

Nebraska Winter Weather Awareness Day

November 8, 2012

With fall upon the Great Plains, now is the time to focus attention to winter weather and the dangers it can pose to life and property. **November 8th, 2012**, has been declared as Winter Weather Awareness Day for the state of Nebraska. Each year, dozens of Americans die due to exposure to the cold. Account for vehicle accidents and fatalities, fires due to dangerous use of heaters and other winter weather fatalities, and you have a significant threat. Other hazards, such as hypothermia and frostbite, can lead to the loss of fingers and toes or cause permanent internal injuries and even death. The very young and the elderly are among those most vulnerable to the potentially harsh winter conditions. Recognizing the threats and knowing what to do when they occur could prevent the loss of extremities or save a life.

A winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall and cold temperatures. People can be trapped at home or in a car with no utilities or assistance, and those who attempt to walk for help could find themselves in a deadly situation. The aftermath of a winter storm can have an impact on a community or region for days, weeks, or possibly months.

Wind - Some winter storms have extremely strong winds which can create blizzard conditions with blinding, wind driven snow, drifting, and dangerous wind chills. These intense winds can bring down trees and power poles, can reduce visibilities to white-out conditions, and can also cause damage to homes and other buildings.

Snow - Heavy snow accumulations can immobilize a region and paralyze a city, stranding motorists, stopping the flow of supplies, and disrupting emergency services. Buildings may collapse and trees and power lines can be destroyed from the heavy snow. In rural regions, homes and farms may be isolated for days, and livestock could be lost.

Cold - Extremely cold temperatures can accompany winter storms and be left in their wake. Infants and the elderly are most susceptible to exposure to the cold, which can cause potentially life-threatening conditions such as hypothermia and frostbite. Below freezing temperatures can damage vegetation and cause pipes to freeze and burst inside homes.

Ice - Heavy ice accumulations can bring down objects like trees, utility poles and lines, and communication towers. Power can be disrupted or lost for days while utility companies repair the damage. Even a small amount of ice can cause hazardous conditions for motorists and pedestrians.

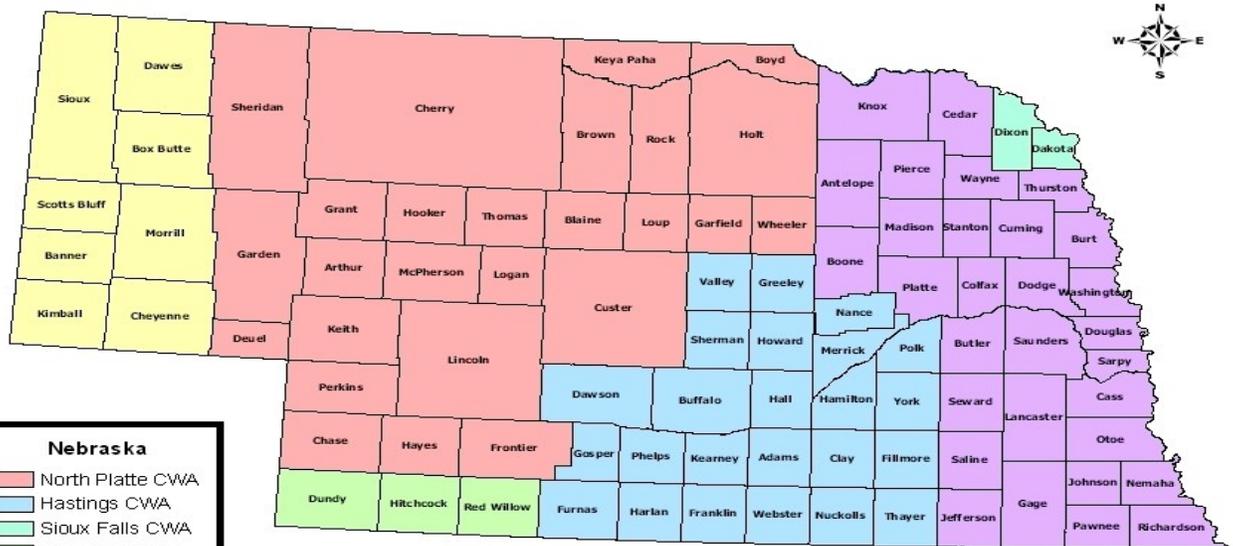
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National Weather Service Offices Serving Nebraska

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National Weather Service Coverage Area



Nebraska

- North Platte CWA
- Hastings CWA
- Sioux Falls CWA
- Goodland CWA
- Cheyenne CWA
- Omaha CWA



Far West

National Weather Service
1301 Airport Parkway
Cheyenne, WY 82001
(307) 772-2468

<http://www.weather.gov/cys>

West and North Central

National Weather Service
5250 E. Lee Bird Drive
North Platte, NE 69101
(308) 532-4936

<http://www.weather.gov/lbf>

Southwest

National Weather Service
920 Armory Road
Goodland, KS 67735
(785) 899-7119

<http://www.weather.gov/gld>

South Central

National Weather Service
6365 N. Osborne Drive West
Hastings, NE 68901
(402) 462-4287

<http://www.weather.gov/gjd>

East

National Weather Service
6707 North 288th Street
Valley, NE 68064
(402) 359-5166

<http://www.weather.gov/oax>

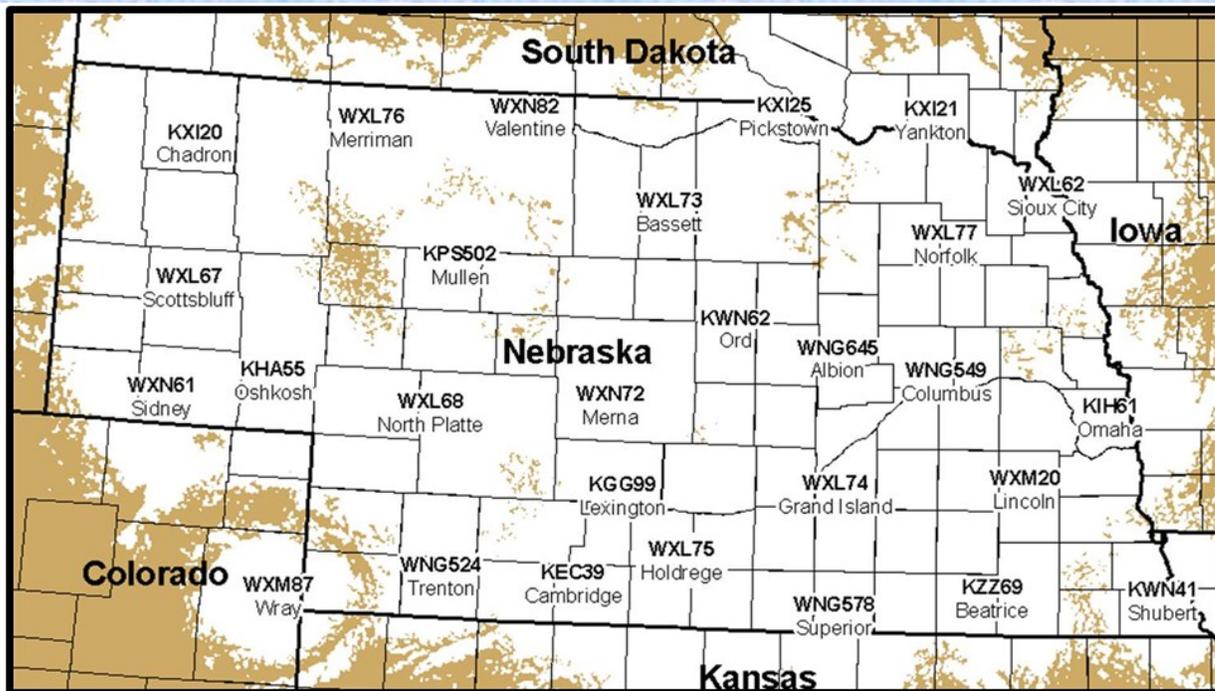
Far Northeast

National Weather Service
26 Weather Lane
Sioux Falls, SD 57104
(605) 330-4247

<http://www.weather.gov/fsd>

NOAA Weather Radio All - Hazards

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NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service office. NWR broadcasts official Weather Service warnings, watches, forecasts and other hazard information 24 hours a day and 7 days a week.

Working with the Federal Communication Commission's (FCC) Emergency Alert System, NWR is an "All Hazards" radio network, making it your single source for comprehensive weather and emergency information. In conjunction with Federal, State, and Local Emergency Managers and other public officials, NWR also broadcasts warning and post-event information for all types of hazards, including natural (such as tornadoes or floods), environmental (such as chemical releases or oil spills), and public safety (such as AMBER alerts or 911 telephone outages).

Known as the "Voice of NOAA's National Weather Service," NWR is provided as a public service by the National Oceanic and Atmospheric Administration (NOAA), part of the Department of Commerce. NWR includes 1000 transmitters, covering all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and the U.S. Pacific Territories. NWR requires a special radio receiver or scanner capable of picking up the signal, found in the VHF public service band at these seven frequencies (MHz):

162.400	162.425	162.450	162.475	162.500	162.525	162.550
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Coverage information and SAME Codes for every county in Nebraska can be found at:
<http://www.weather.gov/nwr/Maps/PHP/nebraska.php>

Winter Weather Terminology

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What is the difference?

OUTLOOK - Hazardous Weather Outlooks are issued everyday, and serve as a "heads-up" that a significant weather event may be possible in the next 7 days.

ADVISORY - An advisory is issued when winter weather events could cause a significant inconvenience, but could also lead to life threatening conditions if not cautious.

WATCH - A watch is issued when winter weather events have the potential to threaten life and property, but the exact timing and location of the storm is uncertain. Watches are normally issued between 12 to 48 hours in advance.

WARNING - A warning is issued when winter weather events are occurring or are imminent and pose a threat to life and property. Warnings are normally issued between 2 and 24 hours in advance.

Winter Weather Product Criteria

Winter Weather Advisory Products

- ♦ **Freezing Rain Advisory** - Small accumulation of ice (freezing rain and/or freezing drizzle), generally less than 1/4 of an inch
- ♦ **Winter Weather Advisory**
 - For Snow** - Snow accumulation of 3 to 5 inches in 12 hours
 - For Sleet** - Accumulation of ice pellets less than 1/2 of an inch
 - For Snow & Blowing Snow** - Snowfall with blowing snow intermittently reducing visibility to less than 1/2 of a mile
- ♦ **Wind Chill Advisory** - Wind Chill values of -20°F to -29°F

Winter Weather Terminology

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Watch Products

- ◆ **Blizzard Watch** - Conditions are favorable for a blizzard event in the next 12 to 48 hrs.
- ◆ **Winter Storm Watch** - Conditions are favorable for a winter storm event (Heavy Sleet, Heavy Snow, Ice Storm, Heavy Snow and Blowing Snow or a combination of events) to meet or exceed local Winter Storm Warning criteria in the next 12 to 48 hrs.
- ◆ **Wind Chill Watch** - Conditions are favorable for wind chill temperatures to meet or exceed Wind Chill Warning criteria in the next 12 to 48 hours.

Warning Products

- ◆ **Blizzard Warning** - Sustained wind or frequent gusts greater than or equal to 35 miles per hour accompanied by falling and/or blowing snow, frequently visibilities less than 1/4 of a mile for at least 3 hours.
- ◆ **Ice Storm Warning** - Widespread ice accumulation of 1/4 of an inch or more
- ◆ **Winter Storm Warning** - Heavy Snow (snow accumulation of 6 inches or more in 12 hours or 8 inches or more in 24 hours), Sleet (accumulation of ice pellets 1/2 of an inch and greater), Ice (accumulation of 1/4 of an inch or more) and/or heavy Snow and Blowing Snow (wind is below blizzard criteria).
- ◆ **Wind Chill Warning** - Wind chills -30°F or colder

Remember to dress for the season!!

- ◆ Try to stay dry.
- ◆ Wear loose-fitting, light-weight, warm clothing in several layers. Trapped air between these layers can insulate. Layers can be removed to avoid perspiration and subsequent chills.
- ◆ Outer garments should be tightly woven, water repellent, and hooded.
- ◆ Always wear a hat, as half of your body heat can be lost from the head.
- ◆ Mittens, snug at the wrist, are better than gloves.



Winter Weather Dangers

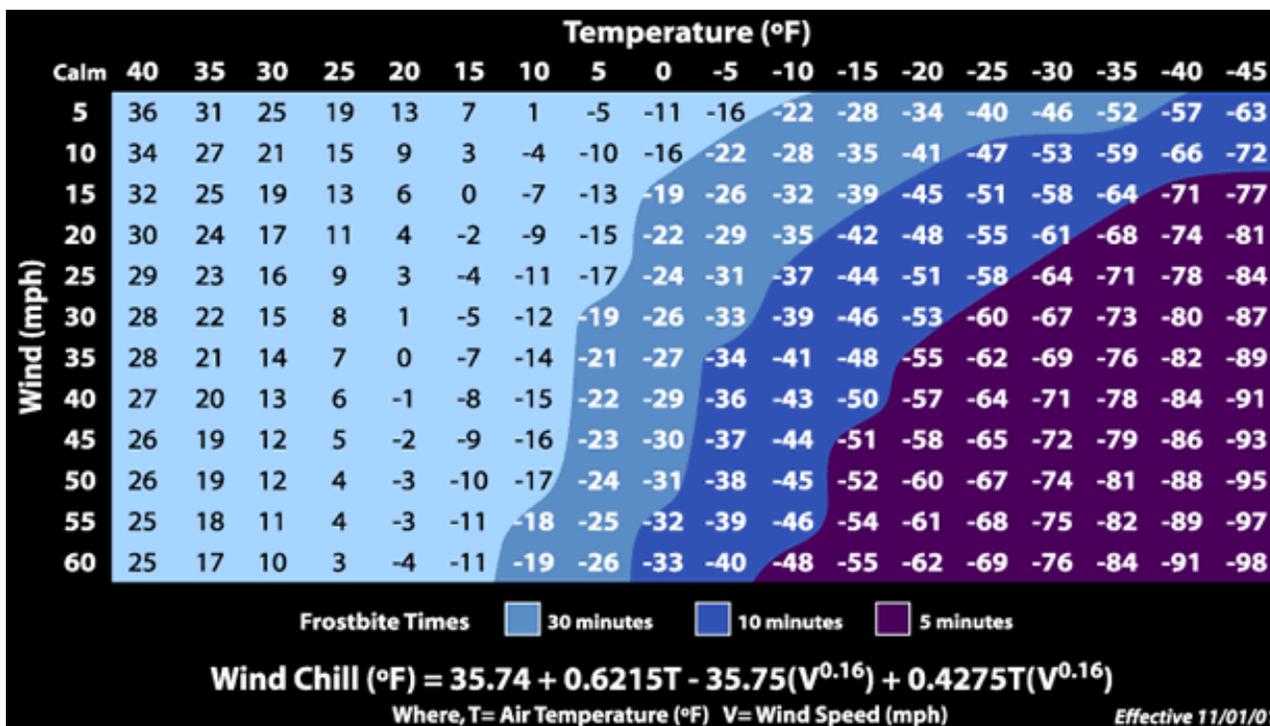
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Exposure to cold can cause frostbite or hypothermia and become life-threatening. Infants and elderly people are most susceptible. What constitutes extreme cold varies in different parts of the country. In the south, near freezing temperatures are considered extreme cold. Freezing temperatures can cause severe damage to citrus fruit crops and other vegetation. Pipes may freeze and burst in homes that are poorly insulated or without heat. Further north, extreme cold means temperatures well below zero.

Wind Chill - is not the actual temperature, but rather how the combination of wind and cold temperatures feel on exposed skin. It is based on the rate of heat loss from exposed skin, and as the wind speed increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Wind chill will also impact animals, but not impact inanimate objects such as cars or exposed water pipes, because they cannot cool below the actual air temperature.

The NWS Wind Chill Index uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. More information about the Wind Chill Index can be found at :

<http://www.nws.noaa.gov/om/windchill/>



Winter Weather Dangers

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Frostbite - is damage to body tissue caused by extreme cold. A wind chill of -20°F will cause frostbite in just 30 minutes. Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes or the tip of the nose. If symptoms are detected, get medical help immediately! If you must wait for help, slowly rewarm affected areas. However, if the person is also showing signs of hypothermia, warm the body core before the extremities.

Hypothermia - is a condition brought on when extremities are excessively cold, and the body temperature drops to less than 95°F. It can kill. For those who survive, there are likely to be lasting kidney, liver and pancreas problems. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion. Take the person's temperature. If below 95°F, seek medical care immediately!



If Medical Care is Not Available - warm the person slowly, starting with the body core. Warming the arms and legs first drives cold blood toward the heart and can lead to heart failure! If necessary, use your body heat to help. Get the person into dry clothing and wrap in a warm blanket covering the head and neck. Do not give the person alcohol, drugs, coffee or any hot beverage or food. Warm broth is the first food to offer.

Remember to Avoid Overexertion!

Avoid activities such as shoveling heavy snow, pushing a car, or walking in deep snow. The strain from the cold and the hard labor could cause a heart attack, and sweating could lead to a chill and hypothermia. Take Red Cross CPR and AED training so you can respond quickly to an emergency.

Did You Know?

Injuries Related to Cold:

- ◆ 50% happen to people over 60 years old
- ◆ More than 75% happen to males
- ◆ About 20% occur in the home



Injuries Related to Ice and Snow:

- ◆ About 70% result from vehicle accidents
- ◆ About 25% occur to those caught in a storm
- ◆ Most happen to males over 40 years old

Winter Weather Safety Tips

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Be Prepared Before the Storm Strikes!

When preparing your home or workplace for the upcoming winter season, keep in mind that the primary concerns deal with the loss of heat, power and telephone service, along with a shortage of supplies if a winter storm continues for an extended period of time.

Make sure to have the following supplies available:

- ◆ Flashlight and extra batteries
- ◆ Battery-powered NOAA Weather Radio and portable radio to receive emergency information - these may be your only links to the outside
- ◆ Extra food and water. Have high energy food, such as dried fruit, nuts and granola bars, and food which requires no cooking or refrigeration.
- ◆ Extra medicine and baby items
- ◆ First-aid supplies
- ◆ Heating fuel. Refuel BEFORE you are empty. Fuel carriers may not reach you for days after a winter storm.
- ◆ Emergency heat source: fireplace, wood stove, space heater
Use properly to prevent a fire, and remember to ventilate properly.
- ◆ Fire extinguisher and smoke alarm
Test smoke alarms once a month to ensure they work properly.

On the farm and for pets:



- ◆ Move animals into sheltered areas.
- ◆ Shelter belts, properly laid out and oriented, are better protection for cattle than confining shelters.
- ◆ Haul extra feed to nearby feeding areas.
- ◆ Have plenty of water available. Most animals die from dehydration in winter storms.
- ◆ Make sure your pets have plenty of food, water and shelter.

Winter Weather Safety Tips

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What should I do if caught...

Outside:



- ◆ Find shelter!
- ◆ Attempt to stay dry.
- ◆ Cover all exposed body parts.
- ◆ If there is no shelter available:
 - Build a lean-to, windbreak, or snow cave to protect yourself from the wind.
 - Build a fire for heat and to attract attention.
 - Place rocks around the fire to absorb and reflect heat.
 - Melt snow for drinking water, eating snow will lower your body temperature.

In a Vehicle:

- ◆ Stay in the vehicle! You could quickly become disoriented in wind-driven snow and cold.
- ◆ Run the motor about 10 minutes each hour for heat.
- ◆ Open the window a little for fresh air to avoid carbon monoxide poisoning.
- ◆ Make sure the exhaust pipe is not blocked.
- ◆ Be visible to rescuers!
 - Turn on the dome light at night when running the engine
 - Tie a colored cloth, preferably red, to your antenna or door
 - After the snow stops falling, raise the hood to indicate you need help
- ◆ Exercise from time to time, move arms, legs fingers, and toes vigorously to keep blood circulating and to keep warm.



Inside:



- ◆ Stay inside!
- ◆ When using alternate heat from a fireplace, wood stove, space heater, etc., use fire safeguards and properly ventilate.
- ◆ If you don't have heat available:
 - Close off unneeded rooms.
 - Stuff towels or rags in cracks under doors.
 - Cover windows at night.
- ◆ Eat and drink, providing the body with energy and preventing dehydration.
- ◆ Wear layers of loose-fitting, lightweight, warm clothing. Remove layers to avoid perspiration and subsequent chill.

Winter Weather Travel Tips

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Along with your home and workplace, vehicles also need to be prepared for the upcoming winter season. It is very important to fully check and winterize your vehicle, which includes having a mechanic check your battery, antifreeze, wipers, windshield washer fluid, ignition system, thermostat, lights, exhaust system, heater, brakes, and oil levels.

If you must travel during winter conditions, it is best not to travel alone. Try to plan your travel during the day, and make sure to let others know your destination, route, and when you expect to arrive. Make sure to keep your gas tank near full to avoid ice in the tank and fuel lines.

Always carry a Winter Storm Survival Kit in your car!!

- ◆ Mobile phone, charger and batteries
- ◆ Flashlight with extra batteries
- ◆ First-aid kit
- ◆ Knife
- ◆ Shovel
- ◆ Tool kit
- ◆ Tow rope
- ◆ Battery booster cables
- ◆ Compass and road maps
- ◆ A windshield scraper and brush or small broom for ice/snow removal
- ◆ Blankets and sleeping bags, or newspapers for insulation
- ◆ Rain gear, extra sets of dry clothes, socks, mittens, and stocking caps



- ◆ Large empty can to use as emergency toilet. Tissues, paper towels, and plastic bags for sanitary purposes
- ◆ Small can and waterproof matches to melt snow for drinking water
- ◆ Cards, games, and puzzles
- ◆ High calorie, non-perishable food, such as canned fruit, nuts, and high energy "munchies" (Include a non-electric can opener if necessary)
- ◆ A small sack of sand or cat litter for generating traction under wheels and a set of tire chains or traction mats.
- ◆ A brightly colored (preferably red) cloth to tie to the antenna



Winter Weather Road Condition Information

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Road Conditions

Before you travel, check out the latest road conditions. Road report information across Nebraska can be found at the Nebraska Department of Roads web site at: <http://www.511.nebraska.gov/atis/html/index.html>

For **in-state information call 511.**
When out of state call: 1-402-471-4533

South Dakota: <http://www.safetravelusa.com/sd/>
Out of state: 1-866-697-3511

Wyoming: <http://map.wyoroad.info/>
Out of state: 1-888-996-7623

Colorado: <http://www.cotrip.org/roadConditions.htm>
Out of state: 1-303-639-1111

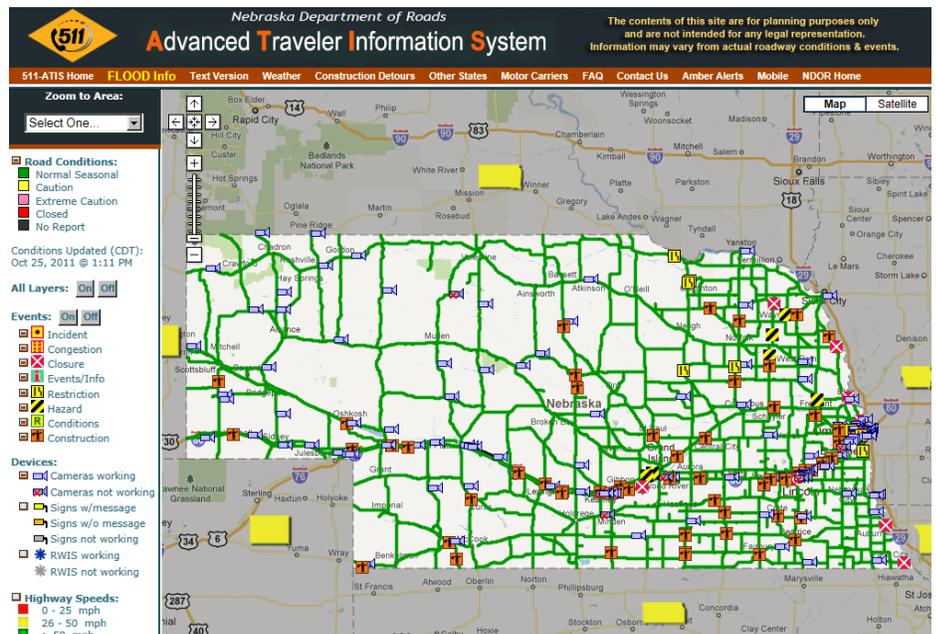
Kansas: http://511.ksdot.org/KanRoadPublic_VE/Default.aspx
Out of state: 1-800-585-7623

Missouri: <http://maps.modot.mo.gov/timi/>
Out of state: 1-800-222-6400

Iowa: <http://511ia.org>
Out of state: 1-800-288-1047

National Traffic and
Road Closure
Information can be
found at:

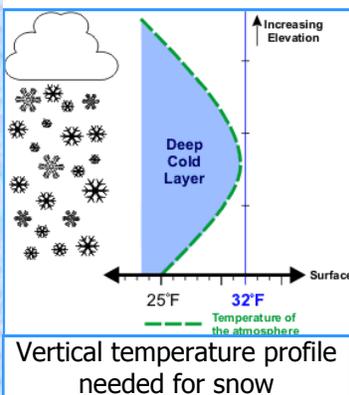
<http://www.fhwa.dot.gov/trafficinfo/index.htm>



Winter Weather Precipitation Types

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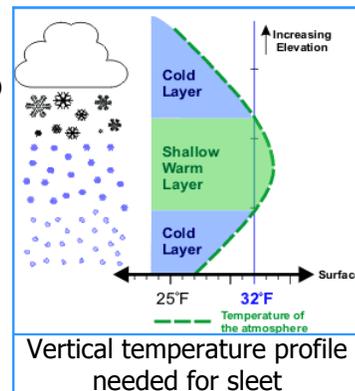
One of the difficult tasks for a forecaster is trying to figure out what type of precipitation is going to occur in the winter. An important piece of the puzzle involves determining the temperature throughout the troposphere (basically the lower 7 - 8 miles of the atmosphere) where the temperature usually decreases with height. However there are times when the temperature actually increases with height in the lower troposphere and this can cause problems for the forecaster.



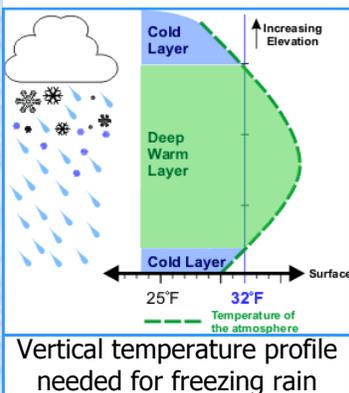
Vertical temperature profile needed for snow

So how does the temperature affect the precipitation type? In general, ice crystals form at heights where the temperature is several degrees below freezing. As they fall the crystals grow by several means, eventually forming snowflakes. If the entire column of the atmosphere remains below freezing all the way to the ground, we get **snow** (left). However, what happens if the snowflakes encounter a warm layer in the atmosphere that is above freezing? If the layer is warm and/or deep enough, the snowflakes melt and we get rain.

Sleet process: If the warm layer is not quite as warm or as deep (let's say a degree or two above freezing for 500 feet) the snowflakes will partially melt, and then re-freeze as they encounter a cold layer closer to the ground. By the time they hit the ground they look like tiny frozen ice balls known as sleet (right).



Vertical temperature profile needed for sleet



Vertical temperature profile needed for freezing rain

Freezing rain process: This process is similar to sleet formation except that the warm layer completely melts the snowflakes into raindrops. But before reaching the ground, the rain falls through another cold layer. If the air temperature in this layer and at the ground is several degrees below freezing, the rain drops will instantaneously freeze wherever they land (on trees, sidewalks, roads, etc.), causing a potential hazardous situation known as freezing rain (left).

Forecasters use information from radiosondes (weather balloons) to determine, among other things, the temperature profile of the atmosphere. Due to cost factors, radiosondes are normally only launched twice per day at NWS sites across the country. In Nebraska, they are launched from the North Platte and Omaha offices. Due to the sparse coverage in both space and time, one can see where it might be tough to determine whether we will get snow in Chadron, while those in York may see a mixture of sleet, rain, and freezing rain.

2012 Nebraska Winter Weather Summary

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Western Nebraska Panhandle - Cheyenne, WY

The winter of 2011-2012 (Which meteorologically is the period December through February) for this region turned out to be fairly typical for what is observed during La Niña, the event where water temperatures over the tropical central and eastern Pacific Ocean are cooler than average. La Niña was at moderate strength during much of the winter but weakened late in the winter.

The winter was characterized by generally colder than average temperatures overall during the months of December and February, with a much warmer than average January in between. February was significantly cooler than average over most areas, which is often seen during La Niña winters. All together the winter was pretty close to average over most areas. Warmer than average conditions overall were noted across the northern Nebraska panhandle while the remainder of the panhandle had near average temperatures. Precipitation was generally a little below average.

Temperatures:

The following table summarizes the monthly and overall winter average temperatures and the departures from normal for select sites over the area:

City	Dec. average temp.	Dec. depart. from normal	Jan. avg. temp.	Jan. depart. from normal	Feb. avg. temp.	Feb depart. from normal	Dec-Feb average temp.	Dec-Feb depart. from normal
Chadron	26.7	+2.3	28.4	+4.0	28.7	+1.3	27.9	+2.5
Scottsbluff	26.0	-0.1	30.4	+3.2	29.8	-0.6	28.7	+0.8
Sidney	29.2	+0.5	31.5	+2.3	29.2	-2.8	30.0	0.0

This next table depicts the dates of warmest and coldest temperatures of the winter for selected cities as well as the warmest and coldest average daily temperatures. The total number of days with low temperatures at or below zero and the departure from normal is also noted:

City	Lowest temperature and date	Highest temperature and date	Lowest daily average temperature and date	Highest daily average temperature and date	Number of days with mins at or below zero
Chadron	-14 on Feb. 11*	63 on Jan. 5	5.5 on Feb. 11	43.0 on Jan. 5	7 (-8)
Scottsbluff	-10 on Dec. 6	66 on Jan. 5	6.5 on Dec. 5	46.5 on Jan. 5	5 (-7)
Sidney	-12 on Jan. 17	74 on Jan. 5	6 on Dec. 5	51.5 on Jan. 5	4 (-5)

* and January 17, 2012

2012 Nebraska Winter Weather Summary

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Western Nebraska Panhandle - Cheyenne, WY Con't

Bitterly cold arctic air was pretty much absent from the area during the winter with just a few relatively minor arctic air masses affecting the region. This is evident by the below average number of days with below zero temperatures recorded at most stations. February saw several surges of cold Canadian air which led to its relatively cold average temperature, but the combination of the moderate La Niña and a lesser known event being a strongly positive Arctic Oscillation kept the deeper arctic air out of the region, and much of the country for that matter.

Precipitation:

Winter precipitation turned out to be generally below average across the area. In general December and January were rather dry, while February was relatively moist. There were no big snowstorms with most snowfall consisting of several relatively minor events through the season. Scottsbluff's most significant snows included 3.2 inches which fell on February 10th and 11th and February 19th and 20th. Total snowfall over the plains for the period ranged from about 10 to 15 inches across the southern Nebraska panhandle to about 15 to 20 inches over the northern Panhandle.

The following table tabulates the December through February liquid precipitation amounts and their departures from average:

City	December pcpn and departure	January pcpn and departure	February pcpn and departure	Total pcpn and departure
Chadron	0.26 (-0.26)	0.43 (+0.07)	0.59 (-0.02)	1.28 (-0.21)
Scottsbluff	0.31 (-0.20)	0.16 (-0.25)	0.69 (+0.09)	1.16 (-0.36)
Sidney	0.10 (-0.44)	0.05 (-0.15)	0.12 (-0.20)	0.27 (-0.79)

Did You Know?

There are many ways for winter storms to form; however, all have three key components.

COLD AIR: For snow and ice to form, the temperature must be below freezing in the clouds and near the ground.

MOISTURE: Water evaporating from bodies of water, such as a large lake or the ocean, is an excellent source of moisture.

LIFT: Lift causes moisture to rise and form clouds and precipitation. An example of lift is warm air colliding with cold air and being forced to rise. Another example of lift is air flowing up a mountain side.

2012 Nebraska Winter Weather Summary

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Western & North Central Nebraska - North Platte, NE

With the exception of February, above normal temperatures and well below normal snowfall, was common during the 2011-2012 winter season across western and north central Nebraska. After mild temperatures in November, December and January, February brought above normal snowfall and below normal temperatures to the region. The winter season ended abruptly in February as March saw record warmth and dry conditions across western and north central Nebraska. Snowfall for the season ranged from around 10 inches at Taylor, Butte and Big Springs, to around 16 inches at Valentine and North Platte, to around 30 inches at Stapleton. Officially, 15.6 inches and 15.9 inches fell at North Platte and Valentine respectively. The seasonal total of 15.6 inches for North Platte was the 20th lowest seasonal snowfall on record, while the 15.9 inch seasonal total for Valentine was eighth lowest on record.

A mild November, followed by cold and snowy conditions in early December

After mild temperatures and limited snowfall in November, December started off cold and snowy. Arctic air pushed into the region on December 5th, resulting in bitterly cold temperatures on the morning of December 6th. Lows on the 6th ranged from 16° below zero at Curtis, to 6° below zero at North Platte, to 2° below zero at O'Neill. The bitterly cold temperatures were followed by light snow on the 8th. Across western and north central Nebraska, anywhere from a dusting to 3 inches fell, with the heaviest amounts across portions of central and north central Nebraska. By the middle of the month, much warmer air moved into the region and persisted into January.

Mild and dry Conditions Carry Over into January

Warm temperatures and limited precipitation, continued into January across western and north central Nebraska. Snowfall for the month totaled around an inch at Valentine and 2 inches at North Platte, which was around 20 to 40 percent of normal for January. The lack of snowfall led to very warm temperatures across western and north central Nebraska. January 2012 was 3rd warmest January on record for Imperial, 10th warmest for Valentine and 13th warmest for Broken Bow.

Winter Returns in February

After a mild January, the weather pattern shifted in early February. A significant winter storm, impacted western and north central Nebraska on the 3rd and 4th of February. The heaviest snowfall occurred across northern Lincoln, eastern McPherson, Logan and southern Thomas counties. In these areas, 15 to 20 inches of snow was reported.

2012 Nebraska Winter Weather Summary

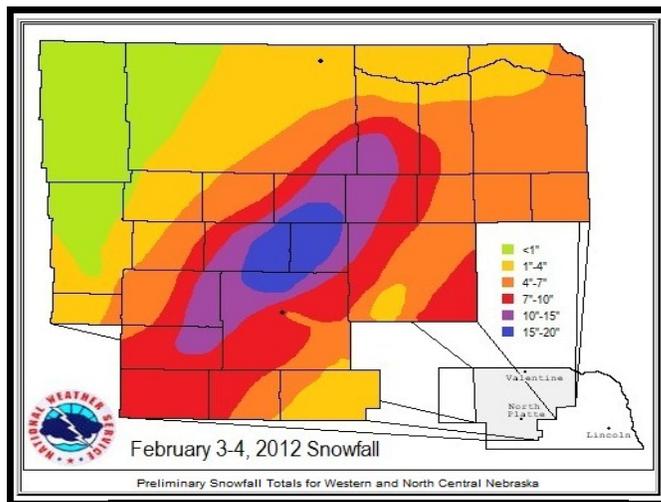
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Western & North Central Nebraska - North Platte, NE Con't.

Snowfall at North Platte totaled 6.8 inches, while Valentine reported 1.5 inches. A second, weaker storm system dropped light snow across the region on February 13th. Snowfall with this second system, ranged from a dusting at Imperial, to around 5 inches at Anselmo and Burwell. A third winter system brought snow, freezing drizzle, and hail to western and north central Nebraska toward the end of the month. A tornado was reported near Stapleton on the 28th, which was the first ever recorded during the month of February in Nebraska. The tornado moved over open rangeland and no damage was reported.



Tornado southwest of Stapleton
on February 28th.
Photo Courtesy of Bob Denny



Snowfall Totals From February 3-4.

Winter comes to an end in March with record warmth

The month of March is typically the snowiest month of the winter season across western and north central Nebraska. March 2012 featured little or no snowfall and record warm temperatures. Ridging built into the central and northern plains in March, which significantly limited precipitation and led to several days with record or near record high temperatures. March 2012 ended up being the warmest March on record for Broken Bow and Imperial, and 2nd warmest on record for Valentine and North Platte. A total of 6 daily record high temperatures were set during the month in North Platte, while 5 were set in Valentine. On the 26th, the high in Valentine was 87°, which tied the highest temperature ever recorded in March. For both Broken Bow and Imperial, four daily record high temperatures occurred during the month.

2012 Nebraska Winter Weather Summary

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Extreme Southwest Nebraska - Goodland, KS

Overview

The winter of 2011-2012 brought above normal temperatures and well below normal snowfall to extreme southwest Nebraska (Dundy, Hitchcock, Red Willow counties). Temperatures were close to normal during four of the six winter months as shown in the table below. However, temperatures in January and March were noteworthy, being around five degrees above normal in January and an impressive six to ten degrees above normal in March! A moderate La Niña was underway last winter which was likely responsible, at least in part, for the mild and dry weather.

Station	Temperature Departure From Normal					
	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012
Benkelman	1.6	0.5	1.1	5.2	0.1	10.2
Culbertson	1.7	-0.1	-0.4	5.3	-0.2	10.7
Haigler	1.4	0.9	0.7	3.7	-1.7	8.2
McCook	2.9	0.2	0.2	5.0	1.3	6.9
Trenton Dam	1.9	0.5	0.7	5.7	1.2	6.4

Table 1: Temperature departure from normal (1981-2010 normals)

Seasonal snowfall (Jul 2011 - Jun 2012) was well below normal across the three counties. Snowfall totals ranged from 8 to 18 inches last season, with normal values ranging from 23 to 30 inches. The most extreme departure occurred in Dundy county where Benkelman reported only 27% of normal snowfall. Further east in eastern Hitchcock and Red Willow counties, amounts were higher but still well below normal at 53 to 63%.

Station	2011-2012 Snowfall	1981-2010 Normal	Percent of Normal
Benkelman	8.1	30.3	27
Culbertson	18.0	28.5	63
Haigler	9.3	22.7	41
McCook	18.0	28.8	63
Palisade	9.9	26.2	38
Trenton Dam	13.1	24.7	53

Table 2: Snowfall and Percent of Normal Snowfall

2012 Nebraska Winter Weather Summary

Winter Weather Awareness Day - November 8, 2012

Extreme Southwest Nebraska - Goodland, KS Con't.

October - December 2011

October was a mild month with several rounds of precipitation occurring. Rainfall totals for October ranged from 1.2 to around 2.0 inches at cooperative observer sites. Culbertson came in with 2.08 inches for the month.

The first noteworthy snowfall of the season occurred in mid-November when a weather system brought one to three inches of snow to parts of southwest Nebraska on the 16th-17th. Otherwise, November was quiet in terms of winter weather.

The most significant snowfall in December occurred on the 3rd and 4th when an upper level trough moved across the region, dropping between 6 and 11 inches of snow over Hitchcock and Red Willow counties. A trace to three inches were noted further west across Dundy county. On December 31st, a strong cold front blasted through the area with peak winds of 63 mph reported at Haigler in the morning.

January - March 2012

January was mild and dry in southwest Nebraska. Water equivalent precipitation came in at under 0.10 inches for the entire month. Meanwhile, afternoon high temperatures were routinely climbing into the 50s and 60s, with a couple days topping out at over 70 degrees. On January 22nd, a strong cold front pushed through the region producing wind gusts near 60 mph at McCook.

February started off on a wintry note when a large winter storm moved from the Central Rockies into the Central High Plains on the 2nd and 3rd. Precipitation began as rain but eventually mixed with and changed to snow. Benkelman received 3 inches of snow, while 4 inches was reported at Palisade, Trenton, McCook and Indianola. Northern Dundy county received the highest snow totals where 6-8 inches fell. Later in the month, a strong low pressure system moved out into the Plains on the 20th. The combination of strong winds and several inches of snow made for poor visibility across parts of southwest Nebraska.

The month of March was warm and dry. No snow was reported, and rainfall totaled only around one-half inch. Temperatures were well above normal and frequently climbed into the 80s during the middle and latter parts of the month.

2012 Nebraska Winter Weather Summary

Winter Weather Awareness Day - November 8, 2012

South Central Nebraska - Hastings, NE

Looking back there is no doubt that the 2011-12 winter season was definitely drier and warmer than normal, and toward the end, the drought even began to show its ugly head. The warmer weather remained in the headlines through much of the winter period, with only a few "winter storms" to talk about.

Early December - The first widespread snow event of the season would come knocking on our door as a strong but rather quick-moving upper level disturbance swept across the Plains. The majority of the area measured between 3-6 inches of snow by the time the system pulled out late in the afternoon. Locally higher amounts were reported in far western portions of the area, with locations such as Lexington, Elwood and Cambridge reporting 7-9 inches. On the opposite end of the spectrum, far southeast areas such as Thayer County saw 1-3 inches.

Another quick moving system would bring an additional 2-4 inches of snow to the area on the 8th, mainly east of Highway 281.

A Warm End to 2011 & Start to 2012 - Breaking down temperature trends, there were really no long stretches of extreme warmth; it was more of a steady above normal trend. During December, the above normal monthly average temperature certainly did not represent the entire month, as the first 10 days were well below normal on several days, along with plenty of snowfall. Between the 11th and the 31st, however, the trend reversed itself with nearly every day featuring above-normal temperatures. January was a continuation of this warm trend, as there were no prolonged outbreaks of Arctic air. The vast majority of the area failed to drop below zero from mid-December through January.

Record temperatures were recorded in the area on 2 days during January.

January 5th (32 to 34° above normal for early January):

- Grand Island recorded 68° - breaking the 1956 record of 61°.
- Hastings recorded 67° - breaking the 1956 record of 61°.
- Kearney recorded 69° - breaking the 1956 record of 66°. This was also the warmest high temperatures of ANY day in January since 69° was reported on Jan. 24, 2005.

January 30th (31 to 32° degrees above normal):

- Grand Island & Hastings recorded 69° - breaking the 1931 record of 64°. This was also the warmest high temperature of ANY day in January for both, since 70 & 71° were reported on Jan. 15, 2006.
- Kearney reported 68° - breaking the 1931 record of 64°.

2012 Nebraska Winter Weather Summary

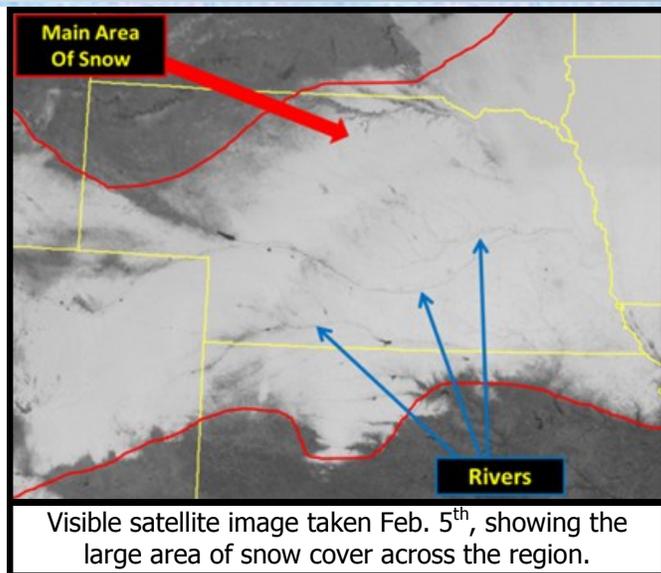
Winter Weather Awareness Day - November 8, 2012

South Central Nebraska - Hastings, NE Con't.

February 3-4th - By the time February came, Nebraskans were beginning to wonder if winter was gone. Unseasonably warm temperatures and a lack of precipitation had even put portions of South Central Nebraska closer to receiving a Category D2 (severe) drought designation from the U.S. Drought Monitor.

However, this all changed during a roughly 42-hour period centered from the evening of the 2nd through the afternoon of the 4th, as a strong mid-upper level low pressure system strengthened as it neared the Central Plains. Early on, temperatures remained warm enough to support rain as the first round of precipitation lifted across the area. Much of the coverage area experienced its biggest snowfall event of the season, with many tallying between 6-13 inches of heavy, wet snow. Prior to the snowfall, several counties mainly east of a Franklin to Grand Island line picked up rainfall ranging from 0.25 to over 1 inch.

The heaviest corridor of snow encompassed about 15 counties and was centered roughly 25 miles either side of a line from near Holdrege-Minden-Doniphan-Benedict, and included the Tri-Cities. A few of the highest measured snowfall amounts from Cooperative Observers included Bradshaw (13.3 inches), Minden (12.2), York (11.0), Hastings (11.0) and Grand Island (9.4). The combination of the snow, along with north winds gusting to around 30 MPH for several hours, resulted in at least minor tree damage and power outages across the area.



Funnel Cloud near Greeley.
Photo courtesy of Tim Marquis.

February 28th Tornado - The end of the 2011-2012 winter season featured the first-ever confirmed February tornado within the 24-county South Central Nebraska area. This brief EF0 tornado touched down four miles west of Greeley at 7 p.m. and overturned an irrigation pivot. In addition to the tornado west of Greeley, a few other notable reports of wind damage in northern portions of South Central Nebraska included a feed grinder overturned near North Loup and an outbuilding destroyed southwest of Belgrade. This classic early-season severe weather setup also produced another tornado in Logan County. These 2

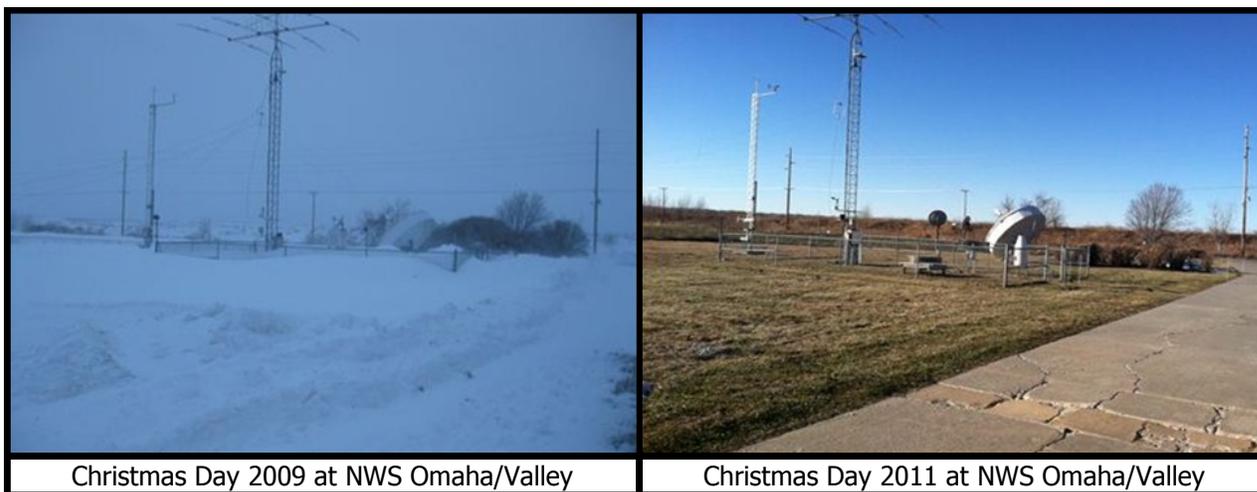
tornadoes are the only reported tornadoes in Nebraska since 1950.

2012 Nebraska Winter Weather Summary

Winter Weather Awareness Day - November 8, 2012

Eastern Nebraska - Omaha/Valley, NE

For the second winter in-a-row, the winter of 2011/2012 continued the moderating trend over the prior winter season with even warmer temperatures and less snowfall. In fact, this picture below taken at the NWS comparing Christmas Day 2011 to 2009 pretty much sums up most of this past winter season.



Snowfall was below average at Omaha, Lincoln and Norfolk with 20.4, 18.8 and 15.3 inches respectively, while temperatures for the period December through February were among the top 20 warmest.

There were basically two winter storms that impacted eastern Nebraska and western Iowa, December 3rd and February 4th. Snowfall from these two storms provided well over half the winter's total at Omaha and Lincoln, and just under half at Norfolk.

The first storm of the season, December 3rd, dropped 2 to as much as 8 inches of snow across east central and northeast Nebraska and west central Iowa. The I-80 corridor and about 30 miles north received the most, with amounts mostly in the 4 to 8 inch range. The second and last storm of the season began as a cold rain over much of the area on February 3rd before changing to wet snow on the fourth. Although north winds increased into the 15 to 30 mph range during the snow, blowing and drifting was limited to a degree by the wetness of the snow. However, the wet snow stuck to trees and caused some tree damage and scattered power outages, mainly from west of Lincoln through Lincoln and into the Omaha/Council Bluffs area. Total snow from the storm was generally 8 to 12 inches but amounts tapered off to a few inches around Norfolk to Tekamah and 3 to 4 inches from the southeast corner of Nebraska into far southwest Iowa.

Spring came early to the area in March as temperatures were the warmest on record at all 3 sites and several severe weather episodes were observed.