The Newsletter of NOAA's National Weather Service in Green Bay, Wisconsin

www.weather.gov/grb

Packerland Weather News

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Inside this issue:

NOAA Celebrates 200 Years of Science

The National Oceanic and Atmospheric Administration (NOAA), the parent agency of the National Weather Service, celebrates 200 years of science, service, and stewardship serving the U.S.

President Thomas Jefferson created the Coast and Geodetic Survey in 1807 to survey and map the country's coastline. The survey's vital role in providing safer travel on the seas and promoting commerce was worthy of its status as the young Nation's first physical science agency. Two centuries later, that survey has evolved into NOAA, with responsibilities for the nation's weather and climate, fisheries, ports, as well as environmental stewardship.

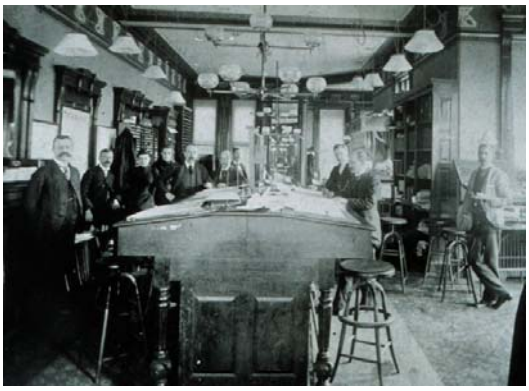
NOAA's 12,500 employees and many national and international partners play key roles in initiatives that range from the deep ocean to the surface of the sun. The aim is to apply a comprehensive understanding of the role of our oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions.

The National Weather Service (NWS) is NOAA's largest component and is the primary source of weather data, forecasts, and warnings for the U.S. The NWS is the nation's sole official voice for issuing warnings during life-threatening weather events. These services cost each American only about a cup of premium coffee a year—quite a bargain considering how much weather affects our daily activities.

While the NWS employs highly-skilled scientists and technology specialists, the NWS could not do its job as well as it does without the efforts of tens of thousands of volunteers around the country.

For more information on the NOAA 200 Year Celebration, visit:

celebrating200years.noaa.gov



A Weather Bureau office circa 1900. Credit: NOAA Central Library Photo Collection.

Part of the operations area of the NWS Green Bay Weather Forecast Office circa 2007.

Comments or Suggestions?

If you have suggestions for articles, have comments about the newsletter, or would like to be removed from the mailing list, please contact us at:

NOAA/NWS
2485 South Point Road
Green Bay, WI 54313

or by e-mail: jeff.last@noaa.gov

NWS Green Bay "On the Road" in Northeast Wisconsin

By Teri Egger, Senior Forecaster, and
Jeff Last, Warning Coordination Meteorologist
NWS Green Bay

NWS Green Bay staff hit the road again this past winter and spring and participated in many outreach activities and school talks, meeting with thousands of northeast Wisconsin residents.

The Lambeau Field Atrium in Green Bay showed that it is not only a place for excited Packers fans when it hosted the Safe Kids of Greater Green Bay's "Super Bowl of Safety" in January. The NWS, a member of the Safe Kids organization in Green Bay, joined with other community public safety organizations to provide a wide range of activities and presentations geared towards keeping children safe. Two thousand kids and adults participated in the event. This year the NWS booth got help from Junior Girl Scout Troop 469 of Morgan L. Martin Elementary School in Green Bay. As part of their work toward the Weather Watch badge, the girls put together safety posters and a home disaster preparedness kit.

The cold of January didn't prevent kids and their parents from becoming "scientists for a day" at the Einstein Science Expo in Green Bay. The Expo allows children to engage in hands-on explorations with experts in different disciplines of science. The NWS Green Bay office staffed a booth and provided many activities for the kids.

In February, NWS Green Bay staff members met with recreational boaters and outdoor enthusiasts at the Northeast Wisconsin Boat Show in Green Bay. Visitors to the Weather Service's booth learned about weather safety when out on the lake and provided valuable feedback on NWS marine forecasts and services.

The Green Bay office also had a booth at the annual Wisconsin Society of Science Teachers convention, held in downtown Green Bay in March. Hundreds of science teachers from across the state stopped by the booth to learn more about meteorology and the NWS. Teachers also had a chance to be a meteorologist and use the same tools NWS meteorologists use to issue severe weather warnings during a field trip to the Green Bay Weather Forecast Office.

Junior Girl Scout Troop 469 of Morgan L. Martin Elementary School with their weather safety poster.

The NWS booth at the Einstein Science Expo was a popular stop for children of all ages. Credit: Peg Zenko.

NOAA's 200th anniversary of science and service was the theme of the booth at the Wisconsin Society of Science Teachers convention. Linda Skowronski and Jeff Last of the NWS Green Bay office were on hand to meet the teachers.

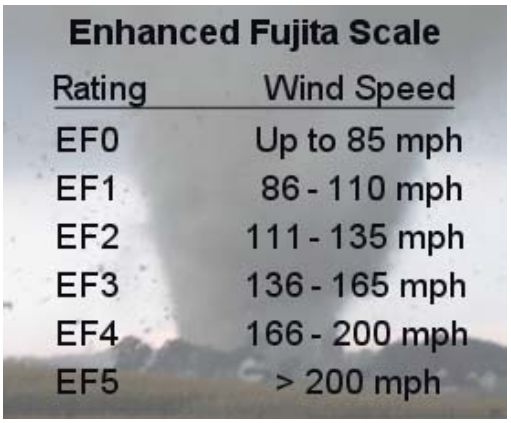
New Tornado Intensity Scale Introduced

Many people in Wisconsin and the Midwest are familiar with the Fujita (F) Scale, the damage intensity scale used to rate tornado strength. Recent research in structural engineering helped fine-tune the rating system, which is now known as the Enhanced Fujita (EF) Scale.

Dr. Ted Fujita from the University of Chicago created the original F-Scale in the 1970s to rate damage intensity caused by tornadoes. The scale, which ranges from F0 to F5, was a useful way to classify the estimated tornado intensity based on the damage the storm caused, but was difficult to objectively use. The F-Scale was originally developed based on expected damage to one primary type of structure—a "well-built frame house." The scale was difficult to use when tornadoes hit large buildings or wooded areas that were absent of houses.

Another problem was the wind speeds assigned to each F-Scale rating were never scientifically compared to the damage descriptions Dr. Fujita assigned to each rating category. For example, the minimum wind speed assigned to an F5 rating is 261 mph, but many structural engineers have argued that the damage associated with an F5 tornado (a well-built frame house being destroyed and the debris swept away) can be caused by wind speeds lower than 261 mph.

To address these issues, beginning in 2001, storm damage assessment experts and structural engineers began the process of developing an update to the Fujita Scale.



The main goals were to identify items that can be damaged (not only frame houses, but also commercial structures, mobile homes, barns, etc.), correlate the appearance of various degrees of damage to these structures to estimate wind speeds, and preserve the historic tornado database for some degree of consistency between the F-Scale and the EF-Scale. In 2004, this EF-Scale was introduced to the meteorological and engineering communities. The scale was formally implemented in the National Weather Service in February 2007.

The new scale uses 28 damage indicators consisting of many types of buildings, structures, and trees. For each damage indicator, several degrees of damage are identified. The added indicators and various types of degrees of damage will assist storm survey experts when assessing the strength of a tornado.

On the Web

www.spc.noaa.gov/efscale

Lightning Kills, Play it Safe

Summer is the peak season for one of the nation's deadliest weather phenomena—lightning. If you are outdoors and a storm approaches, move to a sturdy building or metal vehicle immediately. Remember, if you can hear thunder, you are close enough to that storm to be struck by lightning.

Coaches, sports officials, and others responsible for outdoor groups should have a NOAA Weather Radio handy for the latest weather information.

On the Web

www.lightningsafety.noaa.gov

Severe Weather Spotter Talks a Success

By Linda S. Skowronski,

Administrative Support Assistant, NWS Green Bay

Every spring, NOAA's National Weather Service conducts training seminars for individuals interested in becoming severe weather spotters. Storm spotters are volunteers who help their community and the NWS by keeping an "eye on the sky" during severe weather. Timely and accurate information received from spotters assists meteorologists in their warning decision making.

NWS Green Bay recently held 23 severe weather spotter talks throughout northeast and north central Wisconsin. Over 1,000 individuals attended the seminars, many of whom were attending for the first time.

Storm spotters are an important part of a successful warning system, providing valuable observations of significant weather to those in the path of severe storms. Spotters in south-central Kansas tracked a monstrous and deadly tornado on May 4, 2007 as it moved toward the small community of Greensburg. The spotters were able to keep the local NWS office updated on the path of the storm, undoubtedly helping to save lives.

Attendance at the Algoma, Kewaunee County spotter talk included Emergency Manager Lori Hucek and members of law enforcement, fire departments, first responders, amateur radio, and the general public.

We are pleased with the support we have been given by the citizens of Wisconsin and look forward to receiving your reports should severe weather strike.

On the Web

www.weather.gov/grb/skywarn

Length of Service Awards Given to Observers

Walt Kaszynski (left) receives a 35 Year Length of Service Award from NWS Green Bay Meteorologist-in-Charge Gary Austin. Walt is the station manager of WOCO radio in Oconto. After the award ceremony, he held a radio talk show with Gary and Observing Program Team Leader Pat Hein about the effects of El Nino and sunspots on the local climate.

Ken Eales, COOP Observer for the airport in Manitowish Waters, received a 10 Year Length of Service Award.

The Cooperative Observer Corner

By Scott Cultice, Hydrometeorological Technician, NWS Green Bay

Hello fellow Cooperative Observers. My name is Scott Cultice, and I work for the NWS Green Bay as a Hydrometeorological Technician. I am also a Cooperative Weather Observer for Outagamie County taking observations for the City of Appleton.

Now that we are into the spring season, our focus is changing from frozen ponds and fluffy white beauty to scenes of waving wheat, greening lawns, and the occasional threat of severe weather. As Cooperative Weather Observers, we are the eyes that bring ground truth to what the NWS sees with radar images. At the NWS, we can detect the most likely place that hail, high winds, and tornadoes may occur, but we need your reports to ascertain if the event is even taking place, and if it is, the magnitude of the particular weather feature.

When you report hail, we want to know the largest size that fell. Your property may be covered with pea size hail, but if there is one stone that is larger, we want to know about it! You can either measure it, or compare it to common things such as coins, ping pong balls, golf balls, tennis balls, or grapefruits. On the B-91 form, there is a box you can "X" to document that you received hail. The size of the largest stone could then be written in the remarks section. Since hail is a type of frozen precipitation, you would enter a "T" for Trace in the same column you used for snowfall.

Hopefully you will never see a tornado. If you do, take shelter first. You can document the experience after the threat has passed. Damaging winds are more challenging. Unless you personally own wind equipment to directly measure wind speed, you can infer the magnitude by the damage that occurs. Here is a guide for estimating wind speed:

25-31 mph: Large branches are in motion; whistling heard in overhead wires.

32-38 mph: Whole trees in motion.

39-54 mph: Twigs break off trees; wind impedes walking.

55-72 mph: Damage to chimneys; television antennas; pushes over shallow rooted trees.

73-112 mph: Peels surface off roofs; windows broken; trailer homes overturned; large trees uprooted.

113+ mph: Complete roofs torn off houses; weak buildings and trailer homes destroyed.

On your weather form, there is also a box you can "X" for damaging winds. If you have damage, you can write the details in the remarks section. For example, let us know if tree limbs were blown down and the diameter of the limbs. Also, let us know if the tree was alive or dead and what type of tree it was.

Thanks to all the Cooperative Observers across central and northeast Wisconsin for doing an outstanding job reporting the weather. Have a safe and enjoyable summer!

NWS and TV Stations Working Together

By Jeff Last, Warning Coordination Meteorologist, and Richard Mamrosh, Senior Forecaster
NWS Green Bay

The National Weather Service and media meteorologists work closely together to ensure watches and warnings issued by the NWS are quickly broadcast to the public. Most people receive severe weather information from television, so a good working relationship between the media and the NWS is critical to the safety of everyone.

To enhance this relationship, the NWS Green Bay office hosts an annual "Media and Partners" workshop for media and private sector meteorologists. The half-day seminar covers many topics, including NWS forecast and warning product changes, meteorological reviews of significant weather events, and an open forum for exchanging ideas on how to improve services.

Staff from the NWS office also visit television stations. Local TV weather departments are quite sophisticated. They all have access to much of the information that meteorologists and observers in the NWS collect and use–including surface weather observations, weather balloon observations, satellite pictures, and numerical weather prediction models. They look over this information to come up with the forecast for the local area, and then use weather graphics software to create colorful weather maps that are appealing to the viewing audience. TV stations also have access to NWS watches, warnings, and advisories. During severe weather, the media quickly broadcast the severe weather information so that viewers can take protective action.

NWS Forecaster Tasos Kallas discusses radar algorithms at the Spring 2007 Media and Partners Seminar.

When severe weather occurs, the NWS and TV stations can communicate directly with one-another using Internet instant messaging (IM). For example, with IM, NWS meteorologists can provide enhanced insight on why a warning is not required for a particular storm. TV meteorologists can forward reports of snowfall or significant weather observations from their network of "weather watchers." This method of communication allows for a quick and real-time exchange of information that is important to both the NWS and the TV weather office.

Summer Weather Helps Promote Poor Air Quality

In many parts of the country, the arrival of summer signals the start of air pollution season. Fortunately, the National Weather Service's air quality forecast guidance, produced in partnership with the U.S. Environmental Protection Agency, helps provide air quality forecasters and the public with information on predicted air quality conditions. The NWS's involvement in air quality forecasting stems from the fact that air quality and weather go hand in hand. Weather can promote both the formation or degradation of various airborne pollutants and can disperse or transport them from one part of the country to another, thus making air quality a national issue.

In Wisconsin, an Air Quality Watch is issued by the Department of Natural Resources (DNR) when pollutant levels are forecast to reach the "unhealthy for sensitive groups" category of the Air Quality Index. When pollutant levels have actually reached or exceeded that category and are expected to remain at that level for several hours or more, the DNR will issue an Air Quality Advisory.

On the Web

dnr.wi.gov/org/aw/air/health/AQwatch.html

Winter 2006/2007 in Review

By Roy Eckberg, Forecaster,
NWS Green Bay

The first week of the 2006/2007 winter (December through February) was characterized by below normal temperatures. A shift in the weather pattern brought significantly above normal temperatures from the 9th through the end of the month. During this period, temperatures on most days averaged 10 to 20 degrees above normal for the date. On the 14th, high temperatures climbed to around 50 degrees. Some high temperatures on this date included:

New Holstein	53° F
Manitowoc	52° F
Appleton	50° F
Wisconsin Rapids	50° F
Green Bay	49° F

The only significant storm during December came on the 21st and 22nd. Heavy rains were reported across central and northeast Wisconsin with general rainfall amounts of 1 to 2 inches. Across the north, temperatures were cold enough for some of the precipitation to fall as snow. Snowfall amounts of 4 to 8 inches were reported generally north of a Wisconsin Rapids to Marinette line, while lighter amounts were reported to the south. Overall, December 2006 went down in the record books averaging 7.5 to 10.0 degrees above normal and much wetter than normal.

The New Year started out very mild. At the stroke of midnight, temperatures were in the lower to middle 30s over the north and in the upper 30s and lower 40s across Green Bay and the Fox Cities east to the lake. Temperatures for the first week and a half of January averaged 15 to 25 degrees above normal compared to early January normals. The string of very mild days came to an end on the 13th. The remainder of the month was close to or slightly below normal. The only significant snow of the month fell on the 14th where 2 to 5 inches fell over most of the area. Overall, January 2007 averaged 6 to 8 degrees above normal. Precipitation and snowfall were below normal.

In sharp contrast to the start of January, the first half of February averaged 10 to 20 degrees below normal. Below zero temperatures, along with strong winds, created wind chills in the range of -30 to -40 degrees causing many area school districts to cancel classes on February 5th. A sampling of low temperatures on that date included:

Tomahawk	-28° F
Rhinelander	-21° F
Wausau	-19° F
Appleton	-16° F
Green Bay	-13° F

Temperatures finally modified by the middle of the month with highs in the 50s on the 22nd. However, wintry conditions returned when a slow moving storm brought a significant snowfall from late on the 24th through the 26th. Over a foot of snow was reported across portions of central and northeast Wisconsin. For the month, temperatures averaged 5 to 8 degrees below normal. Precipitation and snowfall amounts were close to normal over the north and above normal across northeast Wisconsin.

Overall, the winter of 2006/2007 averaged 2 to 4 degrees above normal while precipitation and snowfall were close to normal.

Did You Know…

At any given moment, there can be as many as 2,000 thunderstorms occurring across the globe. This translates to more than 14.5 MILLION storms each year. NASA satellite research indicated these storms produce lightning flashes about 40 times a second worldwide.

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Send correspondence to:
NOAA/NWS
2485 South Point Road
Green Bay, WI 54313

Phone: 920-494-2363
E-mail: jeff.last@noaa.gov

The ***Packerland Weather News*** Editors: Jeff Last
Linda Skowronski
Roy Eckberg
Phil Kurimski

Representative Kagen Visits NWS Green Bay

Representative Steve Kagen of the 8th Congressional District of Wisconsin visited the NWS Green Bay Weather Forecast Office on April 5. Rep. Kagen spoke with NWS staff and toured the facility during his visit.

Rep. Kagen has a strong interest in weather. As an allergy doctor, Rep. Kagen collected and tracked mold and pollen data. The allergens are affected by the weather, and Rep. Kagen used satellite imagery in his practice to view large-scale weather patterns.

Retired WLUK-TV Chief Meteorologist John Chandik accompanied Rep. Kagen on his visit to the office.

Rep. Steve Kagen (center) discusses satellite pictures with forecasters Phil Kurimski (L) and Rich Mamrosh.

From L-R, NWS Green Bay Meteorologist-in-Charge Gary Austin, Rep. Steve Kagen, and John Chandik.