



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

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

MICHIGAN, East

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

04	1100EST								
05	1800EST			0	52				Excessive Heat

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

Lapeer County

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

Tuscola County

6 SW Caro	17	1400EST			0	0	8K		Thunderstorm Wind (G52)
-----------	----	---------	--	--	---	---	----	--	-------------------------

St. Clair County

Harsens Is	17	1550EST			0	0	14K		Thunderstorm Wind (G55)
------------	----	---------	--	--	---	---	-----	--	-------------------------

A warm and humid airmass covered southeast Michigan, with high temperatures around 90 and dew points around 70. Numerous thunderstorms developed in the unstable atmosphere, beginning around noon EDT. These were 'pulse' type thunderstorms, in that they had a very short life cycle. A few storms, at their most intense, briefly reached severe levels. Several large trees were downed in Lapeer. The same occurred southwest of Caro, and in addition a small shed was blown over. On Harsens Island, falling trees damaged two roofs and two boats.

Monroe County

Maybee to 5 SW Maybee	21	1925EST 1927EST			0	0	5K		Thunderstorm Wind (G52)
--------------------------	----	--------------------	--	--	---	---	----	--	-------------------------

Monroe County

Monroe to 2 S La Salle	21	1930EST 1942EST			0	0	40K		Thunderstorm Wind (G57)
---------------------------	----	--------------------	--	--	---	---	-----	--	-------------------------

A warm and sticky summertime day in southeast Michigan, with dew points well into the 70s. A few thunderstorms developed in the area, most of which were not especially strong. However, one thunderstorm in Monroe County evolved into a supercell, and produced an impressive swath of wind damage. Scores of trees were downed from the Maybee area to south of LaSalle. The most concentrated damage occurred along W Albain Road, just west of Telegraph Road (US-24) - between the city of Monroe and LaSalle. Here, two cars and one home were struck by falling trees, and a metal barn was heavily damaged.

Midland County

Pleasant Vly	23	1210EST			0	0			Hail (0.75)
--------------	----	---------	--	--	---	---	--	--	-------------

Midland County

Midland	23	1240EST			0	0	25K		Thunderstorm Wind (G52)
---------	----	---------	--	--	---	---	-----	--	-------------------------

Saginaw County

Merrill to 2.5 W Swan Creek	23	1323EST 1334EST			0	0	5K		Thunderstorm Wind (G52)
--------------------------------	----	--------------------	--	--	---	---	----	--	-------------------------

Saginaw County

1.5 W Swan Creek to 3 W Bridgeport	23	1334EST 1346EST			0	0	5K		Thunderstorm Wind (G52)
---------------------------------------	----	--------------------	--	--	---	---	----	--	-------------------------



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<u>MICHIGAN, East</u>									
Saginaw County 1.5 SW Bridgeport to Frankenmuth	23	1346EST 1400EST			0	0	5K		Thunderstorm Wind (G52)
Saginaw County Frankenmuth	23	1400EST			0	0	12K		Lightning
A lightning strike took out a transformer, and blew the chimney off of a home.									
Shiawassee County Owosso	23	1400EST			0	0	8K		Thunderstorm Wind (G52)
Tuscola County 4 S Vassar	23	1400EST			0	0	7K		Thunderstorm Wind (G52)
Lapeer County 9 N Lapeer	23	1420EST			0	0	95K		Thunderstorm Wind (G65)
Genesee County 2 E Otisville	23	1425EST			0	0	8K		Thunderstorm Wind (G52)
Genesee County 2 W Fenton	23	1438EST			1	1			Lightning
A thunderstorm quickly rolled into Silver Lake Park near Fenton. Beachgoers at the park quickly gathered up their things and raced to their cars, but the last group off the beach was not quite quick enough. Lightning struck an adult female and an eight year old girl, about five feet away from their car. Rescue workers were briefly able to resuscitate the adult, but she died soon after arriving at a local hospital. The girl was treated for her injuries at the hospital, and was released the following day. F31OU									
Lapeer County Imlay City	23	1444EST			0	0	8K		Thunderstorm Wind (G52)
Washtenaw County Ann Arbor	23	1445EST 1455EST			0	0	35K		Thunderstorm Wind (G52)
Livingston County 7 N Hartland	23	1450EST			0	0	3K		Thunderstorm Wind (G50)
Oakland County 3 S Holly	23	1455EST			0	0	6K		Thunderstorm Wind (G52)
St. Clair County Capac	23	1500EST			0	0	10K		Thunderstorm Wind (G52)
Oakland County White Lake to Milford	23	1508EST 1514EST			0	0	70K		Thunderstorm Wind (G52)
Oakland County 2 SW Clarkston to 1 SW Pontiac	23	1510EST 1524EST			0	0	35K		Thunderstorm Wind (G58)
Oakland County Ortonville	23	1510EST			0	0			Thunderstorm Wind (G57)
Wayne County 4.5 S Plymouth	23	1515EST			0	0	35K		Thunderstorm Wind (G55)
Oakland County Oxford to Lake Orion	23	1520EST			0	0	35K		Thunderstorm Wind (G55)
Oakland County Bloomfield Hills	23	1529EST			0	0	7K		Thunderstorm Wind (G52)
Wayne County Dearborn to Detroit	23	1538EST 1544EST			0	0	22K		Thunderstorm Wind (G61)



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

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

MICHIGAN, East

St. Clair County Port Huron	23	1540EST			0	0	18K		Thunderstorm Wind (G52)
Oakland County Royal Oak	23	1545EST			0	0	10K		Thunderstorm Wind (G52)
St. Clair County Algonac	23	1550EST			0	0	6K		Thunderstorm Wind (G52)
Macomb County St Clair Shrs	23	1610EST			0	0	70K		Thunderstorm Wind (G60)
Lenawee County Rome Center to 1 S Tipton	23	1700EST			0	0	16K		Thunderstorm Wind (G52)
Monroe County Dundee	23	1810EST			0	0	8K		Thunderstorm Wind (G52)

This was a hot and extremely humid day in southeast Michigan. Temperatures approached 90 degrees during the afternoon, with dew points as high as 80. This resulted in a very unstable airmass across the area. A trough of low pressure moved east into the western Great Lakes by late morning, and thunderstorms ignited along the trough. These storms moved southeast into Michigan, and a large number of them became severe.

The first severe report was dime sized hail in southwest Midland County. That would be the only severe hail event; the rest of the day was filled with damaging wind gusts. A 66 mph gust was measured at the National Weather Service office in White Lake, while a spotter estimated 70 mph winds near downtown Detroit.

Most the damage caused by the wind involved downed trees and power lines. Trees were downed onto homes in the city of Midland, White Lake, Lake Orion, Pontiac, and Deerfield Township (Lapeer County). Deerfield Township was especially hard hit, as some roads were closed for several days due to tree debris. A number of tents at the Ann Arbor Art Fair were demolished. Vehicles were destroyed in White Lake and Port Huron when trees fell on them. A large awning was blown off the roof of a Canton strip mall, and the roof of a hangar at the Oakland County International Airport in Waterford was displaced by the wind. Panelling was torn off the press box at Tiger Stadium in Detroit. In St Clair Shores, a garage collapsed, moored sailboats were tipped over, and part of an aluminum roof was peeled off a warehouse.

Locally heavy rainfall occurred with some of the thunderstorms, especially in metro Detroit. Freeway underpasses were flooded in Detroit, as were fifty basements in Dearborn. The thunderstorm hazard resulted in over a hundred flights at Detroit Metropolitan Airport being either delayed or cancelled. The Reform Party national convention in Dearborn was seriously disrupted, as several scheduled speakers - including Minnesota Governor Jesse Ventura - could not fly into Detroit.

Bay County Kawkawlin	24	1355EST 1400EST			0	0			Hail (1.75)
Bay County Bay City	24	1419EST			0	2			Hail (1.75)
Bay County Bay City	24	1419EST			0	0	90K		Thunderstorm Wind (G55)
Tuscola County 5 E Reese	24	1420EST			0	0			Hail (0.75)



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<u>MICHIGAN, East</u>									
Saginaw County 5 NE Saginaw	24	1425EST			0	0			Hail (1.75)
Saginaw County Bridgeport to Frankenmuth	24	1455EST 1457EST			0	0	8K		Thunderstorm Wind (G52)
Lapeer County 9 N Lapeer	24	1520EST			0	0			Hail (1.00)
Lapeer County 9 N Lapeer	24	1520EST			0	0	10K		Thunderstorm Wind (G52)
Saginaw County Chesaning	24	1525EST			0	0	3K		Thunderstorm Wind (G50)
Genesee County Flushing to Flint	24	1533EST 1537EST			0	0			Hail (1.00)
Genesee County 3.5 S Flint	24	1540EST			0	0			Thunderstorm Wind (G52)
Genesee County Grand Blanc to 3.5 SW Davison	24	1543EST 1548EST			0	0			Hail (1.00)
Shiawassee County Durand	24	1545EST			0	0			Hail (0.75)
St. Clair County 6 NW Marine City	24	1545EST			0	0	11K		Thunderstorm Wind (G52)
Genesee County Fenton	24	1557EST			0	0	3K		Thunderstorm Wind (G52)
Livingston County 7 NE Howell	24	1600EST			0	0	5K		Thunderstorm Wind (G50)
Oakland County 4 SW Ortonville	24	1602EST			0	0			Hail (0.75)
Macomb County Romeo	24	1605EST			0	0	7K		Thunderstorm Wind (G52)
Oakland County Clarkston	24	1608EST			0	0	10K		Thunderstorm Wind (G52)
Oakland County Rochester Hills	24	1610EST			0	0	8K		Thunderstorm Wind (G52)
Oakland County Royal Oak	24	1620EST			0	0	9K		Thunderstorm Wind (G50)
Oakland County Southfield	24	1620EST			0	0			Hail (1.75)
Macomb County St Clair Shrs	24	1625EST			0	0			Hail (0.75)

An upper level disturbance crossed the Great Lakes region from northwest to southeast, igniting thunderstorms along its path. The thunderstorms evolved into a squall line as they moved across southeast Michigan. Instability was high on this warm and humid summer day, allowing many of the storms to become severe.

Unlike the previous day, severe reports were almost evenly split between large hail and damaging wind. Most of the damaging wind gusts took down trees, tree limbs, utility poles, and power lines. However, the marine community felt the brunt of the severe thunderstorm winds in two separate incidents. A large number of sailboats were returning to the Bay City Yacht Club after a competition on Saginaw Bay, when the line of storms struck. As many as a dozen boats were capsized, with two sailboats demasted. On Lake St Clair, wind gusts capsized one sailboat, and caused a cabin cruiser to run aground.



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

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

MICHIGAN, East

The largest hail of the day, golfball sized, was reported in Kawkawlin, Bay City, Zilwaukee, and Southfield. In Bay City, the large hail fell on the exposed mariners (see above), causing welts and bruises to at least two.

Washtenaw County Manchester	24	2235EST			0	0	2K		Thunderstorm Wind (G50)
Lenawee County 5 N Adrian to Adrian	24	2256EST 2301EST			0	0	6K		Thunderstorm Wind (G52)
Lenawee County Devils Lake	24	2310EST			0	0	8K		Thunderstorm Wind (G52)
Lenawee County Fairfield	24	2310EST			0	0	7K		Thunderstorm Wind (G52)
Lenawee County 3 S Weston to 2 SW Ogden Center	24	2320EST			0	0	16K		Thunderstorm Wind (G55)

Far southern Michigan avoided the line of severe thunderstorms on the afternoon of the 24th. However, additional thunderstorms developed near Jackson late in the evening. One of these evolved into a supercell as it moved southeast, producing a swath of wind damage from Manchester to the Ohio border, south of Adrian. A number of trees and power lines were downed.

Sanilac County 4 E New Greenleaf to 3 NW Sandusky	28	1740EST 1825EST			0	0	45K		Lightning
Lightning-induced fires caused two barns to burn to the ground									
Huron County 3 W Bad Axe to Bad Axe	28	1800EST 1810EST			0	0	10K		Thunderstorm Wind (G52)
Sanilac County Elmer to Argyle	28	1800EST 1805EST			0	0			Hail (2.75)
Midland County 4 W Midland to Midland	28	1835EST			0	0			Hail (1.75)
Tuscola County Cass City	28	1835EST			0	0	2K		Thunderstorm Wind (G50)
Midland County Midland	28	1840EST			0	0			Hail (1.75)
Sanilac County Peck	28	1842EST			0	0	8K	4K	Thunderstorm Wind (G55)
Sanilac County Amadore	28	1900EST			0	0	26K		Thunderstorm Wind (G52)
St. Clair County 1.3 WSW Jeddo to 1.1 WSW Jeddo	28	1905EST	0.3	100	0	0	60K		Tornado (F1)
St. Clair County Ruby to 2 S Kimball	28	1909EST 1924EST			0	0	22K		Thunderstorm Wind (G52)
St. Clair County Kimball	28	1915EST			0	0			Hail (1.00)
Lenawee County Hudson	28	1917EST			0	0			Hail (1.00)



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

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

MICHIGAN, East

St. Clair County Port Huron	28	1926EST			0	0	8K		Thunderstorm Wind (G52)
Lenawee County Adrian	28	1930EST			0	0			Hail (1.75)
Saginaw County Shields	28	2000EST			0	0	5K		Thunderstorm Wind (G50)
Monroe County Petersburg	28	2007EST			0	0			Hail (0.75)
Monroe County Petersburg	28	2007EST			0	0	2K		Thunderstorm Wind (G50)
Monroe County 1.8 N La Salle	28	2021EST			0	0	20K		Thunderstorm Wind (G55)
Monroe County Monroe	28	2024EST			0	0			Hail (0.75)

A weak cold front moved into a warm and humid airmass over southeast Michigan during the afternoon. A passing upper level disturbance added fuel to the fire. A number of severe thunderstorms developed, with the strongest and most concentrated area of activity in the Saginaw Bay and Thumb regions. The counties along the Ohio border also saw severe weather

The first severe thunderstorm of the day was also the most potent. It became a large supercell (a rotating thunderstorm) as it moved southeast across the Thumb. Baseball sized hail was reported in Elmer - the largest hail report in all of southeast Michigan all summer. Sporadic wind damage from this thunderstorm began near Bad Axe, and continued all the way to Port Huron, where the storm moved into Canada. Most of wind damage involved trees and power lines going down. The community of Peck had a picnic table tossed by the wind, and damage to nearby farm fields. In Amador, homes under construction were damaged. A tree was downed onto a home in Ruby, and in nearby Wadhams, a spotter estimated 60 mph winds with the storm.

This supercell produced a brief tornado touchdown near Jeddo in northeast St Clair County. A home and garage suffered substantial damage to windows, roofing, and siding. A light trailer was flipped over, and some parked vehicles in the area were moved. Most impressively, a large aluminum rowboat - with attached outboard motor - was blown 20 feet up into a tree. The damage was consistent with winds in the 80 to 90 mph range, making this an F1 tornado.

Over the rest of southeast Michigan, severe thunderstorms produced hail up to golfball size, and wind gusts that toppled trees and power lines. The most substantial damage occurred just southwest of the city of Monroe, where roofing was ripped off of a shed, and a barn was deroofed. This occurred along W Albain Road, exactly where damage occurred with the severe thunderstorms of July 21st.

St. Clair County Yale to 4 N Avoca	31	1234EST 1237EST			0	0	8K		Thunderstorm Wind (G72)
Macomb County Memphis	31	1242EST			0	0	20K		Thunderstorm Wind (G51)
Lapeer County Metamora	31	1245EST			0	0	7K		Thunderstorm Wind (G51)



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<u>MICHIGAN, East</u>									
Genesee County Goodrich	31	1256EST			0	0			Hail (1.75)
Genesee County Goodrich to 2 SE Goodrich	31	1256EST 1258EST			0	0	140K		Thunderstorm Wind (G65)
Livingston County Gregory	31	1335EST			0	0	2K		Thunderstorm Wind (G50)
Livingston County Brighton	31	1350EST			0	0	8K		Thunderstorm Wind (G61)
St. Clair County 5 SW St Clair to St Clair	31	1355EST 1400EST			0	0	8K		Thunderstorm Wind (G52)
Washtenaw County 1 W Saline	31	1358EST			0	0			Thunderstorm Wind (G52)
Lenawee County Addison	31	1400EST			0	0	8K		Thunderstorm Wind (G54)
St. Clair County 6 S Emmett	31	1400EST			0	0	2K		Thunderstorm Wind (G50)
Wayne County Redford	31	1413EST			0	0	14K		Thunderstorm Wind (G61)
Oakland County Pontiac to Rochester Hills	31	1415EST			0	0	45K		Thunderstorm Wind (G55)
Macomb County Utica to 7 ENE Utica	31	1422EST 1430EST			0	0	15K		Thunderstorm Wind (G52)
St. Clair County 6 S Emmett	31	1430EST			0	0	8K		Thunderstorm Wind (G52)
Wayne County Allen Park	31	1430EST			0	0			Thunderstorm Wind (G52)
Wayne County Lincoln Park	31	1432EST			0	1			Lightning As a woman walked by a window in her home, lightning apparently struck just outside. The woman was briefly knocked unconscious.
Oakland County Pontiac to Rochester Hills	31	1433EST 1445EST			0	0	16K		Thunderstorm Wind (G52)
Wayne County Livonia	31	1440EST			0	0	12K		Thunderstorm Wind (G52)
Lenawee County 3 S Cement City to 2 N Onsted	31	1445EST			0	0	15K		Thunderstorm Wind (G52)
Lenawee County Clinton	31	1445EST			0	0	6K		Thunderstorm Wind (G52)
Macomb County 4 E Mt Clemens	31	1445EST			0	0	18K		Thunderstorm Wind (G52)
Monroe County Temperance	31	1454EST			0	0	7K		Thunderstorm Wind (G52)
Monroe County 3 NE Maybee	31	1458EST			0	0	5K		Thunderstorm Wind (G52)



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

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

MICHIGAN, East

Oakland County

1 W Bloomfield Hills to Royal Oak	31	1458EST 1508EST			0	0	30K		Thunderstorm Wind (G52)
--------------------------------------	----	--------------------	--	--	---	---	-----	--	-------------------------

After a long spell of hot and humid weather, a potent cold front finally moved through southeast Michigan. However, temperatures were able to climb well into the 90s before the front arrived, with dew points in the middle to upper 70s. Numerous severe thunderstorms developed along the front as it moved through, with most of the severe weather located south of Interstate 69

Only one storm produced severe criteria hail. This occurred in Goodrich, where golfball sized hail fell. Otherwise, damaging wind gusts were the severe weather threat. Spotters reported 83 mph gusts just north of Avoca, 70 mph in Brighton and Redford, 60 mph in Saline, Allen Park, Macomb Township, and Rochester Hills, and 58 mph near Metamora.

As is usually the case, the main result of these severe gusts was to down trees, tree limbs, and power lines. The hardest hit community was Goodrich, where a garage was moved well off its foundation, a church steeple and a backyard pool were destroyed, and flying debris damaged siding. In Pontiac, a toppled tree punched a hole in a home's roof, utility poles were snapped, and a large sign was tossed through the windows of an indoor flea market. Siding was torn off a building in nearby Auburn Hills. Cars were damaged by fallen trees in Royal Oak and Harrison Township (Macomb County).

The number of severe thunderstorms from the 23rd through the 31st was unusually high. Insurance companies stated that there were more damage claims from these late July storms than for any other single weather event since 1983. State Farm Insurance alone reported 7500 damage claims in the entire state of Michigan, worth about \$10 million. Allstate reported about 1600 claims, and AAA of Michigan 2000 claims, with no dollar figures available.

Area power companies came under some "heat" during this time period. Severe weather, combined with high electric demand due to hot and humid weather, produced frequent and lengthy power outages in some locations. In particular, Detroit Edison received quite a bit of negative press, with over 400,000 customers losing power at some point during the last 10 days of July