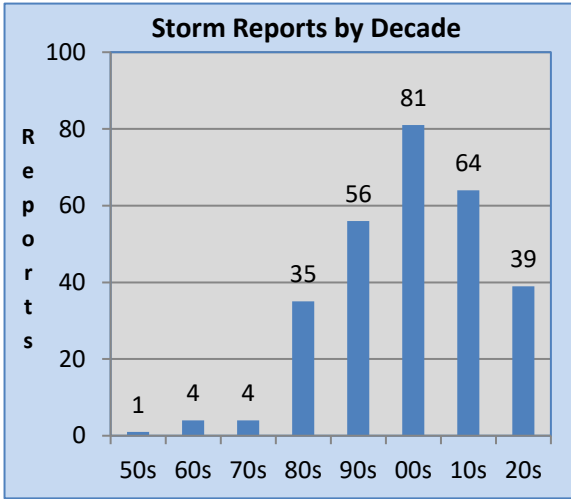


# Vilas County Severe Weather Facts (1950-2023)

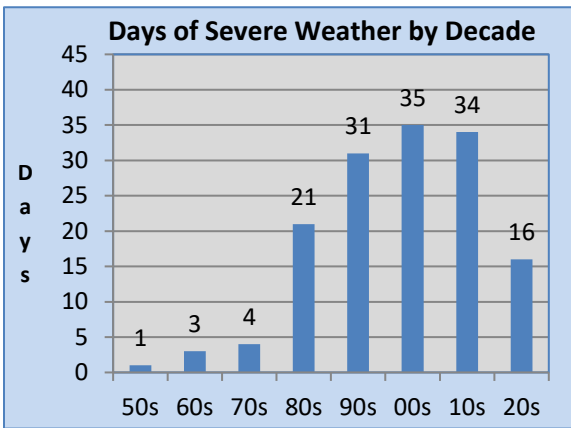
Updated: 01/01/24: Next Update January 2025

## Storm Reports by Decade



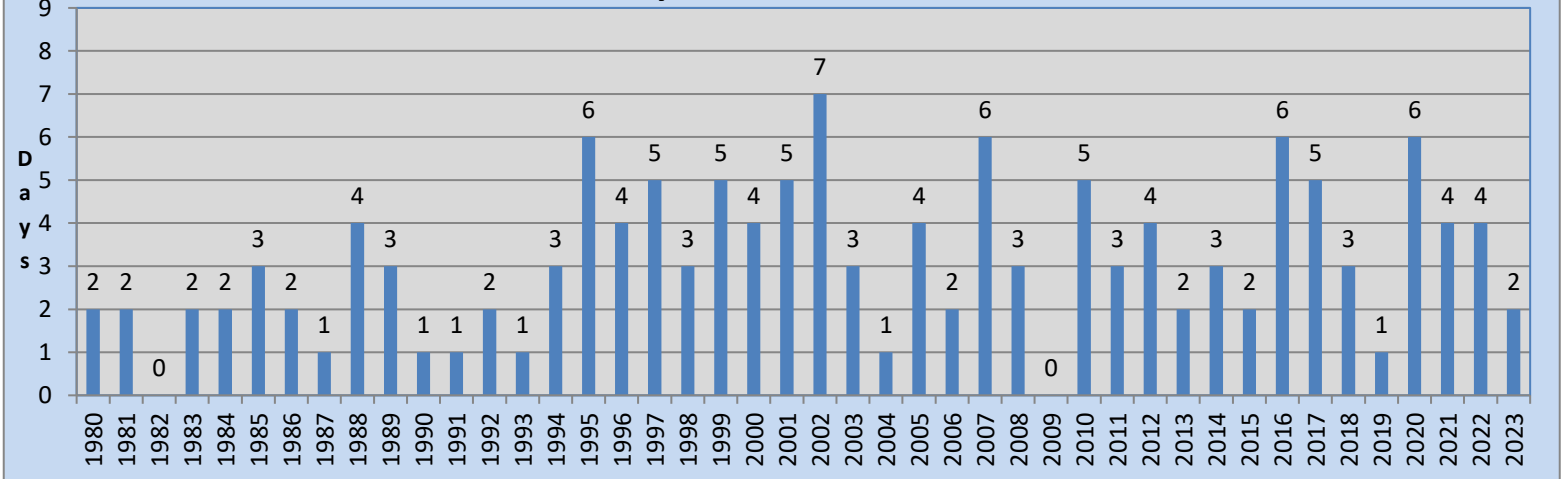
Since 1950 there have been 284 documented reports of large hail, damaging winds and tornadoes across Vilas County. The population boom of the 1980s and 1990s combined with the SKYWARN program led to an increase in the number of reports of severe weather during both decades. The number of reports increased 41% 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. 2002 was the most active year with 15 reports followed by 14 reports in 1995, 12 reports in 2008, 11 reports in 1999, 2001, 2016, 2021 and 2022, and 10 reports in 1997, 2005, 2017 and 2018. Since 1980, there have been no reports of severe weather in a year: 1982 and 2009. In 2023, there were five reports of large hail and one report of strong winds/wind damage.

## Days of Severe Weather by Decade



In order to address the impact of multiple reports for the same storm, the data was examined by the number of severe weather days. Since the reports were sporadic during the 1950s through the 1970s, only data from 1980 to present was used. There has been a 16% increase of the number of days of severe weather 2014 to 2023 period compared to the 1990s. 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, Vilas County averages 3.5 days of severe weather per year. The long-term average from 1980-2023 is 3.1 days. The most active year was 2002 with seven days of severe weather, followed by six days of severe weather in 1995, 2007, 2016 and 2020, and five days in 1997, 1999, 2001, 2010 and 2017. In 2023, severe weather was reported on July 10 (5 large hail reports) and one report of strong winds/wind damage on July 27.

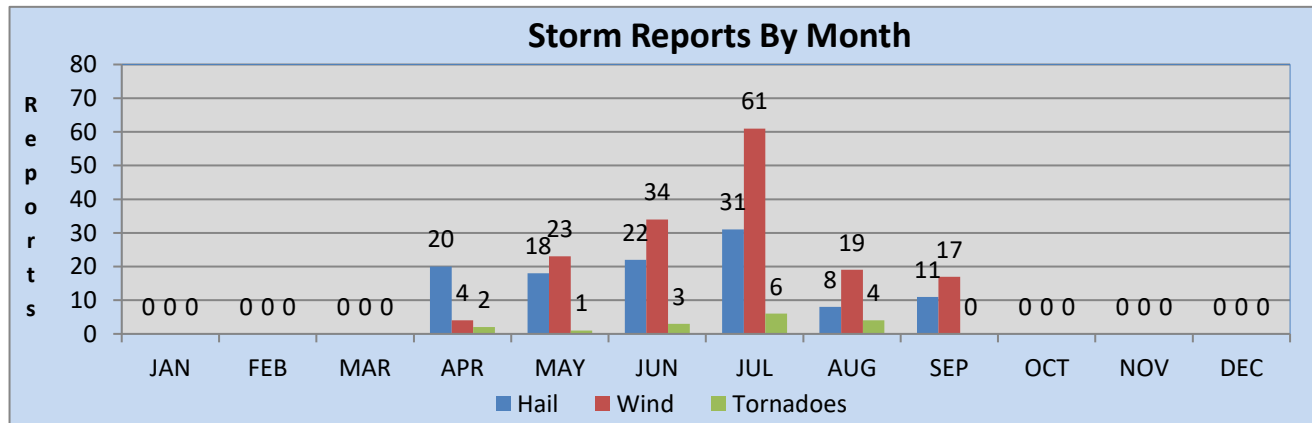
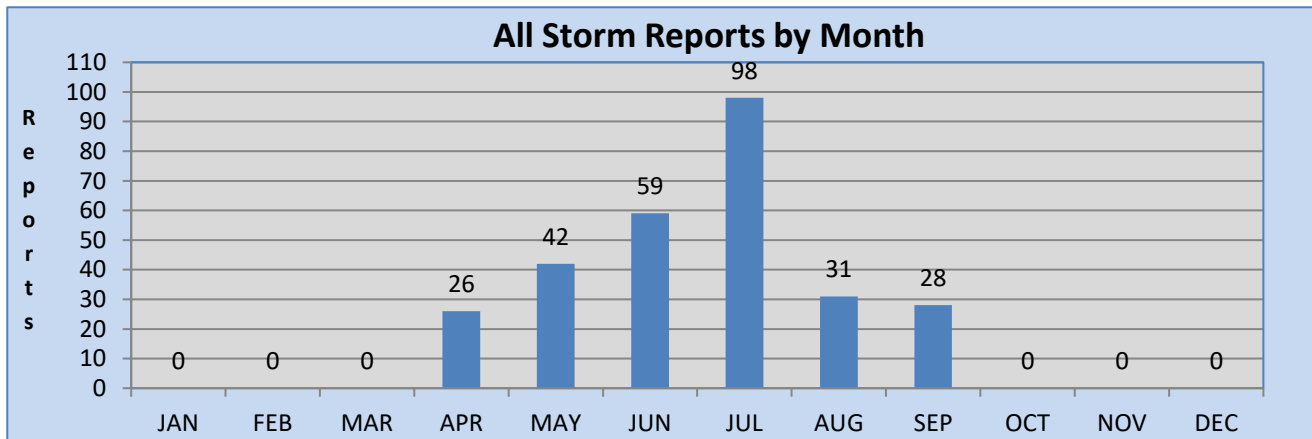
## Number of Days of Severe Weather Since 1980



# Vilas County Severe Weather Facts (1950-2023)

## Storm Reports by Month

Severe weather has been recorded in Vilas County from April through September. The severe weather season begins in earnest in April. The earliest documented report of severe weather during the year occurred on April 9, 2017, when quarter size to golf ball size hail was reported near Lac Du Flambeau. The previous earliest documented reported of severe during the year occurred on April 14, 2003, when penny to nickel size hail was reported at Eagle River, Conover, Boulder Junction and Presque Isle. The convective season peaks in July and then wanes quickly by September. The warm season period of May through September accounts for 91% of all severe weather reports during the year. Severe weather can occur from time to time in September. The latest report of severe weather during the year occurred on September 30, 2002. On this date, golf ball size hail was reported at Conover while golf ball to tennis ball size hail was reported from Arbor Vitae to St. Germain. In 2017, strong winds and wind damage was reported on September 22 just south of Arbor Vitae.

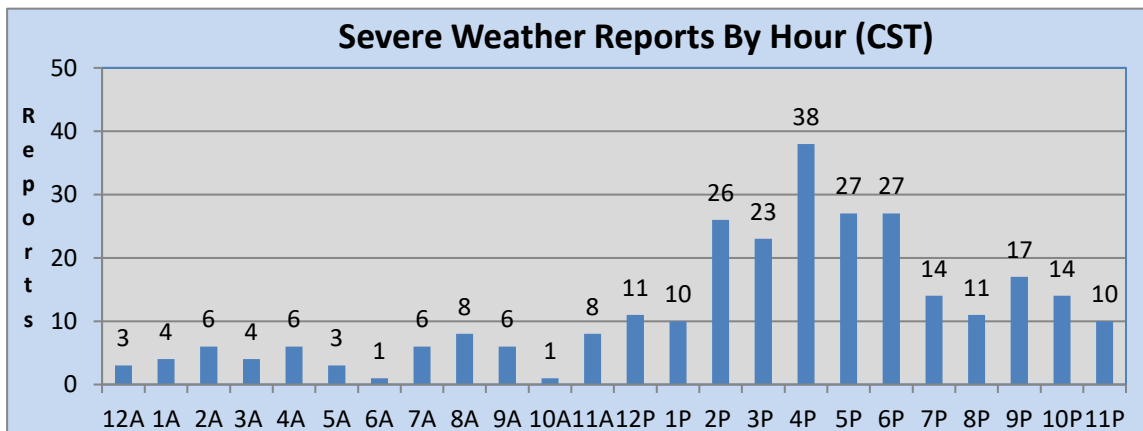
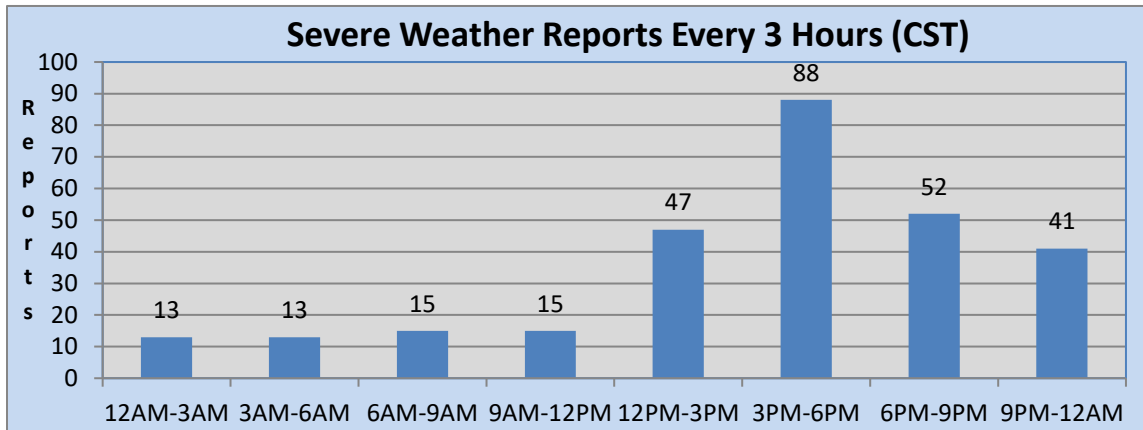


NOTE: The chart depicts storm type by month: (hail, wind/wind damage, tornadoes).

# Vilas County Severe Weather Facts (1950-2023)

## Storm Reports by Time of Day

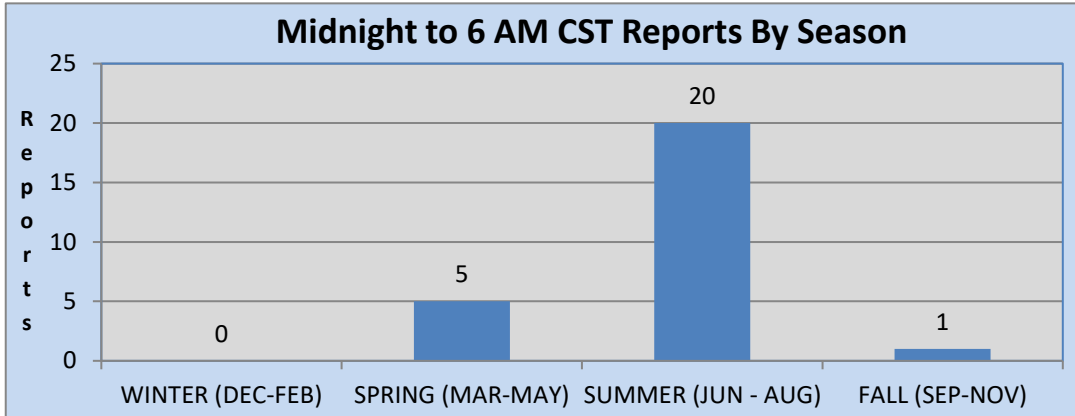
No matter the season, the afternoon and early evening hours are the peak time for severe weather across Vilas County where nearly 62% of all severe weather reports occur between 1 PM and 9 PM CST. In Vilas County, severe weather reports increased sharply after 1 PM CST with a peak in reports between 2 PM and 7 PM CST. The peak in the storm activity corresponds to peak afternoon heating when the atmosphere is most unstable. There was another minor peak in the number of reports from midnight to 6 AM CST during the summer months. In these events, thunderstorms that develop across the Dakotas and Minnesota move eastward into the county overnight.



# Vilas County Severe Weather Facts (1950-2023)

## Overnight Severe Weather Reports from 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 77% of all overnight severe weather reports during the year.



# Vilas County Severe Weather Facts (1950-2023)

## Vilas County Tornadoes

Since record keeping began in 1950, there have been 16 documented tornadoes across the county. One tornado was rated an F/EF3 or greater intensity. On April 27, 1984, a F3 tornado touched down near Fawn Lake and moved to near Star Lake before dissipating. One tornado was rated F/EF2, while 13 tornadoes were rated F/EF1, and one tornado was rated F/EF0. The most active year was 1988 with three tornadoes, while 1969 and 2020 was the second most active year with two tornadoes. A tornado was reported in consecutive years in 1969 and 1970 and again in 1994 and 1995. The last tornadoes to strike Vilas County occurred on August 9, 2020, when an EF1 tornado touched down near Star Lake and moved to nearly 5 miles west of Conover. A second EF1 tornado was reported on this date from nearly 4 miles east southeast of St. Germain to 2 miles southwest of Eagle River. Since 1950, tornadoes have touched down in 12 different years. A tornado strike in Vilas County usually occurs about once in every four and a half years.

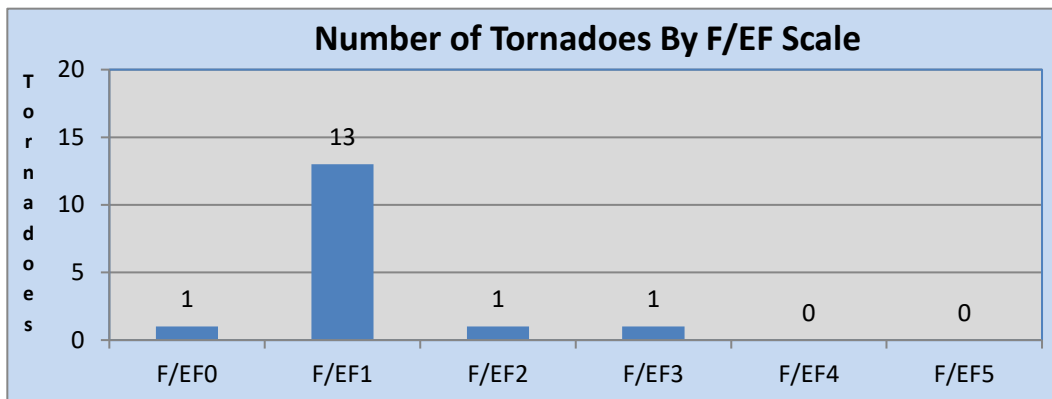
| Event | Date  |     |      | Time        |  | F/EF |
|-------|-------|-----|------|-------------|--|------|
| #     | Month | Day | Year | (CST)       | Start / End Location                     | Rank |
| 1     | 5     | 4   | 1964 | 18:00-18:10 | Saint Germain                            | 1    |
| 2     | 6     | 26  | 1969 | 16:30       | 2 W Manitowish Waters - 3 SW Presque Is. | 1    |
| 3     | 6     | 26  | 1969 | 17:00       | Lac Du Flambeau - 9 NW Land O Lakes      | 2    |
| 4     | 7     | 7   | 1970 | 19:00       | Winchester - Boulder Junction - Conover  | 1    |
| 5     | 7     | 12  | 1973 | 03:00       | Boulder Junction - Sayner                | 1    |
| 6     | 6     | 13  | 1981 | 20:45       | Sayner - 3 NE Sayner                     | 1    |
| 7     | 7     | 3   | 1983 | 04:39       | Eagle River                              | 1    |
| 8     | 4     | 27  | 1984 | 14:37-15:07 | Fawn Lake - Star Lake                    | 3    |
| 9     | 7     | 24  | 1986 | 14:15       | Saint Germain                            | 1    |
| 10    | 7     | 29  | 1988 | 20:30       | Eagle River                              | 1    |
| 11    | 8     | 1   | 1988 | 18:52       | 1 W Saint Germain                        | 1    |
| 12    | 8     | 1   | 1988 | 19:22       | 2 SE Eagle River                         | 0    |
| 13    | 4     | 26  | 1994 | 14:55-15:05 | 1.5 N Conover - 3 SE Land O'Lakes        | 1    |
| 14    | 7     | 14  | 1995 | 16:40-16:47 | Phelps                                   | 1    |
| 15    | 8     | 9   | 2020 | 18:44-18:58 | 0.3 SSW Star Lake - 4.7 W Conover        | 1    |
| 16    | 8     | 9   | 2020 | 19:28-19:36 | 3.8 ESE St. Germain - 2 SW Eagle River   | 1    |

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

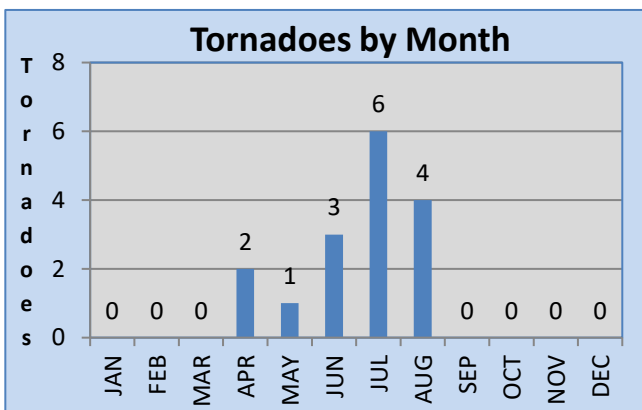
## F/EF2 or Greater Tornadoes in Vilas County

| Event | Date  |     |      | Time        |                                     | F/EF |
|-------|-------|-----|------|-------------|-------------------------------------|------|
| #     | Month | Day | Year | (CST)       | Start / End Location                | Rank |
| 1     | 6     | 26  | 1969 | 17:00       | Lac Du Flambeau - 9 NW Land O Lakes | 2    |
| 2     | 4     | 27  | 1984 | 14:37-15:07 | Fawn Lake - Star Lake               | 3    |

# Vilas County Severe Weather Facts (1950-2023)



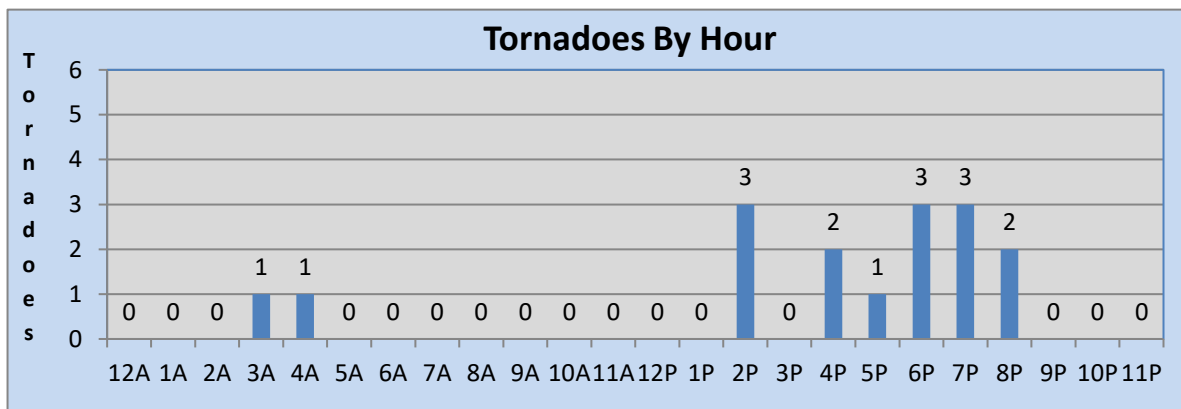
## Tornadoes by Month



Documented tornadoes have occurred from April to August. The earliest documented tornado during the year occurred on April 26, 1994. On this date, an F1 tornado developed one and a half miles north of Conover and moved to three miles southeast of Land O Lakes before dissipating. The tornado season peaks in June and July, which accounts for 64% of all tornado reports. The warm season months of May through August account for 88% of all tornadoes during the year. The latest tornadoes on record during the year occurred on August 1, 1988. On this date, two tornadoes struck the county. The first tornado briefly touched down one mile west of St. Germain. A second tornado touched down two miles southeast of Eagle River.

## Tornadoes by Hour

In Vilas County, 14 documented tornadoes (88%) have occurred between 2 PM and 9 PM CST. There have been zero documented tornadoes between 9 PM and 3 AM CST, and from 5 AM to 1 PM CST. The two overnight tornado events occurred on July 12, 1973, when a F1 tornado struck between Boulder Junction and Sayner, and the second event occurred on July 3, 1983, when a F1 tornado struck Eagle River.



# Vilas County Severe Weather Facts (1950-2023)

## Predominant Storm Reports – Wind and Hail Only

During April, large hail is the dominant weather report. The atmosphere is still cold aloft to support large hail reaching the ground. Over the remainder of the convective season, nearly six out of ten reports are strong wind gusts and wind damage compared to large hail. During the summer however, nearly seven out of ten reports are strong winds and wind damage.

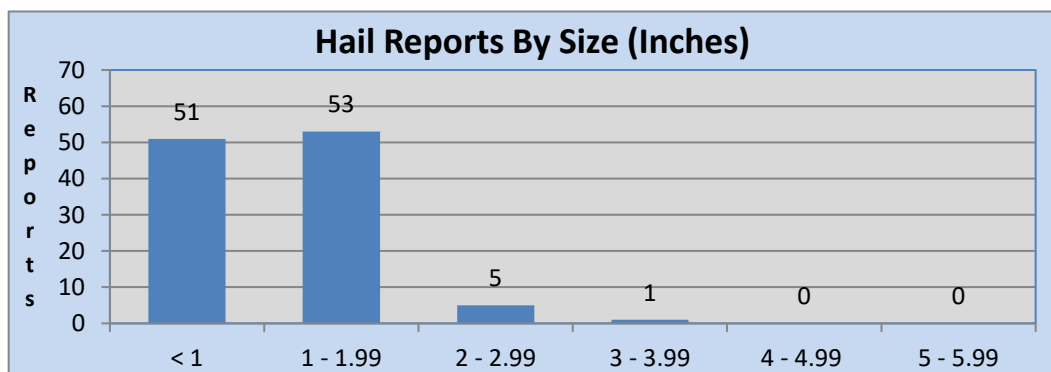
| Month | % Hail Reports | % Wind or Wind Damage | Month | % Hail Reports | % Wind or Wind Damage |
|-------|----------------|-----------------------|-------|----------------|-----------------------|
| Jan   | 0.0            | 0.0                   | Jul   | 33.7           | 66.3                  |
| Feb   | 0.0            | 0.0                   | Aug   | 29.6           | 70.4                  |
| Mar   | 0.0            | 0.0                   | Sep   | 39.3           | 60.7                  |
| Apr   | 83.3           | 16.7                  | Oct   | 0.0            | 0.0                   |
| May   | 43.9           | 56.1                  | Nov   | 0.0            | 0.0                   |
| Jun   | 39.3           | 60.7                  | Dec   | 0.0            | 0.0                   |
|       |                |                       | Year  | 41.0           | 59.0                  |

## Large Hail in Vilas County

There have been six documented reports of hail two inches or greater in diameter across the county. The largest hail stone three inches in diameter was reported from three miles south to eight miles southeast of Eagle River on June 5, 1999. The last report of hail of two inches or greater occurred on May 25, 2008, when two-inch hail fell in Eagle River. Overall, hail ranging in size from three quarters to one inch accounted for 67% of the documented reports. Large hail reports of two inches or greater only accounted for 5% of all reports.

## Hail over 2 inches

| Rank # | Date  |     |      | Time (CST) | Start / End Location      | Hail (Inches) |
|--------|-------|-----|------|------------|---------------------------|---------------|
|        | Month | Day | Year |            |                           |               |
| 1      | 6     | 5   | 1999 | 18:35      | 3 S - 8 SE Eagle River    | 3.00          |
| 2      | 9     | 30  | 2002 | 16:47      | Arbor Vitae – St. Germain | 2.50          |
| 3T     | 5     | 25  | 2008 | 14:37      | Eagle River               | 2.00          |
| 3T     | 5     | 25  | 2008 | 14:22      | 2.1 NNW St. Germain       | 2.00          |
| 3T     | 5     | 25  | 2008 | 14:05      | 2.5 NW Lac Du Flambeau    | 2.00          |
| 3T     | 9     | 13  | 1993 | 07:50      | Arbor Vitae               | 2.00          |



# Vilas County Severe Weather Facts (1950-2023)

## Vilas County Summary

In Vilas County, the severe weather season begins in earnest in April, peaks in July and then wanes quickly by September. Severe weather usually occurs in the afternoon and early evening hours, with a secondary peak between midnight and 6 AM CST during the summer months. If you do experience severe weather, you are likely to see large hail in the spring. Damaging winds or reports of strong wind gusts are 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, Vilas County ranks 8<sup>th</sup> in the total number of storm reports and 16<sup>th</sup> in the number of tornado reports since 1950.

## 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                  | Wausara-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               |



# Vilas 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     |