NATIONAL WEATHER SERVICE
GREEN BAY

PACKERLAND WEATHER NEWS

Winter 2021/2022
Volume 19

EXTREME HAIL EVENT IN NORTHEAST WISCONSIN

BY: KEITH COOLEY, LEAD METEOROLOGIST

A cold front passed through northeast Wisconsin early September 7, 2021, which caused two separate squall lines to develop.

The first squall line passed through northeast Wisconsin in the early morning hours, before shifting east to Lake Michigan by 7:30 am. It led to isolated wind damage across northern Door County, where multiple trees and wires were downed near Peninsula State Park.

Figure 1: 4.5" hailstone reported 5 miles north-northeast of Appleton. Photo credit: Pat Costello.

The second squall line developed by 8:00 am over Waupaca and Oconto counties and quickly became severe. As the second round of storms raced eastward at 50 to 60 mph, they produced a swath of hail ranging from 1.0 to 4.5 inches in diameter! The large hail damaged roofs, vehicles, and homes from New London and Hortonville, east across the I-41 corridor near Appleton, to portions of southern Brown County. The largest hail stone was measured at 4.5 inches (**Figure 1**) and was observed only 5 miles north-northeast of Appleton! Although the 4.5 inch diameter hailstone tied for the third largest hailstone recorded in Wisconsin, it *was* the largest recorded hailstone to fall so late in the season (since 1950 when records began). In addition, it shattered the previous record for the largest hailstone in Outagamie County which was last set on June 5, 2019, with 2.5 inches.

Environmental Setup

The mid-levels of the atmosphere featured a deepening 500 mb trough, a 70 to 75 knot jet streak, and cold temperatures ranging from -14°C to -18°C, all of which are favorable ingredients for severe weather formation. As discussed in National Weather Service spotter classes, severe thunderstorms are most likely to develop and maintain intensity where the greatest vertical wind shear and instability overlap. This overlap of favorable ingredients happened to be directly over northeast Wisconsin in this event

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Inside this issue:

Historic Wind/ Severe Storm/ Temperature Event December 15-16

A historic storm pushed across the Great Lakes on December 15-16. Wind gusts to around 75 mph, severe storms, and tornadoes occurred across the state. For a detailed summary, please CLICK HERE.

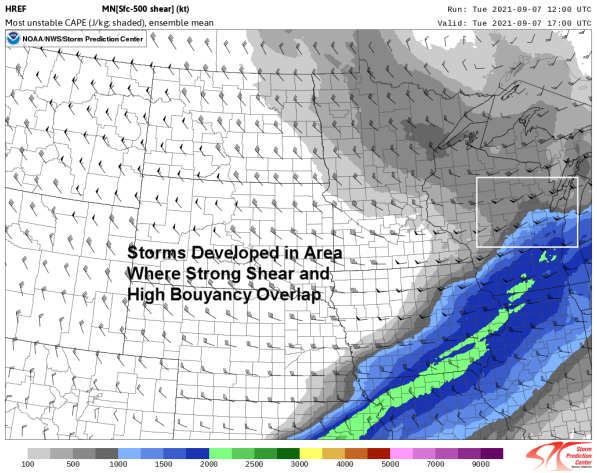


Figure 2: HREF mean wind shear vectors and most unstable CAPE (shaded)

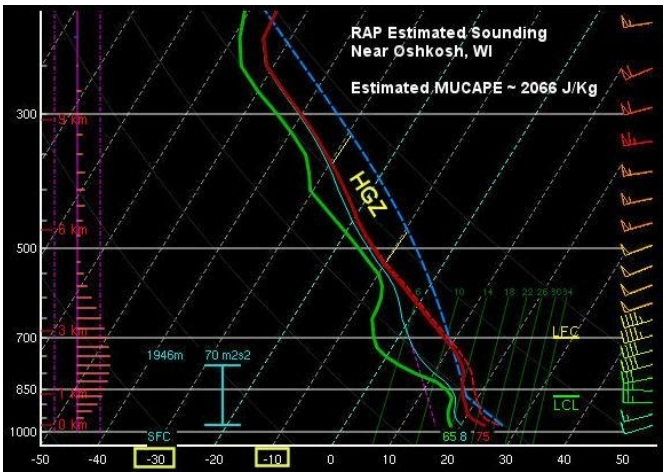


Figure 3a: RAP estimated sounding near Oshkosh, WI valid @ 10 am CDT

(white box in **Figure 2**). In this area, the forecast mean wind shear values exceeded 60 knots, while mean instability values (MUCAPE) were forecast to range from 1500-2000 J/kg. Analysis of a Rapid Refresh (RAP) model sounding near Oshkosh (**Figure 3a**), suggested very steep lapse rates associated with MUCAPE values even greater than 2000 J/kg. One thing to note from the Oshkosh RAP sounding is the area denoted as HGZ, the Hail Growth Zone. The HGZ identifies the layer in the atmosphere where temperatures range from -10°C to -30°C and is unstable. As the instability increases in the HGZ, the probability of seeing larger hail also increases. In this case, the instability in the HGZ was estimated to be near 600 J/kg across northern Wisconsin.

In addition to favorable instability and wind shear in the atmosphere, rotating updrafts can also lead to very large hail development. In fact, the storm that produced the largest hailstone on September 7th, had a persistent-rotating updraft that continued eastward into Lower Michigan! These rotating updrafts lead to pressure perturbations that can further strengthen the updraft. Research suggests that an updraft would have to reach speeds of at least 100 mph to support hail to 4.5 inches in diameter! The longevity of these rotating storms was supported by the intense speed shear noted through much of the convective cloud depth. This effectively tilted the storm to the east-northeast, separating the intense updraft from the cooler downdrafts. Since it is difficult to depict the tilted storm in this article, we can identify the classic hook signature and cyclonically rotating (and tilted) updraft (supercell) at the time the storm was producing some of the largest hailstones just north of the city of Appleton (**Figure 4**).

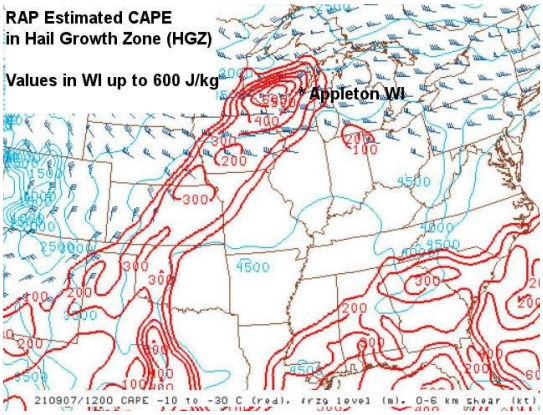


Figure 3b: RAP HGZ CAPE (J/Kg). Values over WI were ~ 600 J/kg

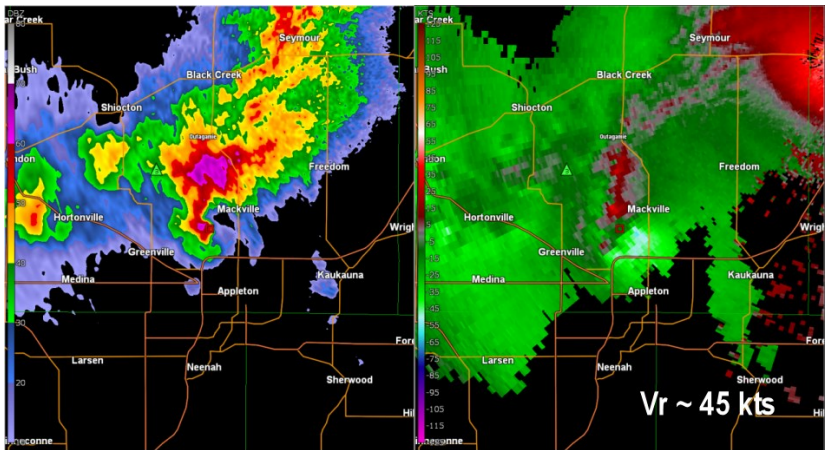


Figure 4: GRB radar data - Reflectivity (left) and Storm Relative Velocity (right) near Appleton

While these storms wreaked havoc during the morning commute and produced damage, the communities were very fortunate no injuries were reported from such extraordinary hail stones. To see more information on this story, please visit:

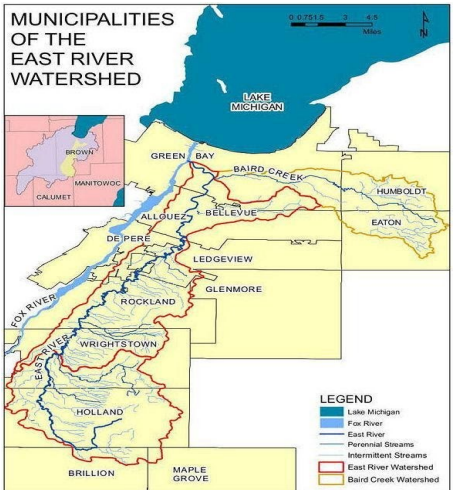
https://www.weather.gov/grb/090721_Hail_Event

COMMUNITY COLLABORATION TOWARD IMPROVING EAST RIVER WATERSHED RESILIENCY

BY: GENE BRUSKY, SCIENCE AND OPERATIONS OFFICER

The East River (one of the major tributaries of the Lower Fox River) has a well-known history of flooding. Although mitigation plans have been enacted along the river to limit impacts to area residents, flooding concerns remain. Recent flooding along the East River has been exacerbated by historically high Great Lakes water levels. The increased frequency and severity of weather events has made the need for resilience planning even more urgent. In the last three years alone, flooding along the East River has damaged homes, businesses, public infrastructure, agriculture, and strained local emergency response resources.

The map (below) shows the East River Watershed (outlined in red), which spreads across nearly a dozen municipalities from Holland to Green Bay. The key to adequately mitigating the flood impacts along the watershed will require a collaborative effort of all these municipalities.



Map of the East River watershed (red outline) and impacted municipalities. (Courtesy Adam Bechle, Sea Grant Coastal Engineering Specialist)

In early 2020, The Nature Conservancy (TNC) partnered with Wisconsin Sea Grant and the Green Bay Metropolitan Sewerage District (NEW Water) to create the East River Community Resiliency Collaborative (ERRC). The ERRC was founded to address East River flood-related concerns through a holistic, watershed-based approach to resilience planning and water resource management. Blake Neumann, the founding Nature Conservancy East River Resiliency Fellow, envisioned the ERRC as a springboard "to bring together a variety of stakeholder groups including county and municipal entities, state and federal agencies, legislators, technical experts, academics, and non-profit organizations with the goal of collectively achieving a common vision of a more resilient, flood-prepared East River Watershed." Julia Noordyk, the University of Wisconsin Sea Grant's water quality and coastal communities outreach specialist also highlighted the importance of East River watershed municipalities to "work beyond their borders" to collaboratively find solutions to address flooding impacts and water quality issues.

Since the inception of the ERRC nearly 18 months ago, several successful efforts have been initiated. These efforts include bringing East River Watershed municipalities together to complete a Community Flood Resilience Self-Assessment and launching a survey directed at local residents to better understand their perspectives regarding flood impacts and resilience. Several community-focused field trips within the East River watershed were also conducted in order to observe the most vulnerable locations to flooding. Some of these field trips included meeting with local farmers to learn about ongoing agricultural strategies that address flood resiliency, water quality, and retention of valuable topsoil. Other field trips involved visiting parks, trails, and ecologically important lands along the watershed to discuss improvements and preservation strategies.

Dan Teaters (wearing the green jacket), Zoning Administrator for the Ledgeview Planning Commission, discusses flood mitigation challenges near the bank of the East River at Ledgeview Road as part of the East River field tour on November 16, 2021.

Another important component of the ERRC is exploring ways to improve real-time monitoring and forecasting of East River water levels and stream flow, in order to provide increased lead time for flood warnings. In this regard,

(continued on page 4)

University of Wisconsin-Madison's Civil and Environmental Engineering Department, the North Central River Forecast Center (RFC) and the National Weather Service (NWS) in Green Bay, continue to collaborate toward the development and implementation of a hydrologic model specifically designed to forecast streamflow, water-levels, and inundation along the East River Watershed. During the summer of 2021, several temporary sensors were installed in the East River, and some of its tributaries, to analyze streamflow characteristics. This information will be used to help calibrate the forecast models.

Recent contributions by the NWS Green Bay office to the ERRC effort included installation of a staff gauge near the Hoffman Road Bridge, conducting a flood impact survey at several vulnerable locations along the Fox and East Rivers, and educating stakeholders on hydrologic-related forecast and warning products issued by the NWS, as well as the value of the additional river gauges for real-time monitoring of river levels and streamflow.

Ultimately, the goal of the ERRC is to foster a spirit of stewardship that will bring communities together to make the entire East River Watershed more resilient and responsive to flood impacts.

NWS staff member assists with impact survey along the Fox River in downtown Green Bay.

Remember to visit www.weather.gov/grb for the latest watches, warnings, statements, and forecasts.

KEWAUNEE COUNTY RECEIVES TWO "TURN AROUND, DON'T DROWN!" SIGNS

BY: KURT KOTENBERG, WARNING COORDINATION METEOROLOGIST

Second only to heat-related fatalities, more deaths occur from flooding each year than any other weather-related hazard. Over half of all flood-related drownings occur when a vehicle is driven into hazardous flood water.

On October 6, the National Weather Service in Green Bay delivered two "Turn Around, Don't Drown!" signs to Tracy Nollenberg, Kewaunee County Emergency Management Director.

These signs are a part of the National Weather Service's nation-wide "Turn Around, Don't Drown!" campaign. As part of the campaign, these signs are placed in flood-prone locations and are intended to warn people of the hazards of walking or driving a vehicle through flood waters. Several counties in east-central and northeastern Wisconsin have Turn Around Don't Drown signs posted at locations where flash flooding often leads to water over the roads.

The National Weather Service would like to thank Kewaunee County for their continued support and partnership.

Tracy Nollenberg, Kewaunee County Emergency Management Director receives TADD sign.

MANITOWOC COUNTY RECOGNIZED AS STORMREADY BY THE NATIONAL WEATHER SERVICE

BY: KURT KOTENBERG, WARNING COORDINATION METEOROLOGIST

Manitowoc County is now officially StormReady. On October 6, Travis Waack, Manitowoc County Emergency Services Director, and Kayla Beckerdite, Manitowoc County Emergency Services Program Manager, accepted a StormReady designation from the National Weather Service in Green Bay.

Travis Waack (left) and Kayla Beckerdite (middle) receive StormReady sign from Kurt Kotenberg (right).

The StormReady program helps arm America's communities with the communication and safety skills needed to save lives and property-before, during, and after the event. StormReady helps community leaders and emergency managers strengthen local safety programs.

"Being designated as a StormReady Community reaffirms the County's commitment to public safety, shows our commitment to preparedness, and proves that we have the correct systems in place for when disaster strikes," said Beckerdite.

The National Weather Service in Green Bay is greatly appreciative of our partnership with Manitowoc County and looks forward to continuing to work with them for the common goal of protecting life and property.

Manitowoc County's StormReady recognition will be valid for three years and will expire on September 8, 2025. Visit the national StormReady website at www.weather.gov/StormReady to see Manitowoc County on the national and state map of recognized communities.

100 YEAR INSTITUTION COOP AWARD

BY: SCOTT CULTICE, OBSERVATION PROGRAM LEADER & SCOTT BERSCHBACK, METEOROLOGIST

NWS Green Bay was honored to present a 100 Year Honored Institution Award to the Hancock Agricultural Research Station in Hancock, Wisconsin. The Hancock weather history is rich in tradition, as the very first weather observation was taken on October 17, 1902, by a farmer on the north side of town by the name of F.B. Hamilton. Hamilton continued taking weather observations for the town through July 1921.

Professor A.R. Albert then moved into town in the summer of 1921 and opened the Hancock Agricultural Research Station. Albert was a soil scientist who devoted a significant amount of research efforts to dairy feeding, pasture utilization, soil fertility management, and one of the first studies of wind erosion control. Albert facilitated the expansion of the station from the initial 95 acres to 225 acres.

Professor Albert was also a devoted weather enthusiast and had the weather station for the town moved to the Research Station. On August 1, 1921, the first weather observation was taken. Since then, the station has taken over 36,500 weather observations and has had many weather keepers through the years. The highest temperature recorded was 112°F (on July 13 &14, 1936) and lowest was -43° (on January 30, 1951). A total of 3,096.56 inches of precipitation and 4,503.2 inches of snow has been recorded.

Sue Miles (left), Office Manager, and Troy Fishler (right), Superintendent, receive 100 year award.

For more historical weather information from the Hancock site, please click HERE.

Congratulations and thank you for your dedication to the National Weather Service Cooperative Observer Program!

LET'S TALK ABOUT THOSE SNEAKY WINTER HAZARDS

BY: KIRA JESSE, METEOROLOGIST

Every year meteorologists, emergency managers, and other public safety offices come together to promote an important week: Winter Weather Awareness Week. Typically occurring in mid-November, this year's annual event was November 15th through the 19th.

If you're a life-long Wisconsin resident (or from another northern climate), some of the information shared might seem like common knowledge, but many of us know all too well that once the flakes start to fly, and temperatures fall below freezing, winter travel hazards can be sneaky. This was the topic NWS Green Bay focused on for the 2021 Winter Weather Awareness Campaign.

Some of the more common sneaky winter hazards include localized blowing snow and black ice—which could be caused by freezing drizzle, a flash freeze, or melting snow refreezing at night. The keyword is localized. Not all roads are treated equally, especially when driving on secondary highways or a neighborhood road. It's important to stay aware all season long because with temperatures frequently at or below freezing, you never know when or where a slick spot may appear. The same is true of blowing snow, as the impact is often a result of the local geography. The bottom line: just because you don't see an official winter headline out (such as a Winter Weather Advisory or a Winter Storm Warning), doesn't mean roads are free and clear from other wintry surprises!

The good news is there are ways to stay prepared. An emergency car kit is essential, even if you only plan to drive your car around town all winter. Staying warm is the first step. Take five minutes to round up an old blanket or sleeping bag, a couple hats, scarves, socks, and mittens, and throw them in a tote, box, bag, or as-is in the back of your car. Other items to collect include hand warmers, first aid kit, water, snacks, an extra phone charger, flashlight with spare batteries, shovel, rope, cat litter or sand, and jumper cables.

You can also prepare by checking the weather forecast and local road conditions. For Wisconsin road conditions, visit www.511wi.gov or download the 511 Wisconsin Smartphone app. Most other states have similar websites and applications available to easily check the road conditions. If traveling, make sure someone knows where you are going, the route you are taking, and when you expect to arrive.

Cold is somewhat less sneaky but a very familiar winter weather hazard. We asked our Facebook friends what advice they'd give to someone who was new to the north. Here's what they said:

"Dress in Layers. On the coldest days I wear a jacket underneath my heavy coat." - Eric McDonald

"If you're going to be active outdoors do not let cotton be the layer next to your skin. Merino wool is the best but expensive." - Tony Seefeldt

"I've used my car's floor mats in front of the front tires to get out of icy patches." - Melanie Koslowski

"Embrace the cold and winter... Make some firewood, strap on some skis or snowshoes, take the dog for a brisk walk, or just stroll with friends." - Lisa Haefs

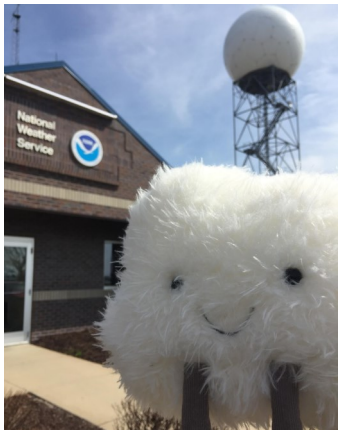
"Wear a stocking cap that will cover your ears and your forehead... Make some tea, find some good books to read and enjoy the winter. It will make you appreciate spring and summer all the more." - Ray Norman

Good reminders for us all. And I have to agree, there's nothing like a good book on a cold or snowy winter day. Stay safe and have fun this winter!

CLOUDY TOURS THE NWS FOR SEVERE WEATHER AWARENESS WEEK

In addition to Winter Weather Awareness Week, our other big campaign of the year is Severe Weather Awareness Week, occurring every April in Wisconsin. This past spring, NWS Green Bay geared the content towards young kids by introducing an office friend, Cloudy.

Cloudy tours the office and discovers facts along the way about weather balloons, thunderstorms, staying safe, and weather radios. If you have young ones at home (or even if you don't!) visit: www.weather.gov/grb/cloudy to find the full campaign video and daily lessons.



Cloudy stopping by the Green Bay Forecast Office to learn about severe weather forecasting.

SUMMER 2021: FROM ABNORMALLY DRY AND MODERATE DROUGHT TO UNUSUALLY WET CONDITIONS

BY: ROY ECKBERG, METEOROLOGIST

The winter of 2020-21 brought well below normal snowfall to north-central and northeast Wisconsin. At Wausau, it was the 13th least-snowiest winter on record and 18th least-snowiest at Green Bay. Even across the snowbelt region of northern Wisconsin, Lac Vieux Desert in Vilas County only reported 76.2 inches of snow for the season, well short of the normal of 125.7 inches. Due to the well below normal snowfall, the snow cover melted earlier than usual. The typical snowmelt runoff was well below normal for the area as well.

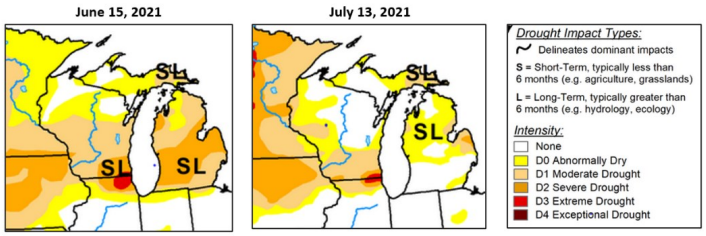


Figure 1: Drought Monitor on Jun 15th (left image) and July 13th (middle image)

In April, local precipitation trends kept drier than normal conditions in place across central and east-central Wisconsin, with near or slightly above normal conditions across northern Wisconsin. As the calendar turned to May, it was extremely dry across northern Wisconsin along the Michigan border, where precipitation totals were only 50% to 75% of normal. The lack of precipitation, combined with dry air masses from Canada, brought worsening drought conditions and several days of elevated fire weather conditions across northern Wisconsin.

The dry conditions across Wisconsin peaked during the first week of June, with an unusually intense and long heat wave for so early in the summer. This resulted in much of the area being classified in abnormally dry or moderate drought conditions (see **Figure 1** left image).

As shown in the middle image in **Figure 1**, abnormally dry and moderate drought conditions vanished from the Drought Monitor by the middle of July as several rounds of thunderstorms with heavy rain moved across the state between June 10th and July 10th.

The first round of thunderstorms with heavy rain occurred on June 10th, where Rhinelander received 3.29 inches of rain. Some of the higher rainfall totals during this period: 10.10 inches at Schofield 3 E, 10.02 inches at Waupaca 6 SW, 9.59 inches at Rudolph 2 ENE, 9.13 inches at Wisconsin Rapids Grand Avenue Coop Station, 9.07 inches at Waupaca, 9.02 inches at De Pere 4 SW, and 8.69 inches at Stevens Point. The lowest rainfall totals were generally in the 3 to 4 inches range. The rounds of thunderstorms continued through July and much of August. Many locations reported 4 to 9 inches during July, with Omro reporting the highest total at 9.29 inches.

In August, the rounds of storms brought more heavy rain and at times contained damaging winds, hail, and a few tornadoes. Some of the higher rainfall totals for the month: 12.31 inches at Vesper 2 SSE, 11.86 inches at Wisconsin Rapids 4 SE, 11.04 inches at Evergreen, 10.28 inches at the Stevens Point COOP site, and 0.11 inches at Clintonville. By the end of the summer, water levels on area rivers returned to normal, if not above normal at times.

By the end of the summer (June 1 to August 31), over two feet of rain fell across portions of the area (see **Figure 2** left image). Some of the higher totals for the season: 25.60 inches at Schofield, 25.36 inches at Wausau, 24.57 inches at Waupaca 6 SW, and 24.49 inches at Vesper 2 SSE. Rainfall totals generally ranged from 15 to 21 inches across northeast Wisconsin. From Wausau and Marshfield east, through the Fox Valley east to the lakeshore, the rainfall totals were 150% to 175% of normal (**Figure 2** right image). At Wausau, the summer rainfall total of 25.36 inches smashed the previous record of 20.60 inches set in 1995.

Despite the heavy rain across much of the area during the summer, the far north missed out on the heavy rain as the Rest Lake COOP observer only recorded 7.21 inches for the summer. As a matter of fact, **Figure 2** shows a bullseye of the heavy rain over central Wisconsin with very dry conditions to the north and south. Mother Nature finally turned the faucet off again during the fall, as the weather pattern returned to drier than normal conditions.

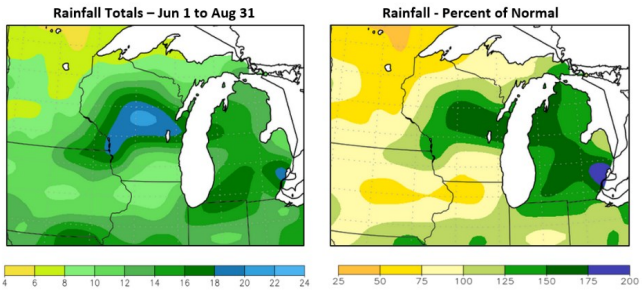


Figure 2: Rainfall total (left image) and Percent of Normal (right image)

AUTOMATED WEATHER OBSERVATIONS

BY: RICH MAMROSH, LEAD METEOROLOGIST

The National Weather Service has thousands of dedicated citizens who report high and low temperatures and precipitation each day. These observations are used in weather forecasting, verification, and climate studies. We also use automated weather observations that report hourly, or at more frequent intervals, as input to our warnings and forecasts for the public, pilots, and mariners. These weather stations are usually located at airports, though there are some marine sensors along the lakeshore, and others at fire weather reporting stations. Private citizens sometimes report weather from their home weather stations as well.

ASOS (typical system pictured below) and **AWOS** systems are typically found at airports. They use

a variety of sensors and computer algorithms to report current weather information at least hourly, but often every minute. ASOS stands for Automated Surface Observing System. They are owned by the Federal Aviation Administration (FAA) and maintained by NWS technicians. AWOS stands for Automated Weather Observing System. These are maintained by the FAA, a state, or a contractor.

Temperature and **relative humidity** are measured using a hydro thermometer, similar to the one pictured on the right. It is accurate to about 1.5°C. The housing is painted white to reflect sunlight. ASOS systems use ultrasonic wind sensors that use sound to estimate wind speed and direction. A typical sensor is pictured below.

Cloud cover is measured by a ceilometer that points a laser light straight up into the sky (see pointed sensor below). It measures the time

it takes for the light to be reflected back to the sensor by clouds or precipitation. Therefore, since the

speed of light is known, it calculates the height of the clouds or base of the precipitation above.

Since the sensor can only determine cloud cover if there are clouds directly overhead, it uses an algorithm to estimate cloud cover across the entire sky. If clouds are moving at a steady pace, the ceilometer will have periodic returns from the clouds, and time averaging will produce a representative sky cover. If clouds are only on the horizon, over the sensor, or moving very quickly, then time averaging may result in an unrepresentative sky cover.

Visibility is determined by using pulses of light, and measuring the amount that is scattered by rain, snow, smoke, or fog. A transmitter sends the pulses of light, while the receiver measures the amount of light left after being scattered. Algorithms are used to determine the visibility based on the amount of light that is scattered. A picture of the sensor is below.

Precipitation type is estimated by using light emitting diodes that shine infrared light between a transmitter and receiver. Different precipitation types such as rain,

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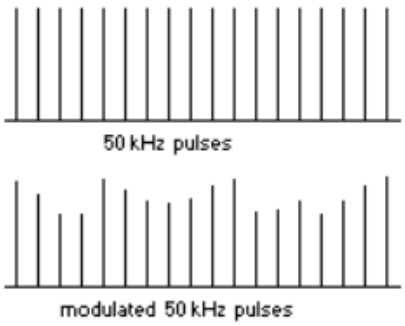
snow, and drizzle are of different shapes and sizes, and alter the wavelength and amplitude of the reflected light. ASOS/AWOS systems use algorithms to improve the precipitation type estimates based on air temperature, humidity and wind.

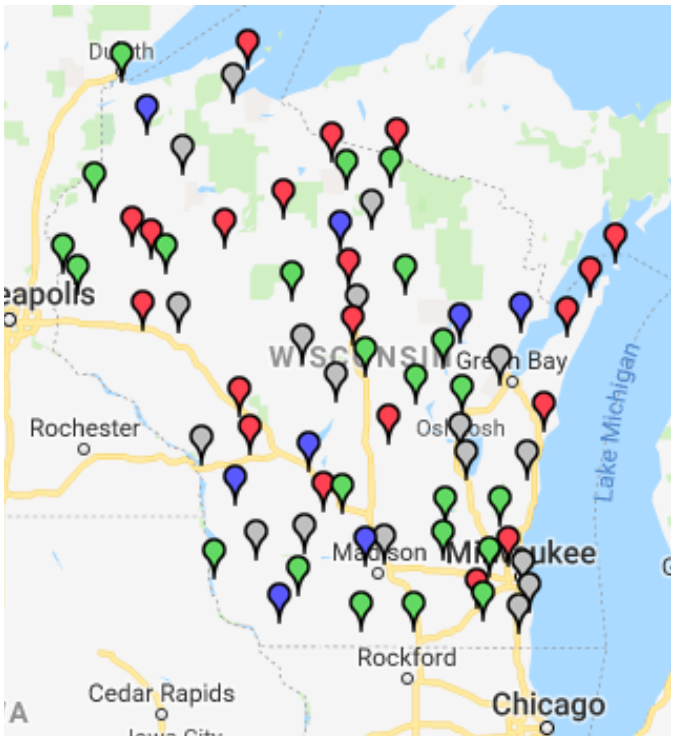


Weather observations are transmitted at hourly (or more frequent) intervals in a coded fashion that is similar throughout the world. These reports are called METARs (Meteorological Terminal Air Report) in a format that is standardized by the World Meteorological Organization (WMO). The report begins with the station identifier, which is a three character identifier preceded by the geographical location. The METAR above is from Oshkosh (OSH), in the continental United States (K). AUTO means there is no human backup observer present. The next group is the date of the month and time in Greenwich Mean Time (or UTC). Then, there is the three character wind direction, reported in 10° intervals, with 90° being east, 180° south, 270° west, and 360° north. It is followed by the wind speed in knots. Next is the visibility in statute miles, followed by precipitation type (if any), and sky cover in hundreds of feet above the ground. After sky cover are temperature and dewpoint in degrees Celsius. Finally, there is the four digit altimeter setting in inches of mercury (Hg) with the decimal place implied between the first two and last two digits. There may be remarks added by an observer, if there is one.

For example, here is an Oshkosh METAR reported from the ASOS:

KOSH 160953Z **AUTO** 05014KT 9SM -RA OVC019 12/07 A2983

Day: 16th
Time: 0953Z
Wind: 50 degrees (or northeast) at 14 knots
Visibility: 9 Statute Miles
Weather: Light Rain
Sky Condition: Overcast at 1900 feet AGL
Temperature: 12C
Dewpoint: 7C
Altimeter: 29.83 in Hg



You can access the automated systems in Wisconsin (see map above) at https://www.faa.gov/air_traffic/weather/asos/?state=WI

THANK YOU COOP/UCOOP/COCORAHS OBSERVERS!

BY: SCOTT CULTICE, OBSERVATION PROGRAM LEADER & SCOTT BERSCHBACK, METEOROLOGIST

Happy 2022!

Everyone at NWS Green Bay would like to personally thank each of you for your dedicated snow measuring efforts through the years! Your timely, and accurate measurements allow us to provide better service to our partners and the public, and in some cases, immediate life-saving action. Your observations also help provide important data for research that leads to advances in life-saving technology.

As we push through the winter season, you can find many helpful reminders on measuring snow/ice and water equivalent here:

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

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

Have a safe 2022! If you have any questions, please send us an e-mail or give us a call. Thanks again!

COOP AWARDS

Jim Koth - Rice Reservoir-Tomahawk – 30 years

Dan Konopacky - Rainbow Reservoir-Tomahawk – 25 years

Jerry Stoltenberg - Wausaukee – 20 years

Tim Ebert - St. Germain – 10 years

Hancock Agricultural Research Station – 100 years!!!

Clintonville WWTP – 75 years!!

Phelps WWTP – 25 years!

WANT TO BECOME AN OBSERVER?

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

NWS GREEN BAY METEOROLOGIST WINS DEPARTMENT OF COMMERCE BRONZE MEDAL

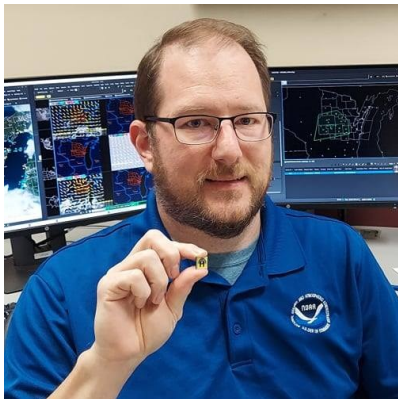
BY: SCOTT BERSCHBACK, METEOROLOGIST

NWS Green Bay Lead Forecaster Phil Kurimski was (virtually) presented with the Department of Commerce Bronze Medal, which recognizes federal employees for their superior performances. The medal is awarded to individuals, groups (or teams), and organizations.

Phil and 9 of his colleagues were recognized this fall for exceptional testing, training, and implementation of a new operational hydrologic framework, referred to as Hazard Services.

Hazard Services will significantly enhance the NWS forecasters' ability to deliver more timely, informative, and useful hydrologic hazard information.

Congratulations to Phil and his colleagues on this great honor!



NWS GREEN BAY GIVES BACK TO THE COMMUNITY

BY: SCOTT BERSCHBACK, METEOROLOGIST

Employees at the National Weather Service office in Green Bay gave back to the community this year by participating in a variety of programs. We hope everyone had a happy and healthy holiday season!

Adopt-A-Family

NWS Green Bay adopted a family during the holiday season, purchasing toys, books, clothes, shoes, and hygiene items.

NWS Week of Service

The Green Bay Forecast Office participated in the NWS Week of Service by reaching out to the community to help those in need. This year, the office donated 140 pounds of food, and 40 pounds of shelter items to Paul's Pantry and Saint John's Shelter.

Adopt-A-Highway

For the third straight year, employees cleaned the park-and-ride parking lot near the Freedom, WI exit along I-41. Typically, anywhere from 3 to 6 employees volunteer to participate in each of the three cleanings during the spring, summer, and fall seasons. We plan to stay involved with the Adopt-A-Highway program for many years to come.

WISCONSIN LAKES WORD SEARCH

G D A B S M Q C D V B M N W K M O J S F
N C S D E T D O K E N E W I C K G J E E
D Y U K Y R R Q S S I N Z S O A A S G L
O L A F F U B O H S P D W C R K B O I J
Z R C V R B P A M T E O S O E K E Y Y Y
O R X N G O W O W S P T C N L V N D Z P
R S M X A A I P Y R E A D S T X N B C M
U J M G N C T R P G R D T I S N I P I U
S B R O T J I Z E D A S E N A Y W C C J
H W Q Q T F B L N P L N S T C S H A J Z
G E N E V A G G E I U A N M T I Y Z D D
P B W D S U N R V P X S I Q G U O P M X
G W W P Z I F E E K P P H A N J B B E S
T M D K M X D Y V E M M N H B U X X Y O
P E T E N W E L L E N J I A N O N O M X

Buffalo
Butte des Morts
Castle Rock
Devils
Geneva
Green
Mendota
Michigan
Monona
Pelican
Pepin
Petenwell
Poygan
Rush
Shawano
Superior
Winnebago
Wisconsin

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