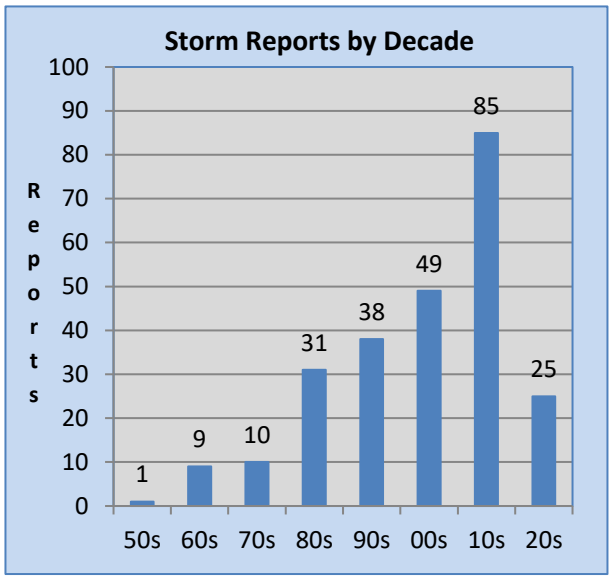
Manitowoc County Severe Weather Facts (1950-2023)

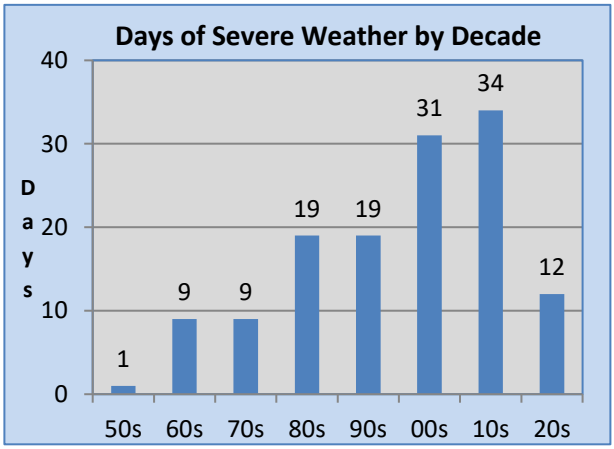
Updated: 01/01/24: Next Update: January 2025

Storm Reports by Decade

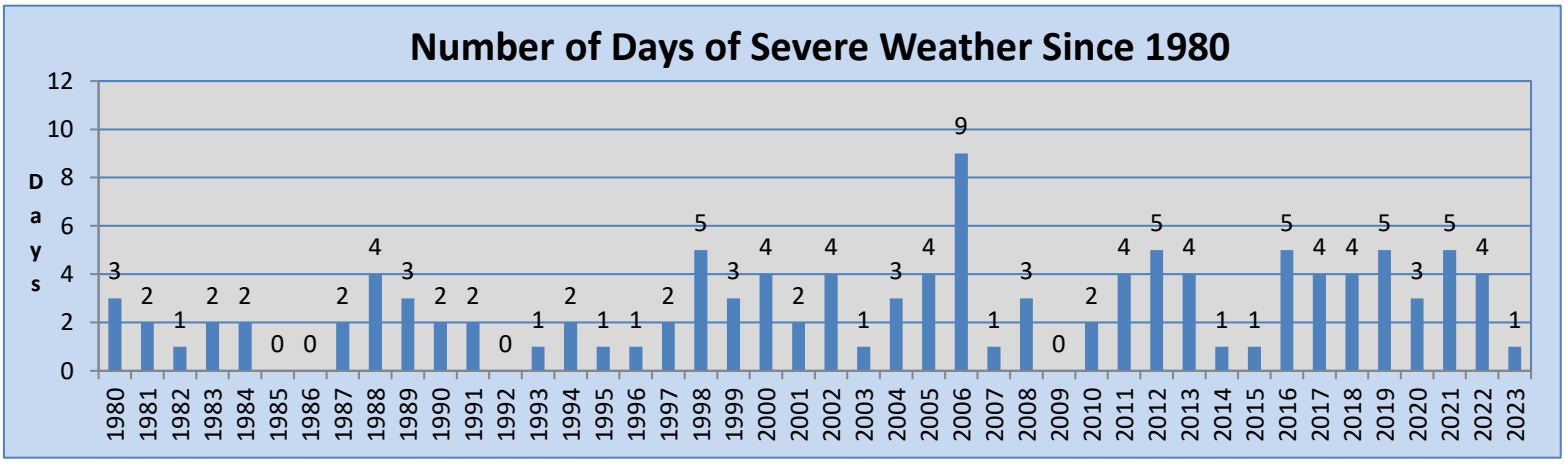


Since 1950 there have been 248 reports of large hail, damaging winds and tornadoes across Manitowoc County (see graph to the left). The population boom of the 1980s and 1990s combined with the SKYWARN program led to an increase in the number of reports of severe weather during both decades. The number of reports increased 82% from the 2014-2023 period compared to the 1990s, one can't say for sure there has been an increase in severe weather across northeast Wisconsin. One possible reason for the apparent increase in reports is that in some instances, multiple reports were received from a single location for the same storm due to more spotters today. Another reason for the increase in storm reports has been the focus by the National Weather Service (NWS) to improve warning verification. 2011 was the most active year with eighteen reports followed by fifteen reports in 2006, fourteen reports in 2017, twelve reports in 2012, eleven reports in 1998 and ten reports in 2019 and 2022. Since 1980, the following years did not have a report of severe weather: 1985, 1986, 1992 and 2009. In 2022, there were 2 reports of large hail and 3 reports of strong winds or wind damage.

Severe Weather Days by Decade



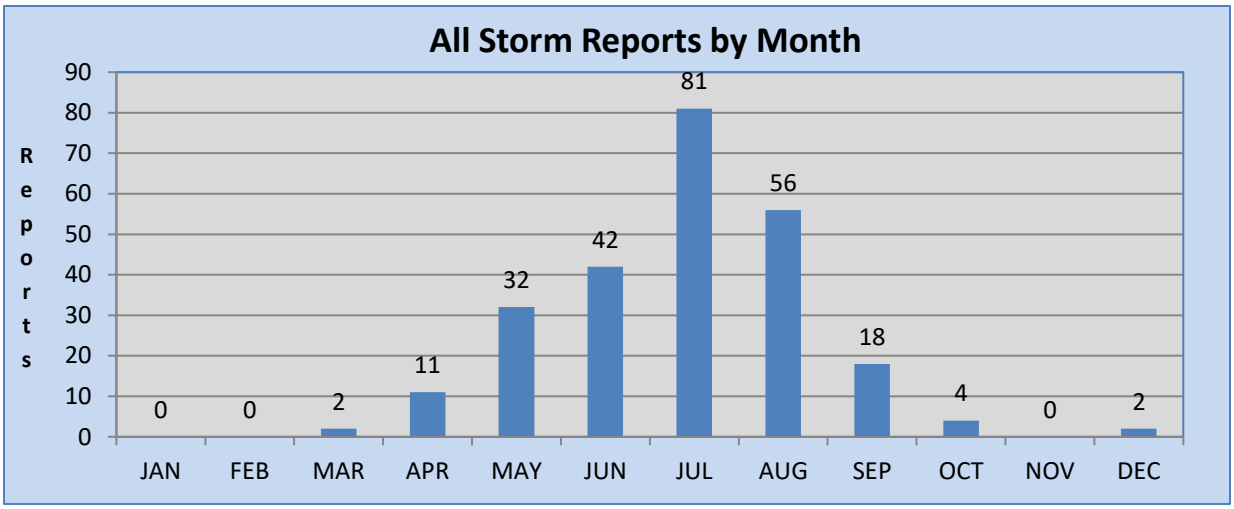
In order to address the impact of multiple reports for the same storm, the data was examined by the number of days of weather. Since the reports were sporadic during the 1950s through the 1970s, only data from 1980 to present was used. There has been an increase of 68% in the number of days of severe weather from the 2014 to 2023 period compared to the 1990s (see graph to the left). This trend can be attributed to the increase in population, technology advances in reporting severe weather, and greater severe weather awareness by the public. Since 2010, Manitowoc County averages 3.4 days of severe weather per year. The long-term average from 1980-2023 is 2.6 days. The most active year was 2006 with nine days of severe weather; followed by five days in 1998, 2012, 2016 and 2021, five days in 2019 and four days in 1988, 2000, 2002, 2005, 2011, 2017, 2018 and 2022. In 2023, severe weather (2 large hail and 3 strong winds/wind damage) was reported on August 3rd.

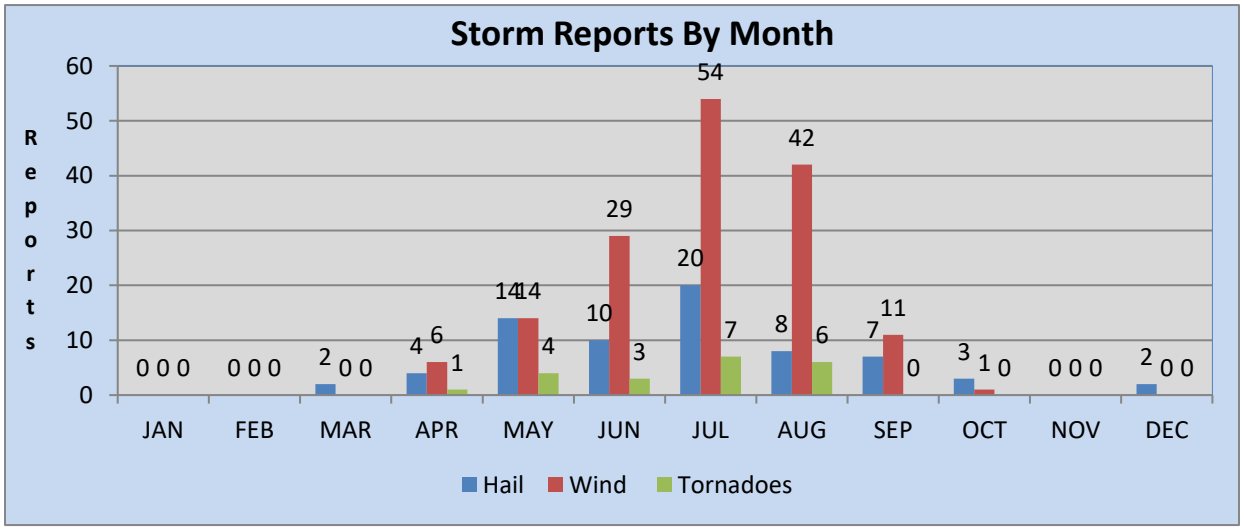


Manitowoc County Severe Weather Facts (1950-2023)

Storm Reports by Month

Severe weather has been documented in Manitowoc County from March through October with a rare out of season report in December. The earliest documented report of large hail during the year occurred on March 29, 1998 when three quarter inch hail was reported at Cooperstown. The severe weather season begins in earnest in May, which is about a month later than central Wisconsin. In most instances the colder waters of Lake Michigan produces a stable layer, which weaken storms as they approach the county during the early spring. The heart of the convective season is June through August, which accounts for 72% of all severe weather reports. July is the peak month for severe weather and then quickly wanes by September. The warm season months from May through September accounted for 92% of all severe weather reports during the year. Isolated reports have been noted in September and October. The latest and very rare report during the year occurred on December 20, 1967. One inch hail was reported four miles west of St. Nazianz on this date.

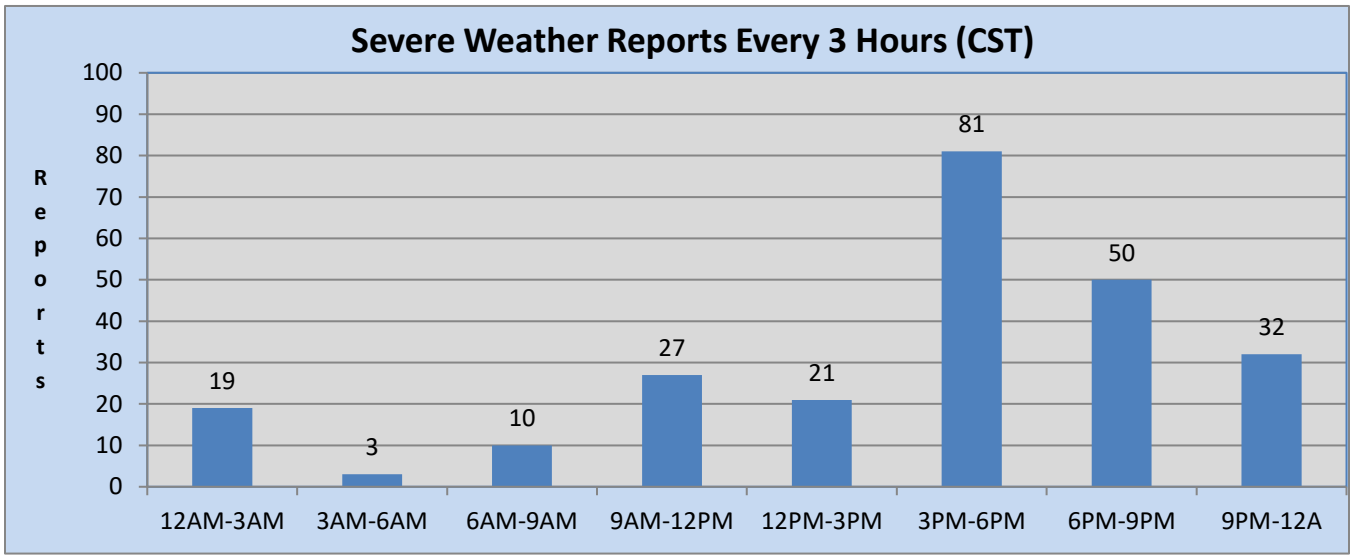


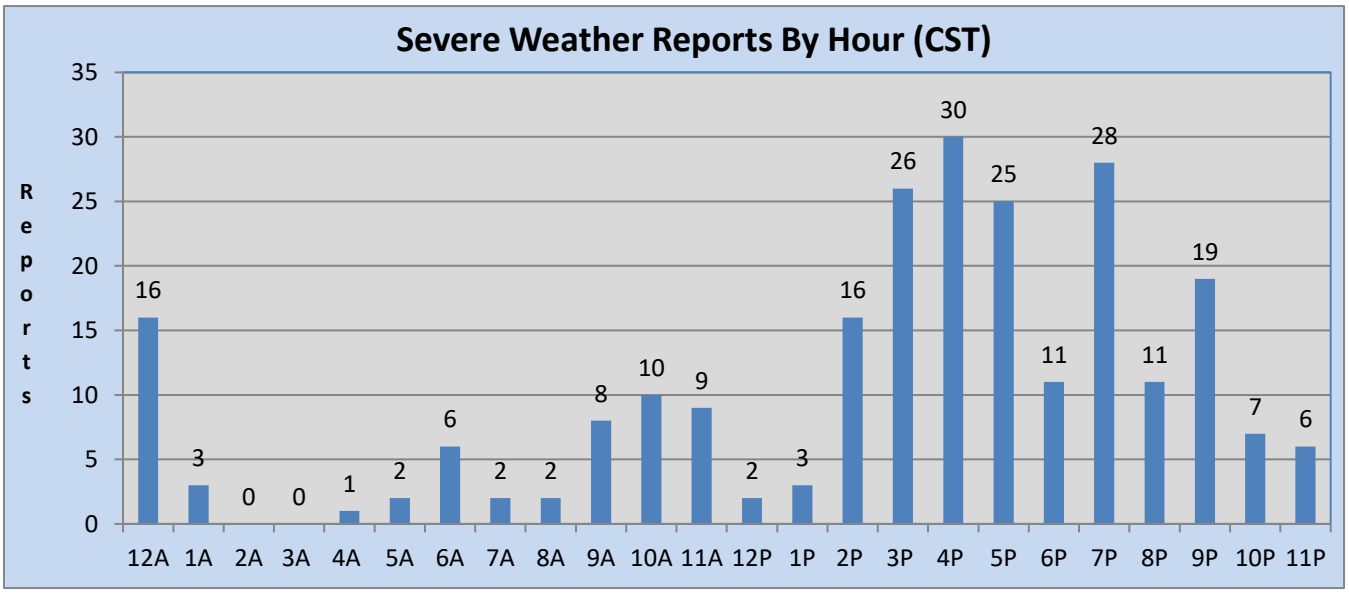


Manitowoc County Severe Weather Facts (1950-2023)

Storm Reports by Time of Day

No matter the season, the afternoon and early evening hours are the peak time for severe weather across Manitowoc County. Overall, 63 percent of all severe weather reports occur between 1 PM and 9 PM CST. In Manitowoc County, severe weather reports increased sharply after 2 PM CST with a peak between 3 PM and 6 PM CST and another peak between 7 PM to 8 PM CST. The peak in the storm activity corresponds to peak afternoon heating when the atmosphere is most unstable. During May through August, there was another minor peak in activity around midnight. In these events, severe thunderstorms develop across Minnesota and western Wisconsin move eastward into the county around midnight.

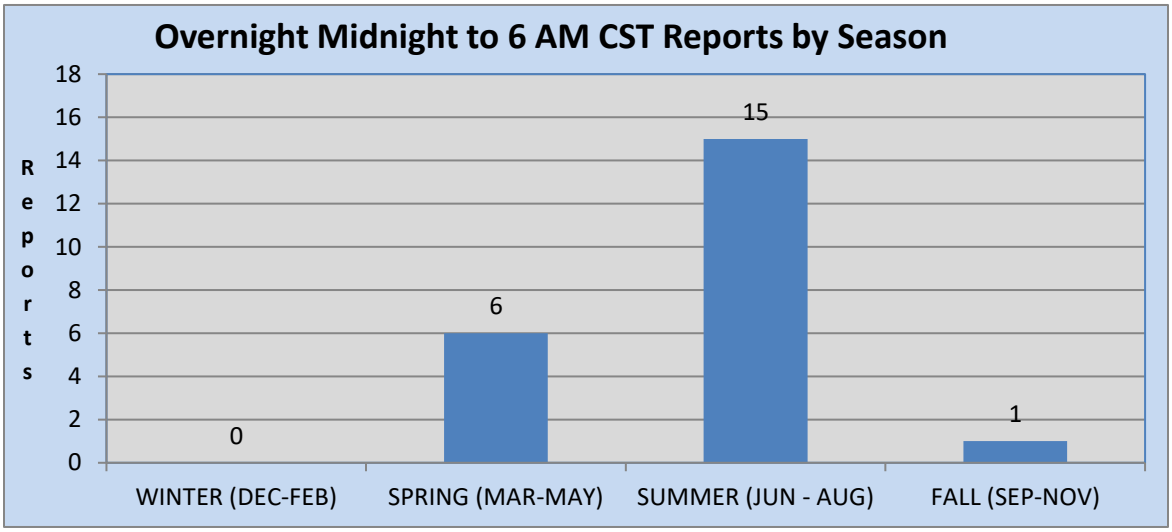




Manitowoc County Severe Weather Facts (1950-2023)

Severe Weather Reports Midnight to 6 AM CST

Overnight severe weather reports are most prominent during the summer (June through August) due to nocturnal convection along warm fronts, or from complexes of storms that develop across the Dakotas and Minnesota and roll through northeast Wisconsin during the early morning hours. The summer months of June through August account for 68% of all overnight reports of severe weather during the year.



Manitowoc County Severe Weather Facts (1950-2023)

Manitowoc County Tornadoes

Since record keeping began in 1950, there have been 21 documented tornadoes in the county. Only one tornado has been rated F/EF3 or greater. A F4 tornado touched down three miles northwest of Maribel and moved to a half mile west of Cooperstown on July 5, 1994. The most active years were 1967, 1980, 1994 and again in 2004 with two tornadoes. A tornado was reported in the county in three consecutive years from 1978 to 1980 and again from 1987 to 1989. Since 1950, tornadoes have touched down in seventeen different years. A tornado strike in Manitowoc County occurs on average nearly every three years.

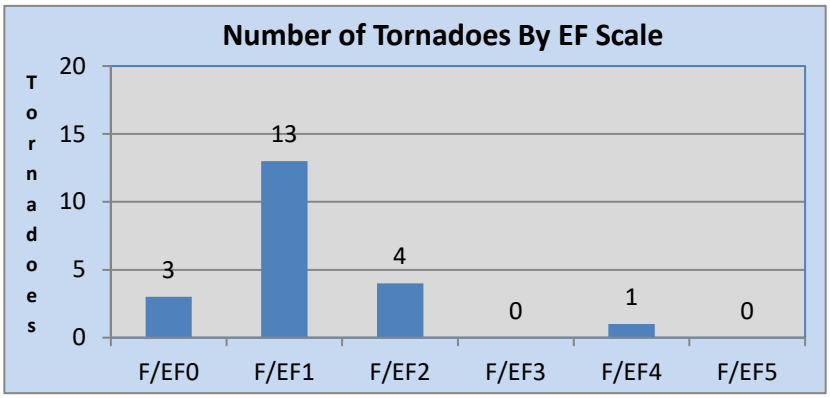
Event		Date			Time		F/EF
#		Month	Day	Year	(CST)	Start / End Location	Rank
1		7	11	1957	14:00	Whitelaw	1
2		4	24	1960	16:00	7 SW Valders	1
3		6	30	1967	23:49-23:59	Chilton - 7 SW Valders	2
4		7	1	1967	00:45	3 E Kiel	1
5		8	21	1972	15:10	Goodwin - Two Rivers	1
6		5	9	1973	15:50	2 N Reedsville	1
7		6	7	1978	15:15	2 NW Francis Creek	2
8		8	4	1979	10:00	Manitowoc	1
9		6	7	1980	00:20	Valders	2
10		7	5	1980	00:30	Valders	1
11		7	12	1987	11:27-11:30	1 S Francis Creek	1
12		8	4	1988	14:35	1 E Reedsville - 2 N Cato	1
13		5	24	1989	21:15	1 E Cooperstown	0
14		7	5	1994	15:43-15:55	3 NW Maribel - 0.5 W Cooperstown	4
15		7	5	1994	15:53	2 SW Cooperstown	2
16		5	12	2000	10:43	5 WNW St. Nazianz	0
17		5	23	2004	17:47	2.7 E Reedsville	0
18		7	13	2004	14:40-14:52	1.4 NW Clark Mills - 2.8 SE Clark Mills	1
19		8	18	2005	20:35-20:39	6.5 SSW - 5.7 S Manitowoc	1
20		8	6-7	2013	23:40-00:10	2.7 ENE Mackville - 1.1 NNE Larabee	1
21		8	28	2018	15:34-15:35	2.2 NNW - 2.1 N Kiel	1

Additional tornado data can be found on the NWS Green Bay webpage at: **http://www.weather.gov/grb/severeclimate**

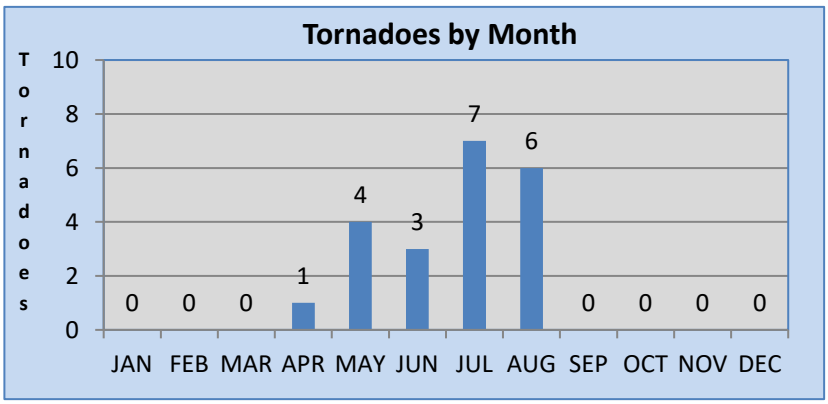
F/EF2 or Greater Tornadoes in Manitowoc County

Event		Date			Time		F/EF
#		Month	Day	Year	(CST)	Start / End Location	Rank
1		6	30	1967	23:49-23:59	Chilton - 7 SW Valders	2
2		6	7	1978	15:15	2 NW Francis Creek	2
3		6	7	1980	00:20	Valders	2
4		7	5	1994	15:43-15:55	3 NW Maribel - 0.5 W Cooperstown	4
5		7	5	1994	15:53	2 SW Cooperstown	2

Manitowoc County Severe Weather Facts (1950-2023)



The strongest tornado to hit Manitowoc County occurred on July 5, 1994, when a F4 tornado touched down near Maribel and moved to near Cooperstown. Four tornadoes (19%) were rated F/EF2. Thirteen of the 21 (62%) were rated F/EF1 while another 3 tornadoes were rated F/EF0.

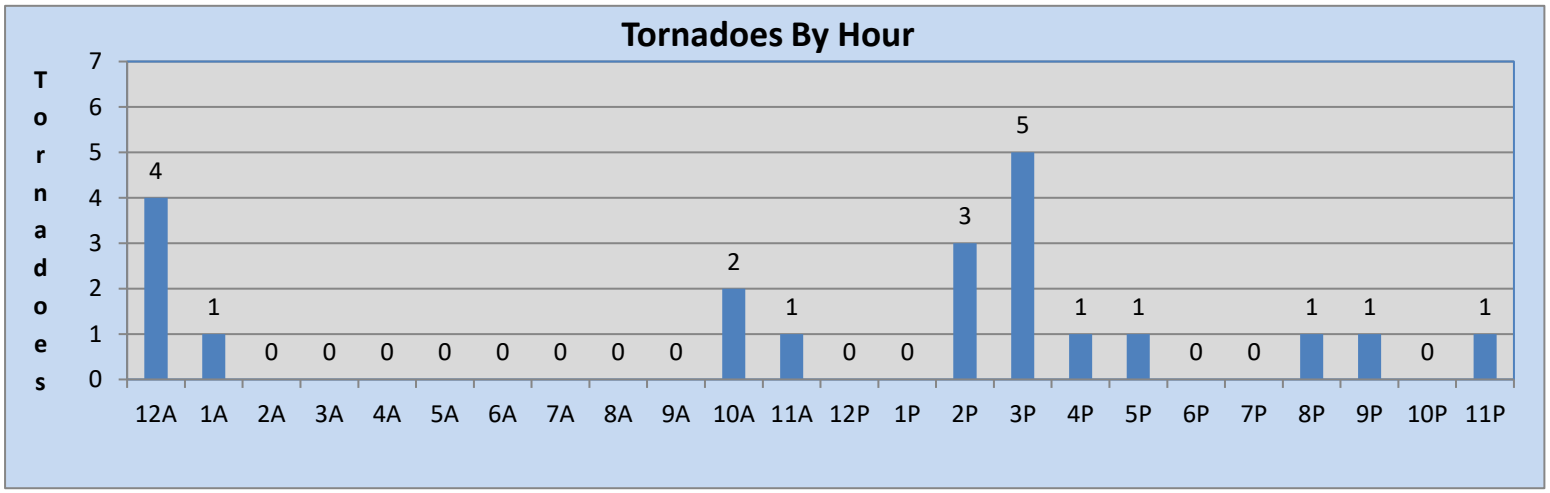


Tornadoes by Month

Documented tornadoes have occurred from April through August. The earliest documented tornado during the year occurred on April 24, 1960, when a F1 tornado touched down seven miles southwest of Valders. The tornado season peaks in July and August, then quickly wanes by September. The warm season months of May through August account for 95% of all tornadoes during the year. The latest documented tornado on record during the year occurred on August 21, 1972 when a F1 tornado touched down three miles east of Kiel.

Tornadoes by Hour

In Manitowoc County, twelve (57%) documented tornadoes have occurred between 2 PM and 9 PM CST. There have been no documented tornadoes between the 2 AM and 10 AM CST. It is interesting to note there was another peak between 11 PM and 1 AM CST. Checking the records, the four tornadoes between midnight and 1 AM CST occurred in four different years.



Manitowoc County Severe Weather Facts (1950-2023)

Predominant Storm Reports – Wind and Hail Only

During March, October and December, large hail is the dominant weather event that is reported to the National Weather Service. During the spring and fall into early winter, the atmosphere is cold aloft to support large hail. Nearly eight out of ten reports during the summer months of June, July and August are strong wind gusts/wind damage compared to large hail. For the year, nearly seven out of ten reports are high winds/wind damage compared to large hail reports.

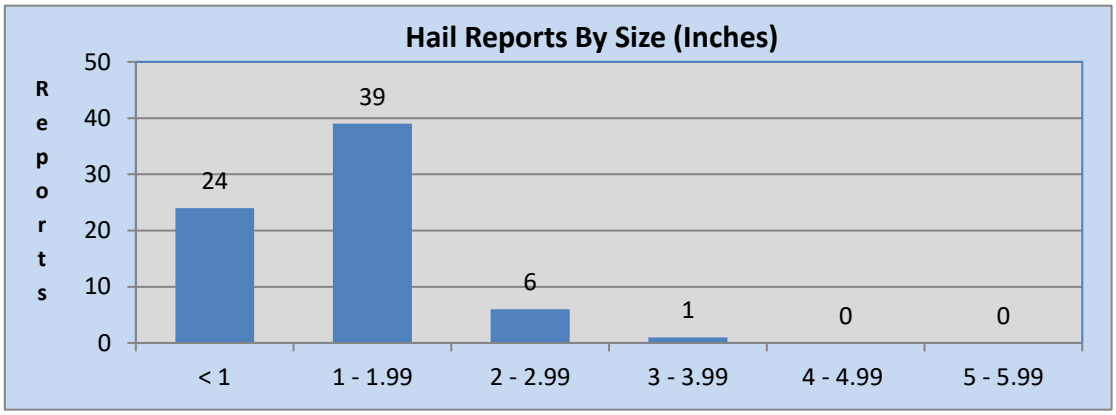
Month	% Hail Reports	% Wind or Wind Damage	Month	% Hail Reports	% Wind or Wind Damage
Jan	0.0	0.0	Jul	27.0	73.0
Feb	0.0	0.0	Aug	16.0	84.0
Mar	100.0	0.0	Sep	38.9	61.1
Apr	40.0	60.0	Oct	75.0	25.0
May	50.0	50.0	Nov	0.0	0.0
Jun	25.6	74.4	Dec	100.0	0.0
			Year	30.8	69.2

Large Hail in Manitowoc County

There have only been seven documented reports of hail two inches or greater in diameter across the county. The largest hail stone 3 inches in diameter was recorded from Branch to Manitowoc on July 1, 2006. The last documented hailstone of two inches or greater occurred a half mile east of downtown Manitowoc on June 27, 2013. Overall, hail ranging in size from three quarters to one inch accounted for 57% of the documented large hail reports. Large hail reports of two inches or greater accounted for 10% of the total hail reports.

Hail over 2 inches

Event #		Date Month	Day	Year	Time (CST)	Start / End Location	Hail (INCHES)
1		7	1	2006	19:29	Branch to Manitowoc	3.00
2T		6	27	2013	17:03-17:10	0.5 E Manitowoc	2.50
2T		7	13	2004	14:30	Reedsville - 1 N Whitelaw	2.50
2T		5	12	2000	10:47	3 W St. Nazianz - 1 SW Manitowoc	2.50
5T		6	27	2013	17:08	1 SE Manitowoc	2.00
6		7	30	2012	19:00-19:03	0.7 S Maribel	2.00
7		7	17	2006	16:49	Manitowoc	2.00



Manitowoc County Severe Weather Facts (1950-2023)

Manitowoc County Summary

In Manitowoc County, the severe weather season begins in earnest in May, peaks in June and July and then wanes quickly by September. Severe weather usually occurs in the afternoon and early evening hours, with a secondary peak around midnight during the summer months. If you do experience severe weather, you are likely to see large hail early in the spring or late fall. Damaging wind or large hail will be the dominant severe weather report during the remainder of the convective season. In the NWS Green Bay County Warning Area which includes 22 counties from central to northeast Wisconsin, Manitowoc County ranks tied 13th in the total number of storm reports and 13th in the number of tornado reports since 1950.

One of the most severe storms to hit Manitowoc County (pictures below of homes damaged in St. Nazianz) occurred during the late morning of May 12, 2000 when a single "high-precipitation" supercell thunderstorm developed in west-central Wisconsin, and moved east across the Waushara, Winnebago, Calumet and Manitowoc Counties. Hail up to the size of baseballs, driven by winds in excess of 60 mph, produced incredible damage in Waushara, Winnebago, Calumet, and Manitowoc counties. Chilton and St. Nazianz were particularly hard-hit by very large hail and hurricane force wind gusts well over 75 mph. Total damage from the storm in Wisconsin was nearly $122 million.

Manitowoc County Severe Weather Facts (1950-2023)

Green Bay Forecast Area Severe Weather Climatology Summary

Across the Green Bay forecast area which covers 22 counties in north-central and northeast Wisconsin, severe weather has been documented in every month except February. This includes a rare event on January 24, 1967, in which a line of thunderstorms produced damaging winds across Brown, Winnebago, and Outagamie counties during the early evening hours. Another rare late season thunderstorm produced one inch hail in Florence County on December 5, 2001, while one inch hail was reported four miles west of St. Nazianz in Manitowoc County on December 20, 1967.

Tornadoes have occurred from March through December, with an extremely rare tornado outbreak occurring on December 1, 1970. On this date four tornadoes were reported across central and northeast Wisconsin during the morning. A strong area of low pressure brought unseasonably mild temperatures and severe thunderstorms to portions of central and northeast Wisconsin as a cold front swept across the state. The first tornado was reported twelve miles southeast of Marshfield in Wood County around 7 AM CST while another tornado was reported in the town of Hull in Portage County around 9 AM CST. Later that morning, a F2 tornado was reported in Waupaca and Shawano counties, from four miles southwest of Iola to near Marion and Pella. The last and strongest tornado occurred around 9:45 AM CST. The F3 tornado travelled from Medina in southwest Outagamie County to far southeast Shawano County, destroying about 20 barns and five homes.

Here are the strongest documented tornadoes in the Green Bay forecast area which covers 22 counties in central, north-central and northeast Wisconsin.

F/EF4 Tornadoes

Event	Date			Time		Tor in GRB Service Area
#	Month	Day	Year	(CST)	Start / End Location	County or Counties
1	6	25	1950	21:00	1 W Woodboro - 5 NE Rhinelander	Oneida
2	9	26	1951	15:45-16:08	9 SSW Amherst - 2 SW Bear Creek	Portage-Waupaca
3	4	3	1956	13:45-13:53	Berlin - 2 W Omro	Waushara-Winnebago
4	8	19	1968	16:10	3 SW Pound - Marinette	Marinette
5	4	21	1974	14:40-15:08	5 S Ripon - Oshkosh	Winnebago
6	4	27	1984	15:20-15:40	1 NE Winneconne - Freedom	Winnebago-Outagamie
7	7	5	1994	15:43-15:55	2.5 NW Maribel - 0.5 W Cooperstown	Manitowoc

Manitowoc County Severe Weather Facts (1950-2023)

Green Bay Forecast Area Severe Weather Climatology Summary

The state record for the largest documented hail stone in Wisconsin occurred in Wausau on May 22, 1921. The hailstone measured 5.7 inches in diameter. More recently, a hailstone of 5.5 inches in diameter was reported in Port Edwards in southeast Wood County on June 7, 2007. In 2021, there were three reports of hail four inches in diameter or greater across northeast Wisconsin.

Hail	Month	Date	Year	Time (CST)	Start / End Location	County
5.70	5	22	1921	??	Wausau	Marathon
5.50	6	7	2007	15:23	Port Edwards - Wisconsin Rapids	Wood
4.50	9	7	2021	07:47-07:48	2 W Apple Creek	Outagamie
4.50	7	16	1997	14:15	8 NE Merrill	Lincoln
4.25	5	22	2011	15:05	0.8 NW Winchester	Winnebago
4.25	5	22	2011	14:35	0.5 E Redgranite	Waushara
4.10	9	7	2021	07:45-07:46	3 NE Greenville	Outagamie
4.00	9	7	2021	08:13-08:14	2 E Apple Creek	Outagamie
4.00	8	2	2015	13:32	2.8 S Brookside	Oconto
4.00	8	2	2015	13:24	0.5 E Abrams	Oconto
4.00	4	25	2008	17:50	0.8 SW Kings	Lincoln
4.00	7	1	2006	14:31	1 N Hayes - Suring	Oconto
4.00	3	29	1998	12:25	St. John	Calumet
3.75	9	7	2021	07:47-07:48	1 NW Little Chute	Outagamie
3.50	6	8	2000	22:30	10 W Middle Inlet	Marinette
3.25	7	1	2006	15:05	Oconto - 6 SE Oconto Falls	Oconto
3.00	10	24	2023	08:50-08:51	Nasonville	Wood
3.00	8	2	2015	14:06	Rudolph	Wood
3.00	5	22	2011	17:35	Plover	Portage
3.00	6	7	2007	15:50	5 W Langlade	Langlade
3.00	7	1	2006	19:29	Branch - Manitowoc	Manitowoc
3.00	4	18	2002	15:30	7 WSW Bloomville - 7 NW Bradley	Lincoln
3.00	8	9	2001	12:50	1S Sturgeon Bay	Door
3.00	6	5	1999	18:24	3 S - 8 SE Eagle River	Vilas
3.00	7	27	1989	10:50	1 N Oshkosh	Winnebago
3.00	8	19	1968	16:15	2 E Harmony	Marinette
3.00	7	19	1963	15:00	4 S Rhinelander	Oneida
3.00	7	1	1956	11:00	5 E Green Bay	Brown