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Rural Lancaster County, NE just east of Lincoln - Photo by Ken Dewey
<http://www.nebraskaweatherphotos.org>

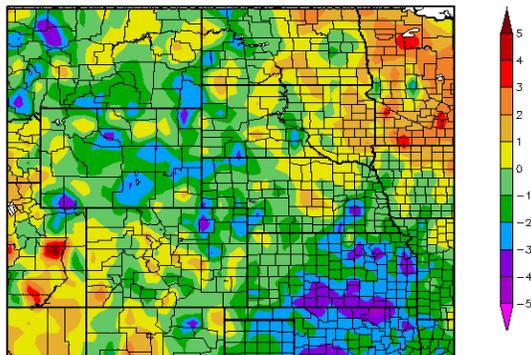
September 2008 Climate Summary

Region Breakdown

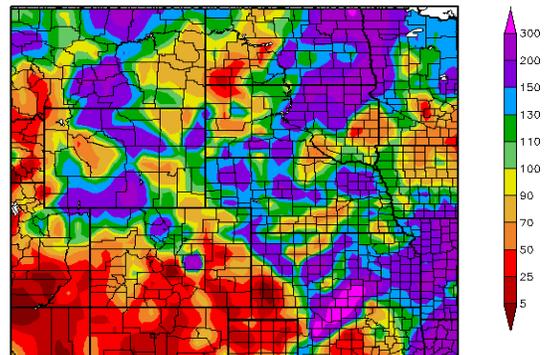
Overall, September was cool for most of the region with monthly average temperature departures from normal ranging from 2-4°F below normal. However, the entire month was not cool as most places experienced a cool spell at the beginning of the month, followed by warming through the end of the month.

Each state had precipitation amounts that were well above and well below normal. North Dakota was a state divided with ample precipitation in the eastern half which helped to alleviate drought conditions and below normal precipitation in the western half where drought conditions persist. Kansas had a similar situation with little to no precipitation along the Kansas-Colorado border and precipitation totals over 300% of normal in south central portions of the state. Relief should be on the way however. According to the U.S. Seasonal Drought Outlook released September 18, these areas should show improvement over the next few months.

Departure from Normal Temperature (F)
9/1/2008 - 9/30/2008



Percent of Normal Precipitation (%)
9/1/2008 - 9/30/2008

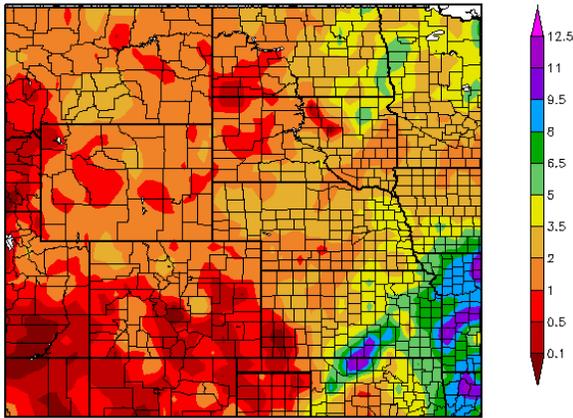


Departure from 1971-2000 Normal Mean Average Temperature (left) and Percent of 1971-2000 Normal Total Precipitation (right) for September 2008 in the High Plains Region. Map by High Plains Regional Climate Center. Available at: <http://hprcc.unl.edu/maps/current>

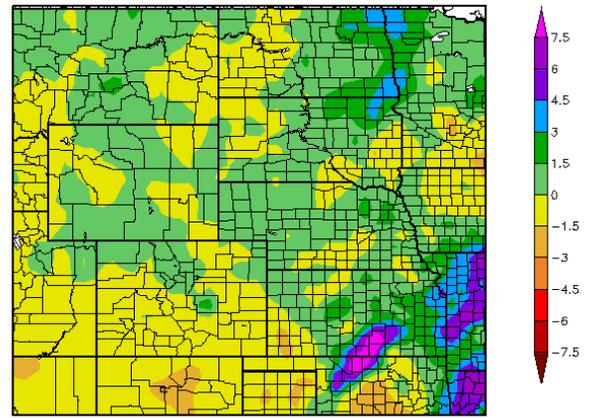
Precipitation Summary

September 2008 was dry for southern Colorado, the western Dakotas, and portions of Wyoming and Nebraska. Drought conditions continue in western North Dakota, western Wyoming, and places along the Colorado-Kansas border, and the lack of precipitation in South Dakota helped contribute to the development of moderate drought conditions. Rain in eastern North Dakota and eastern Nebraska helped alleviate drought conditions, with many locations receiving 150-300% of normal precipitation. One exceptionally wet spot was Wichita, KS where they experienced the wettest September on record* with 12.96 inches of precipitation. Additionally, a new 24-hour rainfall record was set on September 12th for the Wichita Mid-Continent Airport where 10.31 inches of rain fell. This crushed the old record of 1.75 inches set back in 1961.

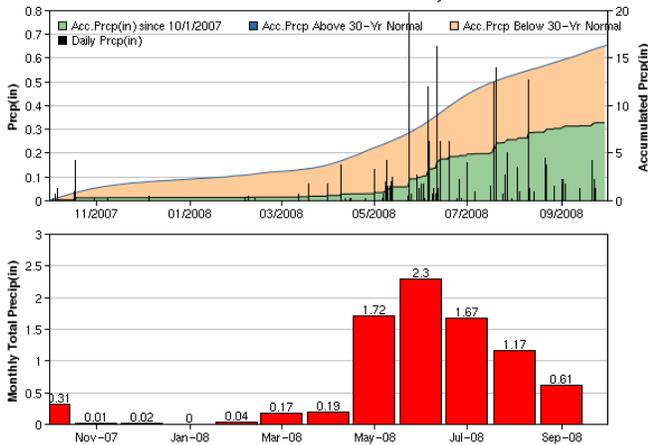
Precipitation (in)
9/1/2008 - 9/30/2008



Departure from Normal Precipitation (in)
9/1/2008 - 9/30/2008

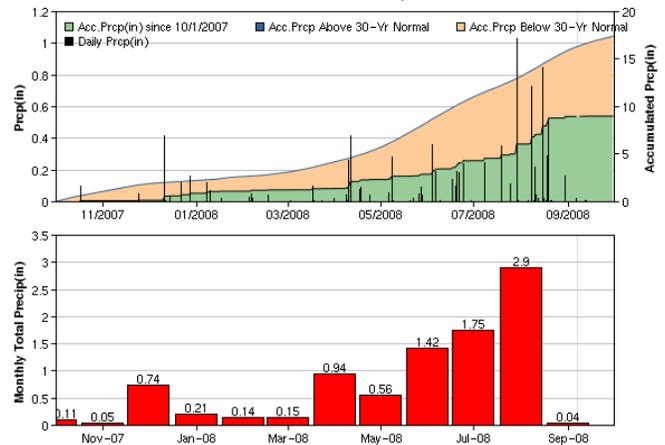


DICKINSON MUNI AP, ND



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 <http://hprcc.unl.edu>

ULYSSES 3NE, KS



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 <http://hprcc.unl.edu>

Above (top): Total precipitation (in inches)(upper left) and Departure from Normal Precipitation (upper right) (using 1971-2000 Normals) for September 2008 in the High Plains Region. These maps are produced by HPRCC and can be found on the Current Climate Summary Map page at: <http://hprcc.unl.edu/maps/current>.

Above (bottom): The growing precipitation deficit as compared to the 1971-2000 Normals for precipitation from October 1, 2007 - September 30, 2008 for Dickinson, ND and Ulysses, KS. Similar trends can be seen for other locations in Western North Dakota and Southwestern Kansas.

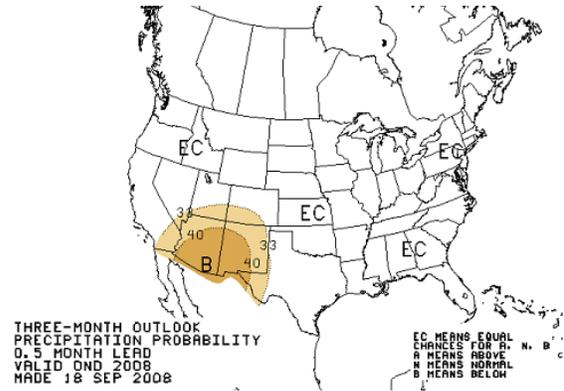
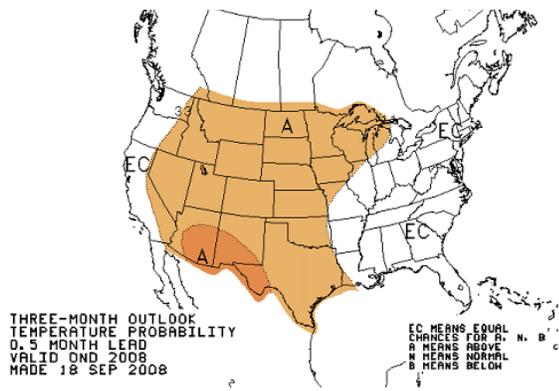
*Records are preliminary and are taken from local National Weather Service Office Record Event Reporter summaries. For records information updated on a daily basis from the National Weather Service, please see <http://www.weather.gov/climate>

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

ENSO conditions remain neutral and are expected to persist through the end of 2008. NOAA forecasters are predicting chances of above normal temperatures for all of the High Plains region during the months of October – December. Equal chances of above, near, or below normal precipitation conditions exist for all but a portion of southern Colorado where there are chances for below normal precipitation. This outlook is produced by scientists at the NOAA Climate Prediction Center. More information can be found here: <http://www.cpc.ncep.noaa.gov/>.



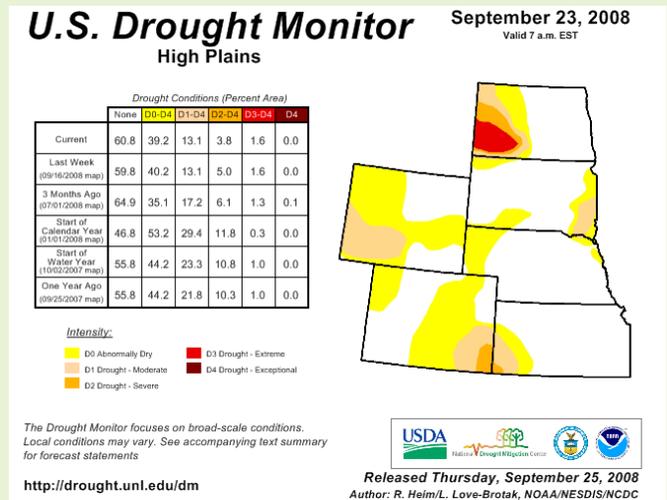
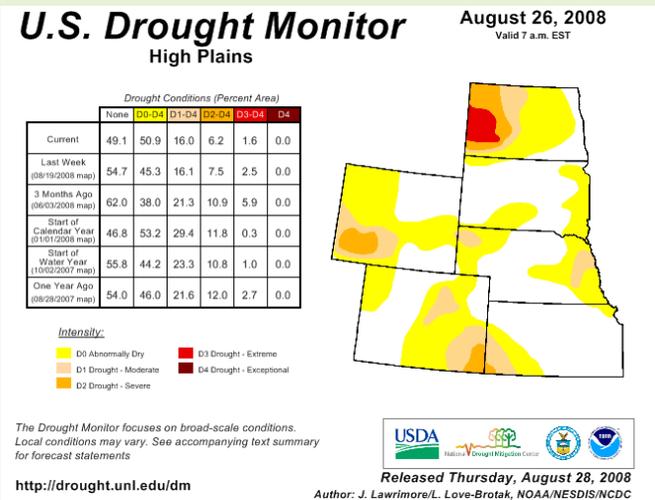
Above: 3-Month Outlook Maps Courtesy the NOAA Climate Prediction Center - <http://www.cpc.ncep.noaa.gov>

(left) The Three-Month Temperature Probability Outlook showing a higher probability of above normal temperatures for the entire High Plains region.

(right) The Three-Month Precipitation Probability Outlook showing equal chances of above, near, or below normal precipitation for most of the High Plains region except for southern Colorado where a higher probability of below normal precipitation exists.

Drought Watch

While drought conditions persist across western North Dakota and places along the Colorado-Kansas border, there has been some improvement across the High Plains region. The eastern half of North Dakota and Nebraska received ample rainfall and are no longer experiencing drought conditions. The eastern part of South Dakota, however, is now under moderate drought conditions (D1). Wyoming has largely remained unchanged except for the pocket of severe drought conditions (D2) in the southwest which has improved to moderate drought conditions (D1).



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 is 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	75.2	34.5	54.9	0.4	82	9/7	25	9/24	0.21	-0.68	24
Akron Washington County Airport	75.2	48.1	61.6	-1.5	90	9/26+	38	9/4	1.04	0.12	113
Colorado Springs Municipal Airport	73.2	47.3	60.2	0.4	84	9/1	41	8/15	4.96	3.74	404
Grand Junction Walker Field Airport	82.0	51.0	66.5	1.1	88	9/8	41	9/23	0.23	-0.68	25
Pueblo Memorial Airport	79.9	48.0	64.0	-0.8	91	9/25	39	9/4	0.77	-0.07	92

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	77.0	55.2	66.1	-1.9	90	9/28	42	9/30	4.85	2.35	194
Dodge City Regional Airport	79.2	56.6	67.9	-1.4	91	9/26+	44	9/30	1.89	0.19	111
Goodland Renner Field	77.2	49.4	63.3	-0.7	90	9/26	38	9/30	1.95	0.83	174
Topeka Municipal Airport	77.8	56.6	67.2	-0.9	91	9/1	45	9/30	6.17	2.46	166
Wichita Mid-Continent Airport	77.9	57.8	67.9	-2.9	89	9/1	46	9/30	12.96	10.00	438

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	77.0	43.6	60.3	-1.4	92	9/26+	32	9/29	1.85	0.41	128
Grand Island Airport	77.6	52.3	65.0	0.6	92	9/1	38	9/30+	1.51	-0.92	62
Lincoln Municipal Airport	77.8	53.3	65.5	-0.5	93	9/1	39	9/30	4.14	1.22	142
Omaha Eppley International Airport	76.0	54.8	65.4	0.0	91	9/1	42	9/15	2.90	-0.27	91
Norfolk Karl Stefan Airport	76.2	52.0	64.1	0.7	91	9/1	39	9/30+	3.02	0.77	134
North Platte Regional Airport	77.1	47.2	62.2	-0.2	91	9/1	33	9/15	1.34	0.02	102
Valentine Miller Field	75.9	47.1	61.5	0.0	91	9/1	34	9/30	2.31	0.70	143

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	72.8	45.2	59.0	1.3	94	9/18	36	9/30	2.49	0.85	153
Dickinson Municipal Airport	72.3	41.6	57.0	-0.2	91	9/18	31	9/29	0.61	-1.01	38
Fargo International Airport	71.2	48.2	59.7	1.7	92	9/1	34	9/30	5.08	2.90	233
Grand Forks International Airport	69.0	45.7	57.3	0.3	90	9/1	34	9/30	4.39	2.43	224
Williston International Airport	70.6	41.6	56.1	0.0	87	9/18	28	9/29	1.64	0.29	121

All Data are Preliminary and Subject to Change.

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>.

September 2008 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	73.6	45.7	59.7	-0.1	89	9/1	34	9/30+	3.61	1.80	199
Huron Regional Airport	75.6	48.6	62.1	1.1	93	9/1	37	9/30	3.27	1.47	182
Rapid City Regional Airport	74.6	43.4	59.0	-1.6	93	9/25	32	9/24	0.87	-0.23	79
Sioux Falls Joe Foss Field Airport	75.6	50.2	62.9	2.0	89	9/26+	37	9/30	1.78	-0.80	69

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	73.0	38.5	55.7	-1.9	85	9/25	25	9/24	0.75	-0.23	77
Cheyenne Airport	69.7	43.0	56.3	-0.3	81	9/26	34	9/29	1.12	-0.31	78
Lander Hunt Field Airport	71.3	42.7	57.0	-1.7	84	9/25+	36	9/2	0.80	-0.34	70
Laramie Regional Airport	67.9	36.9	52.4	-0.5	77	9/25	27	9/2	1.19	0.20	120
Rawlins Municipal Airport	69.6	38.2	53.9	-3.0	79	9/9	32	9/30+	1.75	0.93	213
Sheridan County Airport	71.4	38.3	54.9	-2.2	88	9/25	29	9/14	1.56	0.18	113

All Data are Preliminary and Subject to Change.

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State Spotlight - Nebraska

Al Dutcher - State Climatologist

Nebraska State Climate Office, University of Nebraska - Lincoln

Climate trends across September followed two distinctly different patterns. The first two weeks of the month saw below normal temperatures and above normal precipitation. The most active precipitation period fell between the September 6-12 time frame. An upper air trough pushed slowly through the central Plains region and was enhanced by the moisture feed of tropical system Lowell as it made its way into the southwestern U.S. Fortunately, the upper air trough moved east of the state before entraining the remnants of hurricane Ike, thus sparing the state from the massive flooding experienced in Missouri, Illinois, Indiana, and Michigan. Winter wheat producers welcomed the generous rainfall as seed bed preparation and planting were in the process of completion.

The remainder of September brought above normal temperatures and below normal precipitation as a persistent upper air ridge built across the western U.S. and forced low pressure systems north of Nebraska. The welcome warmth aided crop development and significantly lowered the risk of freeze damage to late maturing corn, soybean, and sorghum. Prior to the onset of the warm weather, the state corn crop was averaging 15-17 days behind normal, but by the end of September had shrunk the deficit to 10-13 days behind normal.

September climate statistics for Nebraska indicate that the highest temperature reported was 96 F at Culbertson on the 27th, while the lowest temperature reported was 25 F at Agate on the 29th. Of the 195 weather sites reporting data during September, 14 locations saw their minimum temperature reach 32 F, with 3 reporting a killing freeze of 28 F or lower. Eleven of the 14 sites reaching 32 F were located across the northern half of the Nebraska Panhandle region. All 195 reporting stations reported at least one day with the maximum temperature exceeding 85 F, with 81 locations breaking 90 F. Falls City recorded the greatest monthly total with 6.50 inches, as well as the largest 24-hour total of 2.91 inches on the 12th. Overall, 123 stations reported above normal precipitation for the month of September, with the driest locations confined to portions of southwest, south central, and central Nebraska.

The Nebraska State Climate Office is a part of the School of Natural Resources, University of Nebraska - Lincoln.

For more information about the School of Natural Resources at UNL: <http://www.snrc.unl.edu>.

For more information on the University of Nebraska - Lincoln: <http://www.unl.edu>.



State Spotlight - North Dakota



Barb Mullins

North Dakota State Climate Office, North Dakota State University

The first half of September had several events of scattered rains across ND. The second half of September was drier with the rain events falling on the 21st through the 24th. The eastern half of the state had greater than normal monthly precipitation with most areas between 125 and 375% of normal. The northwestern part of the state had near normal or slightly above normal monthly precipitation. The southwest part of the state had 25 to 50% of normal monthly precipitation. The US Drought Monitor classified the northwest part of the state as abnormally dry and the southwest part of the state as extreme drought. The eastern part of the state did not have drought conditions. The USDA, National Agricultural Statistics Service, North Dakota Field Office reported a topsoil moisture of 18% very short, 15% short, 62% adequate, and 5% surplus with a subsoil moisture reported as 23% very short, 21% short, 52% adequate, and 4% surplus (Weekly Weather and Crop Bulletin Vol. 95, No. 40). The state average precipitation was 2.58 inches which is above the 1971-2000 normal of 1.74 inches. September 2008 state average precipitation ranked 18th wettest in the last 114 years with a maximum of 5.00" in 1900 and a minimum of 0.28" in 1897.

September's average monthly temperatures ranged from around 65°F in the southeast to around 55°F in the northwest. For the most part, the east half of the state had 1 to 2°F above normal temperatures. The western part of the state was closer to normal. The central part of the state had a mix of near normal in the north central and slightly above normal in the south central with a few areas in the center as 1 to 2°F below normal. The western part of the state had scattered frost on the 24th and 29th. The state average air temperature was 56.4°F which is about the same as the 1971-2000 normal of 56.1 °F. September 2008 state average air temperature ranked 64th coolest in the past 114 years with a maximum of 63.4 °F in 1897 and a minimum of 45.2 °F in 1965.

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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