Northern Exposure

National Weather Service
Grand Forks, ND

Winter 2008/09

INSIDE THIS ISSUE

NWS Open House

by Dave Kellenbenz and Geoffrey Grochocinski

Local area residents visited the National Weather Service (NWS) office in Grand Forks, ND on a cool Saturday September 20, 2008 for the office's first open house since 2000. Despite a chilly and cloudy morning start, the NWS staff provided tours to about 200 to 225 people by the open house's finish by mid afternoon. Visitors included the mayor of Grand Forks and Fargo, weather enthusiasts, local HAM radio operators, and plenty of just plain curious folks. (continued p. 2)

SCEP Amanda Homann (left) explains the role of the NWS and the University of North Dakota's meteorology programs to visitors at the NWS Open House.

The NWS office teamed up with the Grand Forks Park District, who also provided tables, chairs and garbage cans for the event, the local American Red Cross and Salvation Army, the atmospheric sciences department at the University of North Dakota (right down the street from the NWS), the local American Meteorological Society (AMS) and Ham radio club, the Air Force Weather Unit, and storm chasers to make the event about all-things relating to weather. Marcy Douglas, the city administrator of Northwood, ND, also came to highlight how far the town has come since the tragic EF4 tornado that nearly destroyed the town last year.

Incoming visitors were quickly welcomed by National Weather Service employees and their partners manning booths outside in the office's parking lot. Thankfully, the neighboring USDA office allowed the NWS to use their parking lot for the event. The Salvation Army provided free food and drinks, including cups of ice-cold lemonade, a fitting end to the summer. Kids flocked to the "Weather Corner" booth to check out the tornado machine, get a hold of kid's reading material, snatch color changing pencils, and fill their own helium balloon. The storm chasers showed off their tricked-out vehicles and shared stories. Several teenagers appeared to pay extra attention to UND's atmospheric sciences program and students' AMS.

Tickets were distributed for an indoor tour of the NWS building. The tour consisted of a NWS overview and demonstration of the Weather Event Simulator (WES) of the Northwood, ND EF4 tornado event on August 26, 2007. Then the tour moved into the operations area, where posters were also displayed highlighting the many services provided to our customers. The public then toured the electronics area, and exited the building to an outside Coop tour of the equipment used to report precipitation and take temperature measurements. []

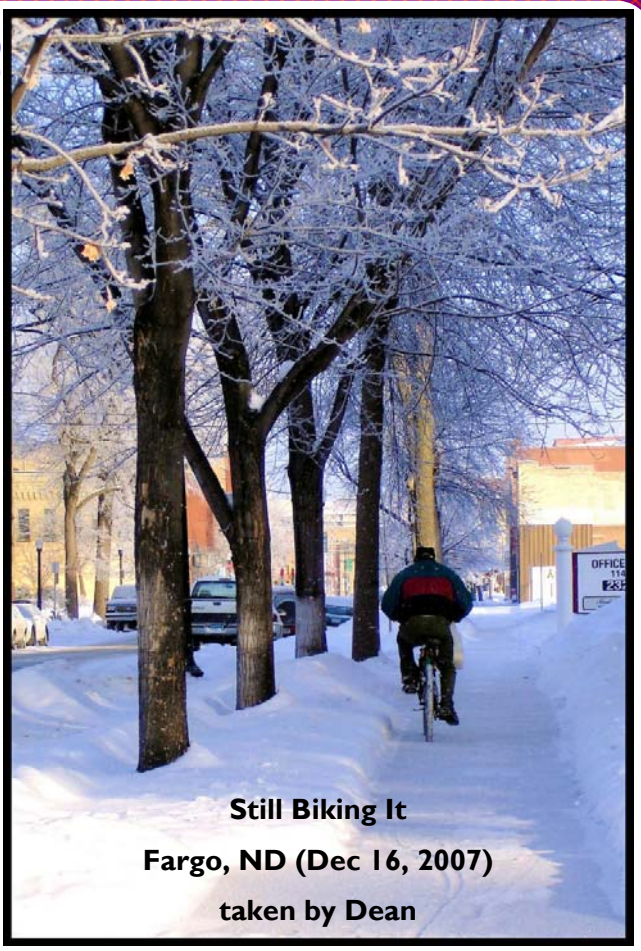
"To live anywhere in the world today and be against equality because of race or color, is like living in Alaska and being against snow." ~William Faulkner (American writer)

Island Park Gazebo
Fargo, ND Dec 26, 2005
taken by Jim Postema

"One kind word can warm three winter months." ~Japanese proverb

Winter Weather Awareness

by Dave Kellenbenz



Still Biking It
Fargo, ND (Dec 16, 2007)
taken by Dean

With the winter season upon us, it is important to remember some basic safety tips that may save your life. First, it is important to dress for the weather. Thin layers of loose-fitting clothes will trap body heat and aid air circulation. Outer clothing should be hooded, tightly woven, and water-repellant. Mittens are warmer than gloves. Wear a hat since most body heat is lost through the head. Check the current weather forecast, statements, watches, and warnings for the latest information on any developing winter storms from your National Weather Service (www.crh.noaa.gov/fgf) before going outdoors or traveling. Pay particular attention to the wind chill temperature, which can create dangerously cold conditions and watch for signs of hypothermia and frostbite, especially in the very young and the elderly. Symptoms of hypothermia are shivering, confusion, and loss of muscular control. Frostbite causes loss of feeling and a white or pale appearance in extremities such as fingers, toes, tip of nose, and ear lobes. If you see these symptoms, get medical attention immediately. Pace your outdoor activity and avoid strenuous activity in extremely cold temperatures. Your heart must work harder to pump blood through constricted vessels in arms and legs.

Winterize your home and vehicle before the cold weather arrives. Prepare an emergency kit for your home and one for your vehicle, and make sure your home heating system is in good working order. If you must travel during inclement weather, advise others of your travel plans and your expected time of arrival. For road conditions, dial 511 for the latest road conditions in the area.

Safe Behavior During the Winter Season

Never walk on ice that is less than four inches thick. Don't snowmobile on less than five inches of ice, or drive your car on less than eight inches of new, clear ice. Be sure to warn your children to stay away from ice-covered ponds and streams. Do not mix alcoholic beverages with snowmobiling or any other outdoor winter activity. Alcohol causes the body to lose heat more rapidly, even though one may feel warmer after drinking alcoholic beverages, it is much easier to develop hypothermia. Do not over exert yourself as cold weather, even without physical exertion, puts extra strain on the heart and body in general. If you add to this the strain of heavy physical activity, such as shoveling snow, pushing an automobile or even walking too fast or too far, you risk damaging your body and becoming susceptible to the elements.

Above all, think safety first for this winter season and enjoy all the area has to offer during our longest season of the year. []

Agricultural Applications of the North Dakota Agricultural Weather Network (NDAWN)

by Guest Contributor Adnan Akyüz, Ph.D.
ND State Climatologist and NDAWN Director

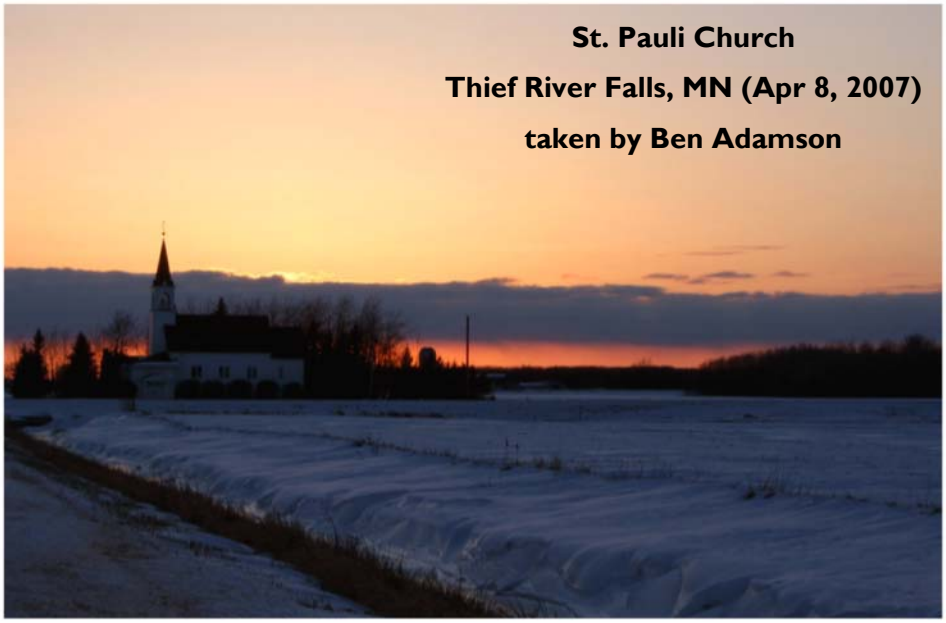
The North Dakota Agricultural Weather Network (NDAWN) consists of 70 automated weather stations distributed among prime agricultural locations across North Dakota, the Red River Valley, and border regions of surrounding states. The NDAWN Center is a part of the Department of Soil Science, North Dakota State University. The NDAWN Center web site (http://ndawn.ndsu.nodak.edu/) allows direct access to NDAWN data in various special and temporal scales. The voice modem accommodates those who do not have internet access. The NDAWN Center has assisted many North Dakotans in making weather critical decisions concerning their crops, livestock, and livelihood. One direct benefit of NDAWN data was helping to save the 1993-94 potato crops in North Dakota. The stations provide weather data, which was instrumental in developing an agricultural model called the late blight model. This model predicts when leaf disease can occur in potato plants. Late blight doesn't occur in North Dakota every year and is prevalent during cool and moist periods of weather. In 1993-94, this model predicted that late blight would occur and growers were able to use fungicide applications to prevent the disease. Another direct benefit of NDAWN data is that it provides universities and the National Weather Service with an additional database for research and forecast applications. Agriculture remains the number one industry in North Dakota and its success will always be dependent on the weather.

The NDAWN was developed as a valuable tool for agriculture. The primary benefit of this weather station network is to use the data to develop an array of agricultural models. The models help producers make timely decisions to keep crops healthy and increase their yield. These decisions save producers both time and money. Our objective was, and still is, to provide current weather data (yesterday's data today) necessary for the development of, and operational use of various crop, insect, and disease development models.

Figure 1 shows the location of the stations in the network as of December 2008. Station names coincide with the nearest town and are labeled with its distance and direction from the nearest town. For example, Rolla 2S is the NDAWN weather station located 2 miles (3.2km) south of Rolla, North Dakota, USA.

Since its inception in 1989, all equipment, non-labor operational costs, and some labor costs have been funded through gifts and grants from various federal and state agencies, commodity organizations, agricultural clubs, businesses, and individuals. In addition, current web site development which allows us to disseminate these valuable data free of charge was funded through a federal agency grant. North Dakota State University funds 4 full-time employees operating the NDAWN Center; the director, a network engineer, a data manager and a computer programmer. **(continued p. 5)**

"Perhaps I am a bear, or some hibernating animal underneath, for the instinct to be half asleep all winter is so strong in me."
~Anne Morrow Lindberg (American aviator)



St. Pauli Church
Thief River Falls, MN (Apr 8, 2007)
taken by Ben Adamson

"People don't notice whether it's winter or summer when they're happy."
~Anton Chekhov (Russian playwright)

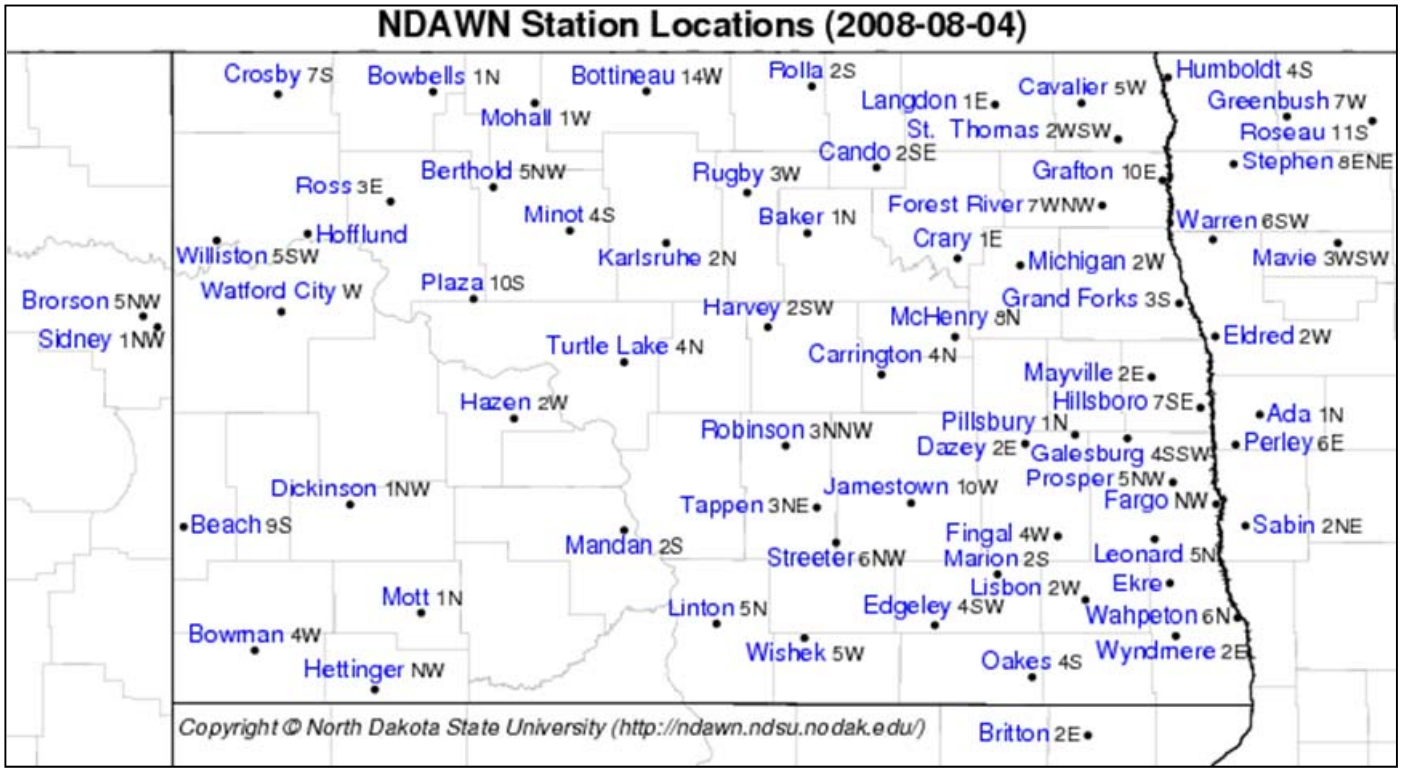


Fig. 1: North Dakota Agricultural Weather Network (NDAWN) station locations in North Dakota.

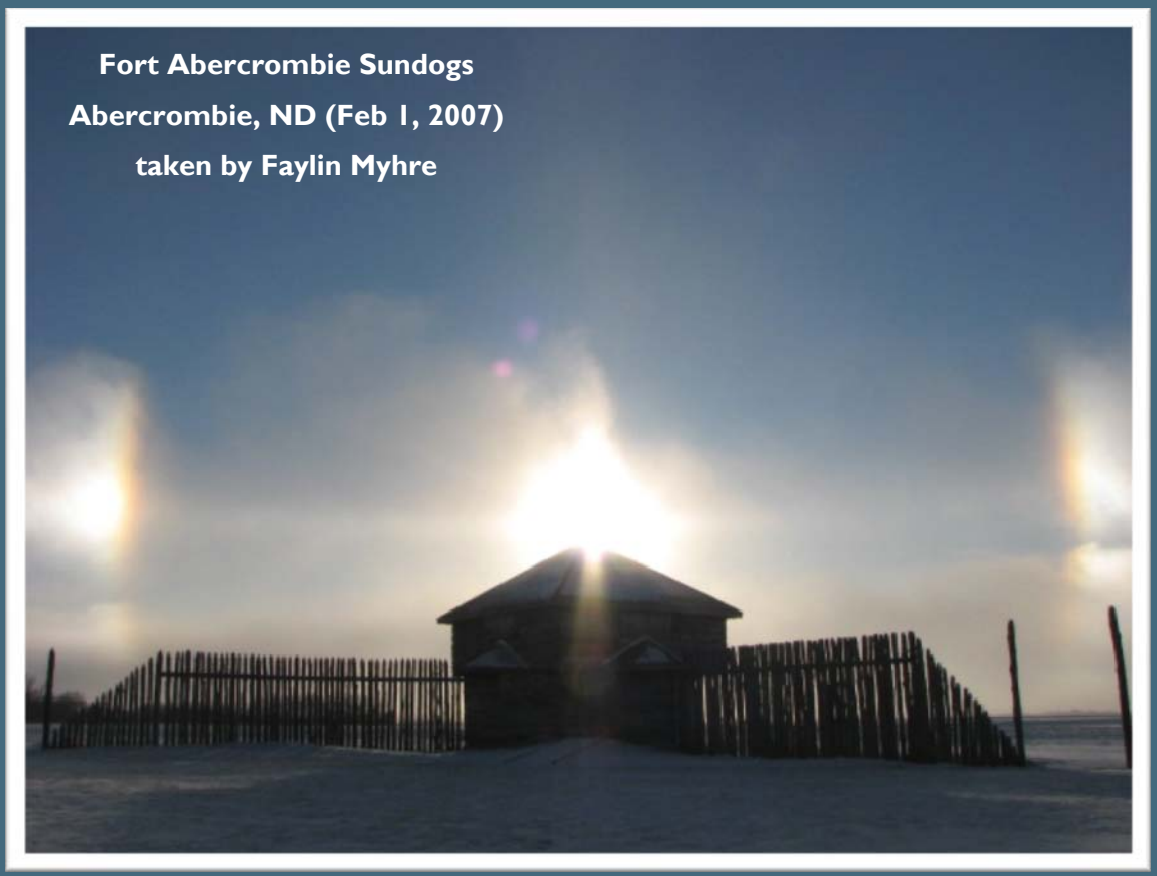
The stations measure air temperature, relative humidity, wind speed, wind direction, solar radiation, station air pressure at 32 stations (not adjusted to sea level), rainfall, and soil temperature under a bare soil surface and under a turf covered surface. The stations also keep track of maximum and minimum air temperature, maximum wind speed, and the times they occur. Calculated variables include potential evapotranspiration, dew point temperature, wind chill temperature, heating and cooling degree days, and numerous growing degree days. Departure from normal (1971-2000 average) temperature or rainfall data are also available. The normal temperature and precipitation values were interpolated from National Weather Service (NWS) Cooperative stations. A complete list of variables can be seen from the following link: (http://ndawn.ndsu.nodak.edu/help.html?topic=datainfo#vardefs). []

Meet...Dan Riddle! Senior Meteorologist

Hello, I am Dan Riddle, a senior meteorologist at the National Weather Service (NWS) in Grand Forks, ND since 1998. I graduated with a bachelor's degree in Meteorology from Iowa State University in Ames, IA in 1988, and then worked for Accu-Weather, Inc. in State College, PA for two years before joining the NWS as an intern in 1990. My tour of stations while advancing through the NWS career ladder took me to Detroit, MI and to Springfield, MO before my arrival at Grand Forks.

I am one of those lucky individuals who knew exactly what he wanted to do when he was very young. I have always loved weather forecasting, and learned much while watching local TV weathercasts and taking my own observations using a backyard weather station. I truly enjoy my job, its challenges, and would never do anything else. I enjoy talking about the weather, and passing on knowledge to others, whether it be through SKYWARN spotter talks or to school groups.

I was born and raised in western Kentucky. My fascination with weather started with snowstorms. Snow does occur each winter in western Kentucky, but it falls and then usually melts in a few days. I loved playing in the snow and would stay out all hours doing so since it wouldn't last long before melting away. I did not like it when my parents would shovel the sidewalks and driveway. After they did so, I would soon go out and shovel snow back on them. I would also pour water on the porch or sidewalk to see how fast it freezes. Yes, my parents had to put up with a lot! Days before a storm system was forecast to hit, I would anxiously follow TV weathercasts and listen to weather forecasts over the NOAA Weather Radio to here the latest information. So with all of this, I knew early on I was destined to move north someday where snow lasts longer than a few days on the ground. So my travels took me to the Red River valley, where I love the weather, flat prairie, and the cold wind. I am married to a woman from Minot, have one young boy with twin boys on the way, and I live across the river in East Grand Forks, MN. I have learned that youth hockey is the way of life here, so watch out hockey world here we come! []



Fort Abercrombie Sundogs
Abercrombie, ND (Feb 1, 2007)
taken by Faylin Myhre

"Spring, summer, and fall fill us with hope; winter alone reminds us of the human condition."
~Mignon McLaughlin (American author)

Meet...Kim Klein! Administrative Support Assistant (ASA)

Hello, I am Kim Klein, Administrative Support Assistant at the National Weather Service (NWS) in Grand Forks since June 1997. I arrived here with my husband Scott, who is stationed at Grand Forks AFB and my children Cody, age 17, Jared age 7 and Jaiden age 3 on Jan 11, 2007. That was the day winter officially hit Grand Forks. When we took our first breath of sub zero air (our car thermometer read negative seven degrees) and the wind felt like a jagged knife cutting through our lungs, we looked at each other and both said "what the heck have we gotten ourselves into!" Even the locals agreed that it was "quite cold" and had been a very mild winter until that day. Soon after that we found ourselves surrounded by drifts of snow 6 feet high or more and a dazzling daily dose of sunlight. It was quite a different world than any that we had ever experienced in all our travels. We have had the benefit of living in and traveling the world to such places as San Antonio, Texas, Knob Noster, Missouri, Spangdahlem in Germany, England, France, Poland, China, Korea…we have literally been all around the world. I grew up in the ArkLaMiss corner of Louisiana and knew from a very young age that traveling was the road for me. I love to see new places and meet new friends wherever I go.

So how does a warm weather loving southern girl come to be working for the National Weather Service in Grand Forks? That is a question I often ask myself…Has it been a blessing or a curse? I would like to think of this experience as a blessing; a chance to grow outside of my comfort level and experience a world that I would otherwise never have known. In this world of hockey and snow we are learning to adapt to a lot of differences and conditions. There have been growing pains; neither of my boys like hockey and since baseball is a foreign deity here they are not as involved in sports as I would like them to be. My green thumb is usually contained to pots and seedlings grown indoors for a great part of the year. Sledding is a favorite pastime and when the wind is not too fierce we like to bundle up in layers with every bit of skin covered and hit the levee nearby our home…which by the way is just a few houses down from our friendly meteorologist; Dan Riddle. I like it hot; Dan likes it cold - it's a wonder with all the differences we share for the weather we haven't created our very own thunderstorm. As I am huddled indoors keeping warm I often see Dan walking by in nothing but a thin short sleeved shirt. Some are just born for the frozen tundra, some come and stay forever; all are forever changed.

Living in the Red River Valley has its distinct advantages. The schools are great and crime is low. I find it very comforting to know that my kids are growing up in a very family friendly environment. Prior to the National Weather Service, I worked at the 22d Fighter Squadron, Spangdahlem, Germany. It was very similar to Grand Forks in that there was very little commercialism and locals enjoyed farming and preferred good old fashioned wholesome fun to malls and amusement parks. The quiet country life is one that I didn't think I would ever find myself returning to but have found to be quite intriguing in its own accord.

Will Grand Forks be our final destination? Time (and the state of the economy) will only tell. When and if the chance to move comes I know I will miss the friends I have made here. Having a bird's eye view and an inner connection to weather happenings has been a very educational experience and I have enjoyed learning how many ways the weather affects our lives. I have gained a whole new respect for winter weather and the hazards of going out with skin exposed. It can be deadly if not given its proper regard, but if proper equipment is utilized there lies within our little world a secret wonderland of opportunity that few will ever know. []

The Importance of Forecasting Snow Ratios

by Tommy Grafenauer

Forecasting snowfall is basically a two step process. First, the amount of liquid water that is to fall must be forecast (the precipitation falls as snow, but when the snow is melted it has a certain amount of liquid water). Second, this liquid water must be converted into snow. This conversion involves the expected ratio of liquid to snow, or the snow ratio. In order to understand snow ratio better, here are a couple examples:

Example 1 (heavy and wet):

1.0 inch of liquid water is forecast
The expected snow ratio will be 10:1
(10 inches of snow for every 1 inch of liquid water)
So, the forecasted snowfall will be 10 inches.

Mathematically: 1.0 x 10 = 10 inches

Example 2 (light and fluffy):

0.50 inches of liquid water is forecast
The expected snow ratio will be 20:1
(20 inches of snow for every 1 inch of liquid water)
So, the forecasted snowfall will be 10 inches

Mathematically: 0.50 x 20 = 10 inches

A photo from the Bemidji area after an early April 2008 snowstorm.

The snow ratio can be felt when shoveling. Shoveling the 10 inches from Example 1 would be a lot harder than shoveling the 10 inches from Example 2. The Example 1 snowfall is the heavy wet snowfall that is hard to pick up. The Example 2 snowfall is the light fluffy snowfall that is easy to push around. The reason is because the snowfall from Example 1 has twice the amount of liquid content than that of Example 2. The light fluffy snow is said to have a high snow ratio, while the heavy wet snow is said to have a low snow ratio.

We can see from the above examples how important snow ratio is to forecasting snowfall. If we used a snow ratio of 10:1 in Example 2, we would have forecasted 5 inches of snowfall. If we used a snow ratio of 20:1 in Example 1, we would have forecasted 20 inches of snowfall. These are huge differences that can affect the way people plan for expected storms.

Snowflakes develop above the surface of the earth within the clouds. The temperature within these clouds affects the way in which the snowflakes develop. Generally, the warmer the temperature in which the snowflakes develop, the lower the snow ratio will be. Other factors that affect snow ratio involve temperature, humidity, and wind speed from the cloud to the surface of the earth (all levels through which the snowflake falls). Forecasting the snow ratio involves methods that incorporate some or all of the known factors which influence the snow ratio. []

"Genius is an African who dreams up snow."
~Vladimir Nabokov
(Russian-born novelist)

"Cats are smarter than dogs. You can't get eight cats to pull a sled through snow."
~Jeff Valdez (American producer)

WE NEED YOUR WEATHER STORIES AND PICTURES!

Want a chance at sharing your weather story or picture in future newsletters?

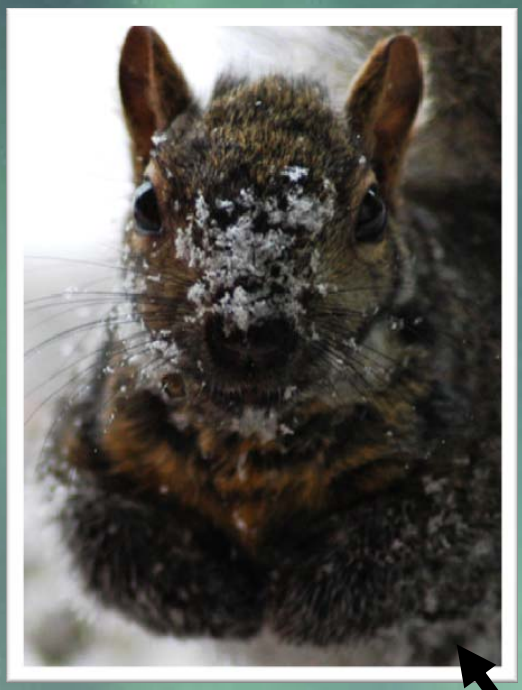
If you are interested, then please send your weather story/picture(s) to Geoffrey Grochocinski at the Grand Forks, ND National Weather Service by email or mail:

Geoffrey.Grochocinski@noaa.gov

or

National Weather Service
4797 Technology Circle
Grand Forks, ND 58203

- **Greater preference will be given to story/photo(s) originating within our county warning area of eastern ND and the northwestern quarter of MN.**
- **Please be as detailed as possible (provide a title, the name of the author/ photographer, where, when, and so forth).**
- **If your story or photo does not fit the theme of the next newsletter (Spring, for instance), do not despair! It will be saved for the next appropriately themed Northern Exposure.**



Please can I have some more Food!?

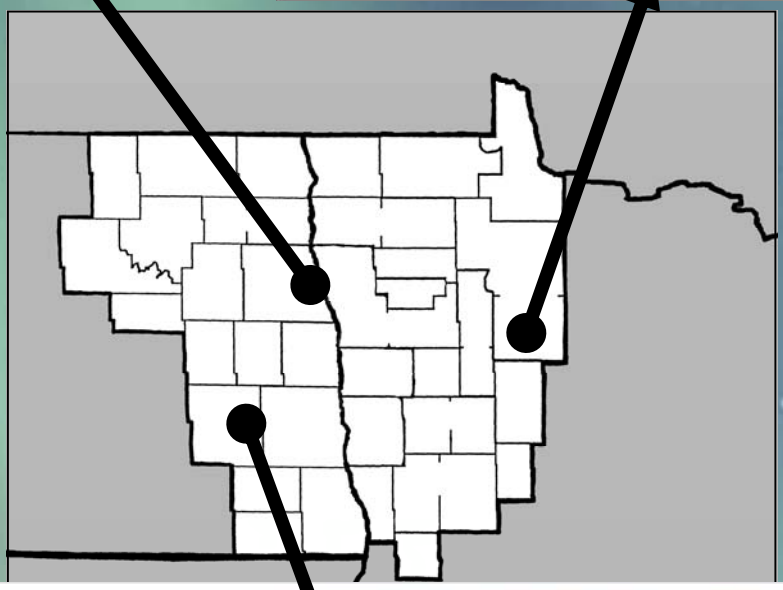
Grand Forks, ND Mar 8, 2008

taken by Crystal Ann

Winter in Bemidji

Bemidji, MN Dec 3, 2007

taken by Jake Schmidt



Frosty Campus at VCSU

Valley City, ND Jan 9, 2008

Courtesy of Valley City State University

Cold Season 2008/09 Experimental WFO FGF Outlook

by Mark Ewens

Synopsis: A seasonally normal winter, tending towards the cool side of normal, with average to below average snowfalls is forecast.

Techniques used in this outlook: The basic principles involved include 1) determining the last 3 season's climate, the atmospheric modes and forcings responsible for the climate 2) using tools available at the Earth System Research Lab (ESRL) determine the primary, secondary and tertiary forcing 3) find years similar to the atmospheric modes in step 1 and test for statistical relevance 4) obtain the base data and develop graphics and tables based on the years determined to be relevant. This technique is also known as the *Analog Technique*, as years with one type of global weather patterns often lead to similar global patterns in the following seasons.

Years chosen: Based on the technique described, the following years are used for input to the analog in this outlook: 1955/56, 1957/58, 1961/62, 1966/67, 1971/72, 1972/73, 1978/79 and 1989/90. These years are based on the phase and tendency of the large scale atmospheric forcing mechanisms known as the Atlantic Multi-Decadal Oscillation, Pacific Decadal Oscillation and El Nino Southern Oscillation. The ESRL has statistical tools available to determine the relative correlation of each signal, and many more, described. Please note there are years prior to 1950 that also fall into the analog years, but were not chosen to keep the sample smaller and more contemporary. Finally, there was still a fair amount of variability in the individual winters chosen; removing the warm years resulted in a minor change to a slightly cooler winter season outlook.

The Outlook: Tables of temperature, precipitation and snowfall are below. These tables are based on the years noted on the previous paragraphs. The first table to the lower left is specific to the UND/NWS Grand Forks Climate Station. **(continued p. 12)**

NWS/UND

Oct to Apr Averages*

	Climo	Composite	Departure
Max	33.1°F	31.2°F	-1.9°F
Min	14.3°F	12.7°F	-1.6°F
Precip	6.5"	6.2"	-0.3"
Snow	44.1"	40.2"	-3.9"

Dec - Jan - Feb Specific

	Climo	Composite	Departure
Max	18.7°F	17.0°F	-1.7°F
Min	0.7°F	-2.3°F	-3.0°F
Precip	1.9"	1.77"	-0.13"
Snow	25.4"	20.9"	-4.5"

Fargo Area

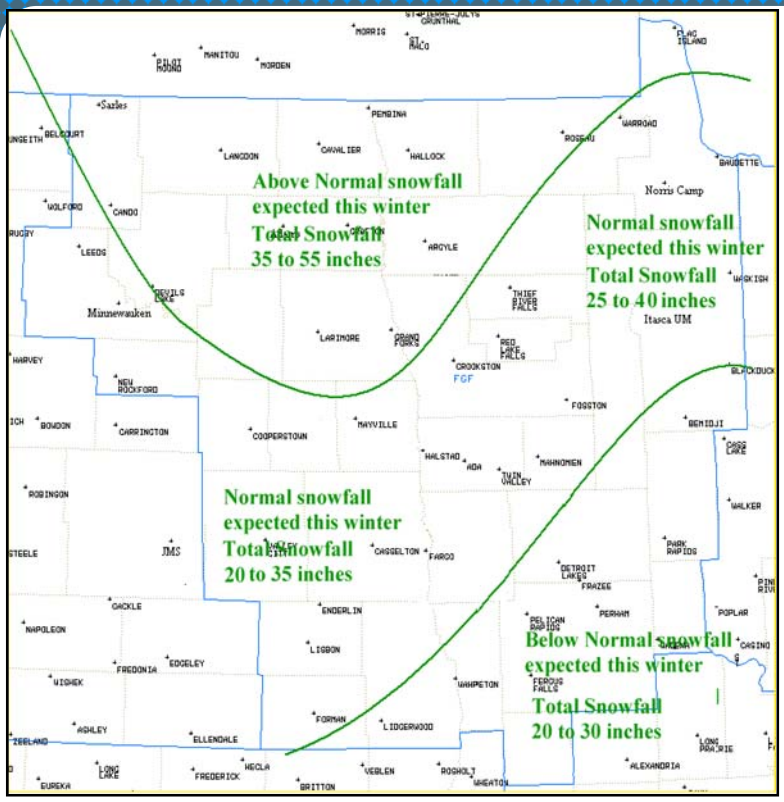
Oct to Apr Averages*

	Climo	Composite	Departure
Max	35.4°F	33.1°F	-2.3°F
Min	15.9°F	14.0°F	-1.9°F
Precip	7.5"	6.5"	-1.0"
Snow	47.6"	37.6"	-10.0"

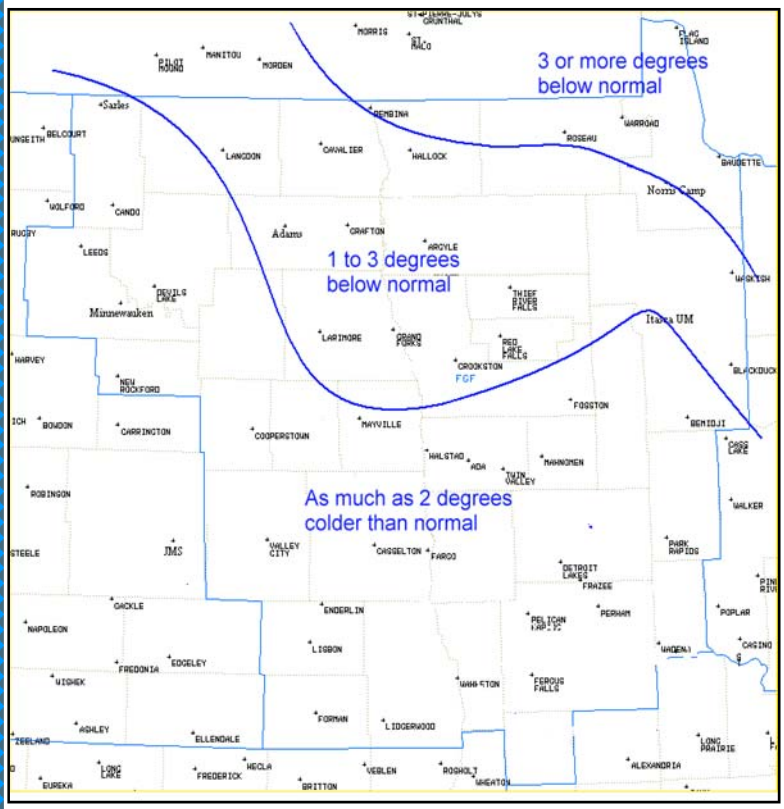
Dec - Jan - Feb Specific

	Climo	Composite	Departure
Max	19.8°F	18.1°F	-1.7°F
Min	2.4°F	-0.5°F	-2.9°F
Precip	2.0"	1.9"	-0.1"
Snow	27.8"	21.6"	-6.2"

*Some data are rounded



This graphic represents the expected snowfall departure from normal snowfall for the period Dec 2008 to Feb 2009.



This graphic represents the expected average departure from normal temperatures for the period Dec 2008 to Feb 2009.

Basically, the overall cold season will feature normal climatic variability in temperature and snow fall. Total snow will be close to normal; statistically within 1 standard deviation. A total of 30 to 50 inches of snow is statistically "average". Two distinct cold periods are apparent in the composites, one from late November into late December, and a stronger signal late January to late February. As is often the case in weak La Nina signals, the March and April time frame tilts predominantly to the cold side of climatology. Looking at the individual winters, the heavier snowfalls were mainly across the northern Red River Valley; however the difference was statistically a wash.

Caveat Emptor: These are outlooks, not forecasts and not designed for literal interpretation. As example, peak snow fall events appear in both Fargo and UND data in late January and late March; these should not be used as a "forecast". However, they do signify a commonality in the winters chosen, indicating that around those times there have been large scale events. *Remember these outlooks will only be as good as the analogs.* If the wrong years to build the analogs have been chosen, the outlook will be no worse than one based on random chance or chaos. That is why there will be an early December update to account for errors in analog year choices.

These outlooks will differ from the Climate Prediction Center (CPC) Outlooks. CPC outlooks are currently based on two dominant signals; the phase of the ENSO and the past decade trend in temperature. At this time the CPC does not currently use the PDO, AMO, or any other of the less predictable signals to make outlooks.

Again, remember these are experimental, and should be viewed as such. These outlooks are designed to test the limits of the science, as well as a design test bed. []

The Blizzard of Mid-December 2008

by Geoffrey Grochocinski

One of the worst blizzards to hit the Northern Plains since the winter of 1996/97, if not *the* worst, struck the region on the usually busy holiday shopping weekend of December 13-14, 2008. A strong surface low pressure system pushed out of the Rocky Mountains into the northwestern Central Plains in Nebraska by late Saturday afternoon. Northeasterly winds began to increase Saturday afternoon across the Northern Plains in response to the approaching storm system. Snow slowly worked its way into the southern Red River Valley (RRV) as early as Saturday afternoon. However, blizzard conditions across eastern North Dakota (ND) and the northwestern quarter of Minnesota (MN) mainly held off until after midnight until more substantial snow could work its way north into the area. But bitterly cold arctic air was well in place, especially along and west of the RRV, by late Saturday evening. **(continued p. 14)**

Fig 1: A Snow plow and its driver work hard to clear blizzard battered 42nd Avenue near the University of North Dakota in Grand Forks, ND on Sunday December 14, 2008. This photo is courtesy of Crystal Ann.

"There are only two seasons...winter and baseball."
~Bill Veek (American baseball player)

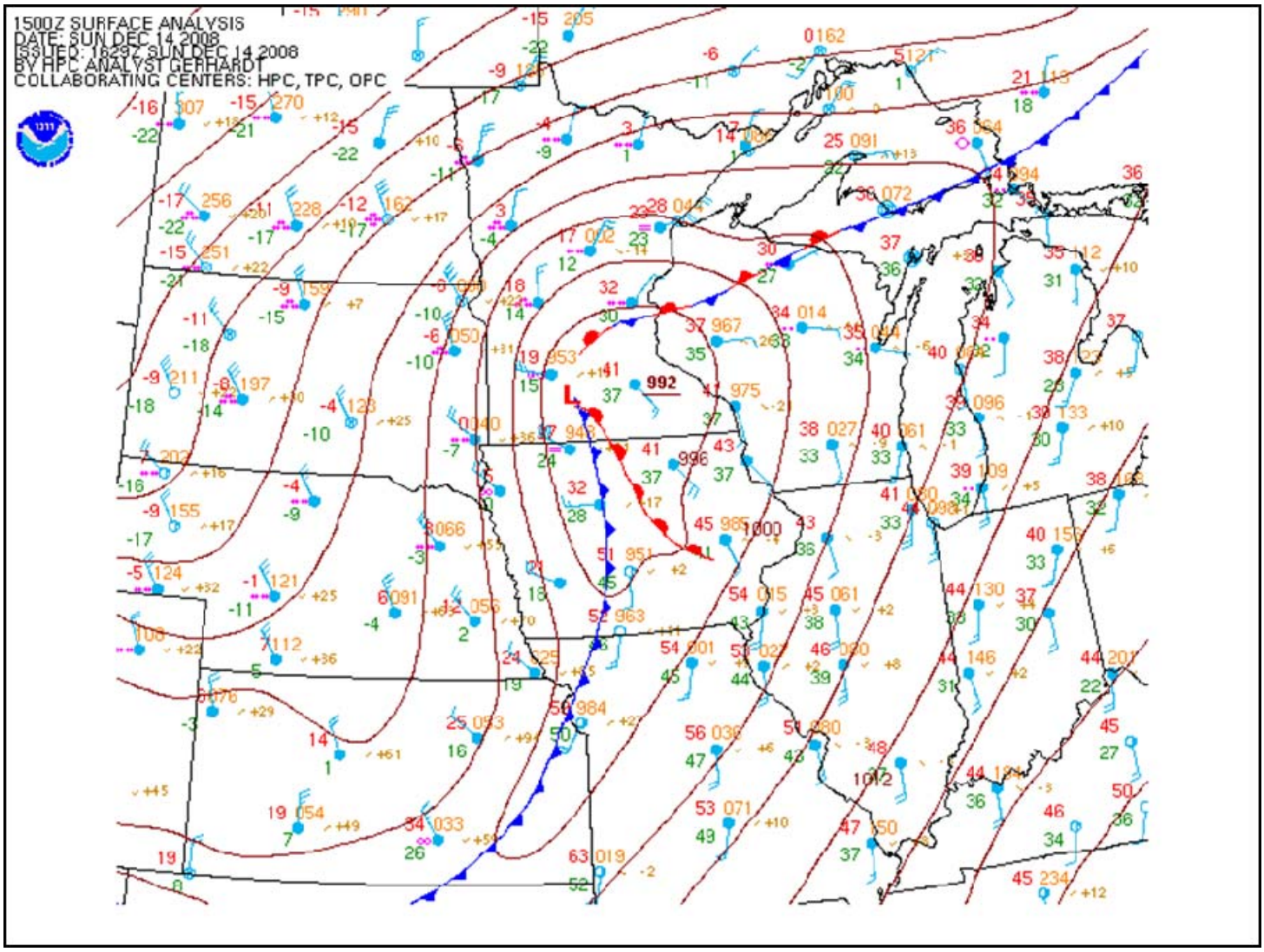


Fig. 2: A surface analysis of the winter storm system as it was nearing the Twin Cities at 9 AM Sunday December 14, 2008.

By Sunday morning, the low pressure system was advancing northeast towards the Twin Cities (Fig. 1). While the worst blizzard conditions affected the southern RRV through much of Sunday in response to the area's heaviest snow showers, the sheer gustiness of the northerly winds caused blizzards conditions well to the Canadian border. In fact, top wind gusts at Fargo and Grand Forks were around 50 mph, and each location's Sunday average wind speeds were near a whopping 30 mph. ND and MN officials advised no travel Sunday, and eventually both state's Departments of Transportation deemed it necessary to close down the area's sections of I-29 and I-94.

The Lakes Country of Minnesota, despite its better tree protection from the wind, wasn't spared from the poor weather conditions. The Warroad, Bemidji, and Park Rapids areas, which were under a Winter Storm Warning, didn't begin to improve until late Monday morning when the system reached the area north of the Great Lakes. The system left its bitter business card of subzero weather across the Northern Plains and Upper Midwest well into Wednesday.

Thanks to hard-working observers across the county warning area, we are able to compile a graphical display of the estimated total snowfall (Fig. 3) from the winter storm. The southern RRV clearly had the most snow, with Breckenridge, MN topping the list at 15". Since the southern RRV already had such a wet fall, it seems Mother Nature wanted one last laugh. **(continued p. 15)**

This blizzard was obviously (or at least for folks in the southern RRV) the area's worst in about the last ten years, but it was by no means anywhere as bad as some of the area's worst blizzards on record in more than a century of record keeping. The RRV blizzard of March 15, 1941, in which dozens of people were killed across ND and MN, was much worse. There is no doubt, though, that this recent blizzard will be remembered for quite some time, especially by the younger generations. []

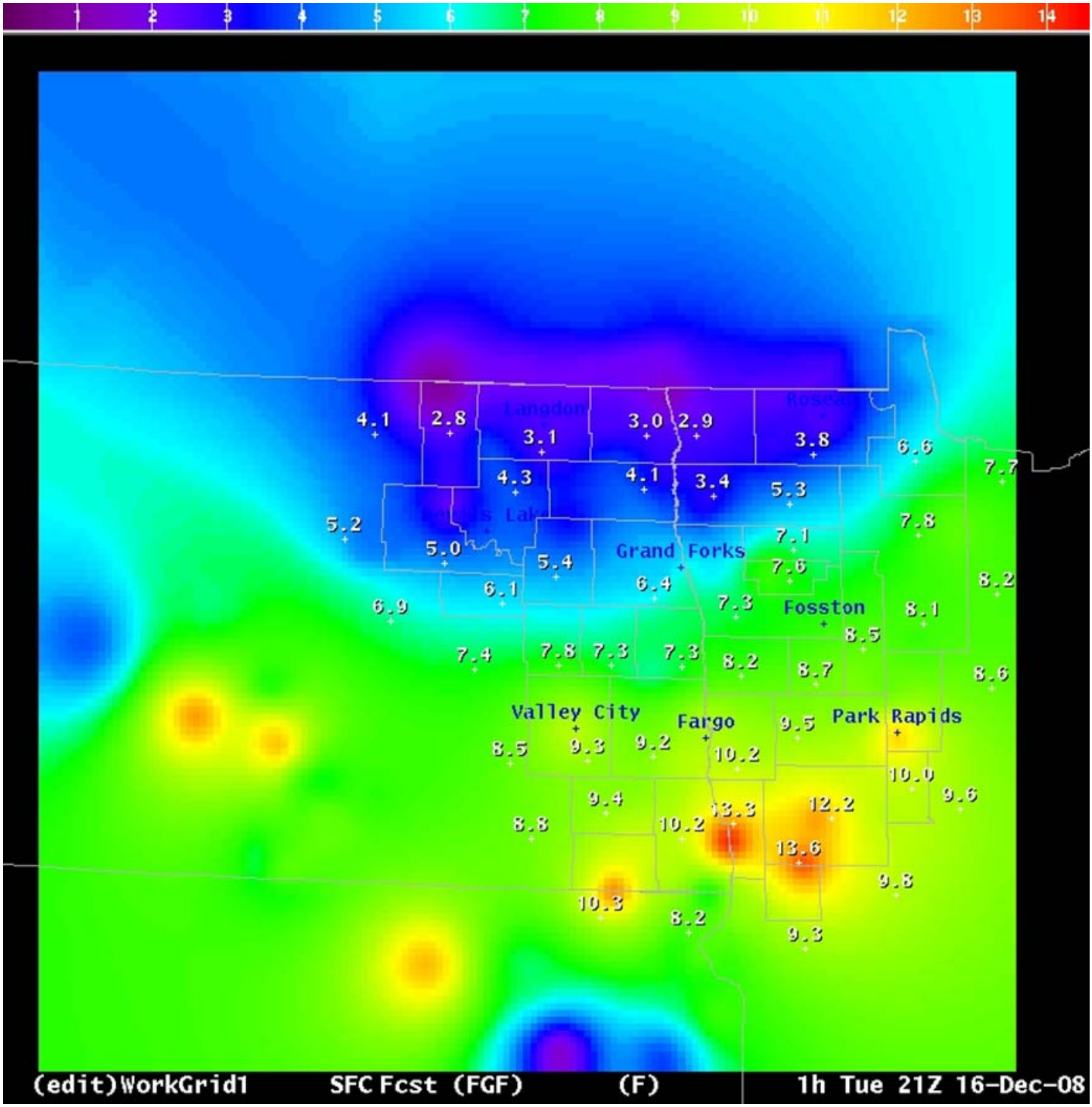


Fig. 3: A graphical representation of the estimated total storm snowfall (in inches) from the mid-December 2008 winter storm.

"In the kingdom of hope...there is no winter." ~Russian proverb

FGF Meets with Emergency Managers and Broadcast Meteorologists

by Peter Rogers

County and city emergency managers are responsible for a local government's preparation and response to high-impact weather events, including spring flooding, severe summertime convection, and dangerous winter storms or blizzards. Therefore, emergency managers serve a vital link between the National Weather Service (NWS) and a community's ability to effectively deal with hazardous weather.

On the other hand, broadcast meteorologists are responsible for the mass dissemination of weather forecast information and all watch/warning products issued by the NWS to their respective viewing audiences. Although the NWS also relies on the Internet and National Oceanic and Atmospheric Administration (NOAA) All Hazards Weather Radio to disseminate its products and services, television often plays a central role in communicating hazardous weather information to the general public. **(continued p. 17)**

Orion over the Trees
Baudette, MN (Feb 4, 2006)
taken by Dan Reust

"Advice is like snow; the softer it falls, the longer it dwells upon, and the deeper it sinks into, the mind."
~Samuel Taylor Coleridge
(English poet)

"Getting an inch of snow is like winning 10 cents in the lottery."
~Bill Watterson
(American author)

"Snow and adolescence are the only problems that disappear if you ignore them long enough."
~Earl Wilson (American journalist)

For these reasons, it is important for NWS forecast offices to maintain and enhance both professional and personal relationships with their local emergency managers and broadcast meteorologists. To this end, a team of managers and forecasters from the Grand Forks, ND Weather Forecast Office (WFO) met with emergency managers from Fargo and Grand Forks, as well as on-air broadcast meteorologists from two Fargo-based television stations on December 16. Topics covered during the meeting included changes to NWS winter weather products, enhanced methods for two-way communication prior to and during significant weather events, and a review of the heavy rainfall/winter storm event that affected the entire forecast area November 4-7.

All parties involved were able to freely exchange ideas, offer suggestions for improvement to NWS products and services, and gain a better appreciation and understanding for the roles and responsibilities of those in attendance. "Meetings like these are a great way to enhance our working relationships with our customers and to receive valuable feedback for the future improvement of NWS products and services," said David Kellenbenz, Grand Forks, ND WFO Senior Forecaster. []

Local emergency managers, broadcast meteorologists, and staff from the Grand Forks, ND WFO listen to NWS Science Operations Officer (SOO) Brad Bramer, as he delivers a presentation discussing different communication methods used during high-impact weather events.

Wet Fall, Spring Flood?

By Mike Lukes

As George and Ira Gershwin famously penned, "It ain't necessarily so". The early flood talk around the Red River Valley has been whether a wet fall will lead to spring flooding. We know that a wet fall is one of many factors that lead to big floods on the Red, but whether it is a major factor or not needs some examination. We at the Weather Service looked at some stream flow data for the main-stem Red harkening back to the early 1900's gathered by the U.S. Geological Survey. We took an average of fall stream flows as an indicator of the relative wetness of the watershed upstream of the gage for that year and correlated it with the next spring's peak flow. The results for the Red River at Grand Forks are given in a scatter plot below (Fig. 1). The dry fall is represented by the lower third of the fall averages, the normal fall by the middle third, and the wet fall by the upper third. As you can see, there is a lot of scatter in the data and the correlation was a paltry 0.14 (the data for a value of 1.0 would fit perfectly on a straight-line). You can also see that there are many years above flood flow that fall into the normal fall wetness and there are also many years that have had a wet fall and did not produce flood flows. Similar Red River main-stem gages had similar results. []

0.02 for Wahpeton, ND (64 yrs of data)	**0.04 for Drayton, ND (62 yrs of data)**
0.06 for Fargo, ND (107 yrs of data)	**0.11 for Emerson, MB (95 yrs of data)**
0.14 for Grand Forks, ND (104 yrs of data)	

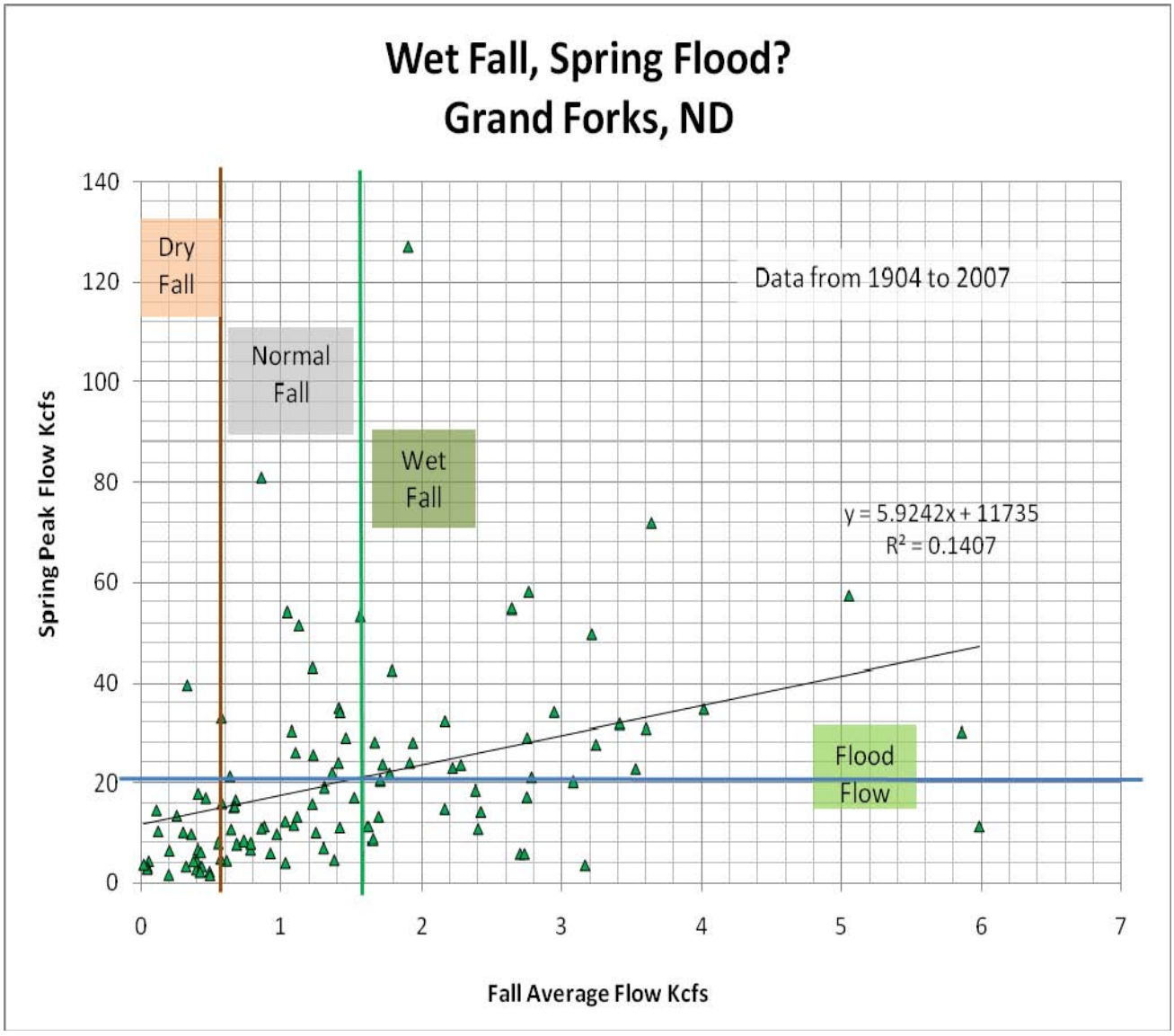


Fig 1: An analysis of Red River stream flow at Grand Forks, ND during the fall and spring resulted in no significant correlation between wet falls and spring flooding.

The Grand Forks NWS Staff

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Forecaster	Peter Rogers
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Feel free to make suggestions to Editor Geoffrey Grochocinski
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Winter Sky at Dusk
Grand Forks, ND March 21, 2005
taken by D. Bjorn

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