The Newsletter of the National Weather Service in Green Bay, Wisconsin

www.crh.noaa.gov/grb

Packerland Weather News

Volume 1, Issue 1 July 2002

Inside this issue:

Longtime Observer Receives Ben Franklin Award

Recognizing 55 years of dedication, the National Weather Service has named Minocqua resident Charles Longwitz as a 2002 recipient of the agency's Ben Franklin Award for outstanding service in the Cooperative Weather Observer program. The award is one of the agency's most prestigious, honoring cooperative observers with 55 years of service.

Meteorologist-in-Charge Gary Austin of the Green Bay Weather Forecast Office presented the award during a ceremony held on June 19, at Wisconsin Valley Improvement Company in Wausau. Data Acquisition Program Manager Allen LaGree and Hydro-Meteorological Technician Pat Hein, both of the Green Bay office, were also in attendance for the award presentation.

The National Weather Service Cooperative Weather Observer Program has given scientists and researchers continuous observational data since the program's inception more than 100 years ago. Today, more than 11,000 volunteer observers participate in the nationwide program to provide daily reports on temperature, precipitation and other weather elements.

Charles Longwitz (right) receives the Ben Franklin award from NWS Green Bay's Gary Austin.

Many of the cooperative stations have been collecting weather data from the same location for more than a century. In some cases, several generations of a family have given up vacations and braved all kinds of extreme conditions to report weather conditions. Most observers record precipitation and

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Welcome to the Packerland Weather News

In an effort to keep our customers up-to-date and informed on the latest information from the National Weather Service, the NWS Green Bay office decided to publish a biannual newsletter.

The ***Packerland Weather News*** will contain articles about changes in the NWS, summaries of significant weather events and stories about our customers.

If you have any suggestions for articles or comments about the ***Packerland Weather News***, feel free to contact us. Our address:

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

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

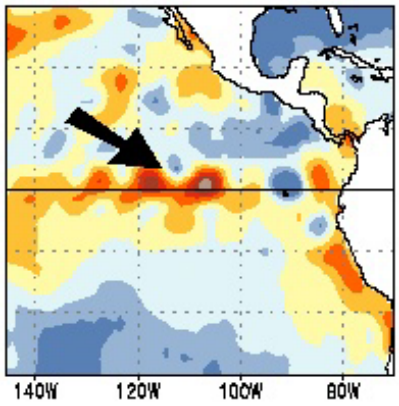
El Niño Expected to Develop by Year's End

NOAA forecasters report that a weak or moderate El Niño event is likely to develop during the next six-to-nine months, but global impacts should be less than those experienced during the strong 1997-98 El Niño.

NOAA's Climate Prediction Center, a branch of the National Weather Service, states that El Niño is still developing and will probably remain that way for the next several months, with abnormally warm ocean surface temperatures continuing over most of the central equatorial Pacific.

"Some events develop quickly and others, like this one, have a more gradual evolution," said Brig. Gen. Jack Kelly USAF (ret.), director of NOAA's National Weather Service. "We are maintaining a constant watch over the conditions of the atmosphere and ocean and will continue providing guidance on potential impacts," said Kelly.

In the June El Niño/Southern Oscillation Diagnostic Discussion, NOAA scientists report that a climate phenomenon called the Madden-Julian Oscillation (MJO) contributed to an increase in ocean surface temperatures late last month. Ocean surface temperatures of 1 degree C (2 degrees F) above average were observed throughout most of the equatorial Pacific at the end of May. This increase in ocean temperature, combined with observations of abnormally heavy rainfall in parts of South America, and the lack of it over Indonesia suggests that El Niño continues to develop as was originally forecast.



Sea Surface Temperature (SST) chart of equatorial Pacific. Arrow points out area of above normal SST along equator.

The MJO is an important factor contributing to the evolution of El Niño because it can influence the winds near the earth's surface. In late May, the MJO contributed to a weakening of the normal east-to-west flow throughout the equatorial Pacific, which has led to an increase in ocean surface temperatures.

"Some events develop quickly and others, like this one, have a more gradual evolution."

On the Web

www.cpc.ncep.noaa.gov

Ben Franklin Award

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temperature data. Longwitz became the official observer at the Minocqua Dam station on April 1, 1947, providing daily precipitation and temperature data to the Weather Service.

Why do they do it? Some simply have a real interest in weather. Others see their service as a civic duty. Hein noted that Longwitz, an 83-year-old disabled American veteran, has faithfully taken daily high and low temperature readings in one of the coldest areas in the United States. He also provides daily snow measurements and water equivalent long after most people have retired to an easier life.

Satellites, high-speed computers, mathematical models and other technological breakthroughs have brought great benefits to the Nation in terms of better forecasts and warnings. But without the century-long accumulation of accurate weather observations taken by volunteer observers, scientists could not begin to adequately describe the climate of the United States.

On the Web

weather.gov/om/coop

Severe Weather Spotters — The Eyes of the NWS

The National Weather Service relies on a group of volunteers who, during severe weather, keep an eye to the sky. Their information, in concert with NWS Doppler radar analysis, allow meteorologists to make decisions on the severity of thunderstorms and other types of significant weather.

Severe weather spotters attend annual training given by the NWS. The training concentrates on the identification of significant cloud features that are associated with severe weather. Spotters also learn how to measure snow, estimate hail size and wind, and learn how to report this information to the NWS.

Spotters come from all walks of life—amateur radio operators, law enforcement, firefighters, outdoor workers and anyone with a passion for weather.

Timely reports from weather spotters mean faster and more accurate warnings to the citizens of north-central and northeast Wisconsin.

If you would like more information on the weather spotter program, visit the NWS Green Bay Spotter website.

On the Web

www.crh.noaa.gov/grb/spotters.html

Spring Flooding Hits Menominee River

By Tom Helman, Senior Forecaster,
NWS Green Bay

Significant flooding occurred along the Menominee River in April 2002 adjacent to Florence and Marinette counties in Wisconsin; and Iron, Dickinson and Menominee counties in Upper Michigan. River stages exceeded flood stage by as much as three feet at many locations along the Menominee River from April 15-21.

The high rivers were the result of three factors: a deep snow cover over far northern Wisconsin and Upper Michigan which lingered into the spring due to below normal temperatures in March and early April; above normal temperatures in the middle 70s to lower 80s during the second week of April which led to rapid melting of the deep snow cover; and heavy rains from thunderstorms which aided the snowmelt.

Much of the flooding was confined to lowland adjacent to the Menominee River, however flooding was reported in the cities of Aurora and Niagara in Wisconsin and near the Twin Falls Dam in Upper Michigan. Area dam operators noted much debris passed through their systems, which included piers and a few small boats.

The North Central River Forecast Center and the NWS Green Bay office issued forecast and flood warnings several days before the river reached flood stage. The river crested on April 17 and 18 for locations upstream of Niagara. The river crested between April 19-21 at locations south of Niagara.

The boat landing in Niagara. The photo was taken April 18.

Of special note, the Advanced Hydrologic Prediction Service (AHPS) was implemented this spring for the Menominee River. AHPS allows customers to retrieve the latest river stage, flow and forecast information. This addition to the hydrology program can be accessed on the NWS Green Bay web page by clicking on "Lakes & Rivers" under Current Weather on the left hand side of the page.

On the Web

www.crh.noaa.gov/grb/ahps

Aviation Weather—An Airline's Perspective

By Richard Mamrosh, Senior Forecaster, NWS Green Bay

Weather forecasts are vital to the safety and efficiency of the airline industry. Many airlines are so convinced of this fact that they have established their own meteorology departments. Some airlines have even conducted their own weather research (United Airlines and TWA many years ago, and UPS more recently), and contributed to the science of meteorology.

Airline Meteorology Depts	No. of Mets
Northwest	19
American	20
Federal Express	20
United	21
Delta	15
United Parcel Service	5

Northwest Airlines meteorologists produce Terminal Aerodrome Forecasts (TAF) for their hubs in Minneapolis, Detroit and Memphis, and use NWS or a private company for other airports. Their meteorologists spend most of their time producing icing, turbulence and thunderstorm forecasts. American Airlines produces TAFs for O'Hare, Dallas/Fort Worth and a few other hub airports, but use NWS forecasts for others. The same method is employed by United Airlines. Federal Express meteorologists, on the other hand, make "short-term" TAFs for 70 airports.

The airline industry claims to lose $250,000,000 annually due to weather related delays. Some of these are due to actual weather conditions, while some are due to poor forecasts. Turbulence, icing, thunderstorms, wind shear and volcanic ash are the main safety hazards to the airlines. Thunderstorms are the single most disruptive element in the summer months. The airlines, NWS and Federal Aviation Administration (FAA) now produce a forecast called the "Collaborative Convective Forecast Product," that uses the input of all three organizations to produce a single thunderstorm forecast. Low ceilings and visibilities are no longer a big problem to modern aircraft at medium and large airports, as long as ceilings and visibilities are above minimum take off and landing criteria.

The airlines are working to convince the FAA to change the criteria that is used to determine whether airlines must carry extra fuel on their planes to reach alternate airports. These criteria (ceilings less than 2,000 feet and or visibilities below 3 miles) were established in the 1930s, when aircraft, airports and the air traffic control system were far less sophisticated.

New Weather Radio Voices Debut

In June, the NWS Green Bay office began using new computerized voices on NOAA Weather Radio. Listeners across northeast, central and north-central Wisconsin now hear current weather conditions, weather forecasts, and severe weather warnings delivered via the new computer voice program with a more lifelike male and female voice. The new software voices are more easily understood because they combine phonetic sounds with natural language.

The software was customized to ensure words and geographical names were understandable to listeners. Wisconsin locations are a challenge for a computer voice to pronounce, so tweaking of words will continue this year.

NOAA Weather Radio, also known as the voice of the National Weather Service, is the quickest way to get important warnings, forecasts and weather conditions to your home, school or office.

On the Web

www.crh.noaa.gov/grb/nwr.html

Weather in Review: Winter 2001-2002

By Roy Eckberg, Forecaster,
NWS Green Bay

After a relatively typical start to the fall of 2001, November turned very mild with monthly temperatures averaging 5 to 10 degrees F above normal. The above normal temperatures continued into December. Unseasonably warm air pushed into Wisconsin on December 4 and 5. Several cities across northeast Wisconsin basked under unprecedented consecutive days in the upper 50s to mid 60s F, which was 25 to 30 degrees F above the normal high temperatures for that time of year. Numerous locations recorded the warmest December temperatures on record.

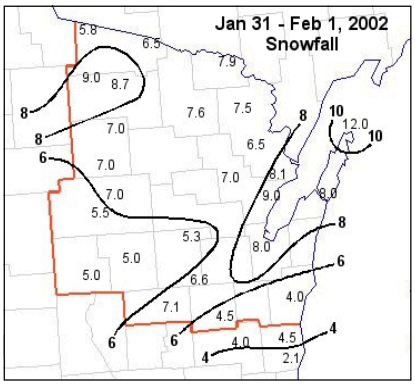
Spring-like thunderstorms developed ahead of a cold front during the afternoon of December 5, producing hail up to one inch in diameter in Florence county. The front moved across central and northeast Wisconsin during the evening, bringing an end to the unseasonably warm temperatures.

While most of central and northeast Wisconsin experienced measurable snowfall in October or November, Green Bay finally recorded its first measurable snowfall of the season on December 23, the second latest first measurable snow since records began in the late 1880s. Overall, December was characterized by very mild temperatures and little snowfall. Both Wausau and Green Bay did not drop below zero during the month. In Wausau, the average temperature for December was 9.6 F above normal, while Green Bay was 9.9 F above normal.

January continued the trend of mild temperatures and moderate snowfall. Any snow that fell usually melted a few days later as high temperatures were near or above the freezing mark. The lack of snow across central and east central Wisconsin allowed temperatures to warm well above normal during the second week of the month. Numerous record highs were reported on January 9, including 54 F at Oshkosh, 53 F at Appleton and Green Bay, 47 F at Wausau and 44 F at Rhinelander. A few record highs were also broken across central Wisconsin on the 10th and 11th.

A cold snap, by this winter's standard, moved into the region on January 18 and 19. The cold weather was brief, however, as Rhinelander tied a record high of 45 F on the 22nd. Additional record highs were reported on January 26 and 27, with readings ranging from the middle 40s F over northeast Wisconsin, with readings near 50 F over central Wisconsin.

In Wausau, the average temperature for January was a staggering 12.1 F above normal, while in Green Bay the average temperature was 10.4 F above normal.



Snowfall (inches) during the late January snowstorm.

The most significant snow storm of January began on the 31st and continued into February 1. The heaviest snowfall was reported across northern Door county, where totals exceeded ten inches. Six to ten inches were reported from eastern Outagamie county into northern Brown and Kewaunee counties, and over southern Marinette and Oconto counties.

After surviving the heart of winter with very few bitterly cold days, February continued the mild trend of above normal temperatures. During the month, Wausau never fell below zero, while Green Bay only reported one day below zero. For the month, Green Bay's average temperature was 6.5 F above normal; in Wausau the average was 7.7 F above normal.

The most significant storm of February brought heavy snow to central and north-central Wisconsin February 19-21. The highest totals were reported across Vilas county.

Overall, the winter of '01-'02 was unusually mild, with close to average snowfall over much of central and northeast Wisconsin. The only exception was across the Lake Superior snow belt of far north-central Wisconsin which reported above normal snowfall.

"Overall, the winter of 2001-02 was unusually mild"

New Staff Join NWS Green Bay Office

By Linda Karman, Administrative Support Assistant, NWS Green Bay

Four staff members have joined the Weather Forecast Office (WFO) in Green Bay within the last year. They include General Forecasters Roy Eckberg and Phillip Kurimski, Electronics Technician Robert Hoag, and Administrative Support Assistant Linda Karman.

Eckberg came to Green Bay from the Aberdeen, South Dakota, WFO. Prior to that, he worked at the WFO in St. Louis. Eckberg's strong interest in climate made him a natural fit as Green Bay's focal point in that area. A native of Appleton, Wisconsin, Eckberg earned his Bachelor of Science Degree in Meteorology from Florida State University.

A native of South Glens Falls, New York, Kurimski joined the Green Bay office from the Milwaukee/Sullivan WFO. While in Green Bay, Kurimski has assumed the role of assistant focal point for the Advanced Weather Interactive Processing System (AWIPS). In his spare time, Kurimski enjoys storm chasing. Kurimski earned his Bachelor of Science Degree in Meteorology from the University of New York, and his Master's Degree in Meteorology from the University of Wisconsin-Milwaukee.

Hoag, a native of Manistique, Michigan, spent 21 years in active duty in the United States Navy where his expertise in the electronics field was utilized on ships and in ports around the world. In addition to receiving many hours of on-the-job training, Hoag also was an instructor at the Great Lakes Naval Training Center. Upon leaving the Navy, Hoag took a job with Banta Books as an electrician before joining the Weather Service. His electronics background is essential for maintaining Green Bay's radar and various weather observing systems sites.

A newcomer to the Weather Service, Karman spent the last 5½ years as an Administrative Assistant with the Aurora Medical Center of Manitowoc County. In her present role, she handles all administrative duties for the Green Bay WFO. A native of Two Rivers, Wisconsin, Karman possesses an Associate Degree in Secretarial Science and will earn a Bachelor of Science Degree in Management from Silver Lake College in May 2003.

Cool Spring Follows Mild Winter

By Roy Eckberg, Forecaster, NWS Green Bay

After experiencing one of the mildest winters in years, Mother Nature decided to swing the temperature pendulum in the opposite direction. Despite the calendar stating it was March, the month ended being cold and snowy.

The coldest temperatures of the entire winter season occurred on March 3-4. In Rhinelander, the coldest temperature for the winter was -19 F on the 3rd, while Wausau (-11) and Green Bay (-13) reported the coldest temperature of the season on March 4. Much of April remained cool as daily mean temperatures stayed below normal for most of the month.

The very cool weather led to higher than normal snowfall during March and April. As a matter-of-fact, snowfall during March and April in Green Bay accounted for 24.6 of the 46.9 inches (52%) that fell from November through April. The numbers were similar in Wausau, where 29.2 inches fell during March and April, accounting for 53% of the seasonal total.

There was a break in the cool spring weather from April 11 to 19, when daily temperatures were well above normal. The "heat wave" peaked on the 15th and 16th of the month as 80 and 90 degree temperatures returned to Wisconsin for the first time since the previous fall.

Tornado Season Starts Early in Northeast Wisconsin

By Gene Brusky, Science and Training Meteorologist, NWS Green Bay

The 2002 tornado season got off to an active and unusually early start in northeast Wisconsin with seven confirmed tornadoes. These seven tornadoes accounted for nearly 80 percent of the total number of tornadoes (9) reported in the entire state (through July 15). Typically, the state averages about 20 tornadoes each year, four of which occur in northeast Wisconsin. This season's tornadoes in northeast Wisconsin were the result of severe thunderstorm episodes that occurred on April 18 and May 6. The large scale environment associated with both of these outbreaks were conducive to the formation of tornadoes, characterized by strong mid-level winds, high instability and a source of low-level rotation associated with a surface boundary.

Fig. 1. Tornadoes in northeast Wisconsin in 2002.

The first confirmed tornado of the season occurred on April 18 at about 4:52 p.m. in extreme northern Lincoln county, two miles west of Bradley. Interestingly, this was the second earliest occurrence of a tornado in northeast Wisconsin over the last ten years. The touchdown near Bradley was the first of three brief touchdowns (all Fujita Scale F0 intensity) associated with a classic right-moving supercell thunderstorm. The storm initially developed over southeast Price county and moved east into Oneida and Lincoln counties. Two subsequent tornadoes occurred in southeast Oneida county, near Woodboro at 4:57 p.m. and Lake Thompson at 5:33 p.m. (see figure 2). Fortunately, other than a few tree tops being sheared off, the tornadoes associated with this classic supercell thunderstorm caused little damage.

The most destructive tornadic storm of the April 18 outbreak was associated with thunderstorms that developed over central Clark county and moved east into Marathon county at around 7 p.m. Unlike the classic tornadic supercell that produced three brief touchdowns in Lincoln and Oneida counties a few hours earlier, this tornadic storm did not exhibit the classic tornadic supercell structural characteristics (e.g., pendant or hook shape). This storm appeared to have evolved from several individual storms that merged near the triple point of a low pressure system entering western Marathon county. Subsequently, the storm developed a more linear structure with bow echo characteristics (figure 3). The storm produced a relatively long track tornado that first touched down near Stratford in southwest Marathon county around 7:13 p.m. and remained on the ground for about 14 miles before dissipating six miles northwest of the Mosinee airport. The tornado briefly reached F1 intensity and produced nearly $1.5 million in damage. Another brief touchdown occurred about five minutes later near Rothschild. The April 18 thunderstorm outbreak, which accounted for five of the seven tornadoes thus far in 2002, also produced widespread large hail (up to three inches in diameter) and straight-line wind damage.

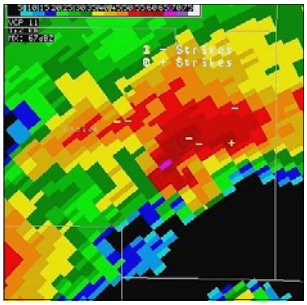


Fig. 2. Doppler radar image of supercell over eastern Oneida county.

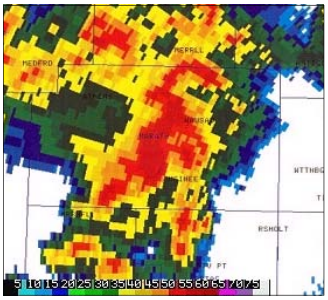


Fig. 3. Doppler radar image of thunderstorms over central Marathon county.

The second round of tornadic thunderstorms to affect northeast Wisconsin occurred on May 6. The initial thunderstorms developed early in the afternoon over west-central Wisconsin, near the intersection of a surface low pressure system and warm front. The storms intensified as they moved east along and just north of the warm front and quickly evolved into classic supercells with impressive-looking hook-shaped radar echoes, indicative of strongly rotating updrafts (figure 4). Despite rather impressive-looking radar echoes, these storms only produced numerous funnel clouds and two weak (F0) tornadoes.

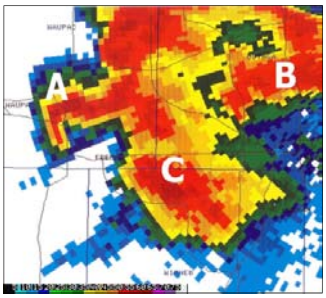


Fig. 4. Doppler radar image of thunderstorms over eastern Waupaca (A), eastern Outagamie (B) and northern Winnebago (C) counties.

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Send correspondence to:
NWS Office
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
Roy Eckberg
Linda Karman
Phil Kurimski

2002 Tornado Season

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The most notable tornado during the event occurred in Winnebago County, where it touched down on Lakes Poygan and Winneconne around 5:30 p.m. The tornado remained on the water for about four miles before dissipating as it briefly came onshore 2.5 miles north of the city of Winneconne at 5:40 p.m. Interestingly, this tornado did not appear to be associated with the main supercell updraft, but rather with much weaker storms located along the flanking line that extended southwest of storm C in figure 4. Another very weak tornado was reported at 6:02 p.m. about eight miles north of Oshkosh. These tornadoes caused little, if any damage. The most notable effect from this severe weather event was attributed to large hail that fell across parts of northeast Winnebago and northwest Calumet counties, resulting in more than $5 million in damage.

Fig. 5. Tornado (waterspout) on Lakes Poygan and Winneconne on May 6. Photo by Connie Gabrilska.