vermont during the early morning hours of July 29th. Thunderstorms developed along and ahead of the									

Storm Data and Unusual Weather Phenomena

July 1998

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

front with strong winds and heavy rainfall. In Burlington, Vermont (Chittenden county), winds gusted to 69 mph (60 knots) with trees and power lines blown down, and shingles blown off homes. Windows were also damaged. In addition, in the adjoining locality of South Burlington, Vermont a tree was blown down on a house causing structural damage.

Chittenden County Countywide

01	0730EST 1220EST	0	0	1M	Flash Flood
-----------	----------------------------	----------	----------	-----------	--------------------

A storm system tracked across New England with steady rainfall. The previous month was very wet so soil conditions remained saturated. Many rivers and streams rose rapidly with some exceeding flood stage. By 0730 AM EST water was beginning to bubble up through manholes in the City of Burlington, and flooding of roads was a big problem through the morning in the City of Burlington. Widespread flooding of roads was reported in the Vermont towns of Underhill, Jericho and Williston.

Addison County Countywide

01	0900EST 1220EST	0	0	1M	Flash Flood
-----------	----------------------------	----------	----------	-----------	--------------------

A storm system tracked across New England with steady rainfall. The previous month was very wet so soil conditions remained saturated. Rivers and streams rose rapidly with many exceeding flood stage, especially the New Haven River. By 9 AM EST some roads in the Ripton, Vermont area were under water and were washed out by late morning. In the towns of Lincoln and Bristol a number of residents were evacuated due to the flood waters.

Addison County Countywide

01	1220EST 1900EST	0	0	1M	Flood
-----------	----------------------------	----------	----------	-----------	--------------

A storm system tracked across New England with continued periods of rainfall. With saturated soil conditions rivers and streams remained at or above flood stage. Areas along the New Haven River continued to flood, especially in Bristol. A number of roads were washed out in the county. Portions of Rte 12A were flooded in and around East Granville. Local sources of drinking water became contaminated.

Chittenden County Countywide

01	1220EST 1900EST	0	0	1M	Flood
-----------	----------------------------	----------	----------	-----------	--------------

A storm system tracked across New England with periods of rain continuing. Soil conditions remained saturated with streams and rivers at or above flood stage. Many basements of houses were flooded, especially in Shelburne. Storm sewers were flooding in many localities. By afternoon, portions of train tracks in both Burlington and Shelburne suffered extensive damage with erosion of the track bed and actual washouts in places. Some roads remained closed through the afternoon, such as Rte 7 in Colchester, Vt with other roads flooded in Burlington. Some local sources of drinking water became contaminated and several beaches were closed due to pollution from the flood waters.

Washington County East Portion

01	1300EST 2300EST	0	0	10K	Flood
-----------	----------------------------	----------	----------	------------	--------------

A storm system tracked across New England with periods of steady rainfall. Soil conditions were saturated and many rivers were running high and muddy. The Winooski River was in and out of its banks from time to time during the afternoon and early night of July 1st, especially from the Marshfield to Plainfield areas.

Chittenden County Jericho

09	1825EST	0	0		Tstm Wind/Hail
-----------	----------------	----------	----------	--	-----------------------

A thunderstorm moved across the area with a wind gust to 42 mph (36 knots) along with pea size hail in Jericho, Vermont.

Grand Isle County South Hero

01	1000EST 1300EST	0	0	50K	Flood
-----------	----------------------------	----------	----------	------------	--------------

Heavy rain during the morning resulted in road flooding in South Hero, Vermont. In addition, a few homes were flooded.

VERMONT, South

NONE REPORTED.

VIRGIN ISLANDS

NONE REPORTED.

VIRGINIA, East

Hanover County Ashland to Mechanicsville

10	0000EST 0145EST	0	0		Flash Flood
-----------	----------------------------	----------	----------	--	--------------------

Slow moving thunderstorms produced rainfall amounts between 3.0 and 3.5 inches within 2 hours. This resulted in flash flooding in eastern portions of Hanover county. Several roads were reported under as much as six inches of water. Several accidents were reported near the intersection of Route 643 and Route 301 about 6 miles southeast of Ashland.

Storm Data and Unusual Weather Phenomena

July 1998

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

VIRGINIA, East

Prince Edward County

Farmville 22 1622EST 0 0 2K **Thunderstorm Wind**
Several trees and power lines down.

Powhatan County

4 W Powhatan 22 1652EST 0 0 2K **Thunderstorm Wind**
Several trees down at intersection of Route 60 and Ridge Road.

Powhatan County

Central Portion 22 1735EST 0 0 2K **Thunderstorm Wind**
Several trees down.

Surry County

Elberon 23 1358EST 0 0 2K **Thunderstorm Wind**
Two large trees down near Route 31.

York County

Yorktown 23 1359EST 0 0 1K **Thunderstorm Wind**
Large tree down on Route 17 at Parkway overpass.

Newport News (C)

Newport News 23 1405EST 0 0 2K **Thunderstorm Wind**
Several trees down.

Sussex County

4 S Stony Creek 23 1745EST 0 0 1K **Thunderstorm Wind**
Tree tops sheared off on Route 643 near the intersection of Route 642.

Sussex County

Stony Creek 23 1750EST 0 0 2K **Thunderstorm Wind**
Several trees down on power lines near Nibblets mill.

VIRGINIA, Extreme Southwest

Scott County

Gate City 19 1530EST 0 0 1K **Hail (0.75)**
The storm also knocked down a tree near the Hilton Hotel.

VIRGINIA, North

Augusta County

Mt Solon 02 1912EST 0 0 **Hail (1.00)**

Staunton (C)

1 W Staunton 02 2005EST 0 0 **Hail (0.75)**

Staunton (C)

Staunton 02 2010EST 0 0 10K **Lightning**
An isolated severe thunderstorm tracked slowly through northern and central Augusta Co, producing hail the size of pennies and quarters at two locations west of Staunton. The same storm produced a lightning strike at a home in Staunton. The strike ignited a fire which damaged a portion of the home's roof and attic.

VAZ025>031-036>042-050>057 **Augusta - Rockingham - Shenandoah - Frederick - Page - Warren - Clarke - Nelson - Albemarle - Greene - Madison - Rappahannock - Fauquier - Loudoun - Orange - Culpeper - Prince William - Fairfax - Arlington - Stafford - Spotsylvania - King George**

20 1100EST 0 0 **Excessive Heat**
23 1700EST

After an unusually pleasant start to the month, a singular heat wave affected northern Virginia during the climatological peak of highest annual temperatures. The heat wave, caused by the combination of hot and humid air associated with "Bermuda" high pressure and increasingly dry ground, caused temperatures to soar into the mid and upper 90s. The heat index, however, equalled or exceeded 100 each afternoon. Highest temperatures were recorded in the Shenandoah Valley on the 22nd, with Winchester and Luray (VAZ028>029) each reaching 99 degrees and Charlottesville (VAZ037) reaching the century mark. A record high was observed at Washington/Dulles International Airport (VAZ042) on the 22nd when the temperatures soared to 98 degrees. The heat wave was less tolerable than those in recent years since much of the summer had been cooler and less humid than normal.

Across northern Virginia, five persons required brief hospital visits due to heat exhaustion; four in Fairfax Co (VAZ053) and one in Prince William Co (VAZ052). Virginia Power reported record usage on the 22nd; the nearly 16,000 megawatts of emitted power surpassed the day-old record of 15,010. The previous record had been 14,910 megawatts.

The heat wave broke during the evening of the 23rd with the passage of a cool front.

Storm Data and Unusual Weather Phenomena

July 1998

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

VIRGINIA, North

Loudoun County

Lovettsville to Waterford	21	1657EST 1710EST				0	0	10K	20K	Thunderstorm Wind
---------------------------	----	--------------------	--	--	--	---	---	-----	-----	-------------------

Fairfax County

Reston to Vienna	21	1741EST 1754EST				0	0	12K		Thunderstorm Wind
------------------	----	--------------------	--	--	--	---	---	-----	--	-------------------

Arlington County

Arlington	21	1758EST				0	0	3K		Thunderstorm Wind
-----------	----	---------	--	--	--	---	---	----	--	-------------------

A potent line of strong to severe thunderstorms raced through portions of northern Virginia during the early evening, knocking down large limbs and a few trees and wires. Initial damage was noted in northwestern Loudoun Co, where numerous trees and wires were blown down along the gust front. Additional limb and wire damage was noted across northern Fairfax Co, from the Reston/Herndon vicinity to Vienna. At least two large trees fell in Arlington Co; one blocking at least one lane of the George Washington Parkway near Windy Run; another at the intersection of Vermont and 11th Avenue.

Culpeper County

Mitchells	22	1515EST				0	0	12K		Thunderstorm Wind
-----------	----	---------	--	--	--	---	---	-----	--	-------------------

King George County

King George	22	1700EST				0	0	15K		Thunderstorm Wind
-------------	----	---------	--	--	--	---	---	-----	--	-------------------

An isolated strong to severe thunderstorm developed over the western piedmont and pulsed to varying intensities as it moved into the Northern Neck region during the evening. A large, healthy oak tree snapped at a residence in Mitchells, with the bulk of the tree smashing the roof of a late-model automobile. An outbuilding, with an open door to the windward exposure, had a portion of its roof peeled back.

The same storm weakened as it pushed across east-central Virginia, but re-intensified for a brief period as it moved into the Northern Neck region, knocking down numerous trees, large limbs, and power lines in the city of King George.

Falls Church (C)

Falls Church	23	1630EST				0	0	1.5K		Lightning
--------------	----	---------	--	--	--	---	---	------	--	-----------

Fairfax County

South Portion	23	1730EST 1830EST				0	0	70K		Lightning
---------------	----	--------------------	--	--	--	---	---	-----	--	-----------

Scattered thunderstorms with abundant cloud-to-ground lightning struck different sections of Fairfax Co during the evening, causing several instances of damage. In Falls Church, a large oak tree was split by a strike, with limbs crushing a fence and falling onto two sedans. Later that evening, direct strikes in southern Fairfax Co caused four separate fires. The strikes included: two strikes to roofs of single-family homes, one to the roof of a garden apartment, and another to a shed. One of the fires, in the Groveton area, damaged the second floor, rendering the home temporarily uninhabitable. The other single-family house fire caused damage to the attic.

Frederick County

Gainesboro	30	1705EST 1715EST				0	0	8K		Lightning
------------	----	--------------------	--	--	--	---	---	----	--	-----------

Frederick County

Gainesboro	30	1710EST				0	0	2K		Tstm Wind/Hail
------------	----	---------	--	--	--	---	---	----	--	----------------

Frederick County

3 E Gainesboro to 3.5 NE Gainesboro	30	1715EST	0.5	75		0	0	10K		Tornado (F0)
-------------------------------------	----	---------	-----	----	--	---	---	-----	--	--------------

An isolated rotating thunderstorm developed along a stationary front over western Frederick Co and moved east, producing some wind damage and a small tornado near and east of Gainesboro. At a residence on Hunting Ridge Road just east of Gainesboro, a brief tornado snapped or uprooted 50 to 60 trees, including pines and oaks. One of the trees smashed a portion of a fence. Moments earlier, in Gainesboro, lightning started two grass fires and struck a home, causing minor damage. Strong winds blew down several power lines as well.

VIRGINIA, Northwest

NONE REPORTED.

VIRGINIA, Southwest

Salem (C)

Salem (C)	22	1415EST				0	0	25K		Thunderstorm Wind
-----------	----	---------	--	--	--	---	---	-----	--	-------------------

Montgomery County

Blacksburg	22	1422EST				0	0			Thunderstorm Wind (G52)
------------	----	---------	--	--	--	---	---	--	--	-------------------------

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
<u>VIRGINIA, Southwest</u>									
Montgomery County									
Blacksburg	22	1428EST			0	0	15K		Thunderstorm Wind
Halifax County									
Virgilina	22	1430EST			0	0	0		Thunderstorm Wind
Montgomery County									
2 S Blacksburg	22	1430EST			0	0	2K		Lightning
Bedford County									
Forest	22	1438EST			0	0	0		Thunderstorm Wind
Appomattox County									
Appomattox	22	1555EST			0	0	0		Thunderstorm Wind
Charlotte County									
Cullen	22	1610EST			0	0			Hail (0.88)
Charlotte County									
Cullen	22	1610EST			0	0	0		Thunderstorm Wind
Thunderstorms on the 22nd produced damaging winds, damaging lightning, and hail up to nickel size.									
Thunderstorms winds toppled two 1.5 foot diameter trees onto highway 611 in Appomattox, trees and power lines onto highway 221 in Forest, large trees and power lines onto highway 47 in Cullen, flipped over 2 single engine planes and damaged a third at the Virginia Tech Airport in Blacksburg, toppled trees causing power outages in Virgilina, and downed power lines and downed a tree through the roof of a house in Salem.									
A lightning strike damaged electronic equipment at a residence two miles south of Blacksburg.									
Bedford County									
Goodview	19	1430EST			0	0	0		Thunderstorm Wind
Thunderstorm winds on the 19th down small trees and large branches in Goodview.									
Rockbridge County									
2 NW Lexington	23	1630EST			0	0	0.30K		Thunderstorm Wind
Thunderstorm winds toppled several large trees on the 23rd destroying parts of a fence.									
<u>WASHINGTON, Northeast</u>									
Lincoln County									
Wilbur	03	1400PST			0	0	0	0	Tstm Wind/Hail
one inch diameter hail and 75 mph wind gusts in Wilbur.									
Lincoln County									
Wilbur	03	1415PST 1430PST			0	0	0	0	Funnel Cloud
funnel cloud sighted on the south side of Wilbur.									
Stevens County									
2 E Addy	03 10	1800PST 1200PST			0	0	50K	50K	Wild/Forest Fire
lightning sparked 3 small wildfires, about an acre in size, in the Colville National Forest.									
Asotin County									
Asotin	10	1845PST			0	0	0	0	Tstm Wind/Hail
half inch diameter hail and wind gust to 60 mph.									
Whitman County									
Colfax	10	1845PST			0	0	40K	500K	Thunderstorm Wind
strong winds knocked trees down, crushing a convertible. only minor wheat damage.									
Grant County									
Ephrata	10	1848PST			0	0	10K	0	Thunderstorm Wind
numerous large trees down									
Grant County									
Soap Lake	10	1850PST			0	0	5K	0	Thunderstorm Wind
trees and power lines down.									
Grant County									
Ephrata	10	1901PST			0	0	0	0	Hail (1.00)
one inch diameter hail									
Adams County									
Lind	10	2015PST			0	0	0	0	Hail (1.75)
1.75 inch diameter hail									

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
WASHINGTON, Northeast									
Lincoln County									
Almira	10	2020PST			0	0	15K	2M	Tstm Wind/Hail
									trailer flipped over by 60 mph winds along with downed trees and power lines. a million bushels of wheat were lost to hail damage. heavy rain and 3/4 inch hail was reported.
Adams County									
Othello to Washtucna	10	2025PST 2049PST			0	0	10K	100K	Thunderstorm Wind
									trees down and power lines down along with widespread damage to nearby wheat fields.
Adams County									
Lind	10	2055PST			0	0	0	0	Hail (1.75)
									1.75 inch diameter hail
Adams County									
Ritzville	10	2055PST 2100PST			0	0	0	0	Funnel Cloud
									Adams county sheriff reported a funnel cloud.
Ferry County									
5 N Keller to Keller	10	2128PST 2204PST			0	0	10K	0	Thunderstorm Wind
									downed trees on Highway 21 and in Keller on Kuehne Rd.
Spokane County									
Spokane	10	2200PST 2228PST			0	0	20K	0	Flood
									standing water and flooding on I90 near the Thor/Freya exit
Spokane County									
(Geg)Spokane Intl Ar	10	2203PST			0	0	0	0	Thunderstorm Wind (G50)
									Fairchild AFB, Geiger Field and the NWS office reported 58 mph winds. a funnel cloud sighted at NWS office.
Lincoln County									
Sprague	10	2208PST			0	0	10K	0	Thunderstorm Wind
									power lines down in RV park
Lincoln County									
Rear dan	10	2235PST 2255PST			0	0	10K	0	Flood
									flooding on Highway 231
Spokane County									
Deer Park	10	2250PST 2255PST			0	0	0	0	Funnel Cloud
									police spotted a funnel cloud near Deer Park
Stevens County									
3 NW Colville	10	2256PST			0	0	5K	0	Thunderstorm Wind
									trees and power lines blown down across roads.
Pend Oreille County									
Newport	10	2305PST 2315PST			0	0	0	0	Funnel Cloud
									sheriff sighted a funnel cloud near Newport
Pend Oreille County									
Newport to Ione	11	0030PST 0045PST			0	0	10K	0	Thunderstorm Wind
									strong winds blew trees down.
Stevens County									
Colville	11	0109PST			0	0	10K	0	Thunderstorm Wind
									trees reported blown down on Aladdin Road.
Pend Oreille County									
6 NW Newport to Metaline	11	0159PST 0205PST			0	0	10K	0	Thunderstorm Wind
									trees reported down across Highway 20 and 31.
Lincoln County									
Wilbur	29	1700PST 1754PST			0	0	20K	0	Flood
									heavy rain lead to flooding in downtown Wilbur with flood drainages full and streets running with water. One inch diameter hail also occurred.

Storm Data and Unusual Weather Phenomena

July 1998

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

WASHINGTON, Northeast

Grant County

Moses Lake	29	1826PST 1830PST			0	0	0	0	Funnel Cloud
-------------------	-----------	----------------------------	--	--	----------	----------	----------	----------	---------------------

a pilot relayed a report of a funnel cloud in the vicinity of Moses Lake airport.

Grant County

Ephrata	31	0530PST 0830PST			0	0	40K	0	Flood
----------------	-----------	----------------------------	--	--	----------	----------	------------	----------	--------------

over 3 inches of rain in 3 hours dumped on Ephrata causing its downtown to flood. water was a foot deep in some area, flooding a local grocery store.

Okanogan County

Ellisford	31	1630PST 1740PST			0	0	15K	0	Flood
------------------	-----------	----------------------------	--	--	----------	----------	------------	----------	--------------

heavy rain caused flooding and mudslides on Loomis Highway near Wannacut Road.

Whitman County

5 NE La Crosse to 10 SW St John	27	1130PST 2000PST			0	0	70K	500K	Wild/Forest Fire
--	-----------	----------------------------	--	--	----------	----------	------------	-------------	-------------------------

Dry and windy conditions help spread small wild fires across farm fields in central Whitman county. Several fires were reported from La Crosse to Endicott to St. John with over 600 acres of wheat and barely burned.

Okanogan County

8 SE Omak to 9 SE Omak	27 28	2230PST 1800PST			0	0	50K	25K	Wild/Forest Fire
-----------------------------------	------------------	----------------------------	--	--	----------	----------	------------	------------	-------------------------

Lightning sparked several small fires between Cameron Lake and Omak Lake in the Colville Indian Reservation. A few smaller fires were also reported near Salmon Creek Rd and south of Riverside. Over 200 acres were burned.

Okanogan County

1 N Oroville	27	2300PST 2310PST			0	0	10K	0	Tstm Wind/Hail
---------------------	-----------	----------------------------	--	--	----------	----------	------------	----------	-----------------------

Strong thunderstorm winds damaged a portion of the grandstand roof at the county fairgrounds.

WASHINGTON, Northwest

NONE REPORTED.

WASHINGTON, Southeast

Benton County

(Rld)Richland Arpt	10	1835PST 1940PST			0	0			Thunderstorm Wind (G51)
---------------------------	-----------	----------------------------	--	--	----------	----------	--	--	--------------------------------

Franklin County

Pasco Arpt to Eltopia	10	1845PST 1930PST			0	0			Thunderstorm Wind (G58)
----------------------------------	-----------	----------------------------	--	--	----------	----------	--	--	--------------------------------

Walla Walla County

Burbank to Ash	10	1855PST 1940PST			0	0			Thunderstorm Wind (G50)
---------------------------	-----------	----------------------------	--	--	----------	----------	--	--	--------------------------------

A thunderstorm with damaging wind, heavy rain, and hail moved through southcentral Washington. Hundreds of trees were blown down and roofs were blown off houses in Pasco. The peak wind gust at the Pasco Airport was 67 mph. Near Eltopia, trees were blown down, flash flooding damaged a house, and hay was flattened causing extensive crop damage. Trees were blown down in Burbank in western Walla Walla County. Power lines were blown along the interstate in Richland and along the Columbia River. There were scattered reports of 1/4 inch hail. Mud slides closed Interstate 82 for about two hours. There were also scattered power outages in the Tri-Cities area.

Kittitas County

Ellensburg to Hillside	03	1330PST 1700PST			0	0			Flash Flood
-----------------------------------	-----------	----------------------------	--	--	----------	----------	--	--	--------------------

Heavy rain caused flash flooding, mud and rock slides that washed out portions of a 17 mile stretch of Highway 831 (Canyon Road) between Ellensburg and Yakima. Radar estimated a storm total maximum of 3.20 inches. Close to 200 people and a freight train were stranded by landslides. People were evacuated by boat on the Yakima river. One landslide went halfway across the river. A breached irrigation ditch sent water across three roads into basements and barns southeast of Ellensburg. Heavy rain also caused scattered power outages in Yakima and Ellensburg. Streets and intersections were temporarily flooded causing several traffic accidents in Yakima.

Columbia County

Dayton	30	1645PST 1730PST			0	0			Heavy Rain
---------------	-----------	----------------------------	--	--	----------	----------	--	--	-------------------

Up to two inches of rain fell in 45 minutes. Flooding was reported along Patit Creek. Water washed out nearby roads and mudslides covered some roads with as much as three inches of mud. 1/2 inch hail also fell.

Storm Data and Unusual Weather Phenomena

July 1998

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

WASHINGTON, Southeast

Klickitat County

Cleveland to Bickleton	27	1800PST			0	0			Wild/Forest Fire
	31	2200PST							

A lightning caused wild fire burned more than 18,500 acres of grassland and forest in Klickitat County. At least 17 outbuildings, including five homes, were destroyed. The entire town of Cleveland was evacuated. In all over 900 people helped fight the fire with no injuries reported. However, nearly 150 head of cattle died as a result of the fire. Heavy rain helped bring the fire under control.

WASHINGTON, Southwest

NONE REPORTED.

WEST VIRGINIA, East

WVZ051>053

Morgan - Berkeley - Jefferson

21	1100EST				0	0			Excessive Heat
22	1700EST								

After an unusually pleasant start to the month, a singular heat wave affected the eastern panhandle of West Virginia during the climatological peak of the highest annual temperatures. The heat wave, caused by the combination of hot humid air associated with "Bermuda" high pressure and increasingly dry ground, caused temperatures to soar into the mid and upper 90s. The heat index, however, equalled or exceeded 100 each afternoon. This heat wave was less tolerable than those in recent years since much of the summer had been cooler and less humid than normal.

Morgan County

Countywide	21	1615EST			0	0	12K	5K	Thunderstorm Wind
		1630EST							

Berkeley County

Hedgesville to Martinsburg	21	1630EST			0	0	75K	25K	Thunderstorm Wind (G71)
		1640EST							

Jefferson County

Shepherdstown to Harpers Ferry	21	1642EST			0	0	35K	15K	Thunderstorm Wind (G71)
		1650EST							

A small but potent line of severe thunderstorms developed over the eastern West Virginia panhandle during the late afternoon. Microbursts produced wind gusts in excess of 80 mph across portions of northern Berkeley and Jefferson Cos, increasing the amount of damage, which was fairly extensive to trees and wires. Some property damage was observed as well.

The storms first intensified in Morgan Co. Widespread scattered damage occurred mainly to trees/large limbs and power lines. The main cell developed an impressive microburst as it traversed northern Berkeley Co, producing widespread damage to trees, large limbs, and power lines. A 50 by 30 area of double-metal roof was ripped from an automobile manufacturing plant in Martinsburg, with associated structural damage noted to the supporting steel girders. Assorted minor property damage (e.g. shingles, siding, yard articles) was noted in neighborhoods north of Martinsburg between Hedgesville and Falling Waters.

Moments later, the storm raced southeast through northern and eastern Jefferson Co. An identical wind gust (82 mph) was recorded by a spotter in Shepherdstown; emergency management officials noted tree/limb and wire damage in the area. An off-duty meteorologist reported numerous trees had been knocked down in the Harpers Ferry/Bolivar area of eastern Jefferson Co.

Berkeley County

1 S Bunker Hill to 1 SE Bunker Hill	30	1700EST	1	150	0	0	80K	10K	Tornado (F1)
		1702EST							

Berkeley County

Bunker Hill	30	1705EST			0	0		3K	Hail (1.75)
		1710EST							

Berkeley County

Bunker Hill	30	1705EST			0	0	50K	10K	Thunderstorm Wind
		1710EST							

A pulse-severe mini-supercell thunderstorm rapidly developed near the border of Frederick Co, Virginia and Berkeley Co during the late afternoon. Shortly after the storm exhibited strong low- and mid-level rotation, a combination of large hail, damaging straight-line winds, and a tornado occurred in the Bunker Hill area.

The most impressive event was a brief tornado, witnessed for much of its path by a local resident. The twister touched down along Tory Town Road and continued east-southeast along Sam Mason Road, crossing Interstate 81 before dissipating shortly after crossing federal highway 11. The tornado had multiple vortices - the eyewitness noted at least 5 spinning finger-shaped tendrils as the twister passed.

Damage on Tory Town Road included a pushed in a wall of a home, one uprooted tree which totalled a parked sport-utility vehicle,

Storm Data and Unusual Weather Phenomena

July 1998

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

WEST VIRGINIA, East

and a destroyed barn. Along and just north of Sam Mason Road, damage included numerous snapped and twisted tree tops. One uprooted tree smashed into a home causing substantial damage to an adjacent shop. Five windows were blown out. Along Sam Mason Road east of Interstate 81, at least a dozen large trees were uprooted, and several sheds were damaged. One of the sheds was large - 12 by 36 feet. Two horses inside sustained minor injuries (from cuts).

Straight-line wind damage occurred about a mile northeast of the tornado's location - along and near Runnymede Road. Two barns were blown down, and several large trees fell, one onto a vehicle and another onto a house. Hail, ranging in size from marble to occasionally golf ball, fell - in one case prior to the tornado touch down.

Allegheny Power estimated between 500 and 1,000 customers lost electricity during the storms.

WEST VIRGINIA, North

NONE REPORTED.

WEST VIRGINIA, Southeast

NONE REPORTED.

WEST VIRGINIA, West

Cabell County 5 S Melissa	02	1745EST		0	0		Hail (0.88)
-------------------------------------	----	---------	--	---	---	--	-------------

Nickel size hail fell near the Beech Fork State Park.

Wayne County 3 E Lavalette	02	1746EST		0	0		Hail (0.88)
--------------------------------------	----	---------	--	---	---	--	-------------

Braxton County Sutton to Flatwoods	02	1750EST 1930EST		0	0	25K	Flash Flood
---	----	--------------------	--	---	---	-----	-------------

Rains of 1.5 to 2 inches fell between 1630 and 1830EST. One home along Granny Creek received water damage as a result of runoff from a saturated hillside. A portion of a roadway was washed out along Old Woman Run.

Cabell County North Portion to East Portion	18 19	2245EST 0100EST		0	0	85K	Flash Flood
--	----------	--------------------	--	---	---	-----	-------------

Putnam County West Portion	18 19	2300EST 0130EST		0	0	50K	Flash Flood
--------------------------------------	----------	--------------------	--	---	---	-----	-------------

Roane County Left Hand to Amma	19	0030EST 0300EST		0	0	40K	Flash Flood
---	----	--------------------	--	---	---	-----	-------------

Rains of 1.5 to 3 inches caused flooding around Dudley Gap, Ona, Culloden, and Milton in Cabell County. The Milton Police reported some mobile homes had to be evacuated. About 40 families were affected by the high water in Cabell County. The same rains affected western Putnam County. One rain gauge in Hurricane had 2.5 inches. A nearby trailer park along Route 60 was flooded. In Roane County, rains of 1 to 1.5 inches fell over saturated ground. Three vehicles were flooded near Amma and roads were blocked. No dwellings were flooded in Roane County.

Wood County Parkersburg	22	1800EST		0	0	12K	Lightning
-----------------------------------	----	---------	--	---	---	-----	-----------

A vacant building was damaged. The sidewalk in front of the building was littered with broken bricks.

WISCONSIN, Extreme Southwest

NONE REPORTED.

WISCONSIN, Northeast

Oneida County 15 W Rhinelander	14	0810CST		0	0	3K	Thunderstorm Wind
--	----	---------	--	---	---	----	-------------------

Oneida County 5 W Clearwater Lake	14	0815CST		0	0	2K	Thunderstorm Wind
---	----	---------	--	---	---	----	-------------------

Vilas County Eagle River	14	0815CST		0	0	3K	Thunderstorm Wind
------------------------------------	----	---------	--	---	---	----	-------------------

Storm Data and Unusual Weather Phenomena

July 1998

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

WISCONSIN, Northeast

Oneida County Rhinelanders	14	0824CST			0	0	4K		Thunderstorm Wind
Forest County 2 S Crandon	14	0910CST			0	0	2K		Thunderstorm Wind
A small line of intense thunderstorms produced winds over 50 mph across far northern Wisconsin. Numerous trees and power lines were knocked down by the winds.									
Waushara County Wautoma	20	2112CST 2116CST			0	0			Hail (1.00)
A thunderstorm moved across Waushara county, dropping hail around Wautoma.									
Marathon County Marathon	03	1810CST			0	0			Funnel Cloud
Marathon County Spencer	03	1815CST			0	0			Funnel Cloud
Marathon County 2 SW Edgar	03	1835CST			0	0			Funnel Cloud
Marathon County 1 SW Rothschild	03	1840CST			0	0			Funnel Cloud
Several funnel clouds were sighted during the evening across western and central Marathon county. The funnels developed from weak thunderstorms and never touched the ground.									
Portage County Almond	20	2303CST			0	0			Lightning
Lightning set a 112 year-old building ablaze, destroying the building and most of its contents. The building, which was originally a church, became an American Legion Hall in 1965.									

WISCONSIN, Northwest

NONE REPORTED.

WISCONSIN, Southeast

WIZ052 Sheboygan	14	1100CST 2200CST			0	3			Excessive Heat
Three people in the city of Sheboygan were treated in local hospitals for heat exhaustion due to high temperatures around 90 after morning lows around 70 degrees and afternoon dewpoints in the 70s creating oppressive heat conditions.									
Sauk County Baraboo	19	0123CST			0	0	3K		Lightning
Iowa County 1 E Livingston	19	0150CST			0	0	100K	100K	Thunderstorm Wind
Iowa County Dodgeville	19	0203CST			0	0	10K		Thunderstorm Wind
Lafayette County Darlington to 3 ENE Fayette	19	0205CST 0220CST			0	0	20K		Thunderstorm Wind
Dane County 5 N Mt Horeb	19	0210CST			0	0	2K		Thunderstorm Wind
Green County New Glarus	19	0230CST			0	0	2K		Thunderstorm Wind
Rock County Evansville	19	0250CST			0	0	3K		Thunderstorm Wind
Rock County Beloit	19	0305CST			0	0	7K		Thunderstorm Wind
WIZ072 Kenosha	19	1100CST 2300CST			0	10			Excessive Heat

A warm front spawned severe thunderstorms in the early morning across southcentral and southeast Wisconsin, resulting in downburst winds which toppled numerous trees and power lines. In addition, a sawmill was destroyed near Livingston in Iowa county and a camper was damaged by felled trees in Yellowstone State Park in Lafayette county. In Sauk county lightning struck a Baraboo home and started a house fire. Later that afternoon in the sweltering heat, 10 people suffered heat exhaustion at the Country Thunder musical festival near Twin Lakes (Kenosha Co.), and were treated at a local hospital. Afternoon temperatures in the lower 90s, dewpoints in the lower 70s and full sunshine were the afternoon weather conditions. exhaustion.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
WISCONSIN, Southeast									
Racine County									
Union Grove	20	1552CST			0	0	2K		Lightning
Dodge County									
Randolph	20	1615CST 1730CST			0	0			Urban/Sml Stream Fld
Sauk County									
Plain	20	1640CST			0	0	2K		Thunderstorm Wind
Jefferson County									
Waterloo	20	1707CST			0	0	1K		Thunderstorm Wind
Lafayette County									
5 N Argyle	20	1710CST			0	0	2K		Thunderstorm Wind
Sauk County									
3 W Lake Delton to Lake Delton	20	1710CST			0	0	2K		Thunderstorm Wind
Columbia County									
Poynette	20	1715CST			0	0	3K		Thunderstorm Wind
Lafayette County									
South Wayne	20	1715CST			0	0	4K		Thunderstorm Wind
Washington County									
West Bend	20	1715CST			0	0	262K		Lightning
Green County									
Monroe	20	1720CST			0	0	50K		Thunderstorm Wind
Jefferson County									
Johnson Creek	20	1720CST			0	0			Hail (0.75)
Dane County									
Oregon	20	1723CST			0	0			Hail (1.00)
Dane County									
Belleville	20	1750CST			0	0	2K		Thunderstorm Wind
Waukesha County									
Delafield to 2 E Waukesha	20	1750CST 1759CST			0	0	6K		Tstm Wind/Hail
Jefferson County									
Ixonia	20	1753CST			0	0	5K		Thunderstorm Wind
Rock County									
Clinton	20	1755CST			0	0			Thunderstorm Wind (G63)
Rock County									
Janesville	20	1756CST			0	0	50K		Lightning
Rock County									
Janesville to Milton	20	1758CST			0	0	100K		Thunderstorm Wind (G60)
Rock County									
Janesville	20	1800CST 1900CST			0	0			Urban/Sml Stream Fld
Waukesha County									
Oconomowoc	20	1800CST			0	0	4K		Lightning
Walworth County									
Delavan	20	1803CST			0	0	2K		Thunderstorm Wind (G52)
Milwaukee County									
Milwaukee	20	1810CST			0	1	1K		Thunderstorm Wind
Walworth County									
Lake Geneva	20	1815CST			0	2	1.5M		Thunderstorm Wind (G87)
Racine County									
Burlington	20	1820CST			0	0	3K		Thunderstorm Wind
Dane County									
Deerfield	20	1843CST			0	0	1K		Lightning
Kenosha County									
Silver Lake	20	1845CST			0	0	5K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

July 1998

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

WISCONSIN, Southeast

Fond Du Lac County Ripon to 1 N Waupun	20	2205CST			0	0	10K		Thunderstorm Wind
Dodge County Theresa	20	2247CST			0	0	2K		Thunderstorm Wind (G54)
Washington County Slinger	20	2302CST 2310CST			0	0	10K		Thunderstorm Wind (G52)
Ozaukee County 3 SW Port Washington	20	2340CST			0	0			Hail (0.75)
Ozaukee County Grafton	20	2345CST			0	0	10K		Lightning
Ozaukee County 2.5 SW Port Washington	20	2351CST			0	0	8K		Lightning

Frontal induced severe thunderstorms downed trees and power lines over much of south-central and southeast Wisconsin during the evening hours. Hardest hit was the Lake Geneva (Walworth Co.) area where downburst winds leveled hundreds of large trees, several street signs, and a large quantity of commercial signs. A dozen vehicles were damaged or totaled and 2 homes sustained significant damage. A 100 mph wind was recorded at the Grand Geneva Airport and 2 people were injured (one in a moving vehicle). Local officials consider this to be the worst storm in 58 years. In Monroe (Green Co.), the powerful thunderstorm winds also damaged 6 vehicles and 2 homes. Elsewhere, hail, high winds, lightning, and torrential rains played havoc. In West Bend (Washington Co.), lightning ignited a fire in an apartment complex and caused a quarter of a million dollars in damage. Urban flooding in Janesville (Rock Co.) resulted in standing water between a foot to a foot and a half deep across area roadways. Wind damage was the most common culprit though with over 200 power lines downed and 17,000 customers without service in southeast Wisconsin and 10,000 residents left without power across south-central Wisconsin.

Walworth County Elkhorn to 4 E Spring Prairie	21	1210CST 1225CST			0	12	1.9M	105K	Thunderstorm Wind (G87)
Rock County Beloit	21	1220CST			0	0	10K		Thunderstorm Wind
Walworth County Sharon to Walworth	21	1220CST 1230CST			0	0	5K		Thunderstorm Wind
Racine County Burlington to 5 SW Racine	21	1230CST 1315CST			0	1	250K		Thunderstorm Wind (G87)
Kenosha County Countywide	21	1235CST 1315CST			0	0	200K	200K	Thunderstorm Wind (G87)

Scattered thunderstorms developed in an unstable atmosphere over southcentral Wisconsin in the early afternoon hours. These storms quickly became severe and merged over Walworth County. Hurricane-force winds were generated over the north side of Elkhorn (Walworth Co.); and the resultant wind damage strongly suggests that winds gusts peaked in the 100 to 110 mph range. Officials in Elkhorn declared a state of emergency and asked for extra help with the cleanup, thanks to hundreds of downed trees and many power lines. Several Elkhorn downtown office buildings suffered some minor damage, while 6 buildings on the north side along Highway 67 had considerable damage (3-minor, 1 major, and 1 destroyed). Thirteen people were injured and 14 vehicles sustained damage. This wicked dowburst then traveled through rural farmland east to the Walworth county line, destroying 3 farm buildings in the process. Altogether, about 27,000 customers in Walworth County lost electrical power. Further east, this wet macroburst became wider and left a path of damage or destruction about 6 to 8 miles wide across northern Kenosha County and southern Racine County. In the Burlington area (Racine Co.), 300 trees were downed and many powerline or poles, leaving 15,000 customers were left without power. A plane tied down at the Burlington airport was tossed over, and rowboats on a local lake were damaged. Elsewhere in southern Racine County, traffic lights were damaged, the Great Lakes Dragway was closed, and the YMCA toboggan slide was destroyed. In Kenosha county 7 semi-trailer tractors were blown over on Interstate-94 west of Somers (Kenosha Co.)! The downburst swath in northern Kenosha County also damaged several corn fields, downed hundreds of trees, leveled a barn near Somers, and damaged several homes. One account was that the town of Somers looked like a bomb exploded after the storms passed through.

Iowa County Mifflin	03	1448CST			0	0	2K		Thunderstorm Wind
Green County 4 NE Monroe	03	1602CST			0	0	2K		Thunderstorm Wind

Scattered thunderstorms, some of them severe, affected southcentral Wisconsin during the late afternoon hours. In two cases,

Storm Data and Unusual Weather Phenomena

July 1998

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

WISCONSIN, Southeast

powerful downburst winds toppled large trees and down power lines in Iowa and Green county.

WISCONSIN, Southwest

Crawford County									
Seneca	19	0104CST			0	0	20K	30K	Thunderstorm Wind (G70)
Grant County									
Bagley	19	0110CST			0	0	25K	25K	Thunderstorm Wind (G70)
Crawford County									
5 N Ferryville	19	0120CST			0	0	8K		Thunderstorm Wind (G65)
Grant County									
Fennimore	19	0130CST			0	0	28K	20K	Thunderstorm Wind (G67)
Grant County									
Livingston	19	0130CST			0	0	30K	35K	Thunderstorm Wind (G65)
Grant County									
Platteville	19	0130CST			0	0	35K	40K	Thunderstorm Wind (G70)
Richland County									
Richland Center	19	0140CST			0	0	12K		Thunderstorm Wind (G62)

Law enforcement officials reported winds of 70 to 80 mph, knocking down trees, power lines and blowing the roof off of a house.

Trempealeau County									
Galesville	20	1338CST			0	0	20K		Thunderstorm Wind (G53)
La Crosse County									
West Salem	20	1400CST			0	0	14K		Thunderstorm Wind (G61)
Crawford County									
Mt Sterling	20	1608CST			0	0	20K	30K	Hail (1.00)
Crawford County									
Mt Sterling	20	1608CST			0	0	25K	35K	Thunderstorm Wind (G54)
Crawford County									
Mt Sterling	20	1609CST			0	0	50K	60K	Thunderstorm Wind (G66)
Crawford County									
Mt Sterling	20	1610CST			0	0	80K	50K	Thunderstorm Wind (G80)
Crawford County									
Mt Sterling	20	1611CST			0	0	25K	40K	Hail (1.00)
Crawford County									
Gays Mills	20	1617CST			0	0	45K	60K	Hail (1.75)
Crawford County									
Gays Mills	20	1617CST			0	0	90K	30K	Thunderstorm Wind (G62)
Vernon County									
Readstown	20	1623CST			0	0		15K	Hail (0.75)
Richland County									
Boaz	20	1630CST			0	0	10K	25K	Thunderstorm Wind (G55)
Grant County									
Bagley	20	1631CST			0	0			Thunderstorm Wind (G52)

60 to 70 mph winds, along with golf ball size hail were reported by spotters and law enforcement officials. Hardest hit was the Mt Sterling area where winds gusted to 92 mph, severely damaging the town's post office when a large power pole was knocked down. Crops were badly damaged as well due to hail the size of quarters and golf balls.

WISCONSIN, West

NONE REPORTED.

WYOMING, Central and West

Park County									
Cody	01	1335MST			0	0			Hail (1.75)
Park County									
Cody	01	1343MST			0	0	35K		Hail (1.75)
									West side of town.
Washakie County									
4 S Worland	01	1600MST 1615MST			0	0			Hail (1.00)

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
WYOMING, Central and West									
Washakie County Worland	01	1615MST 1620MST			0	0			Hail (1.75)
		Hail was large but mostly soft. No damage estimates.							
Washakie County Ten Sleep	01	1700MST			0	0			Hail (1.75)
Washakie County Ten Sleep	01	1705MST			0	0			Hail (1.50)
		Hail was large but mostly soft. No damage estimates available.							
Hot Springs County Thermopolis	02	1702MST			0	0			Hail (1.75)
Hot Springs County Thermopolis	02	1705MST 1715MST			0	0			Hail (1.75)
Hot Springs County Thermopolis Arpt	02	1706MST			0	0			Hail (1.00)
Hot Springs County Thermopolis	02	1709MST			0	0			Hail (1.00)
		Some crop damage south of town, some damage in town. No damage estimates available.							
Johnson County 30 NE Buffalo	02	1715MST			0	0			Hail (0.88)
Sublette County Big Piney	02	1720MST 1730MST			0	0	400K		Dry Microburst
		Extensive damage to High School roof.							
Fremont County 11 N Lysite	02	1750MST 1810MST			0	0			Hail (1.50)
Fremont County 10 NW Shoshoni	02	1830MST 1845MST			0	0			Hail (1.00)
		West side of Boysen reservoir.							
Johnson County Sussex	02	1901MST			0	0			Funnel Cloud
		Multiple funnel clouds reported just north of Sussex.							
Park County 13 W Cody	03	1618MST			0	0			Thunderstorm Wind (G52)
Washakie County Worland Arpt	03	1730MST			0	0			Funnel Cloud
		Reported ESE of airport by weather observers.							
Washakie County Ten Sleep	03	1731MST			0	0			Funnel Cloud
		Reported NW of Ten Sleep.							
Natrona County 5 SW Casper	03	1815MST			0	0			Funnel Cloud
		Near Paradise Valley.							
Washakie County 20 S Ten Sleep	03	1828MST			0	0			Thunderstorm Wind (G57)
Big Horn County 5 NE Hyattville	03	1935MST 2000MST			0	0			Flash Flood
		Medicine Lodge Creek at Taylor Park Campground. Tents lost, campers moved, park road damaged.							
Teton County Jackson	07	1415MST			0	0			Urban/Sml Stream Fld
		Localized street flooding. Water one foot deep at some intersections.							
Johnson County 8 NW Kaycee	08	1410MST			0	0			Hail (1.25)

Storm Data and Unusual Weather Phenomena

July 1998

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

WYOMING, Central and West

Teton County									
Jackson	13	1830MST 1845MST			0	0			Dry Microburst
Trees and power lines down.									
Natrona County									
Casper Arpt	14	0117MST			0	0			Thunderstorm Wind (G61)
Natrona County									
Hiland	22	1720MST			0	0			Thunderstorm Wind (G54)
Winds estimated 50 to 75 mph. Tree limbs down.									
Sweetwater County									
20 SW Wamsutter	29	1000MST			0	0			Funnel Cloud
Sweetwater County									
6 W Creston	29	1000MST			0	0			Funnel Cloud
Johnson County									
Southwest Portion	30	1700MST 1830MST			0	0			Flash Flood
Johnson County									
Southwest Portion	30	1815MST 1845MST			0	0			Flash Flood
Mayoworth area. Roads washed out. Also Willow Creek area.									
Lincoln County									
6 NE Afton	30	1925MST			0	0			Hail (0.75)
Lincoln County									
3 S Alpine	30	2010MST			0	0			Hail (0.75)
Fremont County									
(Lnd)Hunt Fld Lander	31	1416MST			0	0			Thunderstorm Wind (G50)
Fremont County									
Hudson	31	1435MST			0	0			Thunderstorm Wind (G52)
Large tree limbs down.									
Fremont County									
5 N Riverton	31	1452MST			0	0			Thunderstorm Wind (G52)
Large tree limbs down									
Fremont County									
Shoshoni	31	1515MST			0	0			Thunderstorm Wind (G52)
Large tree limbs down									
Fremont County									
15 N Shoshoni	31	1520MST			0	0			Thunderstorm Wind (G52)
BUREC at Boysen Dam									
Hot Springs County									
Thermopolis	31	1540MST			0	0			Thunderstorm Wind (G52)
Large tree/power line down									
Big Horn County									
Greybull	31	1713MST			0	0			Thunderstorm Wind (G52)
Large tree limbs down									

WYOMING, Extreme Southwest

NONE REPORTED.

WYOMING, North Central

Sheridan County									
10 S Sheridan	02	1715MST 1815MST			0	0			Heavy Rain
A spotter reported 1.50 inches of rain in one hour from a thunderstorm.									
Sheridan County									
Sheridan Arpt	03	1927MST			0	0			Hail (0.75)

WYOMING, Northeast

Campbell County									
Gillette	02	1754MST			0	0			Hail (1.75)

Storm Data and Unusual Weather Phenomena

July 1998

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>									
Weston County 5 N Four Corners	02	1808MST			0	0			Hail (1.00)
Campbell County Gillette	02	1820MST			0	0			Hail (1.75)
Weston County Four Corners	02	1845MST			0	0			Flash Flood
					A STATIONARY STORM PRODUCED SEVERAL INCHES OF RAIN, CAUSING OIL CREEK TO FLOOD. OIL CREEK ROAD WAS WASHED OUT IN SEVERAL PLACES.				
Campbell County 18 SSW Gillette	02	2000MST			0	0			Flash Flood
					FLOOD WATERS COVERED HIGHWAY 50 BETWEEN MILE MARKERS 16 AND 20.				
Campbell County 26 W Wright	01	1700MST 1800MST			0	0			Flash Flood
					HEAVY RAINS OF SIX INCHES IN AN HOUR CAUSED FLOODING ALONG HIGHWAY #387.				
Campbell County 26 W Wright	01	1800MST			0	0			Hail (1.75)
Campbell County 26 W Wright	01	2015MST			0	0			Flash Flood
					HEAVY RAINS CAUSED A STOCK DAM TO BREACH ON THE IBERLAND RANCH, FLOODING HIGHWAY #387.				
Campbell County Gillette Arpt	03	2131MST			0	0			Thunderstorm Wind (G64)
Campbell County 14 N Recluse	04	1605MST			0	0			Hail (1.00)
Campbell County 1 NE Rockypoint	05	1900MST			0	0			Hail (1.75)
Campbell County 2 N Gillette	19	1625MST			0	0			Thunderstorm Wind (G69)
Weston County Upton	24	0610MST 0710MST			0	0			Flash Flood
					HEAVY RAIN OF 3.5 INCHES IN ONE HOUR CAUSED MINOR FLOODING.				
Crook County 5 N Sundance	18	1400MST			0	0			Lightning
					LIGHTNING CAUSED A .5 ACRE FIRE OF PINE TREES AND GRASS.				
<u>WYOMING, Southeast</u>									
Converse County 7 E Bill	01	2030MST 2034MST			0	0	4K	0	Hail (1.75)
					A storm produced golfball size hail 7 miles east of Bill.				
Converse County 40 NW Douglas	01	1955MST 2000MST			0	0	7K	0	Hail (2.75)
					A storm produced golfball to base ball size hail, which covered the ground, on several ranches 40 miles northwest of Douglas.				
Converse County 50 NW Douglas to 30 N Douglas	01	1800MST 2000MST			0	0	2K	0	Flash Flood
					A storm produced up to 6 inches of rainfall from 50 miles northwest of Douglas to 30 miles north of Douglas. Water covered many rural roads in the area.				
Laramie County 25 SW Cheyenne	02	1541MST 1547MST			0	0	0	0	Hail (1.00)
					A storm produced quarter size hail which covered the ground, 25 miles southwest of Cheyenne.				
Laramie County 10 SW Cheyenne	02	1635MST 1641MST			0	0	3K	0	Hail (1.00)
					Spotters reported quarter size hail on the Terry Bison Ranch 10 miles southwest of Cheyenne.				

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
WYOMING, Southeast									
Laramie County 19 SW Cheyenne to 5 SE Cheyenne	02	1536MST 1547MST			0	0	0	0	Hail (0.75)
Laramie County 9 S Cheyenne	02	1625MST 1632MST			0	0	0	0	Hail (1.00)
A storm produced quarter size hail 9 miles south of Cheyenne.									
Laramie County 9 S Cheyenne	02	1638MST 1643MST			0	0	15K	0	Hail (1.00)
A storm produced quarter size hail 9 miles south of Cheyenne. The hail covered the ground and wind driven hail broke some automobile windshields.									
Laramie County 33 NE Cheyenne	02	1700MST 1701MST			0	0	0	0	Thunderstorm Wind (G61)
A wind gust of 70 mph was recorded in a thunderstorm 33 miles northeast of Cheyenne.									
Laramie County 8 S Cheyenne	02	1715MST 1726MST			0	0	0	0	Hail (0.75)
Laramie County 6 N Pine Bluffs to 6 NNE Pine Bluffs	05	1438MST 1444MST	1	10	0	0	0	0	Tornado (F0)
A brief tornado occurred over open country 5 miles north of Pine Bluffs.									
Laramie County 5 E Cheyenne to Burns	09	1717MST 1900MST			0	0	0	0	Urban/Sml Stream Fld
A thunderstorm dropped up to 3.5 inches of rain on Lodgepole Creek, 5 miles east of Cheyenne. Minor flooding occurred along the creek between Cheyenne and Burns.									
Laramie County 9 ESE Cheyenne to 12 SE Cheyenne	09	1717MST 2100MST			0	0	0	0	Urban/Sml Stream Fld
A thunderstorm produced rainfall amounts of up to 3.5 inches, 9 miles east of Cheyenne. Water was flowing over campstool road, which runs along crow creek.									
Goshen County Countywide	14	1725MST 1845MST			0	0	0	0	Thunderstorm Wind (G61)
Laramie County Countywide	14	1725MST 1845MST			0	0	0	0	Thunderstorm Wind (G61)
Platte County Countywide	14	1725MST 1845MST			0	0	0	0	Thunderstorm Wind (G61)
A number of high based thunderstorms passed over southeast Wyoming and produced wind gusts of 60 to 70mph. At 1725 MST, a gust of 70 mph was reported at Old Fort Laramie.									
Platte County 4 NE Wheatland	15	1651MST			0	0	0	0	Thunderstorm Wind (G53)
Laramie County Pine Bluffs	15	1707MST			0	0	0	0	Thunderstorm Wind (G52)
Laramie County Countywide	21	1515MST 1550MST			0	0	2K	0	Thunderstorm Wind (G61)
A large severe thunderstorm 45 mile northeast of Cheyenne, developed a strong outflow which spread 70 mph winds across Laramie County.									
Goshen County 5 NE Hawk Spgs	21	1310MST 1325MST			0	0	0	0	Hail (0.75)
Albany County Laramie	14	1830MST 1900MST			0	0	4K	0	Thunderstorm Wind (G61)
Thunderstorms produced wind gusts up to 70 mph in Laramie, which downed two power poles on the southeast side of town.									

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

When reports are not received or are incomplete, the Storm Summary National Death and Injury totals may also be incomplete.

Definition of Fujita Tornado Scale (F Scale)

(F0) Gale tornado (40-72 mph) : Light damage; Some damage to chimneys; break branches off trees; push over shallow-rooted trees; signs and billboards damaged.

(F1) Moderate tornado (73-112 mph): Moderate damage; The lower limit (73 mph) is the beginning of hurricane wind speed; peel surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads.

(F2) Significant tornado (113-157 mph): Considerable damage; Roofs torn from frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.

(F3) Severe tornado (158-206 mph): Severe damage; Roofs and some walls torn from well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.

(F4) Devastating tornado (207-260 mph): Devastating damage; Well-constructed houses leveled; structure with weak foundations blown off some distance; cars thrown and large missiles generated.

(F5) Incredible tornado (261-318 mph): Incredible damage; Strong frame houses lifted from foundation and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100 meters; trees debarked; incredible phenomena will occur.

(F6-F12) (319 mph to Mach 1, the speed of sound): The maximum wind speeds of tornadoes are not expected to reach the F6 wind speeds.

(F0+F1) Weak Tornado
(F2+F3) Strong Tornado
(F4+F5) Violent Tornado

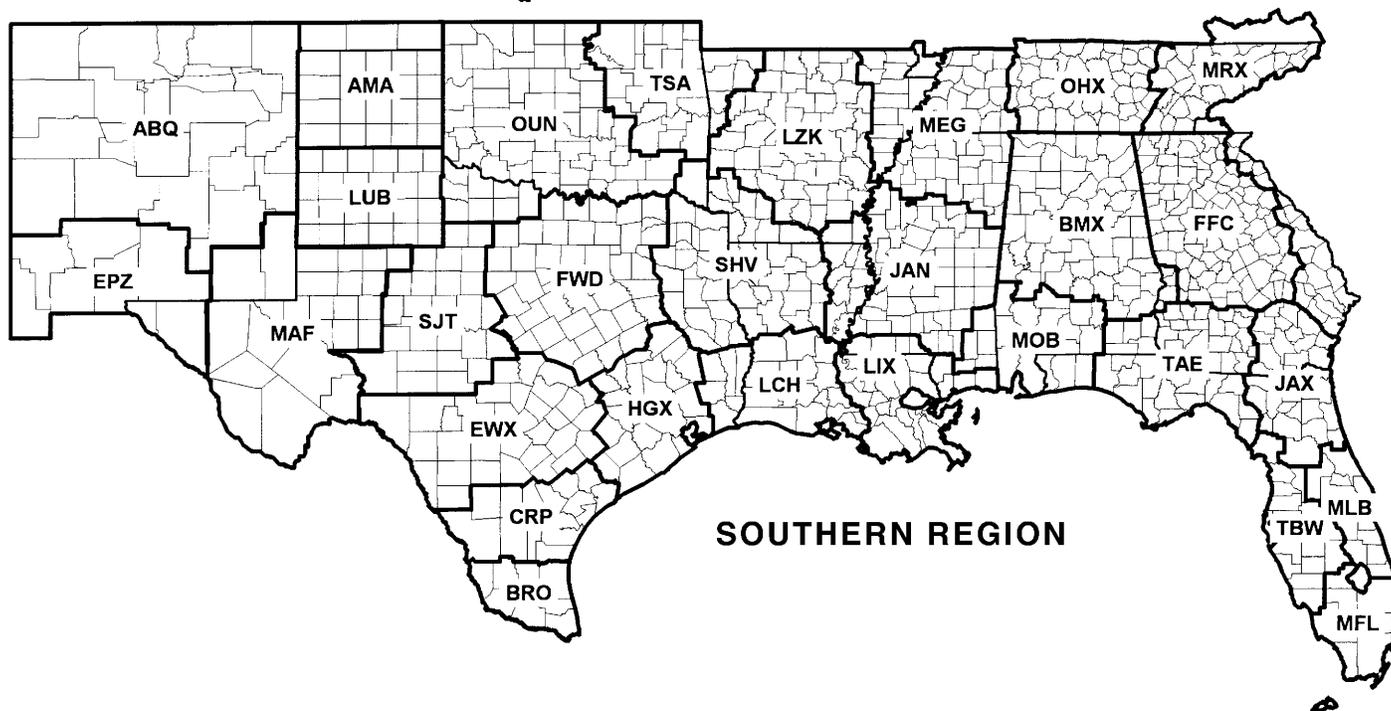


From J. Atmos. Sci., August 1981, p. 1517-1519

COUNTY WARNING & FORECAST AREAS - MODERNIZED NWS

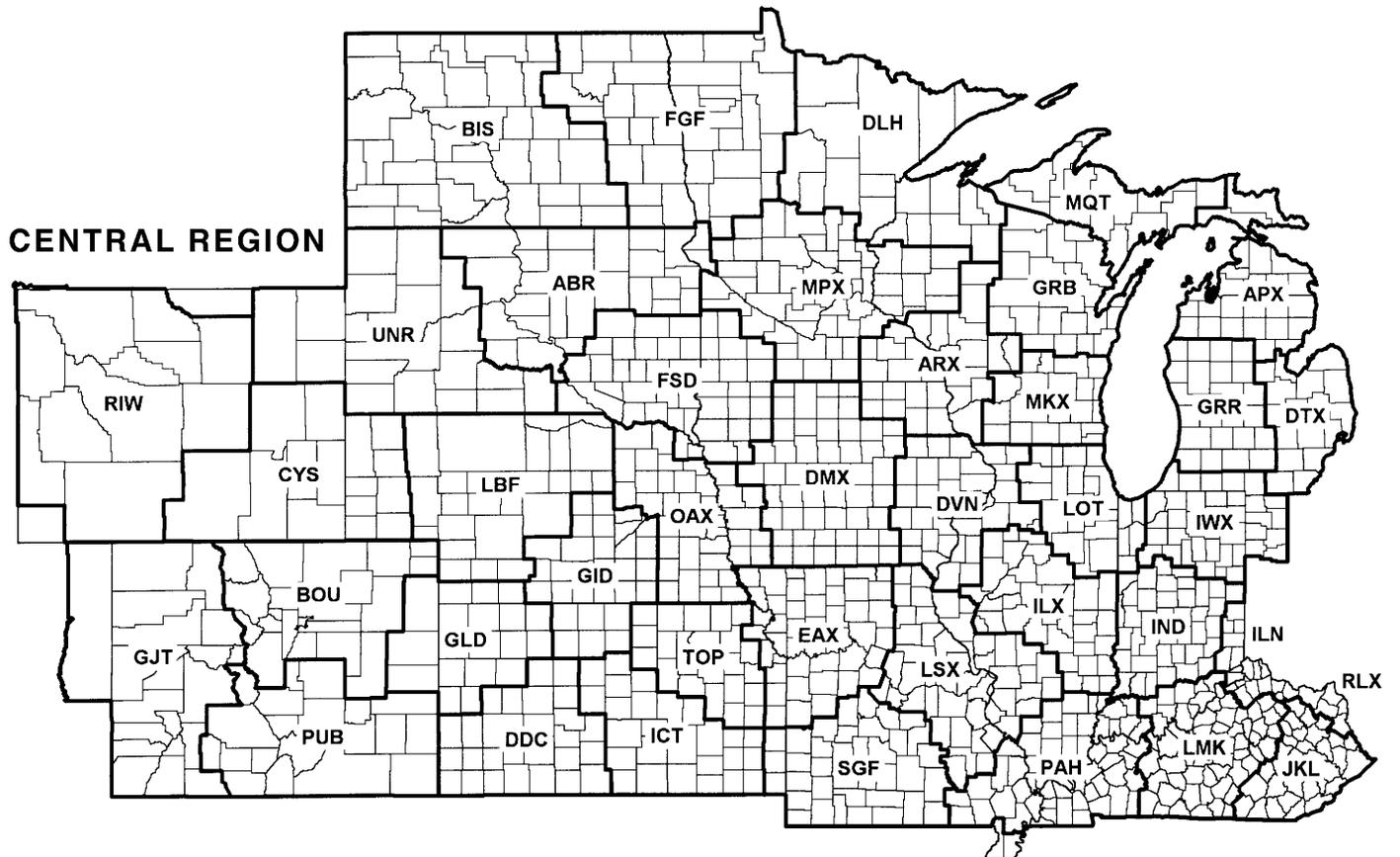
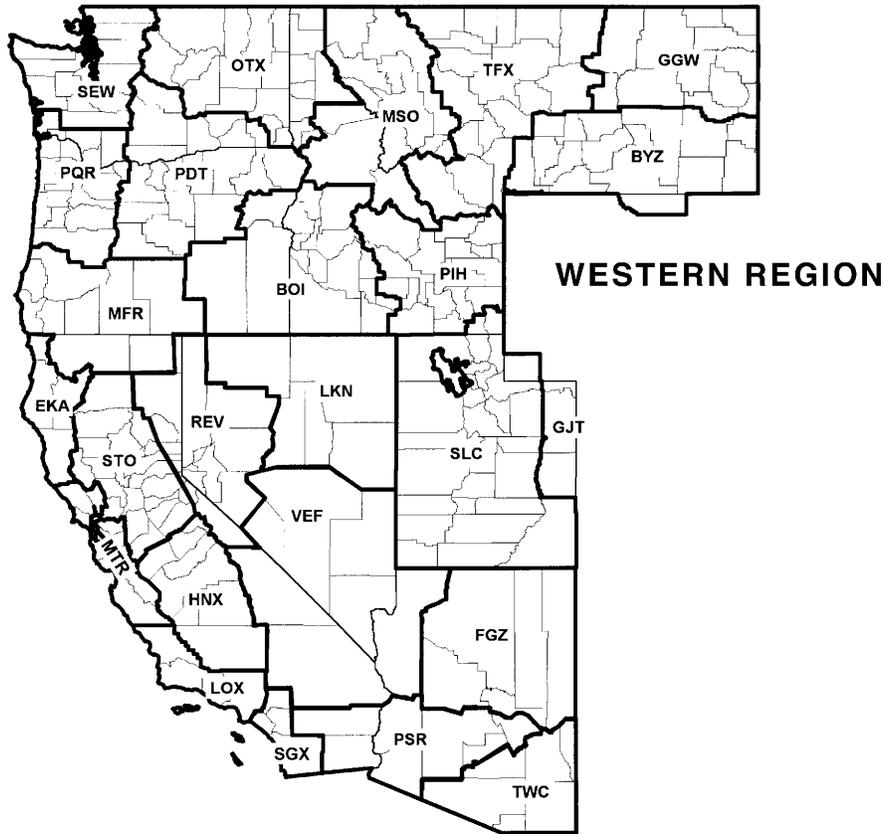


EASTERN REGION

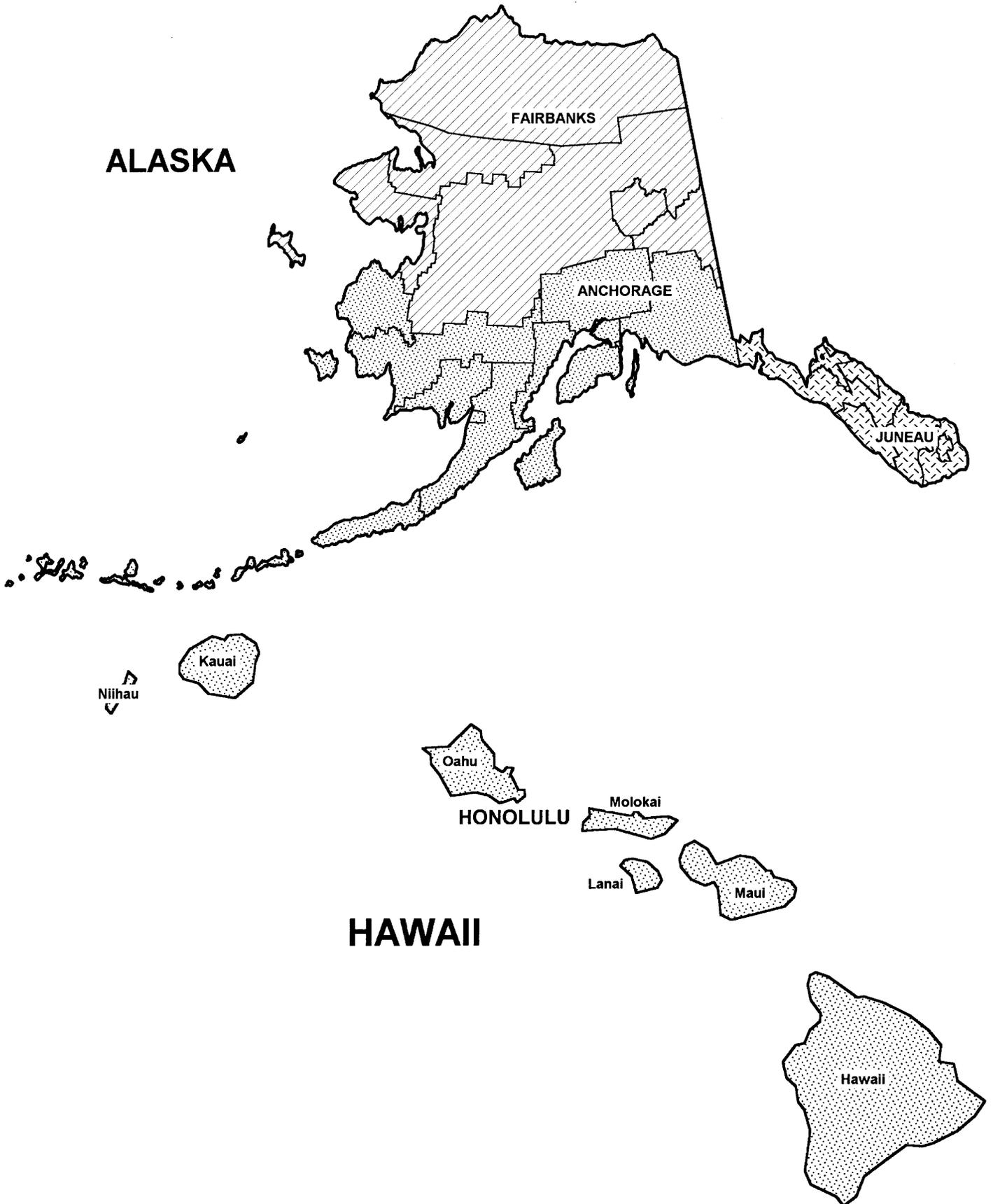


SOUTHERN REGION

COUNTY WARNING & FORECAST AREAS - MODERNIZED NWS



MODERNIZED COUNTY WARNING AREAS



To change your address, please return a copy of the mailing label with your new address to: National Climatic Data Center (Subscription Services).

*Inquiries/Comments Call: (704) 271-4800 (Voice)
(704) 271-4010 (TDD)
(704) 271-4876 (Fax)*

**National Climatic Data Center
Room 120
151 Patton Avenue
Asheville, NC 28801-5001**

**OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300
ADDRESS CORRECTION REQUESTED**

**BULK RATE
POSTAGE & FEES PAID**
United States Department of Commerce
NOAA Permit No. G - 19

BOUND PRINTED MATTER