

Storm Data and Unusual Weather Phenomena

March 1998

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

Kosciusko County

Oswego	28	0840EST			0	0	1K		Thunderstorm Wind
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trees blown down in town. shed destroyed.

Miami County

(Gus)Grissom Afb Per	28	0905EST			0	0			Thunderstorm Wind (65)
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Miami County

(Gus)Grissom Afb Per	28	0918EST			0	0			Thunderstorm Wind (65)
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Whitley County

Laud	28	1005EST	0.1	10	0	0			Tornado (F0)
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small tornado touched down in Laud causing tree damage and moderate damage to one home.

Allen County

Ft Wayne	28	1015EST 1030EST			0	0	5K		Thunderstorm Wind
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numerous trees blown down up to 12 inches in diameter in southern part of town. Many power lines down as well. Trees up to 2 feet in diameter 3 miles south of Baer Field at US 27 and Thompson Road.

Allen County

Harlan	28	1021EST 1023EST	0.3	50	0	0	25K		Tornado (F1)
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small tornado touched down in Harlan. It damaged a cabinet factory and completely destroyed a mobile home.

OHIO, Northwest

Defiance County

Hicksville	28	1046EST			0	0	3K		Thunderstorm Wind
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trees blown down and shed destroyed in Hicksville.

Henry County

Liberty Center	28	1117EST			0	0	0.50K		Thunderstorm Wind
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trees blown down in town.

Henry County

Holgate	28	1127EST			0	0			Thunderstorm Wind (53)
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trees blown down in town.

Fulton County

Archbold	28	1130EST			0	0	1K		Thunderstorm Wind
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trees and power lines down.

Storm Data and Unusual Weather Phenomena

April 1998

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

Marshall County

Plymouth	01	1011EST 1100EST			0	0	1K		Thunderstorm Wind
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Semi trailer blown over on US-30. Semi trailer also blown over south of Plymouth on US-31.

Elkhart County

Wakarusa to Goshen	01	1033EST			0	0	0.50K		Thunderstorm Wind
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Power lines down near Wakarusa. Trees down 4 miles WSW of Goshen and 3-8 miles NE of Goshen.

Elkhart County

(Gsh)Goshen Arpt	01	1042EST			0	0			Thunderstorm Wind (51)
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Goshen Airport ASOS report

Elkhart County

New Paris	01	1049EST			0	0	0.20K		Thunderstorm Wind
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Trees down 4 miles SSW of New Paris.

Steuben County

Fremont	01	1220EST			0	0	1K		Thunderstorm Wind
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Power lines and trees down in northern Steuben County south of Fremont and north of Snow Lake.

Adams County

Preble to Decatur	08	0110EST			0	0			Thunderstorm Wind (51)
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Limbs down and some power lines down from near Peterson and Preble to Decatur.

Jay County

Redkey to Como	16	1508EST 1515EST			0	0			Hail(1.75)
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Golfball size hail was reported at Redkey by State Police and at Como by an ambulance driver

MICHIGAN, Extreme Southwest

St. Joseph County

5 SW Centreville to 5 NE Mendon	01	1100EST 1130EST			0	0	3K		Thunderstorm Wind
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Many trees reported down throughout Joseph county from southwest portion of county through northeast portion.

OHIO, Northwest

Williams County

Edgerton	01	1233EST			0	0	0.50K		Thunderstorm Wind
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Few trees down near Edgerton.

Van Wert County

Wetsel	08	1005EST			0	0			Hail(1.00)
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Hail 1 inch in diameter just northeast of Wetsel reported by Emergency Manager.

Putnam County

Cloverdale	08	1025EST			0	0			Hail(1.00)
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Hail up to 1 inch in diameter reported in Cloverdale by Assistant Emergency Manager.

Allen County

Lima to Beaverdam	16	1648EST 1658EST			0	0			Hail(0.75)
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Three-quarter inch hail was reported by Amateur Radio Operators and Sheriff's Department on Mumaugh Rd. in Lima and along I-75 at Beaverdam.

Storm Data and Unusual Weather Phenomena

May 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>INDIANA, Northeast</u>									
Allen County 3 NE Monroeville	03	1513EST 2113EST	0	0	0	0			Tornado (F0) BRIEF TOUCHDOWN
Allen County New Haven	03	1521EST	0	0	0	0			Tornado (F0) BRIEF TOUCHDOWN ALONG ROUTE 30 AND LINCOLN HIGHWAY
Allen County Monroeville	03	1525EST	0	0	0	0			Tornado (F0) BRIEF TOUCHDOWN
Fulton County 2 N Rochester to Rochester	03	1625EST			0	0			Hail(0.75)
Huntington County 4 N Huntington	03	1636EST	0	0	0	0			Tornado (F0) BRIEF TOUCHDOWN
Allen County New Haven	03	1730EST			0	0			Hail(1.00)
Allen County Ft Wayne	03	1740EST			0	0			Hail(0.75) SOUTHEAST SIDE OF TOWN
Allen County Ft Wayne	03	1745EST			0	0			Hail(1.00) DOWNTOWN
Whitley County 2 W Larwill	03	1749EST			0	0			Hail(0.75)
Allen County Ft Wayne	03	1810EST			0	0			Flash Flood AT LEAST 5 HOMES FLOODED. MANY PEOPLE RESCUED FROM VEHICLES
Noble County Albion	19	0737EST			0	0			Hail(0.75)
Pulaski County Medaryville	19	1730EST 1745EST			0	0			Hail(1.00)
Fulton County Kewanna	19	1732EST			0	0	10K		Hail(1.75)
Fulton County Rochester	19	1805EST			0	0			Hail(1.00)
Fulton County Rochester	19	1810EST			0	0			Hail(1.75)
Fulton County Rochester	19	1810EST			0	0			Hail(1.00)
Starke County Bass Lake	19	1810EST	0	0	0	0	0	0	Tornado (F0)
Pulaski County Star City	19	1822EST			0	0			Hail(0.75)
Fulton County Kewanna	19	1845EST			0	0			Hail(0.75)
Wabash County Urbana	19	1845EST	0	0	0	0	0	0	Tornado (F0)

Storm Data and Unusual Weather Phenomena

May 1998

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
<u>INDIANA, Northeast</u>									
Wabash County Urbana	19	1852EST			0	0			Thunderstorm Wind (79)
Wabash County Wabash	19	1900EST			0	0			Thunderstorm Wind (79)
Huntington County Bippus	19	1905EST			0	0			Hail(0.88)
Huntington County Huntington	19	1907EST			0	0			Thunderstorm Wind (52)
Huntington County Huntington	19	1907EST			0	0			Thunderstorm Wind (52)
Adams County Monroe	19	1935EST			0	0			Hail(0.75)
Adams County Monroe	19	1935EST			0	0			Thunderstorm Wind (56)
Adams County Pleasant Mills	19	2030EST			0	0			Hail(1.75)
St. Joseph County St Joseph Res	29	0035EST			0	0			Thunderstorm Wind (50)
Elkhart County Elkhart	29	0100EST			0	0			Thunderstorm Wind (50)
St. Joseph County St Joseph Res	29	0120EST			0	0			Thunderstorm Wind (50)
Grant County Fowlerton	29	1355EST			0	0			Hail(0.75)
Grant County Fowlerton	29	1359EST			0	0			Hail(0.75)
Blackford County Shamrock Lakes	29	1408EST			0	0			Hail(0.75)
Cass County Royal Center	29	1536EST Utility pole blown down			0	0			Thunderstorm Wind (50)
Cass County Royal Center	29	1540EST			0	0			Hail(0.75)
Cass County Royal Center	29	1540EST Multiple trees down			0	0			Thunderstorm Wind (50)
Cass County Logansport	29	1545EST			0	0			Hail(0.75)
Grant County Matthews	29	1547EST			0	0			Hail(1.00)
Miami County Denver	29	1600EST Facia torn from roof of North Miami Elementary			0	0	20K		Thunderstorm Wind
Huntington County Bippus	29	1615EST			0	0			Hail(0.75)
Miami County Denver	29	1623EST 2 light poles down			0	0			Thunderstorm Wind (50)

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					Killed	Injured	Property	Crops	
<u>INDIANA, Northeast</u>									
Cass County Logansport	29	1654EST			0	0			Thunderstorm Wind (50)
Cass County Logansport	29	1715EST			0	0			Thunderstorm Wind (50)
									Multiple trees down
Blackford County Hartford City	29	1733EST			0	0			Hail(0.75)
Miami County (Gus)Grissom Afb Per	29	1735EST			0	0			Hail(0.75)
Miami County (Gus)Grissom Afb Per	29	1735EST			0	0			Hail(0.75)
Adams County Decatur	29	1820EST			0	0			Thunderstorm Wind (50)
Noble County Albion	31	1240EST			0	0			Hail(0.75)
Steuben County Ashley	31	1242EST			0	0			Hail(0.75)
De Kalb County Spencerville	31	1244EST	0	0	0	0			Tornado (F0)
									Law Enforcement report
Noble County Kendallville	31	1245EST			0	0			Hail(0.88)
De Kalb County Auburn	31	1255EST			0	0			Hail(0.75)
Whitley County Columbia City	31	1305EST			0	0			Hail(0.88)
Noble County Ligonier	31	1310EST			0	0			Hail(0.75)
De Kalb County Auburn	31	1315EST	0	0	0	0			Tornado (F0)
De Kalb County Spencerville	31	1320EST			0	0			Hail(0.75)
De Kalb County St Joe	31	1320EST			0	0			Hail(0.75)
Grant County Fairmount	31	1350EST			0	0			Hail(1.75)
Blackford County Hartford City	31	1400EST			0	0			Hail(0.75)
Grant County Gas City	31	1402EST			0	0			Thunderstorm Wind (60)
Blackford County Hartford City	31	1415EST			0	0			Hail(1.75)
Grant County Gas City	31	1425EST			0	0			Hail(1.75)
Grant County Gas City	31	1425EST			0	0			Thunderstorm Wind (65)
Adams County Geneva	31	1431EST			0	0			Hail(0.75)

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					Killed	Injured	Property	Crops	
<u>INDIANA, Northeast</u>									
Wells County									
Domestic	31	1435EST			0	0			Thunderstorm Wind (60)
Blackford County									
Montpelier	31	1436EST			0	0			Hail(1.75)
Blackford County									
Millgrove	31	1524EST			0	0			Thunderstorm Wind (60)
Jay County									
Portland	31	1630EST			0	0			Hail(1.00)
<u>MICHIGAN, Extreme Southwest</u>									
St. Joseph County									
Three Rivers	29	0050EST			0	0			Thunderstorm Wind (50)
Berrien County									
Stevensville	29	0100EST			0	0			Thunderstorm Wind (50)
Branch County									
Bronson	29	0120EST			0	0			Thunderstorm Wind (50)
Hillsdale County									
Litchfield	31	0511EST			0	0			Hail(0.75)
<u>OHIO, Northwest</u>									
Allen County									
1 SE Lima	03	1624EST			0	0			Hail(0.75)
Allen County									
Delphos	03	1630EST			0	0			Hail(0.75)
									HAIL COVERED THE GROUND
Van Wert County									
2 W Scott to 2.8 WNW Haviland	03	1715EST	0.5	.1	0	0	10K		Tornado (F0)
									OLD BARN SUSTAINED MODERATE STRUCTURAL DAMAGE. GARAGE SUFFERED MINOR DAMAGE.
Paulding County									
2 SW Haviland	03	1718EST			0	0			Thunderstorm Wind (52)
Van Wert County									
Scott	03	1725EST			0	0			Hail(0.75)
Putnam County									
Gilboa	03	1741EST			0	0			Hail(0.75)
Van Wert County									
Willshire	19	2018EST			0	0			Hail(0.75)
Van Wert County									
Wren	29	1700EST			0	0			Hail(1.00)
Van Wert County									
Wren	29	1710EST			0	0			Thunderstorm Wind (70)
Van Wert County									
Wren	29	1828EST			0	0			Thunderstorm Wind (50)
Defiance County									
Hicksville	31	1300EST			0	0			Hail(0.75)
Defiance County									
Hicksville	31	1314EST			0	0			Hail(0.75)

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May 1998

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					Killed	Injured	Property	Crops	
<u>OHIO, Northwest</u>									
Henry County Napoleon	31	1315EST			0	0	35K		Thunderstorm Wind (60)
Defiance County Hicksville	31	1316EST			0	0			Hail(1.00)
Defiance County Hicksville	31	1329EST			0	0			Hail(1.75)
Defiance County Hicksville	31	1334EST			0	0			Thunderstorm Wind (60)
Defiance County Defiance	31	1346EST			0	0			Hail(0.75)
Putnam County Continental	31	1404EST	0	0	0	0			Tornado (F0)
Putnam County Miller City	31	1405EST			0	0			Hail(1.75)
Defiance County Hicksville	31	1409EST			0	0			Thunderstorm Wind (70)
Putnam County Prentiss	31	1409EST			0	0			Hail(0.75)
Putnam County Leipsic	31	1414EST			0	0			Hail(0.75)
Van Wert County Monticello	31	1454EST			0	0			Thunderstorm Wind (60)
Allen County Lima	31	1502EST			0	0			Hail(0.75)
Allen County Elida	31	1507EST			0	0			Hail(0.88)
Van Wert County Venedocia	31	1518EST			0	0			Thunderstorm Wind (60)
Allen County Beaverdam	31	1519EST			0	0			Hail(0.75)

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June 1998

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INDIANA, Northeast

Pulaski County

Medaryville	11	1803EST TIME ESTIMATED			0	0			Hail(1.75)
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Pulaski County

4 S Denham	11	1815EST			0	0			Hail(0.75)
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Pulaski County

Ripley to Monterey	11	1828EST	9	100	0	1	1M	100K	Tornado (F2)
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4 TRAILER HOMES DESTROYED, SEVERAL OTHERS SUFFERED MINOR TO MAJOR DAMAGE, ONE HOME AND BARN DESTROYED, SEVERAL OTHER HOMES SUFFERED MODERATE DAMAGE. TORNADO STARTED IN RIPLEY AND TRACKED EAST NORTHEAST TO MONTEREY BEFORE IT LIFTED. EXTENSIVE TREE DAMAGE OCCURRED ALONG THE TORNADOES PATH.

Starke County

2 S Bass Lake	11	1834EST			0	0	0		Thunderstorm Wind
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NUMEROUS TREE LIMBS DOWN

Marshall County

3 SW Plymouth	11	1903EST			0	0	0		Thunderstorm Wind
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NUMEROUS TREE LIMBS DOWN

Grant County

2.5 SW Swayzee	11	1921EST	6	100	0	0	500K		Tornado (F1)
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THIS TORNADO WAS A CONTINUATION OF THE GREENTOWN TORNADO IN HOWARD COUNTY. THE TORNADO WAS WEAKENING AS IT CROSSED INTO GRANT COUNTY BUT CAUSED EXTENSIVE TREE DAMAGE ALONG ITS PATH AND SEVERLY DAMAGED SEVERAL HOMES IN SWAYZEE. MANY OF THE HOMES SUFFERED DAMAGE FROM UPROOTED TREES FALLING ON THEM. MANY TREES AND POWER LINES WERE REPORTED DOWN FROM THIS SERIES OF STORMS. IN ADDITION...VERY HEAVY RAIN CAUSED FLASH FLOODING ACROSS THE COUNTY WITH MANY COUNTY ROADS WASHED OUT OR UNDER WATER.

Kosciusko County

3 NE Etna Green to 5 NE Etna Green	11	1933EST	2	100	0	4	800K		Tornado (F1)
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THIS WAS ANOTHER TORNADO SPAWNED FROM THE SAME TORNADIC SUPERCELL THAT CAUSED DAMAGE IN PULASKI COUNTY EARLIER IN THE EVENING. 30 MOBILE HOMES AT THE MIKEL MOBILE ESTATES WERE DAMAGED, MANY SEVERELY. SOME WERE SIMPLY OVERTURNED WHILE OTHERS WERE COMPLETELY FLATTENED. 4 PEOPLE SUSTAINED MINOR INJURIES.

Elkhart County

New Paris	11	1949EST			0	0	0		Thunderstorm Wind
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NUMEROUS TREE LIMBS DOWN

Grant County

3 SE Fairmount	11	1958EST	4	200	0	0	1M		Tornado (F1)
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THIS TORNADO TRACK WAS A CONTINUATION OF THE TORNADO WHICH BEGAN NEAR THE TOWN OF ELWOOD IN MADISON COUNTY. THE TORNADO WAS WEAKENING AS IT CROSSED INTO GRANT COUNTY BUT CAUSED EXTENSIVE DAMAGE TO SEVERAL FARMS. ONE FARMSTEAD SUFFERED A DESTROYED BARN AND AN OVERTURNED JUNK BUS. ANOTHER FARMSTEAD HAD A VERY LARGE METAL OUTBUILDING DESTROYED AND 3 LARGE SILOS WERE BLOWN INTO THE FARM HOUSE WHICH SUFFERED MAJOR DAMAGE. ANOTHER FARM LOST MOST OF ITS OUTBUILDINGS WITH THE ROOF OF THE HOUSE DAMAGED. ANOTHER FARM NEAR FAIRMOUNT SUFFERED SEVERE DAMAGE WITH 2 BARNS DESTROYED AND THE HOUSE LOST ITS ROOF.MANY TREES AND OUTBUILDINGS IN FOWLERTON WERE DAMAGED WERE THE TORNADO FINALLY LIFTED.

Wells County

1.5 SW Poneto to .5 SW Poneto	11	2134EST	1	50	0	0	150K		Tornado (F1)
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THIS WAS ONE OF SEVERAL TORNADOES PRODUCED FROM THE SAME SUPERCELL THAT DEVELOPED ACROSS HOWARD COUNTY. THIS BRIEF SPINUP CAUSED EXTENSIVE DAMAGE TO ALL OUTBUILDINGS ON ONE FARM, 2 FARM HOMES SUFFERED EXTENSIVE DAMAGE, 5 OTHER HOMES SUFFERED MINOR TO MODERATE STRUCTURAL DAMAGE.

Jay County

2 SW Boundary City to Boundary City	11	2140EST	2	50	0	0	300K		Tornado (F1)
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INDIANA, Northeast

THIS TORNADO COMPLETELY DESTROYED A NEW MODULAR HOME. RIGHT ACROSS THE ROAD...TWO OTHER HOUSES WERE DAMAGED AND A BARN WAS DESTROYED. SEVERAL OTHER HOMES, AN OLD SCHOOL, AND A CHURCH SUFFERED MINOR TO MODERATE DAMAGE. MANY TREES AND POWER LINES WERE DOWN AS A RESULT OF THIS STORM.

Adams County

Monroe

11	2155EST				0	0			Hail(0.75)
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Adams County

Monroe

11	2155EST				0	0	30K		Thunderstorm Wind
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HIGH WINDS DESTROYED A BARN AND DESTROYED SEVERAL TREES

Synoptic and mesoscale conditions for June 11, 1998...

Morning sfc and upper air analysis revealed a potent upper short wave trough across North Dakota with an intensifying area of sfc low pressure across southwest Kansas. An unseasonably strong 140 knot jet streak was ejecting out of this trough across Kansas with the left front exit region progged into central Indiana after 18Z. Increasing moisture convergence and theta-e advection along the northward lifting warmfront was seen as 850 mb winds were forecast to increase to 55 knots. By 21Z, the sfc low had moved into eastern Iowa and deepened to 994 mb. The prestorm environment was characterized by moderate to extreme instability (LI values -7 to -9 and CAPE values in excess of 2000 J/kg) with temperatures in the lower 80s and dewpoints in the low/mid 70s. This combined with a dry punch at 700mb and deep layer shear along the warm front, where storm relative helicity values increased to 400 M2/S2, lay the foundation for an outbreak of damaging tornadoes across Indiana.

Starke County

North Judson

12	1504EST				0	0			Thunderstorm Wind (61)
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Noble County

Wolflake

12	1505EST				0	0			Hail(1.75)
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Noble County

5 E Rome City

12	1510EST				0	0			Hail(0.75)
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Noble County

Burr Oak

12	1512EST				0	0			Hail(1.75)
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Marshall County

Bourbon

12	1513EST				0	0			Hail(1.00)
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Starke County

Knox

12	1544EST				0	0			Hail(0.75)
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Steuben County

Hamilton

12	1545EST				0	0			Hail(0.75)
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Whitley County

Tri Lakes

12	1545EST				0	0			Hail(1.00)
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De Kalb County

Auburn

12	1549EST				0	0			Hail(0.75)
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Kosciusko County

6 SE North Webster

12	1550EST				0	0			Hail(1.00)
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Whitley County

Churubusco

12	1556EST				0	0			Hail(1.75)
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Grant County

2 S Marion

12	1600EST				0	0			Hail(1.75)
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Noble County

Merriam

12	1603EST				0	0			Hail(1.75)
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Whitley County

Tri Lakes

12	1605EST				0	0			Hail(4.00)
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Noble County

5 S Albion

12	1615EST				0	0			Hail(1.75)
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					Killed	Injured	Property	Crops	
INDIANA, Northeast									
La Porte County									
6 S Westville	12	1617EST	0.1	50	0	0	50K		Tornado (F0) WEAK TORNADO TOUCHED DOWN NEAR U.S. 421 AND U.S. 30. A FEW FARMHOUSES SUFFERED SLIGHT ROOF DAMAGE.
St. Joseph County									
South Bend	12	1622EST			0	0			Hail(1.75)
Kosciusko County									
Mentone	12	1630EST			0	0			Hail(1.00)
Kosciusko County									
Mentone	12	1630EST			0	0	250K		Thunderstorm Wind MANY LARGE TREES WERE BLOWN DOWN THROUGHOUT TOWN. SEVERAL HOUSES SUSTAINED MINOR TO MODERATE STRUCTURAL DAMAGE.
Whitley County									
2 E South Whitley to South Whitley	12	1634EST			0	0			Hail(1.75)
Allen County									
Wallen	12	1635EST			0	0			Hail(1.75)
Elkhart County									
1 S Elkhart	12	1640EST			0	0			Hail(0.75)
Allen County									
Wallen	12	1648EST			0	0			Thunderstorm Wind (65)
Elkhart County									
Elkhart	12	1703EST			0	0			Hail(1.25) ALONG COUNTY ROAD 30.
Allen County									
Ft Wayne	12	1725EST			0	0			Hail(0.75)
Allen County									
Ft Wayne	12	1735EST			0	0			Hail(0.75)
La Porte County									
Michigan City	18	2155EST			0	0	0		Thunderstorm Wind LARGE TREES BLOWN DOWN
La Porte County									
Michigan City	18	2156EST			0	0			Thunderstorm Wind (55) COAST GUARD STATION REPORT
La Porte County									
La Porte	18	2205EST			0	0	0		Thunderstorm Wind LARGE TREES BLOWN DOWN
St. Joseph County									
New Carlisle	18	2206EST			0	0	0		Thunderstorm Wind LARGE TREES BLOWN DOWN
St. Joseph County									
South Bend	18	2235EST			0	0	0		Thunderstorm Wind TREES DOWN
Marshall County									
Plymouth	18	2240EST			0	0	25K		Thunderstorm Wind NUMEROUS TREES DOWN IN TOWN AND ACROSS THE COUNTY. SEVERAL ROADS WERE BLOCKED DUE TO FALLEN TREES AND DOWNED POWER LINES.
Elkhart County									
Wakarusa	18	2255EST			0	0			Thunderstorm Wind (52)
Kosciusko County									
Barbee	18	2255EST			0	0	0		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

June 1998

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

TREE LIMBS AND POWER LINES DOWN.

Wabash County North Manchester	18	2340EST			0	0			Thunderstorm Wind (61)
Huntington County Huntington	19	0015EST			0	0			Thunderstorm Wind (55)
SEVERAL TREES DOWN WITH MINOR ROOF DAMAGE TO SEVERAL HOMES.									
Wells County Ossian	19	0025EST			0	0	10K		Thunderstorm Wind
SEVERAL LARGE TREES WERE TOPPLED IN TOWN.									
Allen County Ft Wayne	19	0035EST			0	0			Hail(0.75)
Blackford County Hartford City	19	0045EST			0	0	0		Thunderstorm Wind
NUMEROUS TREES DOWN ACROSS COUNTY									
Adams County Berne	19	0050EST			0	0	100K		Thunderstorm Wind (52)
MANY TREES AND POWER LINES WERE DOWN ACROSS THE COUNTY. ONE TREE FLATTENED TWO CARS IN DECATUR WITH THE LIBRARY IN BERNE LOSING PART OF ITS ROOF.									
Jay County Portland	19	0050EST			0	0	0		Thunderstorm Wind
NUMEROUS TREES DOWN ACROSS COUNTY									
Steuben County Angola	26	0115EST			0	0			Hail(0.75)
INZ004 St. Joseph	26	0150EST			0	0	0		Flood
BRIDGE REPORTED UNDER WATER IN NEW CARLISLE.									
Allen County Poe	26	1735EST			0	0			Hail(0.75)
Adams County Decatur	26	1803EST			0	0			Thunderstorm Wind (52)
Fulton County Leiters Ford to Rochester	28	2115EST			0	0			Hail(1.75)
Fulton County Talma	28	2115EST			0	0			Hail(1.00)
INZ034 Jay	29	0120EST			0	0			Flood
SEVERAL ROADS WERE REPORTED UNDER WATER IN THE TOWN OF PORTLAND.									
Jay County Portland	29	0120EST			0	0	0		Thunderstorm Wind
NUMEROUS TREES WERE BLOWN DOWN IN THE CITY.									
La Porte County La Porte	29	1900EST			0	0			Hail(1.00)
Elkhart County Elkhart	29	1922EST			0	0			Hail(0.75)
St. Joseph County Osceola	29	1922EST			0	0			Hail(1.00)
SEVERAL TREES DOWN IN TOWN.									
Lagrange County Mongu	29	1934EST			0	0			Hail(0.75)

Storm Data and Unusual Weather Phenomena

June 1998

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

Marshall County

Culver	29	1945EST			0	0	0		Thunderstorm Wind
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NUMEROUS TREES BLOWN DOWN IN TOWN WITH SEVERAL POWER OUTAGES REPORTED.

Kosciusko County

Warsaw	29	2035EST			0	0	0		Thunderstorm Wind
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SEVERAL TREES AND POWER LINES DOWN IN CITY.

Allen County

Ft Wayne	29	2045EST			0	0			Thunderstorm Wind (50)
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MICHIGAN, Extreme Southwest

Berrien County

Stevensville	18	2210EST			0	0	0		Thunderstorm Wind
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TREES BLOWN DOWN ON THE EAST SIDE OF TOWN.

Cass County

Dowagiac to Cassopolis	18	2215EST			0	0	25K		Thunderstorm Wind
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NUMEROUS TREES AND POWER LINES BLOWN DOWN.

St. Joseph County

Colon	25	1934EST			0	0			Hail(1.75)
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St. Joseph County

White Pigeon	25	2320EST			0	0			Thunderstorm Wind (52)
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Berrien County

Galien	26	0040EST			0	0	0		Thunderstorm Wind
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6 INCH TREE LIMBS BLOWN DOWN.

Branch County

Coldwater	26	0100EST			0	0	0		Thunderstorm Wind
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SEVERAL TREES BLOWN DOWN ACROSS COUNTY.

Branch County

Coldwater	26	0500EST			0	0			Hail(1.00)
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QUARTER SIZE HAIL COVERED THE GROUND.

Branch County

Quincy	26	0500EST			0	0			Hail(0.88)
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Hillsdale County

Camden	26	0520EST			0	0			Hail(0.88)
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OHIO, Northwest

Van Wert County

4 S Scott to 4.5 SSE Scott	11	1542EST 1543EST	0.5	25	0	0	4K		Tornado (F0)
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Emergency management reported F0 damage from a tornado south of Scott. The tornado was on the ground for one half mile, touching down 4 miles south of Scott and lifting 4 and one half miles south southeast of Scott. F0 damage was to a barn and trees. The tornado was about 25 yards wide at its widest point.

Van Wert County

2 NE Willshire to 3.5 NE Willshire	21	2200EST 2203EST	1.5	75	0	0	25K		Tornado (F1)
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Emergency management reported F1 damage from a tornado northeast of Willshire. The tornado was on the ground for one and one half miles, touching down 2 miles northeast of Willshire and lifting 3 and one half miles northeast of Willshire. F1 damage was a leveled barn and trees uprooted and torn out of the ground. The tornado was about 75 yards wide at its widest point.

Van Wert County

Scott	12	1713EST			0	0			Thunderstorm Wind (70)
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Storm Data and Unusual Weather Phenomena

June 1998

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

Paulding County

Antwerp	12	1715EST			0	0	10K		Thunderstorm Wind
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MANY TREES BLOWN DOWN INCLUDING ONE 2 FEET IN DIAMETER

Paulding County

Paulding	12	1715EST			0	0			Hail(1.00)
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ONE INCH HAIL FELL THROUGHOUT COUNTY

Putnam County

Ottoville	12	1745EST			0	0	100K		Thunderstorm Wind (52)
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60 MPH WIND GUSTS REPORTED ACROSS COUNTY. NUMEROUS LARGE TREES AND LIMBS WERE BLOWN DOWN WITH DAMAGE TO VEHICLES AND HOUSES.

OHZ015

Paulding

12	1925EST			0	0			Flood
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SEVERAL COUNTY ROADS WERE UNDER WATER.

Synoptic and mesoscale conditions for June 12, 1998...

Strong upper shortwave was progged to dig sharply across the lower great lakes during the day in response to 120 meter height rises across the central plains. Increasing upper divergence associated with a 110 knot 250 mb jet and impressive upper forcing in advance of mid level cold pool led to rapid destabilization across Indiana by afternoon. With Capes increasing to 3000 J/kg and Lifted Indices to -10, the atmosphere was primed for severe weather. A weak surface cold front moving across the area in the afternoon provided the needed low level convergence for convection to develop. Shear values were mainly unidirectional with impressive mid level flow of 50 knots. Severe storms rapidly developed along the sfc boundary around 300 pm EST. Only one tornado was reported but many of the storms produced large hail up to the size of grapefruits and 60 to 80 mph wind gusts. Crop damage was widespread with some fields completely destroyed. Many homes suffered damage to varying degree due to downed tree limbs and uprooted trees.

Williams County

Bryan	19	0050EST			0	0	0		Thunderstorm Wind
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TREES DOWN ACROSS COUNTY.

Paulding County

Latty to Paulding	19	0100EST			0	0	100K		Thunderstorm Wind
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WIDESPREAD WIND DAMAGE ACROSS THE COUNTY. 18 POWER POLES WERE BLOWN DOWN IN ONE STRETCH ALONG CR 107.

Fulton County

Fayette	19	0125EST			0	0		Hail(0.75)
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Fulton County

Wauseon	19	0125EST			0	0	0	Thunderstorm Wind
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TREES DOWN ACROSS THE COUNTY.

Putnam County

Columbus Grove	19	0140EST			0	0		Thunderstorm Wind (53)
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Synoptic and mesoscale conditions for June 18/19, 1998...

A large upper level ridge was in place across the central plains states the morning of the 18th with an upper level trough axis anchored across the eastern Great Lakes region. An unseasonably strong shortwave trough was forecast to crest the upper ridge axis and dive southeast across the midwest during the afternoon and night of the 18th. At the sfc, a warm front was lifting northward with low pressure developing across eastern South Dakota. This surface low was forecast to track into central Wisconsin by evening as a 60 knot low level jet developed in response to a coupled 250 mb jet streak structure. A mid level capping inversion inhibited convection during the day but with the approach of the mid level trough and cold pool, steep mid level lapse rates developed with 700 to 500 mb delta T of 20 degrees Celsius. Rich boundary layer moisture began to pool along the warm front in the afternoon with surface dewpoints climbing into the lower 80s across central and eastern Iowa where severe convection first initiated. Dry air punching in behind this system and favorable storm relative shear provided a balanced cool pool/ambient shear interaction which maintained this long lived severe convective system.

A large squall line known as a derecho developed across central Iowa during the afternoon of the 18th and rapidly propagated eastward along and south of the warm front. Wind damage... large hail and very heavy rains were common from Iowa east into Ohio where the squall line weakened during the morning hours of the 19th. Damage across Indiana, Michigan and Ohio was primarily due

Storm Data and Unusual Weather Phenomena

June 1998

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

OHIO, Northwest

to strong straight line winds from 60 to 80 mph which downed many trees and power lines.

Van Wert County 2.5 SW Convoy	26	1800EST			0	0			Thunderstorm Wind (50)
Henry County Mc Clure	27	1605EST			0	0			Hail(1.00)
Putnam County Columbus Grove	27	1753EST			0	0			Hail(0.88)
Allen County Lima	27	2050EST			0	0			Hail(1.75)
Putnam County Columbus Grove	29	1334EST			0	0			Hail(0.75)
Putnam County Columbus Grove	29	1334EST			0	0			Thunderstorm Wind (53)
Putnam County Leipsic	29	1354EST			0	0			Hail(1.00)
Putnam County Leipsic	29	1354EST			0	0			Thunderstorm Wind (61)

Storm Data and Unusual Weather Phenomena

July 1998

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

Marshall County

Plymouth	03	2130EST			0	0			Thunderstorm Wind (50)
	04	2130EST							

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)
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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 (50)
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NUMEROUS TREES DOWN ALONG WITH POWER OUTAGES.

La Porte County

La Porte	03	2141EST			0	0			Thunderstorm Wind (50)
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WIND DAMAGE - POWER LINES DOWN.

La Porte County

South Center	03	2142EST			0	0			Thunderstorm Wind (50)
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POWER LINES DOWN.

Kosciusko County

3 SW Warsaw	03	2244EST			0	0			Thunderstorm Wind (50)
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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 (50)
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2 TREES DOWN.

Kosciusko County

Beaver Dam	03	2345EST			0	0			Thunderstorm Wind (50)
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POWER LINES DOWN.

Cass County

Countywide to Adamsboro	04	0444EST			0	0			Flood
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COUNTY ROADS UNDER WATER.

Fulton County

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

Miami County

Countywide	04	0444EST			0	0	51K		Flash Flood
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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
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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

Storm Data and Unusual Weather Phenomena

July 1998

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

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 (57)
La Porte County 2 S South Center	19	1625EST			0	0			Thunderstorm Wind (50)
TREES DOWN REPORTED BY SHERIFFS DEPT.									
Marshall County 5 S Culver	19	1639EST			0	0			Thunderstorm Wind (52)
Marshall County 1 S Bourbon	19	1645EST			0	0			Thunderstorm Wind (56)
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 (52)
NUMEROUS TREES DOWN THROUGHOUT WARSAW AND ALONG STATE ROAD 15 FROM WARSAW TO LEESBURG.									
Fulton County Akron	19	1715EST			0	0			Thunderstorm Wind (52)
Wabash County North Manchester	19	1720EST			0	0			Thunderstorm Wind (52)
TREES DOWN.									
Whitley County 6 N Columbia City	19	1735EST			0	0			Thunderstorm Wind (52)
Miami County Peru	19	1737EST			0	0			Hail(0.75)
Allen County (Fwa)Baer Fld Ft Way	19	1738EST			0	0			Thunderstorm Wind (60)
Jay County 5 W Center	19	1738EST			0	0			Thunderstorm Wind (50)
TREES DOWN NEAR STATE ROAD 26 AND STATE ROAD 1.									
Allen County Ft Wayne	19	1746EST			0	0			Thunderstorm Wind (50)
TREES DOWN IN CITY.									
Adams County .5 W Decatur	19	1801EST			0	0			Thunderstorm Wind (52)
ROOF DAMAGE JUST WEST OF DECATUR.									
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.									

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Estimated Damage Crops	Character of Storm
INDIANA, Northeast									
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 (52) NUMEROUS TREES DOWN ACROSS COUNTY.
St. Joseph County Mishawaka	21	1930EST			0	0			Thunderstorm Wind (52)
St. Joseph County New Carlisle	21	1930EST			0	0			Thunderstorm Wind (61)
St. Joseph County South Bend	21	1930EST			0	1	500K		Thunderstorm Wind (60) 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 (50) TREES DOWN.
Kosciusko County Warsaw	21	2010EST			0	0	500K		Thunderstorm Wind (50) NUMEROUS TREES DOWN IN TOWN. ONE HOME COMPLETELY DESTROYED BY LARGE FALLEN TREE WHICH CRUSHED THE THEN UNOCCUPIED HOME. A TENTS AT THE COOK CHAPEL 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 (56) 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 (50) TREES AND LARGE LIMBS DOWN.
Steuben County Fremont	21	2015EST			0	0	312K		Lightning 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.

Storm Data and Unusual Weather Phenomena

July 1998

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
INDIANA, Northeast									
Lagrange County									
Lagrange	21	2030EST			0	0			Thunderstorm Wind (50) NUMEROUS TREES AND POWER LINES DOWN.
De Kalb County									
Waterloo	21	2040EST			0	0			Thunderstorm Wind (55)
Kosciusko County									
Warsaw	21	2042EST			0	0			Thunderstorm Wind (64) NUMEROUS TREES DOWN.
Steuben County									
Angola	21	2050EST			0	4	250K		Thunderstorm Wind (50) 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 (50) TREES AND POWER LINES DOWN THROUGHOUT THE COUNTY.
Fulton County									
Rochester	21	2100EST			0	0			Thunderstorm Wind (52)
Kosciusko County									
Pierceton	21	2100EST			0	0	10K		Thunderstorm Wind (50) TREE FELL ON HOME AND DAMAGED ROOF AND PORCH.
Whitley County									
South Whitley	21	2100EST			0	0			Thunderstorm Wind (50) MANY LIMBS DOWN IN COLLAMER AND SOUTH WHITLEY. 2 TREES DOWN IN SOUTH WHITLEY.
Huntington County									
Huntington	21	2135EST 2250EST			0	0			Thunderstorm Wind (52) NUMEROUS TREES AND POWER LINES DOWN IN COUNTY.
Wabash County									
North Manchester	21	2145EST			0	0	100K		Thunderstorm Wind (50) 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 (52) 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 (50) NUMEROUS TREES AND POWER LINES DOWN ACROSS COUNTY.
Wells County									
Bluffton	21	2230EST			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	
INDIANA, Northeast									
Blackford County									
Hartford City	21	2300EST			0	0			Thunderstorm Wind (50)
			NUMEROUS TREES AND POWER LINES DOWN THROUGHOUT COUNTY.						
Grant County									
Marion	21	2300EST			0	0			Thunderstorm Wind (52)
			TREES DOWN IN TOWN.						
Jay County									
Portland	21	2300EST			0	0			Thunderstorm Wind (52)
			NUMEROUS TREES AND POWER LINES DOWN THROUGHOUT COUNTY.						
Noble County									
Albion	21	2300EST			0	0			Thunderstorm Wind (50)
			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

Storm Data and Unusual Weather Phenomena

July 1998

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

THE LOGANSPOUT 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.

MICHIGAN, Extreme Southwest

Berrien County

Sawyer

03 2125EST 0 0 Thunderstorm Wind (50)
POWERS LINE DOWN IN SAWYER AND ACROSS COUNTY.

Cass County

Edwardsburg

03 2152EST 0 0 Thunderstorm Wind (50)
TREES DOWNED.

Cass County

Cassopolis

03 2207EST 0 0 Thunderstorm Wind (52)
MEASURED GUST.

Hillsdale County

Litchfield

20 2250EST 0 0 Thunderstorm Wind (50)
POWER LINES DOWN

Hillsdale County

3 N Reading

20 2255EST 0 0 Thunderstorm Wind (50)
LARGE BRANCHES DOWN AND POWER LINES DOWN

Hillsdale County

Hillsdale

21 0449EST 0 0 Thunderstorm Wind (50)
TREES DOWN IN TOWN

Branch County

Coldwater

21 0450EST 0 0 Thunderstorm Wind (52)
WIDESPREAD TREE AND POWER LINE DAMAGE COUNTYWIDE

Branch County

Coldwater

21 1625EST 0 0 Thunderstorm Wind (50)
WIND DAMAGE AND SEVERAL TREES DOWN IN TOWN.

Branch County

5 ESE Coldwater

21 1635EST 0 0 Hail(0.75)

Hillsdale County

Litchfield

21 1635EST 0 0 Thunderstorm Wind (50)
TREES AND POWER LINES DOWN.

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 0 0 Hail(0.75)
SHERIFF REPORT.

Berrien County

Sawyer

21 1910EST 0 0 Hail(0.75)

Branch County

Gilead

21 1913EST 0 0 Thunderstorm Wind (50)
TREES DOWN THROUGHOUT COUNTY.

Storm Data and Unusual Weather Phenomena

July 1998

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

Cass County									
Dowagiac	21	1948EST			0	0			Thunderstorm Wind (52)
	NUMEROUS LARGE TREES DOWN AROUND COUNTY.								

Berrien County									
Buchanon	21	2015EST			0	0			Thunderstorm Wind (50)
	TREES AND POWER LINES DOWN.								

OHIO, Northwest

Van Wert County									
Willshire	19	1810EST			0	0			Thunderstorm Wind (70)
	TREES DOWN AND POWER LINES DOWN. SOME MINOR DAMAGE TO HOMES.								

Van Wert County									
Wren	19	1810EST			0	0			Thunderstorm Wind (50)
	TREES DOWN.								

Van Wert County									
Ohio City	19	1815EST			0	0			Thunderstorm Wind (50)
	TREES DOWN. WINDOW BLOWN OUT OF BRICK BUILDING DOWNTOWN ALONG WITH SOME ROOF DAMAGE.								

Putnam County									
Columbus Grove	19	1840EST			0	0			Hail(1.00)

Allen County									
Lima	19	1845EST 1945EST	0.1	25	0	0			Tornado (F0)
	TORNADO TOUCHDOWN REPORTED BY SPOTTER 1/10TH OF A MILE NORTH OF FINDLEY RD AT NORTH SUGAR ST. BLEW STEEL WALL DOWN ALONG SCRAP METAL YARD AND POWER POLES SNAPPED OFF. MOVED SE AND TORE OFF RAILROAD CROSSING ARMS BEFORE LIFTING.								

Putnam County									
1 S Gilboa	19	1845EST	0.1	50	0	0	40K		Tornado (F1)
	BRICK HOME BADLY DAMAGED. ROOF TORN OFF AND LARGE CHUNKS OF BRICK CHIMNEY STREWN ABOUT YARD. TREE WAS FELLED ON CAMPER-TRAILER.								

Allen County									
Cairo	19	1849EST			0	0			Thunderstorm Wind (61)

Putnam County									
Pandora	19	1855EST			0	0			Thunderstorm Wind (50)
	SIDING AND SHINGLES BLOWN OFF HOME.								

Putnam County									
Gilboa	19	1900EST			0	0			Thunderstorm Wind (55)
	TREES UP TO 2 FEET IN DIAMETER DOWN THROUGHOUT COUNTY. WIND DAMAGE TO HOME IN GILBOA. POWER LINES DOWN IN COUNTY ALONG WITH FLOODING ON COUNTY ROADS.								

Synoptic and Mesoscale conditions for July 19th...

A bow echo squall line moved across northern Indiana into Ohio and produced widespread wind damage. The two tornadoes reported with this event were likely gustnadoes that spun-up along the apex of bow echo as seen in the damage path and length which is consistent with gustnadoes.

Allen County									
Lima	21	0304EST			0	0			Thunderstorm Wind (60)
	AT CABLE RD AND LATHEN AVE AND AT ALLENTOWN RD AND ELIDA RD AND AT CLOCK TOWER PLAZA ON WEST SIDE OF LIMA... TREES DOWN AND POWER LINES DOWN. TREES SNAPPED OFF ABOUT 20 FEET ABOVE GROUND, 4 LARGE POLES BEND OVER, AND SMALL CAMPER-TRAILER FLATTENED.								

Henry County									
Mc Clure	21	0600EST			0	0			Thunderstorm Wind (50)
	TREES AND POWER LINES DOWN								

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	
OHIO, Northwest									
Williams County									
Montpelier	21	2015EST			0	0			Thunderstorm Wind (50)
			TREES DOWN THROUGHOUT COUNTY.						
Defiance County									
Hicksville	21	2100EST			0	0			Thunderstorm Wind (50)
			TREES DOWN.						
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 (50)
			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.

Storm Data and Unusual Weather Phenomena

August 1998

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

Adams County

Decatur to Geneva	04 05	1740EST 1205EST			0	0	100K	150K	Flood
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NUMEROUS COUNTY ROADS ESPECIALLY ACROSS THE SOUTHERN HALF OF THE COUNTY WERE INUNDATED ALONG WITH LOW LYING AGRICULTURAL FARMLANDS.

Grant County

Marion	04 05	1740EST 1525EST			0	0	1M	500K	Flood
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EXTENSIVE FLOODING THROUGHOUT MARION AND THE COUNTY. MANY ROADS AND BRIDGES UNDER WATER. NUMEROUS RESIDENCES WERE EVACUATED ALONG THE MISSISSINEWA RIVER AS ARMY NATIONAL GUARDSMEN SANDBAGGED A WEAKENING DIKE ON THE EAST SIDE OF MARION. THE DIKE HELD BUT SEVERAL HOMES SUSTAINED WATER DAMAGE.

Blackford County

Hartford City	05	0000EST 0300EST			0	0	50K	100K	Flood
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NUMEROUS COUNTY ROADS WERE FLOODED ALONG WITH AGRICULTURAL LAND.

Jay County

Portland	05	0000EST 0300EST			0	0	100K	150K	Flood
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OAKWOOD MOBILE HOME PARK INUNDATED. SEVERAL RESIDENCES IN PORTLAND FLOODED. MOST RURAL COUNTY ROADS WERE CLOSED DUE TO THE HIGH WATER OVER THE ROADS.

Synoptic and Mesoscale conditions for August 5th...

A large upper trough was anchored over the central plains the morning of August 4th with a surface reflection across southeastern Iowa. A warm front stretched from this low across northern Indiana which provided the low level focus for shower and thunderstorm development the morning of the 4th. The airmass south of this front was tropical in nature with surface dewpoints in the middle 70s and precipitable water values from 1.75 to 2.00 inches. Mid level winds were quite weak however providing for slow storm movements and training echoes. Many locations from Laporte to Portland received from 1 to 3 inches of rain the morning of the 4th. By late afternoon a weak short wave trough ejected out of upper trough back in Iowa as a low level jet developed from Missouri into central Indiana. Showers and thunderstorms redeveloped north of the warm front once again from Huntington to Portland and remained nearly stationary through the evening. Very heavy rain fell throughout the evening and early morning hours on August 5th with many areas from Huntington to Portland reporting from 5 to 9 inches of rainfall. River flooding then occurred on the 6th and 7th along the Mississinewa...Salamonie and Wabash rivers.

Steuben County

Clear Lake	24	0500EST			0	0			Thunderstorm Wind (56)
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SEVERAL LARGE TREES BLOWN DOWN.

Steuben County

2 NE Fremont	24	0500EST			0	0			Hail(0.75)
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La Porte County

La Porte	24	1446EST			0	0	250K		Thunderstorm Wind
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TREES BLOWN DOWN ON ONE HOUSE AND SEVERAL CARS.

La Porte County

Michigan City	24	1450EST			0	0	10K		Thunderstorm Wind
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TREE FELL ON CAR ON HIGHWAY 35.

La Porte County

La Porte	24	1503EST			0	0			Thunderstorm Wind (52)
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La Porte County

La Porte	24	1505EST			0	0	0		Thunderstorm Wind
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LARGE TREES BLOWN DOWN WITH SEVERAL ROADS BLOCKED.

St. Joseph County

South Bend	24	1510EST			0	0			Thunderstorm Wind (70)
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MANY TREES BLOWN DOWN.

St. Joseph County

South Bend	24	1515EST			0	0			Hail(0.75)
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Storm Data and Unusual Weather Phenomena

August 1998

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
INDIANA, Northeast									
Elkhart County									
Dunlap	24	1527EST			0	0	50K		Thunderstorm Wind (61) SEVERAL HOME ROOFS DAMAGED.
St. Joseph County									
South Bend	24	1531EST			0	0	50K		Thunderstorm Wind SEVERAL POWER POLES SNAPPED OFF BY HIGH WINDS.
Kosciusko County									
Milford	24	1550EST			0	0	50K		Thunderstorm Wind SEVERAL TREES AND POWER LINES DOWN.
Kosciusko County									
Syracuse	24	1550EST			0	0	50K		Thunderstorm Wind SEVERAL TREES AND POWER LINES DOWN.
Lagrange County									
Topeka	24	1550EST			0	0	0		Thunderstorm Wind LOTS OF LARGE TREES AND LIMBS BLOWN DOWN.
Lagrange County									
Shipshewana	24	1551EST			0	0	0		Thunderstorm Wind SEVERAL TREES DOWN IN TOWN.
Whitley County									
Churubusco	24	1605EST			0	0	75K		Thunderstorm Wind TREE FELL INTO A HOUSE CAUSING MAJOR STRUCTURAL DAMAGE. ANOTHER TREE FELL ON TOP OF A CAR FLATTENING IT.
Stauben County									
Helmer	24	1611EST			0	0			Thunderstorm Wind (52)
Allen County									
Ft Wayne	24	1614EST			0	0	50K		Thunderstorm Wind SEVERAL TREES AND POWER LINES DOWN. LARGE TREE FELL ONTO CAR CRUSHING IT.
Noble County									
Kendallville	24	1614EST			0	0	30K		Thunderstorm Wind NUMEROUS TREES DOWN IN TOWN AND ACROSS MOST OF NOBLE COUNTY.
Noble County									
Wolcottville	24	1614EST			0	0	25K		Thunderstorm Wind NUMEROUS TREES AND LARGE LIMBS BLOWN DOWN.
Allen County									
Ft Wayne	24	1625EST			0	0	100K		Thunderstorm Wind BUILDING UNDER CONSTRUCTION DESTROYED.
Grant County									
Hackleman	24	1715EST			0	0	10K		Thunderstorm Wind NUMEROUS TREES DOWN.
Grant County									
Marion	24	1723EST			0	0	150K		Thunderstorm Wind WIDESPREAD TREE DAMAGE IN MARION AND ACROSS GRANT COUNTY.
St. Joseph County									
South Bend	25	0125EST			0	0	150K		Thunderstorm Wind THE DOORS WERE BLOWN OFF A SQUAD CAR. NUMEROUS TREES AND POWER LINES WERE DOWN ACROSS TOWN AND ESPECIALLY ACROSS THE EASTERN THIRD OF THE COUNTY. ONE TREE FELL ONTO A HOME ALONG AUTEN ROAD WHICH CAUSED MODERATE STRUCTURAL DAMAGE TO THE HOME.
Elkhart County									
9 WNW Bristol to Bristol	25	0130EST 0135EST	9	100	0	0	200K		Tornado (F0)

Storm Data and Unusual Weather Phenomena

August 1998

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

THIS WAS THE SAME TORNADO WHICH BEGAN IN NILES EARLIER. DAMAGE WAS EXTENSIVE TO TREES AND POWER LINES FROM THE ELKHART/CASS COUNTY LINE TO THE TOWN OF BRISTOL. SOME HOMES SUFFERED MAINLY MINOR DAMAGE TO SIDING...ROOFS AND GUTTERS. SOME OUTBUILDINGS HOWEVER WERE COMPLETELY DESTROYED.

Elkhart County

2 SSE Dunlap to
2.5 SSE Dunlap

25	0135EST 0136EST	0.5	100	0	0	300K		Tornado (F1)
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THIS TORNADO LIKELY FORMED ALONG THE LEADING EDGE OF THE BOW ECHO WHICH PASSED THROUGH BERRIEN AND ST. JOSEPH COUNTIES EARLIER. IT TOUCHED DOWN ON TOP OF THE FORD DEALERSHIP ALONG HIGHWAY 33 TEARING OFF A LARGE PART OF THE ROOF AND ONE WALL. NEXT IT THREW A FORD AEROSTAR VAN INTO A POWER POLE AND PICKED UP AN RV TOSsing IT OVER 50 YARDS AWAY ACROSS THE HIGHWAY INTO A DITCH. NEXT IT CROSSED A STREET AND HIT A MANUFACTURED HOME DEALERSHIP SHIFTING SEVERAL HOMES OFF THEIR FOUNDATIONS, TEARING A LARGE PART OF THE OFFICE ROOF OFF AND FLIPPING A MOVING VAN OVER. IT THEN PROCEEDED DOWN ALONG HIGHWAY 33 FOR APPROXIMATELY ANOTHER 200 YARDS TEARING OFF PARTS OF ROOFS AND AIR CONDITIONING UNITS BEFORE LIFTING.

Elkhart County

Elkhart to
Goshen

25	0135EST 0140EST			0	0	250K		Thunderstorm Wind
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EXTENSIVE TREE AND POWER LINE DAMAGE OCCURRED ACROSS THE ENTIRE COUNTY. SEVERAL BUILDINGS AND CARS IN DOWNTOWN GOSHEN SUSTAINED MINOR TO MODERATE STRUCTURAL DAMAGE DUE TO LARGE TREES AND LIMBS CRASHING DOWN. BUSINESSES ON THE EAST SIDE OF GOSHEN ALONG HIGHWAY 33 SUSTAINED DAMAGE. THE HOLIDAY INN HAD PART OF ITS ROOF BLOWN OFF. LOCAL BANK HAD ITS STEEL BANK SIGN FLATTENED.

MICHIGAN, Extreme Southwest

Cass County

Marcellus

24	0310EST			0	0			Hail(0.75)
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Branch County

Bronson

24	0355EST			0	0			Hail(1.75)
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Branch County

Coldwater

24	0400EST			0	0	25K		Thunderstorm Wind
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TREES AND POWER LINES DOWN.

Hillsdale County

Hillsdale

24	0430EST			0	0	50K		Thunderstorm Wind
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WIDESPREAD TREE DAMAGE AND POWER LINES DOWN ACROSS THE COUNTY.

Cass County

Edwardsburg

24	1525EST			0	0			Thunderstorm Wind (52)
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Cass County

2 E Adamsville

24	1604EST			0	0	10K		Thunderstorm Wind
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TREE FELL ONTO A PICKUP TRUCK TOTALLY SMASHING IT.

Berrien County

Benton Center

25	0038EST			0	0			Hail(0.75)
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Cass County

Marcellus

25	0040EST			0	0			Hail(0.75)
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Berrien County

Coloma

25	0048EST			0	0			Urban/Sml Stream Fld
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WATER UP TO THE BOTTOM OF CAR DOORS ON STREETS.

Berrien County

St Joseph

25	0052EST			0	0			Hail(1.75)
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Berrien County

Niles to
2 ESE Niles

25	0100EST	2	400	0	0	1.1M		Tornado (F1)
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Storm Data and Unusual Weather Phenomena

August 1998

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

EXTENSIVE DAMAGE TO TREES ACROSS THE CITY WHICH BLOCKED 15 SEPARATE STREETS AT ONE TIME. 60 HOMES DAMAGED SUSTAINED MINOR TO SEVERE STRUCTURAL DAMAGE. MANY VEHICLES WERE DAMAGED OR DESTROYED BY FALLEN TREES AND LIMBS. SEVERAL POWER POLES AND LINES TAKEN OUT. THE FRENCH PAPER COMPANY LOST ROOFS ON THREE DIFFERENT BUILDINGS AS DID THE D&D TIRE COMPANY WHICH HAD ITS WAREHOUSE ROOF RIPPED OFF. DEMOND GROCERY STORE LOST 20K DOLLARS WORTH OF PERISHABLE FOOD ITEMS DUE TO THE EXTENDED EXTENSIVE POWER OUTAGE THAT AFFECTED 41,500 PEOPLE AT ONE POINT. ONE MAN LOST 21 LARGE TREES IN HIS YARD ALONE. THE MICHIGAN STATE GOVERNOR DECLARED THE CITY OF NILES A DISASTER AREA. AN OFF DUTY MICHIGAN STATE POLICE OFFICER TRAGICALLY LOST HIS LIFE WHEN HE WAS ELECTROCUTED BY A DOWNED POWER LINE.

Cass County

8 WNW Edwardsburg to 1 E Adamsville	25	0110EST	9	800	0	0	500K		Tornado (F2)
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ONE MOBILE HOME WAS COMPLETELY DEMOLISHED ON SOUTH SIDE OF JUNO LAKE AND SEVERAL OTHER HOMES AROUND JUNO, PAINTER, EAGLE AND CHRISTAN LAKE SUFFERED MINOR TO MODERATE STRUCTURAL DAMAGE. AN RV WAS TOSSED ABOUT AND ROTATED 180 DEGREES WHICH CAUSED MAJOR DAMAGE. NUMEROUS TREES WERE COMPLETELY FLATTENED WHICH ALSO CAUSED DAMAGE TO HOMES. MANY ROADS WERE BLOCKED BY FALLEN TREES...SNAPPED POWER POLES AND DOWNED POWER LINES.

THIS TORNADO BEGAN IN NILES AND PEAKED IN INTENSITY AND WIDTH 3 MILES NORTHWEST OF EDWARDSBURG WHERE IT WIDENED OUT TO ONE HALF MILE. IT CONTINUED ON TOWARD THE TOWN OF BRISTOL IN NORTHEAST ELKHART COUNTY BEFORE LIFTING.

Cass County

1 E Adamsville to 5 ESE Adamsville	25	0115EST 0120EST	6	300	0	0	300K		Tornado (F1)
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THE TORNADO HAD WEAKENED AS IT PASSED JUST EAST OF ADAMSVILLE. IT STILL CAUSED EXTENSIVE DAMAGE TO SEVERAL FARMS ALONG AND PRIMARILY SOUTH OF HIGHWAY 12. SEVERAL HOMES AND VEHICLES SUSTAINED MAJOR DAMAGE DUE TO FALLEN TREES.

Branch County

Bronson	25	0120EST			0	0			Thunderstorm Wind (52)
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Branch County

Batavia	25	0130EST			0	0	25K		Thunderstorm Wind
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SEVERAL TREES AND POWER LINES DOWN IN TOWN.

Branch County

Kinderhook	25	0130EST			0	0	25K		Thunderstorm Wind
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LOTS OF TREES AND POWER LINES DOWN.

St. Joseph County

Constantine to Sturgis	25	0130EST 0132EST			0	0	100K		Thunderstorm Wind
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EXTENSIVE TREES AND POWER LINES DOWN ACROSS THE COUNTY.

Cass County

Cassopolis	25	0132EST			0	0			Thunderstorm Wind (52)
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St. Joseph County

Sturgis	25	0136EST			0	0			Thunderstorm Wind (52)
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Hillsdale County

Hillsdale	25	0200EST			0	0	100K		Thunderstorm Wind
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SEVERAL TREES DOWN ACROSS THE SOUTHERN THIRD OF THE COUNTY INCLUDING ONE WHOLE LINE OF POWER POLES WHICH WERE FLATTENED TO THE GROUND.

Hillsdale County

Reading	25	0200EST			0	0	10K		Thunderstorm Wind
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TREE FELL ON A HOME WHICH SUSTAINED JUST MINOR DAMAGE.

Storm Data and Unusual Weather Phenomena

August 1998

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

Henry County

Napoleon	05 06	1700EST 0200EST			0	0	150K	50K	Flood
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SOUTHERN HALF OF THE COUNTY SUSTAINED THE WORST FLOODING. MANY RURAL COUNTY ROADS WERE WASHED OUT TO SOME DEGREE WITH EXTENSIVE DAMAGE TO LOWLAND AGRICULTURAL FARM FIELDS.

Paulding County

Paulding	05 06	1700EST 0200EST			0	0	400K	250K	Flood
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EXTENSIVE FLOODING OCCURRED THROUGHOUT THE COUNTY WITH ROADS AND FARM FIELDS WASHED AWAY BY THE FLOODING.

Putnam County

Continental to Gilboa	05 06	1700EST 0200EST			0	0	250K	100K	Flood
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EXTENSIVE FLOODING OCCURRED ACROSS THE COUNTY ESPECIALLY THE NORTHERN HALF. MANY COUNTY ROADS WERE WASHED OUT TO SOME DEGREE.

Synoptic and Mesoscale conditions for August 6th...

The same storm system which had plagued parts of eastern Indiana the night before with very heavy rain shifted its focus into northwest Ohio the night of August 5. A warm top heavy rain event developed late in the afternoon of the 5th as thunderstorms developed along a warm front which stretched from the surface low now in western Illinois into northwest Ohio. Storms continued to backbuild along the front towards the theta-e ridge which extended from central Illinois into northern Indiana and train across the same areas in northwest Ohio into the morning of the 6th. Several locations from Paulding to Napoleon received from 3 to 7 inches of rain.

Fulton County

Wauseon	24	0230EST			0	0	50K		Thunderstorm Wind
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A FARM HAD ITS BARN COMPLETELY DEMOLISHED. NUMEROUS TREES WERE ALSO DAMAGED.

Williams County

Bryan	24	0500EST			0	0	20K		Thunderstorm Wind
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THE FRONTIER CABLEVISION BUILDING LOST PART OF ITS ROOF.

Williams County

Pioneer	24	0500EST			0	0			Hail(0.88)
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Fulton County

Fayette	24	0515EST			0	0			Thunderstorm Wind (56)
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NUMEROUS TREES AND POWER LINES DOWN THROUGHOUT THE TOWN.

Fulton County

Wauseon	24	0525EST			0	0			Hail(0.88)
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Fulton County

Wauseon	24	0525EST			0	0			Thunderstorm Wind (52)
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NUMEROUS TREES AND POWER LINES DOWN.

Williams County

Montpelier	24	0550EST			0	0			Hail(1.00)
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Fulton County

Archbold	24	0614EST			0	0	650K	2M	Hail(4.50)
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SEVERAL HOMES NEAR ARCHBOLD SUSTAINED MODERATE TO SEVERE STRUCTURAL DAMAGE FROM THE HIGH WINDS. ONE HOME OWNER HAD HIS CHIMNEY COLLAPSE WHICH FELL THROUGH THE ROOF. THEY ALSO LOST SEVERAL WINDOWS ON THE WEST SIDE OF THE HOME FROM FLYING DEBRIS. ANOTHER HOME OWNER HAD HIS BARN BLOWN OFF ITS FOUNDATION AND HAD EVERY TREE ON THEIR PROPERTY UPROOTED. SEVERAL CROP FIELDS IN THE AREA WERE HEAVILY DAMAGED BY THE HIGH WINDS AND HAIL.

Henry County

Napoleon	24	0700EST			0	0			Hail(0.75)
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Henry County

Napoleon	24	0700EST			0	0	10K		Thunderstorm Wind (52)
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HIGH WINDS BROKE SEVEN UTILITY POLES ALONG COUNTY ROAD 12. THE CITY WAS ALSO HIT WITH DIME SIZE HAIL FOR ABOUT 10 MINUTES.

Storm Data and Unusual Weather Phenomena

August 1998

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

Fulton County

Archbold	24	1015EST			0	0	150K	1M	Flood
TWO PEOPLE HAD TO BE RESCUED FROM THEIR VEHICLES AS THEY ATTEMPTED TO CROSS FLOODED ROADS. THE SAUDER VILLAGE MUSEUM SUSTAINED THE MOST DAMAGE AS FLAT RUN CREEK INUNDATED THE GROUND FLOOR WITH WATER. SEVERAL HOMES IN ARCHBOLD HAD WATER BACKUP THROUGH THE SEWER INTO THEIR BASEMENTS.									

Paulding County

Paulding	24	1635EST			0	0	50K		Thunderstorm Wind
TREES AND POWER LINES DOWN THROUGHOUT PAULDING COUNTY.									

Van Wert County

Scott	24	1647EST			0	0			Thunderstorm Wind (52)
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Putnam County

5 N Columbus Grove	24	1710EST			0	0			Hail(1.00)
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Putnam County

5 N Columbus Grove	24	1710EST			0	0			Thunderstorm Wind (61)
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Fulton County

Archbold	25	0300EST			0	0	100K		Thunderstorm Wind (64)
A ROOF WAS BLOWN OFF ON A HOME AT 5326 CR RD 20. ANOTHER HOME HAD ITS WINDOWS BLOWN IN ON THE WEST SIDE OF THE HOME AND A BARN WAS MOVED OFF ITS FOUNDATION 3 FEET. IN ADDITION SEVERAL LARGE TREES IN ARCHBOLD WERE UPROOTED.									

Fulton County

Wauseon	25	0300EST			0	0	100K		Thunderstorm Wind
AIR CONDITIONING UNITS ON TOP OF THE LOCAL WALMART WERE BLOWN OFF. THE GREENHOUSE WAS ALSO DEMOLISHED.									

OHZ001

Williams

25	0315EST				0	0			Flood
STATE ROUTE 191 CLOSED FROM WEST UNITY TO STRIKER DUE TO HIGH WATER OVER THE ROAD. SEVERAL OTHER COUNTY ROADS WERE ALSO BRIEFLY CLOSED.									

Williams County

West Unity	25	0315EST			0	0	20K		Thunderstorm Wind
A LINE OF LARGE UTILITY POLES WERE SNAPPED OR BLOWN DOWN.									

Synoptic and mesoscale conditions for August 23-25th...

Impressive surface based instability developed late the night of the 23th ahead of a weak surface trough axis from southern lake Michigan back into western Illinois where mid 70 dewpoints had pooled. Surface based CAPES were on the order of 3000 J/kg with lifted indices to -10. At the same time a potent upper level trough was rotating through southern Ontario. Strong mid level capping inversion was in place at the time however increasing divergence underneath the exit region of a 100 knot jet streak across northern Michigan helped to intensify the low level jet across Illinois early on the morning of the 24th. Convection initiated across lake Michigan and quickly became severe as it became surface based over land. Wetbulb zero and freezing level temperatures were favorable for large hail and mid level winds on the southern edge of trough axis increased to 50 knots which were favorable for damaging wind gusts.

A stronger shortwave trough was located upstream across Montana the morning of the 24th. This system and associated frontal boundary across Minnesota into Michigan were forecast to combine across the area by late afternoon into the evening of the 25th and touch off another round of severe thunderstorms. The convection across southern Michigan into Ohio the morning of the 24th left behind an outflow boundary which helped pool upper 70 dewpoints across northern Indiana. By afternoon CAPES had increased to over 3000 J/kg. A surface wave developed along the cold front across Iowa by late morning where increasing surface convergence and mid level vorticity advection and cooling ahead of Montana shortwave helped to initiate a severe thunderstorm complex across northern Iowa. This system quickly turned into a derecho and raced into northern Indiana by mid afternoon.

By late evening on the 24th... rapid destabilization occurred from northern Illinois into southern Wisconsin with the approach of Montana shortwave. Low level jet increased to 40 knots across central Illinois into lake Michigan which fired off another round of

Storm Data and Unusual Weather Phenomena

August 1998

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

OHIO, Northwest

severe thunderstorms from the Illinois/Wisconsin border area eastward into southern lake Michigan. This convection quickly organized into a squall line by the morning of the 25th with several embedded supercells. One isolated supercell ahead of the line which failed to produce a tornado... did produce a swath of large hail and high winds across southern Michigan. Another supercell within the squall line interacted with the outflow of this isolated supercell and produced a long track tornado as it moved southeast from Niles to Bristol. One additional tornado which was likely a gustnado did develop along the leading edge of the bowing squall line between Dunlap and Goshen. As the bow matured, damaging winds became the primary threat.

INDIANA, Northeast

Lagrange County

Lagrange

06	1915EST	0	0	0	Thunderstorm Wind
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SEVERAL TREES AND POWER LINES WERE BLOWN DOWN IN THE TOWN.

Storm Data and Unusual Weather Phenomena

November 1998

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
INDIANA, Northeast									
Pulaski County									
Countywide	10	0845EST			0	0	10K		Thunderstorm Wind
	NUMEROUS TREES AND POWER LINES BLOWN DOWN ACROSS THE COUNTY.								
Starke County									
Knox	10	0845EST			0	0	0		Thunderstorm Wind
	SEVERAL TREES AND POWER LINES BLOWN DOWN.								
La Porte County									
Countywide	10	0900EST			0	0	50K		Thunderstorm Wind
	NUMEROUS TREES AND POWER LINES DOWN. ONE HOME SUFFERED EXTENSIVE DAMAGE WHEN A LARGE TREE FELL INTO IT COLLAPSING THE ROOF AND ONE WALL. ONE CAR WAS HEAVILY DAMAGED BY A FALLEN TREE.								
Marshall County									
Countywide	10	0930EST			0	0	25K		Thunderstorm Wind
	SEVERAL POWER LINES AND POLES WERE BLOWN DOWN ALONG WITH MANY LARGE TREES AND LIMBS ACROSS THE COUNTY.								
White County									
Monticello	10	0935EST			0	0	30K		Thunderstorm Wind
	WIDESPREAD DAMAGE OCCURRED TO TREES...POWER LINES...SIGNS AND POWER POLES ACROSS THE TOWN.								
Cass County									
Logansport	10	0940EST			0	0	25K		Thunderstorm Wind
	MANY TREES...POWER LINES AND POLES WERE BLOWN DOWN IN TOWN WITH SEVERAL RESIDENTIAL STREETS BLOCKED FOR A TIME.								
St. Joseph County									
Countywide	10	0945EST			0	0	50K		Thunderstorm Wind
	WIDESPREAD DAMAGE TO TREES AND POWER LINES WERE REPORTED ACROSS THE COUNTY.								
Elkhart County									
Goshen Arpt	10	1040EST			0	0			Thunderstorm Wind (53)
Elkhart County									
Countywide	10	1045EST			0	0	50K		Thunderstorm Wind
	NUMEROUS TREES AND POWER LINES WERE BLOWN DOWN. ONE MOBILE HOME WAS CRUSHED WHEN A LARGE TREE TOPPLED ONTO IT.								
Kosciusko County									
2 N North Webster	10	1046EST			0	0			Thunderstorm Wind (52)
Elkhart County									
Nappanee	10	1050EST			0	1	5K		Thunderstorm Wind
	ONE MAN WHILE DRIVING ALONG U.S. HIGHWAY 6 WAS SLIGHTLY INJURED WHEN A LARGE TREE LIMB FELL ONTO HIS CAR. THE VEHICLE SUSTAINED EXTENSIVE DAMAGE.								
Miami County									
Countywide	10	1100EST			0	0	10K		Thunderstorm Wind
	SEVERAL LARGE TREES AND POWER LINES WERE BLOWN DOWN.								
Noble County									
Countywide	10	1110EST			0	0	10K		Thunderstorm Wind
	SEVERAL TREES AND POWER LINES WERE REPORTED BLOWN DOWN.								
Whitley County									
Countywide	10	1115EST			0	0	10K		Thunderstorm Wind
	SEVERAL TREES AND POWER LINES WERE BLOWN DOWN ACROSS THE COUNTY.								
Huntington County									
Rock Creek	10	1125EST			0	0	0		Thunderstorm Wind
	THE ROOF WAS BLOWN OFF THE OLD ROCK CREEK TOWNSHIP HIGH SCHOOL.								
Grant County									
Marion	10	1130EST			0	0	50K		Thunderstorm Wind

Storm Data and Unusual Weather Phenomena

November 1998

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

SEVERAL TREES AND POWER LINES WERE BLOWN DOWN IN TOWN. ONE CAR WAS BADLY DAMAGED BY A LARGE TREE LIMB. ONE FARM OUTSIDE OF TOWN HAD A ROOF BLOWN OFF THE BARN.

Lagrange County

Lagrange	10	1135EST			0	0	50K		Thunderstorm Wind
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LAKELAND HIGH SCHOOL HAD ONE AUDITORIUM WALL BLOWN IN BY THE STRONG WINDS.

Allen County

Ft Wayne	10	1145EST			0	1	150K		Thunderstorm Wind
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NUMEROUS TREES AND POWER LINES WERE BLOWN DOWN IN TOWN. ONE WOMAN WAS SERIOUSLY INJURED WHEN SHE CRASHED INTO A LARGE TREE THAT HAD FALLEN ACROSS STATE HIGHWAY 33. A MOBILE HOME WAS DESTROYED BY FIRE WHEN DOWN POWER LINES IGNITED THE HOME.

Stauben County

Countywide	10	1145EST			0	0	30K		Thunderstorm Wind
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SEVERAL TREES AND POWER LINES WERE BLOWN DOWN. ONE HOME OWNERS GARAGE SUFFERED EXTENSIVE DAMAGE WHEN A LARGE TREE WAS TOPPLED ONTO IT.

Wells County

Countywide	10	1145EST			0	0	25K		Thunderstorm Wind
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NUMEROUS TREES...POWER LINES AND POWER POLES WERE BLOWN DOWN ACROSS THE COUNTY.

Adams County

Decatur	10	1230EST			0	0	10K		Thunderstorm Wind
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MANY TREES AND POWER LINES WERE DOWN ACROSS THE TOWN.

Jay County

Portland	10	1240EST			0	0	10K		Thunderstorm Wind
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SEVERAL TREES AND POWER LINES WERE DOWN ACROSS THE TOWN.

MICHIGAN, Extreme Southwest

Berrien County

Niles	10	0930EST			0	0	25K		Thunderstorm Wind
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SEVERAL TREES...TREE LIMBS...POWER LINES AND POWER POLES WERE EITHER SNAPPED OR BLOWN DOWN IN TOWN.

Cass County

Countywide	10	0940EST			0	0	50K		Thunderstorm Wind
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EXTENSIVE DAMAGE OCCURRED TO TREES...POWER LINES AND POLES ACROSS THE COUNTY.

St. Joseph County

Countywide	10	0955EST			0	0	75K		Thunderstorm Wind
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NUMEROUS TREES AND POWER LINES WERE BLOWN DOWN ACROSS THE COUNTY. THE TOWN OF STURGIS WAS ESPECIALLY HARD HIT WHERE TREES...LIMBS...FENCES AND TV ANTENNAS WERE BLOWN DOWN. ONE HOME OWNERS CAR WAS COMPLETELY CRUSHED BY A VERY LARGE TREE.

St. Joseph County

Colon	10	1000EST			0	0	150K		Thunderstorm Wind
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SEVERAL HOMES WERE HEAVILY DAMAGED BY FALLEN TREES.

Hillsdale County

Countywide	10	1200EST			0	0	60K		Thunderstorm Wind
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WIDESPREAD TREES AND POWER LINES WERE BLOWN DOWN. AEP HAD 66 REPORTS OF POWER LINES DOWN ACROSS THE COUNTY. IN JONESVILLE... DAMAGE WAS EXTENSIVE TO TREES...SIGNS AND POWER LINES.

OHIO, Northwest

Paulding County

Countywide	10	1215EST			0	0	10K		Thunderstorm Wind
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SEVERAL TREES WERE REPORTED BLOWN DOWN ACROSS THE COUNTY.

Defiance County

Defiance	10	1220EST			0	0	25K		Thunderstorm Wind
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Storm Data and Unusual Weather Phenomena

December 1998

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
INDIANA, Northeast									
Elkhart County Simonton Lake	06	1330EST			0	0	5K		Thunderstorm Wind
			DOZENS OF TREES UPROOTED ACROSS NORTHERN OSOLO TOWNSHIP.						
Elkhart County Simonton Lake	06	2050EST 2105EST			0	0	10K		Thunderstorm Wind
			TREES FELL ON ELECTRICAL LINES CAUSING POWER OUTAGES.						
Cass County Logansport	06	2130EST 2135EST			0	0	100K		Thunderstorm Wind
			STRONG WINDS CAUSED PART OF THE THIRD STORY OF THE TOTAL DISCOUNT STORE IN LOGANSPORT TO COLLAPSE. THE SOUTHWEST CORNER OF THE BUILDING FELL ONTO HAP'S DOWNTOWNER, A RESTAURANT LOCATED NEXT DOOR. ELECTRICAL POWER POLES WERE BROKEN, CAUSING POWER OUTAGES. NUMEROUS TREE LIMBS WERE ALSO KNOCKED DOWN, RESULTING IN DAMAGE TO TWO AUTOMOBILES. TO THE SOUTHEAST OF LOGANSPORT, IN WALTON, A GRAIN BIN WAS APPARENTLY BLOWN OVER BY THE WIND.						
Miami County Peru	06	2145EST 2150EST			0	0	10K		Thunderstorm Wind
			POWER OUTAGES CAUSED BY HIGH WINDS KNOCKING TREE BRANCHES ONTO WIRES.						
Miami County Peru	06	2145EST 2150EST			0	0	20K		Thunderstorm Wind
			WIND DESTROYED ONE MOBILE HOME AND DAMAGED ANOTHER.						
Miami County (Gus)Grissom Afb Per to Chili	06	2150EST 2200EST			0	0	50K		Thunderstorm Wind (71)
			ROOF TORN OFF UAP/RICHTER WAREHOUSE. OTHER BUILDINGS IN PERU DAMAGED.						
Whitley County Coesse	06	2200EST			0	0	10K		Thunderstorm Wind (57)
			TOOL SHED ROOF TORN OFF						
Grant County Marion	06	2203EST			0	1	10K		Thunderstorm Wind
			AUTOMOBILE SIGNIFICANTLY DAMAGED WHEN PART OF A TREE FELL ACROSS IT.						
Adams County Decatur	06	2235EST 2240EST			0	0	30K		Thunderstorm Wind
			GARAGE DESTROYED. EIGHT AMERICAN ELECTRIC POWER POLES WERE KNOCKED DOWN.						
Elkhart County Elkhart	06	2100EST			0	0	0		Thunderstorm Wind
			SEVERAL TREES BLOWN DOWN.						
Miami County Bunker Hill	06	2145EST			0	0	10K		Thunderstorm Wind
			SEVERAL TREES BLOWN DOWN. ONE BARN LOST A THIRD OF ITS ROOF.						
Whitley County Columbia City	06	2211EST			0	0	50K		Thunderstorm Wind
			NUMEROUS TREES BLOWN DOWN. ONE BARN COMPLETELY LOST ITS ROOF.						
Wabash County Wabash	06	2213EST			0	0	20K		Thunderstorm Wind
			SEVERAL TREES...POWER POLES AND LINES WERE BLOWN DOWN IN TOWN.						
Huntington County Huntington	06	2215EST			0	0	10K		Thunderstorm Wind
			SEVERAL TREES WERE UPROOTED OR SNAPPED IN TOWN.						
De Kalb County Auburn	06	2220EST			0	0	0		Thunderstorm Wind
			LOTS OF TREE LIMBS WERE BLOWN DOWN.						

Storm Data and Unusual Weather Phenomena

December 1998

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

Wells County

Bluffton	06	2225EST			0	0	10K		Thunderstorm Wind
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MANY TREES AND POWER LINES WERE BLOWN DOWN.

Adams County

2 S Williams to Williams	06	2245EST			0	0	10K		Thunderstorm Wind
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SEVERAL POWER POLES WERE SNAPPED.

MICHIGAN, Extreme Southwest

Branch County

Coldwater	06	2200EST			0	0	0		Thunderstorm Wind
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SEVERAL TREES WERE BLOWN DOWN.

OHIO, Northwest

Paulding County

Paulding	06	2245EST			0	0	50K		Thunderstorm Wind
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NUMEROUS TREES AND POWER LINES BLOWN DOWN. ONE HOUSE HAD ITS ROOF BLOWN OFF.

Defiance County

3 E Defiance	06	2300EST			0	0	30K		Thunderstorm Wind
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BARN ROOF BLOWN OFF AND BOAT WAS KNOCKED OVER BY THE STRONG WINDS.

Williams County

Bryan	06	2300EST			0	0	0		Thunderstorm Wind
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MANY TREES AND LIMBS BLOWN DOWN.

Fulton County

Wauseon	06	2315EST			0	0	10K		Thunderstorm Wind
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TREES AND POWER LINES WERE BLOWN DOWN.

Putnam County

Ottawa	06	2320EST			0	0	10K		Thunderstorm Wind
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TREES AND POWER LINES WERE BLOWN DOWN ACROSS THE TOWN.

Synoptic and mesoscale conditions for December 6th...

A strong upper level disturbance ejecting out of the desert southwest early on the 6th combined with 130 knot jet stream, induced surface low pressure across western Kansas which rapidly deepened throughout the day as it moved northeastward into the southern great lakes that evening. Mid level winds were in excess of 100 knots at 500 millibars. Instability was quite limited with surface based lifted indices only around zero. However an impressive dry punch accompanied the cold front where convergence was quite strong and combined with dewpoints near 60 degrees... a line of low topped storms developed by mid evening across northern Indiana and southern Michigan and marched eastward into Ohio later in the evening. Wind gusts associated with this line of storms were estimated to be as much as 100 mph which caused extensive damage to trees, power lines and structures across many counties.