

OKLAHOMA MONTHLY CLIMATE SUMMARY

DECEMBER 2007



Several significant ice storms since the turn of the millennium have somehow managed to give only glancing blows to the state's major metropolitan areas, thus diminishing the potential number of power outages. This December saw that lucky streak end, however, as yet another major ice storm struck the state December 8-11 with Oklahoma City and Tulsa both squarely in the heavy ice footprint. When it was over, nearly 700,000 customers were left without power, easily the worst such number in state history. The worst toll, however, came in lives as preliminary estimates place the number of fatalities in Oklahoma due to the ice storm at 29. Catastrophic tree damage occurred all throughout central Oklahoma up through the northeast. That ice storm, along with several other bouts of wintry weather, propelled the month to the 29th wettest and 36th coolest on record statewide. The year ended as the 36th warmest and 14th wettest on record as well.

Precipitation

Most areas received beneficial precipitation during December, albeit in a hazardous form at times. The statewide average was just over a tenth of an inch above normal. The Panhandle was a major beneficiary of the moisture since that area had not received the drought-busting rainfalls seen in other parts of the state during 2007. The Panhandle had over an inch of liquid precipitation, which might not seem like much, but for that region ranked as the 16th wettest on record. The year ended over four inches above normal statewide, but the most astounding statistic was found for central Oklahoma. The center part of the state ended with its wettest year on record at over 14 inches above normal. In contrast, the Panhandle ended with the 21st driest year on record with a deficit of about five inches. According to the Oklahoma Mesonet, annual rainfall totals across the state ranged from a high of 59.4 inches at the Red Rock Mesonet site to a measly 12.0 inches at Goodwell.

Description	Extreme	Station	Date
High Temperature	80°F	Idabel Burneyville	Dec. 2 Dec. 7
Low Temperature	-2°F	Hooker	Dec. 29
High Precipitation	6.78 in.	Talihina	
Low Precipitation	0.17 in.	Kenton	

Temperature

It comes as no shock that the month finished cooler than normal, at least on a statewide basis, with the multiple wintry blasts. The statewide average temperature was more than a degree below normal. Southeastern Oklahoma, which often was left on the southern side of those wintry blasts and cold fronts, actually managed to finish a degree-and-a-half above normal, the 44th warmest December on record for that area. The year was not quite as warm as last year's drought-stricken year, but was still above normal by nearly a half of a degree. The warmest temperature recorded by the Oklahoma Mesonet was 106 degrees at Hooker and Webbers Falls on August 12 and 13, respectively. The lowest temperature, -6 degrees, was reported at the Kenton Mesonet site on February 2.

December Daily Highlights

December 1-2: The month's first two days were very un-December like, with highs in the 60s and 70s to go along with gusty winds from the south. A cold front intruded into the pleasant weather on the second, whipping winds around to the north and dropping temperatures into the 50s. Light rain fell in association with the cold front, but amounts were less than a half of an inch.

December 3-7: The cold front's cooler weather quickly faded over the next several days, and temperatures returned to the 60s and 70s through the fourth. Another cold front passed through on the fifth and temperatures dropped from the 70s back into more seasonable 40s. An upper-level disturbance moved over the state on the sixth and generated a bout of freezing drizzle in the north. Amounts were light, but a little goes a long way when dealing with ice, and travel problems ensued. The problems were alleviated as temperatures gradually rose above freezing during the afternoon. A warm front moved into the state from the south on the seventh. Lows remained in the 50s in southern Oklahoma, although they still fell into the freezing range in the north. Light drizzle fell under overcast skies, a precursor to an approaching powerful upper-level storm system.

December 8-12: This four-day period saw the state experience one of its most devastating ice storms in recorded history. An upper-level storm system from the west sent out several waves of energy, each producing a wave of heavy icing. A warm front on the eighth ensured plenty of moisture was available to ride up and over a shallow layer of cold air which had entered the state from the northwest. Freezing drizzle began falling in the northwest around noon, but temperatures managed to remain above freezing over the rest of the state. Low temperatures were separated from the upper 60s in the southeast and the teens in the northwest by the cold front. The ice storm began in earnest late on the eighth and early on the ninth. Areas of moderate to heavy freezing rain and sleet moved northeast over much of Oklahoma during this time. Ice began collecting on power lines and power outages began to increase over northwestern and central Oklahoma. As the day went on, the heaviest freezing rain moved to the northeast and caused similar problems across that area. Another wave of precipitation moved up and over the state from the southwest that evening. Each additional wave of heavy precipitation left an additional layer of ice on elevated surfaces and roadways. Some of the precipitation was convective, and was accompanied by thunder. These bands of freezing rain continually regenerated and moved from the southwest to the northeast, especially along the I-44 corridor. This meant that the state's two largest metropolitan areas were in the heaviest accumulation footprint. The precipitation shifted to the northwest by the evening of the 10th, and a northward-advancing warm front eventually allowed temperatures to rise above freezing in the southeastern half of Oklahoma later that night and early on the 11th. The southeastern one-third was lucky enough to remain above freezing for the most part through the storm system's visit, so the 3-4 inches of precipitation that fell in that area was mostly liquid. Scattered light precipitation remained through the 12th, and most temperatures were still above freezing, so widespread travel problems or additional ice accumulations failed to materialize.

December 2007 Statewide Statistics			
Temperature			
	Average	Depart.	Rank (1895-2007)
Month (Dec)	37.8°F	-1.2°F	36th Coolest
Year-to-Date (Jan-Dec)	60.0°F	0.4°F	36th Warmest
Precipitation			
	Total	Depart.	Rank (1895-2007)
Month (Dec)	2.13 in.	0.11 in.	29th Wettest
Year-to-Date (Jan-Dec)	41.04 in.	4.35 in.	14th Wettest

Depart. = Departure from 30-year normal

December 13-15: Patchy fog and light snow greeted the state on the 13th. The northwest received a bit of a break with a bit of sunshine, allowing temperatures there to rise into the 40s. Other areas of the state struggled to reach the 40s due to lingering cloud cover. The 14th-15th were gray and damp. Snow fell on the 15th in northern Oklahoma. Totals were mainly from 1-3 inches, although up to four inches fell in Ponca City, Enid, and near Skiatook. The snow was accompanied by strong northerly winds, at times gusting to over 50 mph. Temperatures remained above freezing in the south, which allowed for rain instead of snow. More than two inches of rain fell in the extreme southeast during this three-day period.

December 16-21: The next six days were a welcome respite after the frozen nightmare of the previous week or so. Clear skies and seasonable-to-warm weather stuck around throughout the period. Low temperatures were still on the cold side, in the 20s and 30s mostly, but high temperatures rebounded into the 50s and 60s. A few 70s showed up on the 21st.

December 22-23: A strong cold front entered the state with frigid temperatures and strong northerly winds as well as snow, sleet, and freezing rain. One-three inches fell in northern Oklahoma with a high of around five inches in Medford. Skies cleared as high pressure at the surface moved in and temperatures rose into the 50s across the snow-free areas. Temperatures remained in the 30s where snow fell, however.

December 24-28: This five-day period was a mixture of pleasant weather and more of the wintry weather found earlier in the month. A few flurries and sprinkles fell on the 24th before skies cleared and temperatures warmed into the 50s and 60s on the 25th. A very quick-moving storm system on the 26th dropped almost a half-foot of snow in east central Oklahoma near Shawnee and Seminole. The snow was pretty well confined to central and eastern Oklahoma, with most areas receiving a good dusting. Much of the snow melted quickly as temperatures rose above freezing later that day. The 27th was quite chilly as well with more light drizzle and snow. Highs across the state remained in the 20s and 30s. Northern Oklahoma saw another good dusting of snow on the 28th as another upper-level storm passed over the state.

December 29-31: The 29th saw the lowest temperature of the month, -2 degrees, recorded by the Hooker Mesonet site. The rest of the state's low temperatures were from the single-digits to the mid-20s. Temperatures rebounded into the 40s and 50s, generally, with more of the same the next couple of days to end the month.

December 2007 Severe Weather

Significant Tornadoes (EF2 or greater)

No significant tornadoes were reported in the state.

Hail (2 inches in diameter or greater)

No significant hail were reported in the state.

Wind Gusts (70 mph or greater)

No significant wind gusts were reported in the state.

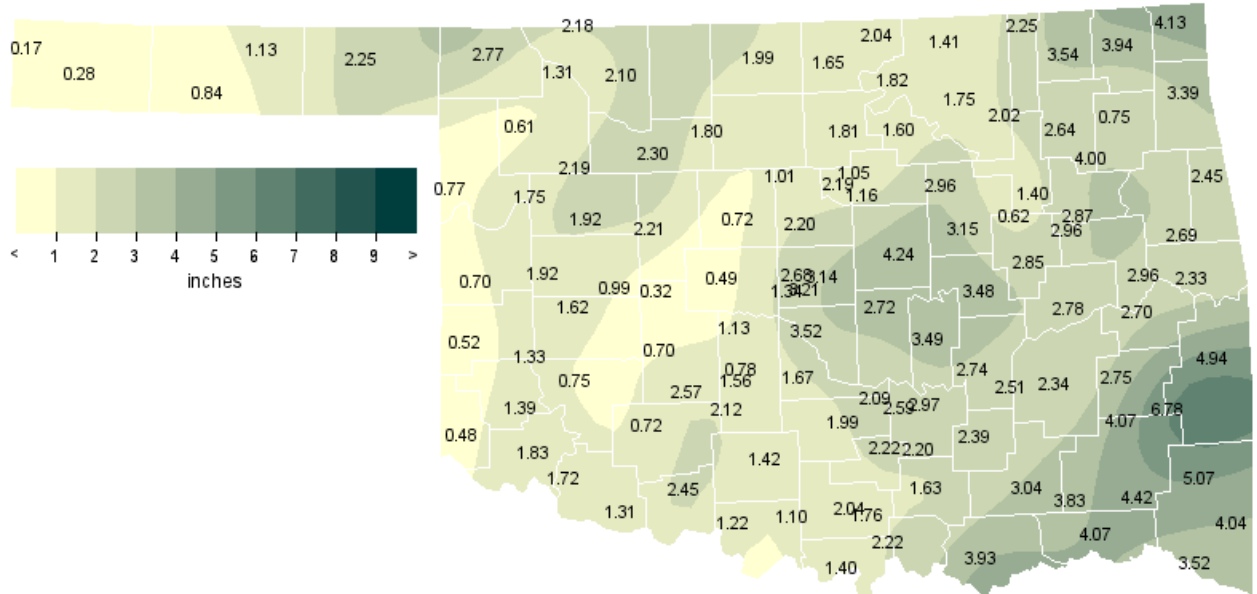
Flooding

No significant floods were reported in the state.

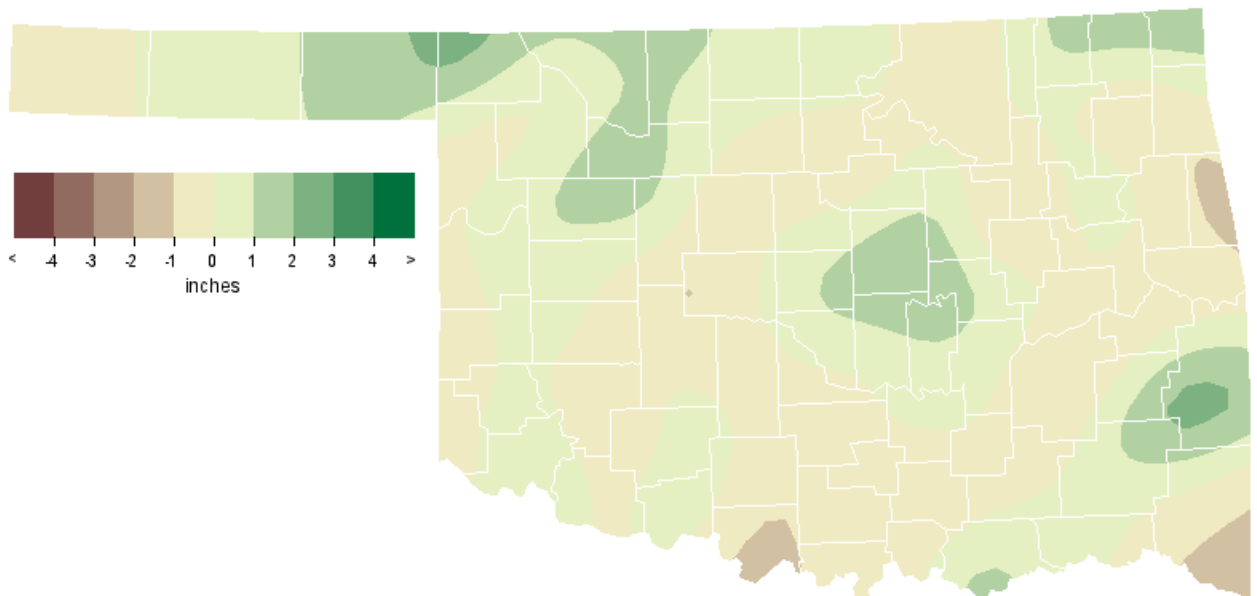
Record Event Reports

Description	Day	Location	Record	Previous Record	Year
Daily Precipitation	10	Oklahoma City	1.18	1.06	1960
Daily Precipitation	11	Tulsa	1.07	0.87	1946

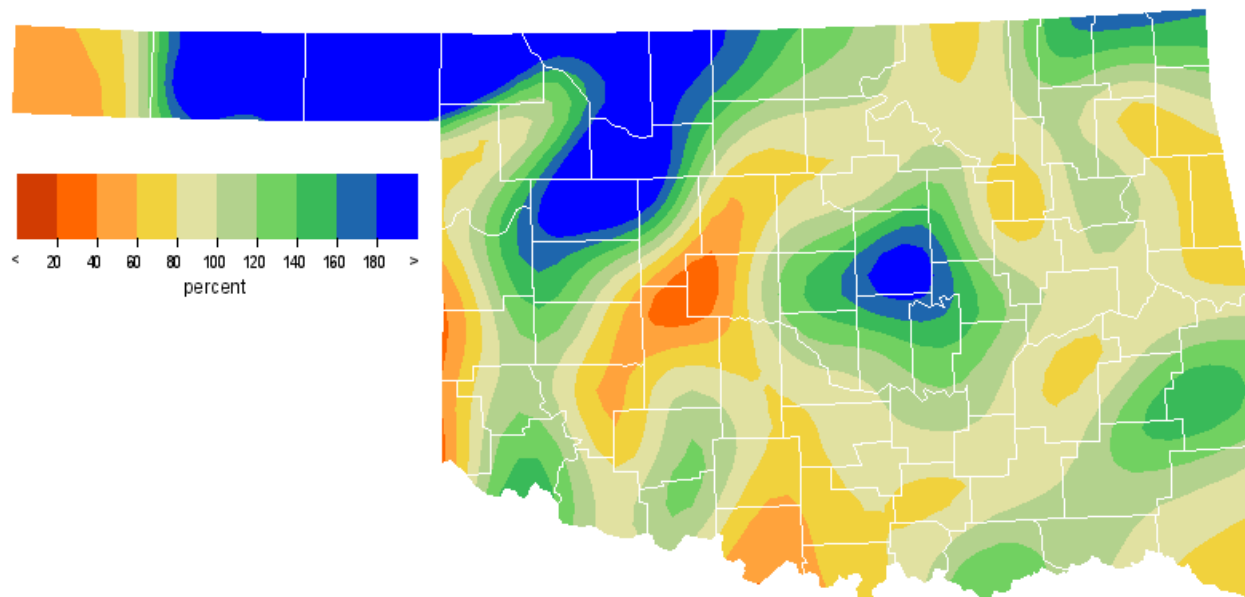
December 2007 Observed Precipitation



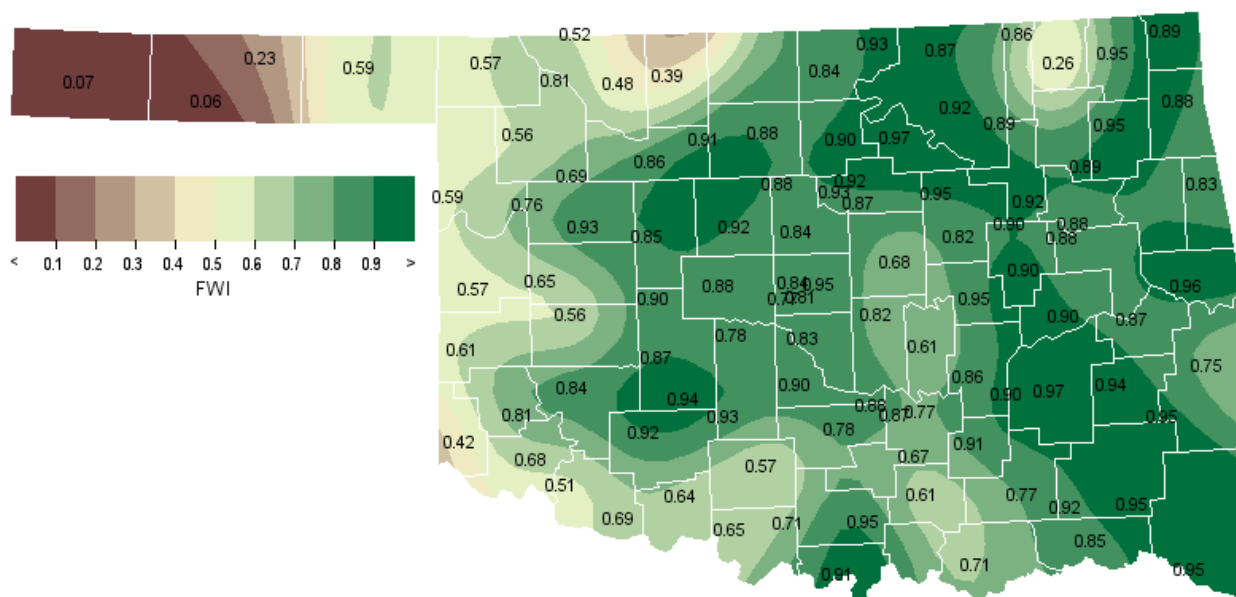
December 2007 Departure from Normal Precipitation



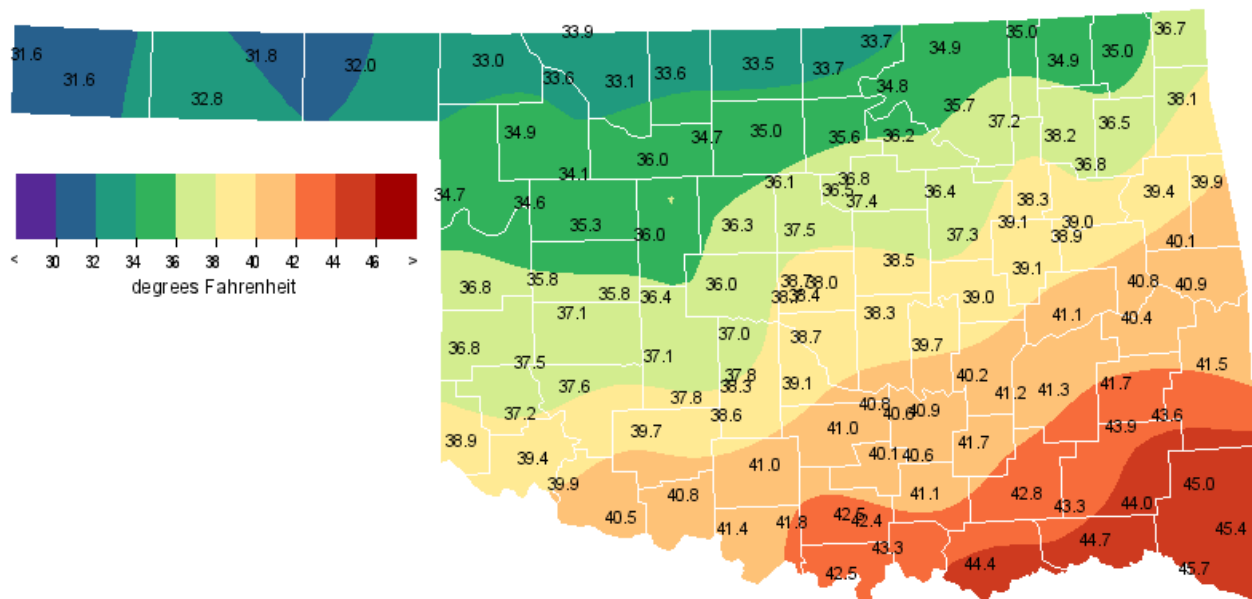
December 2007 Percent of Normal Precipitation



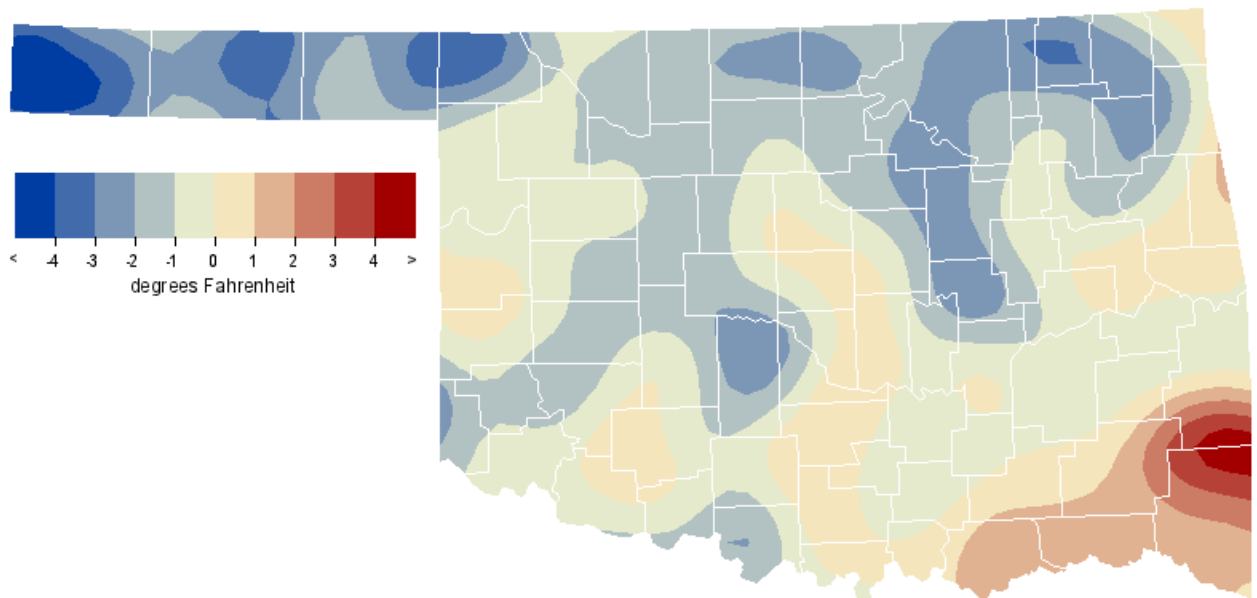
December 2007 Average Soil Moisture at 25cm



December 2007 Average Temperature



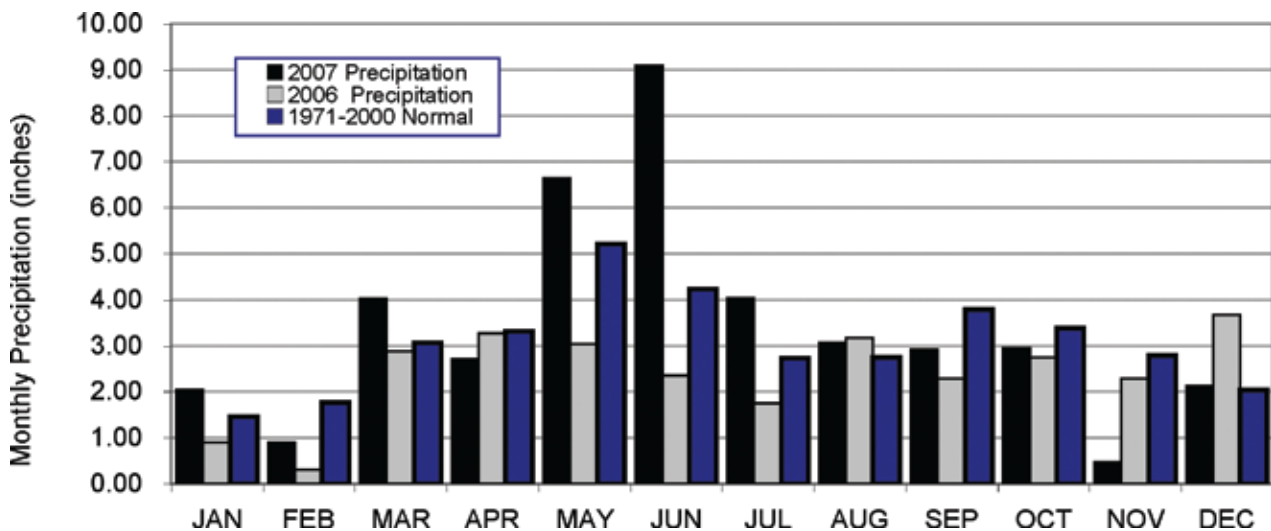
December 2007 Departure from Normal Temperature



December 2007 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	Dec-06
Panhandle	1.17	0.47	16th Wettest	3.75 (2006)	0.00 (1922)	3.75
North Central	1.82	0.52	23rd Wettest	4.55 (1913)	0.00 (1922)	2.92
Northeast	2.50	0.22	32nd Wettest	6.72 (1984)	0.16 (1950)	4.09
West Central	1.44	0.30	27th Wettest	4.03 (1932)	0.00 (1908)	3.32
Central	2.17	0.16	30th Wettest	6.67 (1984)	0.00 (1908)	3.27
East Central	2.49	-0.49	55th Wettest	8.95 (1987)	0.21 (1908)	4.70
Southwest	1.29	-0.09	44th Wettest	4.94 (1991)	0.00 (1908)	2.45
South Central	2.13	-0.40	49th Wettest	7.01 (1932)	0.07 (1950)	3.81
Southeast	4.35	0.28	33rd Wettest	12.76 (1971)	0.23 (2005)	4.88
Statewide	2.13	0.11	29th Wettest	4.98 (1984)	0.10 (1950)	3.67

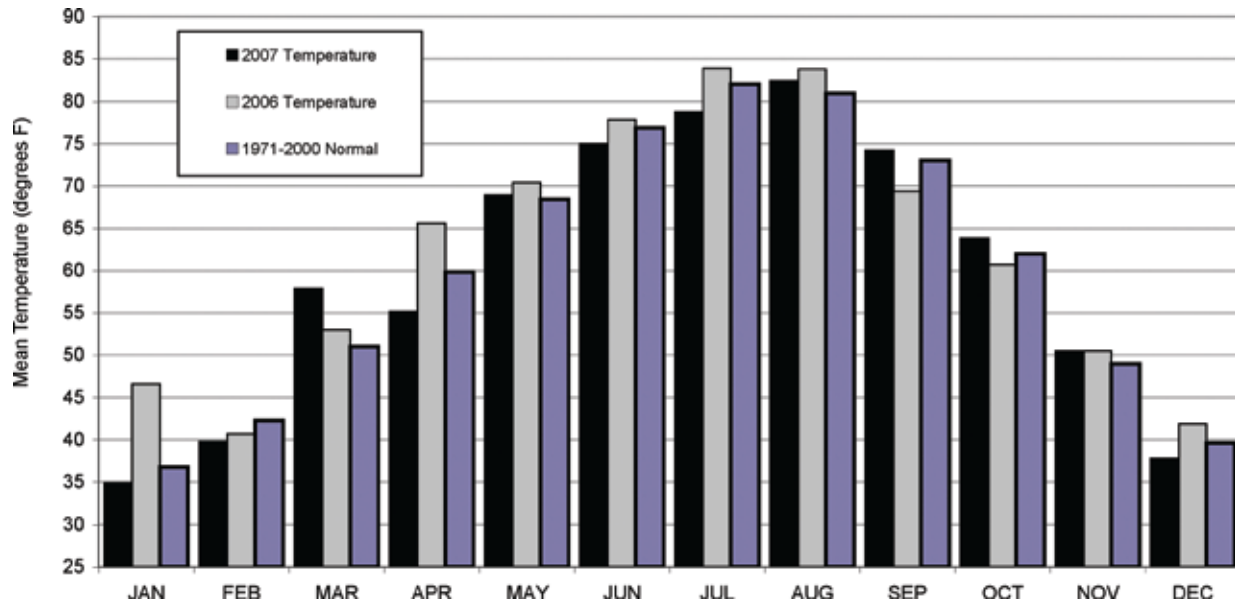
2006 and 2007 Statewide Precipitation Monthly Totals vs. Normal



December 2007 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	Dec-06 (F)
Panhandle	32.5	-2.5	27th Coolest	41.6 (1933)	22.6 (1983)	37.9
North Central	34.3	-2.2	24th Coolest	43.7 (1965)	21.9 (1983)	40.3
Northeast	36.5	-1.7	36th Coolest	45.1 (1931)	24.3 (1983)	41.1
West Central	36.2	-1.2	31st Coolest	44.2 (1965)	24.0 (1983)	40.8
Central	37.8	-1.5	34th Coolest	46.4 (1965)	25.3 (1983)	41.9
East Central	40.2	-0.4	45th Coolest	47.6 (1933)	27.4 (1983)	43.8
Southwest	38.7	-1.1	33rd Coolest	46.7 (1965)	27.5 (1983)	41.9
South Central	41.7	-0.4	45th Coolest	48.5 (1965)	29.2 (1983)	44.4
Southeast	43.9	1.5	44th Warmest	50.7 (1984)	30.7 (1983)	45.2
Statewide	37.8	-1.2	36th Coolest	45.4 (1965)	25.8 (1983)	41.9

2006 and 2007 Statewide Temperature Monthly Averages vs. Normal



Mesonet Extremes for December 2007

Climate Division	High Temp			Low Temp			High Monthly Rainfall			High Daily Rainfall		
	(F)	Day	Station	(F)	Day	Station	(inches)	Station	(inches)	Day	Station	
Panhandle	75	4th	Kenton	-2	29th	Hooker	2.77	Buffalo	1.50	11th	Buffalo	
North Central	75	4th	Seiling	5	16th	Seiling	2.30	Fairview	1.46	11th	Alva	
Northeast	70	2nd	Porter	11	16th	Burbank	4.13	Miami	2.39	11th	Vinita	
West Central	77	4th	Erick	9	29th	Butler	2.21	Watonga	1.44	11th	Butler	
Central	72	2nd	Okemah	10	23rd	Chickasha	4.24	Chandler	2.54	11th	Norman	
East Central	76	2nd	Sallisaw	16	23rd	Cookson	2.96	Haskell	1.47	11th	Okmulgee	
Southwest	76	1st	Tipton	11	30th	Mangum	2.57	Apache	1.76	11th	Apache	
South Central	80	7th	Burneyville	12	23rd	Sulphur	3.93	Durant	1.87	11th	Ada	
Southeast	80	2nd	Idabel	15	23rd	Antlers	6.78	Talihina	1.76	14th	Cloudy	
Statewide	80	2nd	Idabel	-2	29th	Hooker	6.78	Talihina	2.54	11th	Norman	

January Climatological Outlook

NORMAN - The weather in Oklahoma during January, Oklahoma's coldest and driest month, is marked by many and rapid variations. Cold fronts move through the state on a regular basis, bringing air from colder regions of the earth, but cold weather rarely lasts for more than a few days at a time. The north or northwest winds that spread the colder air typically give way to a day or so of calm and sunshine, followed by a return to the prevailing southerly winds which dominate the state's weather throughout the year. The state is located within the range of the winter meandering of the jet stream. Oklahoma's proximity to both the warm waters of the Gulf of Mexico to the southeast and the mountain barrier to the west enhances the potential for the development of winter storms beneath the jet. The Gulf provides moisture and is a source of thermal energy that interacts with the areas of low pressure, which are initiated under the jet stream east of the mountains. This interaction often results in the development of winter storms. Many of the winter storms in the eastern half of the country are born in Oklahoma.

Precipitation

Mean: 1.46 inches
Wettest year: 1949, 5.23 inches
Driest year: 1986, 0.04 inches
Wettest location: Broken Bow, 3.49 inches
Driest location: Goodwell, 0.29 inches
Most recorded: 13.85 inches, Smithville, 1950

According to National Weather Service cooperative network data from 1971 through 2000, the statewide-averaged normal temperature for the month is 36.8 degrees. Normal temperatures across Oklahoma range from 41.9 degrees at Waurika in the south to 30.7 degrees at Turpin in the eastern panhandle. Normal daily maximum temperatures vary between 54.0 degrees at Waurika, near the Red River at Oklahoma's southern border, down to 41.9 degrees at Newkirk, near the state's northern border. Normal daily minimum temperatures range from 30.8 degrees at Okemah to 16.7 degrees at Turpin. The coldest January temperature ever recorded in the state is -27 degrees, recorded at Watts on January 18, 1930. At the other extreme, Cloud Chief reported a daily maximum temperature of 92 degrees on January 31, 1911. The warmest and coldest Januarys, averaged statewide, were 47.5 degrees in 1923 and 24.9 degrees in 1930, respectively.

Temperature

Mean: 49.0 degrees
Warmest January: 1923, 47.5 degrees
Coolest January: 1930, 24.9 degrees
Warmest location: Waurika, 41.9 degrees
Coolest location: Turpin, 30.7 degrees
Hottest recorded: 92 degrees, Cloud Chief, January 31, 1911
Coldest recorded: -27 degrees, Watts, January 18, 1930

Oklahoma's normal monthly precipitation during January, averaged across the state, is 1.46 inches. Normal monthly precipitation for the month ranges from 3.49 inches in the southeast at Broken Bow to 0.29 inch in the panhandle at Goodwell. Most of the precipitation falls as rain, although snow, sleet, and freezing rain are all observed. The statewide-averaged normal snowfall (including sleet) is 2.4 inches, most of which falls in the northern half of the state. The panhandle town of Boise City averages 7.0 inches of snow during January. On average, snowfalls of at least one inch occur on 2.5 January days at Boise City. The wettest January in the state's weather record is 1949, when the statewide average was 5.23 inches. The driest January was 1986, when the state's rain gauges collected an average of only 0.04 inches of precipitation. Smithville was deluged with 13.85 inches of precipitation during January 1950.

Tornadoes

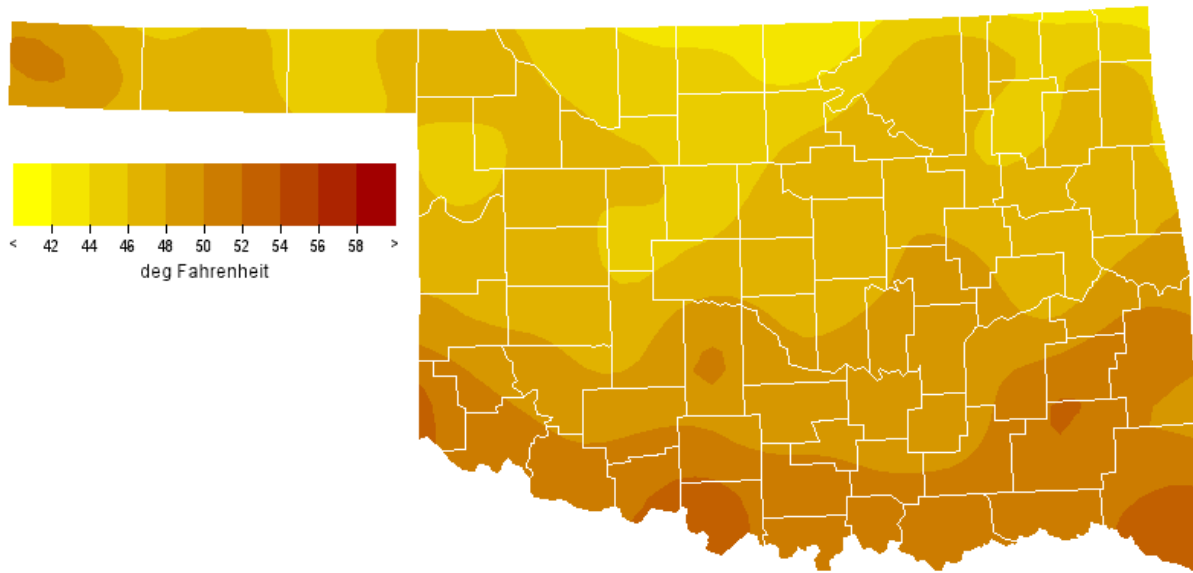
Average January Tornadoes: 0.2
Most: 4 (1967)

Snowfall records are not as reliable as those for temperature and total precipitation (which includes water obtained from melted snow), but the greatest January snowfalls appear to have been recorded in 1905, 1930, 1949, 1988, 1990, and 2001. Statewide information is somewhat sketchy regarding the 1905 event, but it is known that Fort Reno recorded a cumulative depth of 24.5 inches of snow over the course of the month. In January 1930, noted above for its extreme cold, 25.0 inches of snow fell at Jefferson, and the state's reporting stations averaged 11.7 inches for the month. The reported January 1949 snowfall totals include 30.1 inches at Union

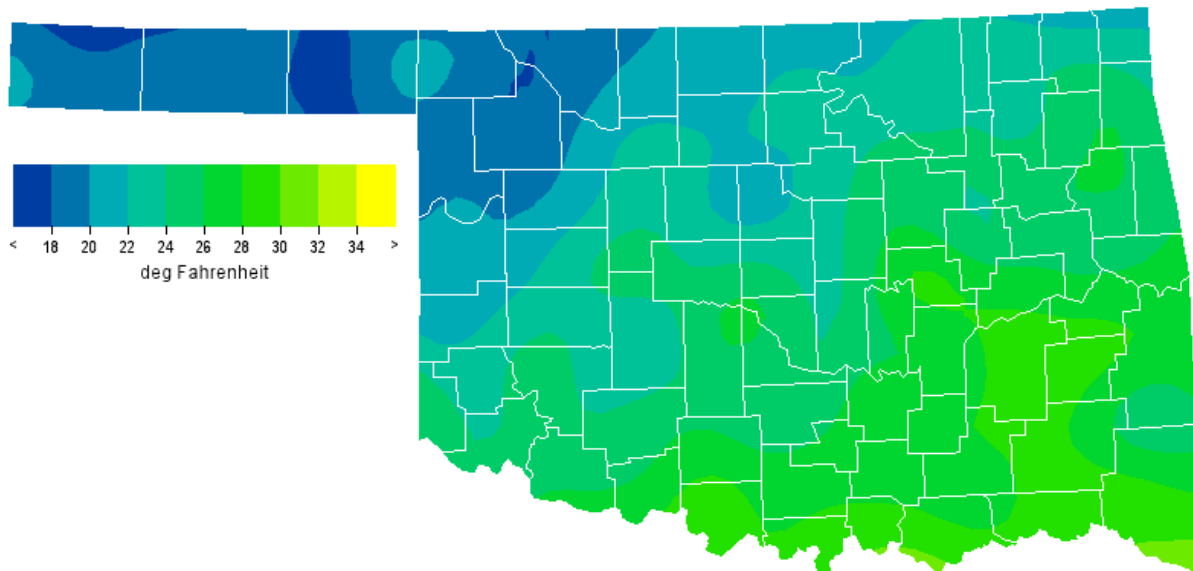
City and 25.3 inches at Ponca City. In 1988, most of the state was blanketed by 10 inches of snow (16 to 18 inches in some locales) in a major snowstorm that came on the heels of an ice storm during the previous month. Goodwell reported 16 inches on snow on January 19, 1990, accumulating 18 inches over a two-day period, in a snowstorm whose Oklahoma extent was mainly confined to the panhandle. The state record for January monthly snowfall is 32.7 inches, set at Kenton in 2001. Nearly half of that total (16 inches) was reported on the 16th.

Tornadoes are not usually a part of the January weather in Oklahoma, but the month is not immune to them. Reasonably reliable counts of tornadoes in the state are available since 1950. During that time, 12 tornadoes have occurred during January, including 4 each in 1957 and 1967. On January 4, 1917, an F3 tornado (severe damage, estimated wind speeds of 158-206 miles per hour) struck a Choctaw boarding school at Vireton (13 miles northeast of McAlester), killing 16 students and injuring 10 others.

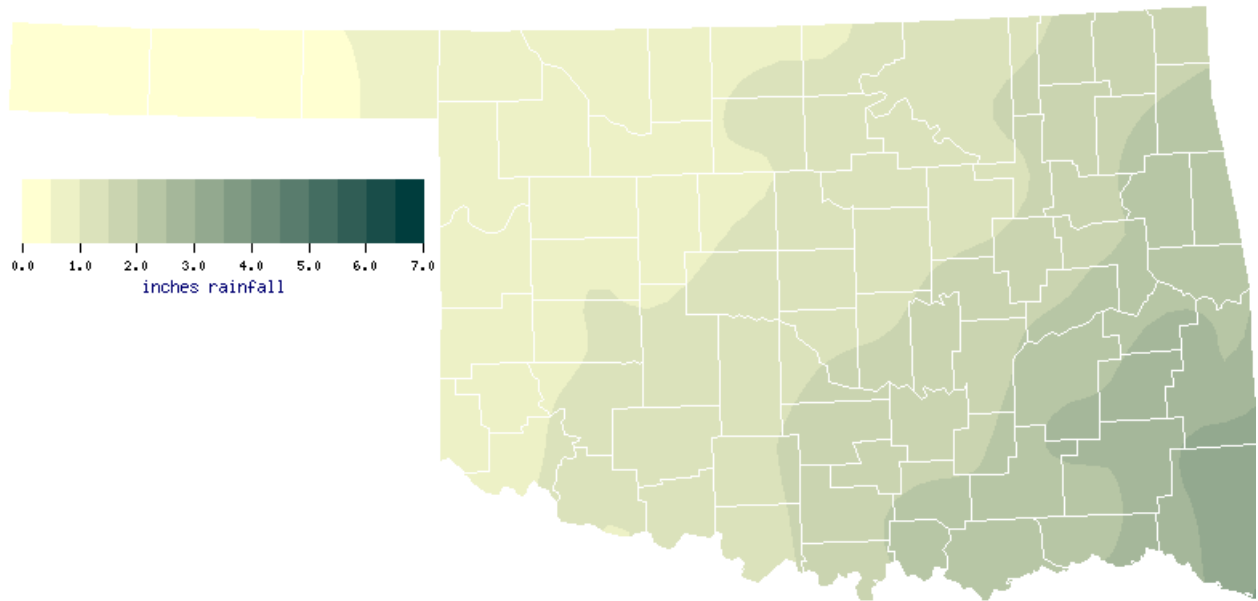
January Normal Daily Maximum Temperature (1971-2000)



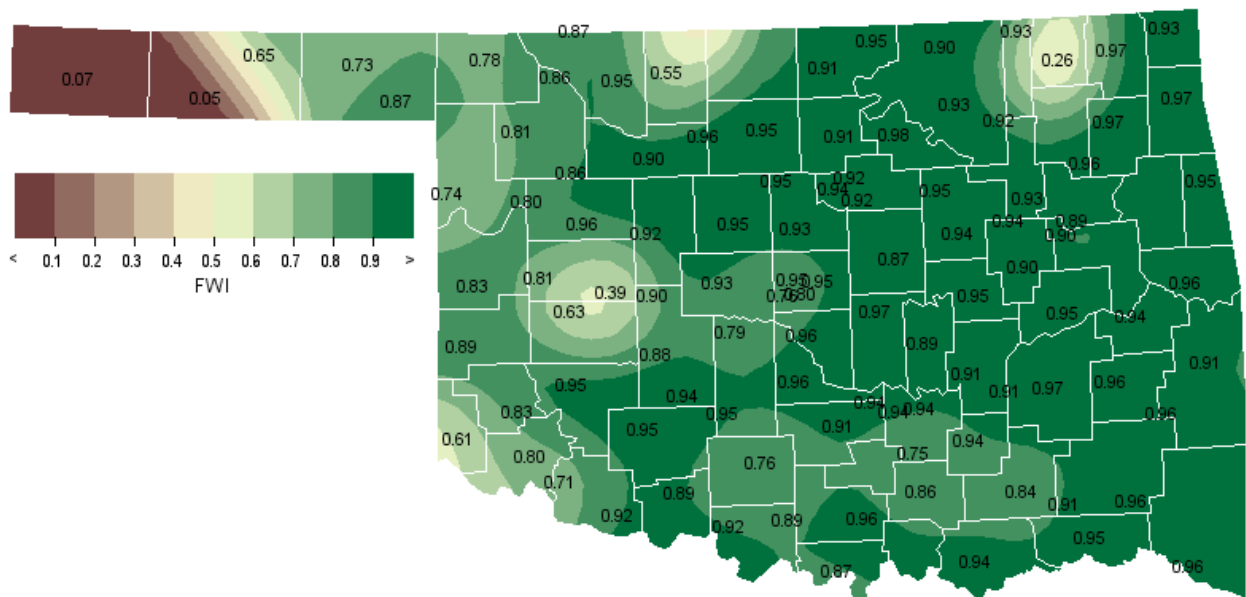
January Normal Daily Minimum Temperature (1971-2000)



January Normal Precipitation (1971-2000)



January 1, 2008 Soil Moisture Conditions at 25cm



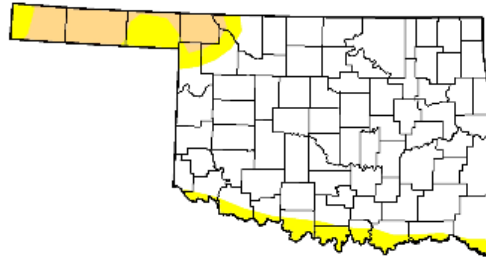
U.S. Drought Monitor

Oklahoma

January 1, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	83.4	16.6	7.1	0.0	0.0	0.0
Last Week (12/25/2007 map)	83.4	16.6	7.1	0.0	0.0	0.0
3 Months Ago (10/09/2007 map)	95.6	4.4	0.0	0.0	0.0	0.0
Start of Calendar Year (01/01/2008 map)	83.4	16.6	7.1	0.0	0.0	0.0
Start of Water Year (10/02/2007 map)	95.6	4.4	0.0	0.0	0.0	0.0
One Year Ago (01/02/2007 map)	31.3	68.7	39.8	24.5	18.2	0.0



Intensity:

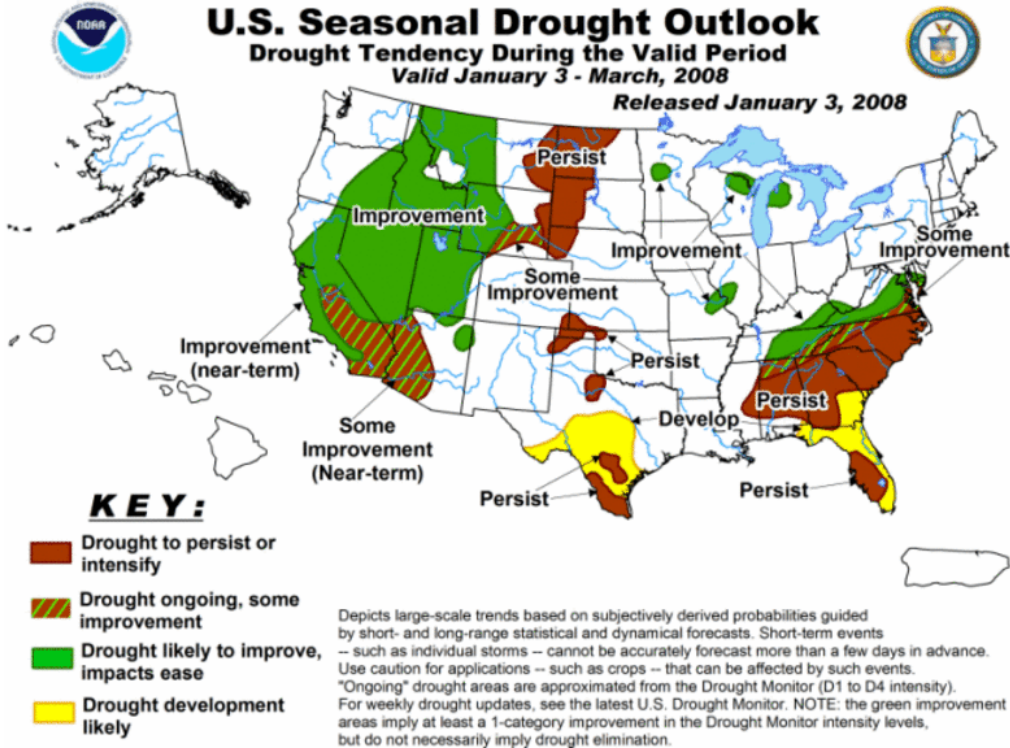
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

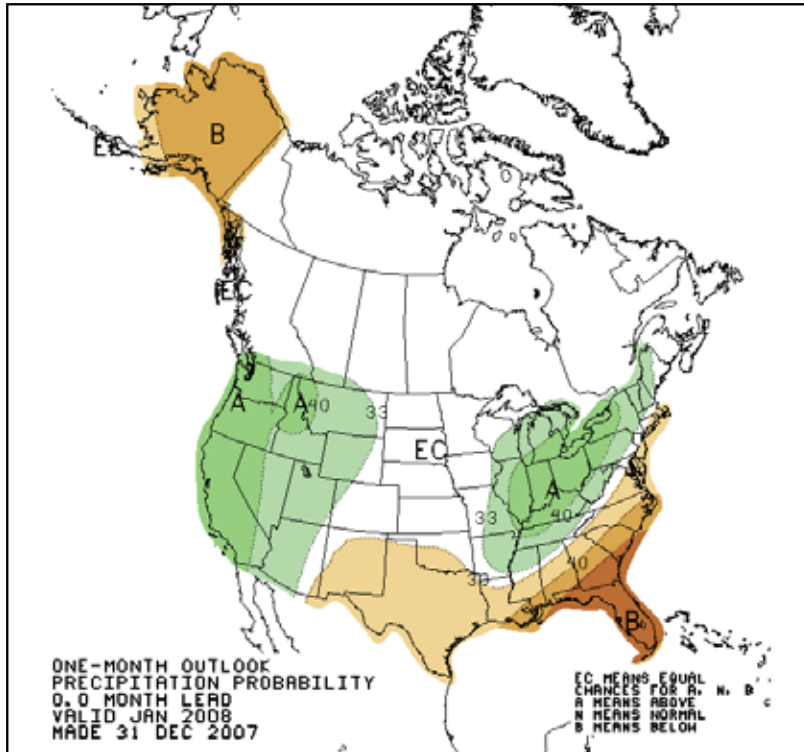
<http://drought.unl.edu/dm>



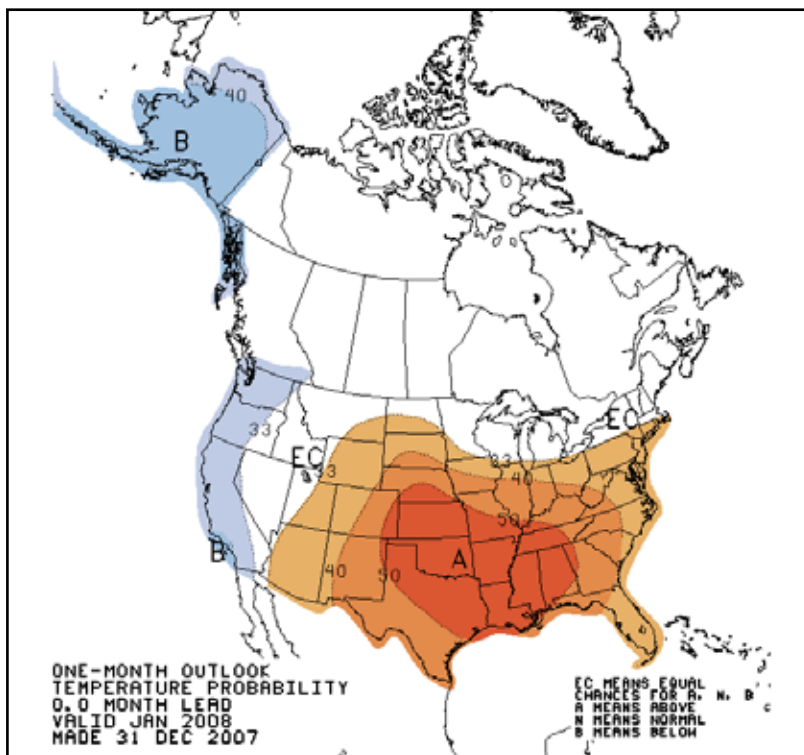
Released Thursday, January 3, 2008
Author: Richard Heim, NOAA/NESDIS/NCDC



January 2008 U.S. Precipitation Forecast



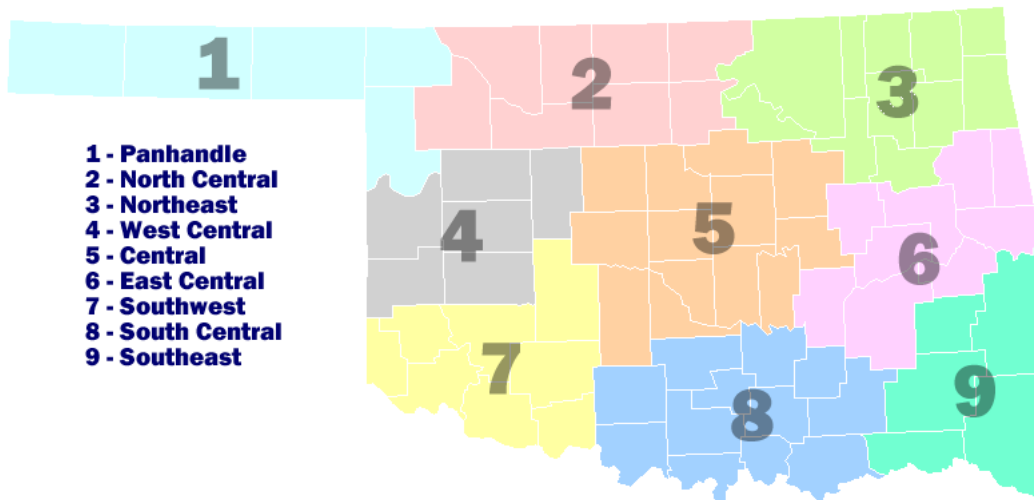
January 2008 U.S. Temperature Forecast



January Climate Normals

Climate Division	Max. Temperature (°F)	Min. Temperature (°F)	Avg. Temperature (°F)	Precipitation (inches)
1	47.3	19.2	33.3	0.51
2	44.7	20.5	32.6	0.95
3	46.3	24.0	35.2	1.58
4	46.9	22.4	34.6	0.83
5	47.5	24.5	36.0	1.33
6	48.0	26.4	37.2	2.10
7	49.7	24.2	37.0	1.08
8	50.4	27.2	38.8	1.91
9	51.3	27.7	39.5	2.81
Statewide	47.9	24.1	36.0	1.51

Oklahoma Climate Divisions



Interpretation Information

Mean Daily Temperature: Calculated from an average of the daily maximum and minimum temperatures. Daily averages are summed for each day, and then divided by the number of valid data points – typically the number of days in the month. Although this may differ from the “true” daily average, it is consistent with historical methods of observation and comparable to the normals and extremes for stations and regions of the state.

Degree Days: Degree Days are calculated each day of the month for which there is a temperature report and the mean temperature for the day is less than (Heating Degree Days) or greater than (Cooling Degree Days) 65 degrees. Daily values are summed to arrive at a monthly total. HDD/CDD are qualitative measures of how much heating/cooling was required to maintain a comfortable indoor temperature. Missing observations may result in an artificially high or low value.

Severe Weather Reports: Only the most significant events are listed. Tornadoes of F2 or greater strength (on the 0-5 Fujita scale), hail of two inches diameter or greater, and wind speeds of 70 miles per hour or above are listed. National Weather Service defines storms as severe when they produce a tornado, hail of three-quarters inch or greater, or wind speeds above 57 miles per hour (50 knots). For additional reports, contact the Oklahoma Climatological Survey, Storm Prediction Center, or your local National Weather Service forecast office.

Soil Moisture: The soil moisture variable displayed is the Fractional Water Index (FWI), measured at a depth of 25 cm. This unitless value ranges from very dry soil having a value of 0, to saturated soils having a value of 1.

Additional Resources

Sunrise / Sunset tables

U.S. Naval Observatory: <http://aa.usno.navy.mil/data>

Severe Storm Reports

Storm Prediction Center: <http://spc.noaa.gov/climo/>

National Climatic Data Center (more than about 4-5 months old):

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms>

Seasonal Outlooks

Climate Prediction Center:

http://www.cpc.ncep.noaa.gov/products/OUTLOOKS_index.html

Climate Calendars and other local weather and climate information

Oklahoma Climatological Survey: <http://climate.ocs.ou.edu> or

<http://www.ocs.ou.edu/>

E-mail (ocs@ou.edu) or telephone (405/325-2541)



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