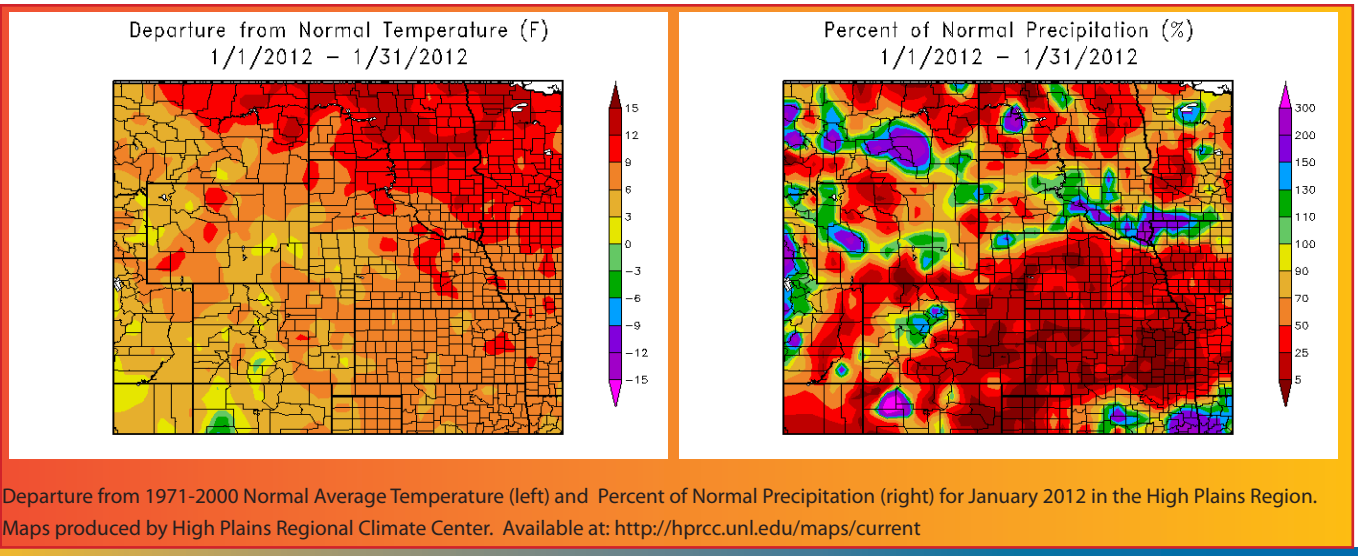
727 Hardin Hall
3310 Holdrege Street
Lincoln, NE 68583-0997
402 472-6706
Fax 402 472-8763
http://hprcc.unl.edu

A snow-free Fargo, North Dakota - Photo by Holly Lussenden
http://hprcc.unl.edu

January 2012 Climate Summary

Region Breakdown

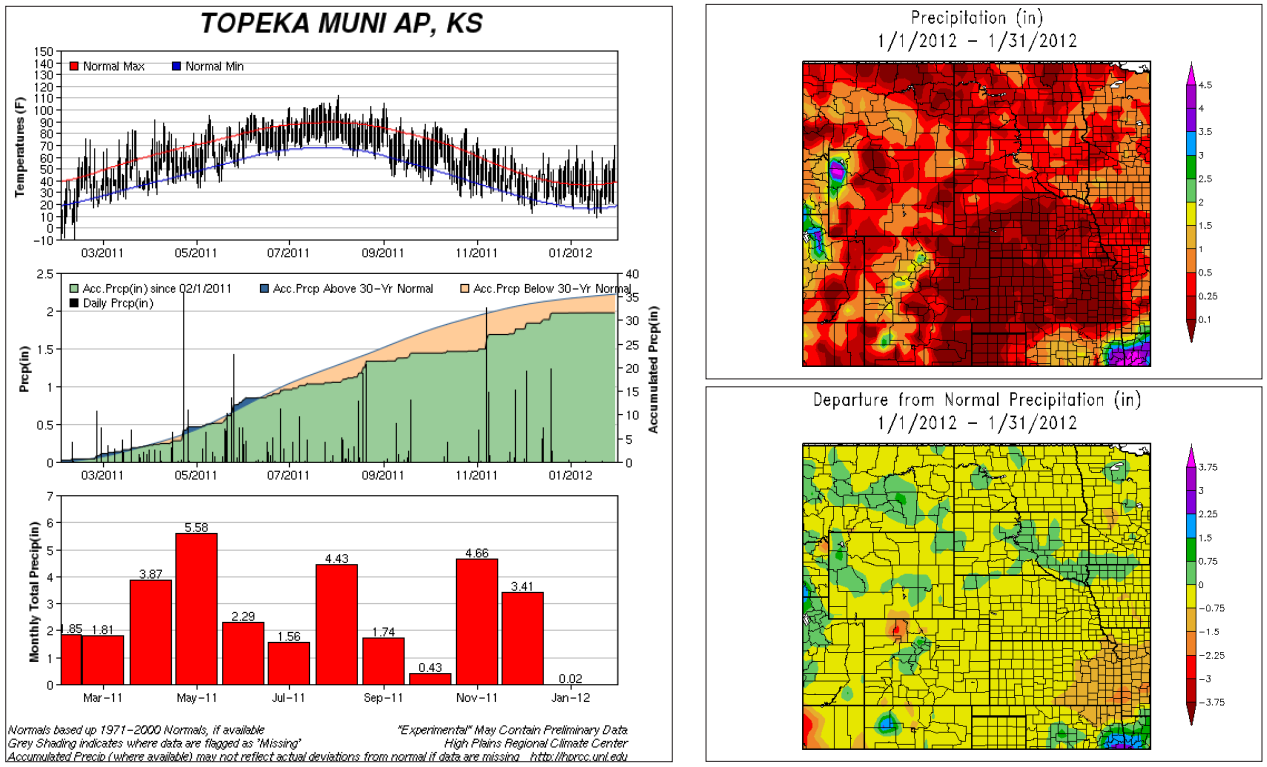
January 2012 was warm and dry across the High Plains Region. Cold arctic air stayed well to the north, with some parts of Alaska having their coldest January on record. Locations here in the High Plains however, enjoyed unseasonably warm temperatures. Most areas of the Region had temperature departures which were just above normal up to 9.0 degrees (5.0 degrees C) above normal. The largest temperature departures in the Region occurred in the Dakotas where some locations had average temperatures which were 12.0-15.0 degrees F (6.7-8.3 degrees C) above normal. Due to the unseasonably warm temperatures, many locations ranked in the top 15 warmest Januaries on record. For example, Grand Forks, ND had its 4th warmest January on record with an average temperature of 16.4 degrees F (-8.7 degrees C), which was 11.1 degrees F (-11.6 degrees C) above normal (period of record 1893-2012). The warmest January in Grand Forks occurred just a few years ago in 2006, with an average temperature of 21.3 degrees F (-5.9 degrees C). In addition to breaking into the top 15 warmest Januaries, numerous locations set new records for the warmest temperatures ever recorded in January. For instance, Omaha, NE set a new record high of 69 degrees F (20.6 degrees C) on January 30th. Not only was this a new record for that day, this tied as the warmest temperature ever recorded in January in Omaha (period of record 1871-2012). Another example is Aberdeen, SD which had a new record high of 63 degrees F (17.2 degrees C) on January 5th. This beat out the previous all-time high temperature record for January by 3 degrees F (1.7 degrees C)! The previous record of 60 degrees F (15.6 degrees C) was set January 24, 1981.



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

Precipitation Summary

January 2012 was fairly dry across the High Plains Region. Liquid equivalent precipitation was less than 25 percent of normal in many areas of Kansas, Nebraska, eastern Colorado, and North Dakota. Many locations in Colorado, Kansas, and Nebraska received no measurable precipitation this month. Although January liquid equivalent precipitation is usually light, the ongoing lack of rain and snow caused drought conditions to develop or worsen in these dry areas. In addition, many locations ranked in the top 10 driest Januaries on record. Much of eastern Kansas received less than 5 percent of normal precipitation. For instance Topeka, KS which received only 0.02 inches (0.5 mm) of precipitation, or 2 percent of normal precipitation, had its 2nd driest January on record (period of record 1887-2012). The driest January occurred in 1986 when no measurable precipitation was received. Another location that had a notably dry January was Laramie, WY. Laramie only recorded a trace amount of precipitation, which made this January the driest on record (period of record 1948-2012). The previous record was set in both 1986 and 2006, when only 0.03 inches (0.8 mm) of liquid equivalent precipitation fell. Although most of the Region was dry, a few light snow events did pass through. A few areas received at least 150 percent of normal including southern South Dakota and isolated pockets of western North Dakota, western Wyoming, and north-central Colorado.



Above: Maximum, minimum, and normal temperatures, accumulated precipitation, and monthly total precipitation for Topkea, KS over the past year (top left). Total precipitation (inches) (top right) and Departure from Normal Precipitation (inches) (bottom right) for January 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.

Why has it been so warm?

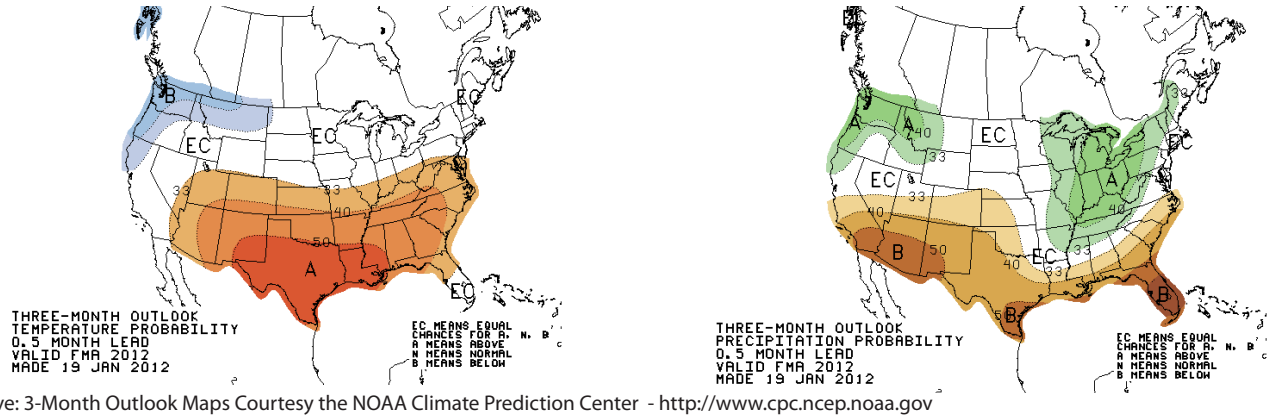
All this warm weather has left many people wondering why the High Plains has been experiencing the spring-like weather this winter. One reason is the Arctic Oscillation (AO). The AO moves between a positive phase and a negative phase and when the AO is in a positive phase, the High Plains Region tends to have warmer than normal temperatures. For much of this winter the AO has been in a positive phase. In addition, the effects of the AO are strong enough to override the effects of ENSO (El Niño and La Niña). So, although this has been a La Niña winter (with colder than normal temperatures expected in the northern Plains), the effects of the positive AO dominated and warmer than normal conditions prevailed. Another reason for the warmer than normal temperatures is the lack of snow cover in not only the High Plains, but also in much of Canada. When there is snow on the ground much of the sun's energy is used to melt the snow or is reflected back to space. This energy cannot be used to heat the ground. Without snow cover however, the energy can be used to heat the ground and air instead. Since many areas to the north have been snow-free, the northerly winds that usually bring cold air, have brought milder air instead.

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

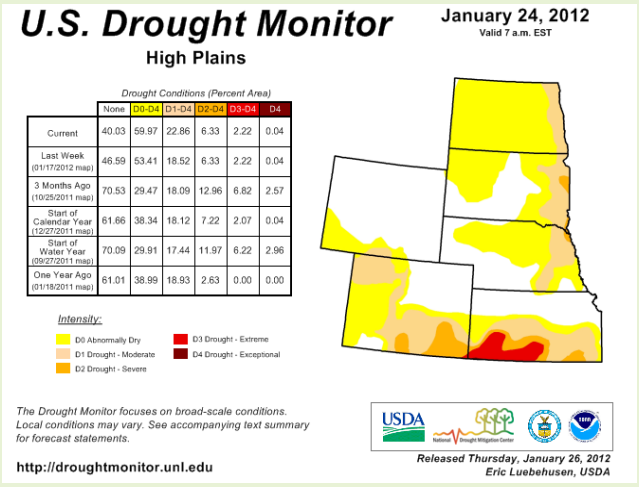
La Niña conditions are present in the equatorial Pacific and are expected to continue into spring. The temperature outlook indicates a higher probability of above normal temperatures for Colorado, Kansas, far southern Wyoming, and southwestern Nebraska. A higher probability for below normal temperatures exists for far western North Dakota. The precipitation outlook indicates a higher probability of above normal precipitation for northwestern Wyoming. Meanwhile, most of Colorado, the western half of Kansas, and southwestern Nebraska have a higher probability of below normal precipitation. 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).

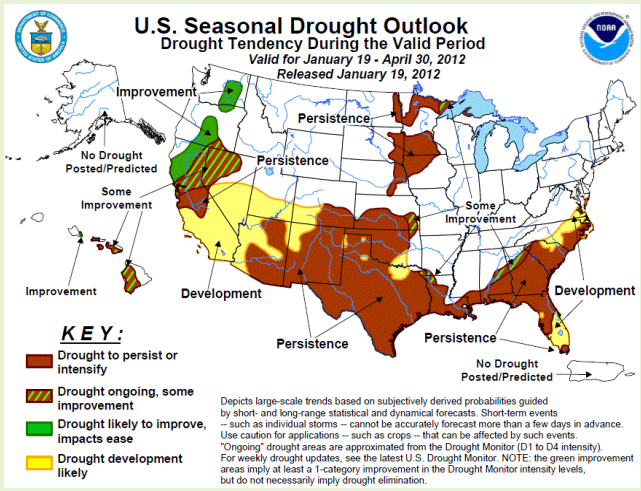


Above: 3-Month Outlook Maps Courtesy the NOAA Climate Prediction Center - http://www.cpc.ncep.noaa.gov
(left) The Three-Month Temperature Probability Outlook, (right) The Three-Month Precipitation Probability Outlook

Drought Watch

The U.S. Drought Monitor had many changes this month. Abnormally dry (D0) conditions spread to western areas of the Dakotas and also through north and central Nebraska. Moderate drought (D1) conditions in eastern North Dakota spread to include all areas near the Minnesota border. Western Colorado and southwestern Wyoming also had degradations this month as D0 developed and spread during the middle of the month. By the end of the month, D1 had developed in central and northwestern Colorado and south-central Wyoming. Low water-year-to-date (the water year starts October 1) precipitation led to this degradation. Except for a small expansion of D0 in western Kansas, drought conditions there remained largely the same. According to the U.S. Seasonal Drought Outlook, released January 19th, drought conditions in portions of the Dakotas, Nebraska, eastern Colorado, and western Kansas were expected to persist, while drought conditions in eastern Kansas were expected to improve. Drought conditions in western Colorado were expected to develop.





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	41.2	1.8	21.5	6.8	52	01/20	-10	01/14	0.06	-0.19	24
Akron Washington County Airport	48.5	18.9	33.7	6.6	67	01/05	-5	01/17	0.03	-0.30	9
Colorado Springs Municipal Airport	50.6	21.9	36.2	8.1	66	01/19	5	01/12	0.02	-0.26	7
Grand Junction Walker Field Airport	44.0	19.3	31.6	5.5	57	01/20	4	01/17	0.37	-0.23	62
Pueblo Memorial Airport	52.5	19.7	36.1	6.8	69	01/19	6	01/12	0.03	-0.30	9

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	46.3	22.0	34.1	7.5	70	01/30	4	01/21	0.32	-0.34	48
Dodge City Regional Airport	49.7	23.2	36.4	6.3	66	01/05	12	01/21	0.07	-0.55	11
Goodland Renner Field	50.6	18.5	34.6	7.0	73	01/05	-1	01/17	0.09	-0.34	21
Topeka Municipal Airport	50.1	22.7	36.4	9.2	70	01/30+	9	01/18	0.02	-0.93	2
Wichita Mid-Continent Airport	51.3	24.5	37.9	7.7	65	01/31	11	01/18	0.03	-0.81	4

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	44.7	12.0	28.4	5.5	63	01/05	-14	01/17	0.39	-0.07	85
Grand Island Airport	45.1	19.4	32.2	9.8	69	01/30	2	01/19	0.16	-0.38	30
Lincoln Municipal Airport	43.4	16.6	30.0	7.6	70	01/30	4	01/13	0.16	-0.51	24
Omaha Eppley Airfield	41.9	20.1	31.0	9.3	69	01/30	6	01/19+	0.06	-0.71	8
Norfolk Karl Stefan Airport	42.1	16.8	29.4	9.0	70	01/05	0	01/19	0.18	-0.39	32
North Platte Regional Airport	47.2	11.9	29.5	6.3	69	01/05	-4	01/17	0.12	-0.27	31
Valentine Miller Field	44.3	14.9	29.6	8.8	69	01/05	-13	01/17	0.19	-0.11	63

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	34.5	10.9	22.7	12.5	59	01/05	-11	01/19+	0.30	-0.15	67
Fargo International Airport	29.3	9.9	19.6	12.8	55	01/05	-17	01/19	0.58	-0.18	76
Grand Forks International Airport	26.2	6.6	16.4	11.1	47	01/05	-17	01/19	0.38	-0.30	56
Theodore Roosevelt Airport	36.0	11.6	23.8	9.6	62	01/05	-14	01/18	0.12	-0.25	32
Williston International Airport	32.0	9.7	20.9	12.9	58	01/05	-19	01/19	0.10	-0.44	19

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.

January 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	33.1	9.4	21.3	10.3	63	01/05	-13	01/19	0.70	0.22	146
Huron Regional Airport	35.3	12.5	23.9	9.7	65	01/05	-9	01/31	0.73	0.24	149
Pierre Regional Airport	38.0	14.8	26.4	8.6	66	01/05	-8	01/19	0.59	0.07	113
Rapid City Regional Airport	44.4	14.9	29.6	7.2	73	01/05	-7	01/17	0.31	-0.06	84
Sioux Falls Joe Foss Field Airport	34.6	13.3	23.9	9.9	62	01/05	-10	01/21	0.75	0.24	147

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	37.8	18.2	28.0	5.7	51	01/05	-2	01/16+	0.67	0.09	116
Cheyenne Municipal Airport	45.0	20.1	32.5	6.6	62	01/05	1	01/17	0.13	-0.32	29
Lander Hunt Field Airport	39.2	16.0	27.6	7.3	52	01/19	-5	01/17+	0.44	-0.08	85
Laramie Regional Airport	39.6	13.0	26.3	6.0	54	01/05	-8	01/12+	0.00	-0.38	0
Rawlins Municipal Airport	37.3	17.1	27.2	4.2	50	01/05	-5	01/11	0.07	-0.49	12
Sheridan County Airport	41.5	14.9	28.2	6.9	67	01/05	-12	01/17+	0.35	-0.42	45

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New January Records - Highlights

Highest temperature ever recorded in January

Temperature in degrees F

Location	New Record/Date	Old Record/Date	Period of Record
Ainsworth, NE	70, 1/05/2012	tie, 1/26/2002	1905-2012
Lodgepole, NE	70, 1/06/2012	tie, 1/21/1950*	1894-2012
Omaha, NE	69, 1/30/2012	tie, 1/25/1944	1871-2012
O Neill, NE	71, 1/06/2012	tie, 1/27/2002	1896-2012
West Point, NE	69, 1/06/2012	68, 1/16/2006*	1892-2012
Bottineau, ND	54, 1/06, 2012	50, 1/20/1944	1893-2012
Center 4 SE, ND	61, 1/05/2012	60, 1/23/1981	1938-2012
Crosby, ND	56, 1/05/2012	51, 1/08/2002*	1907-2012
Fargo, ND	55, 1/05/2012	54, 1/20/1908	1881-2012
Williston, ND	58, 1/05/2012	55, 1/23/1944	1894-2012
Willow City, ND	55, 1/06/2012	50, 1/11/1990	1893-2012
Aberdeen, SD	63, 1/05/2012	60, 1/24/1981*	1893-2012
Alexandria, SD	69, 1/05/2012	68, 1/29/1931	1893-2012
Cottonwood 2 E, SD	73, 1/06/2012	72, 1/09/2002	1909-2012
Huron, SD	65, 1/05/2012	64, 1/19/1900	1881-2012
Pickstown, SD	74, 1/06/2012	71, 1/27/2002	1948-2012

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) January percent of normal precipitation was less than 90% for most of North Dakota (Figure 1. High Plains Regional Climate Center). Precipitation fell in the east on the 1st. The 2nd through the 10th was quiet with little to no precipitation across the state. There was on and off precipitation that fell throughout the remainder of the month. Based on the latest U.S. Drought Monitor published on January 24, 2012 eastern ND, encompassing nearly 12% of the state, was experiencing moderate drought.

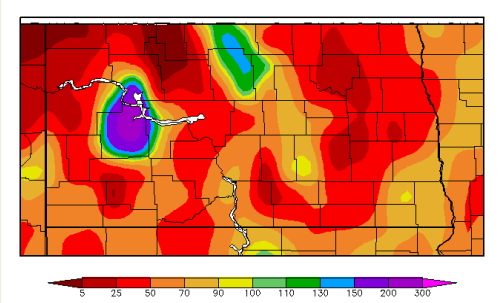

Figure 1. Percent of Normal Precipitation in January 2012 for North Dakota (High Plains Regional Climate Center)

Temperature:

NDAWN December average air temperatures ranged from 15 °F to 25 °F. NDAWN departure from normal temperatures were above normal across the state and ranged from 9 °F to 15 °F (Figure 2. North Dakota State Climate Office). From the 3rd through the 10th average air temperatures were far above normal across the state. Temperatures dipped to near normal and below throughout the middle of the month. From the 22nd through to the end of the month temperatures were mostly near normal or above across the state. Based on the Applied Climate Information System (ACIS), Fargo area maximum air temperature for January ranked 4th warmest with 29.3 °F, Bismarck area tied 1908 for 6th warmest with 34.5 °F, and Williston area ranked 7th with 32.0 °F.

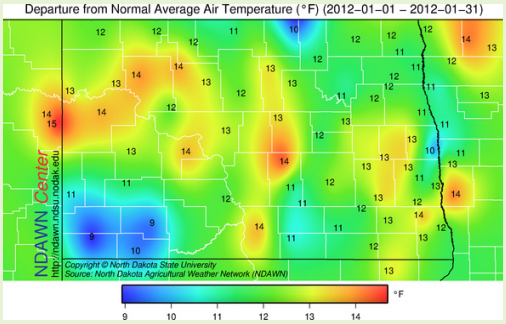

Figure 2. Temperature Departure from Normal in January 2012 for North Dakota (North Dakota State Climate Office)

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 continued to be of concern in January but there was some improvement. At the end of January, the Upper Bear, Upper North Platte, and Little Snake basins were at only about 70% of normal while the Snake, Wind, Upper Yellowstone, Lower North Platte, and the Upper and Lower Green basins ranged from about 85% to 95%. The Belle Fourche, Shoshone, and Bighorn basins are doing better with snowpacks generally around normal. Only the Powder-Tongue basin is above normal at almost 120%.

Precipitation

January was dry for the north central part of the state. The counties of Park, Washakie, Big Horn, Hot Springs, Fremont, Sheridan and Johnson all saw well below normal precipitation amounts (less than 50% of normal). The far west counties of Teton and Lincoln and parts of Uinta were about normal to slightly above normal which was an improvement from last month. Dryness persisted in the southern portion of the state causing the introduction of Moderate Drought in parts of Sweetwater and Carbon counties.

Temperature

The entire state had above normal temperatures for the month of January with some stations reporting in at more than 10°F above normal. This was especially so in the north central areas of the state, i.e. the Wind/Big Horn basins and parts of northwestern Sweetwater County/southeastern Lincoln County.

The D0 (Abnormally Dry) category that was introduced into the very northeastern part of Crook County on 08 November remained. Because of the poor snowpack in the southwest, D0 was also introduced to Uinta, the southern part of Lincoln, and the southwestern half of Sweetwater counties on 10 January. As conditions deteriorated, this was extended east along the southern third of Carbon and the very southwest portion of Albany a week later. On 24 January, the D0 was expanded northward somewhat along the Sweetwater/Carbon county border and D1 (Moderate Drought) was introduced to the southern portion of Carbon and southeastern part of Sweetwater county. This marks the first time since 08 March 2011 where there has been any drought shown in Wyoming.

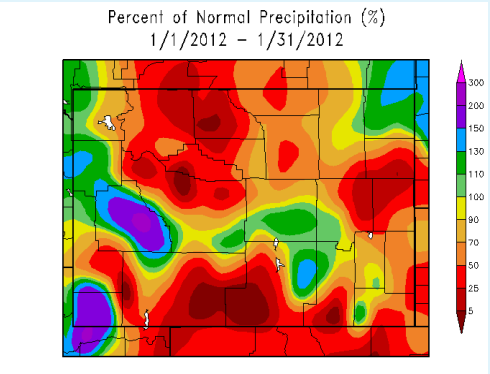

Figure 1. Map showing January 2012 precipitation as a percentage of historical averages (vs. 1971-2000 normal period) for Wyoming. Courtesy HPRCC.

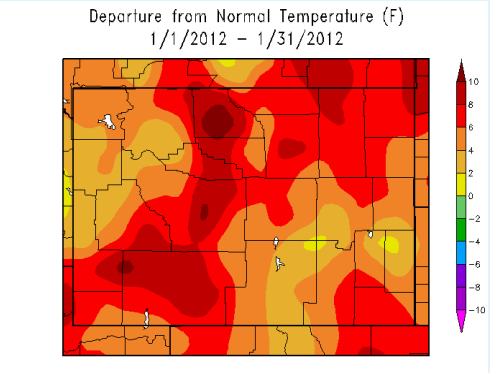

Figure 2. Map showing mean January 2012 temperatures from historical averages (vs. 1971-2000 normal period) for Wyoming. Courtesy HPRCC.

This report was prepared by the Wyoming State Climate Office, which is a division 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 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

Author Information

For questions, comments, or suggestions, please contact:
Natalie Umphlett - Regional Climatologist - High Plains Regional Climate Center
(402) 472-6764 - numphlett2@unl.edu
712 Hardin Hall
3310 Holdrege Street
Lincoln, NE 68583-0997