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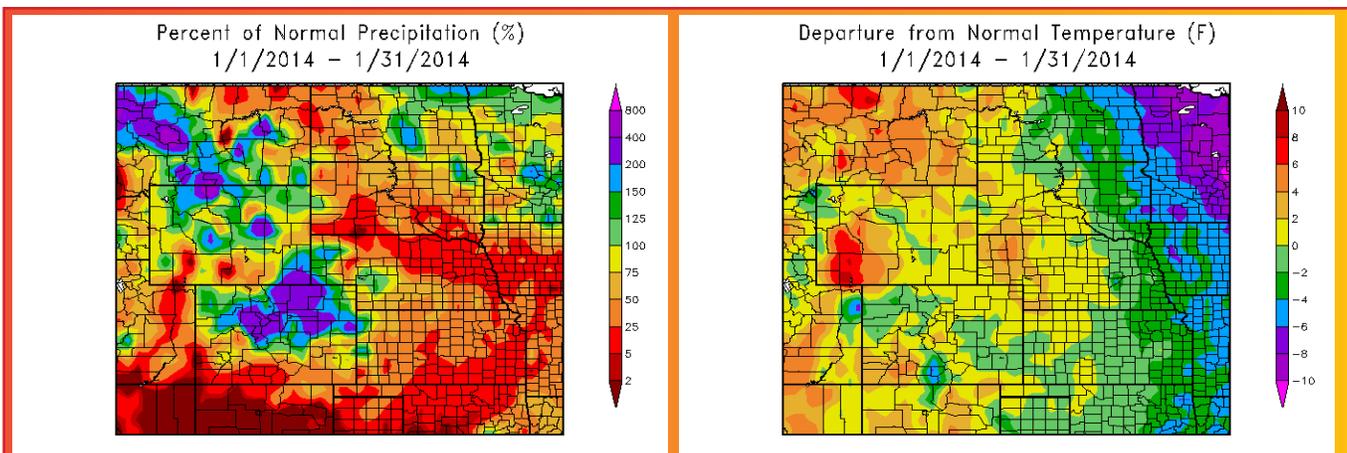


Sun dogs in North Dakota - Photo by Adnan Akyuz
<http://www.ndsu.edu/ndsco/>

January 2014 Climate Summary

Region Breakdown

The High Plains region experienced quite a range in temperatures this month with a combination of both warm spring-like days and bitterly cold days. For instance, in Nebraska, where snowpack was lacking, the highest temperatures of the month were generally in the mid-60s (upper teens in degrees C) and the lowest temperatures were 10-15 degrees F below zero (-23.3 to -26.1 degrees C), resulting in over a 70 degree F (38.9 degree C) temperature range for the month. Individual days also had quite the diurnal range. On January 29th, Lincoln, Nebraska had a low temperature of -5 degrees F (-20.6 degrees C) and a high temperature of 47 degrees F (8.3 degrees C) which resulted in a 52 degree F (28.9 degree C) temperature range that day alone. In the end, most of the High Plains region averaged out to near normal with above normal temperatures generally in the west and below normal temperatures in the east. Many Arctic air masses impacted the eastern half of the U.S. this month, but for the most part these air masses slid just off to the east of the region. For instance, while the far eastern edge of the region had temperature departures of 2.0-6.0 degrees F (1.1-3.3 degrees C) below normal, much of the Midwestern region had temperature departures of 6.0-10.0 degrees F (3.3-5.6 degrees C) below normal. These cold air masses were accompanied by high winds resulting in dangerously low wind chills for areas of the Dakotas and Nebraska.



Departure from 1981-2010 Normal Average Temperature (left) and Percent of Normal Precipitation (right) for January 2014 in the High Plains Region. Maps produced by High Plains Regional Climate Center. Available at: <http://hprcc.unl.edu/maps/current>

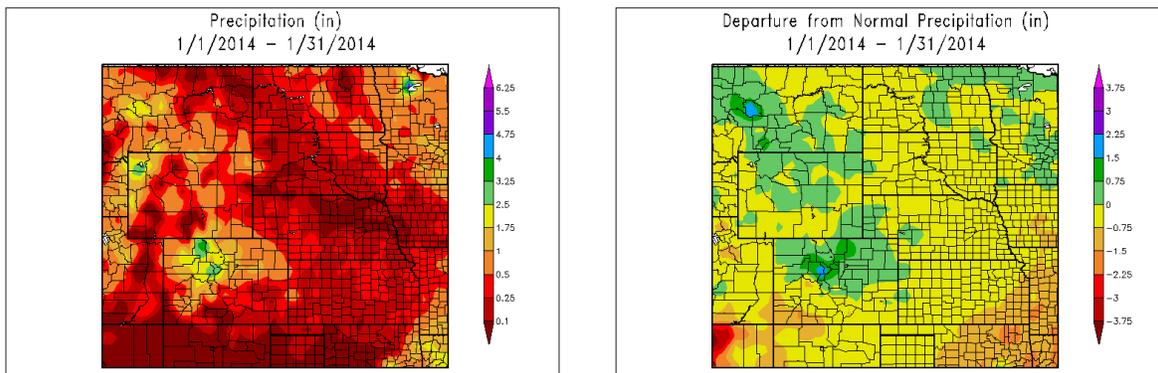
Precipitation Summary

Precipitation was sparse for most of the High Plains region this month. Large areas of Kansas, Nebraska, South Dakota, and North Dakota were dry with precipitation totals less than 50 percent of normal. Additionally, areas of southern and eastern Kansas, eastern and northern Nebraska, and southern South Dakota received less than 25 percent of normal precipitation. The ongoing dryness in Kansas and Colorado continued to have impacts. A mid-month dust storm in the Pueblo, Colorado area caused several accidents and closed I-25 for a portion of the day. A similar scene played out just a few days later in northwestern Kansas where a dust storm reduced visibilities, caused accidents, and closed I-70 for several hours. These are just two examples of dust storms that occurred in these drought-stricken areas this month.

Some locations within the dry areas of the region experienced quite a “snow drought” this month as even areas in the Deep South received more snowfall. For instance, Atlanta, Georgia with 2.6 inches (7 cm) had more snow this month than Omaha, Nebraska, with 1.8 inches (5 cm). Luckily, since winter is typically the driest part of the year, precipitation deficits have not increased drastically. A lack of snow cover can have its advantages, however, this year the multiple extreme cold events combined with a lack of snow cover may be a risk to the winter wheat crop in Kansas and Nebraska.

Not all areas of the region were lacking snowfall this month. Areas receiving above normal precipitation included northern Colorado along with pockets of Wyoming and North Dakota. The highest precipitation totals occurred in northern Colorado, where totals were up to 400 percent of normal. The popular ski destination of Breckenridge, Colorado had its 3rd snowiest January on record with 49.7 inches (126 cm) of snow (period of record 1893-2014). The snowiest January in Breckenridge occurred way back in 1899 with 79.8 inches (203 cm). On average, the town receives about 23.0 inches (58 cm) of snow during the month of January. Cheyenne, Wyoming was also a snowy spot with 15.0 inches (38 cm) of snow, marking its 7th snowiest January (period of record 1883-2014). The 1980 record of 35.5 inches (90 cm) held. Other areas of the region were impacted by snowfall, especially when combined with windy conditions which were a recurring feature this month. Ground blizzards in the Dakotas were quite an issue as high winds caused blowing snow and created treacherous travel conditions. During the blizzard on January 26th for instance, both I-29 and I-94 were both closed.

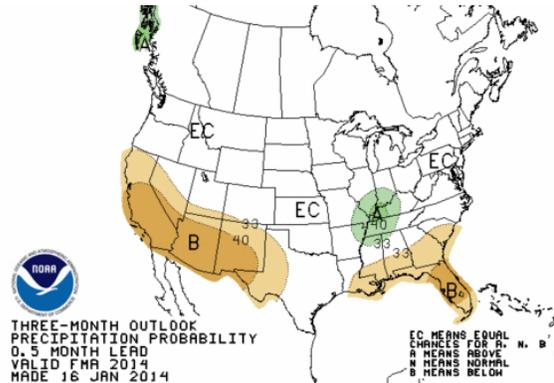
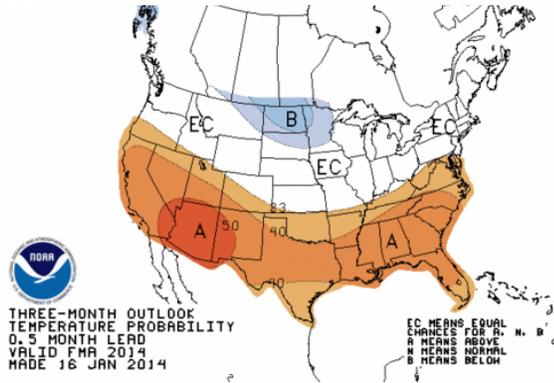
Across the western U.S., this season’s snowpack has been a story of the haves and the have-nots. Generally, eastern areas have fared well, while many areas to the west have struggled due to higher than normal temperatures and drought conditions. For instance, snowpack in California and Oregon has been abysmal so far this season and reservoirs have been in severe decline. Luckily, places like northern Colorado and much of Wyoming have fared better, especially when compared to last year. By the end of the month, Wyoming’s statewide snowpack was 113 percent of average and Colorado’s statewide snowpack was 94 percent of average. In contrast, last year’s snowpack was 76 percent of average and 75 percent of average, respectively.



Above: Total precipitation (inches) (left) and Departure from Normal Precipitation (inches) (right) for January 2014 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>.

Climate Outlook

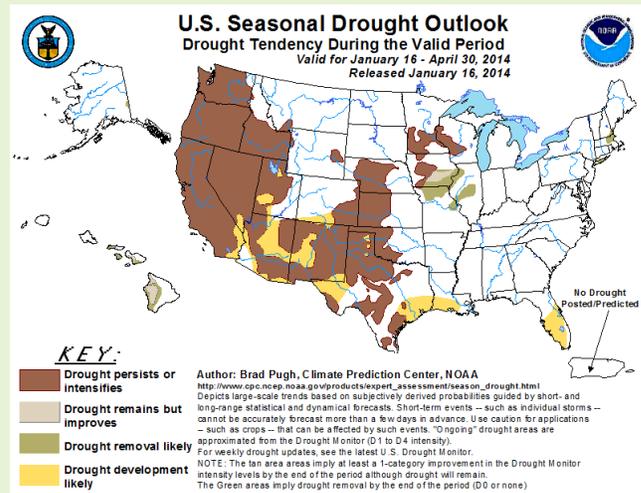
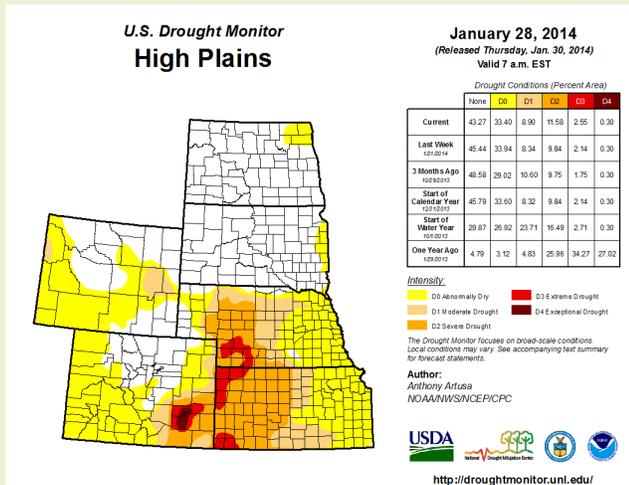
ENSO-neutral conditions continued this month and are likely to continue into the summer of 2014. For the next three months, the temperature outlook indicates a higher probability of above normal temperatures in portions of southern and western Colorado, far southwestern Kansas, and a tiny portion of the southwest corner of Wyoming. Meanwhile, a higher probability of below normal temperatures exists for all of North Dakota and northern parts of South Dakota. The precipitation outlook indicates that southwestern Colorado has a higher probability of below normal precipitation. No areas in the Region have an enhanced chance of above normal precipitation. Equal chances of above, near, or below normal temperatures and precipitation exist for the rest of 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 only small changes to the U.S. Drought Monitor in the High Plains region this month. Approximately 23 percent of the Region was in moderate (D1) to exceptional (D4) drought at the end of January, which was a slight increase from 21 percent at the end of December. Degradations were present in southwestern Colorado and across Kansas. In Kansas, higher than normal temperatures combined with dry and windy conditions led to an expansion of drought there. Both areas of extreme drought (D3) expanded to the west, while areas of severe (D2) and moderate (D1) drought expanded to the east. Abnormally dry conditions (D0) also expanded eastward. By the end of the month, 63 percent of the state was in drought, which was quite a difference from last month's 47 percent. As expected this time of the year, little change is predicted over the next few months. According to the U.S. Seasonal Drought Outlook released January 16th, current drought conditions are expected to persist across Nebraska, Kansas, Colorado, and Wyoming through April 2014. Drought development is still expected in southwestern Colorado.



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
Akron Washington County Airport	41.5	15.3	28.4	-0.2	62	01/19	-12	01/05	0.24	-0.06	80
Alamosa San Luis Airport	29.6	-7.3	11.1	-5.2	42	01/30	-20	01/05	0.07	-0.19	27
Colorado Springs Municipal Airport	45.2	15.2	30.2	-0.3	64	01/21	-10	01/06	0.67	0.35	209
Grand Junction Walker Field Airport	35.1	13.4	24.3	-3.1	44	01/18	1	01/05	0.67	0.09	116
Pueblo Memorial Airport	49.1	13.0	31.0	0.5	69	01/19	-12	01/28	0.45	0.10	129

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	38.6	14.9	26.8	-1.8	65	01/19	-6	01/06	0.43	-0.15	74
Dodge City Regional Airport	44.9	18.4	31.7	-0.5	66	01/19	-11	01/06	0.24	-0.34	41
Goodland Renner Field	44.6	15.5	30.0	0.4	67	01/19	-9	01/06+	0.57	0.19	150
Topeka Municipal Airport	39.8	15.1	27.5	-2.2	65	01/19	-8	01/06	0.37	-0.49	43
Wichita Mid-Continent Airport	44.3	19.4	31.8	-0.4	70	01/12	-5	01/06	0.13	-0.70	16

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	40.4	16.4	28.4	4.0	61	01/19	-13	01/06	0.17	-0.19	47
Grand Island Airport	38.5	12.7	25.6	0.5	68	01/19	-9	01/06	0.32	-0.21	60
Lincoln Municipal Airport	35.8	8.7	22.3	-2.3	66	01/19	-11	01/28	0.24	-0.40	38
Norfolk Karl Stefan Airfield	35.4	7.8	21.6	-1.0	66	01/19	-13	01/06	0.14	-0.45	24
North Platte Regional Airport	42.4	10.0	26.2	1.2	66	01/19	-15	01/06	0.31	-0.03	91
Omaha Eppley Airport	33.5	8.3	20.9	-2.6	65	01/19	-11	01/06	0.14	-0.58	19
Valentine Miller Field	39.0	12.5	25.8	2.2	61	01/19	-11	01/23+	0.04	-0.22	15

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	26.3	1.3	13.8	1.0	43	01/24+	-23	01/02	0.38	-0.05	88
Fargo International Airport	15.7	-6.8	4.4	-4.9	40	01/12	-25	01/02	0.77	0.07	110
Grand Forks International Airport	13.8	-11.7	1.0	-5.7	40	01/12	-33	01/02	0.68	0.13	124
Theodore Roosevelt Airport	27.9	6.4	17.1	0.8	46	01/25	-20	01/06	0.04	-0.26	13
Williston International Airport	26.2	3.4	14.8	3.8	46	01/25	-25	01/06	0.18	-0.41	31

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 2014 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	22.5	-4.9	8.8	-3.2	42	01/12	-27	01/02	0.28	-0.19	60
Huron Regional Airport	27.5	1.8	14.6	-2.1	47	01/19	-19	01/06+	0.16	-0.34	32
Pierre Regional Airport	31.5	9.2	20.3	0.4	51	01/19	-12	01/06+	0.14	-0.28	33
Rapid City Regional Airport	39.5	12.5	26.0	1.0	61	01/25	-16	01/06	0.20	-0.10	67
Sioux Falls Joe Foss Field Airport	25.9	0.7	13.3	-3.3	46	01/19	-18	01/06	0.31	-0.25	55

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	33.7	14.2	24.0	-0.7	43	01/19+	-24	01/05	0.74	0.23	145
Cheyenne Municipal Airport	39.4	17.5	28.4	-0.4	55	01/25	-10	01/05	1.01	0.68	306
Lander Hunt Field Airport	36.4	13.0	24.7	3.0	52	01/11	-17	01/06	0.61	0.20	149
Laramie Regional Airport	33.5	9.5	21.5	-0.2	50	01/21	-14	01/06+	0.19	-0.08	70
Rawlins Municipal Airport	32.6	14.1	23.4	1.8	41	01/25	-17	01/05	0.13	-0.23	36
Sheridan County Airport	38.9	14.3	26.6	2.8	59	01/25	-11	01/06+	0.64	0.08	114

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State Spotlight - Kansas

Mary Knapp - Service Climatologist
 Kansas State Climate Office, Kansas State University

Wide Swings

January saw snowy weather both to begin and end the month. Temperatures moved between much warmer than normal to extremely cold. The preliminary state-wide average temperature was 28.5F, which is 1.3 degrees cooler than average. That places it as the 49th coolest January of 120 years, or slightly on the cool side of the middle third of years. Long-term average temperature for January is 29.2F. There were 13 new daily record highs set during the month, and 5 records tied. Of those daily records, none set or tied monthly record highs. On the cold side of the scale, there were 21 new records for daily low maximums with 10 tied for record low maximums. There were 30 new records for daily low minimum. The daily record at Topeka Forbes Field (-12.8F) set on the 6th was a new record low for January and tied the previous all-time record low for the station, set on February 3, 2011. Still 17 new record warm minimum temperatures were set and 7 records were tied, indicating the extremes during the month. The coldest reading was -16F at Tribune 1W on the 6th. The warmest reading was 75F at Tribune 14N (Greeley County) on the 20th. All divisions saw lows below zero. The warmest January was recorded in 2006, when the average temperature was 41.2F. The coldest January on record occurred in 1940, when the average temperature was 13.9F.

Preliminary statewide average precipitation was 0.24 inches, which was 34% of normal. This makes the 25th driest January since 1895, or in the lower third of the distribution. The long-term average precipitation in January is 0.69 inches. All divisions averaged below normal in January. The South Central and Southeastern division fared the worst, when compared to normals. The South Central division averaged 0.14 inches, which was 17% of normal, while the Southeastern Division averaged 0.22 inches, which was 16% of normal. The Northwestern Division came closest to normal with an average of 0.27 inches or 61% of normal. This has done nothing to improve the drought situation in that area. Only 6 days in January averaged greater than a trace of precipitation. Five of those days saw a state-wide average precipitation of less than a tenth of an inch. Greatest daily precipitation for both the NWS and CoCoRaHS networks occurred at the beginning of the month, with 0.60 inches on the 2nd at Enterprise, Dickinson County, (NWS) and 1.0 inches on the 1st at Leon 7.3 ENE, Butler County (CoCoRaHS). Greatest monthly totals for January were 1.04 inches at Tribune 1W, Greeley County (NWS), and 1.30 inches at Abilene 7.9 NNW, Dickinson County (CoCoRaHS). Snow was a large component of the moisture in January. Greatest daily snowfall was 10 inches on the 31st at Atwood, Rawlins County (NWS) and 5.5 inches on the 31st at Arnold 4.8 NNW, Ness County (CoCoRaHS).

Drought conditions persist across the state. Abnormally dry conditions expanded in eastern KS, while extreme drought conditions expanded in western KS. Almost 8% of the state was in extreme drought at the end of January. Normal precipitation in January is low, so even below normal precipitation has little impact. The latest Drought Outlook indicates drought conditions are expected to continue through April. The El Niño/Southern Oscillation (ENSO) is expected to remain neutral through the winter. That means the signal for increased winter precipitation is also weaker. For February chances are equally likely for precipitation to be above or below normal. The temperature outlook calls for below normal temperatures state-wide. This does not indicate how much cooler conditions might be, and does not exclude the possibility of warm weather in the period.

Severe weather came in the form of winter storms at the beginning and end of the month. There were also several dust storms. One dust storm in Northwestern KS resulted in an 11 car accident, with 3 fatalities.

For more information about the Kansas State Climate Office: <http://www.ksre.ksu.edu/wdl/>

The KSU's AWDN is a part of the High Plains Automated Weather Data Network (AWDN). Data are available through KSU or HPRCC.

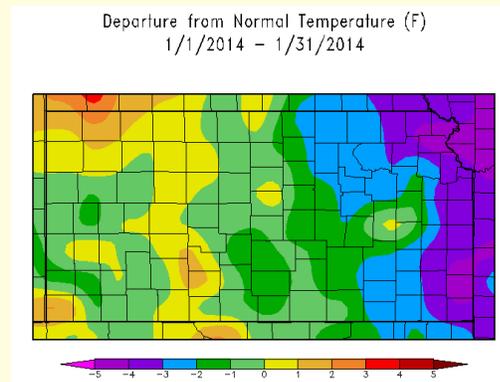


Figure 1. January 2014 departure from average temperatures across Kansas (High Plains Regional Climate Center)

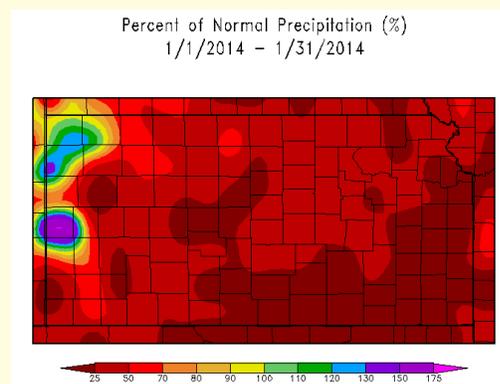


Figure 2. January 2014 percent of normal precipitation across Kansas (High Plains Regional Climate Center)

State Spotlight - North Dakota

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



Precipitation:

The preliminary statewide average January 2014 precipitation total was 0.33 inches which is about 67% of the 1981-2010 average of 0.49 inches. Even though the entire state average was ranked as the 42nd driest January since 1881, there were notable areas receiving much above normal precipitation including central and northeastern ND (Figure 1). The driest parts of the state in the west-central and northeastern ND received only 5 to 25% of normal precipitation. The North Central River Forecast Center issued the spring hydrological outlook delineating probability of the Red River of the North exceeding certain flood stages. Based on the hydrological outlook the Red River in Wahpeton, Fargo, Grand Forks and Pembina has 6, 32, <5, and 20% chance of exceeding their respective major flood stages respectively during the next 3-month period which usually includes the spring flooding period. The U.S. Drought Monitor Jan 28th report listed the northeast corner as abnormally dry with no drought conditions for the remainder of the state.

Temperature:

NDAWN January average air temperatures ranged from a minimum of -13 °F in northeast to 24 °F in the West central ND. Departure from normal average air temperatures were from 7 °F below normal to 4 °F above normal (Figure 2). The state average temperature based on the preliminary results was 8.1°F which is 2.1°F below the 1981-2010 average. January 2014 was ranked the 63rd coldest January since 1890. The coldest temperature was -34 °F that was recorded in Turtle Lake on January 6, 2014. The warmest temperature was 69 °F and was recorded in Dunn Center on January 14, 2014.

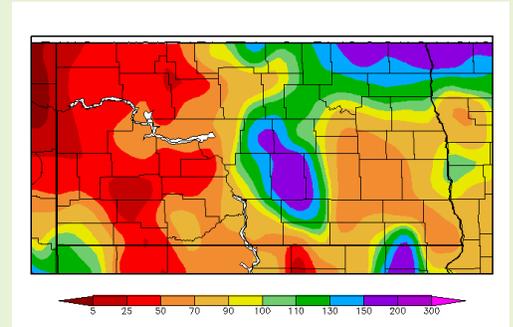


Figure 1. Percent of Normal Precipitation in January 2014 for North Dakota (High Plains Regional Climate Center)

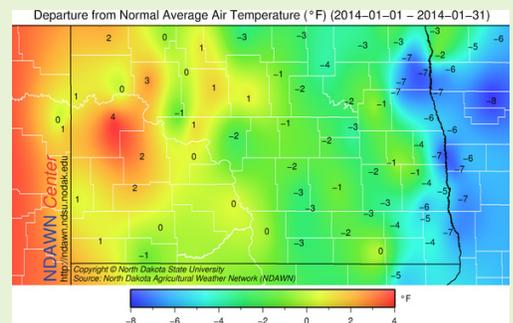


Figure 2. Temperature Departure from Normal in January 2014 for North Dakota (North Dakota State Climate Office)

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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