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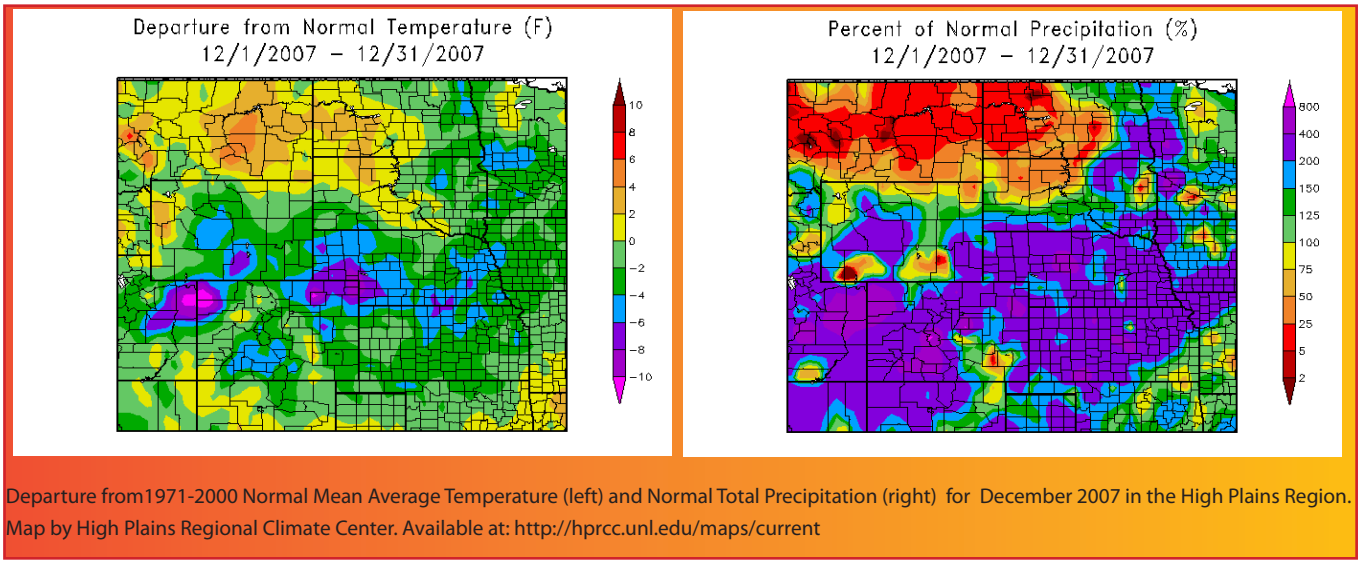
A line of Snow Plows work to clear the fresh snow along Hwy 2 in Lincoln, NE - Photo by Ken Dewey
http://www.nebraskaweatherphotos.org

December 2007 Climate Summary

Region Breakdown

Precipitation was above normal for much of the Southern High Plains region as parts of Nebraska, Colorado and Kansas experienced an active winter-storm pattern for much of December. Liquid precipitation totals were 200% of Normal or higher for much of the Southern High Plains Region, while the Western Dakotas remained dry. December 10, a large system moved through Central and Eastern Kansas bringing with it record precipitation amounts and sub-freezing temperatures, resulting in a deadly mix of ice and heavy snow.

Those regions receiving above normal precipitation amounts also experienced below-normal average temperature for the month of December, with departures of 4-8 degrees Fahrenheit below Normal for parts of Nebraska and Northern Kansas. The western Dakotas experienced above normal temperatures and below normal precipitation, continuing their warm and dry trend through 2007.

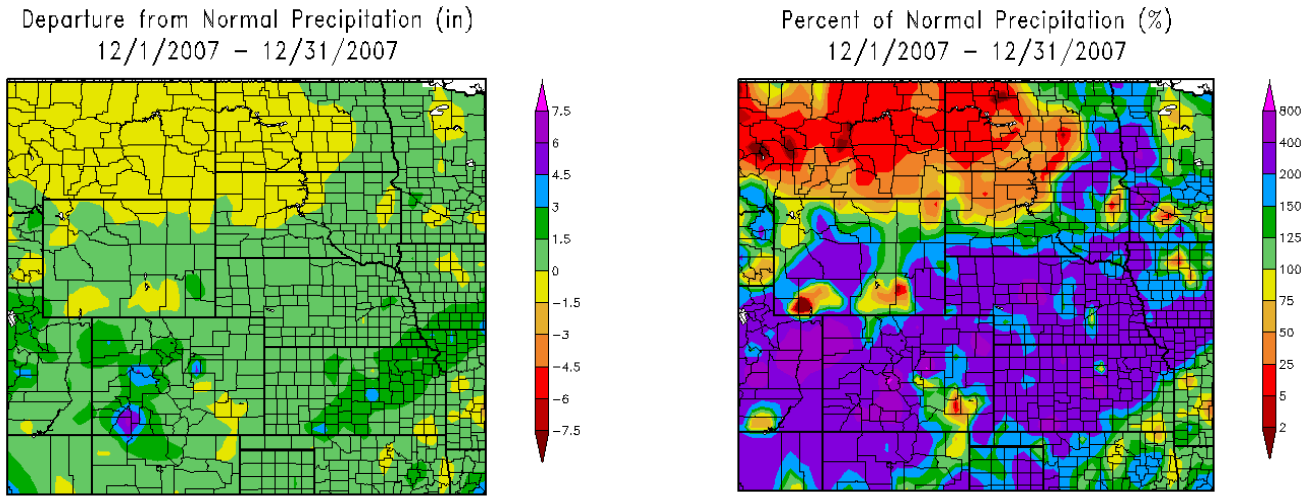


Departure from1971-2000 Normal Mean Average Temperature (left) and Normal Total Precipitation (right) for December 2007 in the High Plains Region.
Map by High Plains Regional Climate Center. Available at: http://hprcc.unl.edu/maps/current

Precipitation Summary

Precipitation was above normal for much of the Southern High Plains region as parts of Nebraska, Colorado and Kansas experienced an active winter-storm pattern for much of December. December 10, a large system moved through Central and Eastern Kansas bringing with it record precipitation amounts and sub-freezing temperature, resulting in a deadly mix of ice and heavy snow. Residents were left without electricity for up to two weeks in portions of eastern and central Kansas as a result of down power lines, with damage estimates from this storm in Kansas along of close to $150 million according to preliminary estimates from Kansas Electric Cooperatives.

The snow in December also provided for additional subsoil moisture and crop insulation for winter wheat throughout the state of Kansas. The snow cover throughout the High Plains region during December resulted in depressed temperatures as well. Although this precipitation during the month of December was over 200% of normal for much of Nebraska and Kansas for December, it was not record breaking. Many locations throughout eastern Colorado, Southern Nebraska and Kansas experienced snowfall amounts for December that ranked within the top 10 for snowfall, here are just a few: Wichita, KS - 10.6 inches of snow (7th); Omaha, Nebraska - 9.2 inches (10th); Goodland, Kansas - 14.2 inches of snow (10th); Denver, Colorado - 16.7 inches of snow (6th); Akron, Colorado (Akron 4 E) - 15.1 inches of snow (1st); Boulder, Colorado - 29.9 inches of snow (6th); Sterling, Colorado - 17.0 inches of snow (2nd).



Above: Precipitation Amounts (in inches)(left) and Percent of Normal Precipitation (right) (using 1971-2000 Normals) for December 2007 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

Official Monthly Records Broken during December 2007*

Precipitation Amounts in Inches/Temperature in Degrees F

Record	Location	Old Record	New Record
Total December Precipitation	Grand Junction Rgnl AP, CO	1.89/1951	2.05/2007

*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

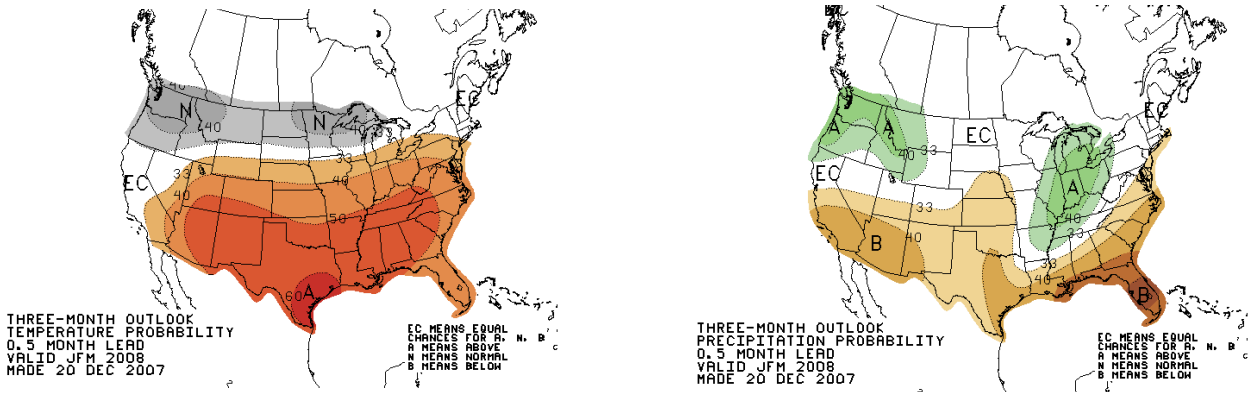
*Some records may be missing from this report

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. The data found throughout this publication was derived using products built on the ACIS framework.

ACIS
Applied Climate Information System - NOAA Regional Climate Centers

Climate Outlook

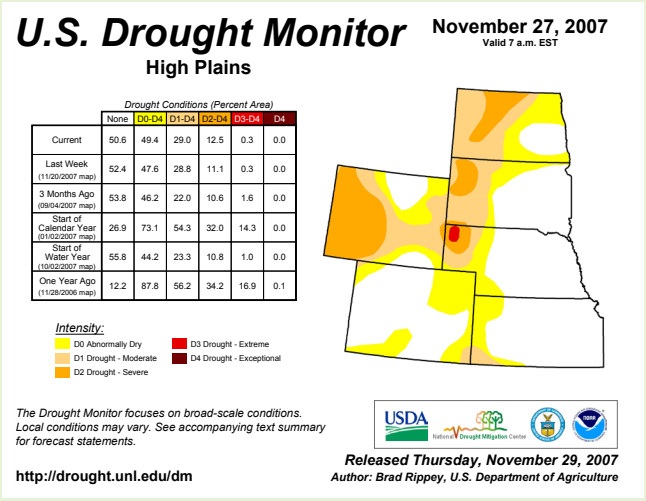
With La Nina ENSO conditions expected for the remainder of the cold season, as NOAA forecasters continue to call for above-average temperatures for much of the southern High Plains, and drier than normal conditions for the far-southwest corner of the High Plains Region (Southern Colorado and Western Kansas). This winter outlook is produced by scientists at the NOAA Climate Prediction Center. More information can be found here: http://www.cpc.ncep.noaa.gov/.

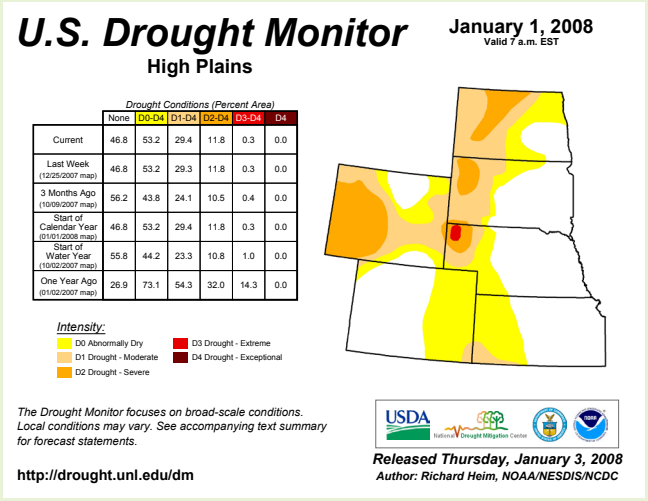


Above: 3-Month Outlook Maps Courtesy the NOAA Climate Prediction Center - http://www.cpc.ncep.noaa.gov
(left) The Three-Month Temperature Probability Outlook showing a higher probability of above-normal temperatures for southern parts of the High Plains region, decreasing probabilities as we head north. (right) The Three-Month Precipitation Probabilities showing equal chances of above or below normal precipitation for most of the high plains, with an increased probability of below normal precipitation across the states of Nebraska, Kansas and southern Colorado.

Drought Watch

Little to no change in the Drought Monitor for the High Plains region. With continued above-normal precipitation amounts for much of the eastern High Plains, and little change in the precipitation for the Western Dakotas, little has changed other than an expansion of the D0-D1 category took place across portions of western Kansas and eastern Colorado.





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	27.6	-3.0	12.3	-4.8	53	12/4	-33	12/29	1.21	0.88	367
Akron Washington County Airport	33.8	12.6	23.2	-5.5	70	12/4	-6	12/29	0.46	0.06	115
Colorado Springs Municipal Airport	38.8	15.7	27.3	-1.7	71	12/4	3	12/15	0.39	-0.03	93
Grand Junction Walker Field Airport	34.1	16.0	25.0	-3.1	52	12/1	-2	12/28	2.05	1.53	394
Pueblo Memorial Airport	43.4	13.7	28.6	-1.7	75	12/4	-4	12/28	0.47	0.08	121

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	34.6	17.4	26.0	-4.2	62	12/1	7	12/17	2.40	1.54	279
Dodge City Regional Airport	39.7	20.1	29.9	-3.2	72	12/4	4	12/28	1.92	1.15	249
Goodland Renner Field	37.6	15.5	26.6	-3.0	74	12/4	0	12/29	1.04	0.64	260
Medicine Lodge	43.4	21.7	32.5	--	72	12/4	6	12/16	2.76	--	--
Topeka Municipal Airport	40.2	21.2	30.7	-0.7	65	12/2+	11	12/24	4.19	2.77	295
Wichita Mid-Continent Airport	40.5	22.0	31.2	-2.4	64	12/4+	6	12/16	2.33	0.98	173

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Muni Airport	29.8	6.4	18.1	-7.0	60	12/4	-7	12/27+	0.68	0.26	162
Grand Island Airport	32.0	14.1	23.0	-2.6	57	12/4	0	12/16	1.38	0.72	209
Lincoln Municipal Airport	34.0	14.5	24.2	-2.2	57	12/1	0	12/16	2.09	1.23	243
Omaha Eppley International Airport	31.5	14.1	22.8	-2.9	49	12/1	-1	12/16	1.79	0.87	195
Norfolk Karl Stefan Airport	29.0	11.0	20.0	-3.7	49	12/4	-8	12/29	1.77	1.12	272
North Platte Regional Airport	33.1	8.6	20.9	-4.8	65	12/4	-6	12/15	0.88	0.48	220
Valentine Miller Field	33.3	11.0	22.2	-1.5	63	12/4	-2	12/29+	0.91	0.58	276

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	27.0	3.1	15.0	-0.1	44	12/20	-19	12/9	0.23	-0.21	52
Dickinson Municipal Airport	32.4	7.2	19.8	1.6	56	12/4	-11	12/8	0.02	-0.32	6
Fargo International Airport	18.7	1.9	10.3	-2.2	33	12/13	-20	12/9+	1.59	1.02	279
Grand Forks International Airport	16.2	-1.9	7.1	-4.2	34	12/13	-26	12/8	0.67	0.12	122
Williston International Airport	27.1	0.4	13.7	0.7	42	12/19	-20	12/8	0.10	-0.47	18

All Data are Preliminary and Subject to Change
Source: National Weather Service Cooperative Observation Network Data
Data is retrieved through the Applied Climate Information System (ACIS)
This data is available for the entire period of record through the CLIMOD system. For more information please see http://hprcc.unl.edu/services.

December 2007 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	21.7	1.1	11.4	-4.6	34	12/19	-15	12/8	0.90	0.52	237
Huron Regional Airport	26.2	6.7	16.4	-2.2	39	12/18	-8	12/8+	0.67	0.28	172
Rapid City Regional Airport	34.1	10.4	22.2	-2.5	66	12/4	-4	12/12	0.51	0.10	124
Sioux Falls Joe Foss Field Airport	26.2	8.8	17.5	-0.8	38	12/19	-6	12/31	1.40	0.88	269

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	29.5	12.3	20.9	-2.9	55	12/4	-2	12/14	0.74	0.12	119
Cheyenne Airport	32.2	13.8	23.0	-4.1	57	12/4	0	12/11+	1.01	0.55	220
Lander Hunt Field Airport	26.4	5.1	15.7	-5.5	56	12/4	-13	12/15	1.77	1.16	290
Laramie Regional Airport	27.7	7.3	17.5	-3.8	51	12/4	-21	12/15	0.35	-0.11	76
Rawlins Municipal Airport	24.2	10.7	17.5	-6.6	40	12/4	-10	12/14	0.43	-0.06	88
Sheridan County Airport	35.5	10.0	22.8	0.4	65	12/4	-6	12/2	0.41	-0.27	60

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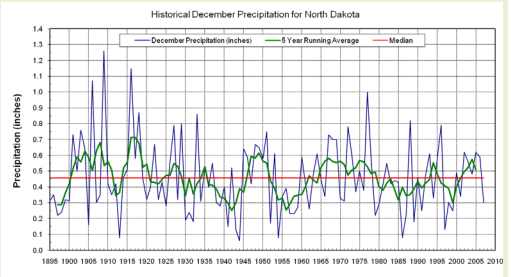
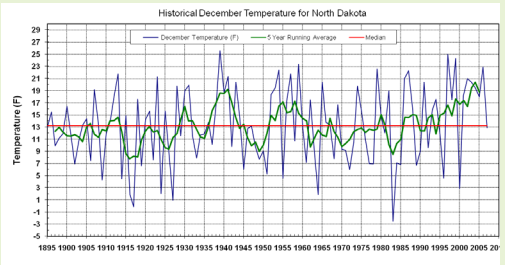
State Spotlight - North Dakota

Barb Mullins - North Dakota State Climate Office, North Dakota State University

The state average rainfall was 0.30" which is slightly below the 1971-2000 normal of 0.44". December 2007 ranked 27th driest in the last 113 years. The maximum state average rainfall was 1.26" in 1909 and the minimum was 0.06" in 1944. As December began, snow fell across the state. The snowfall was light in the western and central regions and heavy in the eastern part of the state. Record snowfall amounts of 7.4" and 6.4" fell on the 1st at Fargo and Grand Forks, respectively. This was followed by another record breaking 5.9" and 6.2" on the 4th for Fargo and Grand Forks, respectively. Most of the month was dry with some scattered snowfall with wider bands of snow falling around the 13th, 22nd, and 25th. Only the eastern part of the state had above normal monthly precipitation of 130 to nearly 300%. The western and central regions had below normal precipitation ranging from 5 to 70%. The drought monitor as of January 1, 2008 displays the western and north central regions of the state having severe to moderate drought conditions. The remaining areas have abnormally dry conditions to no drought conditions.





The first half of the month had daily air temperatures below normal for much of the state. Grand Forks had record low temperatures of -19 ˚F on the 5th and -26 ˚F on the 8th. The state average air temperature was 12.9 ˚F which is nearly right on the 1971-2000 normal state average of 13.0 ˚F. The state was split with the eastern and north central regions being 1 to 5 degrees below normal. The western and south central regions had 1 to 5 ˚F above normal. The higher temperatures in the western regions allowed producers to continue grazing livestock. Overall, the month ranked 54th coolest (or 59th warmest) in the past 113 years. The maximum December state average air temperature was 25.6 ˚ F in 1939 and the minimum was -2.5 ˚ F in 1983.

All graphs in this section courtesy the North Dakota State Climate Office
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
North Dakota State Climate Office: http://www.ndsu.edu/ndsco
North Dakota Agricultural Network: http://www.ndawn.ndsu.nodak.edu
National Weather Service: http://www.weather.gov
National Climatic Data Center: http://ncdc.noaa.gov
School of Natural Resources - University of Nebraska - Lincoln: http://snr.unl.edu
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
National Agricultural Statistics Service (USDA): http://www.nass.usda.gov
Weather Photos: http://www.nebraskaweatherphotos.org

Photo of the Nebraska Sandhills by Bill Sorensen - Senior Programmer - HPRCC

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