



Northern Exposure

Changing Winter Weather And Staffing at the NWS

by Gary Campbell, Meteorologist In Charge

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It sure has been a strange winter. It seemed that snow and cold came in waves this winter, and not necessarily when you would expect it during the winter. Our snowfall spotters helped us keep abreast of the ever changing conditions here in northern Michigan and allowed us to keep our warnings, advisories and forecasts up to date. We thank you for your assistance and dedication.

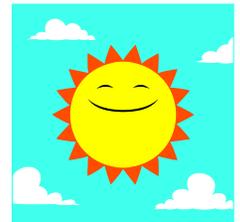
With spring right around the corner, our spring spotter and safety training has started.

We hope to see many of you at a spotter class this year. Please check our homepage at: <http://www.weather.gov/gaylord/> and click on the SKYWARN Spotter Training Schedule link to get a list of spotter talks in your area.

After about 37 weeks, we have finally gotten back to full staffing. Since our last

newsletter last fall, one of our Senior Forecasters, Steve Rowley, moved to Charleston, S.C. At the same time, we hired Scott Rozanski to fill in the vacancy behind Keith Berger, after Keith was promoted to Observation Program Leader. We back-filled Steve's vacancy with a promotion to Brian Adam. Finally, David Lawrence came on board on March 7th to fill in for Brian's vacancy. David and his family came to us from the Blacksburg, VA NWS office. Whew! It seems like we are a revolving door, at times.

That's what is new with us. Please drop us a line if you get a chance. We are always interested in listening to you, our customers, to improve our weather services for Northern Michigan.



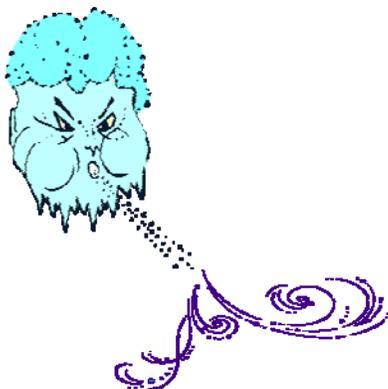
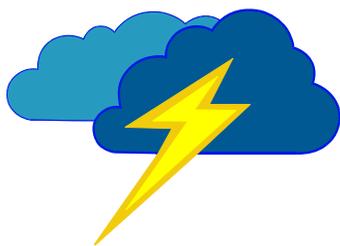
Chippewa County Is StormReady!

by Monique Runyan, Assistant Warning Coordination Meteorologist

On February 7, 2007, Chippewa county became the first community in all of Northern Michigan to be certified as StormReady! The StormReady program is organized into a comprehensive list of guidelines designed to encourage severe weather preparedness. The guidelines cover a variety of preparedness issues, including proactive training of emergency personnel and the general public in hazardous weather response, crucial weather information monitoring and dissemination,

emergency communications capabilities, and backup systems. Chippewa county has shown exceptional competency in all required guidelines, and has actually gone above and beyond in several of the guidelines. On behalf of the National Weather Service, I would like to congratulate all emergency personnel serving Chippewa county for your hard work and dedication to your community. Special thanks goes to Tim McKee, Director of Emergency Services, for his leadership and vision!





Enhanced Fujita Scale Begins

by Jim Keysor, Warning Coordination Meteorologist

On February 1st, the National Weather Service began using a new rating scale for tornado damage assessment. The original F Scale was developed in 1971 by T. Theodore Fujita to rate tornadoes and estimate associated wind speed based on the damage they cause. The EF Scale refines and improves the original scale. It was developed by the Texas Tech University Wind Science and Engineering Research Center, along with a forum of wind engineers, universities, private companies, government organizations, private sector meteorologists and NOAA meteorologists from across the country.

Limitations of the original F Scale may have led to inconsistent ratings, including possible overestimates of associated wind speeds. The EF Scale incorporates more damage indicators and degrees of damage than the original F Scale, allowing more detailed analysis and better correlation between damage and wind speed. The original F Scale historical data base will not change. An F5 tornado rated years ago is still an F5, but the wind speed associated with the tornado may have been somewhat less than previously estimated. A correlation between the original F Scale and the EF Scale has been developed. This makes it possible to express ratings in terms of one scale to the other, preserv-

ing the historical database.

The new enhanced scale makes use of a comprehensive list of Damage Indicators (DIs) and Degrees of Damage (DoD), to help estimate a range of wind speeds the tornado likely produced. From this assessment, a rating (EF0 to EF5) is assigned. Below is a chart showing the new EF Scale ratings and associated wind speed ranges.

Enhanced Fujita (EF) Scale

EF Rating	3 Second Gust (mph)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	over 200

For more information, please visit the following web site:

<http://www.spc.noaa.gov/efscale/>

eSpotter Proves e-efficient and e-effective

by Jim Keysor, Warning Coordination Meteorologist

The National Weather Service in Gaylord uses an online reporting system to collect spotter reports during both the winter and summer months. The program is called eSpotter . To register for this free program, just visit the eSpotter web site (www.crh.noaa.gov/espotter/), and fill in a few blanks about yourself. When it asks you when your last training was received, please provide the approximate date and location of your last Skywarn spotter training class or winter weather spotter training class.

When you send in your report using this system, it alarms at the forecaster's workstation at the weather office. Nearly 200 spotters are now registered in this system and that number continues to grow. One important thing to keep in mind, this new online reporting system is to be used for non-life threatening reports. Time sensitive reports should still be relayed to the weather service using the 800#.

2006/2007 Winter Storm Wrap-Up

by Jeff Zoltowski, Storm Verification Program Leader

It was - as always - an interesting winter in Northern Michigan. Our first storm struck early, with accumulating snow near Lake Michigan on October 12th. The first week of December was very snowy, resulting in significant snow cover that, under normal conditions, would have stuck around all winter. But then the cold disappeared, and all that snow melted away. Finally, winter reappeared in mid January, and February would bring the coldest weather of the season. When looking at the entire winter, we didn't have that many wide-spread snows - instead, localized lake effect snow events were most common.

At press time in early March, it is of course much too soon to say winter storms are over and done with. But so far, the National Weather Service in Gaylord has issued 178 winter storm warnings this season. That's almost exactly what we issued last winter (176 warnings in 2005-06). We had winter storm warnings up in advance of 98 percent of all warning-criteria winter weather events - far and away the best we've ever done (beating 94 percent, achieved in each of the past two winters).

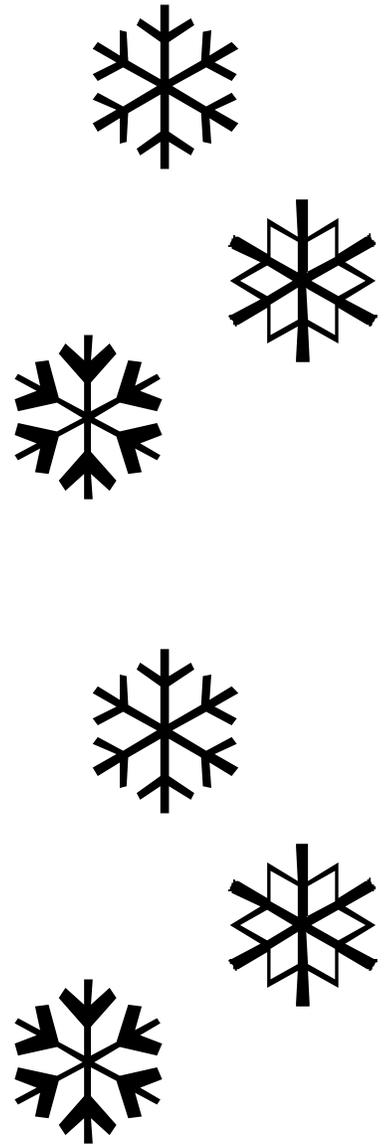
The National Weather Service sincerely thanks to all of our spotters and volunteer observers for their observations during the winter. **Your reports contributed greatly our success!**

Some of our more significant storms of the season:

December 1st: A low pressure system followed a classic storm track, from Oklahoma into Southeast Lower Michigan. Heavy snow fell across all of Northern Lower Michigan, with 5 to 10 inches away from Lake Michigan, and more closer to the coast. Manistee picked up 17 inches of snow.

February 25th - 26th: This time, low pressure approached from the southwest, stalling out just before it made it to Michigan. Places south of a line from Elk Rapids to Tawas City picked up 6 inches or more of snow. The highest amounts, from 12 to 15 inches, were in a band from Lake Ann to Cadillac. Blustery east winds produced considerable blowing and drifting of snow.

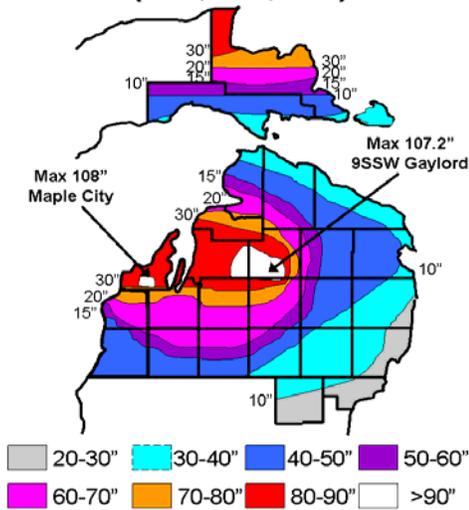
March 1st - 2nd: A strong low pressure system to our southwest, spread a nasty mix of snow, sleet, freezing rain, and strong east winds into Northern Michigan. Snowfall amounts of 8 to 15 inches were common in Eastern Upper and far Northeast Lower Michigan. Rogers City picked up 16 inches of snow. Sleet and freezing rain mixed in to the south. Wind gusts to around 50 mph downed a number of tree limbs and power lines.



A Two-Sided 2006/2007 Winter Season

by Kevin Sullivan, Climate Operations Team

**Northern Michigan
2006-2007 Winter Snowfall
(Dec, Jan, Feb)**



The winter season of 2006-2007 (December, January, and February) had two very distinct periods that clearly defined the season. The first period was an abnormally warm and dry period from mid December to mid January. The second period was an abnormally cold and snowy period from mid January through mid February.

The first week of December got the winter off to a great start in the snowfall department. However, as the middle of December approached, temperatures warmed up significantly, and the snow disappeared across Northern Michigan by the end of the month. Snow did not make a return to Northern Michigan until the middle of January. However, once the snow returned, the snow

quickly made up for earlier season deficits. Nearly every day from the middle of January, through the middle of February saw measurable snowfall in Northern Michigan. Although the frequency of snowfall events decreased towards the end of February, a storm on the 25th of February produced 6 to 15 inches of snowfall south of a line from Charlevoix to Harrisville. Overall, snowfall totals in Northern Michigan fell just short of normal values for most locations, except across Leelanau and Otsego counties.

Below is the total snowfall statistics for the winter of 2006-2007 (December, January, and February). **Observed and normal

	SSM	HTL	APN	TVC	GLR
Total Snowfall (in)	76.8	38.3	48.0	68.1	107.2
Departure from normal	-13.7	-6.3	-11.6	-5.5	+9.2

Snowfall information is for December, January, and February

	SSM	HTL	APN	TVC	GLR	ALL
Dec. Max	+6.1	+5.7	+6.5	+6.6	+5.0	+6.0
Dec. Min	+9.5	+9.6	+9.6	+7.8	+8.7	+9.0
Jan. Max	+4.8	+3.0	+4.1	+4.5	+2.5	+3.8
Jan. Min	+7.7	+6.2	+6.8	+5.2	+5.4	+6.3
Feb. Max	-4.7	-6.9	-5.0	-6.1	-8.2	-6.2
Feb. Min	-4.0	-5.0	-4.8	-2.6	-5.1	-4.3
Winter Max	+2.1	+0.6	+1.9	+1.6	-0.2	+1.2
Winter Min	+4.4	+3.6	+3.9	+3.5	+3.0	+3.7

Values represent departure from normal maximum and minimum

precipitation data for Traverse City and Gaylord are compiled from both cooperative and automated surface observing system information.

This winter season will be remembered for the period of warm weather from mid December...through mid January. This warm period is evident by the above normal conditions seen during the months of December and January. Even though the cold air finally arrived by late January, it was not enough to counter the earlier warm weather. Thus, the winter season from December through February will finish above normal with regards to temperatures.

To the left is the temperature statistics for the winter of 2006-2007 (December, January, and February).



Greetings From Our New OPL

by Keith Berger, Observation Program Leader

I just wanted to say “Hi” to all of you. I’m sure you’re looking as forward to spring as we are. Spring brings about a flurry of activity at the Weather Office. Outreach activities include: the commencement of our Storm Spotter training classes and touching base with all of our media partners, as well as various expos at fairs and campgrounds. I really enjoy these and look forward to seeing some of you out in the community.

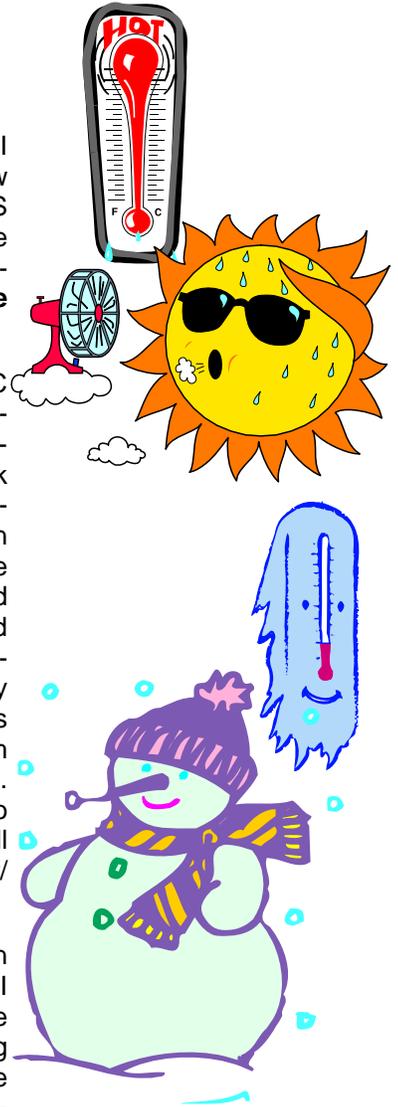
On the “Data Collection” side of the house, Denny and I will begin our annual inspections of COOP stations (as Denny will expand on in this addition) and I will have to hit the “SAWRS” stations (weather observing outfits at various airports) to give them their twice yearly session in the hot seat. With all of the climate research being done these days, observed weather **data quality is paramount**. The information we record today will be studied and scrutinized over the next 50 to 100 years. With that said, we are blessed to have such dedicated helpers, as is the case with many of you.

We have other big happenings in other areas coming this year. We anticipate the installation of our Radiosonde Replacement System (RRS) in August. This will be a top to bottom replacement of our current Upper Air system that tracks our

weather balloons. The old system (and I stress OLD) will be replaced by this new state-of-the-art system that utilizes GPS technology for tracking the “Radiosonde” (weather observing instrument). This will bring us not only **more data**, but **more accurate** data as well.

Also, our sister organization NCDC (National Climate Data Center) has chosen our location for the potential deployment of a Climate Reference Network (CRN) Observing Platform. There are currently less than 100 of these in stations in existence, which are deployed to remote areas that are not expected to be intruded upon by development. They are equipped with redundant temperature and precipitation gages are designed to continuously monitor several weather elements (including solar radiation!) for long term (50-100 years) study of climate change. After commissioning, you will be able to access the information from a website. I’ll be sure to pass along the web address if/when this happens.

So that, in a nut shell, is what I have on my plate for the coming months. Again, I look forward to the chance to get to see and know some of you better at upcoming events and inspections. Until then, take good care and thanks for all of your support.

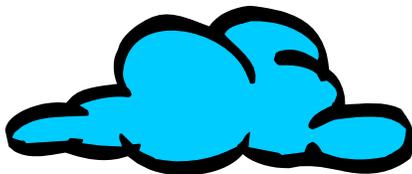


Our fearless OPL, Keith Berger, braves the turbulent waters of Lake Superior to provide valuable marine observations (and fish) to forecasters and to the public (right). He is also very handy with PhotoShop.

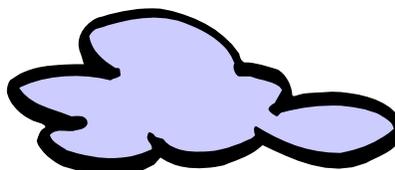


Upper Air Program Soaring Higher

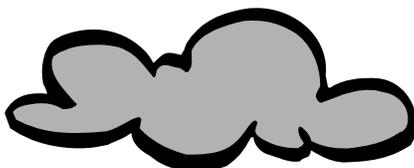
by Mike Cellitti, Upper Air Program Leader



The National Weather Service (NWS) forecast office in Gaylord MI continues to be designated as 1 of 69 upper air stations in the Continental US, and 1 of 92 stations in North America, managed by the NWS. Two upper air observations are conducted simultaneously by each station every day of the year, centered around 7am and 7pm Eastern Standard Time, or 6am and 6pm Eastern Daylight Time. Each flight consists of a Radiosonde instrument package that is suspended below a 2 meter (6 feet) wide balloon filled with hydrogen. As the radiosonde is carried aloft, sensors on the radiosonde measure atmospheric conditions, such as relative humidity, temperatures, and winds. The



radiosonde then transmits these measurements to a ground receiver. The information is compiled and applied to many different operations



such as computer based weather prediction models and local severe storm, aviation, and marine forecasts. In addition, the upper air data is extremely essential in weather research.

Approximately 730 balloon launches are conducted each year at the weather station in Gaylord. A balloon's journey lasts about two hours and reaches a height of 19 miles above the surface before it bursts. The instrument and balloon then descend back to the surface aided by a parachute that is attached. If you are lucky to find one of these instruments, please drop it in a postage paid mailing bag located within the instrument itself and ship it to the reconditioning center to be recycled. About 20 percent of the instruments are recovered on average nationwide. If

you would be interested in seeing a Radiosonde launch performed, feel free to come to the office at 7am or 7pm during Daylight Savings Time or at 6am or 6pm during Standard time and you can watch the release from Passenheim Road. You are also welcome to schedule a tour if you want a closer look at the balloon launch, but please call ahead.

The NWS has designed a new upper air system to replace the old Microcomputer Automatic Radiotheodolite (Micro-ART) system that has been employed since the late

1980s. This new system is called the Radiosonde Replacement System (RRS) and will incorporate a state of the art Global Positioning System (GPS) tracking antenna, a 1680 MHz Radiosonde, and a new surface observing system. The RRS system will increase data resolution and accuracy, and require less operator interaction and maintenance. Although it has been implemented at various offices across the country, it is due to arrive at the weather forecast office in Gaylord this summer.

For more information on this change and other information about Upper Air, check out the NWS Upper Air Observations Program at <http://www.ua.nws.noaa.gov>.



Preparing for the Storm

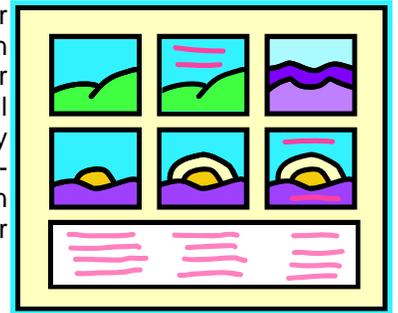
by Bruce Smith, Science and Operations Officer

Just as we work to provide training for our Northern Michigan weather spotters this spring, the Gaylord National Weather Service is also once again providing training to our local meteorologists on severe weather warning operations and the science of summertime severe weather.

As we have done in past springs, numerous training sessions have been scheduled through the end of May specifically for the local forecast staff. Training topics will include thunderstorm and tornado forecasting, as well as refresher training on efficient warning operations. In late March, a day long workshop will be provided covering a broad range of summertime thunderstorm topics. A severe weather simulation will be conducted for

the entire forecast staff in April, focusing on software and communication issues. In April and May, each forecaster will step through two separate "Weather Event Simulator" scenarios. These scenarios will address science issues. Lastly, in late May, there will be a workshop on tornado formation mechanisms.

The goal of this training is to keep our forecasters as proficient as possible in issuing accurate and effective warnings for the residents of Northern Michigan. Well trained forecasters, coupled with timely spotter reports, will help ensure that warnings are issued to help everyone remain safe this spring and summer. Thanks for your assistance!



The COOP Corner

By Denny Fruehauf, Cooperative Observer Program Manager

New Co-op Site:

New site "MIO WWTP" opened late last fall at the Big Creek – Mentor Wastewater Treatment Plant (shown below), on the east side of Mio. Linda Martin and Manager Gregg Anderson have done a wonderful job this winter, starting up with virtually no problems whatsoever. This site has replaced "MIO HYDRO PLANT," 1.3 miles to the northwest, which closed on January first of this year after reporting data since 1903.



Awards:

In mid-December, Laverne Bidelman, co-op at WHITEFISH POINT, was presented with a 20-year length-of-service award, as shown below.



The COOP Corner

By Denny Fruehauf, Cooperative Observer Program Manager



On December 29th, I presented a 50-YEAR INSTITUTIONAL AWARD to manager STEVE KRANTZ (shown below) at co-op site LUPTON 1S, the Rifle River DNR Recreation Area.



Starting with the April form, the entry in the header will be "DE".

Conversely, remember that all Fischer-Porters and FPU's will remain set to Eastern Standard Time, one hour earlier than the local time as shown on your wristwatch through the summer.

Coming Up: WeatherCoder III!

An upgrade to the WeatherCoder Program is in the works and is expected to be in place later this year. Details of improvements are sketchy at this time, but they are mainly aimed at making the program more flexible, such that you can eventually use it to submit your monthly form to us. Nothing beyond entering your daily observations would be required.

Daylight Savings Time:

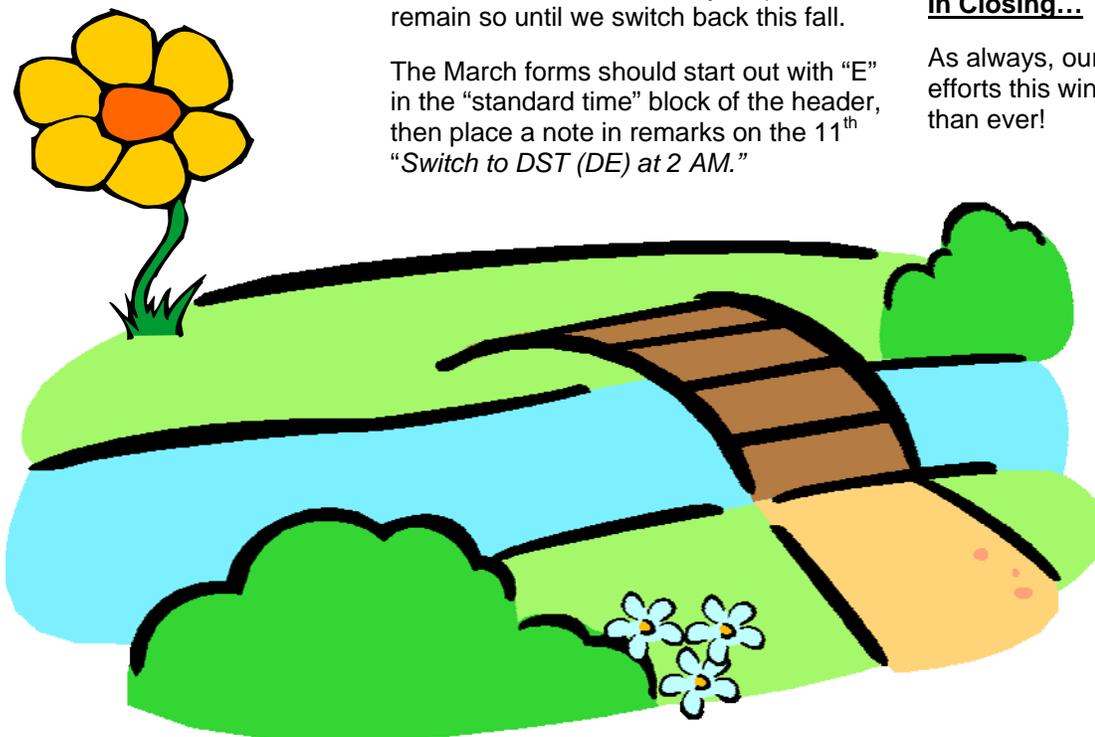
By the time you receive this, we will have switched back to daylight savings time (on Sunday, March 11th). Remember that the proper entry for "Standard Time in Use" in the header on all forms is **DE** (except for the NWS office here, at Gaylord) and will remain so until we switch back this fall.

This would mean that you would have to ensure that all observations for a given month are entered in WeatherCoder, even after-the-fact. It will then allow us to edit and correct the forms electronically... something we cannot do at this time in WeatherCoder II.

In Closing...

As always, our thanks to all of you for your efforts this winter... you have done better than ever!

The March forms should start out with "E" in the "standard time" block of the header, then place a note in remarks on the 11th "Switch to DST (DE) at 2 AM."





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“Saving Lives and Property”

National Weather Service Mission Statement

"The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community."

NWS Gaylord, Michigan Vision

"Lead in developing innovative ways to improve the quality of weather services to our customers and set a standard of excellence for products and services unique to Northern Michigan."

**National Weather Service
8800 Passenheim Road
Gaylord, Michigan 49735**