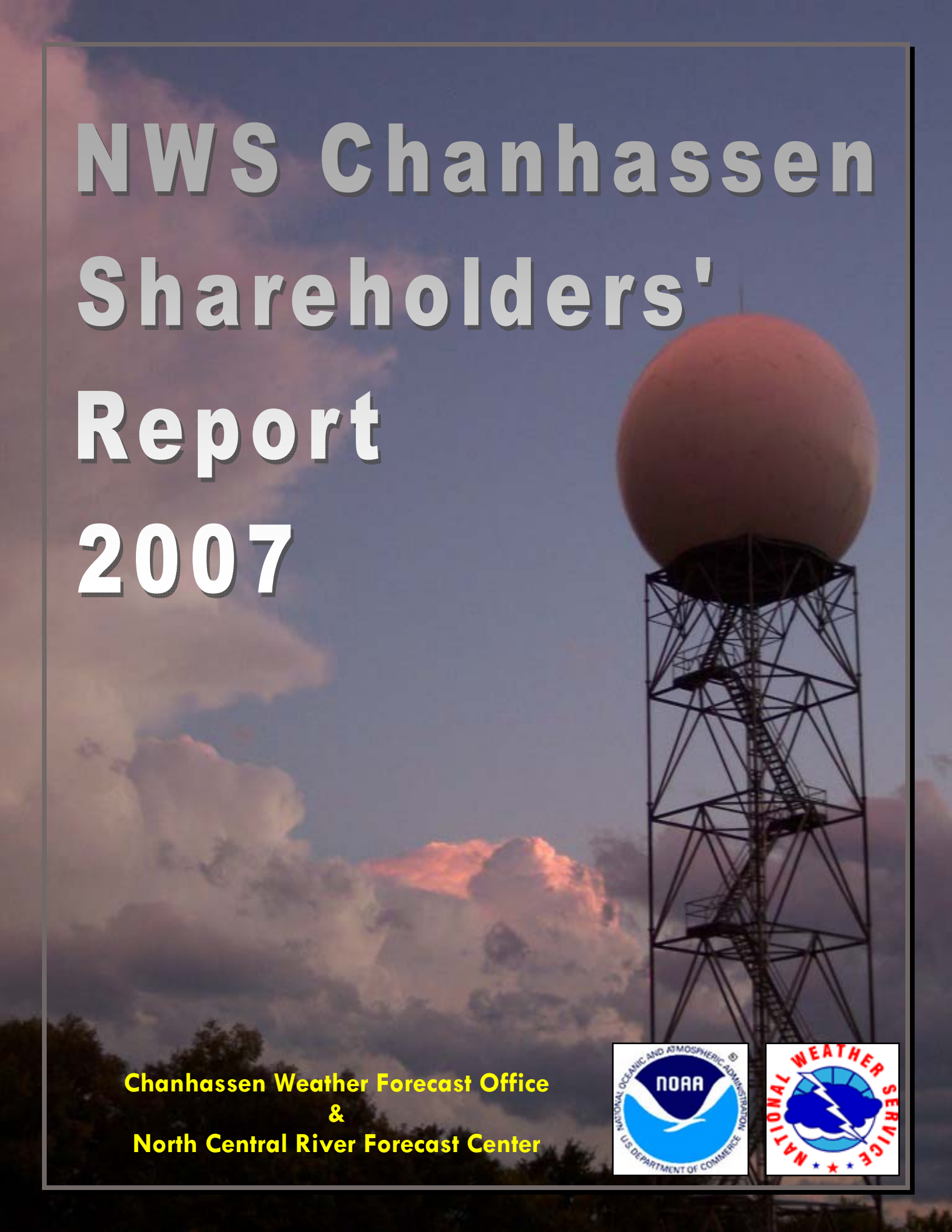
NWS Chanhassen Shareholders' Report 2007



Chanhassen Weather Forecast Office
&
North Central River Forecast Center

Preface

"My vision for the National Weather Service Chanhassen Water and Weather Forecasting Office is to provide the very best in customer service and information to our diverse customer base. Today's water and weather information needs continue to grow, and we can expect this to continue as customer's expectations increase and science and technology advance. We have some of the brightest, most energetic, and capable meteorologists and hydrologists. There are service and information opportunities that we are now embracing. Our intent is to focus on high impact events that significantly impact our customers.

This report details the water and weather activities and events of the NWS office in Chanhassen and in 2007. Since you are a customer I hope you will find our activities demonstrate the sort of stewardship you expect from your public servants. I welcome your comments and suggestions as to how we can improve our services and information."

- Dan Luna
Meteorologist in Charge - Weather Forecast Office
Acting Hydrologist in Charge - River Forecast Center

Our Office Mission

"We are dedicated to providing high quality and timely warnings, forecasts, and other hydrometeorological services to ensure public safety and to benefit the people we serve."

Table of Contents

Common Acronyms
NWS: National Weather Service
RFC: River Forecast Center
WFO: Weather Forecast Office

A New Face

In October of 2007, the NWS WFO Chanhassen added Tom Hultquist to its staff as Science and Operations Officer (SOO). Tom comes from the NWS Marquette, MI WFO.

Tom was interested in weather at a very young age, becoming fascinated initially by winter storms while growing up in southern New England. According to Tom, the blizzard of February 6, 1978 was probably the event most responsible for forging his love of meteorology. This storm produced hurricane force winds across southern New England and dumped around 40 inches of snow in a 24 hour period in his hometown of Providence, Rhode Island. He earned a meteorology degree from Lyndon State College in Vermont in 1992, and joined the NWS as a Meteorologist Intern in Grand Rapids, MI in 1994. He became a forecaster while in Grand Rapids, and remained there until 2001 when he took on the position of SOO in Marquette, MI. There he became heavily involved in the Great Lakes marine forecasting program and conducted a great deal of research into wind and wave forecasting, culminating in a thorough retrospective of the famous 1975 storm which contributed to the sinking of the Edmund Fitzgerald.

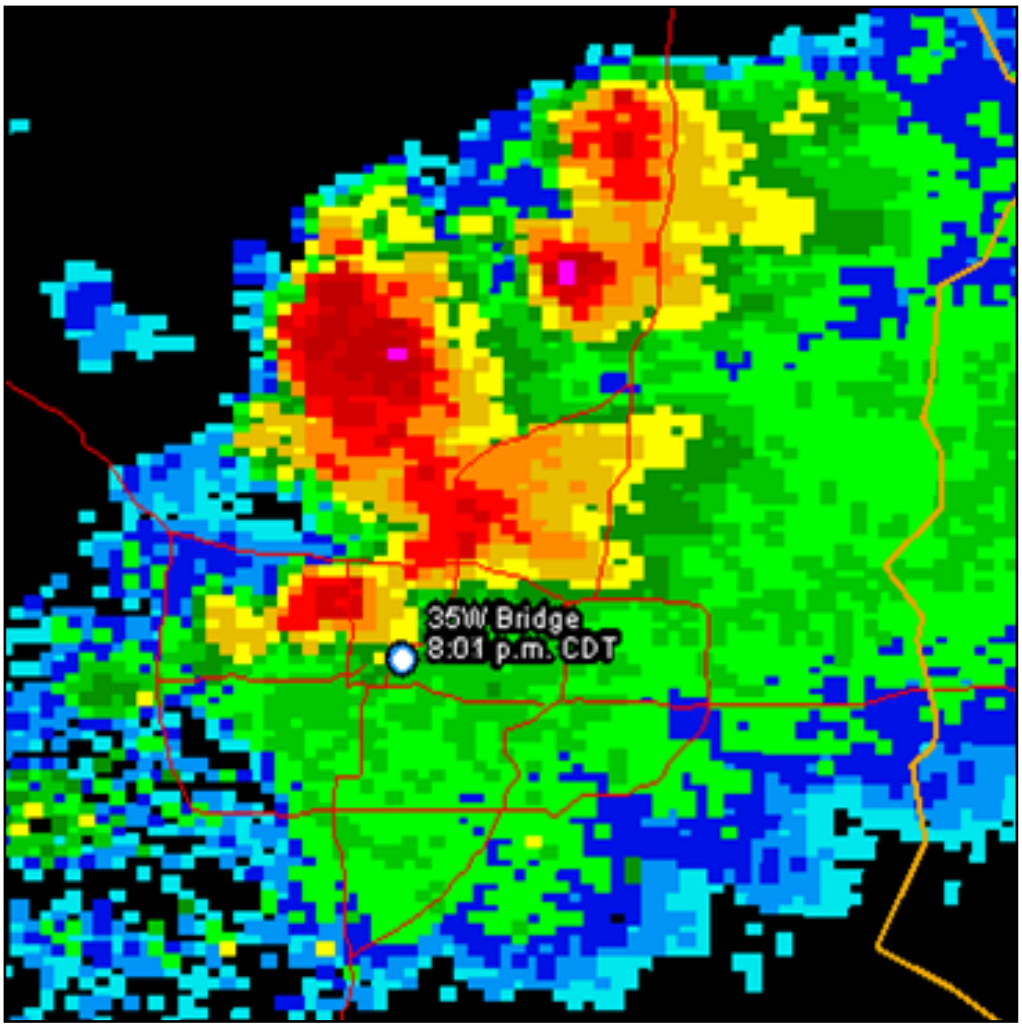
Michigan's Upper Peninsula offered Tom a variety of forecasting challenges, many of which were dependent upon atmospheric processes occurring at small scales due to the complex topography and land/lake interactions. Because of this, Tom became very involved in running local numerical models, particularly at high resolution. Local modeling was used for real-time forecasting and in a number of research projects, addressing issues ranging from lake forecasting to forecasts of severe convection.

Since joining our office team in October, Tom has already provided multiple rounds of forecaster training and new numerical modeling approaches for the forecast process. At the 2007 Northern Plains Winter Storms Conference in St. Cloud, MN he gave a presentation on research which he conducted while in Marquette. The research considered the performance of the operational models during a winter storm available to all forecasters, but also included high resolution numerical simulations conducted locally which tested the sensitivity of the models to differences in initial conditions and model parameterizations. The results helped demonstrate to forecasters the need to evaluate output not only from an ensemble of initial conditions, but also an ensemble of modeling systems and configurations in producing accurate forecasts. In December 2007, he attended the annual National Centers for Environmental Prediction (NCEP) Environmental Modeling Center (EMC) Product Suite Review Meeting in Camp Springs, MD as the NWS Central Region representative. The meeting provided a worthwhile and unique forum for the exchange of ideas and information between field forecasters and modelers at EMC.

Tom looks forward to learning about the area and growing with the staff as we continue to improve our forecast and warning services. He plans to incorporate new technology and the latest science and research into our operations. The office is very glad and proud to have Tom aboard!

I-35W Bridge Collapse Support: August 1 - 19

One to two hours after the I-35W bridge collapse on August 1st, strong storms approached the disaster site. National Weather Service meteorologists were in frequent contact with local officials regarding lightning, heavy rain and gusty winds threatening the victims and the responders. Fortunately, the storms diminished less than five miles from the collapse site.

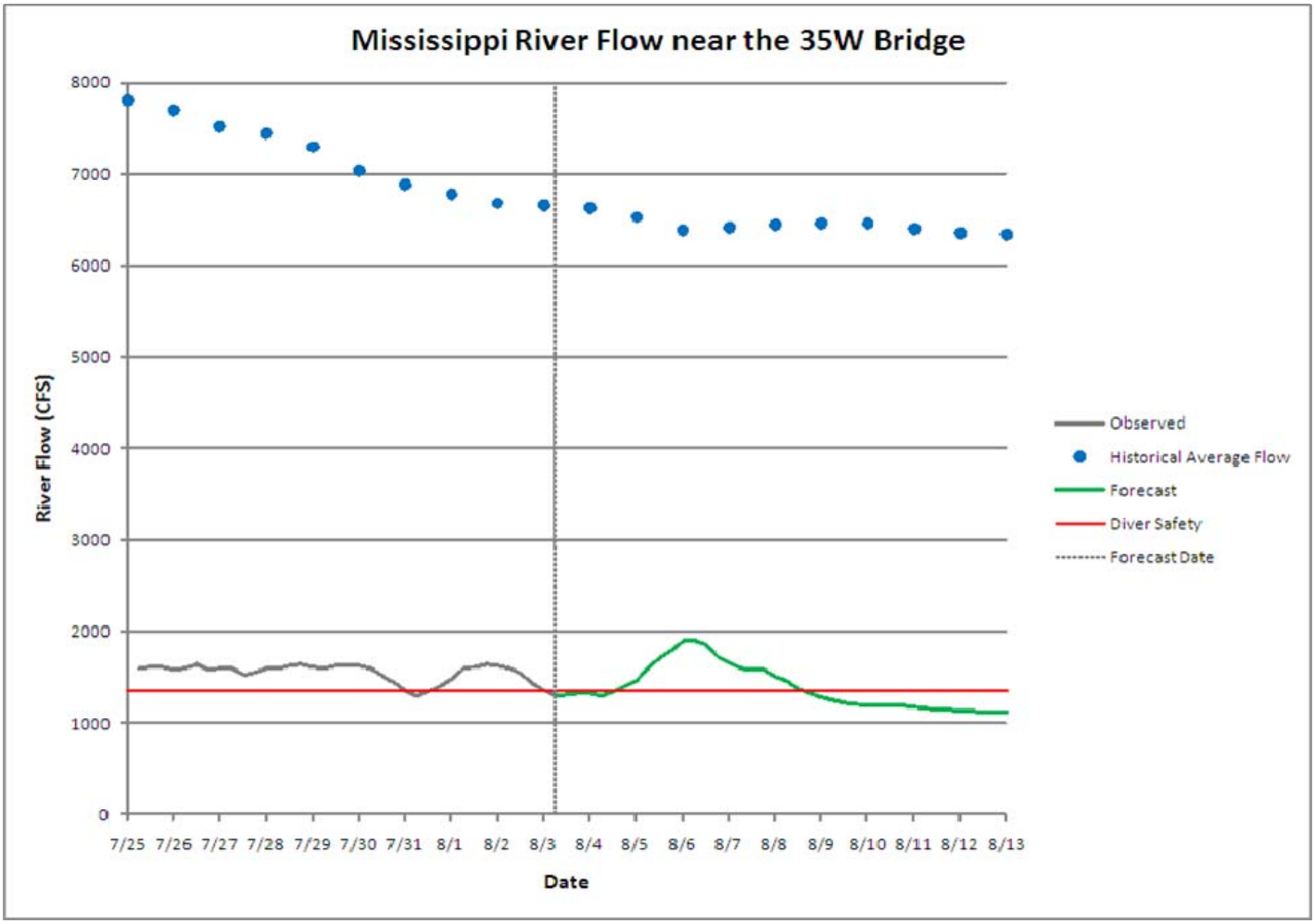


Doppler Radar Reflectivity Image From Approximately Two Hours After the Bridge Collapse

NWS meteorologists remained in frequent contact with the incident command posts during the multi-day recovery efforts whenever storms, heavy rain, lightning or strong winds threatened. Several strong storms moved through the area August 11-14, prompting a halt to activities. At one point, NWS personnel staffed the Minneapolis command post for three days because of the risk of severe weather and increased river flows.

NWS hydrologists provided daily forecasts of flow along the Mississippi River throughout the recovery period, and were involved in many coordination calls. For their safety, the divers required flows less than 1300 cubic feet per second. Drought had resulted in flow much less than the historical average, but storms around and upstream of the site would sometimes create excessively fast flows unsafe for the divers. NWS hydrologists would alert the diving command post to forecasts of such conditions.

Hydrologists used many data sources, including radar estimates of rainfall to provide information to the U.S. Army Corps of Engineers, allowing for the adjustment of river levels and flow whenever possible. The below hydrograph depicts observed river levels and an RFC forecast hydrograph. This is from two days after the bridge collapse.



Hydrograph Showing the Low Mid-Summer Flow on the Mississippi River Due to Dry Conditions

Two Winter Storms in One Week

It is difficult to name only a single 2007 weather event as the major one of the year that the NWS staff and the public will remember. There was significant flooding during August 18th-20th in southeast and south central Minnesota and southwest Wisconsin, during which the RFC provided forecasts and guidance before and during the event. August also saw three thunderstorm complexes with damaging winds move through the Twin Cities metro area, in which the WFO issued over eighty warnings. Flooding also impacted Steele County in south central Minnesota during the early autumn in which the WFO and RFC jointly provided localized water and weather forecasts to public officials. These were all significant events. But it was actually two winter events within a close time frame that we felt characterized the largest weather story of 2007.

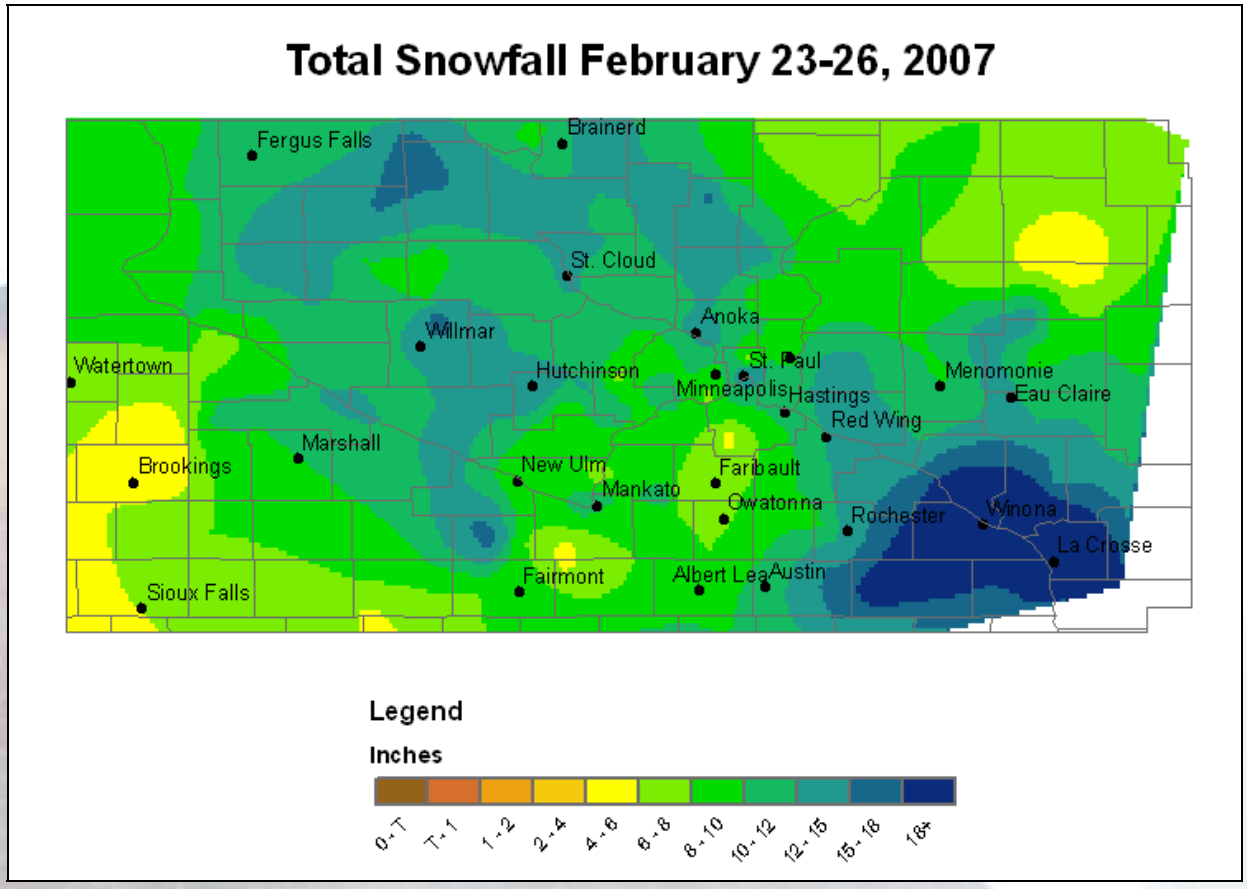
The 2006-2007 winter season across much of Minnesota and western Wisconsin began on a disappointing note for snow enthusiasts and others who rely on wintry precipitation for economic reasons. Except for a quick late November snow, affecting a portion of south central and southeast Minnesota and west central Wisconsin, the first sizeable winter storm did not occur until New Years' Eve. The month of January featured a few quick, minor snow events, but by the middle of February, the residual snow cover had dwindled to only a couple of inches across much of the region, with parts of western and central Minnesota even seeing large patches of bare ground. However, the end of February and the very beginning of March showed that the relatively dry trend set during the early and middle portions of the winter was not an accurate predictor of how the season would conclude.

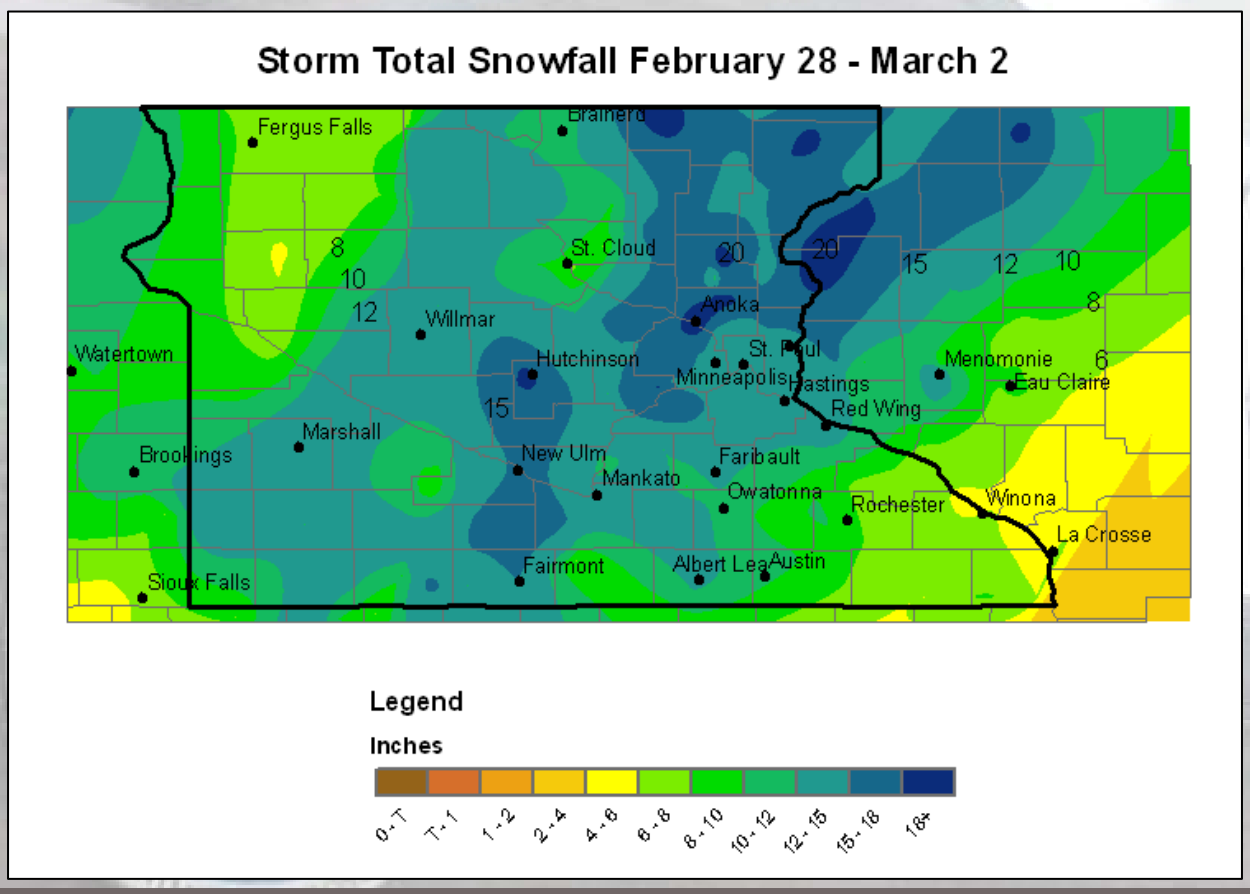
Two back-to-back major winter storms rocked central and southern Minnesota and west central Wisconsin over the 7-day span between February 23rd and March 1st, each dropping a foot or more of snow across portions of the region. The snow from these two storms amounted to over half of the season's total snowfall for much of the area.

The first storm occurred from the 23rd through the 25th of February. Being it was a weekend, it somewhat lessened the public impact because children were home from school and most people home from work. Storm total snowfall accumulations ranged from 4 to 6 inches along the Interstate 90 corridor between Fairmont and Albert Lea to 12 to 18 inches in a band from Red Wing to the northern suburbs of the Twin Cities, St. Cloud, and Alexandria. In addition to the snow, portions of south central Minnesota saw ice accumulations early in the event, although the significant accumulations were confined to far southeast Minnesota and parts of northeast Iowa.

Several meteorological factors combined to produce this winter storm. The weather pattern on the evening of the 23rd featured a deep upper level trough in the western United States with a weak ridge in the Mississippi Valley. An unseasonably strong jet stream was located in the base of the western trough, over southern Arizona. A surface low pressure system was positioned in far eastern Colorado and southeastern Wyoming. In advance of the surface low and the upper trough, a potent, southerly low level jet rapidly transported moist air from the Gulf of Mexico, across the Plains states, and into

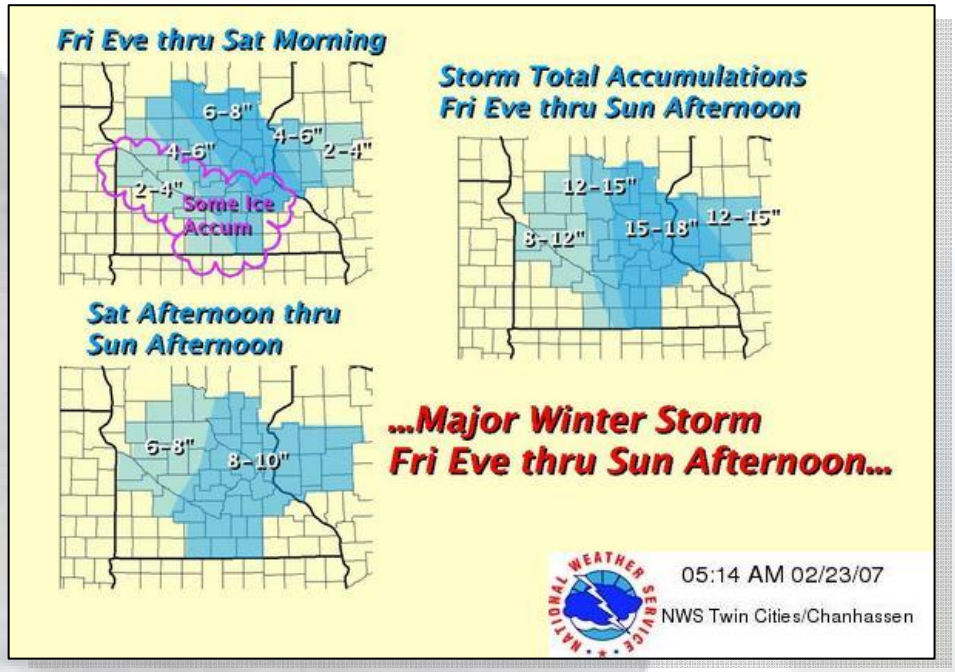
the Upper Mississippi Valley. All of these features moved eastward, colliding over Minnesota and Wisconsin during the daylight hours of the 24th, clearing the region late on the 25th.



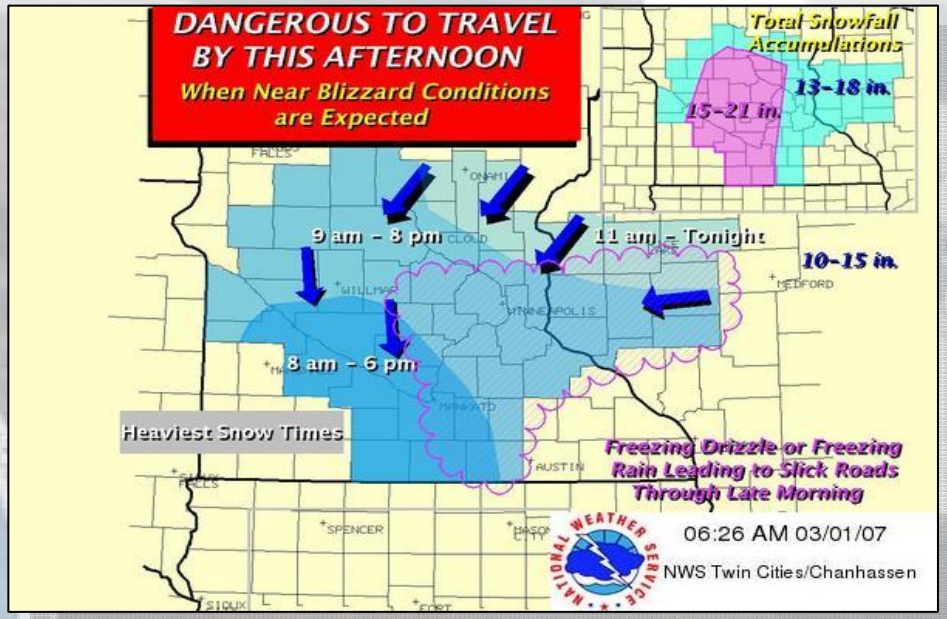


Two rounds of precipitation affected the area as the system moved eastward. The initial round occurred as warm air flowed into the Upper Midwest ahead of the approaching surface low and upper trough. It was during this time that freezing rain occurred across parts of southern Minnesota, as the increase in warm air created a deep layer of above freezing temperatures just above the ground, allowing the snowflakes to melt before reaching the cold surface and refreezing. Areas of moderate to heavy snow were still found on the northern edge of the freezing rain area, mainly across central Minnesota and west central Wisconsin. After the surface low passed southeast of the area, the second round of precipitation, this one completely in the form of snow, invaded the area. The snow gradually subsided, dwindling to flurries by late afternoon on the 25th.

Not long after residents had emerged from the remnants of the first storm, a second winter storm pounded the region between the 28th of February and the 1st of March, packing an even bigger punch. This second storm had greater public impact for two reasons: its occurrence during the middle of the work and school week; and the compounding effect of the previous winter storm. Storm total snowfall accumulations ranged from 6 to 8 inches across far west central Minnesota and in the Eau Claire and Chippewa Falls vicinities to 15 to 20 inches from Fairmont to the Twin Cities and into northwest Wisconsin. Windy conditions late in the storm led to blizzard conditions across parts of Minnesota, as well as towering snow drifts across much of the area. Ice accumulations were non-existent for this winter storm, although a period of light freezing drizzle did occur in some locales early in the event.



WFO Graphical Weather Story: February 23, 2007



WFO Graphical Weather Story: March 1, 2007

The weather pattern responsible for this second, more potent, winter storm was eerily similar to the one that produced the first storm, although there were a few notable differences. A strengthening upper level trough was found in the western United States on the morning of the 28th, with a strong jet stream in its base across the southwestern United States. A large surface low pressure area stretched across Colorado and western Kansas, and ahead of it, another strong, southerly low level jet fed moist air into the Upper Midwest. As the features converged on Minnesota and Wisconsin late on the 28th and on the 1st, they strengthened rapidly, a factor that was largely absent during the first storm. The deepening low led to the intense snowfalls, large snowfall rates, and windy conditions.

Once again, two rounds of precipitation, one in advance of the low pressure system and one in its wake, affected the region. Except for some patchy freezing drizzle at the start of the storm, snow was the predominant precipitation type throughout the event. The windy, and at times blizzard conditions, occurred after the low had moved northeast of the area. The snow tapered toward midnight on the 1st.

The back-to-back winter storms of late February and early March certainly formed the biggest weather story of the 2006-2007 winter season. With the relative lack of a severe weather season, perhaps even the biggest weather story of the year for central and south central Minnesota and west central Wisconsin. Individually, each storm created dangerous conditions for area residents, but together, they formed a high impact hazardous weather event, seen only on rare occasions. Fortunately, the potential for snowfall totals in excess of a foot and occasional blizzard-like conditions were noted in Winter Storm Warnings and graphical outlooks before the storms hit. We strive for success at all times in the warning and forecast process, but most notably in these forms of life-threatening situations.

Training

"The production of accurate and effective forecasts and warnings requires the culmination of many efforts, both internal and external. The Warning Coordination Meteorologist (WCM) position serves a crucial role in this effort, and any advances in our science and training depend upon the tireless efforts of our WCM so that they manifest themselves in an improvement of our services to the public. Meteorology is a science, but like any science, it is one which is constantly thirsting for new knowledge and information. There remain many unknowns in the world of forecasting, and one of our jobs as meteorologists is to continually solve problems while raising new questions to cast further light into other areas of our understanding. It is my hope that our office will continue its research into atmospheric phenomena, particularly those which relate to forecast and warning challenges across our area. Things we learn from such research should be incorporated into our thought processes when producing forecasts and warnings. To ensure that occurs, it is necessary that adequate, timely, and appropriate training be conducted routinely. Training should not be thought of as a periodic refresher on old information or primer on new tools, but rather an ongoing learning experience. As scientists we should all relish the opportunity to learn new things and challenge things we thought we already knew, and the application of this knowledge in producing better forecasts and warnings should inspire all of us to continue to learn throughout our careers."

- Tom Hultquist
Science and Operations Officer
Weather Forecast Office

Office Wide Training Reviews in 2007	
Weather Forecast Office	**River Forecast Center**
Spring Severe Weather Review	Mississippi River Low Water Flow Training
Spring Hydrologic Case Review	Winter Hydrology and Ice Jam Review
Winter Weather Case Review	

Regional or National Non-NWS Conferences or Workshops Attended by Staff

January: American Meteorological Society Annual Meeting in San Antonio, TX (1 WFO)
March: Severe Storms and Doppler Radar Conference in Des Moines, IA (2 WFO)
April: Northern Plains Convective Workshop in Grand Forks, ND (4 WFO)
April: International Water Conference in Grand Forks, ND (2 RFC)
May: GIS Conference in Sioux City, IA (1 RFC)
May: Advanced Hydrology Science Course in Boulder, CO (1 RFC)
September: U.S.-Canada Great Lakes Operational Meteorology Workshop in Milwaukee, WI (2 WFO)
October: Northern Plains Winter Storms Conference in St. Cloud, MN (3 WFO)
December: Environmental Modeling Center Product Suite Review Meeting in Silver Springs, MD (1 WFO)

Outreach

As a scientific *service* agency, the NWS in Chanhassen proudly conducts dozens of outreach events with our partners and for the public each year. These include safety and school talks, display booths at expos, and more. The largest outreach events we conducted in 2007 were two that have become annual traditions for the NWS office in Chanhassen. These were a display booth at the Government on Display at the Mall of America in January and at the Minnesota State Fair for a dozen days in late August and early September. Other notable outreach events conducted in 2007 are mentioned below.

Notable Outreach Events in 2007

Minnesota State Fair in Falcon Heights, MN
Government on Display at the Mall of America in Bloomington, MN
Scout Day at the Office in Chanhassen, MN
Young Scientist's Roundtable Exhibit in Wayzata, MN
St. Paul, MN Public Schools 1st Grade Teacher Science Curriculum Training
Presentation to the University of Wisconsin, River Falls Meteorology Class
Minnesota Assocation of State Floodplain Managers Meeting in St. Cloud, MN
Association of Minnesota Watershed Districts Conference in Alexandria, MN
Fire Department Open Houses in Chanhassen, Excelsior, and Minnetonka, MN
Six Weather Safety Presentations to Local Government or Community Groups
Eleven School Presentations (Weather Safety, Career, or Weather Education)
Three Elementary School Age Safety Camps

NWS Chanhassen 2007 Tours

Private or Public School Groups: 14	**Adult Community Group: 5**
Family Tours: 7	**Young Adults with Special Needs Groups: 3**
Girl Scout Groups: 5	**YMCA Groups: 2**
Home School Groups: 4	**St. Cloud State University Meteorology Groups: 2**
Cub Scouts Groups: 4	**University of St Thomas Groups: 2**
University of Minnesota Groups: 3	**Brownie Scout Group: 1**
Boy Scout Groups: 3	**Eau Claire Teacher Group: 1**

First Annual Scout Day

The RFC and WFO, along with the National Operational Hydrologic Remote Sensing Center (NOHRSC), teamed up with the local Boy and Girl Scout councils to host "Scout Day" in October. Over 300 boy and girl scouts from the local area, in addition to 200 family members, visited the NOAA facility to participate in six activity stations which helped them earn their weather badge. Each scout also had an opportunity to launch a balloon during a special weather balloon release, and the participants posed for a picture just before the launch. We had wonderful feedback from the scouts on the event and hope to make this an annual tradition.

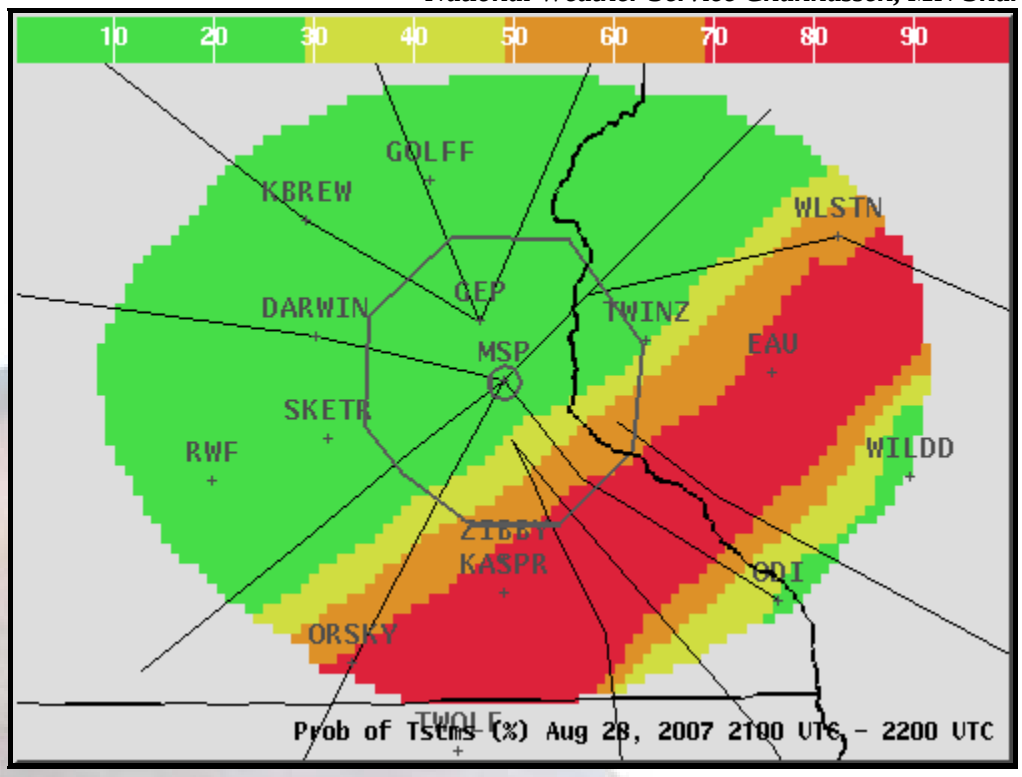
Aviation Services

The Chanhassen WFO Aviation program continues to evolve and expand. A new section was added to the Area Forecast Discussion product which focuses on aviation weather and related conditions. This Aviation Forecast Discussion is issued four times per day to correspond with each terminal aerodrome forecast (TAF) issuance. It provides further information that cannot be conveyed in the TAFs such as level of confidence in the forecast and other potential weather scenarios.

An effort to better understand aviation customers and their needs continues. A seminar was held at the office in April 2007 where representatives from Northwest Airlines Meteorology and Dispatch departments, Minneapolis Terminal Radar Approach CONtrol (TRACON) facility, and a commercial pilot and flight instructor came to speak about their respective operations and weather needs. The information gleaned from the seminar helped forecasters better understand the impacts that weather has on various customers. This was also an initial step in building upon existing relationships with the local aviation community.

Visits to Northwest Airlines, the Minneapolis/St. Paul International Airport Tower and TRACON, and the Minneapolis Airport Commission Airside Operations Center have provided additional information on user needs as well as impacts of weather. A new office team has been developed to evaluate weather impacts as well as forecast performance on an event by event basis. The goal of this is to better understand how the forecast and the actual weather affect aircraft operations. This builds upon existing monthly performance measures. This team is in its initial stages and is primarily focusing on MSP airport but plans to expand its approach to other TAF sites. The evaluation involves a scientific analysis of the weather pattern, forecasts, and model guidance as well as an evaluation of the impacts to operations through communication with various customers. Performance verification for all sites for individual events has also been implemented to further supplement monthly verification efforts and provide more immediate feedback on how the forecast performed.

One of the major undertakings was a collaborative effort between the WFO, the Farmington Center Weather Service Unit (CWSU), and Northwest Airlines Meteorology to demonstrate the viability of collaboratively producing hourly forecast probabilities of thunderstorms. The goal of this demonstration was not only to test collaboration between the three offices, but also to help increase air traffic flow when thunderstorms are present in a TRACON area. Much research was done to determine the specifications of the convection probability forecast based on input from FAA traffic managers and airline dispatchers. The result was a graphic which showed the highest probability of thunderstorms equal or greater than a pre-defined intensity over the MSP TRACON area. An example is shown on the following page. Feedback was sought following the demonstration and will be used to enhance the product for 2008.



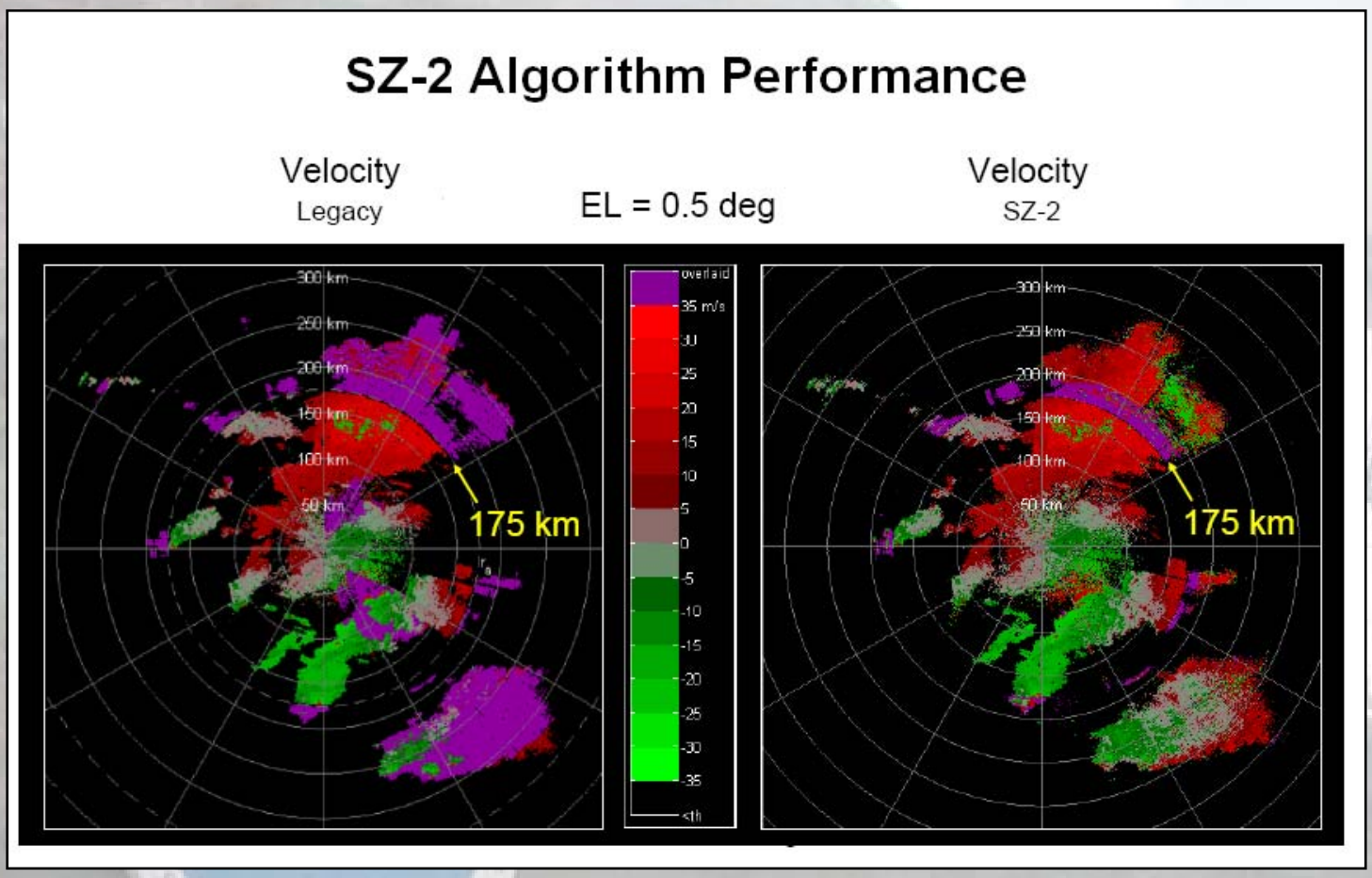
TRACON Convective Thunderstorm Probability Forecast Example

Another area that is currently in the process of expanding is outreach. An FAA safety team requested a presentation at one of their safety meetings in early 2008. This will kick off a plan to seek further outreach opportunities within the aviation community to not only increase their awareness of the weather information the NWS provides but to also increase our awareness of the wide range of aviation weather needs, especially when it comes to general aviation. The plan would facilitate interaction with local flying groups and organizations as well as continue interaction between the FAA, airports, and airline organizations.

WSR-88D Doppler Radar

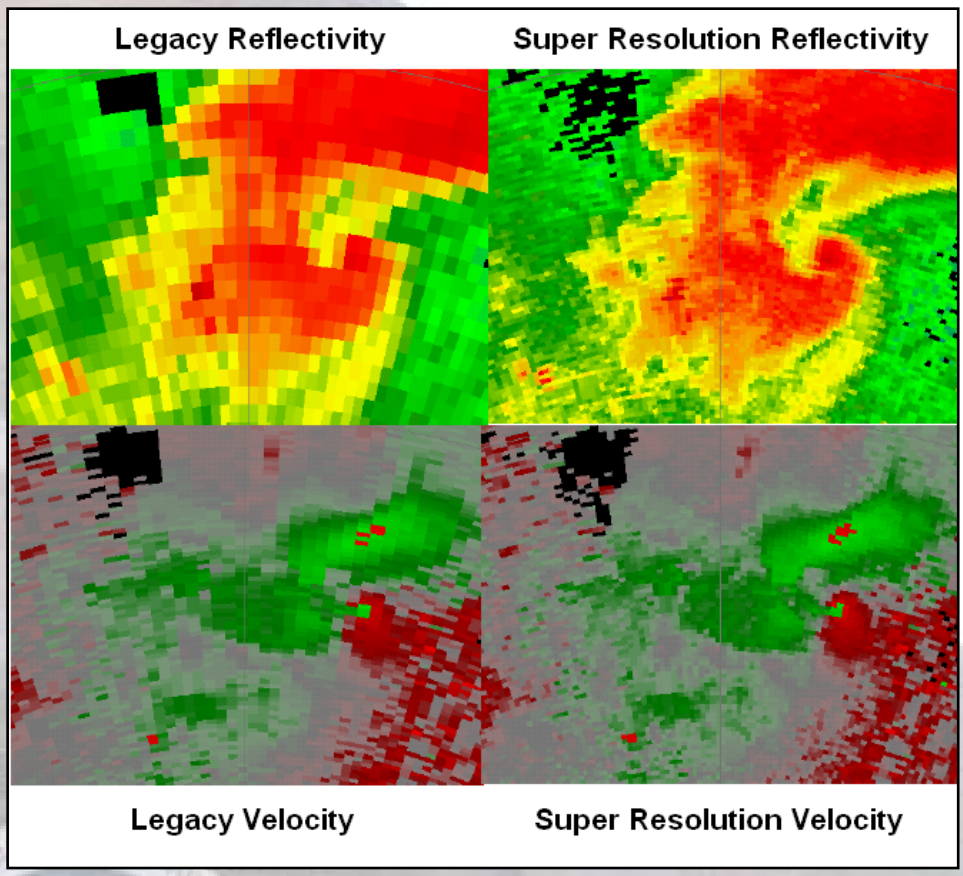
The Chanhassen WSR-88D Doppler radar received an upgrade in the Summer of 2007, known as Build 9. The radar builds usually occur once per year and are designed to keep the radar updated with new technology.

The highlight of Build 9 was the introduction of the Sachidananda-Zrnic (SZ-2) range unfolding algorithm. This technique is designed to display wind velocity data properly that would normally be undecipherable (range folded) or purple as viewed on the radar screen. The velocity data is critical in severe weather decision making and needs to be diplayed as acurately as possible. An example of the legacy range unfolding scheme and the new SZ-2 range unfolding scheme is shown below. Note the large increase in usable velocity data to the northeast and southeast of the radar. Also note that there will still be some residual range folded data (purple) in the new scheme, but still much improved over the legacy one.



Part of the Radar Product Generator

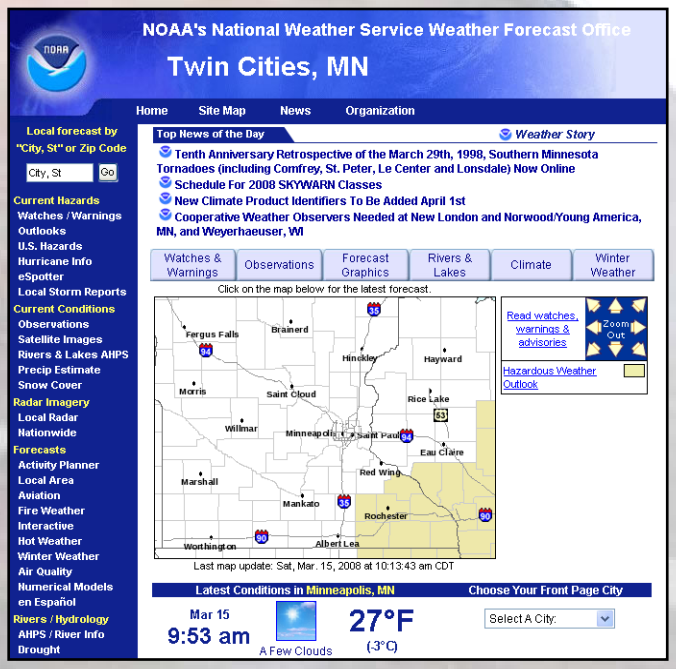
A second benefit of Build 9 was the automatic transfer of environmental data (temperature, wind direction and wind speed) from our Advanced Weather Interactive Processing System (AWIPS) to the Radar Product Generator (RPG). The RPG takes the return signal data from the radar and makes radar products, many which use algorithms that depend on the correct environmental data to work properly. Previously, the enviromental data was updated manually, twice a day. A picture of the Chanhassen WSR-88D RPG is shown to the left.



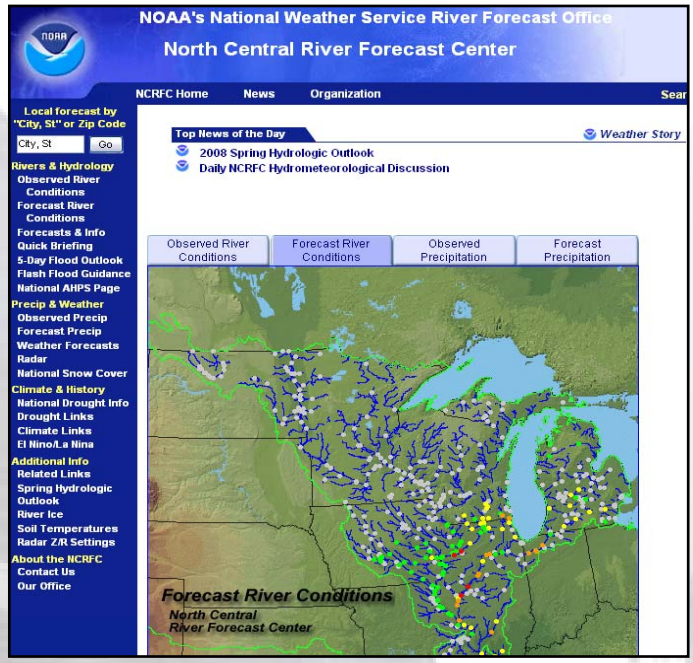
The next build for the Chanhassen Doppler radar is scheduled for April 2008. It will be Build 10 and will produce "Super Resolution" radar data. Initially, this data will be available for the lowest elevations of the radar. It will change the azimuth resolution, or gate spacing, from 1 degree to 0.5 degrees. It will change the reflectivity data range resolution from 1 km to 250 meters. There will also be an increase in the range of the doppler data from 230 km to 300 km. An example of legacy versus super resolution for velocity and reflectivity data is shown above.

Web Additions

The internet has become the primary medium for most NWS weather, water, and climate users. All WFOs and RFCs have a standard layout home page. Because of shared weather and water interests, the offices within the NWS Central Region have a home page which features news headlines at the top and similar links on the left hand column. This includes the Chanhassen WFO and RFC. The home page is a portal to a plethora of information geared for the local office's service area.



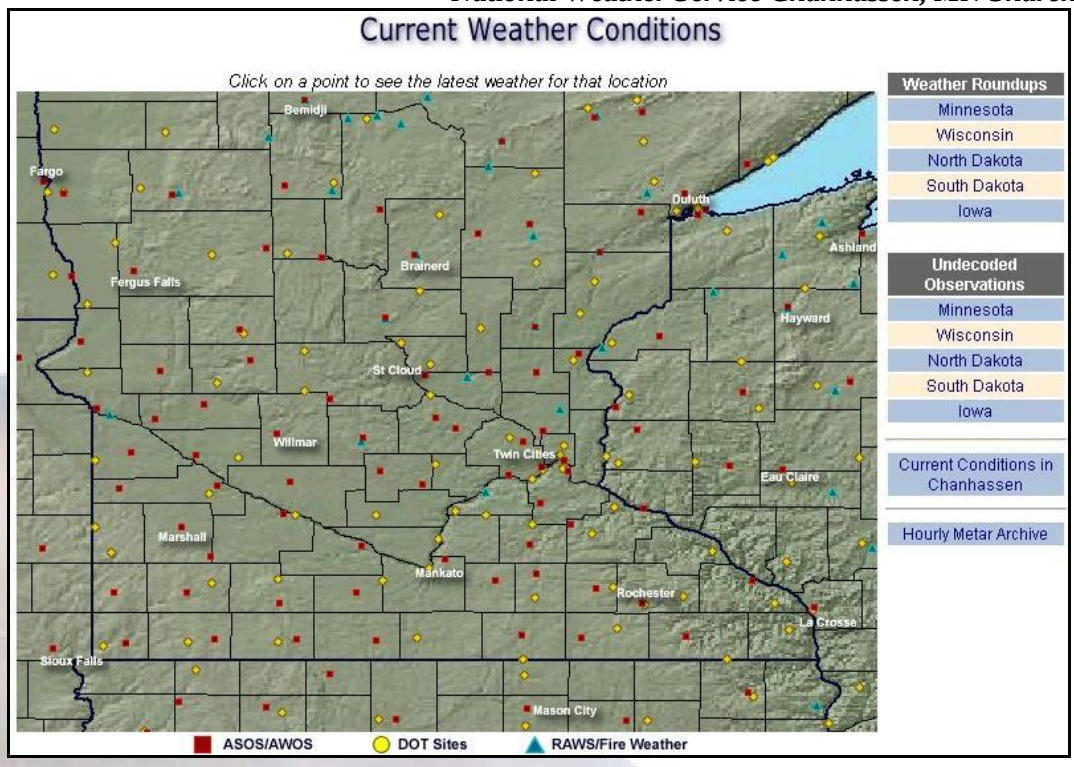
WFO Chanhassen Home Page: http://weather.gov/twincities



RFC Chanhassen Home Page: http://weather.gov/ncrfc

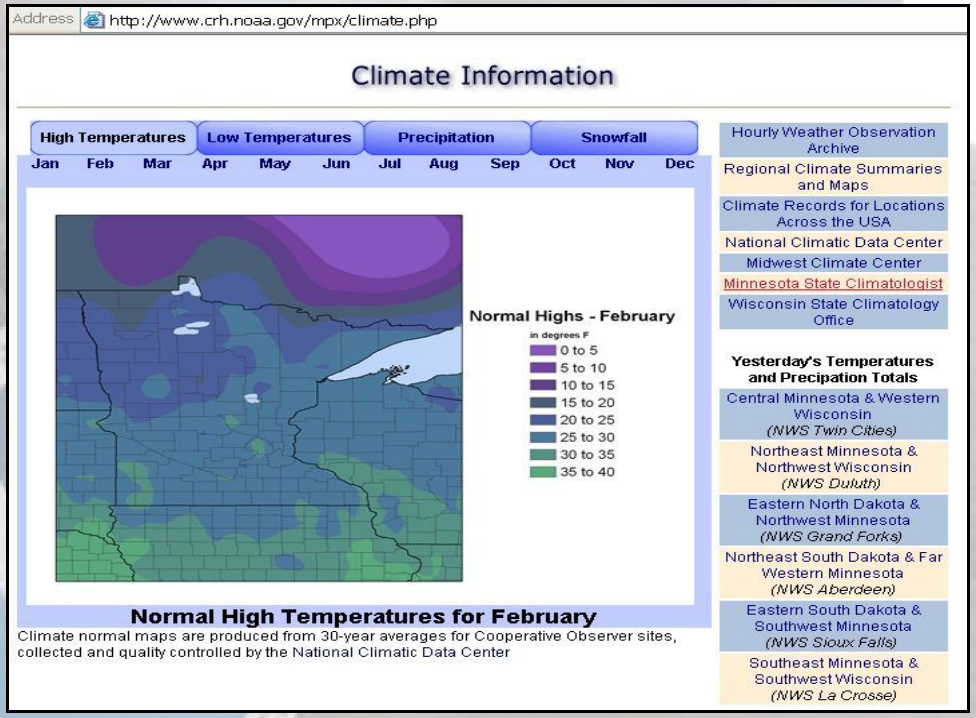
In 2007, the NWS Central Region added a common watch and warning display page that can be accessed by clicking on Watches/Warnings on the left hand column of any central region WFO page. This page will show the exact geographic plot of any hazardous watches or warnings as well as details on all such products in effect within the WFO's county warning area and immediate adjoining areas.

On the local level, the WFO and the RFC in Chanhassen both made marked enhancements to their web sites. On the WFO site, an improved observation page was added which can be seen on the next page. This includes a clickable map featuring government observational weather networks. After clicking on a location, a detailed observation is displayed including a multi-hour history. Over 80 sites in our forecast area are available on this page.



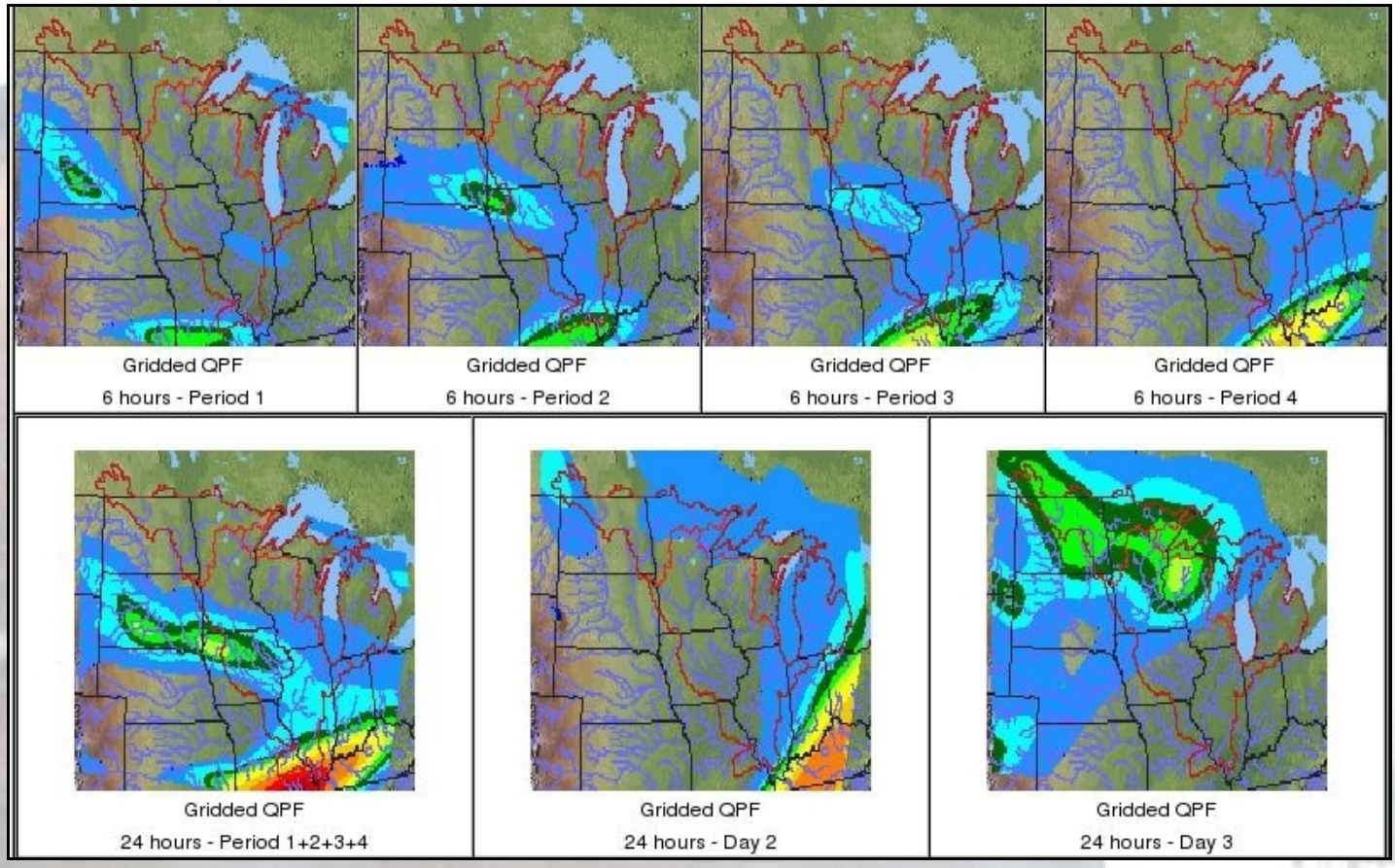
WFO Chanhassen Observations Page: http://www.crh.noaa.gov/mpx/current.php

The WFO also increased its web-based climate information with an enhanced mapping suite. On this site, which can be seen below, are tabs for different weather elements. Months of the year can be selected and upon doing so a map meeting the user's request will be displayed. Many climate links are featured to the right of the page. At the bottom of the page, up-to-date climate graphs at multiple observation points across the forecast area can be found.



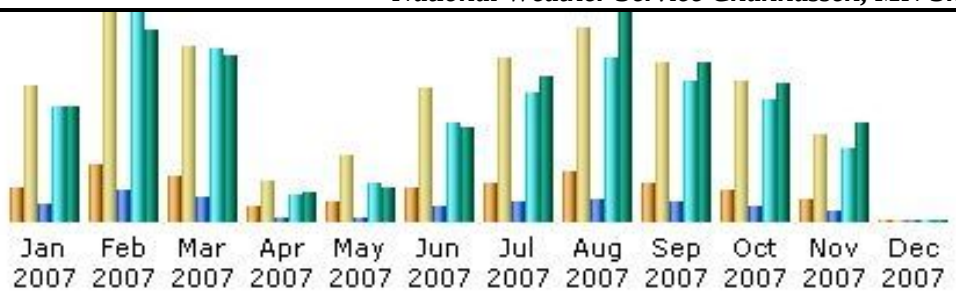
WFO Chanhassen Local Climate Page: http://www.crh.noaa.gov/mpx/climate.php

The NCRFC web team continued the migration to a common map background for its precipitation graphics. New images were created for observed daily point precipitation, hourly radar precipitation estimates, and future quantitative precipitation estimates (QPF). The point precipitation data includes five days worth of data while the hourly radar precipitation data dates back 24 hours. The QPF is for three days into the future.



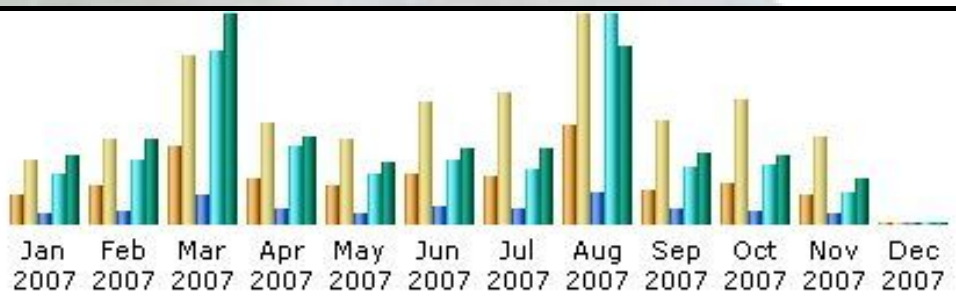
Other additions to the NCRFC website include a water temperature page, a soil temperature page and the ability to view the previous ten issuances of many text products.

The graphics on the next page feature 2007 statistics for the NWS Chanhassen web sites. These are for all pages on the WFO and RFC web domains. Months with higher web traffic for WFO sites correlated to months with more active weather, namely the winter storms of late February and early March and the severe weather of August and September. Likewise, months with busier than normal requests for data on the RFC sites included the spring flooding in Illinois and Iowa and the summertime flooding in southeast Minnesota.



Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2007	71581	292825	869907	5761169	32.87 GB
Feb 2007	121960	450956	1515848	10387213	54.52 GB
Mar 2007	98433	376282	1163289	8543336	47.38 GB
Apr 2007	31493	87227	162379	1315507	8.23 GB
May 2007	41068	140873	213597	1937601	9.29 GB
Jun 2007	72567	289331	719198	4901501	26.42 GB
Jul 2007	82723	354458	972930	6421420	41.46 GB
Aug 2007	105598	419809	1152056	8158483	59.39 GB
Sep 2007	84300	342412	949633	6952734	45.12 GB
Oct 2007	67460	301179	803417	6111015	39.00 GB
Nov 2007	49100	190089	481078	3613395	28.09 GB

NWS Chanhassen WFO Web Page Statistics



Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2007	2468	5222	13364	70157	2.98 GB
Feb 2007	3167	7020	17444	89303	3.67 GB
Mar 2007	6371	13877	39389	244551	9.12 GB
Apr 2007	3801	8402	21235	109856	3.78 GB
May 2007	3137	6930	14623	68949	2.69 GB
Jun 2007	4065	10064	23785	89585	3.30 GB
Jul 2007	3861	10867	22054	77374	3.29 GB
Aug 2007	8104	17301	44973	293972	7.76 GB
Sep 2007	2825	8621	20379	81266	3.09 GB
Oct 2007	3384	10335	19167	82867	3.03 GB
Nov 2007	2402	7258	13125	44749	1.92 GB

NWS Chanhassen RFC Web Page Statistics

Cooperative Observers

Cooperative Weather Observers are the backbone of the climate observing network. They record the daily weather conditions for over 110 locations across southern Minnesota and west central Wisconsin. These observers volunteer their time every day to note the weather in their community so the data can be archived at the local, state, and national level for future generations.

Their data allows everyone to know what the climate is like outside of the major metropolitan areas. It helps local officials and citizens know what kind of weather to expect in their local area year-round. Major decisions such as how to build roads and bridges, where to designate flood plains, how water resources are being managed, and planning for weather disaster mitigation are based on observations made by our dedicated Cooperative Weather Observers.

New 2007 Cooperative Observers		
Andover	Buffalo	Milaca
Lester Prairie	Long Praire	

We also have several observers who have been a part of the observing program for many years. In 2007 we gave out 39 length of service awards to observers who have been volunteering for ten or more years. In addition, we gave awards to four institutions who have been taking weather observations for 25 years or more.

We also had one observer, Richard Feser from Springfield, MN, who won the national Thomas Jefferson Award. This honor is given to five Cooperative Weather Observers across the United States each year, out of a network of 12,000 observers. The recipients are nominated by their local weather office, and are chosen by a national team. The award winners are cited for going beyond the call of duty to observe the weather (extra observations, life saving information), having high quality observations over at least 25 years of service, and are active members of their local community. Mr. Feser was highly deserving of this award and we were excited to present it to him at a November ceremony in Springfield.

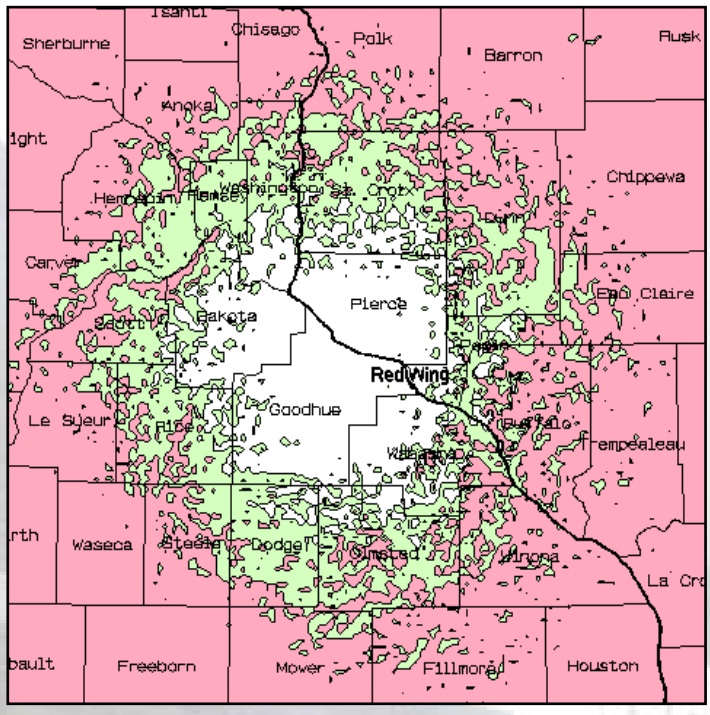
Thomas Jefferson Award Ceremony. Pictured from left to right: Michelle Margraf (WFO Observing Program Leader), John Ogren (NWS Central Region Deputy Director), Dan Luna (WFO Meteorologist in Charge), Richard Feser (recipient of the award), Richard's wife Gladys, and Pete Boulay (Minnesota Assistant State Climatologist)

During 2008, new observers will be recruited in Weyerhaeuser, New London, and Norwood Young America. We will be visiting as many sites as possible during the year to meet with observers to personally thank them for the work they do. The atmosphere will no doubt deliver many memorable events during 2008 and the Cooperative Observers will be on the front lines to record the weather making history in their hometown.

NOAA Weather Radio All-Hazards

NOAA Weather Radio All-Hazards (NWR) continues to be a 24 hour communication source directly from the NWS. NWR units are best known for their ability to alarm anytime of the day or night upon issuance of a warning, watch, or other hazardous message. This is important, as severe weather can strike anytime. As a case in point to this, 27 of the 81 tornado fatalities (33%) across the United States in 2007 occurred between the hours of 10 pm and 7 am.

Minnesota boasts some of the best NWR transmitter coverage of any state. Adding to this in 2007, the Chanhassen WFO launched a transmitter near Red Wing. This vastly improved a signal gap in portions of southeast Minnesota as well as far western Wisconsin. A computer generated map of the coverage area can be seen to the right.



NWR Red Wing Transmitter Coverage (white=full, green=partial)

Programming of NWR units is critical to ensure that the warnings for a specific location are received. Early in the severe weather season, the Chanhassen WFO staff together with broadcast meteorologists from KEYC in Mankato "kicked off" summer by heading to a Hy-Vee grocery store in Mankato during Memorial Day Weekend. They offered their expertise to program any brand of NWR that people brought in.

Programming of NWRs was also done by the WFO Chanhassen staff during the Government on Display Expo at the Mall of America in January.

Joint NWS and KEYC TV Outreach in Mankato, MN

Fire Weather Services

The NWS Chanhassen WFO provides forecast service to support land management agencies that conduct prescribed burns and fight wildfires. Our routine forecast service consists of twice-daily fire weather planning Forecast narratives, typically issued from March through November. We also issue numerical forecasts for four forecast points. This information provides input for wildland fire management agencies to assess current fire danger at local levels.

In 2007 our office issued nearly 200 Spot Forecasts tailored for individual prescribed burns conducted by Federal Agencies and the Minnesota and Wisconsin Department of Natural Resources. These forecasts provide very specific weather information pertaining to the precise location where the burn will take place. Most of these forecasts are issued in April and May when the majority of prescribed burns take place.

In dry weather, during times of high winds and low relative humidity, we issue Red Flag Warnings to alert land managers of increased wildfire potential. Red flag warnings were issued on two days in late April and early May.

One of our forecasters is also an Incident Meteorologist (IMET). When dispatched, he works as part of the Incident Management Team suppressing wildfires. During 2007 he worked on wildfires for 46 days. In addition to providing on-site forecast service at the Ham Lake Fire in the Boundary Waters Canoe Area Wilderness in Northern Minnesota during May, he also provided forecast service for two wildfires in Idaho (Middle Fork Complex and the Cascade Complex) as well as for the Jocko Lakes Fire in Montana.

Ham Lake, MN Fire - May 2007

The Fire Weather Program Leader in Chanhassen also assists land management agencies in fire weather training courses for wildland firefighters.

For further information, contact Byron Paulson at Byron.Paulson@noaa.gov.

Verification: Probability of Precipitation

Verification is the final but critical part of the National Weather Service forecast process. It is "seeing the forecast through". How meteorologists performed on their forecast allows for the opportunity to see where improvement has occurred or may be needed.

One of the forecasts we verify is probability of precipitation (POP). The concept of POP forecasting is something the NWS has used for decades. The definition of POP is the forecast office's likelihood that measureable precipitation (0.01 inch or higher) will occur at a given location during the forecast period. The given location used is a 5km by 5km grid point which is the forecasting resolution level invoked by all NWS offices. The time period for the forecast can vary, however for verification purposes it is considered 12 hours in duration from 6 am-6 pm and 6 pm-6 am CST.

Probabilistic forecasts work well for weather as the state of the science still does not allow for pin-point precision in precipitation forecasting, especially greater than three days in advance. POP forecasting was developed and continues to be issued for decision-making customers to weigh the forecast confidence in the chance for precipitation versus their impact threshold. NWS probabilistic forecasts also include river stages and stream flow as well as climate forecasts and may someday be issued for all weather and hydrologic elements.

WFO Chanhassen Probability of Precipitation Forecasts: 2007

Forecast	% Precipitation Occurred	% Error
0-10%	6%	-1%
20%	18%	2%
30%	30%	0%
40%	42%	-2%
50%	51%	-1%
60%	68%	-8%
70%	75%	-5%
80%	83%	-3%
90%	86%	4%
100%	95%	5%

The table to the left reflects verification for our forecast POP during 2007. These are for nine communities within our forecast area and for each day and night in the seven day forecast for two daily forecast issuances. Thus, this includes tens of thousands of forecasts. Verification such as this greatly helps our meteorologists to see when they may have a bias for too low or high POP forecasting.

Our Partners

The NWS in Chanhassen has a plethora of government, media, private, and academic partners who are critical for the support, efficiency, and overall fulfillment to the NWS mission. Likewise, the NWS is important to their operations as well. Emergency management along with county and community government officials are examples. They ensure that NWS warnings and other critical products are acted upon along with providing vital reports and feedback back to the NWS. Television and radio broadcast meteorologists are another example, as they assist in the distribution of NWS messages along with preparing the public through outreach and other efforts for potentially hazardous weather. We have many more partners, and will focus on two of them in detail within this section.

U.S. Army Corps of Engineers

In January of 2003 low stages on the Mississippi River combined with ice production during a cold snap caused several barges to run aground. This proved to be the catalyst for renewing efforts to make coordination with the Corp of Engineers (COE) a top priority when forecasting the Mississippi River. This was especially true for the St. Louis forecast point since there is no lock and dam system below this point to guarantee a navigable 9 ft channel.

What began as a simple phone call five years ago to the St. Louis COE for forecast discussion has turned into a large network of agency interactions directed toward improving forecasts along the Mississippi River. Interagency meetings are held twice a year to review the cooperative efforts and identify any specific needs that require action. Action items have included the COE sharing daily regulation information with the RFC or the RFC contacting the COE when there are discrepancies in COE and RFC flow forecasts. The result has been a real-time coordination effort between RFC's and the COE, generating more accurate and timely forecasts that are used to maintain efficient and safe navigation for industry and general use for the public. Another result from the COE coordination effort was the RFC first issuance of an "ice bite" forecast three days before it happened. This is where ice production drops river stages several feet in a short amount of time and can be a hazard to navigation. This has led to more timely and consistent forecasts, backed by the combined knowledge and experience of two groups of river specialists.

Skywarn Storm Spotters

Skywarn storm spotters are a critical asset during severe weather to all NWS WFOs across the country. In 2007, there were 528 documented events of severe weather in the WFO Chanhassen's County Warning Area, a majority of which were received from spotters. There were a total of 78 spotter training classes given in 2007, with

approximately 2,500 new spotters. This brought the total number of spotters to near 8,800 over the County Warning Area. Of the 78 classes, WFO Chanhassen personnel taught 42 of the classes with about 1,640 spotters. Skywarn spotters who have gone through the "train-the-trainers" course taught another 36 classes instructing 860 additional spotters.

The first Saturday in December is Skywarn Recognition Day, which is a day HAM radio operators make contacts across the country signifying the strength and importance of the Skywarn Storm spotters and the HAM radio network. We took part in this celebratory day again in 2007. The Chanhassen office made 164 QSOs, or amateur radio contacts, within 38 states, including 34 other NWS offices.

Retirements

Rich Naistat

WFO Science and Operations Officer

Retired May, 2007

Rich Naistat

My NWS career began in the summer of 1966, gridding TIROS satellite images for the Forecast Office in Los Angeles. Other assignments included Silver Spring, MD (1967), Austin, TX (1969), Tulsa, OK (1970-71), Fort Worth, TX (1972), Bismarck, ND (1972-74), and Minneapolis/Chanhassen (1974-2007). I witnessed increases in computer power, and advances in scientific understanding of the atmosphere during my career. I think the biggest advancement was in training, where we transitioned from on-the-job training (learning the hard way) to learning via simulation thanks to the development and deployment of the Weather Event Simulator (WES). The WES enabled the hard-working and motivated field forecast staff to learn quickly, both under the guidance of the Science and Operations Officer (SOO) and on their own. I was fortunate to be the first SOO at Minneapolis/Chanhassen WFO to have the WES at my disposal. The busted forecasts (that I remember) from the 1970s, 1980s, and early 1990s have pretty much become a part of history. The NWS in general and this WFO in particular, has greatly diminished the surprise element of tornadoes, severe thunderstorms, flash floods, and winter storms. What I saw during my last year was not only accurate forecasting, but a real emphasis on the end-user, be that the general public or the Emergency Manager. Many of my non-NWS friends have commented to me how accurate the NWS forecasts have become over the last few years.

I thought the highlight of 2007 was the release of the Inspector General's Report on the Rogers, Minnesota tornado. The IG found that

- …the staff…generally complied with agency policy and procedures for handling severe weather situations and utilizes the best technology for observation and forecasting,
- the Chanhassen WFO's historical performance in issuing severe thunderstorm and tornado warnings has been good or above average.
- the NWS staff that we interviewed were among the most helpful, dedicated, and professional employees we have ever dealt with.

I look forward to an increase in the specificity of severe weather warnings as the hard-working operational segment of the NWS utilizes technology in the pipe-line: the Terminal Doppler Weather

Radar, the Phased Array Radar, and the Dual Polarization Radar. This technology will be supported by one of the best (maybe THE best) training program in the world.

In 2004, I was quite fortunate to have attended Executive Leadership Seminar (ELS). In ELS, we learned that nothing gets done without people. Thanks to the agency's newly-found interest in leadership training and by extension its realization of the importance of its people, I envision the NWS's field workforce (which already unselfishly deals with the rigors of rotating-shift work) to become even more visionary and productive in the years ahead.

Mike Anderson

RFC Hydrologic Forecaster

Retired January, 2008

Mike Anderson

After 35 ½ years of Federal Service, Michael E. Anderson retired on January 3, 2008. Mike started his Federal career in the military as a Seabee for the Navy, serving two tours in Vietnam. After completing a Civil Engineering degree at the University of Minnesota, Mike got a job with the Army Corps of Engineers, St. Paul District. Mike was one of the first forecasters hired at the North Central River Forecast Center in 1979, and has been a dedicated employee of the National Weather Service ever since.

Mike produced hydrologic forecasts for the Red River of the North since the early 1980s. Most notably, Mike issued accurate crest forecasts for the Great Flood of 1997. During that flood event, 33 of the 34 forecast points crested within 1 – 2 feet of the forecast. The remaining location, Grand Forks, crested 5 feet higher than the forecast and affected the lives of 50,000+ individuals forever.

Mike's most clear memory of his career with the NWS was on Friday, April 18, 1997. Mike was at the office from 7am – 9pm that day, along with most of the rest of the staff. At the time, there was a television in the operations area, and Mike watched as the levees protecting the Lincoln Park neighborhood in Grand Forks overtopped and people were evacuated. Mike spent 12+ hours a day at the office during the Flood of '97, working almost 50 days in a row. He advises, "Every time you put out a forecast, you are affecting people. You have to make sure it is your best, best forecast."

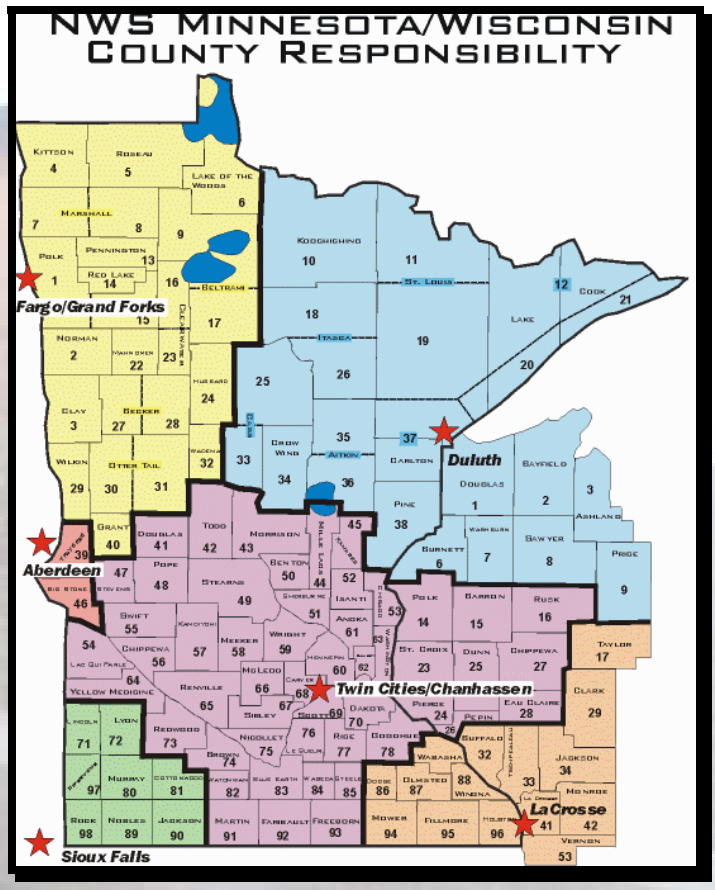
Mike was also intensely involved in coordination with other agencies, including state, federal and other interests. Mike knew the Weather Service had to communicate and coordinate with outside agencies in order to get the most up to date, relevant information; both for the river forecast models and out to the users. His willingness to travel all over the country in order to get information out to the public and to coordinate with other users was invaluable. In fact, at the start of this year Mike received the Gregg B. Rishel Award for contributions to the NWS Hydrologic Services Program. The

purpose of this award is "to recognize outstanding contributions by an individual to hydrologic science and/or service which contribute to the fulfillment of the hydrologic services mission of the National Weather Service."

Mike Anderson Receiving the Gregg B. Rishel Award in Washington D.C.

The favorite part of Mike's job at the NWS was the people; all the individuals that have been a part of his career from NWS employees and other agency contacts to the general public. Over the years, so many of the people Mike worked with became close friends, working toward and accomplishing many mutual goals. It was a wonderful experience which he says he will truly miss.

We are YOUR National Weather Service



Chanhassen Weather Forecast Office

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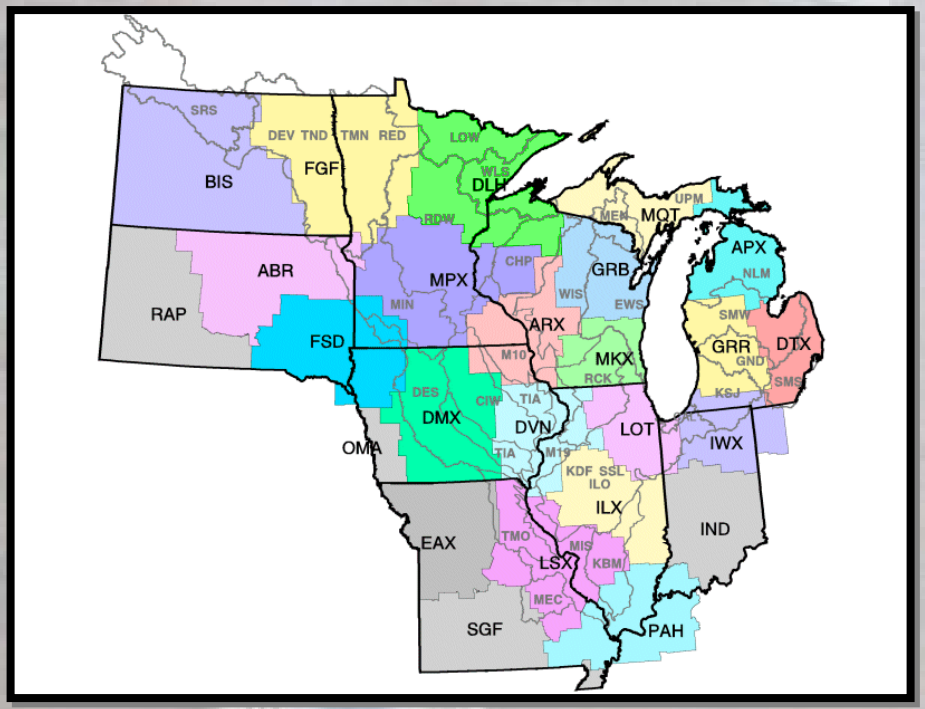
http://weather.gov/twincities



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