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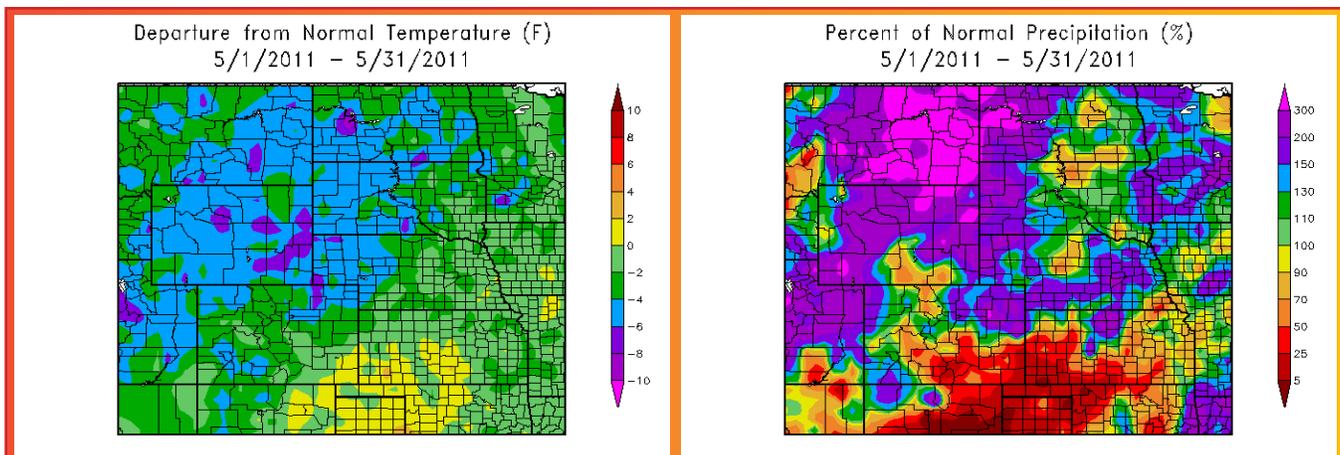
Southwest Nebraska - Photo by Ken Dewey  
<http://www.nebraskaweatherphotos.org>

# May 2011 Climate Summary

## Region Breakdown

Temperatures were cool across the High Plains Region this month. Average monthly temperatures were near normal in Kansas and up to 8 degrees F (4.4 degrees C) below normal across Wyoming, the panhandle of Nebraska, and the Dakotas. Each of these areas had locations which ranked in the top 10 coolest Mays on record. In Wyoming, record and near record temperatures were widespread as many locations ranked in the top 5 coolest Mays on record. Medicine Bow, Wyoming, which is located in southern Wyoming, had an average temperature of 43.4 degrees F (6.3 degrees C) which was 6.7 degrees F (3.7 degrees C) below normal. This broke the old record of 43.5 degrees F (6.4 degrees C) which was set just last year (period of record 1949-2011).

The cool weather has slowed planting activities and crop progress across large portions of the Region. By the end of the month, crop development was behind average in Nebraska, South Dakota, and North Dakota. According to the National Agricultural Statistics Service, the average starting date for field work in North Dakota was May 7th which was the latest spring start date since 1979. While the cooler weather was a hindrance to much of the planting and crop progress, these conditions helped improve the declining winter wheat crop in Kansas.



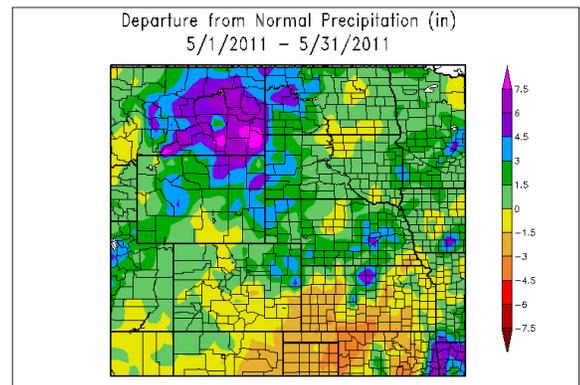
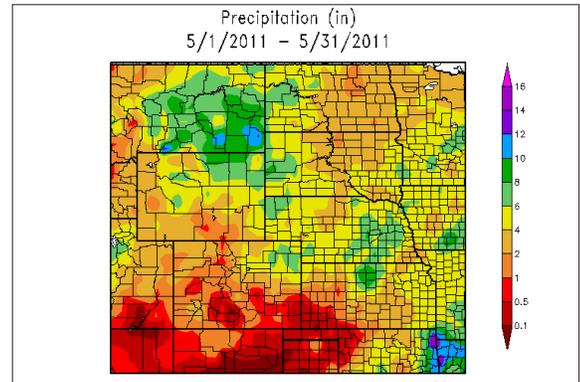
Departure from 1971-2000 Normal Average Temperature (left) and Percent of Normal Precipitation (right) for May 2011 in the High Plains Region. Maps produced by High Plains Regional Climate Center. Available at: <http://hprcc.unl.edu/maps/current>

# Precipitation Summary

Precipitation varied somewhat across the High Plains Region this month. In general, heavy precipitation occurred from about central Kansas northward, and little to no precipitation fell across parts of southern Colorado and Kansas where drought conditions persisted. Several locations near the Colorado/Kansas border received less than 5 percent of normal precipitation this month and exceptional drought conditions (the highest intensity of drought according to the U.S. Drought Monitor) developed there.

However, ample precipitation fell in areas of Wyoming, Nebraska, northeastern Colorado, eastern South Dakota, and western areas of the Dakotas. Precipitation in some locations even ranged from 200-300 percent of normal. The recent heavy precipitation, along with mountain snowpack and cool temperatures has increased flooding concerns throughout the High Plains Region. According to the Wyoming State Climate Office, statewide snow water equivalent (SWE) topped 327 percent of normal. In comparison, at the end of last month, the statewide SWE was about 150 percent of normal. Much of the increase in SWE resulted from cooler temperatures which delayed melting. May precipitation also contributed to the increase in SWE across the state and many locations received both rain and snow this month. Lander, Wyoming had its wettest May on record with 6.79 inches (17 cm) of precipitation. This beat the old record of 6.13 inches (16 cm) set in 2008 (period of record 1891-2011). Interestingly, the May 2011 precipitation was also the 3rd wettest month on record in Lander. The record was set in April 1900 with 7.19 inches (18 cm).

According to the U.S. Army Corps of Engineers, reservoir releases from Missouri River reservoirs are forecast to reach unprecedented levels. People living along the Missouri River have already been encouraged to evacuate as significant flooding will impact towns and agricultural lands in the Dakotas. Flooding is also anticipated along the Missouri River down to the Mississippi River. Unfortunately, flooded areas have the potential to be inundated for several months.



Above: Total precipitation (inches) (top) and Departure from Normal Precipitation (inches) (bottom) for May 2011 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 2011 Records - Highlights

Monthly Records			
Temperature in degrees F; Precipitation in inches			
Coolest	New Record	Old Record	Period of Record
Harrisburg 12 WNW, NE	48.6	48.8/1995	1962-2011
Kingsley Dam, NE	54.5	tied/1967	1939-2011
Glenrock 5 ESE, WY	46.8	47.5/2010	1942-2011
Medicine Bow, WY	43.4	43.5/2010	1949-2011
Wettest	New Record	Old Record	Period of Record
Dunn Ctr 1 E, ND	7.20	6.76/1965	1918-2011
Camp Crook, SD	7.26	6.93/1982	1893-2011
Lander, WY	6.79	6.13/2008	1891-2011
Worland, WY	4.53	4.10/1978	1960-2011

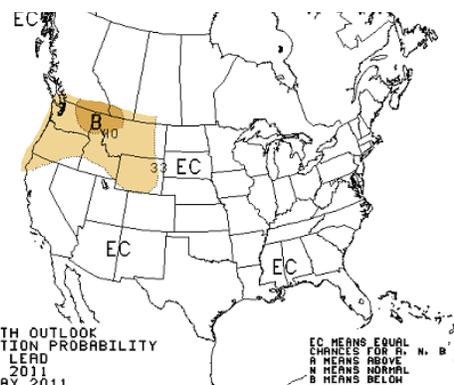
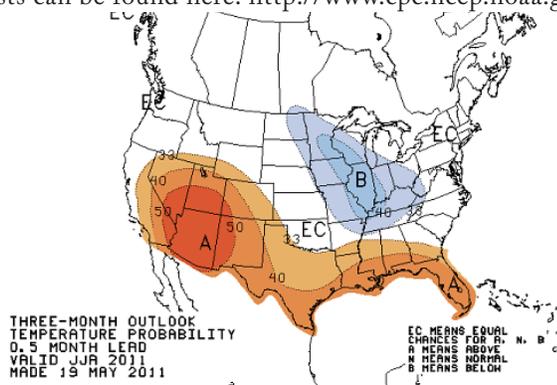
All Data are Preliminary and Subject to Change.  
 Source: National Weather Service Cooperative Observation Network Data

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

A transition from La Niña conditions to El Niño Southern Oscillation cycle (ENSO)-neutral conditions is currently underway. ENSO-neutral conditions are expected to develop soon and continue through summer. The temperature outlook indicates a higher probability of above normal temperatures for most of Colorado and southwestern Wyoming. Meanwhile, the eastern half of North Dakota, portions of eastern South Dakota, and a small sliver of eastern Nebraska and Kansas have a higher probability of below normal temperatures. Equal chances of above, near, or below normal temperatures are predicted elsewhere in the Region. The precipitation outlook indicates a higher probability of below normal precipitation for the majority of Wyoming. 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, 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

The U.S. Drought Monitor had many changes throughout the month of May. Early in the month, persistent extreme dry conditions caused an expansion of drought across east-central Kansas. Extreme drought conditions (D3) were introduced in central Kansas and even exceptional drought conditions (D4) expanded along the border of Colorado and Kansas. The main impact from these dry conditions was the decline in the winter wheat crops. But, towards the end of the month, much needed rains fell in many parts of the drought stricken areas. Abnormally dry conditions (D0) were eliminated from Wyoming and nearly all parts of Nebraska. Northeastern Colorado and north-central Kansas had one to two category improvements as well. According to the U.S. Seasonal Drought Outlook released May 19th drought conditions across Colorado and Kansas were expected to improve.

### U.S. Drought Monitor

High Plains

May 31, 2011  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D1	D1-D2	D2-D3	D3-D4	D4
Current	79.34	20.66	15.76	10.93	3.47	0.36
Last Week (05/24/2011 map)	77.40	22.60	16.73	11.20	3.42	0.34
3 Months Ago (03/01/2011 map)	64.33	35.67	18.47	7.78	0.00	0.00
Start of Calendar Year (01/01/2011 map)	60.35	39.65	19.57	2.63	0.00	0.00
Start of Water Year (09/25/2010 map)	65.06	34.94	3.73	0.00	0.00	0.00
One Year Ago (05/25/2010 map)	88.86	11.14	5.72	2.41	0.00	0.00

**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, June 2, 2011  
Anthony Artusa, NOAA/NWS/NCEP/CPC

### U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid May 19, 2011 - August 31, 2011  
Released May 19, 2011

**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	68.0	29.3	48.6	-1.8	81	05/29+	11	05/03	0.18	-0.52	26
Akron Washington County Airport	65.2	37.8	51.5	-5.5	88	05/08	24	05/01	3.14	-0.01	100
Colorado Springs Municipal Airport	67.3	41.1	54.2	-0.4	87	05/29	25	05/29	0.69	-1.70	29
Grand Junction Walker Field Airport	71.0	44.8	57.9	-2.6	86	05/29+	24	05/01	1.27	0.29	130
Pueblo Memorial Airport	75.9	40.3	58.1	-1.6	94	05/29	23	05/03	0.61	-0.88	41

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	74.7	51.0	62.8	-0.2	99	05/09	33	05/03	7.98	3.78	190
Dodge City Regional Airport	80.8	48.1	64.4	0.6	106	05/29	33	05/14	1.74	-1.26	58
Goodland Renner Field	71.3	41.8	56.5	-2.2	83	05/30+	29	05/02	3.45	-0.01	100
Topeka Municipal Airport	75.3	53.9	64.6	0.2	95	05/09	34	05/03+	5.58	0.72	115
Wichita Mid-Continent Airport	78.4	54.4	66.4	1.4	100	05/09	34	05/02	2.45	-1.71	59

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	63.4	40.1	51.7	-5.1	85	05/08	26	05/03	6.78	3.76	225
Grand Island Airport	71.5	48.1	59.8	-0.8	98	05/09	33	05/16+	8.70	4.63	214
Lincoln Municipal Airport	73.6	49.9	61.8	-0.2	96	05/09	30	05/03	6.00	1.77	142
Omaha Eppley Airfield	73.2	51.8	62.5	0.3	97	05/10	32	05/02	5.08	0.64	114
Norfolk Karl Stefan Airport	70.9	48.5	59.7	-0.6	99	05/09	26	05/03	5.13	1.21	131
North Platte Regional Airport	68.1	42.0	55.0	-3.2	90	05/09	24	05/01	5.69	2.35	170
Valentine Miller Field	66.2	43.9	55.0	-2.4	88	05/08	27	05/03	3.87	0.67	121

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	63.0	41.8	52.4	-3.6	77	05/08	22	05/02	2.32	0.10	105
Fargo International Airport	64.8	44.4	54.6	-2.8	85	05/30	27	05/03+	4.30	1.69	165
Grand Forks International Airport	63.9	42.2	53.1	-3.7	79	05/19	24	05/01	2.45	0.24	111
Theodore Roosevelt Airport	60.1	39.7	49.9	-4.6	73	05/08	21	05/02	4.84	2.56	212
Williston International Airport	61.3	42.1	51.7	-2.9	73	05/19	22	05/02	5.28	3.40	281

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>.

# May 2011 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	65.2	44.2	54.7	-3.2	83	05/10	27	05/03	2.93	0.24	109
Huron Regional Airport	66.8	46.4	56.6	-1.6	85	05/30	28	05/02	3.34	0.34	111
Pierre Regional Airport	64.9	43.7	54.3	-4.6	88	05/08	27	05/03+	3.24	0.10	103
Rapid City Regional Airport	61.0	40.1	50.6	-4.4	76	05/08	27	05/03	5.88	2.92	199
Sioux Falls Joe Foss Field Airport	67.3	45.7	56.5	-1.3	86	05/30	24	05/03	5.43	2.04	160

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	59.7	35.4	47.6	-4.5	80	05/08	23	05/02	3.37	0.99	142
Cheyenne Municipal Airport	57.8	36.5	47.1	-4.2	79	05/08	23	05/02	3.12	0.64	126
Lander Hunt Field Airport	59.2	36.5	47.8	-5.5	72	05/08+	25	05/02+	6.77	4.39	284
Laramie Regional Airport	55.1	31.1	43.1	-3.9	74	05/07	12	05/01	1.01	-0.66	60
Rawlins Municipal Airport	59.1	33.1	46.1	-4.8	75	05/08	16	05/01	1.10	-0.39	74
Sheridan County Airport	57.6	38.4	48.0	-4.5	69	05/05	23	05/02	5.91	3.50	245

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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:

Percent of normal precipitation ranged from approximately 70% to 300% (Figure 1. North Dakota State Climate Office). The western half of the state had the highest amounts with 200% to 300% of normal. Much of the eastern half ranged from 70% to 150%. The North Dakota Agricultural Weather Network (NDAWN) May rainfall totals ranged from 1.60 to 7.01 inches. The greatest daily rainfall events occurred between the 8th and 10th, 19th and 22nd, and the 27th through to the 31st. According to the USDA, National Agricultural Statistics Service, North Dakota Field office the average planting date was May 7th which was 19 days later than 2010 and 16 days later than the previous five year average (2006-2010). Cool, wet conditions continued to hamper field work throughout May. Melting snow pack and heavy rains in eastern Montana and western North Dakota caused river levels to rise above the 100-year flood level. The residents of the flooded areas filled sand bags and built dikes to protect property. Bismarck and Mandan had short notice to prepare for flooding from a scheduled release of the Garrison Dam.

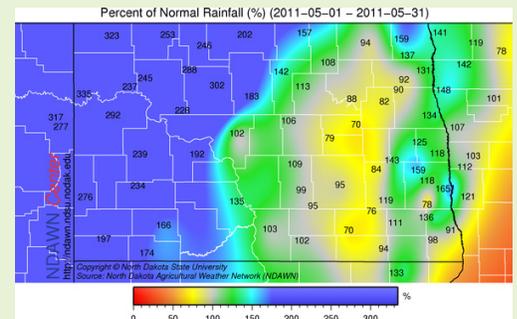


Figure 1. Percent of Normal Precipitation in May 2011 for North Dakota (North Dakota State Climate Office)

### Temperature:

NDAWN May average air temperatures ranged from 49 °F to 55 °F. NDAWN departure from normal temperatures ranged from -1 °F to -5 °F (Figure 2. North Dakota State Climate Office). May is the sixth straight month of below average air temperatures for most of the state. Average daily air temperatures across the state hovered near 50 °F throughout most of May. According to data from the NDAWN weather station network, the first 2011 day a maximum air temperature of over 80 °F was measured in North Dakota was on the 30th in the southeastern part of the state. The hot humid temperature came on the doorstep of a large scale thunder storm that produced near hurricane force winds. The Fargo Hector International Airport measured a strongest gust of 72 mph. However, it is estimated from the damage that gusts could have been 90 to 100 mph. Straight-line winds in the Fargo-Moorhead metro area ripped up trees, knocked down power poles, and caused power outages. Some who lost power did not have it restored for over a day.

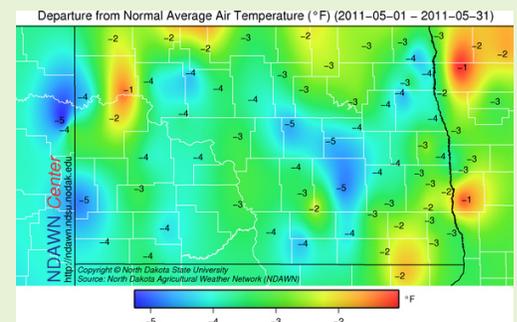


Figure 2. Temperature Departure from Normal in May 2011 for North Dakota (North Dakota State Climate Office)

## State Spotlight - South Dakota

Dennis Today - State Climatologist, Nathan Skadsen  
 South Dakota State Climate Office, South Dakota State University



### Synopsis

During the month of May, South Dakota saw below normal temperatures for the sixth month in a row continuing to slow agricultural progress. However, above average precipitation was the bigger story in May. Increased precipitation, especially in the Black Hills increased the impact of flooding across the entire state. This was especially true for areas along the Missouri River, which due to high amounts of precipitation upstream, saw record releases from its reservoirs, resulting in a flood risk to communities downstream.

### Temperature

Average temperatures across the state ranged from the upper 50's in extreme southeastern South Dakota to the mid 40's in the Black Hills. The lowest average temperature was 44.2°F at Pactola Dam, while the highest average temperature was 60.1°F at Vermillion 2SE.

Once again, most of the state of South Dakota saw below normal temperatures. Southeastern South Dakota saw departures from normal of 0°F to -2°F while most of western South Dakota saw departures of -4°F to -6°F. The Philip AP site saw the greatest departure from normal at -7°F.

### Precipitation and Drought

During the month, precipitation values ranged from 1 inch to greater than 9 inches. Fort Meade received the most precipitation at 9.34". Other sites receiving more than 8 inches of precipitation for the month of May were Mount Rushmore National Memorial with 9.16 inches, Deadwood 2NE with 8.27 inches, and Rapid City WFO with 8.24 inches. The driest area of the state was extreme north central South Dakota, which received 1 to 2.5 inches of precipitation.

Departure from normal precipitation across the state varied from above normal precipitation in the west and east central South Dakota to near normal or slightly below normal across central South Dakota. Both Fort Meade and Mount Rushmore National Memorial, located in west central South Dakota, were over 5 inches above normal precipitation. In east central South Dakota, Brookings 2NE and Flandreau were both just over 3 inches above normal precipitation. In north central South Dakota, Gettysburg, McIntosh 6SE, Pollock, Roscoe, and Selby all received below normal precipitation.

All of the state remained drought free for the month of May because of the continued cool and wet conditions overall. Only areas of north central South Dakota were slightly drier than average in the short term and still wet in the longer term.

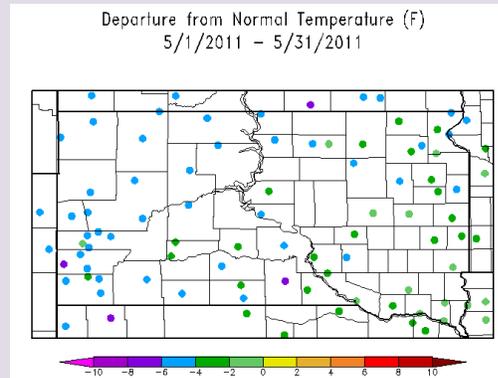


Figure 1. Departure from Normal Temperature in May 2011 for South Dakota (High Plains Regional Climate Center)

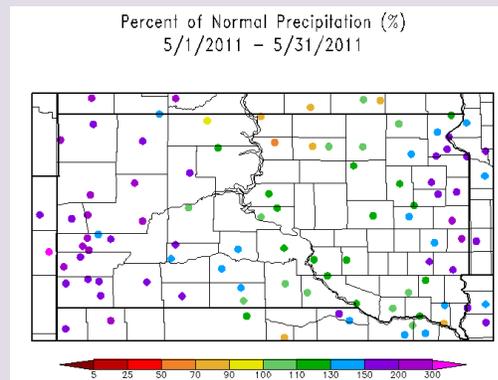


Figure 2. Percent of Normal Precipitation in May 2011 for South Dakota (High Plains Regional Climate Center)

# State Spotlight - South Dakota

**Dennis Todey - State Climatologist, Nathan Skadsen**  
**South Dakota State Climate Office, South Dakota State University**



## Agricultural Impacts

The overall cool and wet conditions continued to slow agricultural progress. Planting continued to be behind the five year average across the state of South Dakota for the month of May. As of 31 May (5-year average in parenthesis), 96% spring wheat (100%), 86% of corn (92%), 34% of soybeans (65%), 18% of sorghum (42%) and 14% sunflowers (24%) were planted, all of which were behind 5-year averages. Emergence of all crops was well behind their 5-year average also due to the cool conditions. Wet field conditions will not allow planting in many locations of the state. Some fields which could be planted were not accessible due to road conditions or closures. This is or will soon become a problem for people who have not been able to plant in three years. This limitation may remove their ability to get prevent plant coverage because of the extended wet period. Soil temperatures also lagged limiting the crop development statewide. All crops were reported in generally good condition, though behind on development. Growing degree day accumulation was 6-12 days behind average at the end of the month.

## Flooding Impacts

The month of May did not bring any relief to the many flooded areas seen across the state. In northeastern South Dakota, water continued to rise near Waubay, SD, which is surrounded on three sides by Blue Dog Lake, Rush Lake, and Bitter Lake. South Dakota Governor, Dennis Daugaard, visited the area in mid-May to survey the damage and share information with the local residents. Officials shared estimates that Bitter Lake, which has the lower elevation of the three lakes, could possibly rise another two feet before equalizing and in the process spread out over another 1000 acres of land.

A stretch of US Highway 12 east of Roscoe, SD, became impassable due to flood waters over the road. The stretch was reduced to one lane by the middle of the month and was closed to all traffic except for semi-trucks and pickups by the end of the month (eventually was closed to all traffic). Officials were working to raise the road and were hoping to have it open for all traffic in early June. Highway 81 south of Arlington was closed because of water and debris over the road. Several other roads were listed as water closely adjacent to the road (<http://www.safetravelusa.com/sd/>).

Many other communities in South Dakota also saw significant flooding impacts. Butte County, including the community of Belle Fourche, saw many roads and water crossings close and the Belle Fourche River reached record levels. The Belle Fourche River was not the only swollen river in northwestern South Dakota as the Little Missouri River near Camp Crook set a new flow record of 20,200 cubic feet per second. A road was breached to protect a bridge on the Little Missouri near Camp Crook. In Hayti, SD Highway 21 south of town became impassable due to Marsh Lake expansion, leaving Hayti only accessible by one road. The Black Hills saw a number of flooding impacts and even had a couple of flash flood warnings during the month of May due to a high amount of rainfall and runoff. The US Forest Service closed a number of campgrounds and roads due to the flooding. Rapid Creek, which flows through Rapid City, SD, came out of its banks as flow was increased from Pactola Reservoir farther upstream. Unfortunately, a ten year old boy drowned after he apparently fell into the swollen Rapid Creek.

At the end of the month of May, the majority of the attention in the state turned towards communities along the Missouri River, especially the towns of Ft. Pierre, Pierre, and Dakota Dunes. Heavy rains in Montana (Billings reported their wettest month ever in May) on top of already wet conditions and up to 200% of seasonal snowpack caused the Army Corp of Engineers to release record amounts of water from the Oahe Dam. The release of water from the dam will peak at 150,000 cubic feet per second by mid-June, which is 30,000 cubic feet more than the original plan. This flow is more than twice the previous record release. This announcement resulted in the activation of a number of South Dakota National Guard members and the start of emergency levee construction and sandbagging. Officials expect more than 3,000 people in Pierre and Fort Pierre to be affected by the rising water. Communities downstream were also warned to begin preparations for flooding. This included the communities of Yankton and Dakota Dunes. As sandbagging began in Yankton, the 2,500 residents of Dakota Dunes were told to prepare to evacuate in the early part of June.

Due to the severe flooding experiences across the state of South Dakota so far this year, 28 counties received federal disaster declarations. Damage in the counties included in the declaration is estimated to be \$7.1 million.

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.

## State Spotlight - Wyoming

**Steve Gray - State Climatologist**  
**Wyoming State Climate Office, University of Wyoming**



Mountain snowpack continued to be the major story in Wyoming this month. By the end of May, statewide snow water equivalent (SWE) topped an astounding 327% of historical average (compared to 1971-2000). These end-of-May numbers also represent a noticeable increase over observations in April 2011. In many cases these gains in percent of average SWE resulted from cooler temperatures having delayed the onset of melt-off. However, in several of Wyoming's mountain ranges new precipitation over the month of May also added to the snowpack. In any case, our mountain snowpack situation has led to significant concerns over potential flooding.

The importance of both temperature and precipitation in driving the current snowpack situation can be seen when one compares percent of average SWE values for the state's major river basins against percent of average water year (October through September) precipitation at the same sites. In the Wind River drainage, for example, percent of average precipitation (vs. 1971-2000) stood at ~120% for the water year, whereas SWE came in at ~315%. In the simplest terms, this is because 1) the snowpack going into early-to-mid May was relatively high to begin with, and 2) cooler temperatures delayed melting beyond the range of most historical years. In this context the Bear River basin is of particular note. Historically speaking, the Bear is well into the runoff season by this time of year, and several monitoring sites are often near melt-out by end of May. Yet lingering snowpack has now pushed percentage of average SWE values over 500%! Of course, to some degree these wild numbers are an artifact of how we report SWE, but the fact remains that multiple snow monitoring sites across Wyoming still hold > 50 of liquid water equivalent. Overall, the Powder-Tongue Basin reported the state's highest end-of-May SWE values at 575% of historical average. The Shoshone River watershed, the basin with the state's lowest end-of-May SWE, still reported > 200% of average.

This year's high water threat comes on the heels of significant flooding in 2010. However, it is important to note that the floods of 2010 occurred within the context of an end-of-May snowpack that was only 125% of average SWE. By any measure current snowpack will present challenges for dam operations and other aspects of water management. Unfortunately, it is also true that the right combination of warm temperatures and additional precipitation on top of this snowpack could lead to catastrophic flooding in some areas.

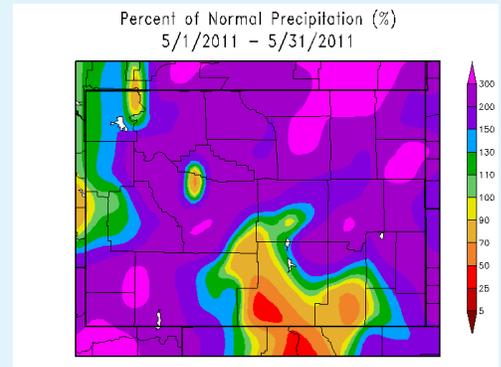


Figure 1. Map showing May 2011 precipitation as a percentage of historical averages (vs. 1971-2000 normal period) for Wyoming. Courtesy HPRCC.

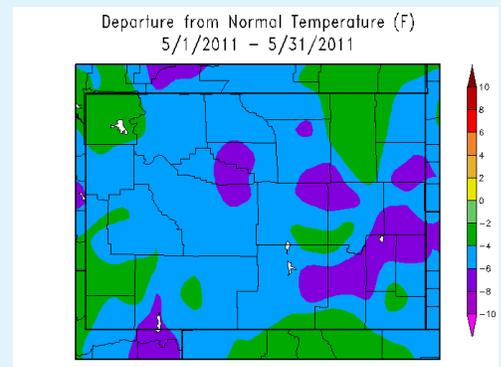


Figure 2. Map showing mean May 2011 temperatures from historical averages (vs. 1971-2000 normal period) for Wyoming. Courtesy HPRCC.

# 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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