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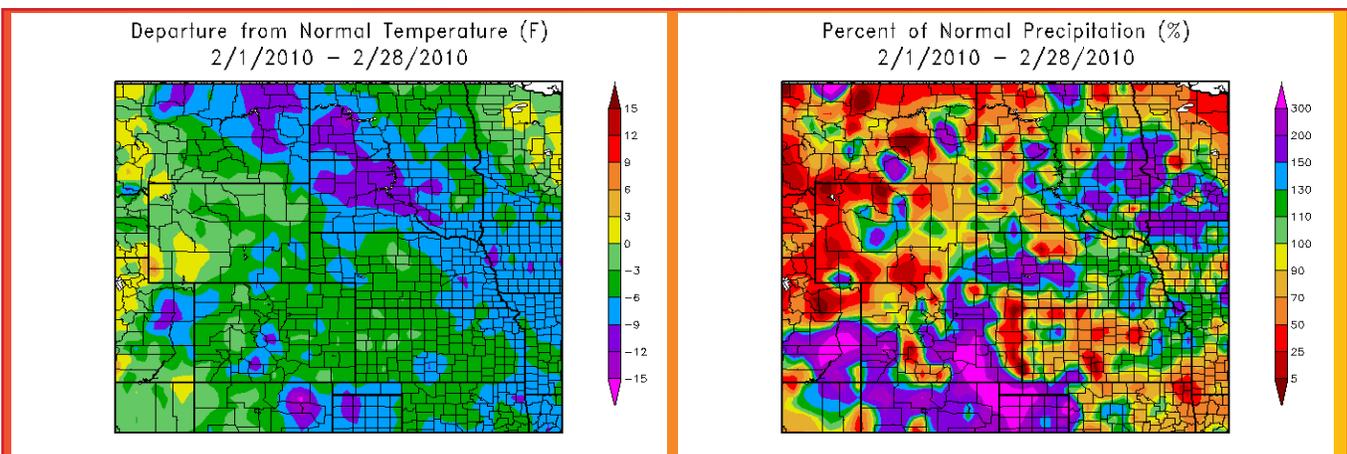
Rural Western Nebraska - Photo by Ken Dewey
<http://www.nebraskaweatherphotos.org>

February 2010 Climate Summary

Region Breakdown

February 2010 was a cold month across the High Plains Region. Temperature departures were below normal for the entire Region except for a few locations in western Wyoming. The majority of the Region had average temperatures which were 3°F to 9°F (1.7°C to 5.0°C) below normal. A rather large area extending from western North Dakota into western and central South Dakota, and pockets of Colorado and Nebraska had average temperatures which were 9°F to 12°F (5.0°C to 6.7°C) below normal. The largest temperature departures of more than 10°F (5.6°C) below normal occurred in western North Dakota and west central South Dakota.

These below normal temperatures were cold enough to place many locations in the top 10 coldest Februaries on record. This month's cold location was Medora, North Dakota which had its fifth coldest February on record (period of record 1948-2010). Medora recorded an average temperature of 11.3°F (-11.5°C) which was 11.9°F (6.6°C) below normal. The coldest February on record for Medora occurred in 1949 with an average temperature of only 6.3°F (-14.3°C).

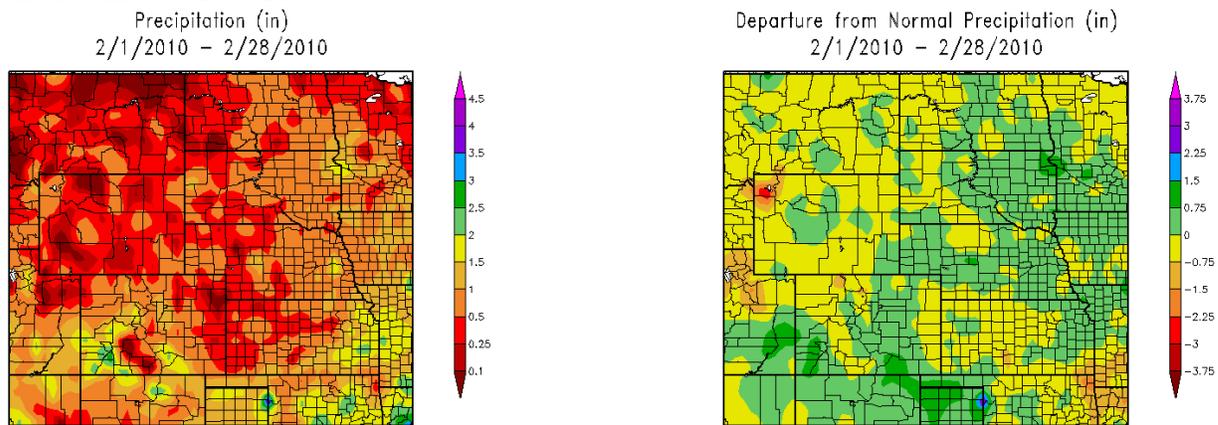


Departure from 1971-2000 Normal Mean Average Temperature (left) and Percent of 1971-2000 Normal Total Precipitation (right) for February 2010 in the High Plains Region. Map by High Plains Regional Climate Center. Available at: <http://hprcc.unl.edu/maps/current>

Precipitation Summary

Precipitation varied widely across the Region this month. Locations which received only 50 percent of normal or less included western Wyoming, eastern Colorado, and small pockets of central Kansas and western North Dakota. Areas which received over 200 percent of normal included central Colorado, eastern South Dakota, western Nebraska, and a few pockets of northern North Dakota. South central Colorado was this month's wet area, with liquid equivalent precipitation totals well over 300 percent of normal. Trinidad Perry Stokes Airport, Colorado received 1.80 inches (45.7 mm) of liquid equivalent precipitation which broke the old record of 1.27 inches (32.3 mm) set in 1990 (period of record 1948-2010). Walsh 1 W, Colorado also set a record with 1.94 inches (49.3 mm), or 462 percent of normal precipitation. This precipitation beat the old record of 1.62 inches (41.1 mm) received in 1987 (period of record 1940-2010).

While no snowfall records were broken this month, the snow that fell aided many locations in breaking into the top 10 snowiest winters (December, January, and February) on record (see table below). This winter's snowiest location was Lincoln, Nebraska with a total winter snowfall of 38.8 inches (98.55 cm). This total edged out the old record of 35.6 inches (90.42 cm) which was recorded in the winter of 2003-2004.



Above: Total precipitation (in inches) (left) and Departure from Normal Precipitation (in inches) (right) for February 2010 in the High Plains Region. These maps are produced by HPRCC and can be found on the Current Climate Summary Map page at: <http://hprcc.unl.edu/maps/current>.

Winter 2009-2010 Snowfall Rankings

Seasonal Records			
Snowfall in inches			
Location	Winter 2009-2010 Snowfall/Rank	Record or Previous Record/Year	Period of Record
Concordia, KS	28.7/5th snowiest	37.1/2000-2001	1948-2010
Topeka, KS	35.5/3rd snowiest	38.1/1992-1993	1887-2010
Grand Island, NE	39.5/3rd snowiest	63.2/1914-1915	1895-2010
Lincoln, NE	38.8/snowiest	35.6/2003-2004	1948-2010
Norfolk, NE	50.5/snowiest	49.3/1935-1936	1893-2010
North Platte, NE	26.1/7th snowiest	34.3/2006-2007	1893-2010
Omaha, NE	43.1/2nd snowiest	44.3/2003-2004	1884-2010
Scottsbluff, NE	32.7/8th snowiest	42.0/1977-1978	1893-2010
Bismarck, ND	45.5/6th snowiest	58.0/2008-2009	1886-2010
Fargo, ND	45.2/7th snowiest	57.0/1996-1997	1885-2010
Aberdeen, SD	36.2/10th snowiest	57.0/1914-1915	1893-2010
Huron, SD	46.8/4th snowiest	61.5/1968-1969	1893-2010
Sioux Falls, SD	53.1/3rd snowiest	89.2/1968-1969	1893-2010

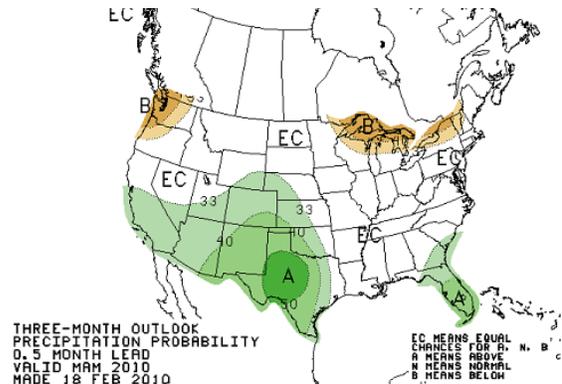
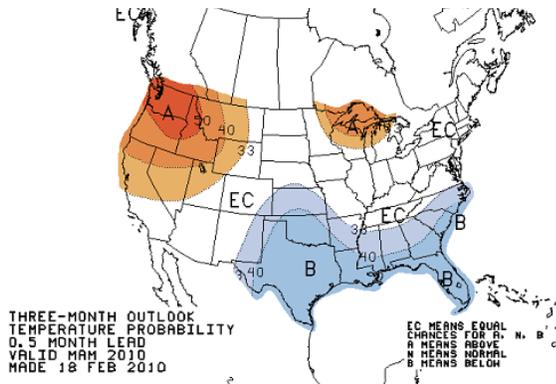
All Data are Preliminary and Subject to Change.
 Source: National Weather Service Cooperative Observation Network Data

The High Plains Regional Climate Center is one of the NOAA Regional Climate Centers, and is involved in the Applied Climate Information System (ACIS) development and management effort. Data found throughout this publication were derived using products built on the ACIS framework.



Climate Outlook

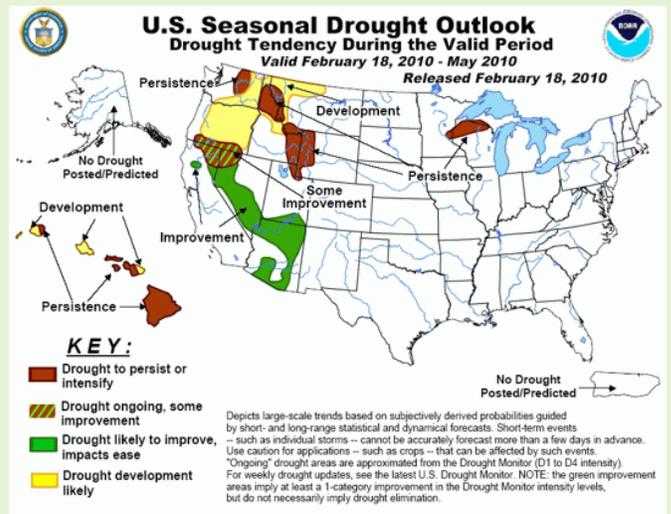
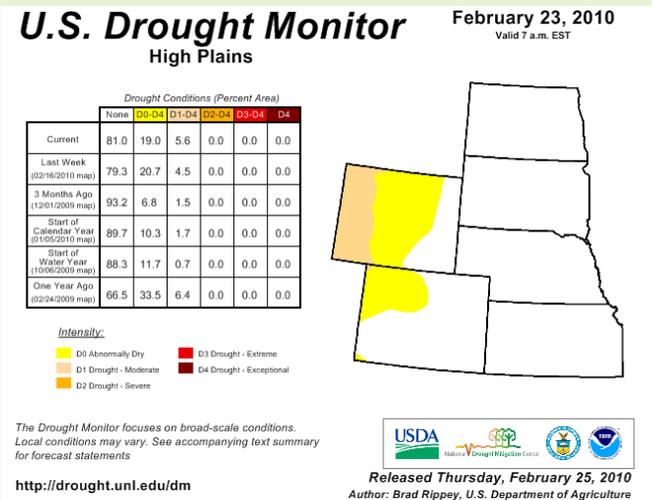
El Niño conditions persisted this month and are expected to continue into Spring 2010. The temperature outlook indicates a higher probability of above normal temperatures for western Wyoming and below normal temperatures in Kansas, the south-east corner of Colorado, and far south central Nebraska. Equal chances of above, near, or below normal temperatures are predicted elsewhere in the Region. The precipitation outlook indicates a higher probability of above normal precipitation for Colorado, southern Wyoming, western Kansas, and western Nebraska. Equal chances of above, near, or below normal precipitation are predicted for the remainder of the Region. The seasonal outlooks combine the effects of long-term trends, soil moisture, and when applicable, the El Niño Southern Oscillation (ENSO) cycle. This Spring 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, (right) The Three-Month Precipitation Probability Outlook

Drought Watch

All states from North Dakota south through Kansas remained drought free this month. Categorical improvement occurred in southwest Colorado where recent precipitation has brought the snowpack up to near or above average. However, abnormally dry (D0) and moderate drought (D1) conditions have spread further into Wyoming due to a low snow pack. According to the United States Department of Agriculture, snowpacks of only 60 percent of normal were present in many locations. Drought conditions in Wyoming are expected to persist through May 2010, according to the U.S. Seasonal Drought Outlook released February 18th.



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 are 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	33.5	2.1	17.8	-4.7	41	2/19	-13	2/02	0.19	-0.02	90
Akron Washington County Airport	38.3	17.4	27.8	-4.4	50	2/03+	0	2/09	0.24	-0.12	67
Colorado Springs Municipal Airport	37.8	17.7	27.8	-4.0	49	2/24	8	2/15+	0.49	0.14	140
Grand Junction Walker Field Airport	36.3	20.3	28.3	-5.8	47	2/28	8	2/04	0.46	-0.04	92
Pueblo Memorial Airport	42.0	15.9	29.0	-5.6	56	2/13	2	2/23	0.77	0.51	296

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	34.7	20.2	27.5	-4.9	50	2/18	5	2/10	0.60	-0.13	82
Dodge City Regional Airport	39.5	21.2	30.4	-5.6	57	2/27	6	2/09	0.71	0.05	108
Goodland Renner Field	40.2	17.2	28.8	-3.6	54	2/17+	5	2/16+	0.60	0.16	136
Topeka Municipal Airport	36.4	20.8	28.6	-4.8	51	2/18	6	2/24	1.60	0.42	136
Wichita Mid-Continent Airport	40.3	24.4	32.4	-3.9	57	2/18	7	2/10	1.11	0.09	109

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	34.2	10.4	22.3	-5.8	48	2/27	-15	2/09	0.62	0.15	132
Grand Island Airport	31.3	16.4	23.8	-4.4	44	2/26	0	2/24+	0.66	-0.02	97
Lincoln Municipal Airport	30.3	14.8	22.6	-5.7	42	2/03	-2	2/10	0.99	0.33	150
Omaha Eppley International Airport	28.9	12.5	20.7	-7.3	37	2/18	-6	2/24	0.70	-0.10	87
Norfolk Karl Stefan Airport	26.6	12.5	19.6	-6.8	35	2/07+	-3	2/24+	0.93	0.17	122
North Platte Regional Airport	35.7	13.9	24.8	-4.6	50	2/02	-2	2/23	0.84	0.33	165
Valentine Miller Field	33.5	11.6	22.6	-4.1	47	2/27	-4	2/08	0.35	-0.13	73

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	18.6	2.5	11.1	-7.6	29	2/06+	-16	2/16	0.63	0.12	124
Fargo International Airport	19.4	0.7	10.1	-4.0	33	2/05	-19	2/24	0.86	0.27	146
Grand Forks International Airport	17.6	-0.8	8.4	-4.7	29	2/05	-20	2/24	0.44	-0.14	76
Theodore Roosevelt Airport	19.8	2.0	10.9	-10.3	35	2/25	-15	2/08+	0.13	-0.30	30
Williston International Airport	19.1	1.1	10.1	-6.7	28	2/06	-20	2/15	0.30	-0.09	77

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Source: National Weather Service Cooperative Observation Network Data

Data are retrieved through the Applied Climate Information System (ACIS).

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

February 2010 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	20.1	1.1	10.6	-8.1	33	2/05	-22	2/24	0.81	0.33	169
Huron Regional Airport	21.7	4.7	13.2	-7.8	35	2/04	-16	2/24	0.91	0.34	160
Rapid City Regional Airport	30.6	9.9	20.2	-7.0	47	2/26	-10	2/09	0.23	-0.23	50
Sioux Falls Joe Foss Field Airport	23.4	5.9	14.6	-6.1	35	2/04	-16	2/10	1.29	0.78	253

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	35.6	12.4	24.0	-2.7	46	2/27+	-14	2/14	0.53	-0.11	83
Cheyenne Municipal Airport	34.4	14.2	24.3	-4.5	47	2/03	-7	2/22	0.70	0.26	159
Lander Hunt Field Airport	30.5	12.7	21.6	-4.0	42	2/28+	-5	2/22	0.76	0.22	141
Laramie Regional Airport	27.2	3.9	15.6	-7.8	36	2/27+	-15	2/23+	0.15	-0.31	33
Rawlins Municipal Airport	32.0	12.0	22.0	-4.1	44	2/28	-8	2/21	0.12	-0.40	23
Sheridan County Airport	35.4	14.0	24.7	-2.2	47	2/26	-10	2/09	0.35	-0.22	61

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State Spotlight - North Dakota

F. Adnan Akyüz - State Climatologist, Barb Mullins
North Dakota State Climate Office, North Dakota State University



Precipitation:

Most of the February total precipitation ranged from 0.05 to 1.00 inches. The total monthly precipitation of less than 0.50 inches was recorded in the western part of the state, the northeast corner, and a small area in the south central regions. The remaining regions had between 0.50 and 1.00 inches of monthly precipitation. The percent of normal precipitation ranged from 25% to 300% of normal. Below normal precipitation was recorded in the west, the northeast corner, and a small area in the south central region with above normal precipitation falling elsewhere (Fig. 1). Most of the precipitation fell in the first half of the month with the second half of the month being quiet and dry. A storm event from the 5th through the 8th affected the central and eastern parts of the state. Snow totals ranged from 3 inches in the central regions to nearly 8 inches in the east. A snowfall event on the 13th covered an area from the north central to the southwest corner and produced totals ranging from 2 to 12 inches. The National Weather Service (NWS) reported a record 0.11 inches of precipitation at the Grand Forks airport on the 6th which broke the previous record of 0.07 inches set in 1988. The NWS also reported a record 0.16 inches of precipitation at the Jamestown airport on the 13th which tied the previous record set in 1962.

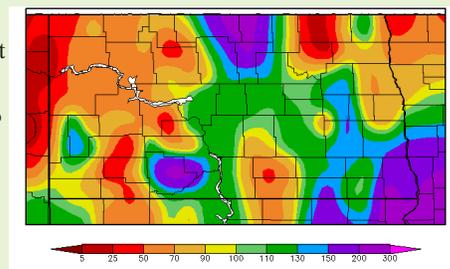


Figure 1. Precipitation Percent of Normal in February 2010 for North Dakota (HPRCC)

Temperature:

February average monthly temperatures ranged from 6°F in the north and northeast and gradually raising to 13°F in the southwest. February average temperatures were below normal across the state. The monthly departure from normal temperatures ranged from -1°F in the northeast corner and fell gradually to -10°F in the southwest corner (Fig. 2). Outside of a couple of days in the first week with above normal daily air temperatures, the majority of the month had below normal average daily air temperatures.

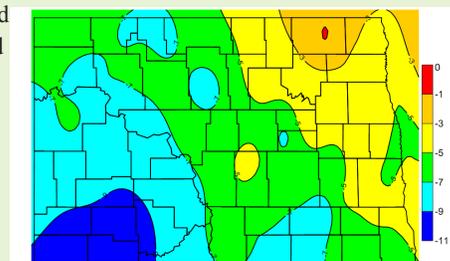


Figure 2. Temperature Departure from Normal in February 2010 for North Dakota (NDSCO)

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).

State Spotlight - Nebraska

Al Dutcher - State Climatologist

Nebraska State Climate Office, University of Nebraska - Lincoln

Overview

Below normal temperatures were the rule in Nebraska during the month of February 2010. All 173 stations available for analysis recorded below normal temperatures, with the most significant departures from normal recorded across the northern 1/3 of the Panhandle. Alliance had an average temperature of 19.4 F, which was 10.1 F below normal, with departures across the northern Panhandle running 6-8 F below normal at most locations.

The coldest periods statewide generally occurred from the 8th-10th and 21st-24th, while the warmest periods were the 2nd-4th, 14th-18th, and 26th-27th. The state high temperature was 59 F at Trenton Dam (Southwest Climate Division) on the 14th, while the lowest temperature was -15 F at Chadron Municipal Airport on the 9th. Therefore, the monthly temperature range between extremes was 74 F.

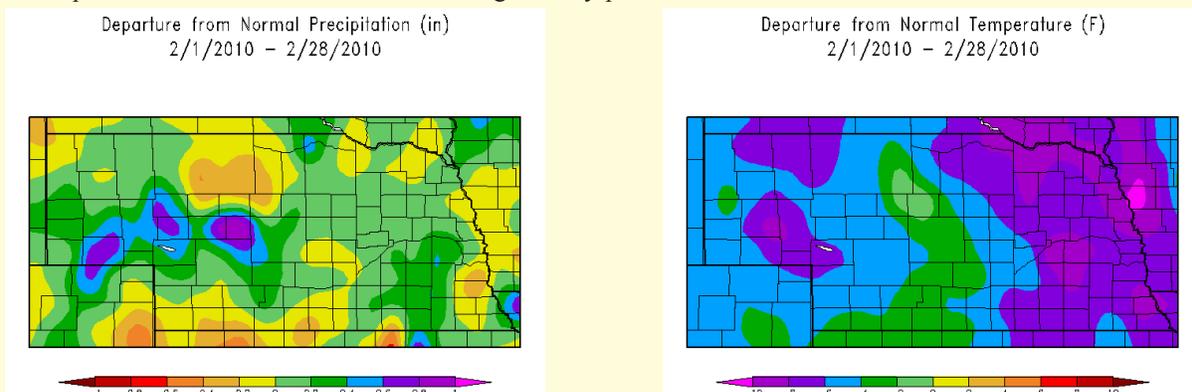
Amazingly, every reporting station across the Panhandle had a lower average temperature in February than in January. The most reasonable explanation for the cooler February temperatures was the increase in snow activity compared to the drier January conditions, along with the fact there was some semblance of a snow pack for much of February.

Ice accumulations on rivers and streams across eastern Nebraska were significant at months end. Platte River ice thickness approached 17 inches in the Fremont area the third week of February. Combined with deep snow packs holding 1-4 inches of water this led emergency planners to begin aerial drops of ash to speed up the ice melt on the Platte in the hopes of reducing the potential for ice jams once temperatures become warm enough to generate rapid snow melt.

There really wasn't any widespread significant snow storm activity during February, just numerous systems moving through the state producing light to moderate totals. The greatest 24-hour snow total was six inches at Bushnell, Lodgepole, and Weston 3 NW. Of the 100 stations available for snowfall analysis, 42 had a maximum 24-hour snowfall total of three inches or less.

Even though widespread snow storms were not observed during February, the endless stream of Alberta Clippers and western U.S. upper air ridge runners resulted in the majority of stations reporting above normal precipitation. Of the 140 stations available for analysis with at least 90% of the data available, 90 recorded above normal moisture. Salem 5 SW had the highest February moisture total with 1.58 inches, while York 3 N recorded the largest 24-hour total of 0.60 inches on the 5th.

Although temperatures were beginning to moderate at months end, a vast majority of the eastern ¼ of Nebraska still had at least an inch of snow on the ground at the end of February. On February 28th, there had been 84 consecutive days of snow depth one inch or greater. This streak began December 6, 2009 when the first snow storm of the winter season struck eastern Nebraska and deposited over six inches of snow during a 3-day period.



Above: Figure 1. Departure from 1971-2000 Normal Precipitation (left) and Figure 2. Departure from 1971-2000 Normal Temperature (right) for February 2010 for Nebraska (HPRCC).

The Nebraska State Climate Office is a part of the School of Natural Resources, University of Nebraska - Lincoln.

For more information about the School of Natural Resources at UNL: <http://www.sn timer.unl.edu>.

For more information on the University of Nebraska - Lincoln: <http://www.unl.edu>.

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>

National Weather Service: <http://www.weather.gov>

National Climatic Data Center: <http://ncdc.noaa.gov>

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>



Photo of the Nebraska Sandhills by Bill Sorensen - Senior Programmer - HPRCC

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