



# National Weather Service

## 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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### 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.



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### MICHIGAN, East

#### Lenawee County

4 S Tecumseh	21	0705EST			0	0	2K		Thunderstorm Wind (G52)
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A warm front moved north into southeast Michigan during the early morning hours. The atmosphere in the area was already quite 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)
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#### Washtenaw County

6 S Chelsea to Manchester	21	1640EST 1648EST			0	0	22K		Thunderstorm Wind (G55)
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#### Oakland County

Highland	21	1645EST			0	0	7K		Thunderstorm Wind (G52)
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#### Shiawassee County

3 NW Carland	21	1645EST			0	0	9K		Thunderstorm Wind (G55)
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#### Lenawee County

Hudson	21	1646EST			0	0	100K		Thunderstorm Wind (G65)
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#### Lenawee County

Adrian to Tecumseh	21	1650EST 1657EST			0	0	145K		Thunderstorm Wind (G58)
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#### Washtenaw County

Chelsea to Dexter	21	1650EST 1657EST			0	0	9K		Thunderstorm Wind (G52)
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#### Washtenaw County

4 SW Saline to 1.5 N Ann Arbor Arpt	21	1650EST 1657EST			0	0	200K		Thunderstorm Wind (G65)
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#### Oakland County

1 S Oakland Pontiac Ar 1 NW Bloomfield Hills	21	1700EST 1713EST			0	0	20K		Thunderstorm Wind (G65)
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#### Oakland County

Waterford	21	1700EST			0	1			Lightning
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#### Washtenaw County

Ann Arbor to 2 E Ypsilanti	21	1702EST 1712EST			0	0	4.5M		Thunderstorm Wind (G65)
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#### Lenawee County

Ridgeway to Deerfield	21	1703EST 1712EST			0	0	40K		Thunderstorm Wind (G55)
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#### Oakland County

Farmington	21	1705EST			0	0	13K		Thunderstorm Wind (G52)
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#### Lenawee County

Britton	21	1712EST			0	0			Hail (1.75)
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#### Washtenaw County

Milan to 3 S Ypsilanti	21	1712EST 1715EST			0	0	65K		Thunderstorm Wind (G58)
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#### Macomb County

Sterling Hgts	21	1713EST			0	0			Hail (0.75)
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#### Monroe County

Azalia	21	1715EST			0	0	15K		Thunderstorm Wind (G52)
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<b><u>MICHIGAN, East</u></b>							
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.							
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)
M7OU, M30OU							
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



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### MICHIGAN, East

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 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



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### MICHIGAN, East

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 of damage, along with two businesses. An automated observing system on Grosse Ile recorded a 62 mph gust.

Yet another area of storm damage was in and near downtown Detroit. At Wayne State University, windows were blown out at State Hall, and the press box of the football stadium collapsed into the stands below. Many power lines were downed near Michigan and Livernois Avenues. Downtown, a lawn chair was tossed up onto the track of the People Mover, a monorail system. The next train by ran the chair over, causing damage to both train and track. Also downtown, empty boxcars were rolled by the wind along a railroad track and into a building, causing significant structural damage.

Finally, the far northeast part of Wayne County was on the fringe of the damage swath that hit southern Macomb County. Harper Woods and all five of the Grosse Pointes saw tree limbs and power lines come down. At Pier Park in Grosse Pointe Farms, several trees that had survived the 90+ mph winds of July 2, 1997, came crashing down.

Overall, more than a thousand trees and five thousand power lines were downed in southeast Michigan. Over 600,000 businesses and residences lost power at some point. For Detroit Edison, this was the fourth worst weather system of all time regarding power outages. The power was out for over a week in spots. The storms also produced over 4300 cloud-to-ground lightning strikes. Wayne County and parts of Macomb County received both state and federal disaster declarations.

#### **Huron County**

2 E Port Hope to  
2 E Harbor Beach

25

0820EST  
0945EST

0

0

**Waterspout**

#### **Monroe County**

3 SW Stony Pt to  
3 SSW Stony Pt

26

0800EST  
1000EST

0

0

**Waterspout**

Great Lakes water temperatures were warmer than normal during the summer, thanks mainly to unusual warmth during the preceding winter and spring. A cool air mass moved over the lakes late in the month, and winds became light as high pressure settled into the area. The cool air, warm lakes, and light winds allowed the waterspout season to begin a little earlier than usual.

Both the Coast Guard and a trained spotter reported a waterspout between Port Hope and Harbor Beach on the morning of the 25th. The waterspout stayed a few miles offshore.

The next morning, the public observed numerous waterspouts during the morning over western Lake Erie. At least five separate waterspouts were sighted, most staying about three miles offshore.