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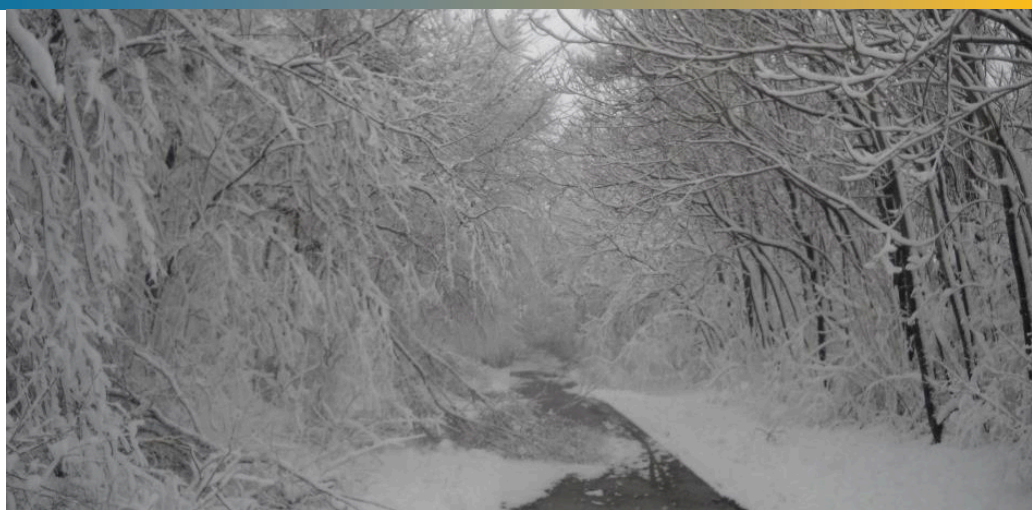

Early February snowstorm in Lincoln, Nebraska - Photo by Natalie Umphlett
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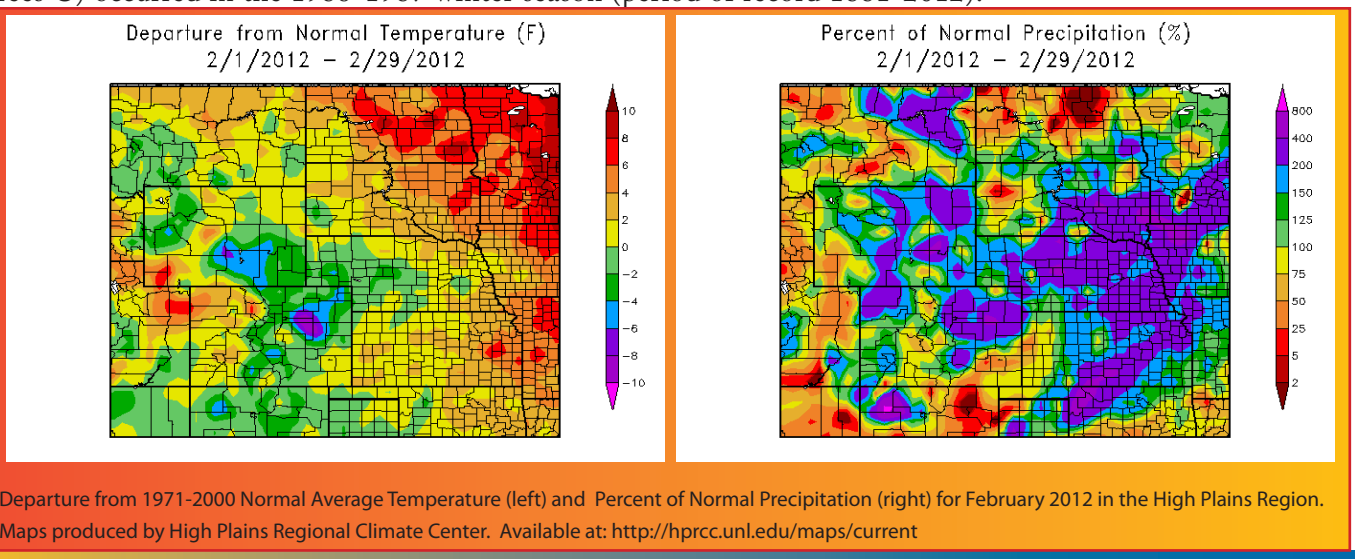
February 2012 Climate Summary

Region Breakdown

February 2012 was generally warmer and wetter than normal across the High Plains Region. While average temperatures were above normal for much of the Region, areas of central Colorado, western Nebraska, and southern and west-central Wyoming had below normal temperatures. The largest temperature departures occurred in east-central Colorado and south-central Wyoming where temperature departures were up to 8.0 degrees F (4.4 degrees C) below normal. However, it was especially warm, yet again, across the northern part of the Region where temperature departures ranged from 6.0-10.0 degrees F (3.3-5.6 degrees C) above normal.

Although the warmer than normal temperatures did not lead to any new February records, the continued warmth throughout this winter caused many locations in North Dakota, South Dakota, Nebraska, and Kansas to rank in the top 10 warmest winters on record. Topeka, Kansas had its 2nd warmest winter (December, January, and February) with an average temperature of 37.6 degrees F (3.1 degrees C). The record of 38.6 degrees F (3.7 degrees C) occurred in the winter of 1991-1992 (period of record 1887-2012). Fargo, North Dakota had its warmest winter on record with an average temperature of 22.1 degrees F (-5.5 degrees C). The old record of 22.0 degrees F (-5.6 degrees C) occurred in the 1986-1987 winter season (period of record 1881-2012).



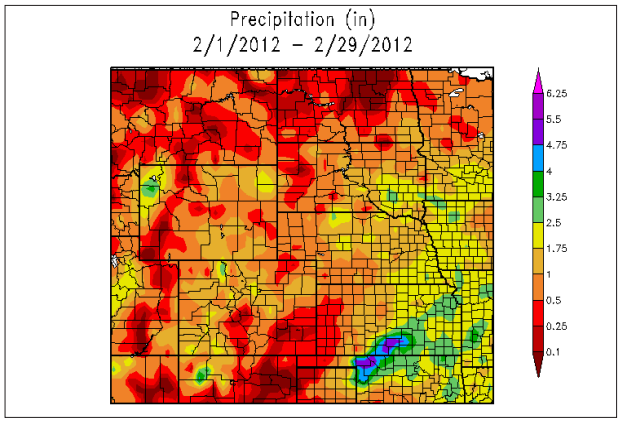
Departure from 1971-2000 Normal Average Temperature (left) and Percent of Normal Precipitation (right) for February 2012 in the High Plains Region.
Maps produced by High Plains Regional Climate Center. Available at: http://hprcc.unl.edu/maps/current

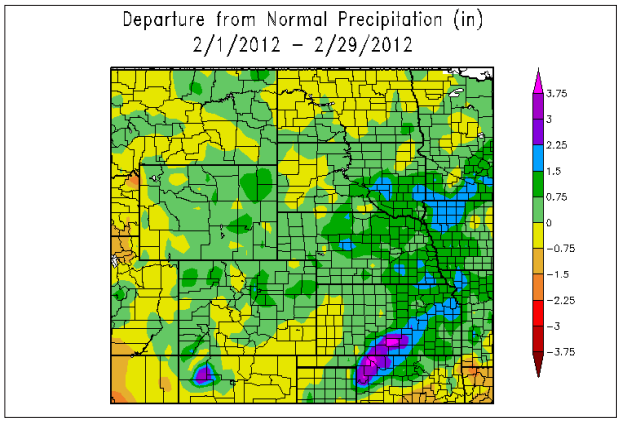
Precipitation Summary

February was an active month across the High Plains Region. The majority of the Region was wet this month; however, there were some drier areas as well. The driest portions of the Region, where precipitation was less than 25 percent of normal, included northern North Dakota and western South Dakota. Large areas of the Region had precipitation totals which were 200-400 percent of normal, including eastern Kansas, central and eastern Nebraska, eastern South Dakota, central and eastern Wyoming, and northern Colorado. By the month's end, several locations in Colorado, Kansas, and Nebraska ranked in the top 10 wettest Februaries on record. For instance, Akron 4E, Colorado, located in the northwestern part of the state, had its wettest February on record with 1.53 inches (39 mm) of liquid equivalent precipitation (period of record 1893-2012). The old record occurred in 1987 with 1.47 inches (37 mm) of precipitation. Because February precipitation is typically light, this seemingly small amount of precipitation at Akron 4E was actually 392 percent of normal precipitation. Further east, Wichita, Kansas had its 4th wettest February on record with 3.57 inches (91 mm) of precipitation (period of record 1888-2012). The wettest February occurred in 1915 with 4.61 inches (117 mm) of precipitation. Most of Wichita's monthly precipitation fell in one day. On February 3rd, 2.86 inches (72 mm) of rain fell and set two new records for Wichita – a new daily precipitation record for February 3rd and a new record for the highest one-day precipitation total for February.

Many storm systems moved through parts of the Region this February; however two systems – one at the beginning and one at the end of the month – were quite notable. After a warm and dry start to the year, February kicked off with a strong winter storm which affected Colorado, Kansas, Nebraska, and Wyoming. The system brought a combination of rain, snow, and even some thundersnow. By the end of the storm, a large swath of 6.0-12.0 inches (15-30 cm) of snow blanketed an area stretching from eastern Colorado and Wyoming into northern Kansas, and much of Nebraska. The heavy, wet snow caused numerous power outages, travel delays, and significant tree damage. In addition, this snowfall set many new daily records. For example, Lincoln, Nebraska received 11.1 inches (28 cm) of snow which beat the old daily record for February 4th by 5.4 inches (14 cm)! The old record of 5.7 inches (14 cm) occurred in 1971 (period of record for snowfall 1948-2012). Interestingly, this snowfall total was also the 4th highest 1-day snowfall total for any day for Lincoln.

The end of the month was also an active period. On February 28th, an intense low pressure system brought heavy snow to South Dakota, southern North Dakota, and northern Nebraska, and severe weather to Kansas and central Nebraska. Snow totals of 4.0-12.0 inches (10-30 cm) were reported across South Dakota and up to 9.0 inches (23 cm) of snow fell across southern North Dakota. This same storm brought severe weather, including tornadoes, hail, and high winds to areas to the south. A total of 8 tornadoes were reported in Kansas and Nebraska. According to the National Weather Service in Topeka, Kansas an EF2 tornado (wind speeds of 111-135 mph or 179-217 km/h) caused significant damage to buildings, including an apartment complex and a church, in Harveyville, Kansas which is located in the northeastern part of the state. While most of the severe weather was confined to Kansas, the first tornadoes to ever be reported in Nebraska in February also occurred. According to the National Weather Service in North Platte, Nebraska, an EF0 tornado (wind speeds of 65-85 mph or 105-137 km/h) was confirmed 21 miles northeast of North Platte, Nebraska or 9 miles west southwest of the small town of Gandy, Nebraska. A little later that day, another EF0 tornado occurred near Greeley, Nebraska.





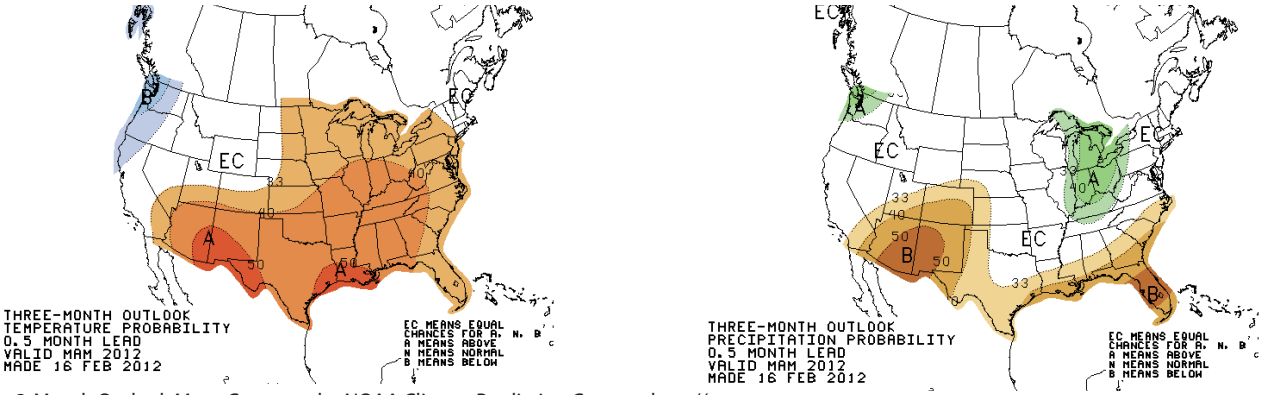
Above: Total precipitation (inches) (left) and Departure from Normal Precipitation (inches) (right) for February 2012 in the High Plains Region. These maps are produced by HPRCC and can be found on the Current Climate Summary Maps page at: http://hprcc.unl.edu/maps/current.

The High Plains Regional Climate Center is one of the 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.

ACIS
Applied Climate Information System - Regional Climate Centers

Climate Outlook

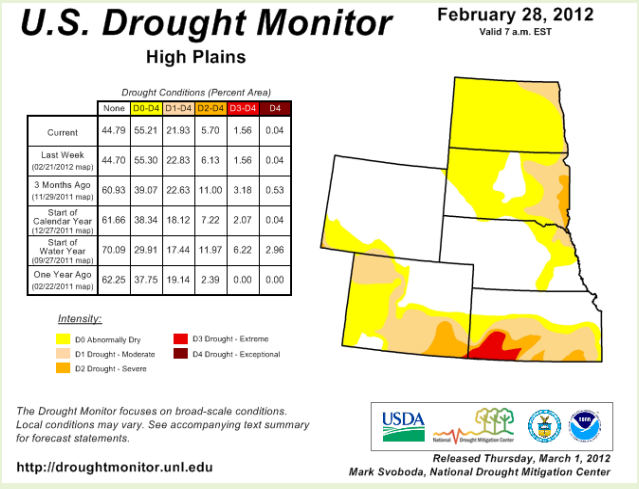
La Niña conditions are present in the equatorial Pacific and are expected to transition to neutral conditions. The temperature outlook indicates a higher probability of above normal temperatures for Kansas, the southern half of Colorado, and the eastern halves of Nebraska, South Dakota, and North Dakota. The precipitation outlook indicates a higher probability of below normal precipitation for western Kansas, southwestern Nebraska, and the majority of Colorado. Equal chances of above, near, or below normal precipitation and temperature are predicted elsewhere in the Region. The seasonal outlooks combine the effects of long-term trends, soil moisture, and when applicable, the El Niño Southern Oscillation cycle (ENSO).

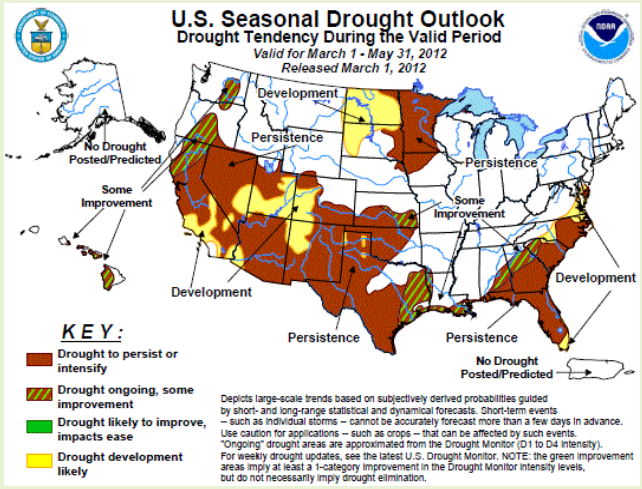


Above: 3-Month Outlook Maps Courtesy the NOAA Climate Prediction Center - http://www.cpc.ncep.noaa.gov
(left) The Three-Month Temperature Probability Outlook, (right) The Three-Month Precipitation Probability Outlook

Drought Watch

There were a few changes to the U.S. Drought Monitor this month. Luckily, most of the changes were improvements. Heavy precipitation led to a downgrade of some of the extreme drought conditions (D3) in south-central Kansas. Additionally, abnormally dry conditions (D0) in north-central and southeast Nebraska were also eliminated due to the precipitation from the early February winter storm. By the end of the month, because of ongoing dryness, D0 expanded into south-central South Dakota and severe drought conditions (D2) expanded slightly in eastern South Dakota. Other areas of the High Plains Region remained largely unchanged. According to the U.S. Seasonal Drought Outlook, all drought conditions in the Region are expected to persist through May, except for east-central Kansas, where conditions are expected to improve somewhat. Additionally, drought conditions are expected to develop in western Colorado and the Dakotas.





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 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://droughtmonitor.unl.edu/
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	41.5	7.1	24.3	1.7	54	02/25	-3	02/04	0.28	0.06	127
Akron Washington County Airport	36.1	17.6	26.8	-5.5	53	02/02	4	02/11	0.46	0.08	121
Colorado Springs Municipal Airport	43.7	20.4	32.0	0.2	65	02/22	10	02/05	0.29	-0.08	78
Grand Junction Walker Field Airport	47.1	24.7	35.9	1.6	59	02/27+	16	02/20	0.43	-0.09	83
Pueblo Memorial Airport	46.9	20.3	33.6	-1.2	69	02/22	4	02/24	0.60	0.32	214

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	46.9	25.2	36.1	3.5	64	02/22	4	02/12+	2.28	1.50	292
Dodge City Regional Airport	47.3	25.6	36.4	0.3	73	02/28	9	02/11	0.96	0.26	137
Goodland Renner Field	45.6	19.9	32.7	0.2	67	02/22	1	02/11	0.42	-0.05	89
Topeka Municipal Airport	50.7	29.1	39.9	6.3	66	02/26	8	02/12	2.72	1.48	219
Wichita Mid-Continent Airport	51.4	29.5	40.5	4.0	74	02/22	12	02/11	3.57	2.49	331

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	42.1	15.3	28.7	0.5	57	02/25	-14	02/11	0.59	0.10	120
Grand Island Airport	40.9	19.3	30.1	1.8	61	02/01	-7	02/11	1.05	0.33	146
Lincoln Municipal Airport	41.3	20.0	30.6	2.2	63	02/01	-5	02/12	2.10	1.40	300
Omaha Eppley Airfield	40.7	22.1	31.4	3.2	61	02/01	0	02/21+	2.29	1.44	269
Norfolk Karl Stefan Airport	39.8	18.7	29.2	2.7	59	02/01	-4	02/12	1.73	0.93	216
North Platte Regional Airport	41.4	15.1	28.3	-1.3	57	02/28	-3	02/11	1.23	0.69	228
Valentine Miller Field	41.2	13.3	27.2	0.5	54	02/14+	-14	02/11	2.27	1.77	454

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	34.9	9.5	22.2	3.9	53	02/05	-12	02/11	0.48	-0.05	91
Fargo International Airport	30.5	12.4	21.4	7.2	47	02/19	-8	02/10	0.95	0.33	153
Grand Forks International Airport	29.3	8.8	19.0	5.8	43	02/05	-11	02/10	0.51	-0.10	84
Theodore Roosevelt Airport	33.7	9.9	21.8	0.4	52	02/05	-14	02/11	0.31	-0.13	70
Williston International Airport	32.0	8.9	20.5	3.5	47	02/18	-16	02/27	0.30	-0.11	73

All Data are Preliminary and Subject to Change. + indicates multiple dates, latest date listed.
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 2012 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	35.5	12.2	23.9	5.0	50	02/01	-10	02/11	0.87	0.36	171
Huron Regional Airport	37.2	14.2	25.7	4.6	53	02/19+	-8	02/11	2.06	1.46	343
Pierre Regional Airport	38.3	14.0	26.1	1.5	52	02/01	-8	02/11	1.20	0.64	214
Rapid City Regional Airport	40.6	13.7	27.1	-0.3	56	02/25	-8	02/11	0.38	-0.10	79
Sioux Falls Joe Foss Field Airport	36.4	16.7	26.6	5.6	50	02/01	-5	02/11	2.43	1.89	450

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	34.9	15.4	25.2	-1.6	49	02/22	4	02/20	0.88	0.21	131
Cheyenne Municipal Airport	35.4	15.4	25.4	-3.4	53	02/25	5	02/12+	0.88	0.42	191
Lander Hunt Field Airport	36.3	15.6	26.0	0.2	52	02/22	7	02/20	0.87	0.31	155
Laramie Regional Airport	31.1	8.4	19.8	-3.7	42	02/27+	-4	02/15	0.43	-0.05	90
Rawlins Municipal Airport	32.1	10.6	21.3	-4.9	40	02/27+	2	02/27+	0.64	0.11	121
Sheridan County Airport	38.9	16.1	27.5	0.5	52	02/25	-2	02/11	0.94	0.34	157

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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.

Winter 2011-2012 Temperature Rankings - Highlights

Seasonal Records

Temperature in degrees F

Location	Winter Temperature/Rank	Record or Previous Record/Year	Period of Record
Concordia, KS	34.7/8th warmest	38.1/winter of 1991-1992	1885-2012
Topeka, KS	37.6/2nd warmest	38.6/winter of 1991-1992	1887-2012
Wichita, KS	38.3/6th warmest	40.9/winter of 1991-1992	1888-2012
Grand Island, NE	30.6/13th warmest	35.1/winter of 1991-1992	1895-2012
Lincoln, NE	29.9/19th warmest	35.2/winter of 1991-1992	1887-2012
Norfolk, NE	28.8/8th warmest	33.0/winter of 1991-1992	1893-2012
Omaha, NE	30.8/12th warmest	34.4/winter of 1877-1878	1871-2012
Valentine, NE	28.5/10th warmest	31.3/winter of 1930-1931	1889-2012
Bismarck, ND	23.4/7th warmest	25.8/winter of 1930-1931	1874-2012
Fargo, ND	22.1/warmest	22.0/winter of 1986-1987	1881-2012
Grand Forks, ND	19.2/2nd warmest	19.6/winter of 1982-1983	1893-2012
Williston, ND	22.1/4th warmest	26.4/winter of 1930-1931	1894-2012
Aberdeen, SD	23.1/5th warmest	27.6/winter of 1930-1931	1893-2012
Huron, SD	25.5/6th warmest	28.8/winter of 1930-1931	1881-2012
Rapid City, SD	28.3/16th warmest	34.1/winter of 1991-1992	1942-2012
Sioux Falls, SD	25.8/7th warmest	28.6/winter of 1930-1931	1893-2012

All Data are Preliminary and Subject to Change.
* indicates multiple records, latest year is listed
Source: National Weather Service Cooperative Observation Network Data

State Spotlight - North Dakota

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

Precipitation:

The High Plains Regional Climate Center (HPRCC) February percent of normal precipitation was less than 50% for much of northern North Dakota with the driest region of less than 5% in the northeast, including parts of Towner, Benson, and Pierce Counties. Amounts of greater than 100% of normal precipitation fell in the far southern counties with the highest amounts of greater than 200% falling in the southeast, including parts of Richland, Sargent, and Cass Counties (Figure 1. High Plains Regional Climate Center). According to the National Weather Service (NWS), the first half of the month was mostly dry with the last half of the month having four primary snowfall events. On the 15th, up to 3" of total snowfall fell in western ND. On the 20th through the 21st, 2" to 5" of snow fell in eastern ND. A highly variable snow storm on the 25th through the 27th had 2" to 8" of total snowfall. The higher amounts recorded from the 25th-27th snowstorm was Lidgerwood with 9" and Minot REC with 8.5". The snow storm on the 29th hit hardest in the south central and southeast with totals between 4" and 7" of snow. According to the U.S. Drought Monitor published on February 28th, all of ND had at least abnormally dry conditions with the northeast corner having moderate drought conditions.

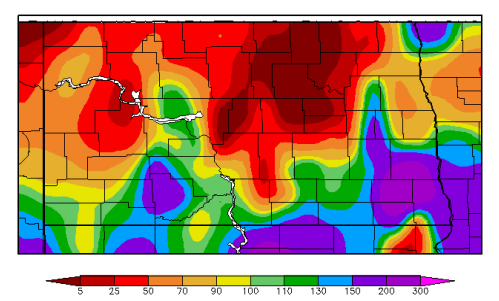

Figure 1. Percent of Normal Precipitation in February 2012 for North Dakota (High Plains Regional Climate Center)

Temperature:

NDAWN February monthly average air temperatures ranged from 14 °F to 23 °F. NDAWN departure from normal temperatures were above normal across most of the state and ranged from 0 °F to 9 °F (Figure 2. North Dakota State Climate Office). Daily average air temperatures were below normal on the 10th through the 12th and the 24th through the 28th. Otherwise, daily average air temperatures were primarily above normal. The average air temperature for the winter of 2011-2012 (Dec.-Feb.) ranked in the top 10 warmest on record at several locations. According to the Applied Climate Information System (ACIS), Fargo area had the warmest winter average air temperature on record with 22.1 °F. Grand Forks area ranked the 2nd warmest average air temperature with 19.2 °F. Bismarck area was 7th warmest with 23.4 °F. Williston area was 4th warmest with an average air temperature of 22.1 °F.

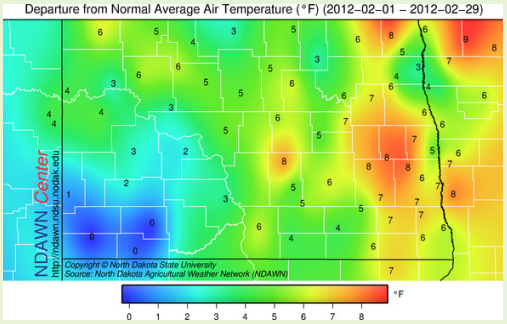

Figure 2. Temperature Departure from Normal in February 2012 for North Dakota (North Dakota State Climate Office)

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).

State Spotlight - Wyoming

Tony Bergantino - Assistant State Climatologist
Wyoming State Climate Office, University of Wyoming

Snowpack

Snowpack improved again in February for many areas. At the end of the month the Upper Bear basin in the southwest remained at about 70% while the Upper North Platte, Little Snake, and Lower Green in the southern and southwest portions of the state were at 89%, 84%, and 82% respectively. The Wind, Upper Green, and Snake River basins in the west-central part of the state were at 91%, 93%, and 93%. Moving to the northwest corner of the state, conditions continued to improve with the Madison-Yellowstone at 95% and the Shoshone basin right at normal with 99% of snowpack. In the southeast in the Lower North Platte, conditions were similar with snowpack being at 101%. Finally the northern and northwest portions of the state were even better with the Bighorn, Belle Fourche, and Powder-Tongue basins improving to 110%, 115%, and 132% respectively. With the exception of the south central and southwest, conditions are good as we move into March.

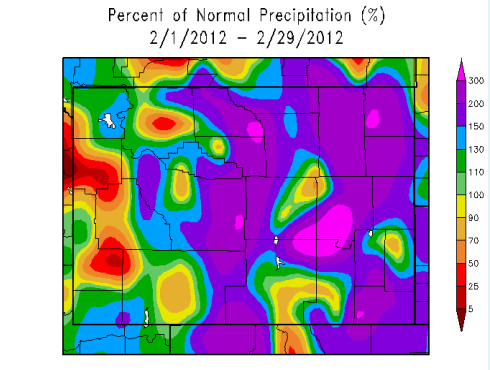

Figure 1. Map showing February 2012 precipitation as a percentage of historical averages (vs. 1971-2000 normal period) for Wyoming. Courtesy HPRCC.

Precipitation

February saw improvement in many areas of the state, especially in the northern half. The eastern half of the state also either remained the same or, in many locations, improved. The southern tier of counties in the state, where D0, D1, and (just recently) D2 drought levels have been introduced saw a little improvement, but locations in Sweetwater, Sublette, and parts of Lincoln County are still wanting for precipitation.

Temperature

The above normal temperatures for January were followed by some well below normal temperatures in February in many places in Wyoming. With a few exceptions, the entire eastern half of the state saw normal to below normal temperatures with the southwest experiencing monthly average temperatures 2°F to 5°F below normal. There were also cooler averages in the western counties. There were exceptions in counties such as Park, Big Horn, Fremont, Washakie, and Sweetwater where temperatures, though mostly less "above-average" than in January, were still above normal.

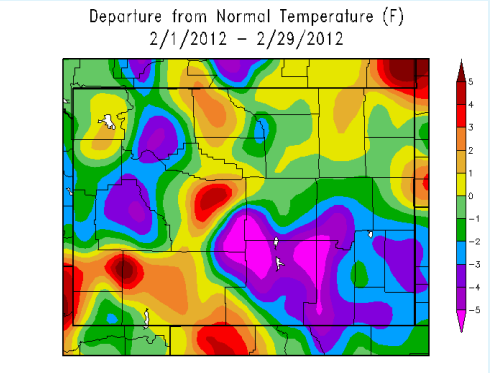

Figure 2. Map showing mean February 2012 temperatures from historical averages (vs. 1971-2000 normal period) for Wyoming. Courtesy HPRCC.

The D0 (Abnormally Dry) category introduced to the southern and southwest portion of the state as well as the northeastern corner of Crook County remained in place during February. The D1 (Moderate Drought) in southeast Sweetwater/southwest Carbon counties remained as well. The D1 category was also introduced to portions of Uinta and Teton counties as well as a small section of southwestern Sweetwater County. Additionally, D2 (Severe Drought) was introduced to the extreme southwest corner of Uinta county on 21 February when the D1 category there was expanded to the northeast. This marks the first time since 29 June 2010 where there has been any D2 shown in Wyoming.

This report was prepared by the Wyoming State Climate Office, which is part of the Wyoming Water Resources Data System at the University of Wyoming. More information can be found at: http://www.wrds.uwyo.edu and http://www.wrds.uwyo.edy/sco/climate_office.html. Special thanks to the National Weather Service's Riverton and Cheyenne Offices and the NRCS Casper Office for supplying much of the data and information used in this report.

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 throughout the nation, 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

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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