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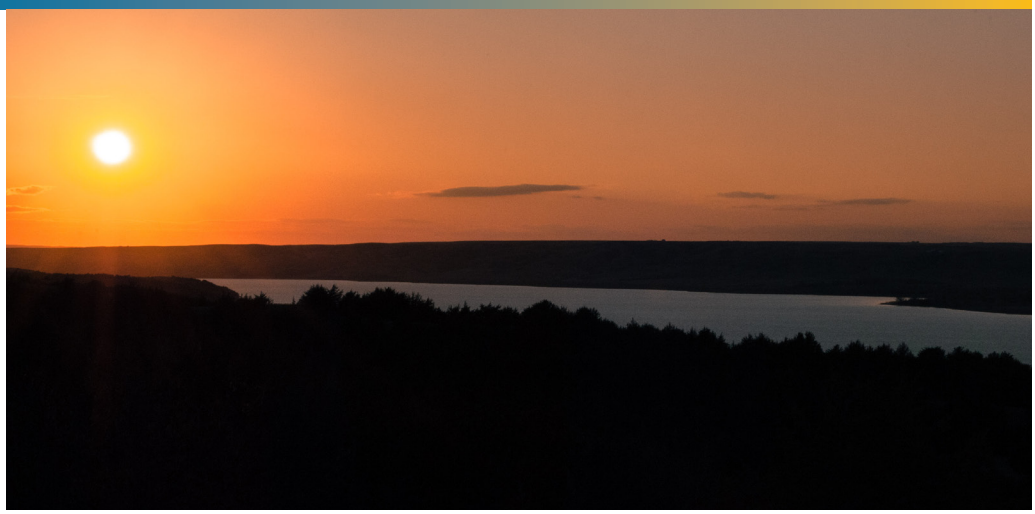


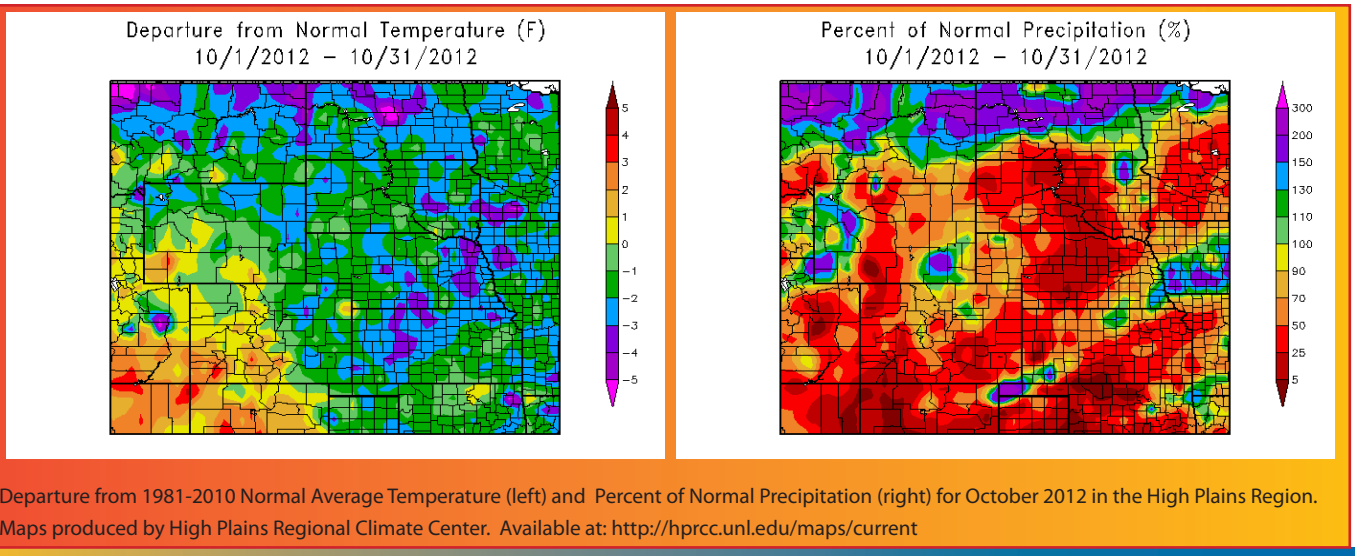
Sunset near Chamberlain, South Dakota - Photo by BJ Baule
http://hprcc.unl.edu

October 2012 Climate Summary

Region Breakdown

October 2012 was actually cooler than normal for the majority of the High Plains Region. Most locations in the Region had average temperatures which were at least 2.0 degrees F (1.1 degrees C) below normal. Above normal average temperatures were limited to southwestern Colorado and portions of southern Wyoming. The cooler weather was not record-breaking although there were a few locations that were able to creep into the top 10 coolest Octobers on record. Garden City, Kansas tied for its 6th coolest October on record with an average temperature of 52.3 degrees F (11.3 degrees C). The record of 48.6 degrees F (9.2 degrees C) occurred just a few years ago in 2009 (period of record 1947-2012).

Despite the widespread below normal temperatures this month, 2012 still continued to be one of the warmest on record in many places. For example, the average temperature in Grand Forks, North Dakota was 1.3 degrees F (0.7 degrees C) below normal this month, but this year's January 1-October 31 time period still ranked as the warmest. The average temperature in Grand Forks for this time period was 48.7 degrees F (9.3 degrees C), which surpassed the 1931 record of 48.1 degrees F (8.9 degrees C) (period of record 1893-2012).

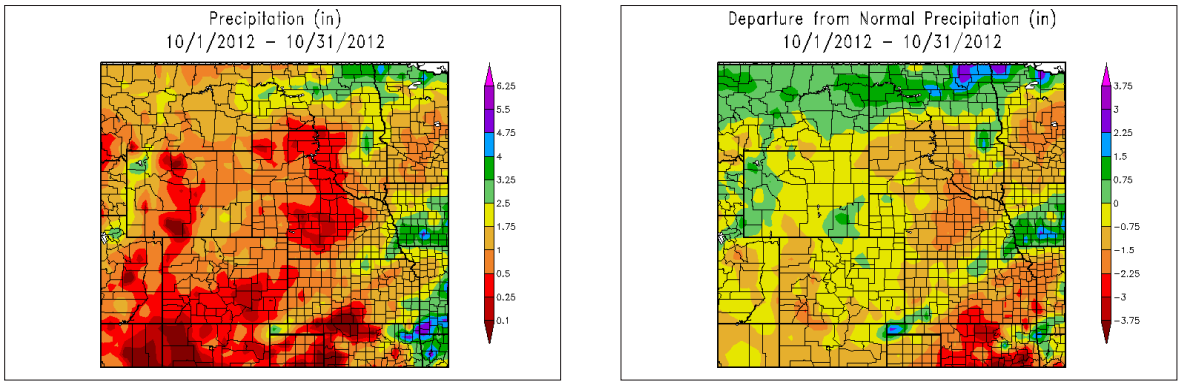


Departure from 1981-2010 Normal Average Temperature (left) and Percent of Normal Precipitation (right) for October 2012 in the High Plains Region.
Maps produced by High Plains Regional Climate Center. Available at: http://hprcc.unl.edu/maps/current

Precipitation Summary

Ample precipitation was confined to North Dakota and small pockets elsewhere in the High Plains Region this month. Much needed precipitation fell in areas of northern North Dakota, where precipitation totals were over 150 percent of normal. While this precipitation was not record-breaking, it did help alleviate drought conditions there. In addition, many locations across the High Plains Region had their first snowfall of the season this month. Even with the snowfall, a large portion of the High Plains Region continued to have dry conditions this month. Central Nebraska, central South Dakota, southern Kansas, southern and northwestern Colorado, and south-central Wyoming all had precipitation totals which were less than 25 percent of normal.

The dry weather helped with the harvesting of row crops in many areas across the Region. The corn harvest was ahead of average in Kansas, Nebraska, North Dakota, and South Dakota. The soybean harvest was also well ahead of average in Nebraska, North Dakota, and South Dakota. On the downside, dryness continued to affect pasturelands as most of the Region continued to have pasture conditions in the very poor to poor classifications. Dry and windy conditions also took their toll on winter wheat progress. For instance, the lack of precipitation limited winter wheat emergence in parts of South Dakota and some winter wheat had to be reseeded in Nebraska due to wind damage. Although mid-October showers did help with winter wheat emergence, according to the National Agricultural Statistics Service (NASS), more precipitation is needed for improved emergence.



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

Dust Storm Hits the Plains

Even with the growing season coming to a close, the ongoing drought has continued to have impacts across the Region. The combination of an intense low pressure system to the east and high pressure over the Rockies created very strong northwest winds over the High Plains Region October 17-18. The strongest wind speeds occurred on the 18th when winds were sustained at 35-45 mph (56-72 km/h) for much of the day. Gusts to 50-60 mph (80-97 km/h) were quite common and some peak wind gusts topping 70 mph (113 km/h) were reported as well. The combination of these winds and dry conditions from the ongoing drought caused a large dust storm to form (see satellite image to right). The dust storm reduced visibilities and many roads were forced to close, including portions of I-80 in western Nebraska and eastern Wyoming, I-70 in eastern Colorado, and I-35 in Kansas and Oklahoma. Unfortunately, wildfires also started during this time period and spread rapidly. According to NASS, in Nebraska, buildings, machinery, and even crops were lost in these fires. Impacts ranging from overturned semi-trucks to downed power lines to roof and tree damage were reported all across the wind swept region.

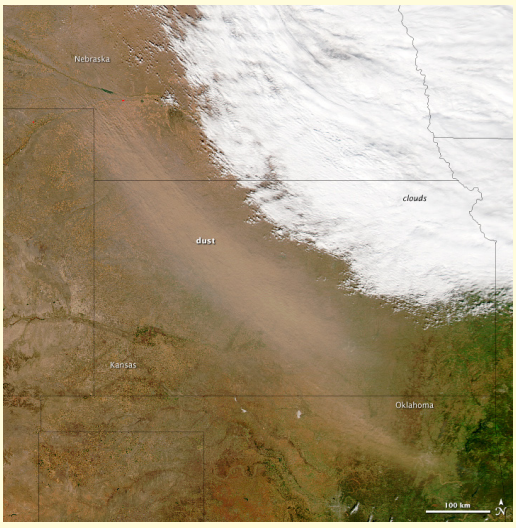


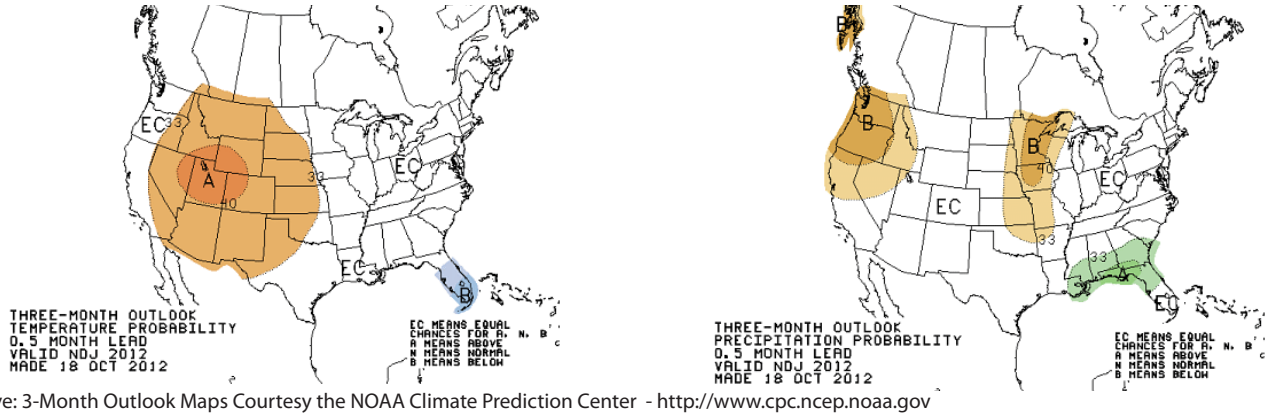
Image courtesy NASA

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

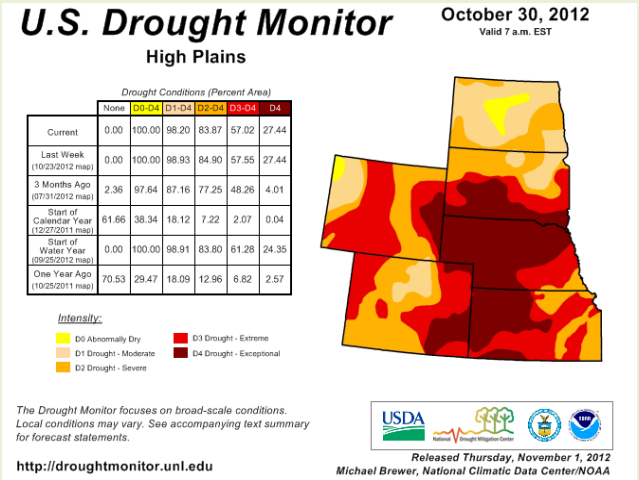
ENSO-neutral conditions continue and weak El Niño/ENSO-neutral conditions are likely through the winter. For the next three months, the temperature outlook indicates a higher probability of above normal temperatures for the majority of the High Plains Region, except for the eastern half of North Dakota and the far eastern sides of South Dakota, Nebraska, and Kansas. The highest probability for above normal temperatures exists in southwestern Wyoming and northwestern Colorado. The precipitation outlook indicates a higher probability of below normal precipitation in the eatern half of Kansas, eastern Nebraska, eastern South Dakota, and far southeastern North Dakota. Equal chances of above, near, or below normal temperature and precipitation exists 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).

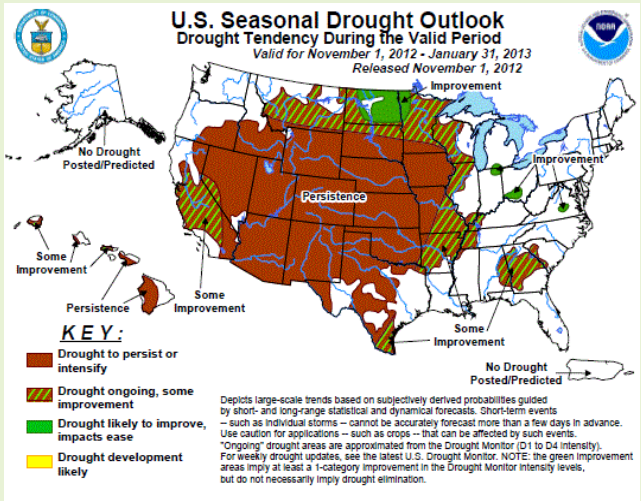


Above: 3-Month Outlook Maps Courtesy the NOAA Climate Prediction Center - http://www.cpc.ncep.noaa.gov
(left) The Three-Month Temperature Probability Outlook, (right) The Three-Month Precipitation Probability Outlook

Drought Watch

Slight changes in drought conditions in the High Plains Region occurred over the past month, according to the U.S. Drought Monitor. Some areas experienced improvements and others had degradation which balanced out to little change over the past month. Nebraska was still the hardest hit state, with nearly 78 percent of the state in exceptional drought conditions (D4) which was up a few percent from the end of last month. South Dakota had the most degradation with a significant increase in D4 that went from 7 to 33 percent coverage over the past month. The most significant improvements occurred in the Red River Valley of North Dakota where precipitation in the middle of the month helped downgrade all extreme drought conditions (D3) to severe drought conditions (D2) in the state. Other areas which had improvements included north central Colorado, eastern Kansas, far southeastern Nebraska, and central North Dakota. According to the U.S. Seasonal Drought Outlook released November 1st, drought conditions were expected to improve across the entire state of North Dakota and northern areas of South Dakota. All other areas of drought in the Region were expected to persist through the end of January 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	61.5	34.4	47.9	-2.3	86	10/03	21	10/25	0.62	-0.49	56
Alamosa San Luis Airport	64.9	22.0	43.4	0.3	76	10/03	2	10/27	0.37	-0.31	54
Colorado Springs Municipal Airport	63.3	35.2	49.3	-0.1	83	10/03	22	10/27	0.14	-0.68	17
Grand Junction Walker Field Airport	67.6	38.0	52.8	-0.2	84	10/03	23	10/27	0.29	-0.77	27
Pueblo Memorial Airport	67.8	33.6	50.7	-1.1	88	10/03	21	10/28+	0.29	-0.43	40

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	65.2	40.7	53.0	-2.4	82	10/23+	23	10/27	3.30	1.38	172
Dodge City Regional Airport	68.2	39.7	54.0	-2.6	88	10/23	21	10/26	1.52	-0.22	87
Goodland Renner Field	65.4	34.7	50.0	-1.9	90	10/03	20	10/27	0.41	-0.96	30
Topeka Municipal Airport	68.5	42.9	55.7	-0.9	86	10/23	24	10/27	1.42	-1.61	47
Wichita Mid-Continent Airport	71.5	45.3	58.4	0.1	91	10/23	24	10/27	0.32	-2.46	12

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	62.2	31.5	46.9	-0.7	87	10/02	16	10/25	0.78	-0.53	60
Grand Island Airport	63.4	37.2	50.3	-1.9	86	10/03	25	10/28+	0.78	-1.08	42
Lincoln Municipal Airport	62.9	36.2	49.5	-3.7	82	10/03	20	10/27	1.92	-0.05	97
Norfolk Karl Stefan Airfield	60.9	34.9	47.9	-3.1	83	10/03	18	10/07	0.49	-1.58	24
North Platte Regional Airport	63.6	29.6	46.6	-2.5	90	10/03	19	10/28+	0.28	-1.27	18
Omaha Eppley Airport	62.5	39.6	51.1	-2.1	81	10/21+	26	10/06	2.07	-0.08	96
Valentine Miller Field	61.7	32.3	47.0	-1.5	86	10/02	19	10/07	0.46	-0.79	37

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	53.5	32.0	42.7	-2.1	81	10/02	17	10/27	1.02	-0.23	82
Fargo International Airport	52.8	35.1	44.0	-1.5	77	10/02	22	10/27	2.22	0.07	103
Grand Forks International Airport	50.1	33.6	41.8	-1.3	80	10/02	17	10/28	2.14	0.17	109
Theodore Roosevelt Airport	52.6	31.0	41.8	-2.0	77	10/02	18	10/26	1.34	0.11	109
Williston International Airport	50.3	30.7	40.5	-2.5	72	10/15	17	10/06	1.55	0.63	168

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.

October 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	57.1	31.2	44.1	-1.1	80	10/02	13	10/27	1.06	-0.93	53
Huron Regional Airport	58.6	33.3	46.0	-1.9	85	10/03	19	10/07	1.09	-0.70	61
Pierre Regional Airport	60.4	33.9	47.1	-1.6	86	10/02	18	10/26	0.35	-1.30	21
Rapid City Regional Airport	59.2	32.6	45.9	-1.8	85	10/02	16	10/26	0.44	-0.98	31
Sioux Falls Joe Foss Field Airport	58.1	34.5	46.3	-1.6	80	10/03	20	10/12	0.86	-1.31	40

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	58.4	31.1	44.7	-0.5	83	10/02	17	10/25	0.56	-0.55	50
Cheyenne Municipal Airport	56.6	32.3	44.4	-1.9	79	10/02	9	10/26	1.13	0.20	122
Lander Hunt Field Airport	58.4	32.2	45.3	-0.3	81	10/02	14	10/26	0.68	-0.61	53
Laramie Regional Airport	54.9	27.5	41.2	-0.6	75	10/02	3	10/26	1.01	0.21	126
Rawlins Municipal Airport	56.8	30.6	43.7	0.4	76	10/02	9	10/07	0.37	-0.38	49
Sheridan County Airport	57.6	31.5	44.6	-0.9	83	10/02	15	10/26	0.95	-0.46	67

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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 North Dakota Agricultural Weather Network (NDAWN), October percent of normal precipitation was above normal in the north and below normal in the southern parts of the state (Figure 1, NDAWN Center). NDAWN total precipitation amounts ranged from 5.81 inches at Humboldt, MN to 0.66 inches in Hettinger. There were two major storm events that trekked across North Dakota in October. The first storm started in the west on the 3rd and ended in the east on the 4th and brought the first snow of the season. Snow accumulations ranged from 1-4 inches in the west to 2-5 inches in the east. The second slow moving storm brought rain and high winds starting on the 16th in the west and ending on the 19th in the east. The high winds fueled a fast moving wildfire that broke out near Bucyrus, ND on the 17th. The fire destroyed several homes in the small town.

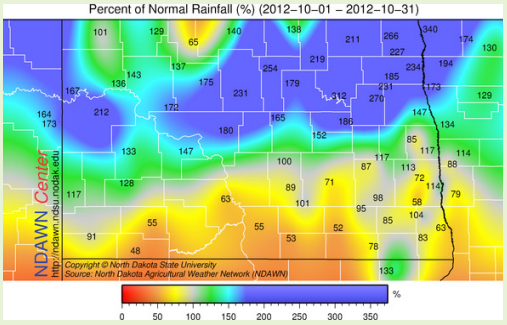

Figure 1. Percent of Normal Precipitation in October 2012 for North Dakota (North Dakota State Climate Office)

Temperature:

NDAWN October average air temperatures ranged from ~37 °F in the far north to ~43 °F in the southeast. Departure from normal average air temperatures were below normal across the state and ranged from approximately -1 °F to -5 °F (Figure 2, NDAWN Center). The beginning of the month was mostly below normal and then rebounded to near and above normal during much of the middle of the month but fell to below normal toward the end with the last couple of days being above normal. Cooler and wetter than normal conditions in the central and northeastern parts of the state helped to improve dry conditions. By the end of the month, significant improvements were observed.

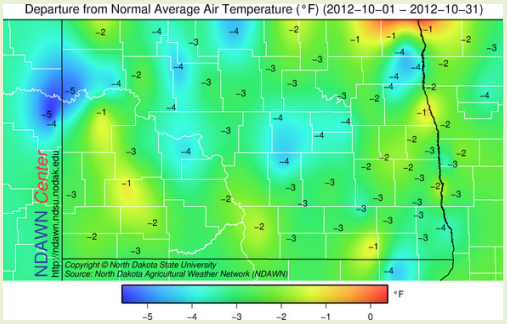

Figure 2. Temperature Departure from Normal in October 2012 for North Dakota (North Dakota State Climate Office)

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

Most areas of the state saw their first snowfall this month with Sheridan County being the first to report it. A CoCoRaHS observer northwest of Dayton, just south of the Montana border, reported the first snow in the state during the morning observation on the 4th of October. Much of Park, Johnson, Natrona, Campbell, Weston, Converse, Platte, Goshen, and Laramie counties followed suit the following day and, by the 6th, most all but the CoCoRaHS observers in the western and southwestern portions of the state had reported snowfall.

Another system moved through causing widespread snow later in the month from 23-25 October. This storm saw the greatest snowfall from CoCoRaHS observers when 12.5" of new snow was reported in Crook County the morning of the 25th.

Despite the snow, large portions of the state reported well below normal precipitation totals for October. Park, Big Horn, Hot Springs, Washakie, Sheridan, Johnson, Campbell, Crook, Weston, Converse, Natrona, Carbon, and Eastern Fremont counties were all below the 1981-2010 Normal with the Big Horn and Wind River basins being mostly at 70% or less.

The extreme west fared better with many stations coming in at 130% or greater than their Normal. In the southeast, Albany County was another area that saw above normal precipitation, thanks especially to the October 23-25 snow storm which gave between three-quarters and an inch of snow water equivalent to the area.

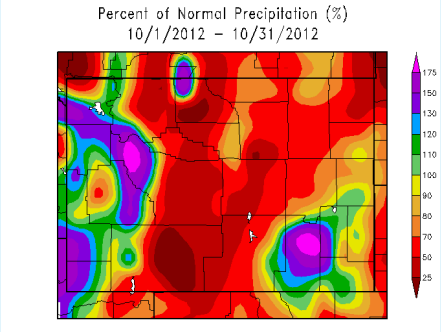

Figure 1. Map showing October 2012 precipitation as a percentage of historical averages (vs. 1981-2010 normal period) for Wyoming. Courtesy HPRCC.

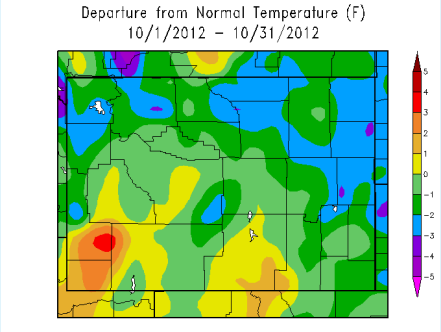

Figure 2. Map showing mean October 2012 temperatures from historical averages (vs. 1981-2010 normal period) for Wyoming. Courtesy HPRCC.

Temperature

October saw a break in the above normal temperatures that Wyoming had been experiencing for the last several months. The above Normal temperatures go back to and include March for much of the state although May saw near Normal to slightly below Normal temperatures for the northwest part of Wyoming. Only a handful of stations throughout the state (southern Lincoln, central Sweetwater, southern Carbon, and central Fremont counties) were above their 1981-2010 Normal in October and even they were generally only about a degree on the plus side. Much of the northern half of the state saw monthly temperatures that were 2°F to 4°F below Normal.

Drought levels remained mostly unchanged throughout October with the exception of an expansion of D4 in the east into all of Niobrara County as well as the northeast of Platte County, the eastern portion of Converse County, and southern Weston County. There was some improvement (D3 to D2) in southwestern Laramie County along with a small amount of D1 south of Cheyenne. This was countered by an expansion (D2 to D3) in southern Lincoln and parts of Uinta counties. A very slight improvement (D1 to D0) was made in central Teton County. Currently 97.77 percent of the state is in some level of drought (i.e. D1-D4).

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, the NRCS Casper Office, the Cheyenne US Geological Survey Office, and Wyoming CoCoRaHS observers 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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