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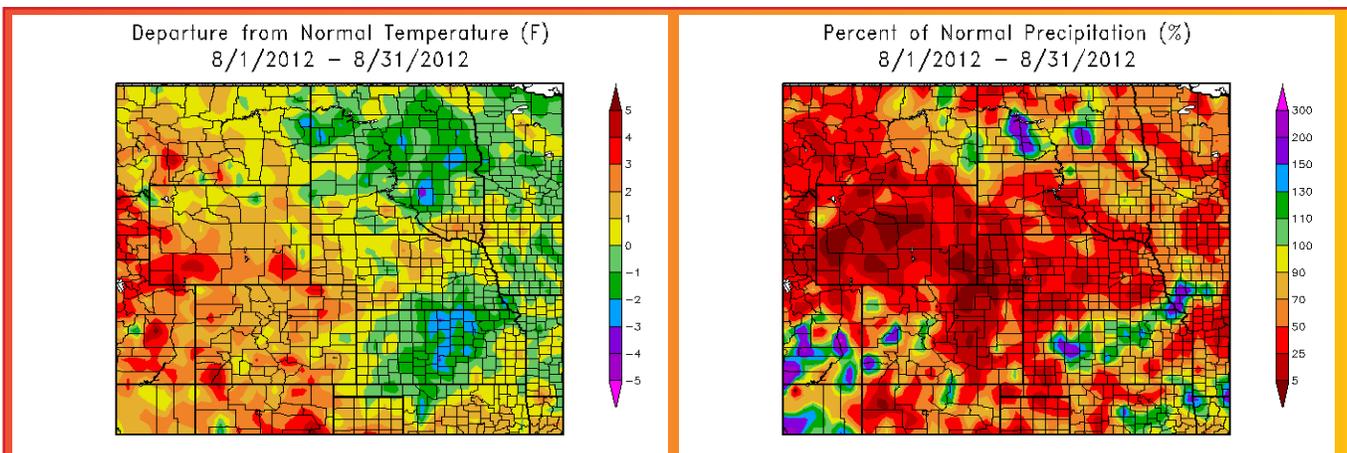


Dry creek bed near Lindy, Nebraska - Photo by Ramesh Laungani
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August 2012 Climate Summary

Region Breakdown

For the first time since February of this year, there were widespread below normal monthly temperatures in the High Plains Region. Much of North Dakota, South Dakota, Kansas, and southern Nebraska had average temperatures which were up to 3.0 degrees F (1.7 degrees C) below normal. Interestingly, some of these areas have not had below normal monthly averages since last year, as the cooler areas in February were mainly in Colorado, Wyoming, and western Nebraska. For instance, the last time the majority of South Dakota had below normal temperatures was September of last year. Meanwhile, areas of Colorado, Wyoming, southern South Dakota, and western and central Nebraska had temperatures which were above normal. Departures were not high or low enough to break monthly records. However, there were still many daily records as temperatures dipped in the middle of the month and soared at the end of the month. One example was Academy 2 NE, South Dakota, which had a high temperature of 113 degrees F (45.0 degrees C) on the 30th. This beat out the old record of 101 degrees F (38.3 degrees C) and was the second highest August temperature on record (period of record 1898-2012). The highest August temperature of 115 degrees F (46.1 degrees C) was set on August 4, 1934. On the other end of the spectrum, there were also low temperature records. Lincoln, Nebraska had a low temperature of 44 degrees F (6.7 degrees C) on



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

August 2012 Climate Summary

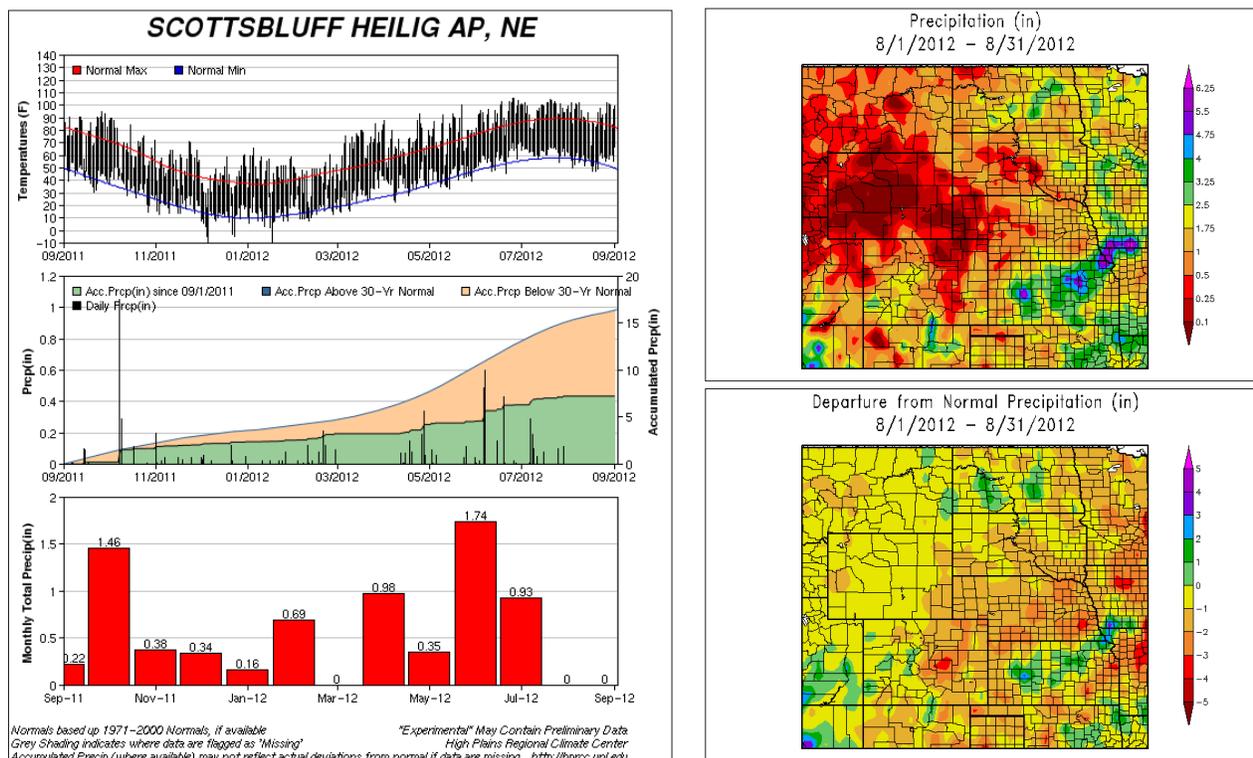
August 17th, which beat out the previous record of 46 degrees F (7.8 degrees C), set in 1943.

August was a busy month for producers as drought damaged crops had to be chopped for silage or baled for hay in Nebraska, Kansas, and the Dakotas. The lack of feed and water caused the culling of herds to continue in Nebraska and Kansas. According to the USDA, by the end of the month 85 percent of all corn, 82 percent of all soybeans, 63 percent of all hay acreage, and 72 percent of all cattle were within an area experiencing drought conditions in the United States. This was a slight improvement from last month.

Precipitation Summary

August was yet another dry month for the majority of the High Plains Region. A large expanse of the Region including Wyoming, eastern Colorado, the eastern and western sides of Kansas, most of Nebraska, central and southern South Dakota, and pockets of North Dakota had precipitation totals which were at the most 50 percent of normal. There were even areas of Wyoming, northeast Colorado, and the panhandle of Nebraska which received less than 5 percent of normal precipitation. Because of the lack of precipitation, there were new records set again this month. For instance Scottsbluff, Nebraska received no measurable precipitation and set a new record for driest August. The old record of 0.04 inches (1 mm) was set in 2001 (period of record 1893-2012). On average, Scottsbluff receives 1.30 inches (33 mm) of precipitation in August. Another location which had its driest August on record was Colorado Springs, Colorado which only received 0.12 inches (3 mm) of precipitation. This beat out the old record of 0.15 inches (4 mm) set in 1962 (period of record 1894-2012).

The only areas of the Region which received much needed rainfall were pockets of central North Dakota, central and northeastern Kansas, far southeastern Nebraska, and a few pockets of western Colorado. These areas had precipitation totals ranging from 110 percent of normal to 300 percent of normal. The heavy rainfall improved drought conditions, however, at this point many of the crops will not benefit from the precipitation.



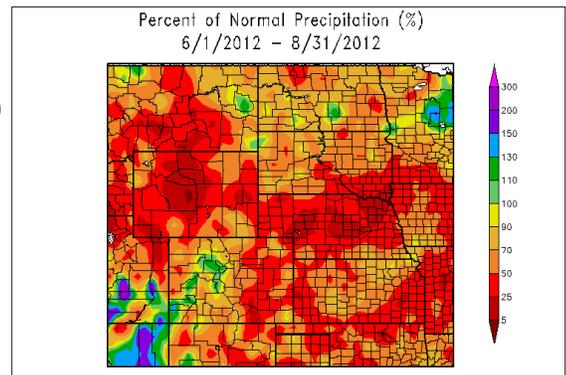
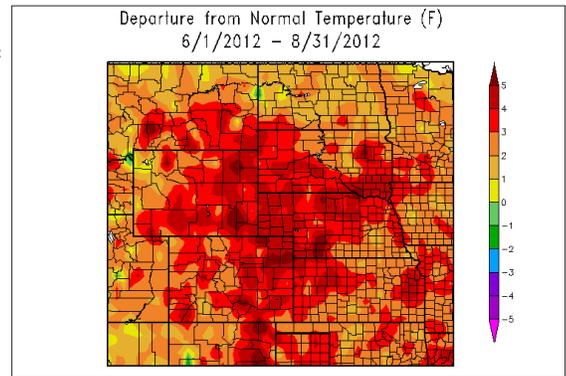
Above: Maximum, minimum, and normal temperatures, accumulated precipitation, and monthly total precipitation for Scottsbluff, NE over the past year (top left). Total precipitation (inches) (top right) and Departure from Normal Precipitation (inches) (bottom right) for August 2012 in the High Plains Region.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

Summer 2012 Highlights

Summer (June, July, and August) 2012 went down as one of the hottest on record for many locations in the High Plains Region. Even the locations that did not break records were very warm as every station had average temperatures which were above normal. The larger temperature departures occurred in eastern Colorado, eastern Wyoming, southern South Dakota, western and northern Nebraska, and pockets of Kansas where the departures from normal temperature ranged from 4.0-5.0 degrees F (2.2-2.8 degrees C) above normal. There were even a few pockets of northeastern Colorado, southeastern Wyoming, and southwestern Nebraska where temperature departures topped 5.0 degrees F (2.8 degrees C) above normal. Denver, Colorado was one of the record breaking locations with an average temperature of 76.3 degrees F (24.6 degrees C) which was 4.9 degrees F (2.7 degrees C) above normal. This easily beat the old record of 74.1 degrees F (23.4 degrees C) set in 1934 (period of record 1872-2012). Denver also set a new record for most days at or above 100 degrees F (37.8 degrees C) with 13. The previous record of 7 occurred in 2005. It was an overall dry summer for the Region and most locations ranked in the top 20 driest summers. Some locations set new precipitation records as well. Grand Island, Nebraska had its driest summer on record with only 2.37 inches (60 mm) of precipitation. This was 8.45 inches (215 mm) below normal and only 22 percent of normal precipitation. The old record of 2.87 inches (73 mm) was set back in the summer of 1940 (period of record 1895-2012).

The impacts from the hot and dry summer have been numerous and many more will be realized as the summer is assessed. Just some of the impacts include widespread drought, crop damage and failure, low river levels, and fish kills.



Above: Departure from Normal Temperature (F) (top) and Percent of Normal Precipitation (bottom) for Summer 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>.

Summer 2012 Records - Highlights

Seasonal Records

Temperature in degrees F / Precipitation in inches

Warmest	Average Temperature	Old Record / Year	Period of Record
Colorado Springs, CO	73.3	73.2 / 2011	1894-2012
Denver, CO	76.3	74.1 / 1934*	1872-2012
Scottsbluff, NE	76.4	75.8 / 1936	1893-2012
Cheyenne, WY	69.9	69.5 / 1881	1872-2012
Driest	Precipitation	Old Record / Year	Period of Record
Grand Island, NE	2.37	2.87 / 1940	1895-2012
Norfolk, NE	1.88	3.50 / 1936	1893-2012
North Platte, NE	2.65	3.81 / 1886	1874-2012
Valentine, NE	2.79	2.92 / 1917	1889-2012
Sioux Falls, SD	2.73	3.55 / 1894	1893-2012
Lander, WY	0.15	0.25 / 1924	1891-2012

All Data are Preliminary and Subject to Change.

* indicates multiple records, latest date is listed

Source: National Weather Service Cooperative Observation Network Data

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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	90.2	59.1	74.6	2.5	100	08/28	48	08/17	0.12	-2.18	5
Alamosa San Luis Airport	82.1	44.6	63.3	0.6	88	08/07	36	08/25	0.50	-0.77	39
Colorado Springs Municipal Airport	85.7	56.7	71.2	2.5	94	08/06	48	08/17	0.12	-3.22	4
Grand Junction Walker Field Airport	92.5	65.2	78.8	3.3	100	08/09+	58	08/25	0.16	-0.79	17
Pueblo Memorial Airport	92.7	57.8	75.3	1.9	102	08/11	50	08/31	0.24	-2.08	10

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	87.0	61.3	74.1	-3.0	99	08/08	49	08/17	3.34	0.20	106
Dodge City Regional Airport	91.3	61.1	76.2	-1.9	107	08/01	52	08/19+	3.24	0.49	118
Goodland Renner Field	90.7	58.4	74.5	0.8	102	08/06+	44	08/19	0.90	-1.80	33
Topeka Municipal Airport	91.1	62.3	76.7	-0.7	104	08/08+	50	08/20+	3.72	-0.52	88
Wichita Mid-Continent Airport	93.1	67.1	80.1	0.1	107	08/01	54	08/20	3.38	-0.33	91

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	93.0	54.8	73.9	1.7	106	08/29	42	08/19+	0.19	-1.39	12
Grand Island Airport	88.7	61.0	74.8	0.8	103	08/08	45	08/17	0.94	-2.18	30
Lincoln Municipal Airport	89.7	59.2	74.5	-0.8	103	08/08	44	08/17	0.30	-3.19	9
Norfolk Karl Stefan Airfield	88.4	58.8	73.6	0.8	102	08/30+	44	08/17	0.99	-2.26	30
North Platte Regional Airport	90.3	56.4	73.4	1.3	103	08/29	41	08/19	1.09	-1.20	48
Omaha Eppley Airport	88.2	63.2	75.7	1.1	103	08/07	48	08/17	2.39	-1.43	63
Valentine Miller Field	91.3	56.2	73.8	1.0	108	08/29	41	08/17	0.99	-1.19	45

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	82.6	52.7	67.7	-1.8	102	08/29	41	08/17	2.33	0.05	102
Fargo International Airport	82.6	55.0	68.8	-0.5	96	08/29	43	08/20	0.92	-1.64	36
Grand Forks International Airport	82.0	53.2	67.6	0.5	97	08/29	41	08/20+	2.01	-0.87	70
Theodore Roosevelt Airport	84.5	51.7	68.1	-0.3	105	08/29	43	08/17+	1.17	-0.37	76
Williston International Airport	84.5	51.8	68.1	-0.8	99	08/29	39	08/17	0.54	-0.91	37

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>.

August 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	82.5	52.9	67.7	-1.3	98	08/29	39	08/17	1.76	-0.67	72
Huron Regional Airport	85.7	55.7	70.7	-0.9	102	08/01	40	08/17	1.90	-0.53	78
Pierre Regional Airport	89.6	55.5	72.6	-1.1	111	08/29	41	08/17	0.33	-1.47	18
Rapid City Regional Airport	89.1	55.7	72.4	0.9	107	08/29	44	08/17	0.58	-0.98	37
Sioux Falls Joe Foss Field Airport	86.1	58.7	72.4	1.8	104	08/30	40	08/17	1.75	-1.30	57

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	88.9	52.4	70.7	1.7	97	08/29+	40	08/25+	0.20	-0.65	24
Cheyenne Municipal Airport	85.0	53.7	69.3	1.7	93	08/29	41	08/19	0.14	-1.81	7
Lander Hunt Field Airport	88.5	57.3	72.9	3.3	96	08/29	45	08/04	0.03	-0.58	5
Laramie Regional Airport	82.1	47.3	64.7	2.4	89	08/09	41	08/21+	0.34	-0.89	28
Rawlins Municipal Airport	85.3	50.8	68.0	2.8	92	08/05	41	08/19	0.17	-0.59	22
Sheridan County Airport	88.9	51.0	70.0	1.0	102	08/29	39	08/25	0.11	-0.61	15

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Source: National Weather Service Cooperative Observation Network Data

State Spotlight - North Dakota



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

Precipitation:

Based on the North Dakota Agricultural Weather Network (NDAWN), August precipitation in North Dakota ranged from mostly well below normal conditions to well above normal conditions (Figure 1, NDAWN Center). The greatest majority of the state had below normal precipitation with the driest areas of less than 50% of normal in the north western and east central regions. Throughout August the drought conditions did not differ significantly from July. According to the U.S. Drought Monitor August 28th assessment, 17.5% of the state was experiencing severe drought (D2), and 22% of the state was experiencing moderate drought (D1). Based on the short and medium range forecast, below normal precipitation will drought conditions will intensify through the end of the growing season. According to the NASS ND Field Office, 23% of the corn is in mature stage, and 26% and 90% of dry edible beans, and canola respectively are harvested.

Temperature:

August daily average air temperatures ranged from ~65 °F in the northeast to ~70 °F in the western regions. The departure from normal average air temperatures were below normal across the state with a range of ~2 °F to ~3 °F (Figure 2, NDAWN Center) with the exception of pockets of above normal areas. Below normal temperature conditions slowed down the impacts of below normal precipitation in drought stricken areas. After the official ranking for August is available, this would be the first time ND would have a cooler than normal month after 12 consecutive months of warmer than normal months since June 2011, if August is indeed cooler than normal in ND.

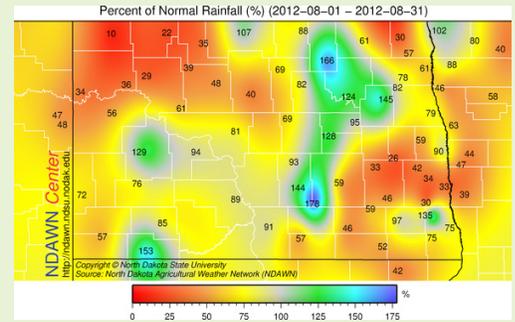


Figure 1. Percent of Normal Precipitation in August 2012 for North Dakota (North Dakota State Climate Office)

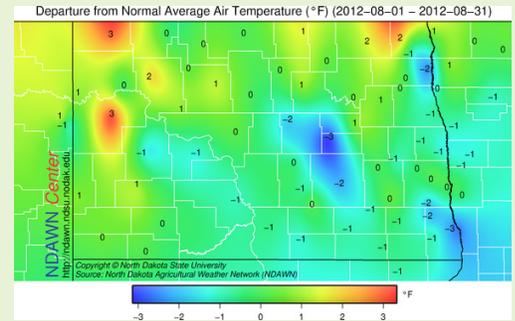


Figure 2. Temperature Departure from Normal in August 2012 for North Dakota (North Dakota State Climate Office)

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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