



The Northland Sky Watcher

NWS DLH

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*For National Weather Service Weather Watchers of
northeastern Minnesota and northwestern Wisconsin.*

The Historic Northland Blizzard of March 1, 2007

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The blizzard of March 1, 2007 that blasted the Northland is probably still fresh in many Northlander's minds. It is hard to forget the widespread white-out conditions, wind gusts up to 66 mph, and the towering snow drifts. The Northland had not seen a winter storm of this magnitude since the Halloween Storm of 1991. In fact, it was such a significant storm that a case study was done focusing on the storm. A case study is an examination of a weather event or storm, and includes collecting data from the event, analyzing the data, and reporting the results. Case study research is important for meteorologists as it leads to better recognition and forecasts of similar events in the future. It is also a good way to see how well we provided weather services to our customers and find ways to improve our services.

National Weather Service Duluth forecaster Amy Liles and WDIO-TV Duluth meteorologist Justin Liles conducted a case study of the blizzard and presented their findings at the Northern Plains Winter Storms Conference in St. Cloud, MN, October 24th.

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*The day after the blizzard mounds of drifted snow covered Duluth. Park Point was especially hard hit, as this picture can attest.
Photo by Carol Christenson*



- Are you ready for Winter?
To be prepared for any disaster, go to

Ready.gov



Blizzard Case Study, continued from page 1

The study focused on many aspects of the severe winter event, including forecasting the storm, communicating the message of severity, and preparing for the blizzard.

Amy's section of the study focused on the science of the storm, how well the NWS served our customers, and the impacts of the storm. She found that the NWS' 48 hour advance warning for the storm gave people time to get to the store for supplies and food needed to ride out the storm. In the case study Amy discusses some of the scientific aspects of the storm that forecasters looked at to help them make forecast decisions. Her case study will be posted on our website at <http://www.weather.gov/dlh>.

The National Weather Service works closely with the media to publicize important weather information, so it was fitting that Amy partnered with Justin for this case study. What they found was that the National Weather Service and its partners, including the media and state, county, and city officials worked together to ensure that a consistent message was relayed and broadcast across the Northland before and during the blizzard. This consistency was important in order to avoid confusion and to ensure that everyone was getting the latest information on the severity of the winter storm.

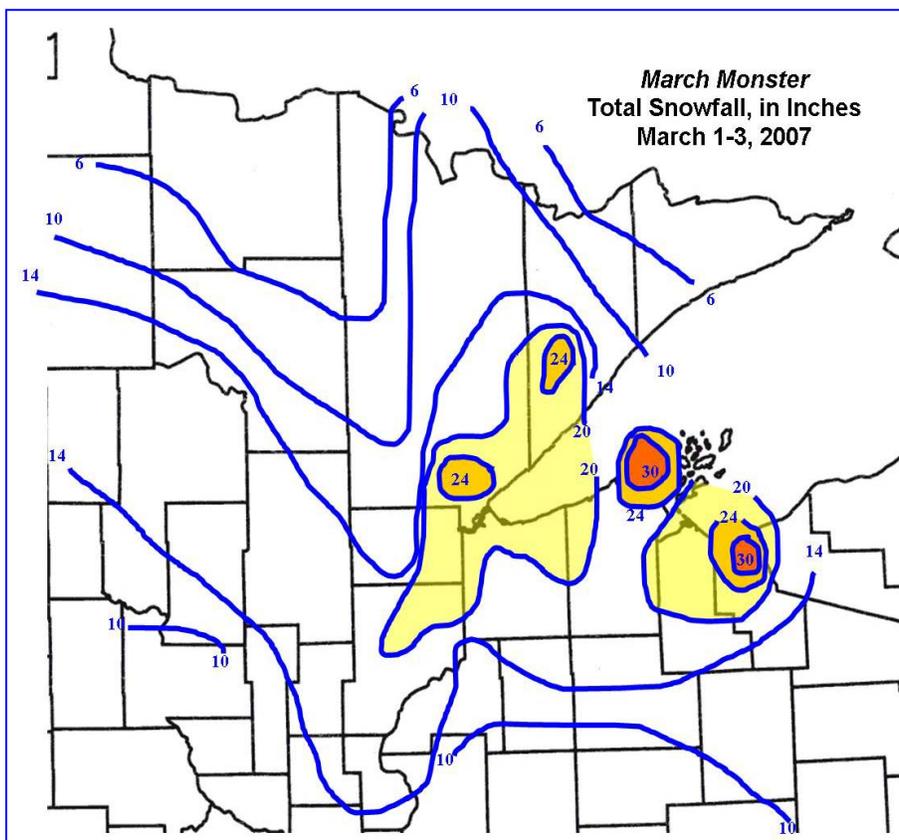
Many schools and businesses closed in advance of the storm, resulting in minimal travel and increased safety during the height of the storm. As a result of this successful collaboration, no fatalities due to the blizzard occurred across the Northland.

Attendees at the Northern Plains Winter Storms Conference included National Weather Service employees from other offices around the region, television meteorologists from Duluth and the Twin Cities, private meteorologists, and meteorology students.

A post conference survey of attendees shows that Amy's and Justin's presentation was named the "best talk" at the conference.

You can view a storm summary of this blizzard on the National Weather Service Duluth website at: http://www.crh.noaa.gov/dlh/science/event_archive/winter_archive/2007winter.php.

- Amy Liles, forecaster



The graphic at left shows the snow that fell from the evening of February 28th through 11:00 am March 2. Snowfall is analyzed every 4 inches.



The Drought is Over

A very wet fall with rainfall amounts of 2 to 4 inches above normal has rescued the Northland from a long drought.

Northeastern Minnesota and northwestern Wisconsin had been in drought status since the summer of 2006. The drought worsened over the following winter with very little snowfall, where only around 40 inches of snow fell in this area- 20 inches below the average snowfall of 60 inches.

In northwestern Wisconsin, seasonal snow totals ranged from around 90 inches in the snow belt along the Gogebic Range, to around 30 inches farther inland.

By spring, very warm temperatures and a lack of rainfall boosted much of the area into the severe to extreme drought category by the U.S. Drought Monitor. Precipitation deficits ranged from 15 to 20 inches below normal for 2006 through August 2007. Relief from the drought finally arrived in September with significant rainfall. Rainfall totals ranged from 6 to 12 inches, with some locally higher amounts. This brought northwestern Wisconsin out of drought status. A wet October helped take the rest of the Northland out of drought status as we head into winter.

The Duluth National Weather Service issues weekly drought information statements when we are classified as being in a severe or worse drought. Check us out on the web at <http://www.weather.gov/duluth> . The U.S. Drought Monitor can be found at <http://www.drought.unl.edu/dm/monitor.html> .

- Greg Frosig, Senior Forecaster



Let Us know When it Snows!

Snowfall Spotter Program Update

Winter weather will soon be here in full force. Some have already reported a bit of the white stuff and much more is certainly on the way! Our snowfall spotters provide reliable and accurate snowfall information that not only helps forecasters issue more accurate forecasts and warnings; they also provide community officials with details needed to make crucial decisions.

Once again this season, spotters can use our online reporting system, eSpotter, to submit any snowfall reports. This is the best way to ensure your reports are received at our in office in a timely manner.

As you report your snowfall amounts throughout the season, please remember these procedures:

- * Keep track of the time the snow began and ended.
- * Report once you receive 1 inch of new snow, 3 inches, 6 inches, and other significant amounts.
- * Report freezing precipitation, significant drifting, or low visibility.
- * Don't forget to report your final snow total.

We are always looking to expand our snowfall spotter program. While we have observers in many locations across the Northland, new observers help fill in a piece of the weather puzzle that affects those in your community. Spotters can also participate in activities such as training sessions, field trips, seminars, and much more!

If you're interested in becoming a snow spotter, please contact Mike Bettwy at Mike.Bettwy@noaa.gov.

For more information about winter weather and our Snowfall Spotter Program, please visit: <http://www.crh.noaa.gov/dlh/winterwx.php>.

- Mike Bettwy, Snowfall Program Manager

-Use a NWS snow stick, like the one shown at the left, to help you measure snow.

-When measuring snow, take a number of measurements, then calculate their average.

-Snowfall is always measured to the tenth of an inch.

-Snow depth is measured in whole inches.



2007- The Weather Year in Review

In good ole' Northland fashion, 2007 has featured a wide variety of weather. From blizzards to huge hail, the weather was anything but boring in northeastern Minnesota and northwestern Wisconsin. The year began on a dry note, with drought conditions continuing through the winter. Many areas lacked snow cover through the month of February. To make matters worse, a cold wave hit the area in early February, causing water pipes to burst. Wind chills of -40 to -50 degrees Fahrenheit were common from the 3rd through the 5th, causing schools to close and outdoor activities to be suspended. Lows in the -20s to -30s were common all across the region.

The snow drought finally ended on the last weekend of February, as the first of two, that's right, *two*, blizzards slammed the Northland within a week. Areas near the Lake Superior shoreline felt the brunt of the storms. The first brought winds of 40 to 50 mph combined with 12 to 14 inches of snow, and caused many churches to cancel Sunday morning services. The second and even more powerful blizzard pounded the Northland on March 1st, bringing with it thunder and lightning, blinding snowfall rates of 2 inches per hour, and wind gusts over 60 mph. Massive snowdrifts 10 to 15 feet high covered Park Point in Duluth. Schools and many businesses were closed March 1st and 2nd as road crews worked overtime to remove the snow. Snowfall totaled over 20 inches in places along and east of the Interstate 35 corridor. A late season snowstorm hit the region in early April, dropping a foot or more of snow near the Superior shoreline, and 6 to 10 inches in the interior of the Arrowhead and the Cass and Brainerd Lakes region. The snow belt of Wisconsin received an added bonus as lake effect snow contributed to a foot and a half to 2 feet of snow. Duluth recorded 12.1 inches on the 7th, which broke a daily snowfall record for any day in the month of April.

The drought persisted through the spring and summer, contributing to a major forest fire on May 5th, caused by an unattended campfire on Ham Lake on the upper portions of the Gunflint Trail. The "Ham Lake Fire" spread quickly north and consumed some 61 homes in Minnesota before reaching Canada. Property damage was estimated at \$4 million in Minnesota. The fire was contained on May 19th, and had consumed more than 36,000 acres in Minnesota (75,000 acres total, including Canada). This would make the "Ham Lake Fire" even larger than last July's "Cavity Lake Fire", which up until now was the largest fire in the area in 100 years.

A particularly damaging hailstorm struck the city of Duluth on the afternoon of May 14th. Hail up to baseball size fell between the Pike Lake area and Duluth, east of the Piedmont Heights neighborhood. The hail dented numerous cars and dented roofs of many homes. This was the largest hail storm to affect the Twin Ports area since 1998. Later that same month, on the 26th, a waterspout formed over Lake Winnibigoshish and traveled northeast for several miles over the open water. The waterspout dissipated before reaching land, and no damage was reported.

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Waterspout over Lake Winnibigoshish, May 26, 2007.



Year's Weather, continued from previous page

An unseasonably strong low pressure system developed and moved through northern Minnesota June 7th, producing thunderstorms with strong winds across the Northland. A gust front developed out ahead of a line of thunderstorms and produced up to 70 mph wind gusts from Itasca and Aitkin counties, eastward through Douglas County and the Superior area. A few locations received golf ball size hail. Another unusually intense low pressure system moved through the region in July producing strong winds, though no thunderstorms were associated with this low. Winds gusted to 60 mph at the Duluth International Airport, with sustained winds in the region between 25 and 35 mph. Some 200,000 homes were without power for more than 24 hours as many trees and power lines were downed. The summer ended with a bang with severe thunderstorms erupting across the Brainerd area, as a bow echo raced through central Minnesota. Damaging winds of up to 60 mph downed hundreds of trees and damaged homes in the area. At least 7,700 customers lost power in the area.

Finally, the drought officially ended in October, with rainfall amounts 2 to 4 inches above normal. The first good snowfall was on November 5-6th when 6 inches of lake effect snow fell over northern Wisconsin- in Ashland and Iron counties.

- Tom Lonka, Storm Data Focal Point



The National Weather Service is moving in a new direction in how we provide products and services to you, our user. A movement called, WAS*IS, or "Weather and Society*Integrating Studies" opened the doors for a new community and culture change within the weather enterprise. This community is continuously growing through workshops of diverse professions. The workshops aim to develop and build relationships among interdisciplinary community of forecasters, researchers, and stakeholders to provide better science-based information services in a socially relevant way to protect lives, physical assets and enhance the national economy. I attended one of these workshops and dispense my experiences, relationships, and societal impact training back to the local level at the Duluth NWS office.

We are working toward the goal of integrating societal impacts into our products and services in many ways. One is by partnering with a meteorology student at St. Cloud State University, Matt Taraldsen, in developing a Quick-Response-Survey. This short, online survey will be found in the Headlines of the Duluth NWS homepage in its test season this winter. The survey will be posted for a few days following a high impact winter weather event such as a significant winter storm, ice storm, or extreme cold episode. The goal of the Quick-Response-Survey is to gain insight into your, the customer's, understanding and decision making process related to hazardous winter weather conditions. The survey questions will aim to gather local user input to return improved products and services. We encourage your participation and input to help us towards this goal.

- Amanda Graning, Forecaster



More Weather Information From the Great Lakes

If you're a boater on Lake Superior, you know that having the most up-to-date weather information can save your life. Weather can change rapidly on Lake Superior, and arming yourself with accurate and timely information can help you make the right decision. In the past, weather information on the lakes has been rather sparse, but the new National Weather Service Great Lakes Observing System (NWS GLOS) automated weather stations are adding critical weather information in strategic locations.

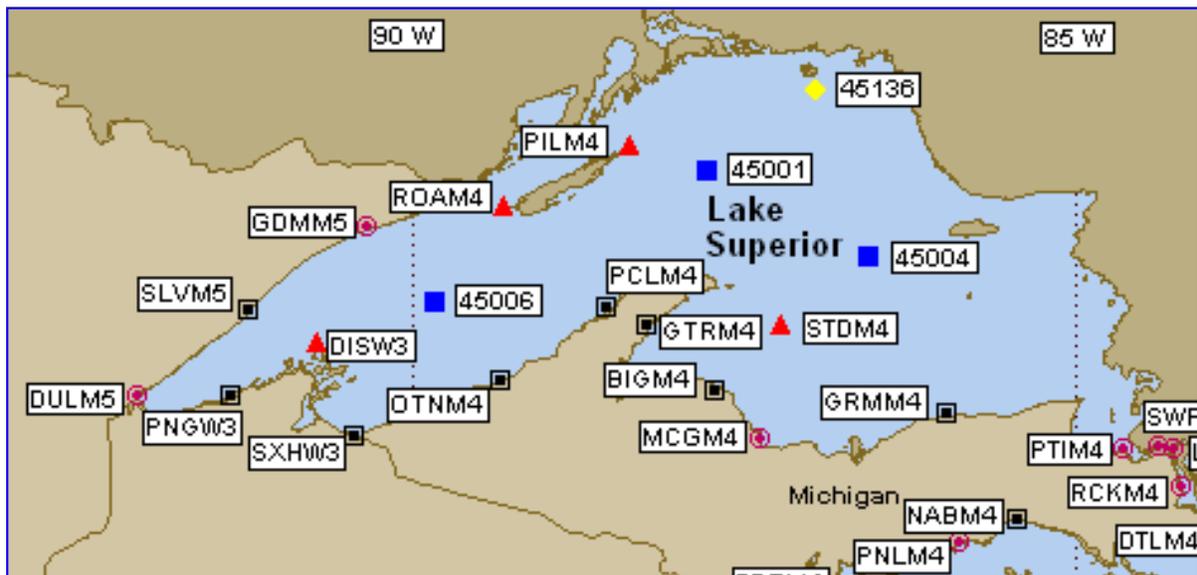
The best way to view the observations is by going to the following page:

<http://www.ndbc.noaa.gov/maps/WestGL.shtml>

Once there, you can simply click on the various weather observations across western Lake Superior. You'll find the new NWS GLOS sites by clicking on the black square icons. The new automated sites are located at Silver Bay Harbor, MN, Port Wing, WI, and Saxon Harbor, WI. A few new sites may also be added in 2008, including Grand Portage, MN and Two Harbors, MN. The site at Two Harbors will be on Department of Natural Resources land at Agate Bay. The site at Grand Portage will be on tribal land at the Grand Portage Marina. The benefit to the GLOS sites is that they are located as close to the water as possible, giving users and forecasters a "birds eye" account of weather close to the near shore environment.

It's hard to say when the funding for new sites may dry up, but if you can think of any locations that would be perfect for the new GLOS stations, we would like to know! Just email dean.packingham@noaa.gov and let us know your thoughts.

-Dean Packingham, Senior Forecaster



Weather observing platforms for Lake Superior. Image taken from the following website: <http://www.ndbc.noaa.gov/maps/WestGL.shtml>



Co-op Corner

Our office maintains a network of close to 100 volunteer cooperative weather observers in northeastern Minnesota and northwestern Wisconsin. They provide daily reports of high and low temperature, rainfall and snowfall, and in some cases, river stage and soil temperature information. This real-time information helps our meteorologists provide more accurate forecasts, watches, and warnings. Ultimately, their records are published and used in a variety of ways, including climatological studies, meteorological research, and even litigation purposes.

Within the past several months, several co-op observers were presented a Length of Service Certificate and lapel pin to express our appreciation for their years of dedicated service, including:

Thelma Johnson, 45 Years, Wright, MN
 Helen Flamang, 25 Years, Solon Springs
 Cy Sorrels, 15 Years, Gurney
 Janice & Earl Fagre, 15 Years, Floodwood
 Potter Family, 10 Years, Cook
 Gordon Hommes, 10 Years, Two Harbors
 Peter Doran, 10 Years, Ely



Thelma Johnson receives the Richard Hagemeyer 45 year Length of Service Award from NWS Meteorologist in Charge Mike Stewart. Thelma's husband, Walter, was also an observer until his death in 2003.



Gary Brama, a co-op weather observer with the US Forest Service at the Chippewa National Forest in Cass Lake, MN accepts the 100 year award from NWS Meteorologist in Charge Mike Stewart.

The U.S. Forest Service Office at the Chippewa National Forest in Cass Lake has been providing continuous weather records for 100 years. The station's present observers, Gary Brama and Rob Harper (forest supervisor), were presented an award this fall.

Ben Wieland also accepted an award on behalf of the Deep Portage Conservation Reserve in Hackensack for 25 years of service.

The length of record for the cooperative stations in northeastern Minnesota and northwestern Wisconsin ranges from a couple of years to just over a century. Nationwide, there are more than 11,000 co-op sites, and a few have been providing weather records for more than 200 years.

By documenting daily weather conditions, cooperative observers carry on the tradition of early American science-minded citizens such as Thomas Jefferson and Benjamin Franklin.

- Mike Bettwy, Meteorological Intern



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**Watch our website and your
mailbox for the spring
Skywarn training calendar!**

The Northland's weather experts



See Ya There!

We'll be at the 2008 Duluth Boat, Sports, and Travel Show as we have for the past eight years.

The show runs from February 13th through the 17th at the Duluth DECC. Stop by and say, "Hi!".

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