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Central Nebraska - Photo by Ken Dewey
<http://www.nebraskaweatherphotos.org>

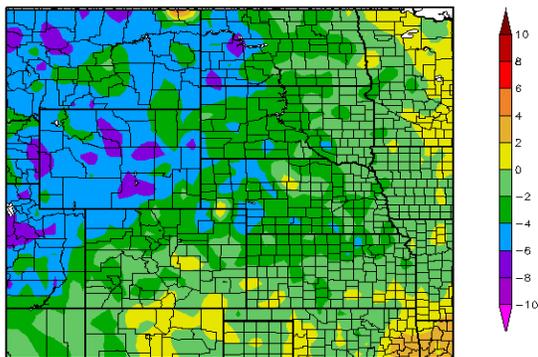
May 2010 Climate Summary

Region Breakdown

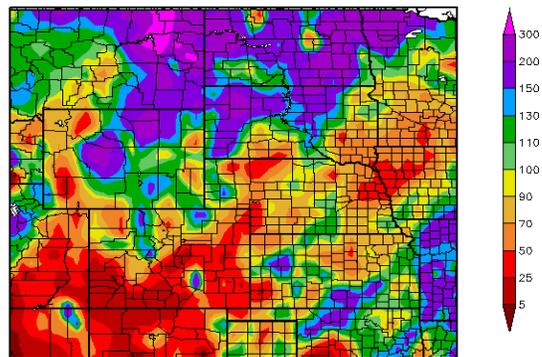
May 2010 was filled with a wide range of weather. Heavy snows across Nebraska, Colorado, and Wyoming led to record breaking seasonal snowfall totals in some locations. Meanwhile, 676 preliminary storm reports in the High Plains Region were received by the Storm Prediction Center. Of these reports 102 were tornado reports, 349 were hail reports, and 225 were wind reports.

May 2010 was cooler than normal across the Region. For most of the month, average temperatures were below normal, but the end of the month was characterized by above normal temperatures. Despite the warm temperatures, temperature departures were below normal overall. The largest temperature departures occurred in eastern North Dakota and Wyoming where temperature departures were 4-8 degrees F (2.2-4.4 degrees C) below normal. Many locations in Wyoming ranked in the top 10 coolest Mays on record. Worland, Wyoming was this month's record breaking location with an average temperature of 50.0 degrees F (10.0 degrees C) which was 7.7 degrees F (4.3 degrees C) below normal. This beat out the old record of 52.4 degrees F (11.3 degrees C) recorded in May 1983 (period of record 1960-2010).

Departure from Normal Temperature (F)
5/1/2010 - 5/31/2010



Percent of Normal Precipitation (%)
5/1/2010 - 5/31/2010



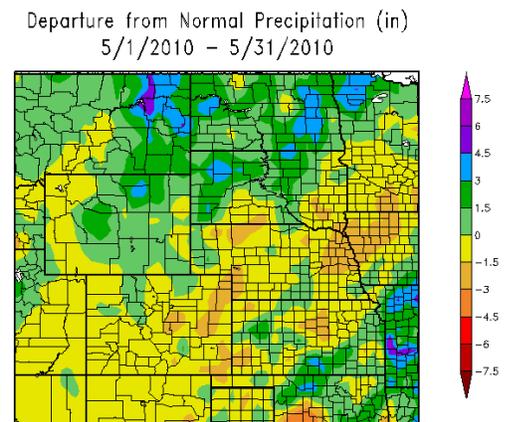
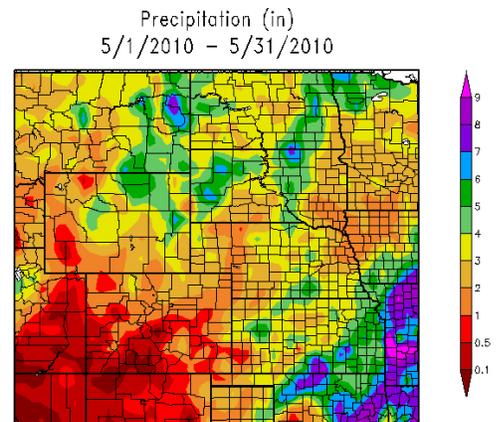
Departure from 1971-2000 Normal Average Temperature (left) and Percent of Normal Precipitation (right) for May 2010 in the High Plains Region. Maps produced by High Plains Regional Climate Center. Available at: <http://hprcc.unl.edu/maps/current>

Precipitation Summary

Precipitation was variable over the Region this month. A large swath of below normal precipitation stretched from the four corners region northeast through portions of Nebraska, Kansas, and South Dakota. Western Wyoming, where drought conditions are ongoing also received below normal precipitation. Areas receiving at least 150 percent of normal include much of North Dakota, western and central South Dakota, central Wyoming, and pockets of Kansas. The precipitation in south central Kansas and western North Dakota helped eliminate the abnormally dry conditions which had developed last month.

Like last month, weather ranging from snow to tornadoes affected parts of the Region. One strong storm occurred May 11-12 and brought snow to Wyoming, Colorado, and Nebraska. In central Wyoming, unofficial reports indicate that up to 40 inches (101.60 cm) of snow fell on the east slopes of the Wind River and southern Absaroka mountains. The late season snowstorm also bumped Scottsbluff, Nebraska up to the snowiest season on record and Cheyenne, Wyoming up to the second snowiest season on record. Scottsbluff, Nebraska received 82.2 inches (208.79 cm) of snow which beat out the old record of 78.5 inches (199.39 cm) recorded during the 1979-1980 snow season (period of record 1893-2010). Cheyenne, Wyoming received 103.4 inches (262.64 cm) of snow this season which came in second to the record 121.5 inches (308.61 cm) of snow received in the 1979-1980 snow season (period of record 1883-2010).

Another strong storm occurred May 24th and brought severe weather to the Dakotas, Nebraska, and Kansas. Multiple tornadoes were reported and one EF-2 tornado destroyed an elementary school in northwest South Dakota. In addition, 4.25 inch hail was reported in the panhandle of Nebraska, high winds caused damage in Alliance, Nebraska, and flooding was reported along the White River in Nebraska.



Above: Total precipitation (inches) (top) and Departure from Normal Precipitation (inches) (bottom) for May 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>.

May 2010 Records - Highlights

Monthly Records			
Temperature in degrees F, Precipitation in inches			
Coollest	New Record	Old Record	Period of Record
Devils Tower, SD	48.5	48.6/1995	1959-2010
Boysen Dam, WY	49.8	tied/1950	1948-2010
Casper, WY	46.5	47.2/1946	1939-2010
Emblem, WY	48.9	49.3/1917*	1911-2010
Pavillion, WY	46.9	49.5/1983*	1919-2010
Rock Springs, WY	44.7	44.9/1953	1948-2010
Ten Sleep 16 SSE, WY	46.0	47.3/1983	1959-2010
Wettest	New Record	Old Record	Period of Record
Ashley, ND	6.90	6.20/2007	1893-2010

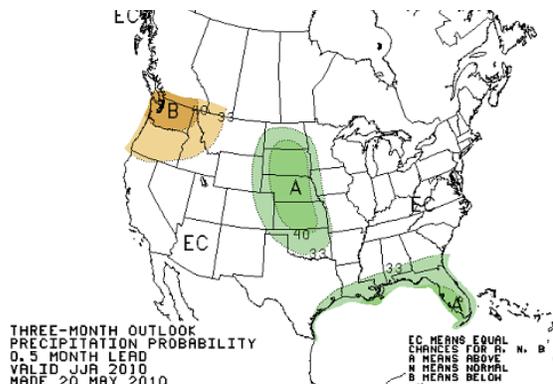
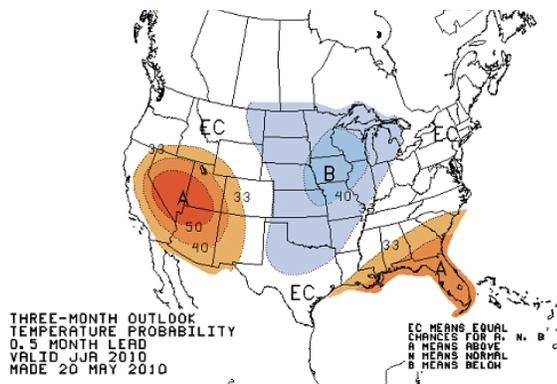
All Data are Preliminary and Subject to Change.
 * indicates multiple records, latest year is listed
 Source: National Weather Service Cooperative Observation Network Data

The High Plains Regional Climate Center is one of the NOAA 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

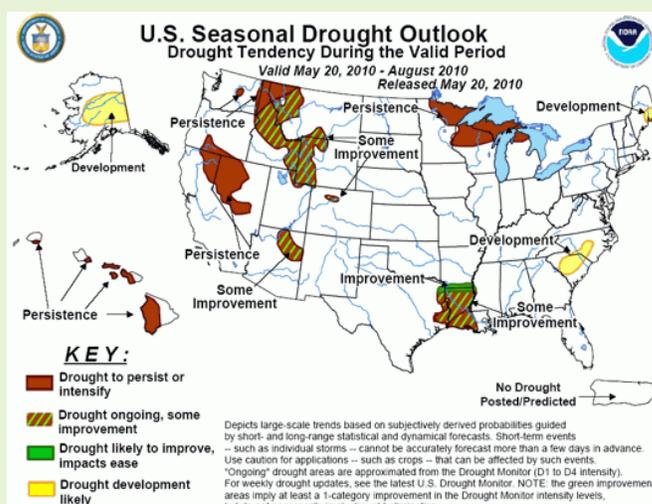
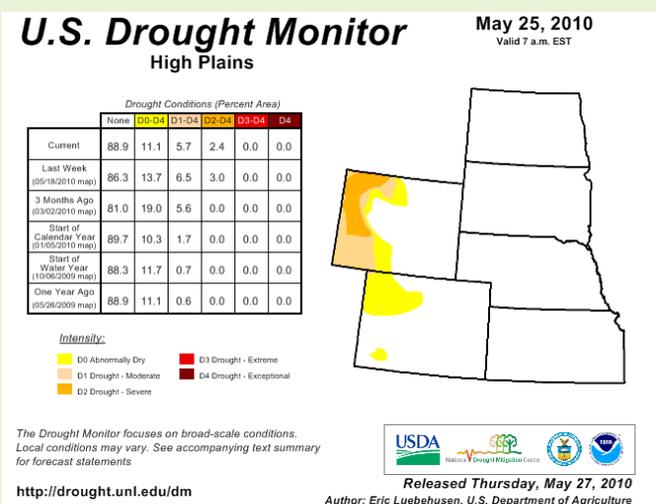
El Niño conditions are currently transitioning to El Niño Southern Oscillation (ENSO) neutral conditions at this time as indicated by decreasing sea surface temperatures in the Pacific Ocean. Models are indicating a possibility of La Niña developing later in 2010. The temperature outlook indicates a higher probability of below normal temperatures for the majority of the Region including the Dakotas, Nebraska, Kansas, and northeastern Wyoming. The western half of Colorado and the far southwestern corner of Wyoming have a higher probability for above normal temperatures. Equal chances of above, near, or below normal temperatures are predicted elsewhere. The precipitation outlook indicates a higher probability of above normal precipitation for the Dakotas, Nebraska, Kansas, eastern Wyoming, and the eastern half of Colorado. Equal chances of above, near, or below normal precipitation are predicted elsewhere in the Region. 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

This month, abnormally dry conditions (D0) were eliminated in central Kansas and the northwest corner of North Dakota. Although abnormally dry to moderate drought conditions (D0-D2) remain in western Wyoming, much of the drought conditions in central Wyoming have been eliminated or reduced in intensity due to late season snow storms. For example, snow totals for the May 11-12 snowstorm in central Wyoming were upward of 40 inches in some locations. According to the U.S. Seasonal Drought Outlook released May 20th, the drought conditions in northwestern Colorado and western Wyoming are expected to improve through August 2010.



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 NOAA 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	69.3	32.3	50.8	0.4	84	5/27	16	05/01	0.09	-0.61	13
Akron Washington County Airport	67.5	39.8	53.7	-3.3	90	5/28	27	5/13	1.70	-1.45	54
Colorado Springs Municipal Airport	68.8	41.9	55.4	0.8	90	5/28	26	5/01	0.82	-1.57	34
Grand Junction Walker Field Airport	73.8	43.6	58.7	-1.7	93	5/28	30	5/07+	0.48	-0.50	49
Pueblo Memorial Airport	75.1	42.3	58.7	-1.0	93	5/28	25	5/01	2.84	1.35	191

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	70.1	50.6	60.4	-2.6	85	5/29+	34	5/08	3.54	-0.66	84
Dodge City Regional Airport	74.8	49.4	62.1	-1.7	90	5/29+	32	5/08	4.06	1.06	135
Goodland Renner Field	69.7	41.8	55.8	-2.9	91	5/22	29	5/05	2.83	-0.63	82
Topeka Municipal Airport	74.0	55.3	64.7	0.3	89	5/30+	38	5/08	6.58	1.72	135
Wichita Mid-Continent Airport	76.2	55.3	65.7	0.7	88	5/30+	39	5/08	6.47	2.31	156

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	66.8	41.3	54.0	-2.8	92	5/28	15	5/08	1.93	-1.09	64
Grand Island Airport	69.9	48.4	59.1	-1.5	88	5/29+	32	5/08	4.24	0.17	104
Lincoln Municipal Airport	71.4	49.5	60.5	-1.5	89	5/23	35	5/14	3.70	-0.53	87
Omaha Eppley Airfield	72.6	51.1	61.9	-0.3	91	5/24	37	5/08	2.54	-1.90	57
Norfolk Karl Stefan Airport	70.8	46.6	58.7	-1.6	89	5/29+	34	5/08	2.12	-1.80	54
North Platte Regional Airport	68.5	41.2	54.8	-3.5	90	5/29+	26	5/08	2.28	-1.06	68
Valentine Miller Field	68.1	43.3	55.7	-1.8	95	5/22	25	5/08	1.98	-1.22	62

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport											
Fargo International Airport	68.4	47.7	58.1	0.7	95	5/29	32	5/09	2.69	0.08	103
Grand Forks International Airport	67.0	45.5	56.2	-0.6	93	5/29	32	5/09+	4.56	2.35	206
Theodore Roosevelt Airport	61.0	38.9	49.9	-4.6	79	5/28+	23	5/08	2.50	0.22	110
Williston International Airport	62.8	39.8	51.3	-3.3	83	5/18	21	5/08	3.94	2.06	210

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>.

South Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Aberdeen Regional Airport	66.4	46.0	56.2	-1.7	90	5/29	32	5/09+	4.46	1.77	166
Huron Regional Airport	68.1	46.4	57.3	-0.9	92	5/29	31	5/08	3.67	0.67	122
Pierre Regional Airport	65.9	44.2	55.0	-3.9	90	5/28	27	5/08	3.72	0.58	118
Rapid City Regional Airport	62.9	40.2	51.5	-3.5	88	5/28	21	5/08	5.19	2.23	175
Sioux Falls Joe Foss Field Airport	68.6	44.9	56.7	-1.1	91	5/24	28	5/09	2.03	-1.36	60

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	60.3	32.6	46.5	-5.6	86	5/28	18	5/08	2.48	0.10	104
Cheyenne Municipal Airport	60.0	37.0	48.5	-2.8	83	5/28	24	5/08+	3.14	0.66	127
Lander Hunt Field Airport	58.3	35.3	46.8	-6.6	82	5/28	19	5/07	4.70	2.32	197
Laramie Regional Airport	56.2	30.5	43.4	-3.6	81	5/28	16	5/01	1.24	-0.43	74
Rawlins Municipal Airport	58.3	30.8	44.5	-6.4	83	5/28	16	5/05	1.76	0.27	118
Sheridan County Airport	60.6	35.7	48.1	-4.3	84	5/27	19	5/08	4.43	2.02	184

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State Spotlight - North Dakota

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



Precipitation:

Monthly precipitation totals ranged from 2 to 7 inches. The higher amounts from 5 to 7 fell in the northeast and east central regions with 2 to 4 inches falling elsewhere. Total precipitation was above normal for most of the state and ranged primarily from 50% to 300% of normal (Figure 1. North Dakota State Climate Office). The first half of the month had lighter scattered rainfall and a snowfall event. Snow fell in the southwest and central regions on the 7th with totals ranging from 8 inches in the southwest to 2 inches in the central region. The second half of the month had widespread heavy rains and thunderstorms. A major thunderstorm on the 24th produced hail and damaging high winds in the central, northeast, and southwest parts of the state. Tornadoes were reported on the 24th in Sioux and Morton counties. Record rainfall was recorded on the 24th at Grand Forks, Jamestown, Dickinson, Minot, and Williston.

Temperature:

May average monthly air temperatures ranged from 48°F to 58°F with the lower temperatures in the west and higher temperatures in the east. The average May temperatures were near normal in the east and below normal in the west with departure from normal temperatures ranging from 1°F to -5°F (Figure 2. North Dakota State Climate Office). Daily air temperatures were below normal in the first half of the month. The second half of the month had near normal daily temperatures with the last few days having above normal temperatures. Record high temperatures were set on the 29th at Grand Forks airport with 93°F and Fargo with 95°F.

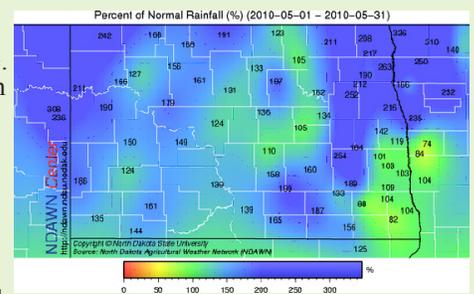


Figure 1. Precipitation Percent of Normal in May 2010 for North Dakota (NDSO)

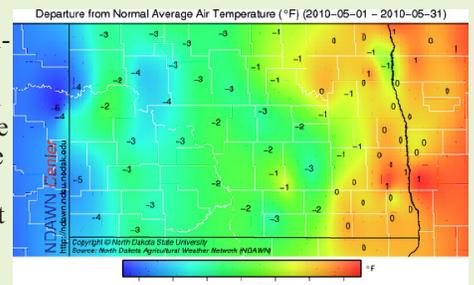


Figure 2. Temperature Departure from Normal in May 2010 for North Dakota (NDSO)

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).

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 operated under the National Oceanic and Atmospheric Administration (NOAA), 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>

NOAA 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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