NATIONAL WEATHER SERVICE
GREEN BAY

PACKERLAND WEATHER NEWS

2019
Volume 17, Issue 1

2019 STARTED OUT SLOW…THEN OH NO!

2018 ended uneventfully over northeast Wisconsin, with December 2018 averaging 5 to 8 degrees above normal, while snowfall was roughly 50% of normal. The relatively placid weather rolled on through the first half of January 2019…then the wheels came off, as the weather pattern became cold and active. Bitterly cold temperatures returned in late January with record setting cold, as lows plunged to 20 to 35 below zero. February followed with five major snowstorms in that month alone! For the month of February, Rhinelander had received 61.5 inches of snow, Wausau 54.2 inches, and Green Bay 28.4 inches. All of these locations exceeded their normal monthly February snowfall by over 300%! In fact, Wausau crushed its previous February snowfall record by over a foot.

By the second week of March, the cold and snow finally relented to somewhat warmer temperatures, however, northeast Wisconsin paid the price for the break from Old Man Winter. A quick warm-up along with moderate rainfall led to a rapid melt of the deep snowpack, as well as widespread ice jamming on many area rivers. It all came to a head on March 14 and 15, as widespread river flooding commenced, highlighted by historic flooding along the East River in Brown County. Significant flooding was also seen in Kewaunee and Manitowoc County. Preliminary damage estimates from flood waters in 8 area counties exceeded $1.3 million.

Unfortunately, the spring and summer were considerably wetter than normal which continued localized river flooding. By July, many locations including Green Bay, Wausau, and Rhinelander were already 6 to 7 inches above normal for the year! Mother Nature's stormy summertime fireworks were equally impressive by throwing a nasty one-two punch in late July, which consisted of devastating damaging straight line winds and tornadoes. On the evening of July 19, one of the worst blow-downs in over 40 years pummeled northern Wisconsin, as an intense and fast-moving bow echo flattened nearly 250,000 acres of woodlands, and damaged several homes and campsites during peak summer tourist season. During the height of the storm, winds

(continues on page 2)

Inside this issue:

A HISTORIC 2019

Take a closer look at the July 19-20 blowdown/ tornadoes, February 24 blizzard/multi-vehicle pileup, and March 14-15 Flood!

were estimated at over 100 mph in parts of Langlade and western Oconto county. The very next morning, another fast moving bow echo raced across central and east-central Wisconsin; but this time with a bit of a twist, literally! This second bow echo turned out to be a prolific tornado producer with at least 5 twisters carving out narrow damage paths from Waupaca to Appleton before noon.

Meanwhile, water levels on the Great Lakes were steadily increasing, as well above normal rainfall continued over the region into the fall. Lake Michigan water levels reached near record highs, causing periodic localized bayshore/lakeshore flooding especially near the mouth of the bay from northern Green Bay to Oconto, as well as along the Lake Michigan shoreline in Kewaunee, Manitowoc, and Door County.

The inevitable finally occurred on October 2, when the city of Green Bay officially broke its all-time yearly precipitation record, reaching 40.26 inches. This toppled the old record of 39.21 inches, which ironically was last year! October would continue to offer more surprises as temperatures quickly turned abnormally cold. With early cold comes early snow. Alas, by the end of the month, Green Bay had measured 5.6 inches of snow, which was the second snowiest October on record! As of this writing (late-November), the official Green Bay yearly precipitation was at 44.40 inches (nearly 17 inches above normal) and climbing! What will December 2019 have in store?

JULY 19-20, 2019 BOW ECHOES – HISTORIC BLOWDOWN AND TORNADOES

BY: GENE BRUSKY

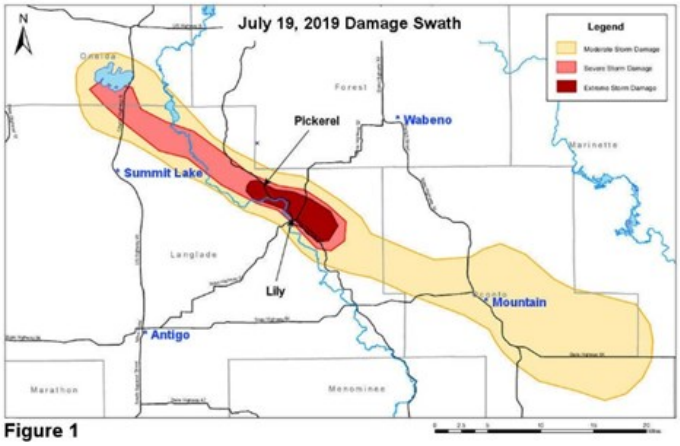


Figure 1

Introduction

Within a span of 18 hours, two highly organized, fast-moving, and devastating quasilinear convective systems (bow echoes) battered the northern half of Wisconsin during the evening of July 19 and again during the morning of July 20. During the evening of July 19, a historic widespread damaging bow echo raced across northern Wisconsin. The storm produced extreme straight-line winds, flattened thousands of acres of forest, caused widespread power outages, and damaged numerous homes, cottages, and campsites (***Figure 1***).

The next morning, another fast-moving bow echo raced across central and east-central Wisconsin. This system was different from the previous evening's widespread blowdown, as it was a prolific tornado producer. Damage surveys revealed at least 5 tornadoes touched down in Waupaca County, eastward to Outagamie County (***Figure 2***). After a brief overview of atmospheric ingredients that supported these impressive and highly organized storm complexes, a discussion of storm-scale characteristics associated with each event will be examined. An interesting commonality was how both bow echoes intensified rapidly following a storm collision or merger.

Figure 2

Atmospheric Ingredients That Supported the Bow Echoes.

One key ingredient which contributed to the impressive bow echoes was the strength of the upper-level jet stream (***Figure 3***). The winds were anomalously strong over the northern Great Lakes for the middle of July . In fact, the 80 to 85 knot core of maximum winds at approximately 18,000 ft

(continues on page 3)

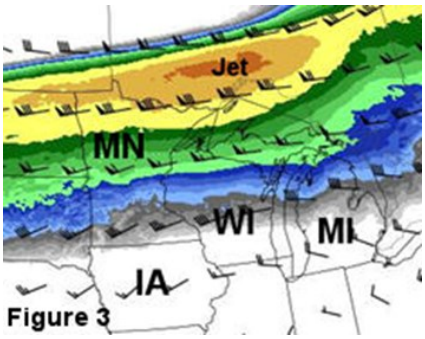


Figure 3

above ground level (AGL) was near the highest observed, based on a 30 year climatology for that time of year and location. Northern Wisconsin was in a very favorable location (relative to the upper-level jet core) where the combination of strong vertical wind shear and large-scale upward motion supported widespread thunderstorm organization and longevity.

A second key ingredient was extremely unstable air that pushed northward into Wisconsin. Convective Available Potential Energy (CAPE), a measure of air mass instability (or buoyancy), was extreme, with mean values in excess of 5000 J/kg (***Figure 4***). The juxtaposition of unseasonably strong upper-level level winds and extreme instability ultimately contributed to the intense and highly organized nature of the two bow echoes.

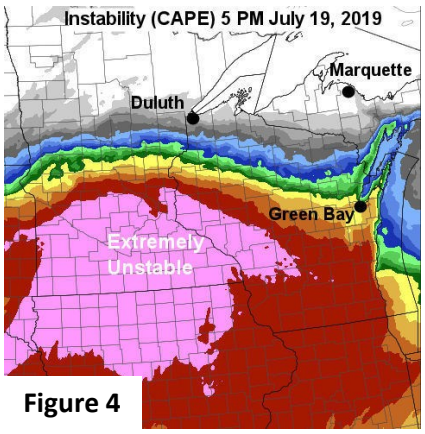


Figure 4

July 19: Historic Blowdown over Northern Wisconsin

Initial thunderstorm development occurred over Minnesota during the afternoon of July 19. The storms quickly grew upscale and congealed into a line as they moved into northwest Wisconsin. However, the extreme damaging winds did not develop until a few hours later when the squall line merged with a rogue supercell storm located just ahead of the line (***Figure 5A***). This supercell produced a weak tornado near Rhinelander before becoming engulfed by the squall line. Interestingly, the renegade supercell originated in eastern South Dakota earlier that morning, and maintained its integrity as it tracked east across Minnesota into northern Wisconsin by that evening. Once the merger took place (***Figure 5C***), an amazing storm evolution occurred. The line dramatically surged east in response to an intense mid-level rear inflow jet (RIJ). The RIJ descended toward the surface as it reached the front of the line causing the classic bow echo radar structure (***Figure 6***). Widespread wind damage occurred along and just north of the apex of the bow. NWS Green Bay Doppler radar velocity estimated winds near 120 mph (at 6000 ft AGL) in this portion of the line. At the surface, maximum wind gusts were estimated to exceed 100 mph! The most extreme damage was not continuous along the storm's path; but rather, it occurred in preferred pockets associated with intense localized downbursts or macrobursts. Aerial surveys of impacted areas revealed this type of damage pattern. Within the NWS Green Bay service area, the damage extended from Oneida County southeast across Langlade, southern Forest, Oconto, and into southern Marinette County. The most extreme damage occurred over northern Langlade County, from roughly west of Pickerel to east of Lily (***Figure 1***). The storm hit during the height of camping season with countless homes, cottages, and campsites impacted. Amazingly, there were no fatalities.

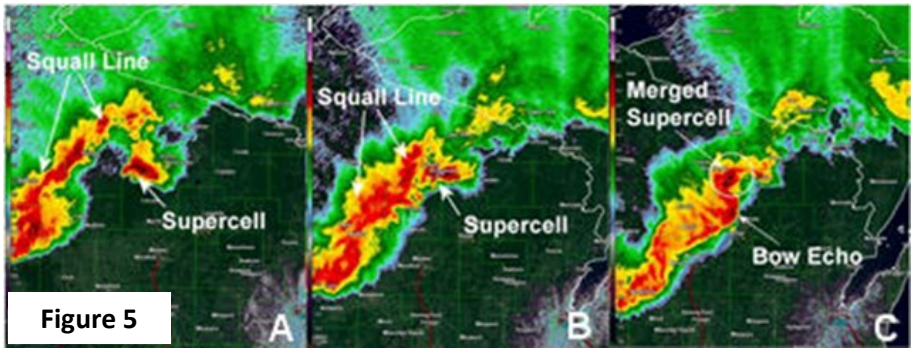


Figure 5

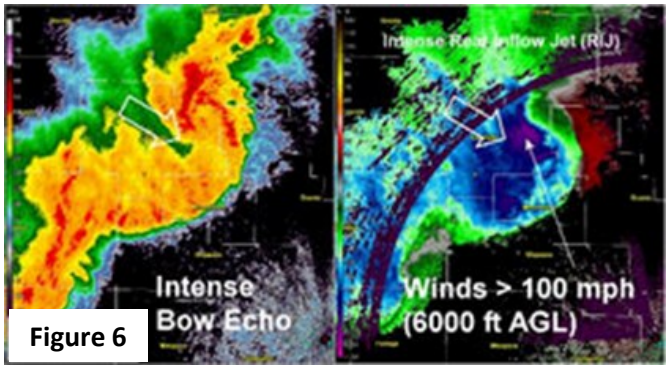


Figure 6

(continues on page 4)

July 20: The Prolific Tornado Producer

Farther south and 12 hours later, a new cluster of storms developed over southern Minnesota and quickly organized into another squall line before entering central Wisconsin by 9 am CDT.

The storms intensified and accelerated eastward, quickly evolving into another classic bow echo. Interestingly, as was seen the previous evening, it appeared storm mergers contributed to the rapid intensification of the system. In this case, a weakening squall line moved a little faster than the storms immediately downstream that resulted in the merger (*Figure 7*). The collision was followed by a rapid eastward line surge and resultant bowing structure. (*Figure 8*) After the merger, the line doubled its forward speed racing eastward across east-central Wisconsin at 65 mph! What was different this time around was rather than widespread wind damage resulting from macrobursts, the damage footprint was considerably smaller in scale and in concentrated narrow paths caused by several weak tornadic circulations. These small and transient circulations developed near and slightly north of the apex of the bow echo as it raced east to Lake Michigan by mid-day. (*Figure 8 right panel*)

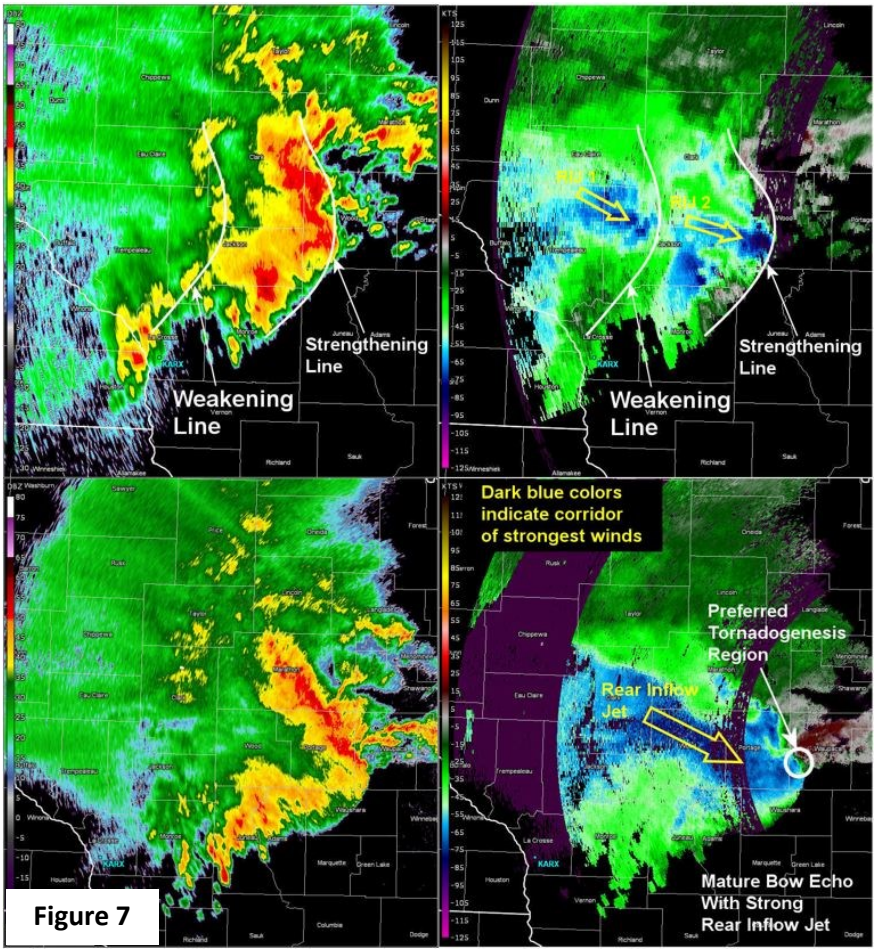


Figure 7

Recovery Will Take Years

The July 19, 2019, Bow Echo Blowdown over northern Wisconsin was one of the most impactful events of its type since the Independence Day Derecho of July 4, 1977. During that event, nearly 850,000 acres of forest were badly damaged or destroyed. The total extent of the damage caused by the most recent event remains to be determined. Very preliminary estimates, from the Wisconsin DNR, indicated at least 250,000 acres were damaged or destroyed across northern Wisconsin, including both state and privately owned land. According to the U.S. Forest Service, nearly 65,000 acres of the Chequamegon-Nicolet National Forest (located in northwest Wisconsin) were severely impacted. There will be ongoing collateral concerns for the upcoming winter and spring too. Heavy early winter snows could bring down trees (that were severely stressed by the wind storm) onto roadways. Many snowmobile trails remain blocked and will need to be cleared. Fallen trees, limbs, and leaves will eventually dry out over the winter and spring, providing an extensive and readily available fuel source for possible forest fires.

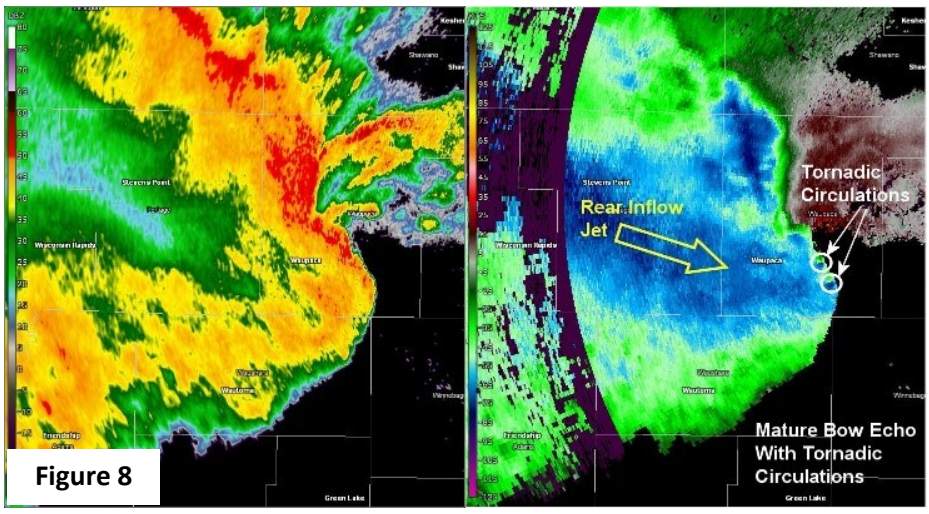
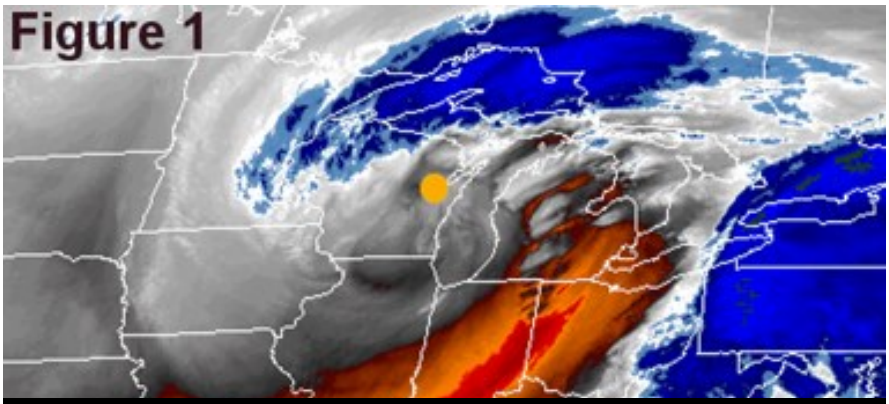


Figure 8

FEBRUARY 24, 2019 BLIZZARD AND HISTORIC I-41 MULTI-VEHICLE PILEUP

BY: GENE BRUSKY

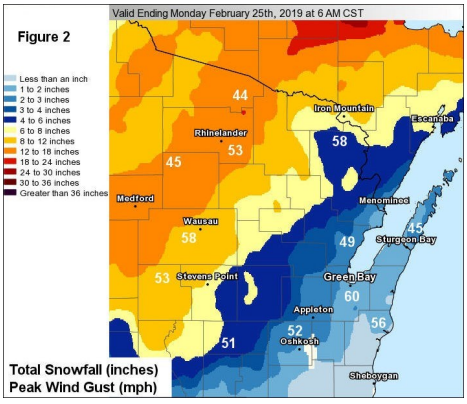
A fierce winter storm severely impacted the western Great Lakes, including all of northeast Wisconsin on Saturday, February 23, and Sunday, February 24, 2019 (***Figure 1***). As the storm approached Wisconsin from the central Plains, a large area of rain, freezing rain, and sleet pushed into central and east-central Wisconsin Saturday evening (***Figure 3***). The mixed precipitation quickly changed to heavy wet snow overnight across central and northern Wisconsin, where 12 to 18 inches fell (***Figure 2***).



GOES 16 Water Vapor image denoting location of storm center early on February 24

As the low pressure system moved northeast across Wisconsin early Sunday morning (***Figure 4***), it intensified rapidly, deepening at the rate of a "bomb" (central pressure falling at a rate of 24 mb/24 hours). Strong westerly winds in the wake of the system created widespread blizzard conditions in central and northern Wisconsin. Significant impacts included impassable roadways, road closures, and widespread power outages. Meanwhile, over the eastern third of Wisconsin, impacts from the storm through early Sunday morning were relatively minor with rain being the primary precipitation type. However, as the low pressure system was exiting the state, conditions changed drastically! Colder air surged into the area dropping temperatures below freezing, rain showers changed to snow showers, and westerly winds increased rapidly, gusting to nearly 60 mph by late Sunday morning. Despite only one or two inches of accumulated snow in eastern Wisconsin, the combination of falling temperatures and strong westerly winds created localized

(continues on page 6)



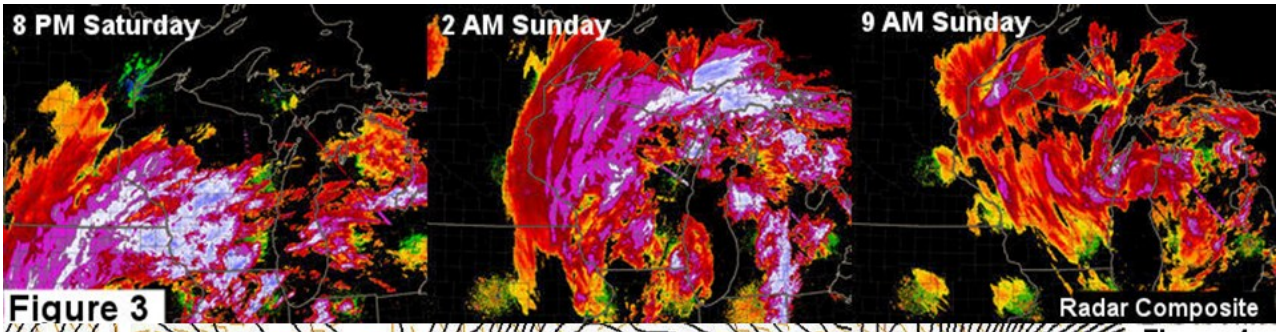


Figure 3

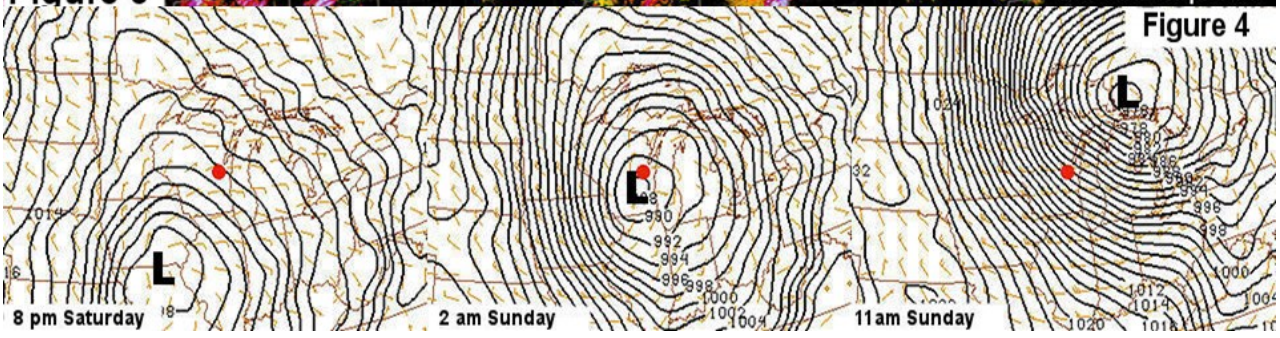
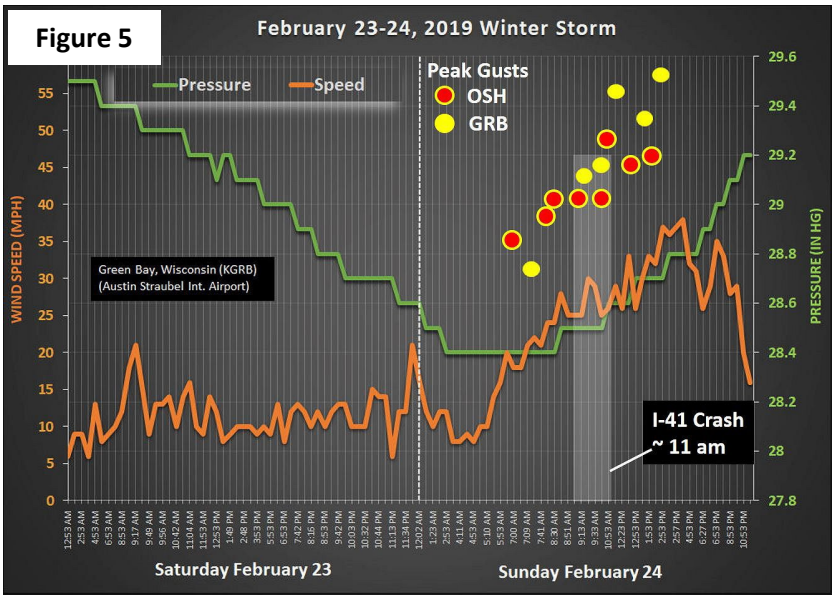


Figure 4



ground blizzard conditions and very treacherous driving conditions, particularly on north-south roads. During the 3 hour period between 8 am and 11 am, peak westerly wind gusts at the Green Bay airport (KGRB) and Oshkosh airport (KOSH) increased from 30 mph to nearly 60 mph (***Figure 5***). North-south stretches of I-41 and I-43 that pass through open rural areas were especially susceptible to strong westerly winds and localized ground blizzards. Drivers encountered highly variable road conditions ranging from somewhat good visibility and wet roads, to sudden whiteout conditions with snow and ice-covered roads — an especially dangerous situation.

The pileup on I-41, which involved 131 vehicles, is believed to be the largest multi-vehicle crash in Wisconsin state history. Unfortunately, there was one fatality along with 71 people injured. The number of vehicles involved, coupled with the very harsh weather conditions, required a multi-agency recovery effort. Dedicated and skilled emergency responders tended to, and ensured the safety of 232 people in near blizzard conditions and 10° wind chills in just 2 ½ hours. The last vehicle was removed from the scene nearly 7 hours later.

The circumstances that contributed to the historic multi-vehicle pile-up on I-41 late Sunday morning presented an especially challenging situation for drivers. Although only a few inches of snow had fallen earlier that morning (compared to locations farther west), the rapid increase in west winds, in concert with temperatures falling below freezing, caused localized whiteout conditions and very treacherous stretches of road, leaving little time for drivers to react.

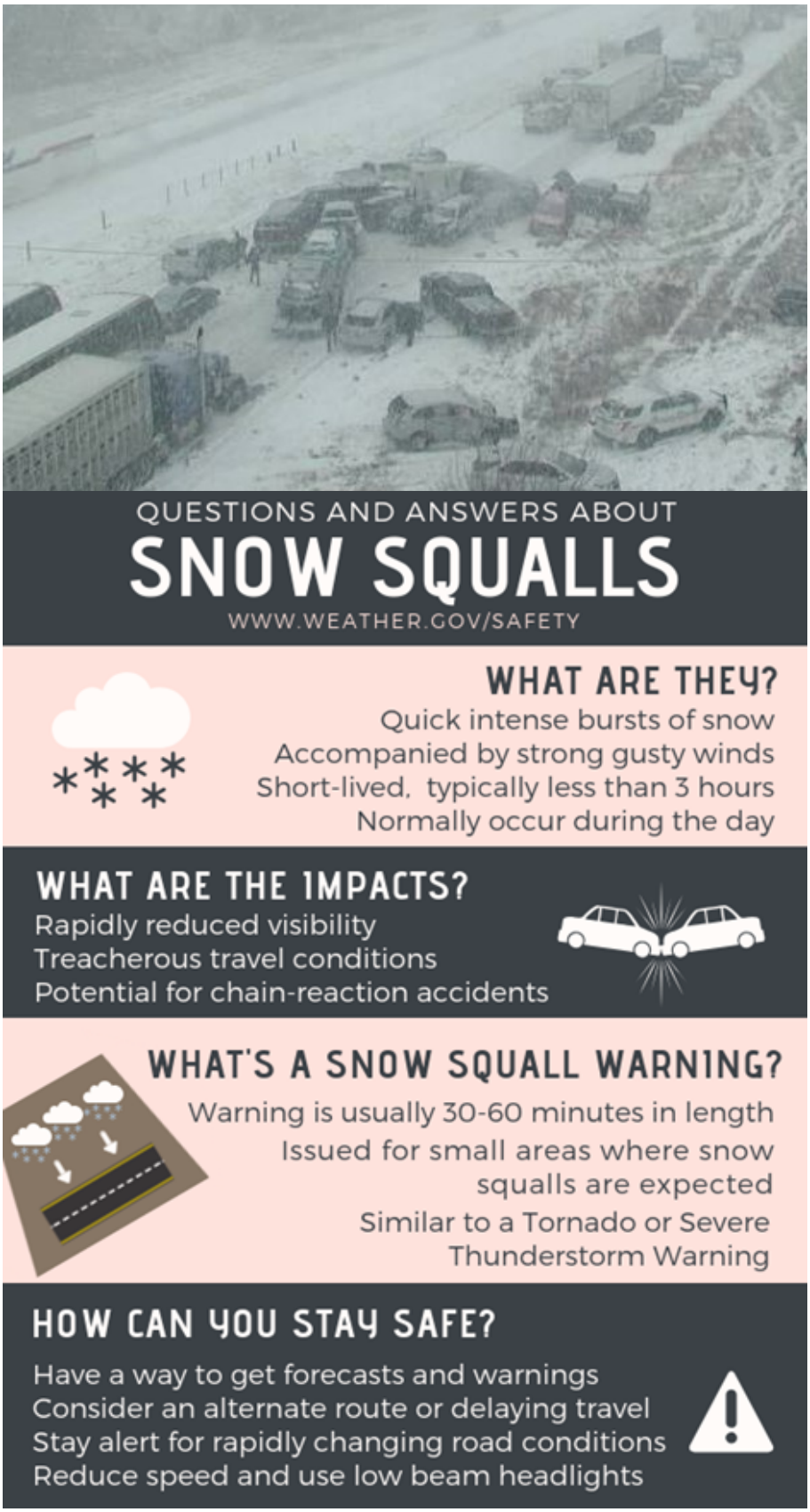
Now that winter is once again upon us, remember to check your winter weather driving safety kit, check road conditions before traveling, and always remain vigilant for rapidly changing road conditions. Be safe this winter!

NEW WINTER WEATHER WARNING IMPLEMENTED THIS WINTER

You may see a new winter weather warning issued this year in Wisconsin. The National Weather Service has officially implemented the Snow Squall Warning, which provides the public with advance notice of intense, but limited duration, periods of moderate to heavy snowfall, accompanied by gusty winds, reduced visibilities and whiteout conditions. Snow squalls often occur during the day and are associated with strong cold fronts. They are usually short-lived, on the order of 30 to 60 minutes, whereas a typical snowstorm lasts several hours or even days.

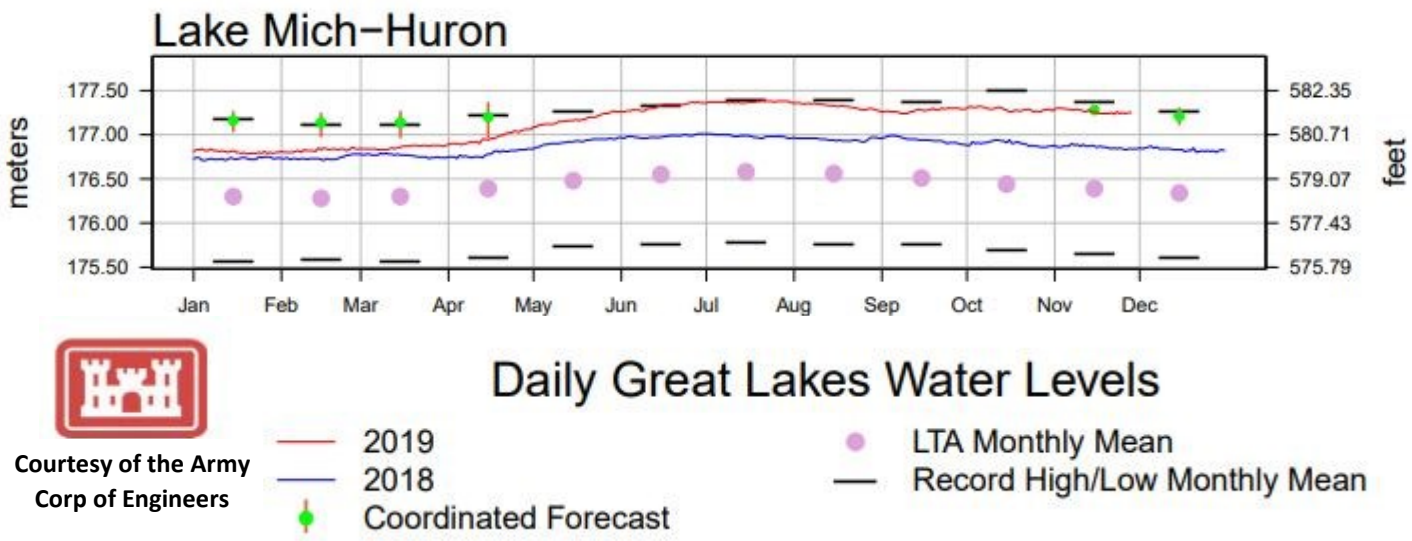
If a Snow Squall Warning is issued for your location, avoid or delay travel until the snow squall exits the area. Given the ability to produce near whiteout conditions, it is not safe to travel on the roadway while this phenomena is ongoing. If you are caught in a snow squall and cannot exit the road, turn on your low beam headlights and hazard lights, and allow plenty of distance between you and the car in front of you.

POOR VISIBILITY



A RECORD YEAR FOR WATER LEVELS ACROSS THE GREAT LAKES

BY: MIKE CELLITTI



Courtesy of the Army Corp of Engineers

After very low water levels were recorded during the late 2000s and early 2010s, many of the Great Lakes observed a dramatic rise in water levels between 2013 and 2015. Since 2015, water levels have continued to rise on all of the Great Lakes, culminating in a record setting year in 2019. Lake Superior, Lake St. Clair, and Lake Erie all broke the record monthly average in May, June, and July. Lake St. Clair and Lake Erie continued the record setting pace in August. Lake Ontario joined the record setting lakes in June and July. Only Lake Michigan fell short, by as little as ½ inch in June and 1 inch in July (see plot above).

The water level on the Great Lakes can fluctuate on a monthly, seasonal, and annual basis depending upon a variety of factors: amount of precipitation, evaporation, and rainfall induced runoff. Precipitation and rainfall induced runoff typically peak in late spring and summer as a result of snow melt and thunderstorm activity. Although evaporation is difficult to measure, it is highest when cold, dry air flows over the relatively warm waters of the lakes in the fall and winter.

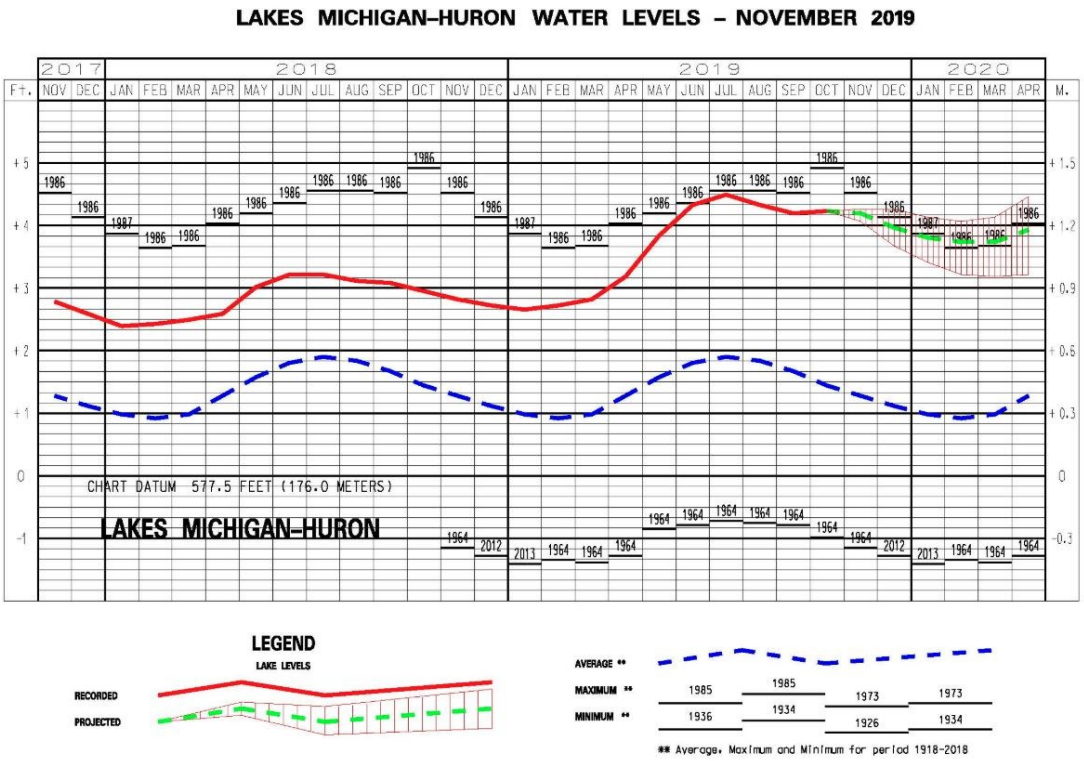
The dramatic rebound of water levels during the years of 2013-2015, and the continued rise to record levels this year, can both be attributed to above normal precipitation. In fact, at Green Bay, the yearly precipitation total has been above normal since 2015, and six out of the last seven years. The precipitation total of 39.21 inches in 2018 set a new yearly precipitation record. However, a new record was already set in 2019, as Green Bay received 46.14 inches of precipitation through December 1. Other cities have also received record annual precipitation over the past several years, including both Buffalo, NY and Duluth, MN in 2017.

Another factor contributing to the record-setting water levels is winter ice cover on the Great Lakes. Ice cover tends to reduce evaporation during the winter months when water levels typically fall. Over the past six years, four of those years have recorded above normal ice cover over the Great Lakes basin. The 92.5 percent ice cover in 2014 was the highest annual maximum ice coverage since 1979. Last year, the annual maximum ice cover was measured at 80.9 percent, which was well above the long-term average of 55.7 percent.

Impacts from the record or near record setting water levels have been numerous. Over northeast Wisconsin, areas along the shoreline of western and southern Green Bay have observed shoreline flooding to roads, parking lots, parks, and structures, especially near the mouths of rivers. Submerged docks and piers have also been noted as well, both along the shoreline of southern Green Bay and Lake Michigan. During the October 21 storm, significant erosion took place along the shoreline from Manitowoc to Algoma.

(continues on page 9)

Looking ahead into early next year, water levels are expected to fall on all of the Great Lakes, which is a normal occurrence during the fall and winter seasons. Water levels are forecast to remain below record levels on Lake St. Clair, Lake Erie, and Lake Ontario this winter, while the water levels on Lake Superior, and Lake Michigan-Huron are expected to remain near their record highs. See the chart on the right for the forecast from the US Army Corps of Engineers for Lake Michigan-Huron.



HISTORIC SPRING SNOWMELT FLOODING IN NORTHEAST WISCONSIN

BY: KEITH COOLEY

What Areas Were Impacted?

A unique and unfortunate combination of meteorological conditions came together to cause widespread flooding all across northeast Wisconsin. Residents and businesses along the East River in Green Bay and along the Manitowoc River in Manitowoc experienced record-breaking and historic flooding. In fact, the flooding along the East River in Green Bay was the worst flooding in nearly 30 years, with 35 to 40 homes impacted. Damage estimates totaled well over $1 million throughout northeast Wisconsin. An image of the flooding and ice on the East River can be seen in photo on the left.

Flooding and ice flowing along the East River in Green Bay, WI.

What Led to the Severe Flooding?

Several factors led to the widespread and historic flooding across northeast Wisconsin, with precipitation being one of the main causes. The winter season started out warmer than normal with very little snow across the area through mid-January; however, much colder air arrived by late January and continued through most of

(continues on page 10)

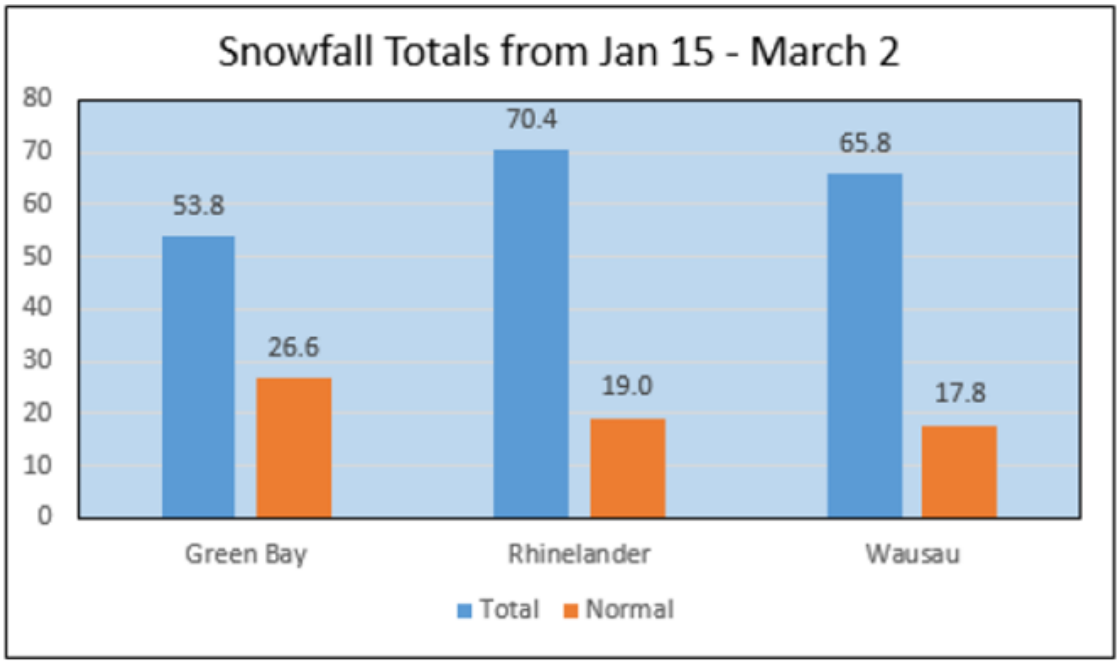


Figure 1: Snowfall totals for select cities, compared to normal from Jan 15 – March 2, 2019. Wausau set a new monthly snowfall record for February at 54.0 inches, which broke the previous record by more than a foot.

February. In fact, five major snow storms produced six or more inches of snow, while one ice storm was noted during February alone. This snowpack contained 1 to 3 inches of liquid across east-central Wisconsin, while northern portions of Wisconsin measured 6 to 9 inches of liquid. The comparison between observed and average snowfall totals can be seen in Figure 1.

Prior to the heavy snowfall, bitterly cold conditions led to increasing frost depths of 20 inches in some locations. This deep frozen soil layer acted like concrete and did not allow snowmelt to easily filter into the soil. Instead, the water that was released from the snowpack, quickly became surface runoff.

As warmer air arrived in mid-March, the snow depth at the NWS Green Bay office went from 10 inches on March 13 to 2 inches on March 15. The combination of the snowpack releasing up to 3 inches of stored water, and an additional inch of rainfall on top of the snowmelt, led to very rapid runoff across much of northeast Wisconsin. Ice jams were also reported along area rivers, which was another major contributor to the severe flooding and historic crests. The record crest on the Manitowoc River at Manitowoc (***Figure 2***) was the result of an ice jam.

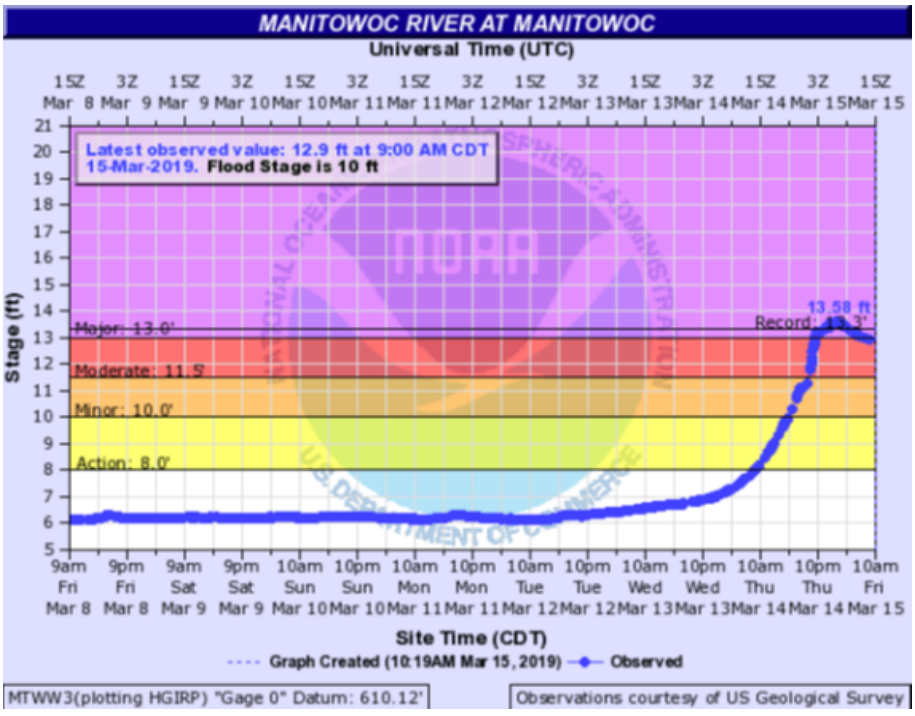


Figure 2: Hydrograph depicting the record crest on the Manitowoc River at Manitowoc.

2019-20 WINTER FORECAST

BY: ROY ECKBERG

Thousands of miles away from Wisconsin, temperature anomalies across the equatorial Pacific Ocean (***Figure 1***) can have a big impact on winter temperatures across the Upper Midwest. Scientists monitor the water temperature anomalies across the Niño 3.4 region. For an El Niño to occur, water temperature anomalies of +0.5˚ C or greater must occur for five consecutive months. For a La Niña to occur, water temperature anomalies of -0.5˚ C or less must also occur for five consecutive months.

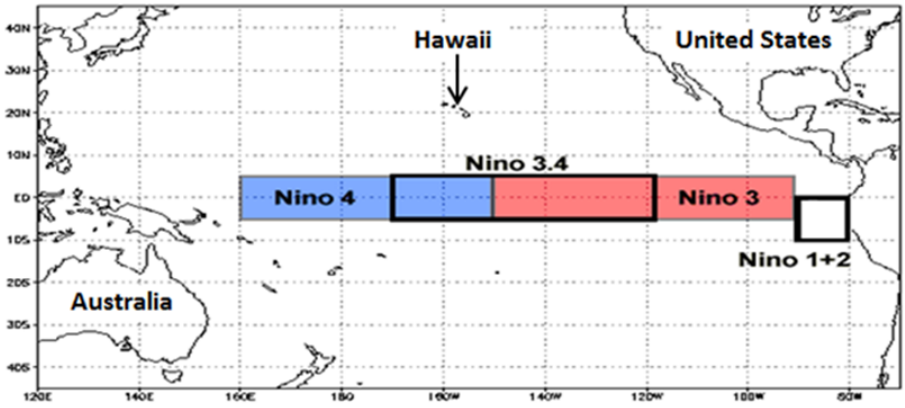


Figure 1: Niño regions for monitoring water temperature anomalies.

Temperature anomalies in the equatorial Pacific Ocean can have a major impact on the location and magnitude of the jet stream (***Figure 2***). During an El Niño winter, the sub-tropical jet stream is stronger than normal, while the polar jet is weaker. This pattern usually leads to fewer intrusions of arctic air into the western Great Lakes and increases the likelihood of above normal temperatures during the winter months. When La Niña conditions are occurring, a ridge of high pressure dominates the western United States. The jet stream moves northward towards Alaska, and then dives southeast towards the Mid-Atlantic states. This pattern usually leads to more Arctic intrusions into the western Great Lakes region, resulting in an increased chance for below normal temperatures in the winter.

Neutral conditions (not warmer or colder than normal) are forecast to occur in the equatorial Pacific Ocean this upcoming winter. What does this mean for the upcoming Wisconsin winter? The current forecast (***Figure 3*** on next page) from the Climate Prediction Center (CPC) favors nearly equal chances of above, below or near normal temperatures for the upcoming winter (December 1 through February 29). The climate models are also indicating a greater chance for above normal precipitation (***Figure 4*** on next page) for the upcoming winter across much of the area. This would continue our wetter than normal trend over the past two years.

For more climate information, please visit:

https://www.cpc.ncep.noaa.gov/

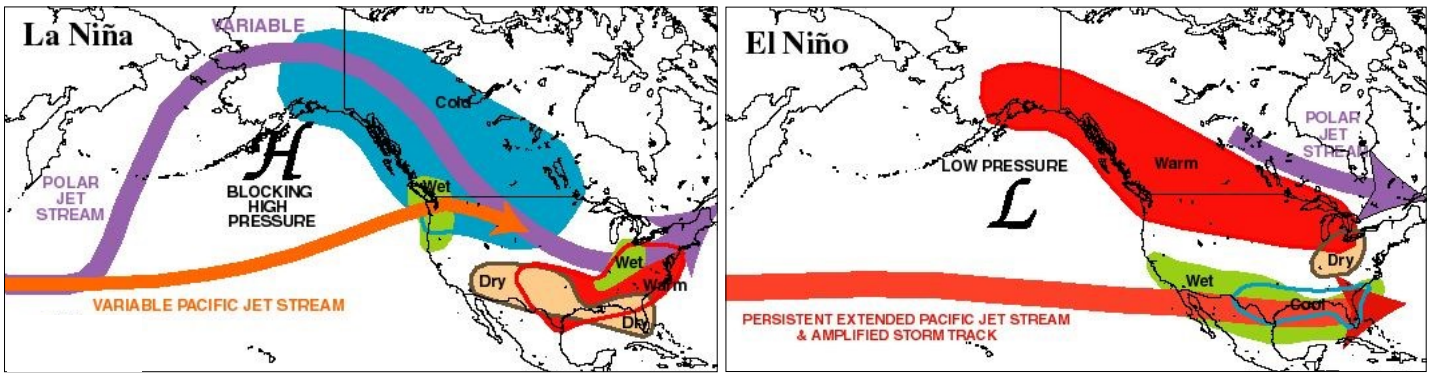


Figure 2: Typical jet stream patterns during El Niño and La Niña winters.

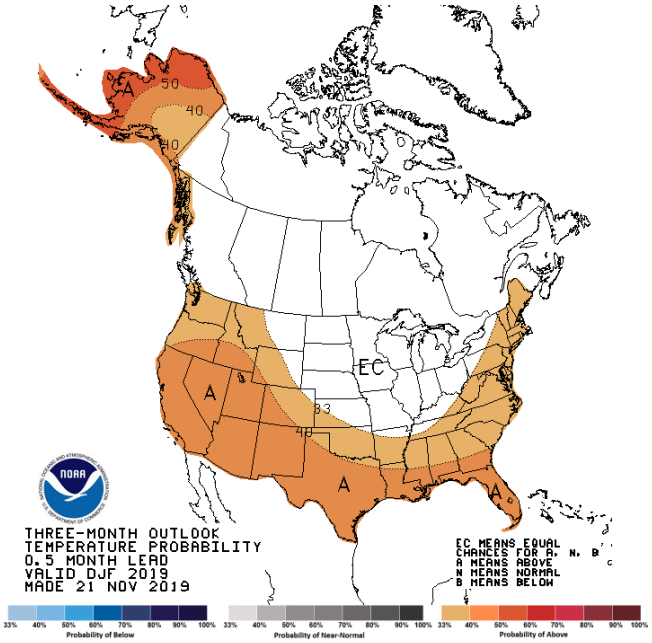


Figure 3: Winter (Dec-Feb) Temperature Forecast

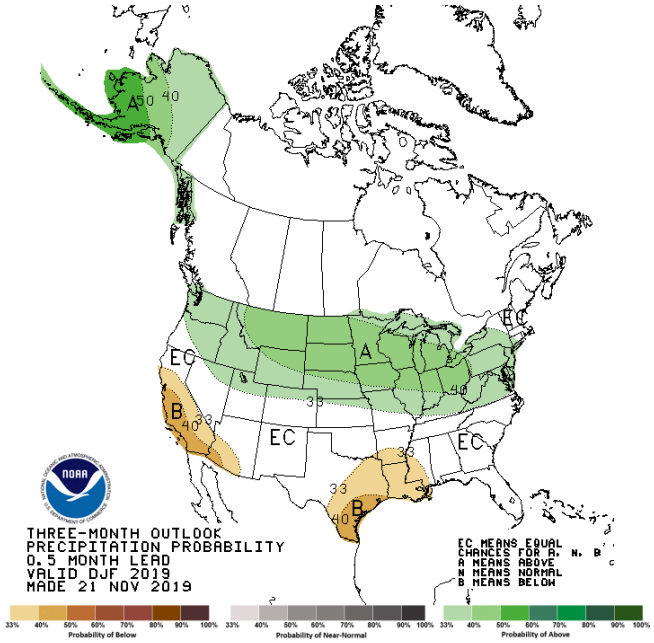


Figure 4: Winter (Dec-Feb) Precipitation Forecast

THANK YOU COOP/UCOOP/COCORAHS OBSERVERS!

BY: SCOTT CULTICE & SCOTT BERSCHBACK

Happy Fall!

We wanted to personally thank each of you for your dedicated snow measuring efforts through the years!

Your dedicated, timely, and accurate measurements allow us to provide better service to our partners and the public and, in some cases, immediate life-saving action. In addition, the observations provide important data for research and advancements in forecast and warning services.

As we look ahead to the new winter season, you can find many helpful reminders on measuring snow/ice and water equivalent online:

Slide Shows:

https://www.cocorahs.org/Content.aspx?page=training_slideshows

Videos:

https://www.youtube.com/user/cocorahs

Have a safe fall and winter! If you have any questions, please send us an e-mail or give us a call.

Thanks again!

COOP AWARDS

50 Year Institutional Award
Jim Gossage - Rhinelander WWTP

50 Year Institutional Award
Carrie Milestone & Rick Green - Babcock / Sandhill Wildlife Area

20 Year Award
David Barkow - Green Bay Botanical Gardens

10 Year Award
John & Anne Delwiche - Washington Island

10 Year Award
Jim & Rochelle Argoudels - Lac Vieux Desert

Rick Green

David Barkow (left) & NWS Green Bay OPL Scott Cultice (right)

Anne & John Delwiche

WANT TO BECOME AN OBSERVER?

Visit: https://www.weather.gov/about/observations

UNIVERSITY OF WISCONSIN-STEVENS POINT RECOGNIZED AS NORTHEAST WISCONSIN'S FIRST STORMREADY UNIVERSITY

BY: PHIL KURIMSKI

The National Weather Service recognized the University of Wisconsin-Stevens Point (UWSP) as the first StormReady University in northeast Wisconsin.

UWSP began their relationship with the NWS in 2016 when they became a Weather-Ready Nation Ambassador. Since then, they have worked diligently to meet the requirements of a StormReady University, which they completed on June 12, 2019. On October 7, 2019, NWS Green Bay presented Emergency Management Specialist Corinna Neeb and Chancellor Bernie Patterson an official StormReady sign. The mayor of Stevens, Point Mike Wiza, was also on hand for the ceremony. This recognition is due to the hard work of Corinna and UWSP to better protect the students, faculty, and visitors to the university.

UW-Stevens Point recognized as the first StormReady University in northeast Wisconsin. L to R: Corinna Neeb, Emergency Management Specialist UWSP; Phil Kurimski, Meteorologist NWS Green Bay; Bernie Patterson, UWSP Chancellor; Mike Wiza, Mayor of Stevens Point.

SÉURA RECOGNIZED BY THE NWS

BY: REBECCA HYKIN

SÉURA, an electronics manufacturer headquartered in Green Bay, was recently recognized as a 2019 Weather-Ready Nation (WRN) Ambassador of Excellence by the National Weather Service (NWS). The WRN Ambassador initiative is the NWS's effort to recognize partners who are improving the nation's readiness, responsiveness, and overall resilience against extreme weather events. This recognition honors Ambassadors for their outstanding work and contributions to building a Weather-Ready Nation.

SÉURA was acknowledged for their efforts of putting together a weather preparedness plan and regularly practicing that plan, identifying tornado shelters within the facility, designating a weather watcher, and monitoring the latest hazardous weather conditions by using various alert systems, including a weather radio.

If your organization or business is committed to weather safety, willing to help spread the word, and inspire others to take action, the NWS wants to recognize your work! Join the thousands of Ambassadors across the nation helping to build a Weather-Ready Nation.

For more information, visit:

http://www.weather.gov/wrn

WEATHER-READY NATION AMBASSADORS EXCEED 10,000!

NOAA's Weather-Ready Nation (WRN) Ambassador Program celebrates a major milestone as it is now 10,000+ strong! Signing on 10,000+ ambassadors is more than just a numerical milestone. It is a testament to the shared priority of stronger community resilience, the innovative successes of collaboration, and the diversity of organizations that all play a role in making communities, businesses, and individuals "weather-ready." To all of NWS Green Bay's WRN Ambassadors, we thank you for all you have done to help build a Weather-Ready Nation!

The extensive reach of WRN Ambassadors has resulted in many noteworthy successes:

- There has been a drop in the number of severe weather fatalities, particularly lightning and storm surge deaths since 2017.
- The sharing of weather safety information has increased, especially during campaigns such as Turn Around Don't Drown and When Thunder Roars Go Indoors
- There is a continued interest from a diverse group of ambassadors eager to engage their employees, stakeholders, and the general public about weather safety.

Becoming ready, responsive, and resilient to extreme weather, water, and climate events involves all of us. If your organization or business is committed to weather safety and willing to help spread the word and inspire others to take action, the National Weather Service wants to recognize your work! Join the hundreds of ambassadors in Wisconsin and help our state become weather-ready.

For more information, visit:

http://www.weather.gov/wrn

"IT IS TRULY INCREDIBLE TO SEE HOW FAR THE WEATHER-READY NATION AMBASSADOR INITIATIVE HAS COME. WE ARE ALWAYS LOOKING FOR WAYS TO EXTEND OUR COMMUNITY OUTREACH TO ENHANCE COMMUNITY RESPONSE TO EXTREME WEATHER, WATER, AND CLIMATE EVENTS. THE AMBASSADOR PROGRAM IS A REFLECTION OF HOW THAT CAN BE ACHIEVED THROUGH PARTNERSHIPS AND COLLABORATION. THANK YOU TO ALL OF THE ORGANIZATIONS THAT HAVE EMBRACED THE INITIATIVE TO CREATE A WEATHER-READY NATION -- WE CANNOT DO IT ALONE!"

— LOUIS W. UCCELLINI, PH. D., DIRECTOR, NATIONAL WEATHER SERVICE

NWS GREEN BAY SAYS GOODBYE TO TWO LONGTIME METEOROLOGISTS

BY: LINDA SKOWRONSKI

LAST RETIRES FROM NWS GREEN BAY

After more than 32 years of federal government service, Jeffrey Last retired from the National Weather Service on September 28, 2019.

Last joined the Green Bay, Wisconsin weather forecast office as its first Warning Coordination Meteorologist in October 1994. During his time in Green Bay, Last worked with many partners in the weather community including emergency managers and broadcast media. He was instrumental in starting and continuing the annual Media and Partners Seminar to share ideas and brainstorm better ways to disseminate weather information to the public.

Last began his National Weather Service career as a Meteorologist Intern at the Peoria, Illinois weather service office. He then moved to Kansas City, Missouri, to work at the Central Region Headquarters office as a Staff Meteorologist. From there, he joined the weather forecast office in Milwaukee/Sullivan, Wisconsin, as a Forecaster and Warning Preparedness Meteorologist. It was during this time that he met his wife Jill, a Meteorologist at General Mitchell International Airport in Milwaukee, Wisconsin.

A native of Milwaukee, Last received his Bachelor of Science Degree in Atmospheric Science from the University of Wisconsin in Milwaukee.

Jeff and Jill are moving to Florida to enjoy warmer weather, especially during the winter months. We wish them both good health and happiness as they start a new chapter in their lives.

GORCZANY RETIRES FROM NWS GREEN BAY

Michael Gorczany retired from the National Weather Service on October 31, 2019. He served over 32 years in the federal government, all with the National Weather Service.

Gorczany joined the Green Bay, Wisconsin weather forecast office as a General Meteorologist in October 1994. During this time, Gorczany served as the Storm Data Program focal point. He meticulously reported details of all thunderstorms, flooding, snow storms, and other weather phenomena into the Storm Data Program. Included in the reporting are damage estimates and any personal injuries as a result of the weather event. This data is used by researchers and is very important in looking at weather trends.

Gorczany began his National Weather Service career as a Meteorologist Intern at the Flint, Michigan weather service office. He then moved to the Topeka, Kansas weather forecast office. It was at this point that Gorczany began working with the Warning Preparedness Meteorologist on a program similar to Storm Data.

A native of Milwaukee, Gorczany received his Bachelor of Science Degree in Meteorology from the University of Wisconsin in Madison, Wisconsin.

Mike and his wife Sue plan to stay in the Green Bay area. We wish them both well in the years ahead.

WFO GREEN BAY HOSTS PARTNERS WORKSHOP

Local emergency managers and media meteorologists visited WFO Green Bay for the 23rd Annual NWS Green Bay Partners Workshop, held November 15, 2018. The theme of this meeting was "collaborating to communicate." Broadcast meteorologists from television stations across the region joined northeast Wisconsin emergency managers and NWS staff to discuss working together to better communicate risks associated with significant weather events. Presentations on the historic northeast Wisconsin April 2018 blizzard and the August 2018 tornado outbreak helped start the discussion. Other topics of discussion included using social media to communicate as a "community," and a preview of new services that will help convey risks and impacts of winter weather events.

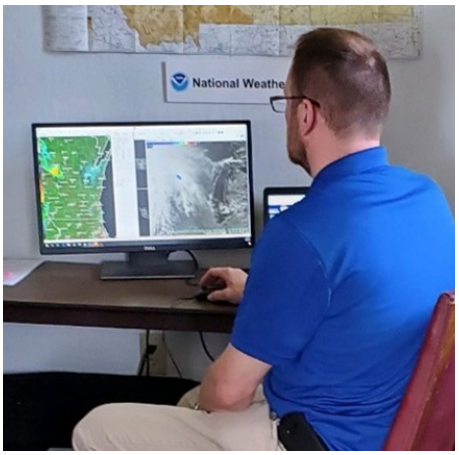
Participants at the 2018 Annual NWS Green Bay Partners Workshop.

NWS GREEN BAY SUPPORTS THE 50TH EAA AIRVENTURE

The annual Experimental Aircraft Association (EAA) AirVenture in Oshkosh continues to be the largest aviation outreach opportunity for the National Weather Service.

Weather always has the potential to be a huge factor at the event, due to the volume of air traffic and the tens of thousands of daily attendees. The NWS Green Bay forecast office provided enhanced aviation forecasts and weather support at the onsite emergency operations center. Meteorologists gave real-time briefings to decision-makers from the FAA, Winnebago County Sheriff's Department, Oshkosh Police Department, Wisconsin State Patrol, US Air Force, US Army, and the FBI. In addition, a daily Enhanced Terminal Aviation Forecast shift helped expand the detail and scope of aviation forecasts and to organize the coordination of that information with internal and external partners.

In addition to the decision support, thousands of visitors stopped by the NWS outreach booth, which provided many opportunities for NWS meteorologists to interact with pilots and the public.



Senior Meteorologist Phil Kurimski providing weather support.

NWS METEOROLOGISTS VISIT AUSTIN-STRAUBEL INTERNATIONAL AIRPORT

On May 16, meteorologists from NWS Green Bay visited Austin-Straubel International Airport in Green Bay. This visit gave a behind-the-scenes look at how weather directly impacts the airport and their operational decisions, which ultimately enhanced the relationship between the airport and the NWS Green Bay staff.

The first stop on the tour was the airport ground maintenance/snow removal building. NWS staff walked through the large facility which houses many impressive snow removal and de-icing vehicles. Airport staff described each vehicles' function in keeping runways operational during snow/ice events and the challenges they face with timing, temperature, and precipitation type. The second stop on the tour was the Aircraft Rescue and Fire Fighting (ARFF) building. ARFF staff provided an overview of the facility along with the expectations and challenges they face as the first responders for the airport, including acquiring weather information from NWS Green Bay for all aircraft incidents. The last stop on the tour was the Airport Control Tower and the Terminal Radar Approach Control Facility (TRACON). Air traffic controllers described how weather impacts local air traffic, including arrivals/departures, and how staffing adjustments are made during busy times, such as for presidential visits, EAA Airventure, and for Green Bay Packers home games.

The visit was well received by the airport personnel and the NWS Green Bay staff. We hope to continue to build on this relationship!

Meteorologist Rebecca Hykin inside one of the airport's massive snow plows.

GIVING BACK TO THE LOCAL COMMUNITY THROUGH THE ADOPT-A-HIGHWAY PROGRAM

Employees at the National Weather Service office in Green Bay gave back to the community this year by adopting a WI DOT park and ride parking lot near the Freedom, WI exit along I-41. Typically, anywhere from 3 to 6 employees volunteered to participate in each of the three scheduled cleanings for the spring, summer and, fall seasons. This is the first year the office has been involved with the Adopt-A-Highway program and will likely be the first of many to come.

WINTER WEATHER WORD SEARCH

ACCUMULATION
ADVISORY
ARCTIC
BLACK ICE
BLIZZARD
BLOWING SNOW
BLUSTERY
CHILLY
COLD
FORECAST
FREEZING RAIN
FROSTBITE
FROZEN
GLOOMY
GLOVES
HYPOTHERMIA
ICE JAM
ICY
MITTENS
OBSERVER
POLAR
RADAR
SHOVEL
SLEET
SLIPPERY
SNOWMAN
SNOW SQUALL
SPOTTER
TEMPERATURE
WARNING
WATCH
WEATHER BALLOON
WEATHER READY
WIND CHILL
WINDY
WINTER STORM

NATIONAL WEATHER SERVICE
GREEN BAY

2485 South Point Road
Green Bay, WI 54313
Phone: 920-494-2363

www.weather.gov/grb

NWSGreenBay

@NWSGreenBay