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Snow Blankets the ground in Rural Lancaster County, NE on March 7th 2008- Photo by Ken Dewey  
<http://www.nebraskaweatherphotos.org>

# March 2008 Climate Summary

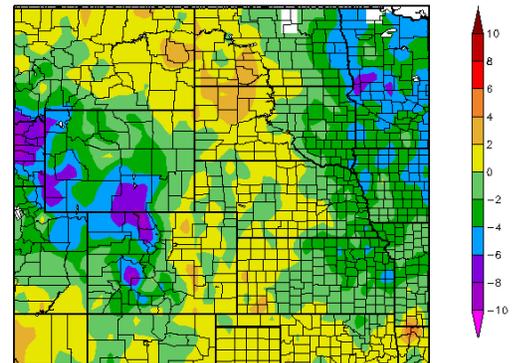
## Region Breakdown

March 2008 was an active month for precipitation and temperature in the High Plains region. Temperatures averaged near-Normal for the region with the exception of warmer than Normal temperature (between 2-4 degrees F above) for NW South Dakota and western North Dakota, and cooler than Normal average temperature for portions of the Colorado and Wyoming Rockies (4-8 degrees F below) and Eastern Nebraska, Eastern South Dakota and Eastern Kansas (2-4 degrees F below).

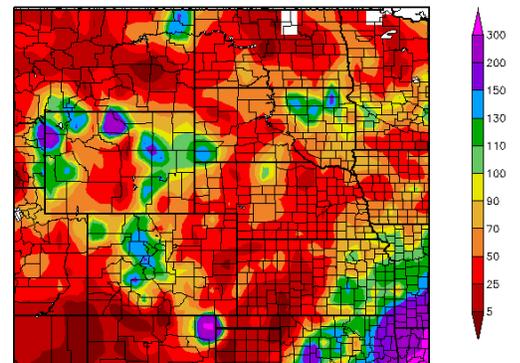
The areas with near-Normal or above Normal temperatures received between 25-50% of Normal precipitation (Central High Plains), while the areas with cooler than normal temperatures (Eastern Nebraska, Eastern South Dakota, Eastern Kansas and areas west of the Continental Divide) ranged from near-Normal to 200% of Normal total precipitation for March 2008.

Drought conditions persisted over areas of Western North Dakota and Western South Dakota as the area received only 10-50% of Normal Total Precipitation. During the same time period, the Drought Monitor categorization was degraded from a D2 to a D3 for this area. SW Nebraska/NW Kansas also saw a Drought Monitor categorization change from D0 to D1 during the month of March.

Departure from Normal Temperature (F)  
 3/1/2008 - 3/31/2008



Percent of Normal Precipitation (%)  
 3/1/2008 - 3/31/2008



Generated 4/5/2008 at HPRCC using provisional data. NOAA Regional Climate Centers  
 From Top: Departure from 1971-2000 Normal March Average Temperature (F) for March 2008 and Percent of 1971-2000 Normal February Total Liquid Precipitation (in) for March 2008 in the High Plains Region.

## Precipitation Summary

While March 2008 was storm filled for areas southeast of the High Plains Region (Missouri, Arkansas, Illinois, Indiana), the High Plains region was not nearly as moist. Snows brought moisture to the Colorado and Wyoming Rockies, with near Normal total precipitation amounts (90 - 130% of normal) for most locations. Some locations reported near two times Normal of total precipitation within the Rockies, such as Leadville Lake County Airport (1.80 inches/45mm, 191% of Normal), Shell, WY (1.58 inches/ 40mm, 268% of Normal) and Moose, WY (3.66 inches/92mm, 222% of Normal).

Dry conditions persisted for much of North Dakota, Central South Dakota and Nebraska, and Western Kansas, with less than 50% of Normal precipitation for most locations.

Three systems brought much of the precipitation for the high plains, one occurring the 6th/7th with the same system that brought severe weather to much of Missouri, Arkansas and much of the midwest, the 17th/18th, with precipitation in SE Kansas and the other on the 27th-31st.

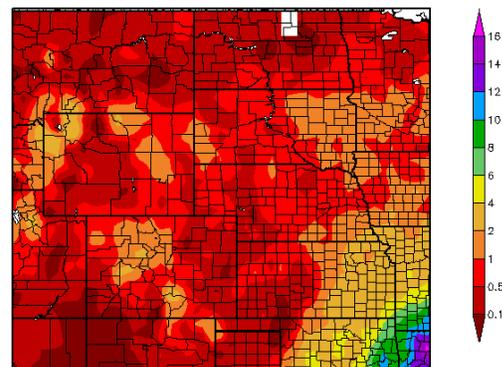
On the 6th/7th of March, a system consisting primarily of snow for much of the High Plains passed through as a strong cold front moved across the region. This brought some precipitation amounts (<0.25 inches/6mm) to parts of Central and Eastern Nebraska, the Blackhills of South Dakota, and up through the High Plains of Wyoming.

On March 13th, rain associated with a warm front draped over South Dakota brought precip to much of the eastern half of the state and portions of SE North Dakota.

Starting March 14th, shortwaves from a larger system moved through the region, starting with precipitation within the mountains of Colorado and Wyoming (Yellowstone Area), and bringing larger amounts of precipitation to NE Kansas and SE Nebraska. On the 17th, the main system finally passed through the region bringing precip (<0.75 inches/20mm) to Western Kansas and more significant amounts of precipitation (~1.5inches/~38mm) to SE Kansas on the 18th.

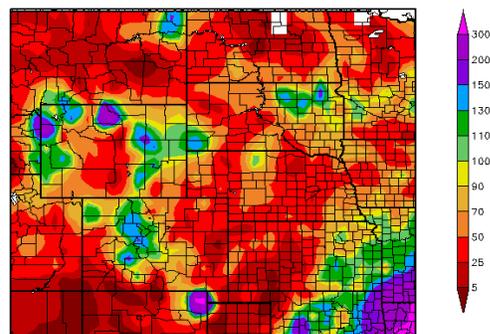
On March 30-31, parts of Nebraska received their first hard rain of 2008, with amounts of up to 1 inch (25.4 mm).

Precipitation (in)  
3/1/2008 - 3/31/2008

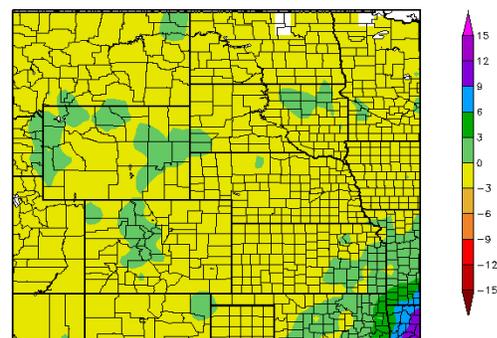


Above: Total Liquid Precipitation (in) for March 2008  
For more, please visit: <http://hprcc.unl.edu/maps/current>

Percent of Normal Precipitation (%)  
3/1/2008 - 3/31/2008



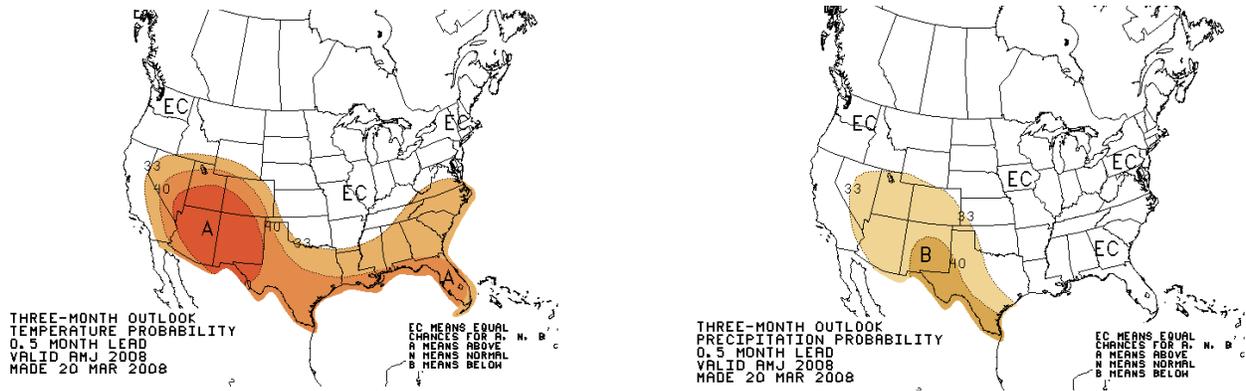
Departure from Normal Precipitation (in)  
3/1/2008 - 3/31/2008



From Top: Percent of 1971-2000 Normal March Total Liquid Precipitation, and Departure from 1971-2000 Normal March Total Liquid Precipitation (in); all for March 2008.

# Climate Outlook

With La Nina ENSO conditions driving the forecast for the remainder of the boreal spring, NOAA forecasters call for above-average temperatures and dryer than normal conditions for much of the southwest corner of the High Plains (namely, Colorado). This winter outlook is produced by scientists at the NOAA Climate Prediction Center. More information can be found here: <http://www.cpc.ncep.noaa.gov/>.



Above: 3-Month Outlook Maps Courtesy the NOAA Climate Prediction Center - <http://www.cpc.ncep.noaa.gov>  
 (left) The Three-Month Temperature Probability Outlook showing a higher probability of above-normal temperatures for Colorado, with decreasing probabilities as we head north. (right) The Three-Month Precipitation Probabilities showing equal chances of above or below normal precipitation for most of the High Plains region, but increased probabilities of drier than normal conditions in portions of Colorado.

## Drought Watch

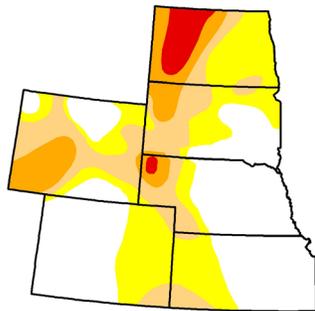
Drought conditions persist over areas of Western North Dakota and Western South Dakota, with a categorization change from D2 to D3 during the month of March. SW Nebraska/NW Kansas also saw a Drought Monitor categorization change from D0 to D1 during this time period. Portions of North Dakota experienced categorical improvement, and more improvement is expected through May of 2008, according to the U.S. Seasonal Drought Outlook released April 3. Drought conditions are expected to further develop across Western Kansas and into SW Nebraska and SE Colorado through May 2008.

### U.S. Drought Monitor High Plains

April 1, 2008  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.6	57.4	30.4	13.0	3.4	0.0
Last Week (03/25/2008 msp)	40.1	59.9	30.9	14.5	1.1	0.0
3 Months Ago (01/08/2008 msp)	46.7	53.3	29.0	13.2	0.3	0.0
Start of Calendar Year (01/01/2008 msp)	46.8	53.2	29.4	11.8	0.3	0.0
Start of Water Year (10/01/2007 msp)	55.8	44.2	23.3	10.8	1.0	0.0
One Year Ago (04/03/2007 msp)	47.1	52.9	38.0	17.2	3.1	0.0

**Intensity:**  
 D0 Abnormally Dry  
 D1 Drought - Moderate  
 D2 Drought - Severe  
 D3 Drought - Extreme  
 D4 Drought - Exceptional



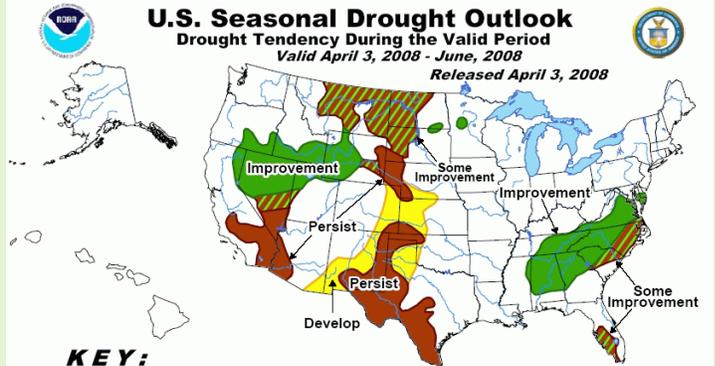
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>

USDA National Drought Mitigation Center  
 Released Thursday, April 3, 2008  
 Author: Rich Tinker, CPC/NOAA

### U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid April 3, 2008 - June, 2008  
Released April 3, 2008



**KEY:**  
 Drought to persist or intensify  
 Drought ongoing, some improvement  
 Drought likely to improve, impacts ease  
 Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

The U.S. Drought Monitor is produced as a joint effort of the U.S. Department of Agriculture (USDA), National Drought Mitigation Center, U.S. Department of Commerce and the National Oceanic and Atmospheric Administration (NOAA). Real-time data provided through ACIS from the NOAA Regional Climate Centers is often used by the agencies involved in the U.S. Drought Monitor when determining the area and intensity of drought conditions, although the product itself is not produced by HPRCC. For current Drought Monitor information, please see: <http://www.ndmc.unl.edu/dm/monitor.html>  
 Portions of this Drought Watch are courtesy the Drought Monitor Text Discussion found on the Drought Monitor webpage.

## State Summaries

Colorado	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Alamosa San Luis Airport	48.5	17.2	32.8	0.1	63	3/26+	2	3/6	0.13	-0.33	28
Akron Washington County Airport	52.8	26.4	39.6	0.6	75	3/1	14	3/3	0.13	-0.91	12
Colorado Springs Municipal Airport	51.8	24.9	38.4	0.5	73	3/1	9	3/6	0.96	-0.10	91
Grand Junction Walker Field Airport	54.4	28.4	41.4	-2.0	72	3/26	19	3/6	0.41	-0.59	41
Pueblo Memorial Airport	58.9	24.2	41.5	-0.3	79	3/1	11	3/6	0.62	-0.35	64

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	52.8	28.9	40.9	-1.7	75	3/1	6	3/7	1.31	-1.04	56
Dodge City Regional Airport	58.6	27.6	43.1	-1.2	82	3/20	10	3/8+	0.02	-1.82	1
Goodland Renner Field	55.5	25.3	40.4	0.5	79	3/1	13	3/15+	0.32	-0.88	27
Topeka Municipal Airport	54.0	30.4	42.2	-2.0	75	3/12	10	3/8	2.58	0.02	101
Wichita Mid-Continent Airport	57.0	34.0	45.5	-0.4	74	3/20	11	3/8	3.08	0.37	114

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Scottsbluff Helig Airport	51.3	24.5	37.9	0.06	72	3/1	14	3/7	0.87	-0.29	75
Grand Island Airport	51.1	27.2	39.1	0.9	70	3/11	2	3/7	0.71	-1.33	35
Lincoln Municipal Airport	51.6	25.0	38.3	-1.1	71	3/11	1	3/7	1.13	-1.08	51
Omaha Eppley International Airport	48.2	24.4	36.3	-3.0	67	3/11	0	3/7	1.53	-0.60	72
Norfolk Karl Stefan Airport	46.3	24.5	35.4	-1.6	65	3/11	-4	3/7	1.00	-0.97	51
North Platte Regional Airport	52.9	21.0	37.0	-1.0	77	3/1	0	3/7	0.88	-0.36	71
Valentine Miller Field	48.3	22.8	35.5	0.2	72	3/1	-2	3/7	1.08	-0.03	97

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	43.2	17.9	30.6	0.9	64	3/10	-10	3/7	0.45	-0.40	53
Dickinson Municipal Airport	45.2	15.1	30.2	-0.2	66	3/11	-7	3/6	0.17	-0.52	25
Fargo International Airport	31.1	14.4	22.8	-4.4	45	3/18	-19	3/7	0.88	-0.29	75
Grand Forks International Airport	29.7	12.8	21.2	-4.5	43	3/18	-21	3/7	0.50	-0.39	56
Williston International Airport	43.2	17.2	30.2	1.5	64	3/11	-12	3/6	0.45	-0.29	61

All Data are Preliminary and Subject to Change

Source: National Weather Service Cooperative Observation Network Data

Data is retrieved through the Applied Climate Information System (ACIS)

This data is available for the entire period of record through the CLIMOD system. For more information please see <http://hprcc.unl.edu/services>.

## March 2008 Climate Summary

South Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Aberdeen Regional Airport	39.3	17.7	28.5	-2.2	57	3/10	-12	3/7	1.75	0.41	131
Huron Regional Airport	41.3	20.5	30.9	-1.7	58	3/13+	-6	3/7	1.49	-0.18	89
Rapid City Regional Airport	47.8	21.9	34.9	0.0	73	3/1	-2	3/7	0.61	-0.42	59
Sioux Falls Joe Foss Field Airport	38.0	20.4	29.2	-3.4	53	3/13+	-11	3/7	1.34	-0.47	74

Wyoming	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Casper Natrona County International AP	43.9	20.6	32.3	-2.7	60	3/24	10	3/28	0.69	-0.21	77
Cheyenne Airport	45.6	22.7	34.2	0.0	67	3/1	12	3/23+	0.68	-0.37	65
Lander Hunt Field Airport	44.8	21.0	32.9	-2.6	57	3/24	8	3/6	0.58	-0.66	47
Laramie Regional Airport	41.3	17.0	29.1	-0.9	57	3/1	-3	3/3	0.26	-0.53	33
Rawlins Municipal Airport	36.4	18.2	27.3	-6.5	52	3/24	0	3/5+	0.15	-0.50	23
Sheridan County Airport	46.1	20.4	33.3	-2.0	66	3/11	5	3/27	0.93	-0.07	93

All Data are Preliminary and Subject to Change

Source: National Weather Service Cooperative Observation Network Data

Data is retrieved through the Applied Climate Information System (ACIS)

This data is available for the entire period of record through the CLIMOD system. For more information please see <http://hprcc.unl.edu/services>.

# State Spotlight - North Dakota



**Barb Mullins**  
 North Dakota State Climate Office, North Dakota State University

March 2008

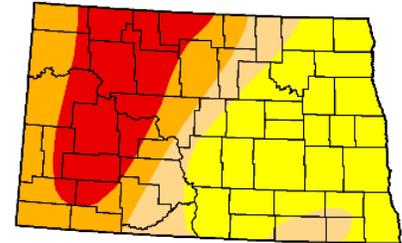
The state average precipitation was 0.36 inches which is below the 1971-2000 normal of 0.80 inches. March marks the 9th straight month in a row in which the state average precipitation was below the 1971-2000 normal. The north central part of the state had less than 25% of normal precipitation. The greatest majority of the state had half of normal precipitation. The highest amounts were in the south central and eastern edge with 70 to 80% of normal precipitation. The U.S. drought monitor has the eastern half of North Dakota listed as abnormally dry and the majority of the western half of the state as extreme drought. March 2008 state average precipitation ranked 18th driest in the last 114 years with a maximum of 2.72" in 1902 and a minimum of 0.09" in 1930.

The coldest daily temperatures were between the 4th and the 9th of March in which eastern and northern areas fell to teens and twenty degrees below zero. Following this cold streak the daily average temperatures across the state were in the upper 20's and 30's most days with some days at near 40 degrees plus. March average monthly temperatures ranged from close to 1 degree above normal in the western third of the state to 1 to 2 degrees below normal in the central third. The eastern third of the state had monthly average temperatures from 2 to nearly 6 (on the eastern edge) degrees below the 1971-2000 normal. The state average air temperature was 26.7 °F which is nearly right on the 1971-2000 normal of 26.9 °F. March 2008 state average air temperature ranked 75th coolest (or 40th warmest) in the past 114 years with a maximum of 40.7 ° F in 1910 and a minimum of 6.9 ° F in 1899.

## U.S. Drought Monitor North Dakota

April 1, 2008  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.0	100.0	58.2	44.7	22.8	0.0
Last Week (03/25/2008 map)	0.0	100.0	58.1	40.3	5.8	0.0
3 Months Ago (01/08/2008 map)	19.9	80.1	55.3	28.9	0.0	0.0
Start of Calendar Year (01/01/2008 map)	19.8	80.2	55.5	16.4	0.0	0.0
Start of Water Year (10/02/2007 map)	25.6	74.4	38.1	4.4	0.0	0.0
One Year Ago (04/03/2007 map)	35.2	64.8	37.9	9.1	0.0	0.0



Intensity:

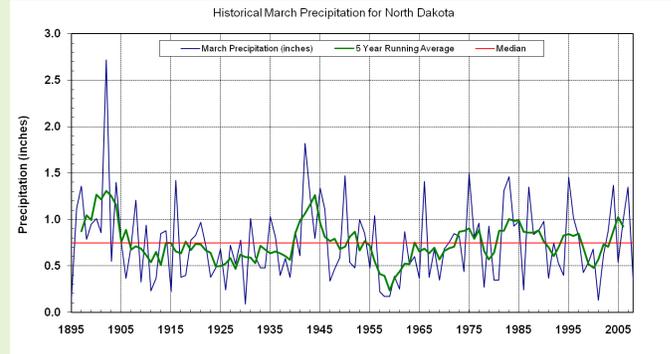
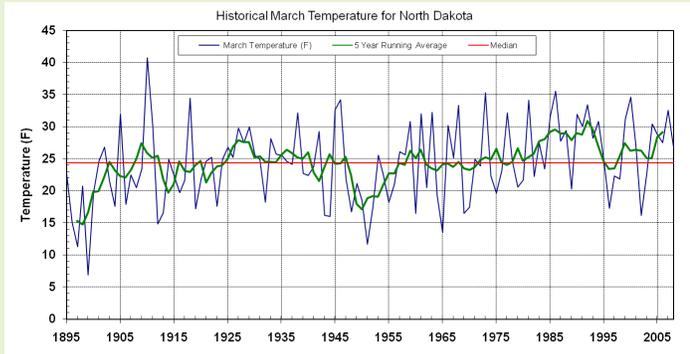
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

<http://drought.unl.edu/dm>



Released Thursday, April 3, 2008  
 Author: Rich Tinker, CPC/NOAA



All graphs in this section courtesy the North Dakota State Climate Office

For more information about the North Dakota State Climate Office: <http://www.ndsu.edu/ndSCO>

For more information on the North Dakota Agricultural Network: <http://www.ndawn.ndsu.nodak.edu>

The North Dakota Agricultural Network is a part of the Automated Weather Data Network (AWDN).

## About the High Plains Regional Climate Center

The High Plains Regional Climate Center (HPRCC) operates out of the University of Nebraska - Lincoln (UNL) in Lincoln, Nebraska. As one of 6 regional climate centers operated under the National Oceanic and Atmospheric Administration (NOAA), HPRCC works closely with other organizations such as the National Climatic Data Center (NCDC), Local and Regional National Weather Service (NWS) Offices, and other climate services organizations such as the National Drought Mitigation Center (also located at UNL) to provide climate data services and specialized climate products.



## For More Information Online

High Plains Regional Climate Center : <http://hprcc.unl.edu>  
High Plains Regional Climate Services: <http://hprcc.unl.edu/services>  
CLIMOD: <http://climod.unl.edu>  
NOAA Regional Climate Centers and ACIS: <http://www.rcc-acis.org>  
North Dakota State Climate Office: <http://www.ndsu.edu/ndsco>  
North Dakota Agricultural Network: <http://www.ndawn.ndsu.nodak.edu>  
National Weather Service: <http://www.weather.gov>  
National Climatic Data Center: <http://ncdc.noaa.gov>  
School of Natural Resources - University of Nebraska - Lincoln: <http://snr.unl.edu>  
University of Nebraska - Lincoln: <http://www.unl.edu>  
National Drought Mitigation Center: <http://drought.unl.edu>  
Climate Prediction Center: <http://www.cpc.noaa.gov>  
NOAA Storm Prediction Center: <http://www.spc.noaa.gov>  
National Agricultural Statistics Service (USDA): <http://www.nass.usda.gov>  
Weather Photos: <http://www.nebraskaweatherphotos.org>



Elk Mountain, Wyoming AWDN Station February 2008 - Photo taken by Rod Oliver, Wyoming State Engineer's Office

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