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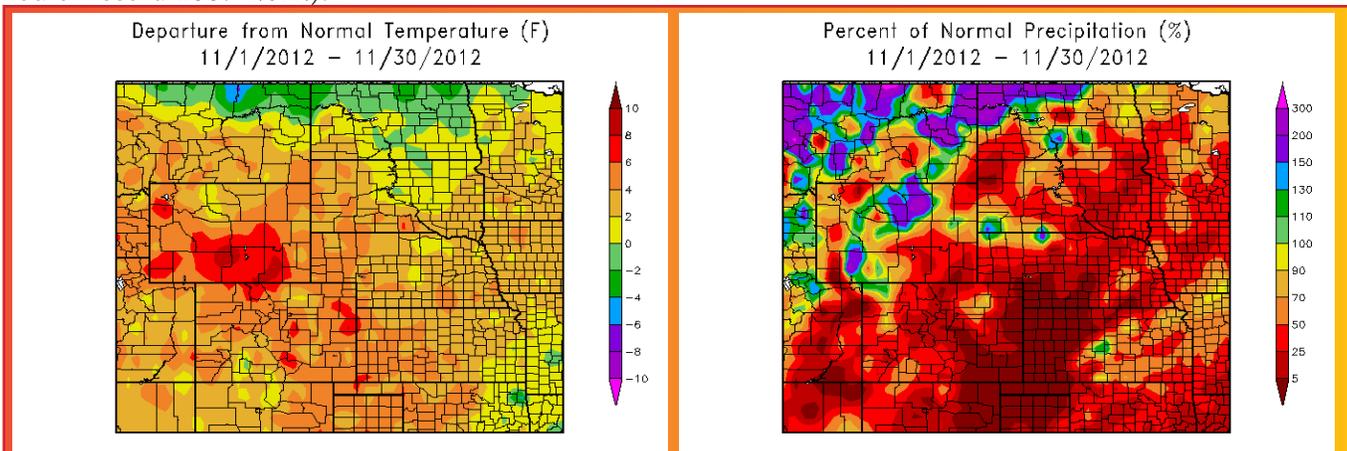
Hyde County Wind Energy Center, South Dakota - Photo by BJ Baule
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November 2012 Climate Summary

Region Breakdown

November 2012 was warm and dry across the majority of the High Plains Region. Below normal temperatures were confined to northern North Dakota where temperature departures ranged from 2.0-4.0 degrees F (1.1-2.2 degrees C) below normal. However, most locations in the Region had average temperatures at least 2.0 degrees F (1.1 degrees C) above normal. The largest departures occurred in southern Wyoming where a large area had average temperatures which were 6.0-10.0 degrees F (3.3-5.6 degrees C) above normal. The warmth caused many locations in that area to rank in the top 10 warmest Novembers on record. Laramie, Wyoming had its 3rd warmest November on record with an average temperature of 38.0 degrees F (3.3 degrees C) which was 8.7 degrees F (4.8 degrees C) above normal. The record of 40.6 degrees F (4.8 degrees C) was set in 1949 (period of record 1948-2012).

Temperatures for the year continued to be among the warmest on record for locations in each state of the Region. For instance, Omaha, Nebraska had its warmest January-November on record with an average temperature of 58.4 degrees F (14.7 degrees C). The old record of 57.9 degrees F (14.4 degrees C) was set in 1934 (period of record 1871-2012). Topeka, Kansas also had its warmest January-November with an average temperature of 62.1 degrees F (16.7 degrees C). This easily beat the old record of 61.0 degrees F (16.1 degrees C), which was also set in 1934 (period of record 1887-2012).



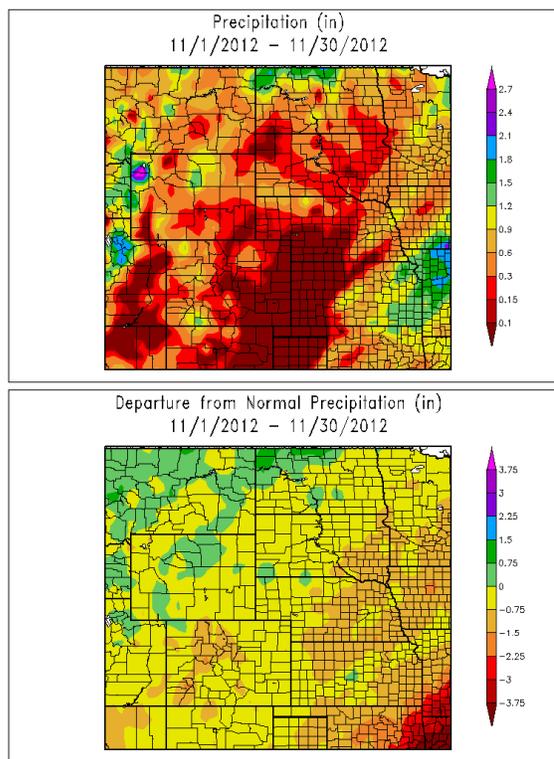
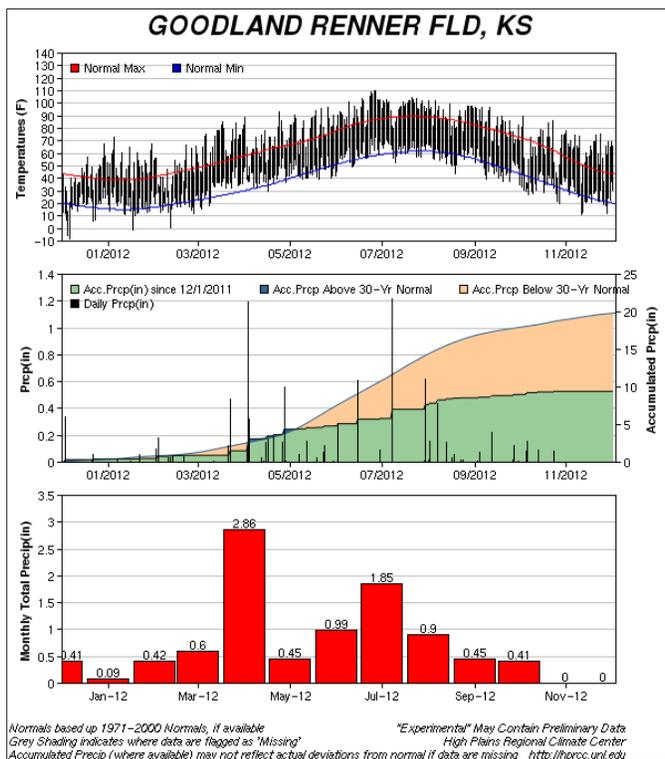
Departure from 1981-2010 Normal Average Temperature (left) and Percent of Normal Precipitation (right) for November 2012 in the High Plains Region. Maps produced by High Plains Regional Climate Center. Available at: <http://hprcc.unl.edu/maps/current>

Precipitation Summary

Unfortunately November was another dry month as precipitation totals were still well below normal across the majority of the Region. A large swath extending from Colorado and Kansas up into southern North Dakota received as little as 25 percent of normal precipitation. In addition, some locations did not receive any measurable precipitation. For instance, Goodland, Kansas received just a trace of precipitation this month and tied with 1959, 1939, and 1932 for its driest November on record (period of record 1895-2012). Goodland has been experiencing exceptional drought conditions (D4) since the end of July (see image below for precipitation totals over the past year).

A few areas of the Region did get ample precipitation this month including northern and central North Dakota and north-central Wyoming. Williston, North Dakota had its 5th snowiest November on record with 16.0 inches (41 cm). 8.0 inches (20 cm) of Williston's monthly total fell all in one day - the 10th. This total smashed the old daily record of 2.2 inches (6 cm) set in 1996 and 1940, and was also the 3rd highest snowfall total for any day in November (period of record 1894-2012).

Although drought conditions were downgraded in parts of North Dakota where beneficial precipitation fell, the drought continued to have impacts elsewhere. For example, the Fern Lake Fire in Rocky Mountain National Park has burned for more than 6 weeks due to the combination of high winds and dry conditions. According to the *Coloradoan*, by the end of the month, more than 3,500 acres had burned since the fire started on October 9th. Even though the harvest season has come to a close, the dry weather continued to impact agriculture across the Region as well. The major concerns were the condition of winter wheat and the replenishment of soil moisture. According to the United States Department of Agriculture (USDA), the winter wheat ratings across the U.S. were the worst since 1985. Winter wheat emergence was still just behind the 5-year average in Colorado, Nebraska, and South Dakota. The two hardest hit states were Nebraska and South Dakota, where the percentage of the winter wheat crop rated in good condition was only 14 and 2, respectively. Neither state's crop was rated in excellent condition.

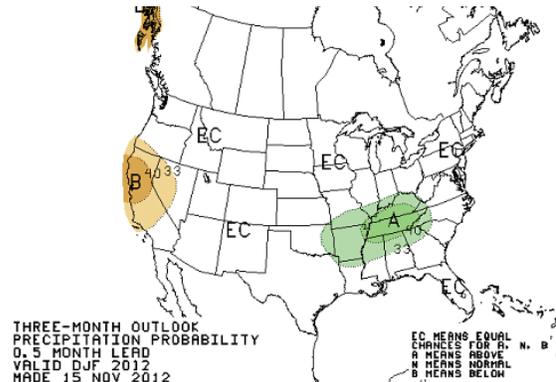
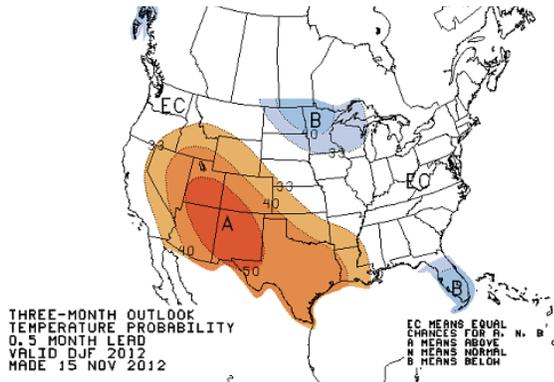


Above: Maximum, minimum, and normal temperatures, accumulated precipitation, and monthly total precipitation for Goodland, KS over the past year (top left). Total precipitation (inches) (top right) and Departure from Normal Precipitation (inches) (bottom right) for November 2012 in the High Plains Region. 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.

Climate Outlook

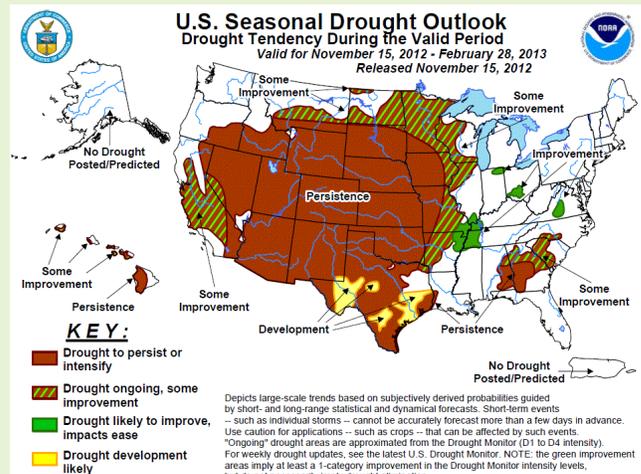
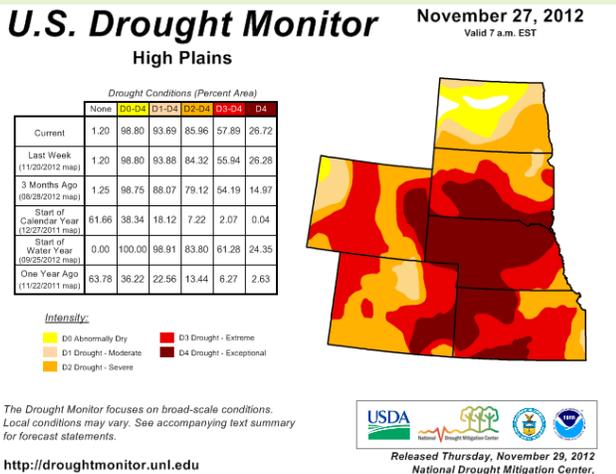
ENSO-neutral conditions are present and likely to continue through the winter. For the next three months, the temperature outlook indicates a higher probability of above normal temperatures for Colorado, western Kansas, southwestern Nebraska, and all but the northeast corner of Wyoming. A higher probability of below normal temperatures exists for much of North Dakota and the northeastern corner of South Dakota. The precipitation outlook indicates a higher probability of above normal precipitation for only the far southeastern corner of Kansas. Equal chances of above, near, or below normal temperatures and precipitation exist for the rest of the High Plains 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

According to the U.S. Drought Monitor, drought conditions remained widespread over the past month. Overall, about 94 percent of the Region was still in moderate (D1) to exceptional (D4) drought. This was down slightly from the end of last month when 98 percent of the Region was in D1-D4. Although Nebraska had a very slight improvement over last month, it was still the hardest hit state in the Region, with 77 percent in the D4 designation. Wyoming had a slight increase in D4 in the eastern portion of the state as well. Unfortunately, there were slight improvements in only limited parts of the Region. North Dakota received beneficial precipitation which led to improvements in the north-central part of the state where much of the D1 was downgraded to abnormally dry conditions (D0). By the end of the month a couple of areas of western North Dakota were completely drought free. According to the U.S. Seasonal Drought Outlook released November 15th, drought conditions were expected to improve across North Dakota and far northern South Dakota. All other areas of drought in the Region were expected to persist through the end of February 2013.



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	57.9	28.9	43.4	5.8	75	11/07	10	11/11	0.13	-0.45	22
Alamosa San Luis Airport	53.2	7.6	30.4	0.9	65	11/01	-5	11/12	0.08	-0.34	19
Colorado Springs Municipal Airport	58.5	28.5	43.5	5.4	71	11/21+	10	11/12	0.02	-0.38	5
Grand Junction Walker Field Airport	56.1	28.6	42.4	3.4	68	11/08+	13	11/11	0.16	-0.57	22
Pueblo Memorial Airport	63.1	23.2	43.2	3.9	76	11/01	9	11/12	0.00	-0.47	0

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	58.8	31.8	45.3	3.7	75	11/10	13	11/27	0.45	-0.66	41
Dodge City Regional Airport	64.2	30.1	47.1	4.0	84	11/09	15	11/27	0.09	-0.67	12
Goodland Renner Field	62.8	25.2	44.0	5.0	78	11/01	11	11/11	0.00	-0.71	0
Topeka Municipal Airport	61.9	33.7	47.8	4.0	79	11/09	15	11/27	1.27	-0.58	69
Wichita Mid-Continent Airport	64.6	35.2	49.9	4.5	86	11/02	16	11/27	0.55	-0.88	38

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	53.7	21.9	37.8	3.8	78	11/07	5	11/12	0.61	-0.01	98
Grand Island Airport	55.7	28.5	42.1	4.0	79	11/10	14	11/26	0.53	-0.64	45
Lincoln Municipal Airport	56.2	26.5	41.3	2.4	78	11/10	8	11/27	0.15	-1.28	10
Norfolk Karl Stefan Airfield	51.3	26.1	38.7	2.3	72	11/21	11	11/26	0.43	-0.94	31
North Platte Regional Airport	57.2	19.9	38.6	3.0	71	11/20	6	11/12	0.05	-0.59	8
Omaha Eppley Airport	54.6	31.2	42.9	4.0	77	11/10	15	11/27	0.38	-1.26	23
Valentine Miller Field	51.7	22.5	37.1	2.7	76	11/21	6	11/28+	0.47	-0.18	72

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	37.8	19.4	28.6	-0.6	56	11/07	3	11/13+	1.07	0.36	151
Fargo International Airport	38.7	22.0	30.3	1.5	59	11/21	0	11/26	0.59	-0.41	59
Grand Forks International Airport	33.8	19.7	26.7	0.6	46	11/21	0	11/26	0.85	-0.10	89
Theodore Roosevelt Airport	43.0	20.8	31.9	2.4	66	11/21+	2	11/26	0.22	-0.32	41
Williston International Airport	35.0	15.9	25.4	-1.7	61	11/05	-6	11/12	1.49	0.84	229

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>.

November 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	42.0	19.8	30.9	1.6	62	11/21	3	11/26	0.38	-0.35	52
Huron Regional Airport	45.4	22.0	33.7	1.1	68	11/21	7	11/26	0.18	-0.69	21
Pierre Regional Airport	45.9	22.4	34.2	0.5	66	11/20+	9	11/26	0.46	-0.30	61
Rapid City Regional Airport	51.0	23.4	37.2	2.7	75	11/07	5	11/11	0.45	-0.08	85
Sioux Falls Joe Foss Field Airport	46.9	24.8	35.8	3.2	70	11/21	12	11/28	0.35	-1.01	26

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	52.1	26.6	39.3	6.1	69	11/07	-8	11/11	0.49	-0.27	64
Cheyenne Municipal Airport	53.5	26.8	40.1	4.8	70	11/07	6	11/11	0.02	-0.57	3
Lander Hunt Field Airport	50.0	25.6	37.8	6.6	69	11/07	3	11/11	0.49	-0.37	57
Laramie Regional Airport	50.9	25.1	38.0	8.7	64	11/07	9	11/11	0.16	-0.38	30
Rawlins Municipal Airport	48.6	27.4	38.0	7.9	63	11/08+	12	11/11	0.35	-0.20	64
Sheridan County Airport	47.9	20.8	34.4	1.7	79	11/07	-3	11/11	1.09	0.38	154

All Data are Preliminary and Subject to Change. + indicates multiple dates, latest date listed.

Source: National Weather Service Cooperative Observation Network Data

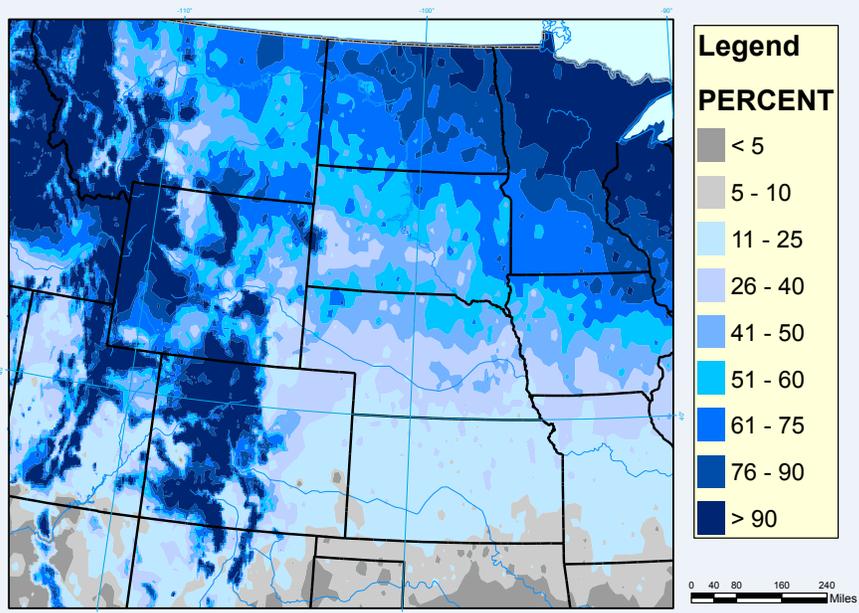
Data are retrieved through the Applied Climate Information System (ACIS).

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

Probability of a White Christmas

This time of year many people wonder what the chances are for a White Christmas. Last year was a “Brown Christmas” for most people in the Region. What will this year’s weather bring?

NOAA’s National Climatic Data Center has calculated and mapped out the chances of a White Christmas from a climatological perspective. The probabilities are based upon historical snowfall and snow depth data. Based on this map alone, there is a good chance for a White Christmas for most of the Region and for some folks it’s almost a guarantee. Check out your local National Weather Service forecast for more details as Christmas gets closer.



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 High Plains Regional Climate Center (HPRCC) percent of normal precipitation was above normal in the northwest, far north-central, and central regions with below normal in the remainder of the state (Figure 1, HPRCC). HPRCC total precipitation amounts ranged from approximately 2 inches in the northwest to less than 0.4 inches in the southwest and southeast. A major storm system that went across North Dakota from the 8th through the 11th brought freezing rain and snow. The highest 4-day snow totals were recorded in Divide and Rolette Counties with greater than 16 inches. A storm system on the 22nd, Thanksgiving Day, brought wind and freezing rain which hampered travel conditions for the holiday. The U.S. Drought Monitor November 27th report listed 32.64% of the state as having severe drought (D2) mostly in the far southern part of the state and the central and southern parts of the Red River Valley. No drought was reported at 8.66% of the state with the remaining 58.7% having abnormally dry or moderate drought conditions (D0-D1).

Temperature:

NDAWN November average air temperatures ranged from ~21 °F in the far north to ~33 °F in the southwest. Departure from normal average air temperatures were near normal in the central, eastern, and southeast part of the state, ~3 °F below normal in the north, and ~3 °F above normal in the southwest (Figure 2, NDAWN Center). The first few days in November were below normal. On the 4th, temperatures in most areas were above normal and held until the 9th when a storm system went across the state pushing temperatures below normal with freezing rain and snow. Temperatures for most were above normal from the 16th through the 21st. The storm system that started on the 22nd brought temperatures down to below normal on the 23rd. The remainder of the month had a mix of daily average air temperatures being above and below normal.

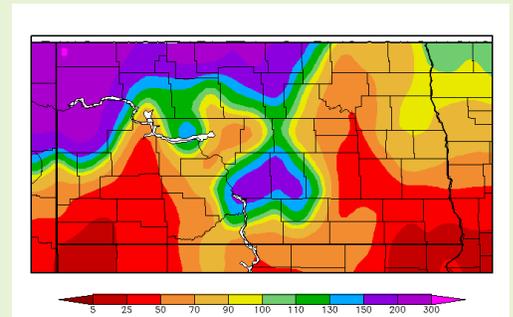


Figure 1. Percent of Normal Precipitation in November 2012 for North Dakota (High Plains Regional Climate Center)

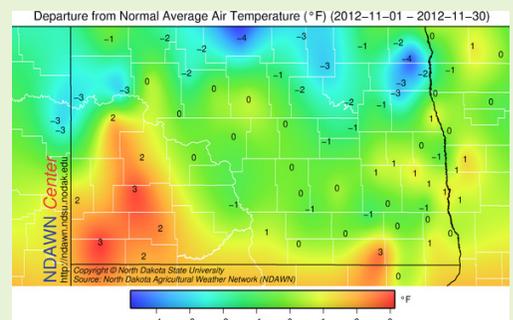


Figure 2. Temperature Departure from Normal in November 2012 for North Dakota (North Dakota State Climate Office)

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



Precipitation

Precipitation in the southeast quarter of the state ran well below the Normal as it did in large portions of the northeast. The western parts of the state fared better but still had many stations reporting less than Normal precipitation. There were some areas that received good doses of moisture, though. Sheridan, Washakie, and Johnson counties were, for the most part, normal to well above normal and this extended into Fremont, Sublette and even parts of Sweetwater and Lincoln counties.

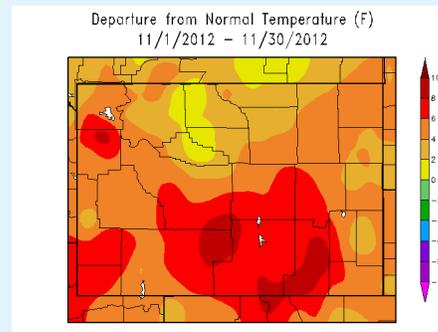
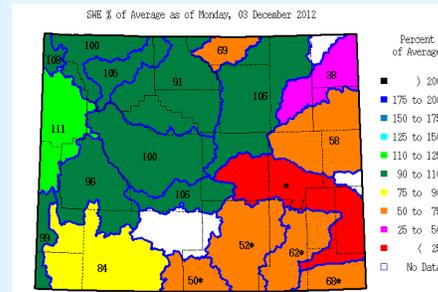
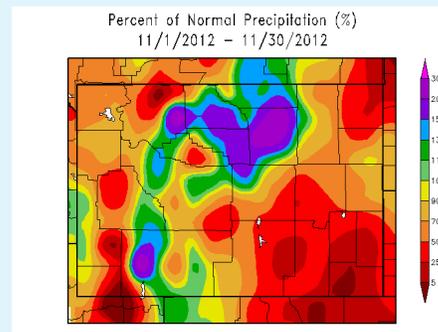
Generally the bulk of the precipitation that fell in November was from two events starting the 9th and the 25th (mostly reported during AM observations on the 10th and 26th respectively). An event that was reported on the morning of the 14th brought some precipitation to the far west and southeast of the state. Other than these dates, only the western part of the state saw any substantial precipitation on a few other days.

This overall pattern was reflected in the snowpack at higher elevations as well with the basins in the south and east being below to well below Normal. Currently the Snake River Basin in the west has the highest percentage of snow water equivalent at 111%. The Belle Fourche in the northeast is the lowest at 38%. The Lower North Platte Basin is currently at “0%” although at this point in the season the data are not a fully valid indicator of conditions.

Temperature

After a cooler October, November saw above Normal temperatures for the entire state with most stations in the southern half of Wyoming being 2°F or more above the 1981-2010 Normal. The north central part of the state (generally Park, Hot Springs, and Sheridan counties) was the cooler part of the state although even that area experienced temperatures that were still just on the warmer side of their Normals.

Drought levels remained fairly similar to those at the end of October with the exception of some improvement from D3 to D2 in Uinta County, extreme southeast Lincoln County, and the far southwest corner of Sweetwater County. There was expansion in the east, however. D3 crept a bit farther north into Campbell and Crook counties and the D4 region there expanded to cover more of northeast Converse County as well as southeast Campbell County. While there was some improvement of the D4 in extreme southeast Weston County, the D4 there did expand to cover most of the western two-thirds of that county. The amount of the state in D1-D4 conditions did not change from the end of October although the percentage of the state in the most extreme conditions (D4) did increase by 2.5%, now covering a total of 10.1% of the state.



Above: (top) November 2012 precipitation as a percentage of historical averages (vs. 1981-2010 normal period). Courtesy HPRCC.
 (middle) End of November snow water equivalent as a percentage of historical averages (vs. 1981-2010 “normal” period). Courtesy of the NRCS National Water and Climate Center, map by Wyoming State Climate Office.
 (bottom) Mean November 2012 temperatures from historical averages (vs. 1981-2010 normal period) for Wyoming. Courtesy HPRCC.

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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