



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



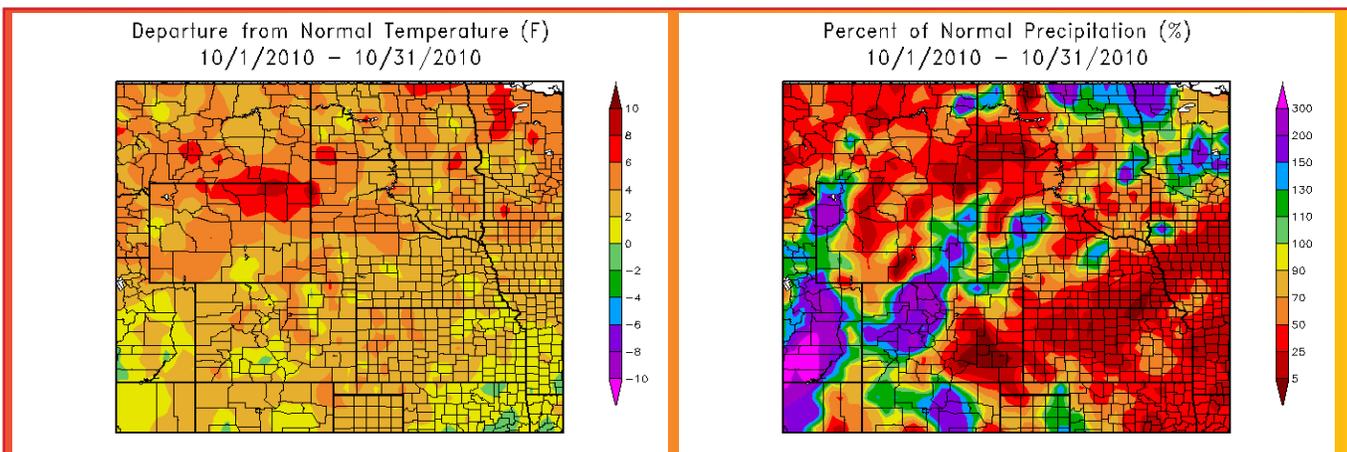
Harvest Time - Photo by Ken Dewey
<http://www.nebraskaweatherphotos.org>

October 2010 Climate Summary

Region Breakdown

October 2010 was warmer than normal across the High Plains Region. Average temperatures were up to 4 degrees F (2.2 degrees C) above normal in Colorado, Kansas, and Nebraska, and up to 8 degrees (4.4 degrees C) above normal in Wyoming and the Dakotas. Several locations in Wyoming ranked in the top 10 warmest Octobers on record. With an average temperature of 50.9 degrees F (10.5 degrees C), Riverton, Wyoming had its 2nd warmest October on record (period of record 1907-2010). The warmest October was in 1963 with an average temperature of 52.0 degrees F (11.1 degrees C). Sheridan, Wyoming recorded its 3rd warmest October on record (period of record 1948-2010) with an average temperature of 52.4 degrees F (11.3 degrees C). Like Riverton, the record at Sheridan was also set in 1963 with an average temperature of 54.6 degrees F (12.6 degrees C).

The warm weather was also coupled with dryness for most of the month which allowed producers to make significant harvest progress. According to the National Agricultural Statistics Service, many row crop harvests across the Region were ahead of the 5-year average by the end of the month.



Departure from 1971-2000 Normal Average Temperature (left) and Percent of Normal Precipitation (right) for October 2010 in the High Plains Region. Maps produced by High Plains Regional Climate Center. Available at: <http://hprcc.unl.edu/maps/current>

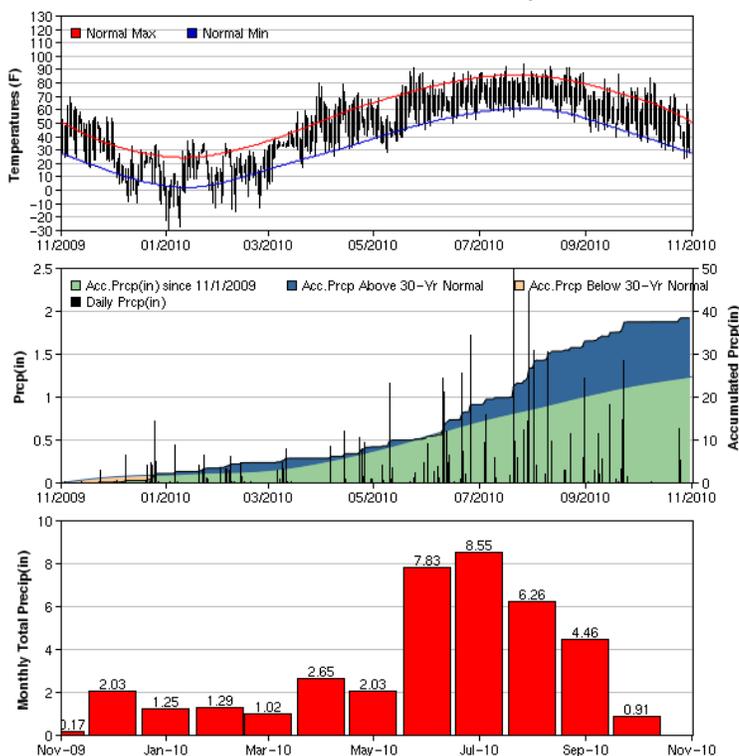
Precipitation Summary

October was a dry month for most areas of the High Plains Region. Large portions of eastern Colorado, central Kansas, and eastern Nebraska along with smaller areas of southwestern North Dakota, western South Dakota, and western Wyoming received less than 25 percent of normal precipitation. The ongoing lack of precipitation caused abnormally dry and moderate drought conditions to expand in eastern Colorado, southwestern Wyoming, and the panhandle of Nebraska. The exceptions were west-central Colorado, eastern Wyoming, and south-central South Dakota where total precipitation for the month was 150 percent of normal or greater.

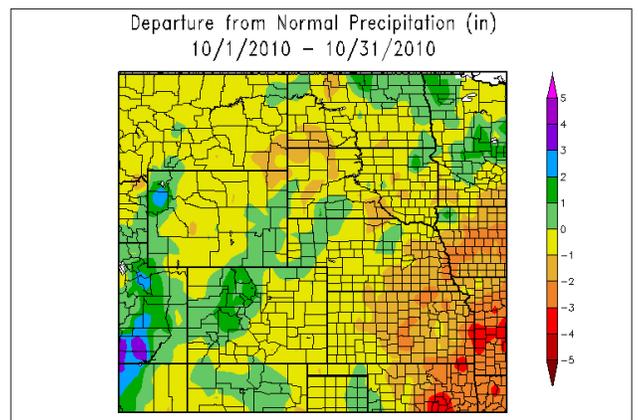
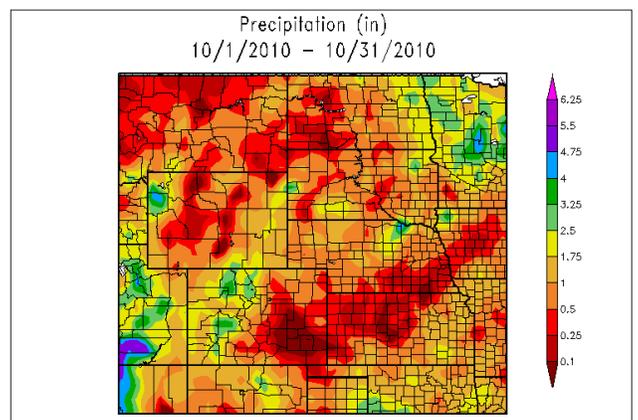
In west-central Colorado, many locations ranked in the top 10 wettest Octobers on record. For example, Taylor Park, Colorado had its 2nd wettest October on record with a liquid precipitation total of 3.31 inches (84 mm). This could not beat out the old record of 4.89 inches (124 mm) recorded in 1969 (period of record 1940-2010). Taylor Park also recorded its 8th snowiest October on record with 8.2 inches (21 cm). The snowiest October was also set in 1969 when 43.0 inches (109 cm) of snow fell.

An intense low pressure system brought rain, snow, and strong winds to parts of the Region October 26-27. In North Dakota, precipitation started as heavy rain which caused a few flood warnings to be issued. The rain turned to snow and totals were generally in the 2-6 inch (5-15 cm) range; however a narrow band in the north-central portion of the state reported snowfall totals of 8-13 inches (20-46 cm). In South Dakota, the precipitation from this storm was enough to push Sioux Falls up to the wettest year on record (period of record 1893-2010). By the end of October, the total precipitation at Sioux Falls this year was 36.25 inches (921 mm), which beat out the old annual precipitation record of 36.11 inches (917 mm) set in 1993. In addition, strong winds with gusts of 50-60 miles per hour (80-97 kilometers per hour) were reported in North Dakota, South Dakota, and Nebraska.

SIoux FALLS FOSS FLD, SD



Normals based up 1971-2000 Normals, if available
 Grey Shading indicates where data are flagged as "Missing"
 Accumulated Precip (where available) may not reflect actual deviations from normal if data are missing
 "Experimental" May Contain Preliminary Data
 High Plains Regional Climate Center
<http://hprcc.unl.edu>

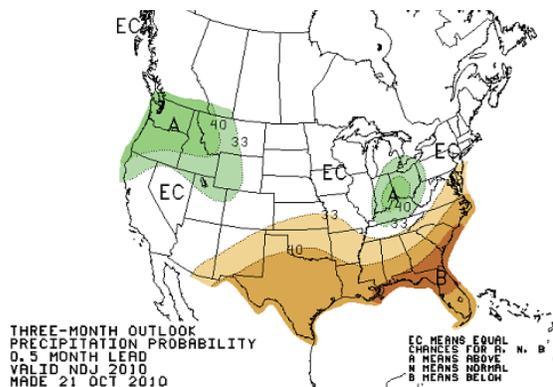
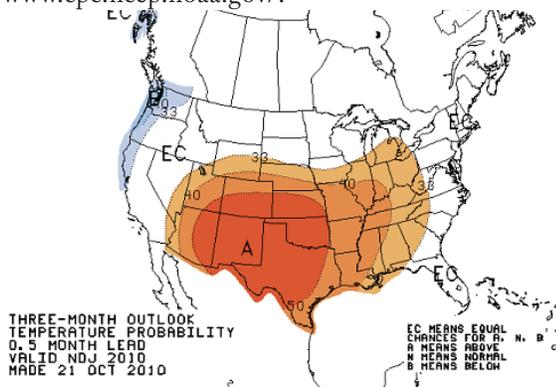


Above: Maximum, minimum, and normal temperatures, accumulated precipitation, and monthly total precipitation for Sioux Falls, South Dakota over the past year (top left). Total precipitation (inches) (top right) and Departure from Normal Precipitation (inches) (bottom right) for October 2010 in the High 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

La Niña conditions were present across the equatorial Pacific this month and are expected to continue through early 2011. The temperature outlook indicates a higher probability of above normal temperatures for Colorado, Kansas, Nebraska, the southern half of Wyoming, and the southwest corner of South Dakota. Equal chances of above, near, or below normal temperatures are predicted elsewhere in the Region. The precipitation outlook indicates a higher probability of above normal precipitation for western Wyoming and the northwest corner of Colorado. Meanwhile, southern Kansas and the far southeast corner of Colorado have a higher probability of below normal precipitation. Equal chances of above, near, or below normal precipitation 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). More information about these forecasts can be found here: <http://www.cpc.ncep.noaa.gov/>.



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

October brought some changes to the U.S. Drought Monitor. Below normal precipitation and declining soil moisture levels led to the expansion of abnormally dry conditions (D0) in western Kansas. A new area of D0 developed in central Nebraska as well. The moderate drought conditions (D1) in central Colorado and extreme southern Wyoming that developed last month spread further east in Colorado, and into the southeast corner of Wyoming and the panhandle of Nebraska. Only small areas of D1, in north-central and southwestern South Dakota, north-central Colorado, and extreme western Wyoming, were eliminated. According to the U.S. Seasonal Drought Outlook released October 21st, the D1 areas in western Wyoming were expected to improve and the D1 areas in western Colorado, the panhandle of Nebraska, and far southeastern Wyoming were expected to persist through December 2010.

U.S. Drought Monitor High Plains

October 26, 2010
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	65.5	34.5	9.0	0.0	0.0	0.0
Last Week (10/19/2010 map)	65.7	34.3	6.6	0.0	0.0	0.0
3 Months Ago (08/03/2010 map)	90.6	9.4	1.4	0.0	0.0	0.0
Start of Calendar Year (01/05/2010 map)	89.7	10.3	1.7	0.0	0.0	0.0
Start of Water Year (10/05/2010 map)	65.1	34.9	4.4	0.0	0.0	0.0
One Year Ago (10/27/2009 map)	94.9	5.1	1.4	0.0	0.0	0.0

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

<http://drought.unl.edu/dm>

Released Thursday, October 28, 2010
Author: Eric Luebehusen, U.S. Department of Agriculture

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period
Valid October 21, 2010 - January 2011
Released October 21, 2010

KEY:

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. 'Ongoing' drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

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://www.ndmc.unl.edu/dm/monitor.html>
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	64.4	25.4	44.9	2.0	78	10/01	5	10/28	0.69	0.02	103
Akron Washington County Airport	68.4	39.9	54.2	3.2	85	10/07+	23	10/28	0.77	-0.13	86
Colorado Springs Municipal Airport	67.9	39.5	53.7	4.8	85	10/01	18	10/28	0.43	-0.43	50
Grand Junction Walker Field Airport	69.0	42.6	55.8	3.1	88	10/01	29	10/27	1.53	0.53	153
Pueblo Memorial Airport	73.2	36.9	55.0	2.7	85	10/07+	13	10/28	0.03	-0.61	5

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	73.0	45.1	59.1	3.1	91	10/08	31	10/28	0.48	-1.36	26
Dodge City Regional Airport	75.7	44.8	60.3	3.2	90	10/07	32	10/28	1.12	-0.33	77
Goodland Renner Field	71.5	37.9	54.7	2.9	85	10/08	23	10/28	0.23	-0.82	22
Topeka Municipal Airport	74.3	45.1	59.7	3.1	90	10/08	31	10/29	1.34	-1.65	45
Wichita Mid-Continent Airport	76.5	48.1	62.3	3.7	90	10/08+	34	10/29	0.50	-1.95	20

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	69.8	37.4	53.6	4.7	88	10/05	20	10/28	0.61	-0.44	58
Grand Island Airport	70.9	40.3	55.6	3.6	91	10/08	28	10/28	0.30	-1.21	20
Lincoln Municipal Airport	71.6	39.2	55.4	1.9	91	10/08	25	10/29	0.13	-1.81	7
Omaha Eppley Airfield	70.4	44.1	57.3	4.1	90	10/08	31	10/29+	0.16	-2.05	7
Norfolk Karl Stefan Airport	69.4	38.5	54.0	3.0	92	10/08	27	10/28	0.70	-1.02	41
North Platte Regional Airport	68.5	35.7	52.1	2.4	89	10/08	22	10/28	1.05	-0.19	85
Valentine Miller Field	68.6	37.6	53.1	4.8	89	10/05	23	10/28	0.70	-0.52	57

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	62.0	35.4	48.7	3.5	84	10/08+	20	10/28	0.68	-0.60	53
Fargo International Airport	61.5	38.6	50.0	4.7	84	10/09+	25	10/28	1.91	-0.06	97
Grand Forks International Airport	60.4	35.2	47.8	3.5	82	10/09	23	10/29+	2.44	0.74	144
Theodore Roosevelt Airport	62.5	35.0	48.7	3.5	81	10/08	12	10/28	0.30	-1.04	22
Williston International Airport	62.0	32.6	47.3	3.7	80	10/07	13	10/28	1.26	0.39	145

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 2010 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	62.4	36.1	49.3	2.5	85	10/08	22	10/31+	1.03	-0.60	63
Huron Regional Airport	64.6	38.5	51.6	3.7	85	10/08	24	10/28	0.86	-0.73	54
Pierre Regional Airport	65.7	38.6	52.2	2.5	89	10/08+	22	10/28	0.98	-0.66	60
Rapid City Regional Airport	68.0	38.7	53.3	5.1	90	10/05	23	10/28	0.32	-1.05	23
Sioux Falls Joe Foss Field Airport	64.3	38.3	51.3	3.3	84	10/08	24	10/28	0.91	-1.02	47

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	65.9	34.7	50.3	4.6	86	10/03	23	10/22	0.56	-0.58	49
Cheyenne Municipal Airport	62.6	37.5	50.0	4.6	79	10/04	21	10/28	0.82	0.07	109
Lander Hunt Field Airport	65.8	37.7	51.8	5.4	86	10/03	21	10/28	0.18	-1.19	13
Laramie Regional Airport	59.4	32.2	45.8	3.9	76	10/03	22	10/27	1.49	0.69	186
Rawlins Municipal Airport	61.6	33.0	47.3	1.8	79	10/03	19	10/28	0.04	-0.82	5
Sheridan County Airport	68.0	36.8	52.4	7.3	89	10/03	21	10/28	1.11	-0.30	79

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>.

State Spotlight - North Dakota

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



Precipitation:

October's percent of normal precipitation ranged from roughly 25% to 200% (Figure 1. High Plains Regional Climate Center). The first 24 days of October were primarily dry with above normal temperatures. Beginning on the 25th, a major storm system started to develop in the Midwest. By the 26th, the storm was producing winds similar to a tropical storm. Peak wind speeds in North Dakota ranged from in the 50's to 60's mph (measured at 33 feet). The National Weather Service (NWS) reported record breaking low pressure in Minnesota and Wisconsin. Fargo at 28.58 inches of mercury came within 3 hundredths of the previous record of 28.55 inches of mercury set on March 15, 1920. The two day rain total, 26th to 27th, in eastern North Dakota was 2 to 3 inches. The two day snow total for northeastern ND was 2 to 6 inches, north central ND was 8 to 13 inches, and central to western ND ranged from 2 to 8 inches. The remaining days of October were dry with mild temperatures.

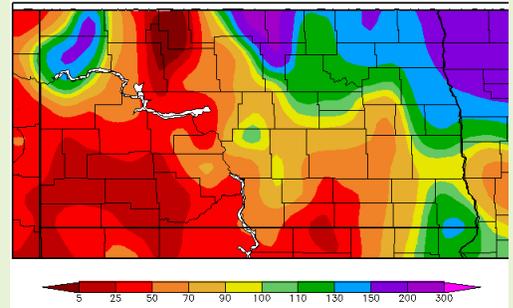


Figure 1. Percent of Normal Precipitation in October 2010 for North Dakota (High Plains Regional Climate Center)

Temperature:

The North Dakota Agricultural Weather Network (NDAWN) October average air temperatures ranged from 45°F to 50°F. NDAWN departure from normal temperatures ranged from 2°F to 6°F (Figure 2. North Dakota State Climate Office). Temperatures were above normal across the state with the warmer temperatures falling in the southwest and eastern part of the state. Most of the month had above normal or near normal temperatures. A few days at the beginning of the month had 10°F or more above normal temperatures. According to the USDA, NASS North Dakota Field Office, the warm, dry days helped producers make excellent harvest progress. The warmer weather did however delay sugarbeet harvest.

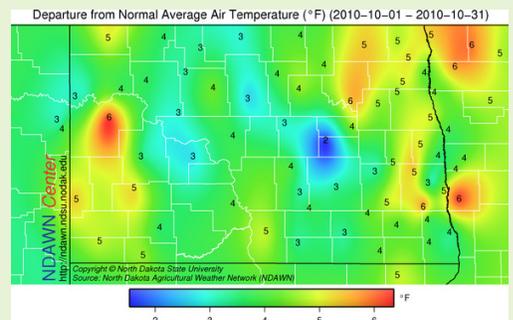


Figure 2. Temperature Departure from Normal in October 2010 for North Dakota (North Dakota State Climate Office)

State Spotlight - South Dakota

Dennis Todey - State Climatologist
South Dakota State Climate Office, South Dakota State University



Synopsis

Warm and dry conditions covered the state for much of the month leading to rapid crop harvesting progress. Two large storm systems impacted the state during the month leading to some heavier precipitation and wind events. But most of the month was very quiet weather-wise. Crop progress was excellent due to dry conditions.

Temperatures

Average temperatures in October ranged from around 50 F in the northern part of the state to the mid 50s F in the southern part. Statewide temperatures were all above average, ranging from about 2 -6 F above. The largest deviations were in and around the Black Hills. Many stations in the west reported top ten warmest Octobers. The highest (of those with longer periods of record) was Bison at number 2 and Elm Springs reaching number 3. Rapid City had its 7th warmest October.

The overall warm temperatures provided several impacts during the month. Most places in the state were near average to late in their first frost and freeze events. Brookings for example had its 3rd latest first sub-32 F event. Most row crops had matured very early due to the warmer than average summer. Thus, freeze was not a concern. A couple comments indicated that the lack of freeze had delayed harvesting in a few crops because they had not frozen completely. The lack of a freeze also allowed mosquito populations to continue to survive with the wet conditions. Horticultural plants also had an extended season with the lack of frost.

Precipitation and Drought

Dry conditions pervaded the whole state for the month, save a few stations scattered around the state. Much of the far west had less than half an inch total during the month. Further east totals did reach above an inch. Two isolated areas had over 4" for the month (Lead/Deadwood and Webster). Much of the state was 50-70% of average or less during the month. During much of the first three weeks of the month there was no precipitation across much of the row crop area providing excellent harvest conditions.

Two more stations, Sioux Falls and Forestburg passed previous all-time annual records during the month joining two from the previous month.

Despite the overall dryness the area of D0 in north central South Dakota was removed because of reduced overall impact. One storm brought rain to much of the southwestern D0 area reducing the area of D0 needed. At the end of the month only a part of Fall River County was in D0 from some longer term dryness. Despite the dry conditions there was little negative impact and some positive for agriculture.

The overall dryness did rank many stations in the top 20 driest. October has a tendency to be quite dry. Thus, low precipitation totals still don't rank too high in a ranking scale. On the wet side, the 6.24" in Lead and the 4.06" in Webster ranked them 5th all time in wettest Octobers.

For more information about the South Dakota State Climate Office: <http://climate.sdstate.edu>

The SDSU's AWDN is a part of the High Plains Automated Weather Data Network (AWDN). Data are available through SDSU or the High Plains Regional Climate Center.

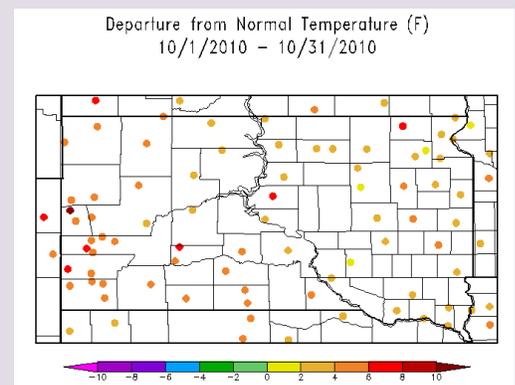


Figure 1. Departure from Normal Temperature in October 2010 for South Dakota (High Plains Regional Climate Center)

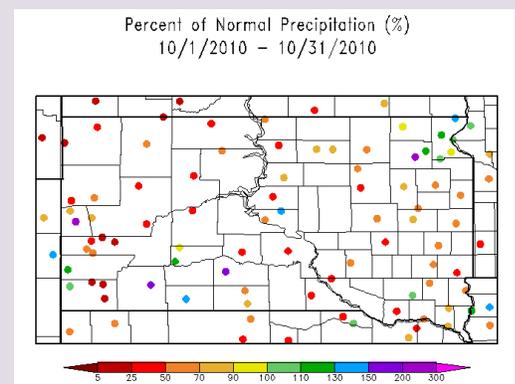


Figure 2. Percent of Normal Precipitation in October 2010 for South Dakota (High Plains Regional Climate Center)

State Spotlight - South Dakota

Dennis Todey - State Climatologist
South Dakota State Climate Office, South Dakota State University



Agricultural Impacts

Agricultural conditions for the month were about as good as could be expected. The dry first several weeks of the month in the row crop area allowed excellent progress on harvesting. All major crops were ahead of average in harvest progress. By the end of the month corn was 81% harvested ahead of the 5 year average of 64%. Soybeans were complete. Sunflower and sorghum were also both ahead of their 5 year averages.

Incidental reports were that corn was being harvested near 15% moisture (the percentage needed to sell or store) in many places. This was very welcomed after last year's major harvest issues in the state where wet conditions delayed harvest of very wet corn. While yields have been lower in areas, the progress seems to have pleased producers.

Hydrology

Despite the shorter-term dryness, long term wetness continues to impact soil moisture and river flows. Rivers in the east (Big Sioux, Vermillion and James) are all reporting in the 90th percentile for flows. Western rivers are showing some impact of the dryness, but are still running above median for the most part.

Severe Weather Impacts

Very little severe weather occurred in the state during the month. The first snows were reported with several inches indicated in a storm report from Roy Lake in the northeast part of the state during the storm on October 27.

One major storm that brought the first snows to several areas of the state was a particularly strong storm gathering national attention. The center of the storm was over northern Minnesota reaching near-record low pressure levels leading to a discussion of a national low pressure record. In the end the storm did not break a low pressure record, but was impressive, nonetheless. The state did not receive much precipitation from the storm overall. But wind gusts into the 60s mph were common on October 26 and 27.

As a result of the storm, a wall that was part of Rapid City high school addition was blown down. Several tractor-trailers were overturned due to combinations of wind and slickness on roads. Some power outages were reported in the Black Hills and some other areas of South Dakota. But the overall impact was fairly mild.

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

