

OKLAHOMA MONTHLY CLIMATE SUMMARY

AUGUST 2005



August rains helped diminish ongoing rainfall deficits for many parts of the state. The notable exception was the southeast, whose burgeoning precipitation shortfall continued unabated. West central and central Oklahoma experienced their 1st and 2nd wettest Augusts on record, respectively, while southwestern and south central sections finished within the top-ten wettest. The added cloudiness helped cooler weather prevail for most of the state, but the southeast once again was the exception, suffering through their 23rd warmest August on record. Severe weather was not prevalent with the precipitation, but it did occur on several occasions. The most common severe weather occurrence was flash flooding, and several windstorms produced gusts over 70 mph, which damaged trees and structures, and downed power lines.

Precipitation

The heaviest precipitation fell in a swath from west central through north central Oklahoma. Mesonet sites in that swath recorded rainfall totals in the 5-9 inch range, although Marshall and Retrop managed to exceed the 10-inch mark. A secondary swath of heavy rain fell from south central through central and northeastern sections, with 5-7 inch amounts being common. Bowlegs topped the secondary swath area at over nine inches. Those heavy rains helped propel west central and central Oklahoma to surpluses of over four inches, while southwestern and south central sections had surpluses of nearly three inches. The summer seasonal rainfall totals are similar, with all areas but southeastern Oklahoma finishing with precipitation surpluses, while the southeast had a deficit of nearly five inches, the 12th driest summer season on record for that area. The year-to-date deficits were dented somewhat, with west central Oklahoma managing to erase their shortfall completely. As a whole, the statewide-averaged precipitation for the January-August period remains over two inches below normal.

Temperature

While August as a whole was somewhat cooler than normal, triple-digit temperatures still made an appearance during the month, peaking with 104-degree readings at Alva, Antlers, Freedom, and Hooker. The statewide-averaged temperature finished just below normal, ranking a very humdrum 52nd coolest on record. The southeastern corner of the state was decidedly on the other side of the spectrum at three degrees

above normal. The summer seasonal statewide-averaged temperature was similar to August in that it was near normal, ranking as the 48th coolest on record. The year-to-date statewide-averaged temperature remained very much on the warm side at close to a degree above normal, the 28th warmest January-August period on record.

August 2005 Statewide Extremes			
Description	Extreme	Station	Date
High Temperature	104°F	Alva, Antlers, Freedom, Hooker	Aug 18th, Aug 24th, Aug 18th, Aug 1st
Low Temperature	49°F	Kenton	Aug 29th
High Precipitation	10.39 in.	Retrop	
Low Precipitation	0.90 in.	Mt. Herman	

August Daily Highlights

August 1-3: A dome of high pressure settled over the state for the month's first three days, providing seasonable temperatures. Partly cloudy skies and warm conditions – typical summer fare – were on hand throughout the period, with highs in the 90s and 100s, and lows in the 70s.

August 4-8: An approaching cold front triggered showers and thunderstorms before sunrise on the 4th and continued through the rest of the afternoon. Several of the storms exceeded severe limits, with winds of up to 66 mph recorded by the Mesonet site at Woodward. More storms on the proceeding four days brought much-needed rainfall to the state, and the cold front dropped temperatures below normal. The accumulated rainfall amounts over this five day period were generally less than two inches.

August 9-11: A much quieter period after the previous few days of storms, only a few showers along the Red River broke up the monotony of sunny skies and high temperatures in the 90s.

August 12-17: Another fairly strong cold front entered the state on the 12th and stalled out, setting up another wet weather scenario for the next several days. These storms were a bit more significant than those that cropped up earlier in the month, with many associated reports of severe weather. High winds and flooding were the main culprits. Gage recorded nearly three inches of rainfall on the 12th, and numerous reports of wind gusts between 60-70 mph were reported throughout central and northeastern Oklahoma. Strong storms struck once again on the 13th along the stalled cold front. Similar to the previous day, strong winds were the main severe threat. Numerous reports of 70 mph winds surfaced from central Oklahoma once again, damaging trees and power lines in Oklahoma City. The weather behind the stalled front was considerably un-summer like. Temperatures in northern Oklahoma only climbed into the upper-70s. The weather south of the front remained hot and humid. The front sagged further to the south over the next several days, spreading more heavy rain and severe weather. The greatest severe threat with the storms later in the period was flash flooding. There were several locations with rainfall totals over five inches for the period, including Sulphur and Bowlegs, which both exceeded six inches. The frontal passage and associated rainfall significantly dropped temperatures in all areas but the southeast.

August 18-19: The ensuing two days were replete with clear skies and warm temperatures. Triple-digit high temperatures returned, and the moist soil caused heat indices to soar close to the 110-degree mark in northwestern Oklahoma.

August 20-24: An upper-level storm system approached the state from the west, triggering another extended period of showers and thunderstorms. Heavy rains fell over much of the state, with the highest totals occurring in west central and north central Oklahoma. Several totals once again exceeded five inches, with the Mesonet sites at Breckenridge and Watonga topping the six-inch mark from the 20th through the 24th. With each round of storms, more outflow boundaries were created which would later trigger more showers. The storms and various boundaries kept temperatures quite pleasant compared to normal with a mixture of 80s and 90s.

August 25-31: A relatively tranquil end to the month was in store for the state. Weather on the 25th was quiet with light winds and high humidity. Daytime heating did manage to fire up a few thunderstorms in the Oklahoma Panhandle. Heat indices across the state rose easily into the 100s. Showers formed again in the northwest along an outflow boundary from storms in Kansas, bringing rains of near an inch to Cheyenne and Leedey. A brief cool down occurred due to a frontal passage on the 27th, with the cooler weather extending into the 28th. Lows dropped to as low as 49 degrees in Kenton in the far western Panhandle

on the 29th. Northeasterly winds and cloudiness across eastern Oklahoma were due to the influence of Hurricane Katrina, at that point a tropical depression moving across Tennessee. Another cold front began to push into the state on the 31st, cooling down the Panhandle as the month ended.

August 2005 Statewide Statistics			
Temperature			
	Average	Depart.	Rank (1892-2005)
Month (Aug)	80.3°F	-0.1°F	52nd Coolest
Season-to-Date (Jun-Aug)	79.2°F	-0.3°F	48th Coolest
Year-to-Date (Jan-Aug)	62.8°F	0.9°F	28th Warmest
Precipitation			
	Total	Depart.	Rank (1892-2005)
Month (Aug)	5.02 in.	2.25 in.	13th Wettest
Season-to-Date (Jun-Aug)	11.97 in.	2.20 in.	29th Wettest
Year-to-Date (Jan-Aug)	22.26 in.	-2.40 in.	44th Driest
Depart. = Departure from 30-year normal			

August 2005 Severe Weather

Significant Tornadoes (F2 or greater)

No significant tornadoes were reported in the state.

Hail (2 inches in diameter or greater)

Size (in.)	Location	County	Day
2.75	1 W Higgins	Latimer	24

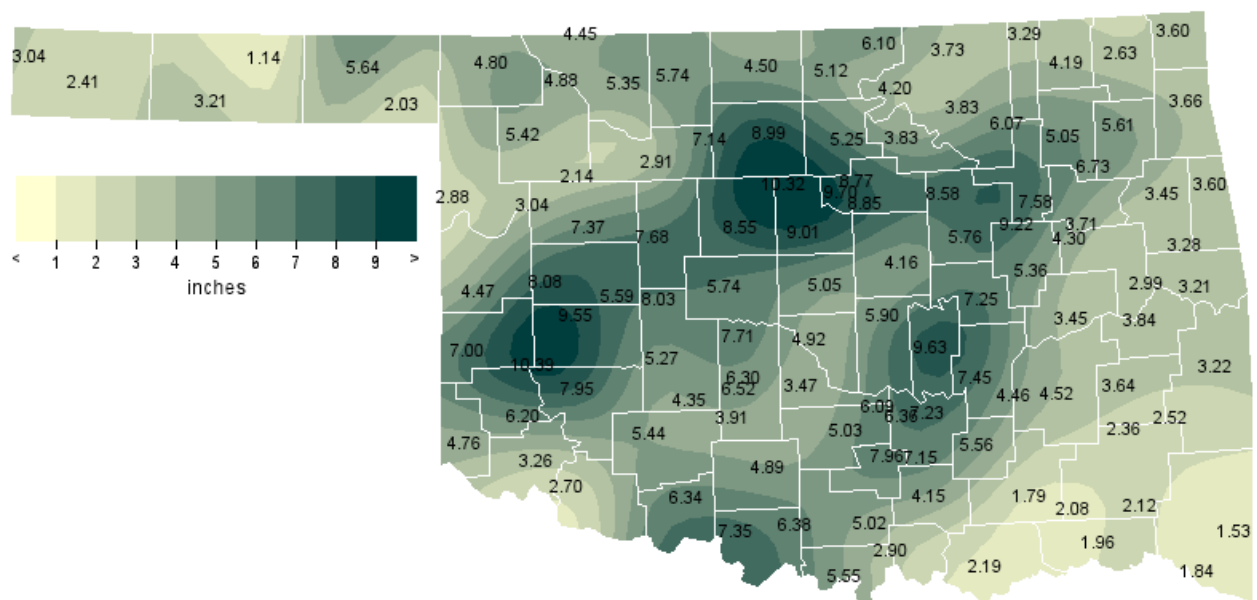
Wind Gusts (70 mph or greater)

Speed (m.p.h)	Location	County	Day
74	Oklahoma City	Oklahoma	13
70	Pryor	Mayes	13
70	Oklahoma City	Oklahoma	13
70	Broken Bow	Tulsa	12
70	Bethany	Oklahoma	12
70	3 SE Piedmont	Canadian	12
70	10 WSW Seward	Logan	12
70	10 S Salina	Mayes	13
70	1 E Disney	Delaware	13

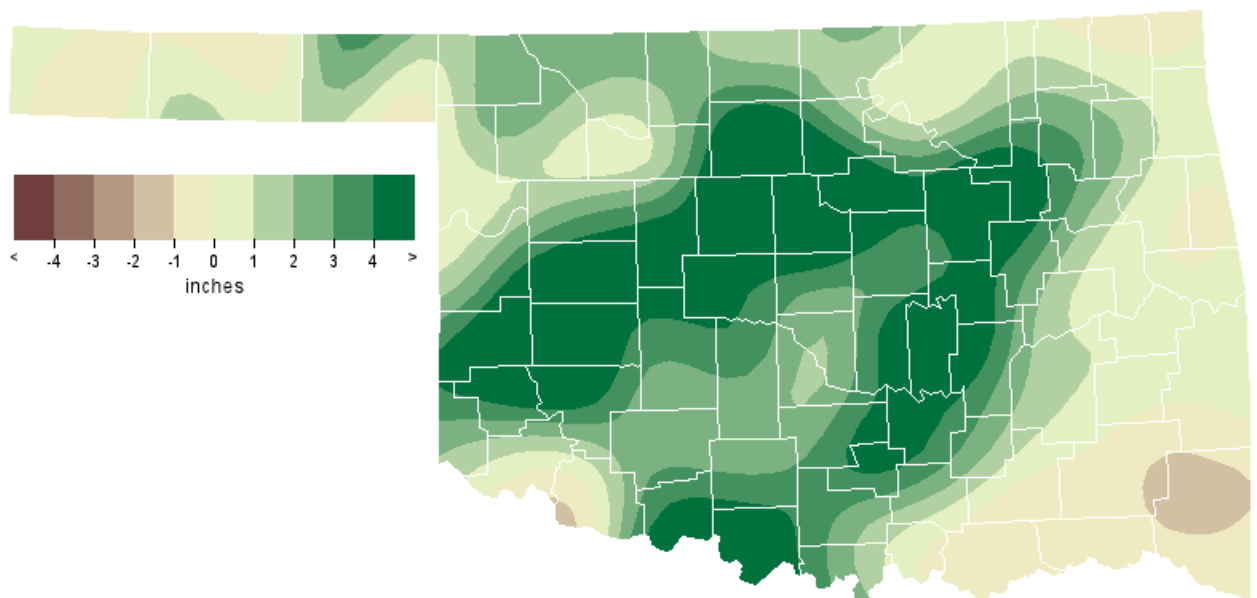
Flooding

	Location	County	Day
	3 NNW Wewoka	Seminole	14
	Sulphur	Murray	15
	9 S Ada	Pontotoc	15
	1 NE Healdton	Carter	15
	Healdton	Carter	16
	1 E Beaver	Beaver	23

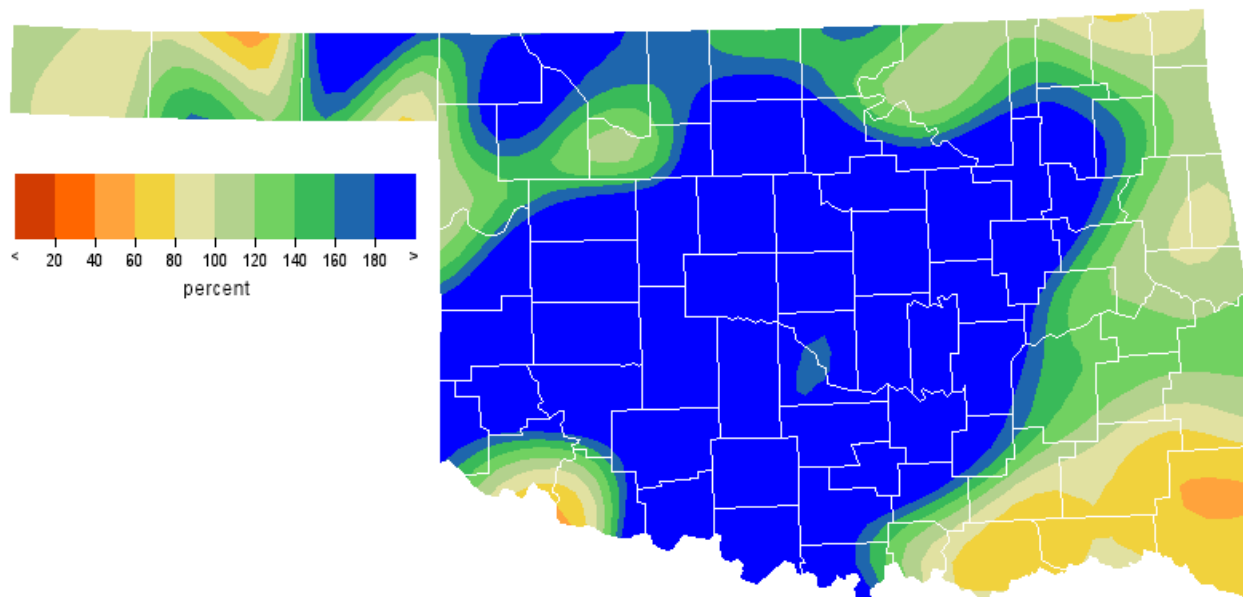
August 2005 Observed Precipitation



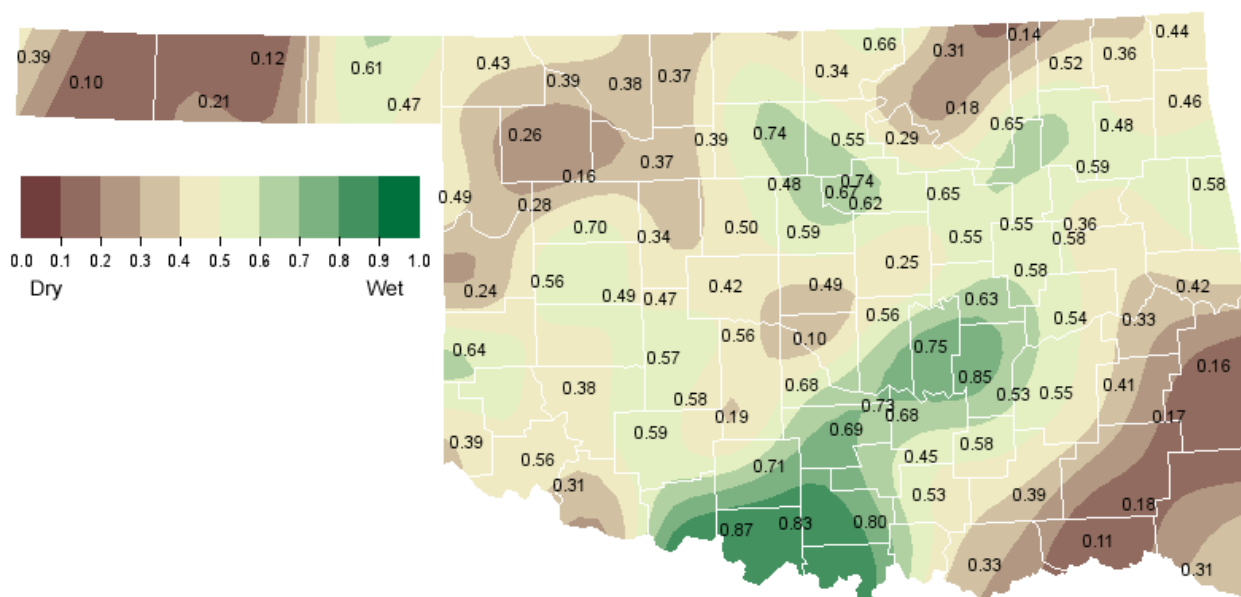
August 2005 Departure from Normal Precipitation



August 2005 Percent of Normal Precipitation



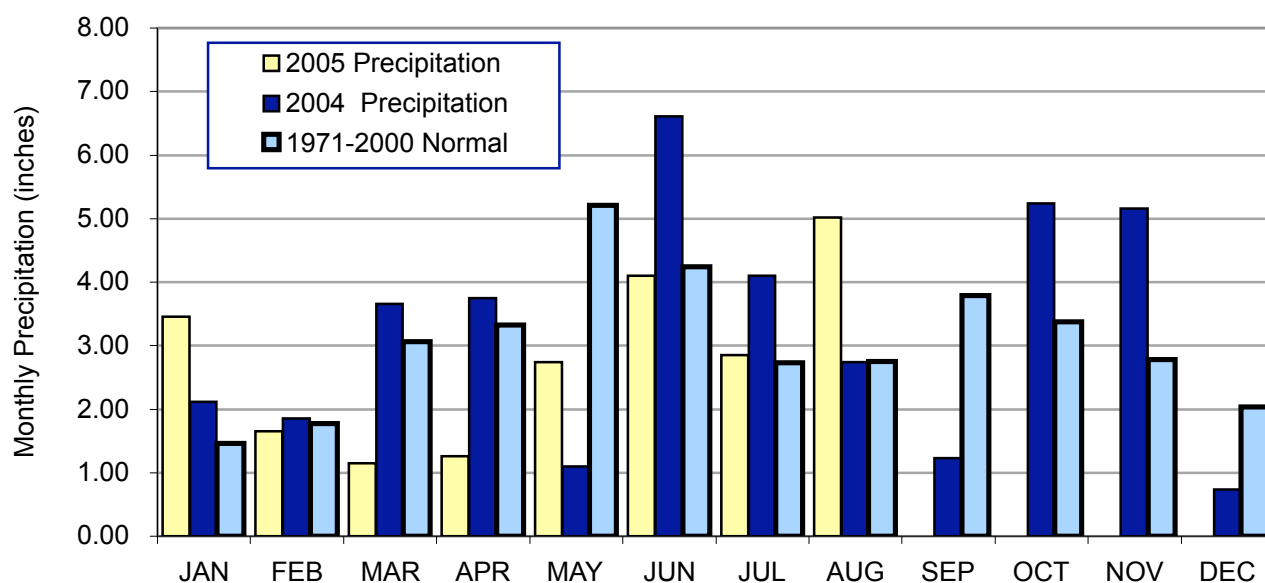
August 2005 Average Soil Moisture at 25cm



August 2005 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	Aug-04
Panhandle	3.14	0.63	31st Wettest	5.68 (1977)	0.47 (1913)	3.67
North Central	5.23	2.18	19th Wettest	7.69 (1974)	0.09 (1913)	3.70
Northeast	4.51	1.33	26th Wettest	8.03 (1964)	0.02 (2000)	2.28
West Central	7.02	4.30	1st Wettest	7.01 (1995)	0.05 (1913)	4.19
Central	7.00	4.38	2nd Wettest	7.21 (1906)	0.03 (2000)	3.42
East Central	4.55	1.68	25th Wettest	6.89 (1915)	0.00 (2000)	1.76
Southwest	5.43	2.74	9th Wettest	8.01 (1996)	0.00 (1913)	3.16
South Central	5.35	2.81	10th Wettest	8.46 (1915)	0.01 (2000)	2.40
Southeast	2.36	-0.35	37th Driest	8.73 (1915)	0.19 (1943)	1.62
Statewide	5.02	2.25	13th Wettest	6.54 (1906)	0.14 (2000)	2.93

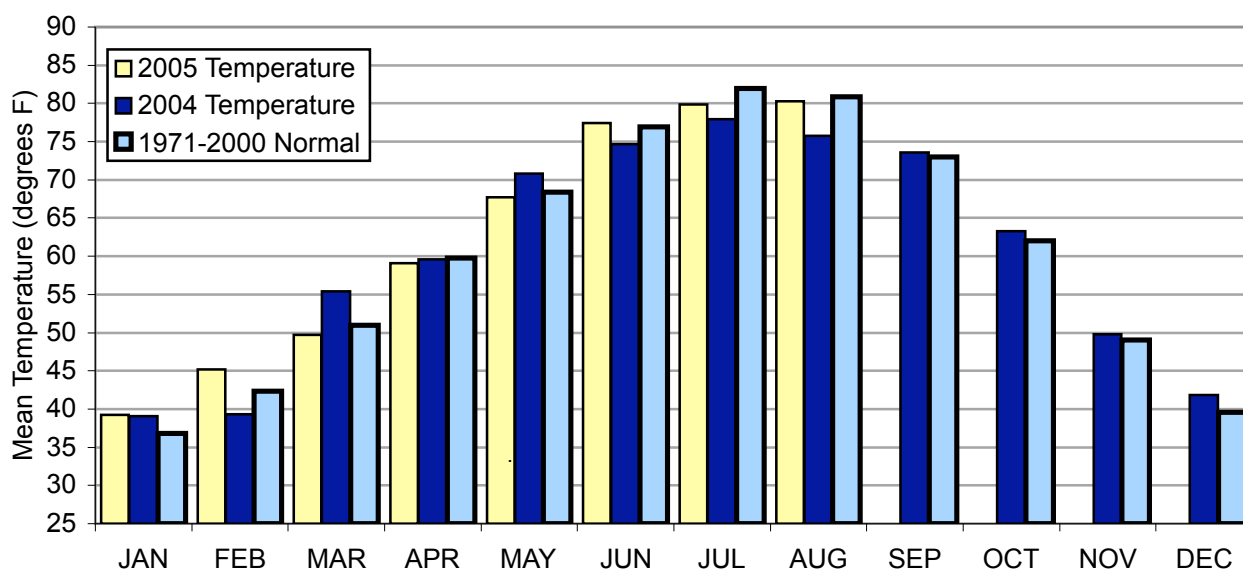
2004 and 2005 Statewide Precipitation Monthly Totals vs. Normal



August 2005 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	Aug-04 (F)
Panhandle	76.6	-1.2	29th Coolest	83.1 (1983)	71.3 (1915)	73.5
North Central	80.0	-0.7	40th Coolest	88.9 (1936)	72.3 (1915)	75.9
Northeast	80.8	1.0	47th Warmest	88.4 (1936)	71.7 (1915)	75.0
West Central	79.1	-1.1	31st Coolest	87.4 (1936)	72.9 (1915)	76.1
Central	80.3	-0.7	47th Coolest	88.3 (1936)	73.1 (1915)	75.9
East Central	81.5	1.1	47th Warmest	88.0 (1936)	73.0 (1915)	76.3
Southwest	80.3	-1.5	28th Coolest	88.1 (1952)	75.4 (1915)	77.6
South Central	81.3	-0.5	43rd Coolest	87.6 (1934)	75.5 (1915)	76.8
Southeast	83.3	3.0	23rd Warmest	87.3 (1943)	74.5 (1915)	74.8
Statewide	80.3	-0.1	52nd Coolest	87.2 (1936)	73.2 (1915)	75.7

2004 and 2005 Statewide Temperature Monthly Averages vs. Normal



Mesonet Extremes for August 2005

Climate Division	High Temp			Low Temp			High Monthly Rainfall		High Daily Rainfall		
	(F)	Day	Station	(F)	Day	Station	(inches)	Station	(inches)	Day	Station
Panhandle	104	1st	Hooker	49	29th	Kenton	5.64	Beaver	2.34	12th	Beaver
North Central	104	18th	Freedom	59	29th	Woodward	8.99	Breckenridge	2.92	22nd	Breckenridge
Northeast	101	3rd	Inola	59	31st	Nowata	7.58	Bixby	2.67	15th	Miami
West Central	101	3rd	Retrop	59	30th	Erick	10.39	Retrop	3.45	20th	Retrop
Central	101	3rd	Kingfisher	56	31st	Bristow	10.32	Marshall	5.37	14th	Bowlegs
East Central	103	12th	Webbers Falls	58	31st	Cookson	9.22	Hectorville	2.65	14th	Calvin
Southwest	101	3rd	Hollis	59	1st	Mangum	8.03	Hinton	4.07	21st	Hobart
South Central	101	24th	Lane	60	31st	Burneyville	7.96	Sulphur	4.63	14th	Ringling
Southeast	104	24th	Antlers	58	31st	Antlers	3.64	Wilburton	1.16	5th	Wister
Statewide	104	18th	Freedom	49	29th	Kenton	10.39	Retrop	5.37	14th	Bowlegs

September Climatological Outlook

Summer's heat fades as precipitation increases across most of Oklahoma during September. The statewide-averaged normal temperature for the month, 73.0 degrees, makes September the 4th warmest month of the year. As such, climatologists consider it to be the first month of the autumn transitional season. Monthly precipitation decreases in extreme northwestern portions of the state, even as the rest of the state enjoys a second rainy season. Normal monthly precipitation, averaged statewide, is 3.80 inches, an increase of more than one inch over either of the two previous months. An increasing frequency of fronts, bringing cooler air from the northern plains, leads to the lower temperatures, an effect that often isn't apparent before the middle of the month.

Precipitation

Mean: 3.80 inches
Wettest year: 1945, 7.86 inches
Driest year: 1956, 0.27 inches
Wettest location: Kansas, 5.56 inches
Driest location: Regnier, 1.44 inches
Most recorded: 16.82 inches, Wyandotte, 1945

Freezes are uncommon in September, but stations in the extreme northwest experience a freeze before the end of September in about 10 percent of years. The earliest reported freeze is September 15, in 1993 at Freedom (28 degrees), Gage (30 degrees), and Hammon (30 degrees), and in 1947 at Kenton (31 degrees). Hot weather is most evident in the southwest. Chattanooga averages 16 days in September with a high temperature of 90 degrees or more, including four days in which the temperature reaches 100 degrees or more. Conversely, Kansas and Stilwell each average only six September days with the high temperature in the 90s. Triple digit temperatures occur only about once every third year at Miami, Kenton, and Boise City.

Temperature

Mean: 73.0 degrees
Hottest September: 1931, 79.8 degrees
Coolest September: 1974, 64.7 degrees
Hottest location: Waurika, 76.8 degrees
Coolest location: Boise City, 68.0 degrees
Hottest recorded: 115 degrees, Alva, Sept 3, 1939 and 1947
Coldest recorded: 25 degrees, Boise City, Sept 30, 1985

Statewide-averaged precipitation has varied between 0.27 inch in 1956 and 7.86 inches in 1945. Wyandotte recorded 16.82 inches in September 1945 to hold the monthly state record. The record daily precipitation at a regular reporting station is the 10.42 inches reported at Barnsdall on September 29, 1986. Snow is rare in September, But Boise City reported 4 inches for the month in 1984 and Kenton recorded 3 inches on September 17, 1971, the earliest snowfall in the state since at least 1910.

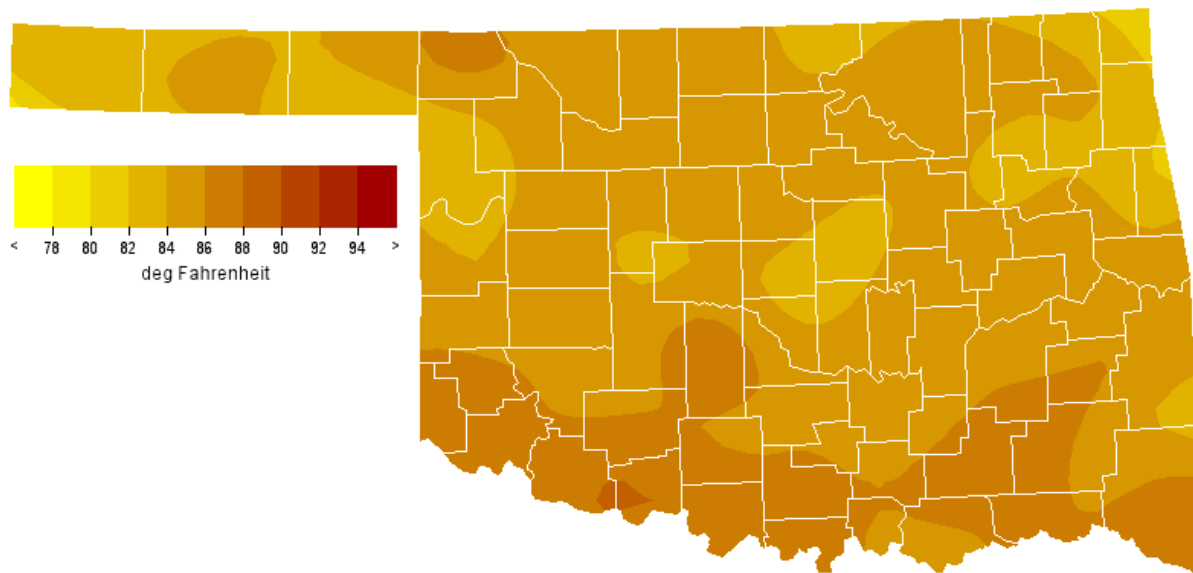
Tornadoes are slightly more frequent in September, averaging 2.1 each year, than they are during the previous two months. The most tornadoes reported in the state during September is 16 in 1992. No tornadoes were reported in the state during September in 18 of 52 years from 1950 through 2001 (the period of comprehensive records). Two people killed in Pottawattomie County on September 14, 1957 are the only tornado-related deaths recorded in September during that period.

Tornadoes

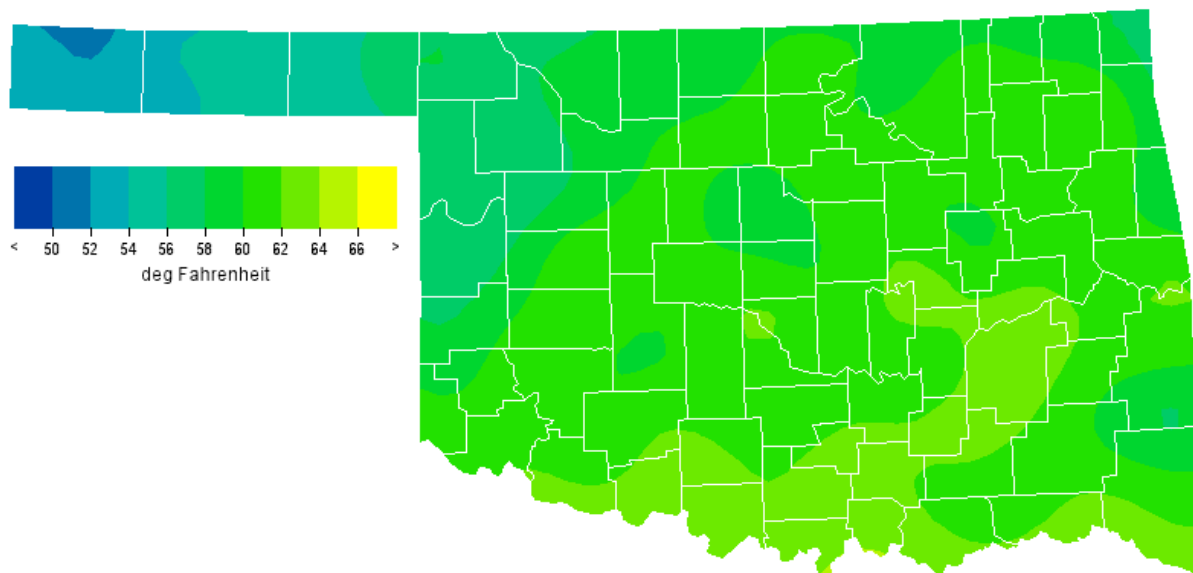
Average September Tornadoes: 2.1
Most: 16 (1992)

Floods present a more common weather hazard than tornadoes in September. Residual moisture from tropical disturbances, usually from the Gulf of Mexico but occasionally from the Pacific Ocean, interacts with slow moving frontal systems in the state from time-to-time during the autumn months. Widespread heavy downpours are the typical result, frequently leading to flooding on larger rivers and streams. On other occasions, a frontal system will stall within the state and successive thunderstorms will form along the frontal boundary and follow each other along a narrow path, thereby producing intense rain over a limited area and causing dangerous flash flooding.

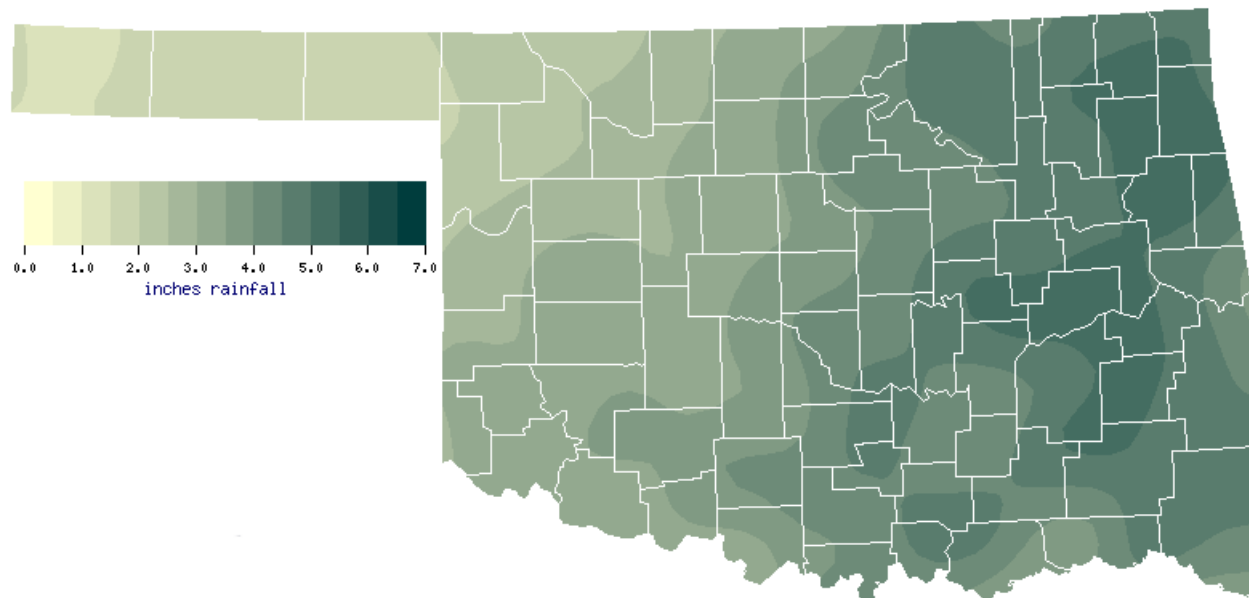
September Normal Monthly Maximum Temperature (1971-2000)



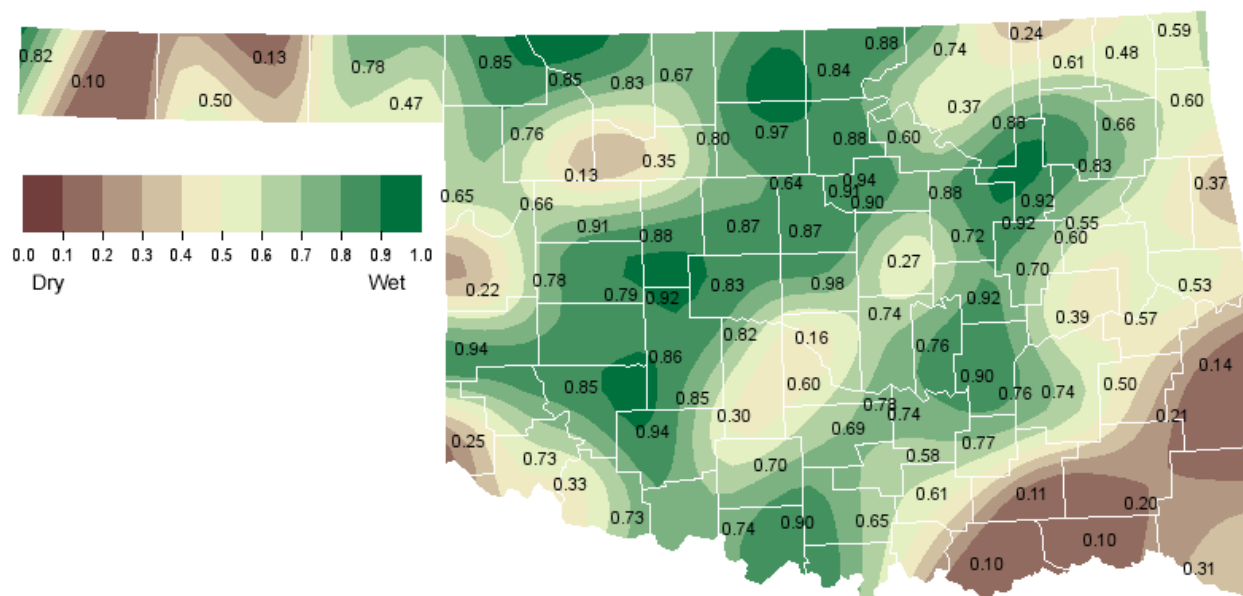
September Normal Monthly Minimum Temperature (1971-2000)



September Normal Precipitation (1971-2000)

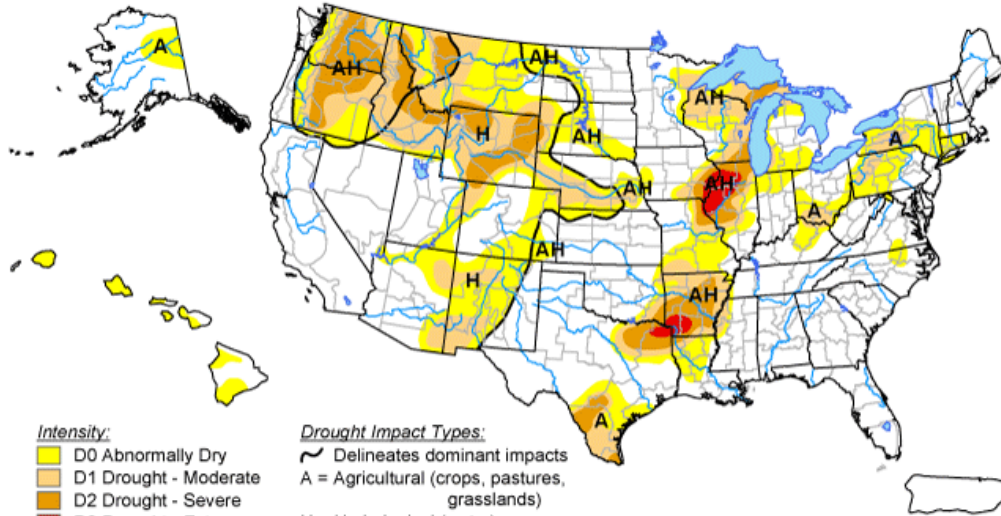


September 1, 2005 Soil Moisture Conditions at 25cm



U.S. Drought Monitor

August 30, 2005
Valid 8 a.m. EDT



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

Drought Impact Types:
 ~ Delineates dominant impacts
 A = Agricultural (crops, pastures, grasslands)
 H = Hydrological (water)
 (No type = Both impacts)

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

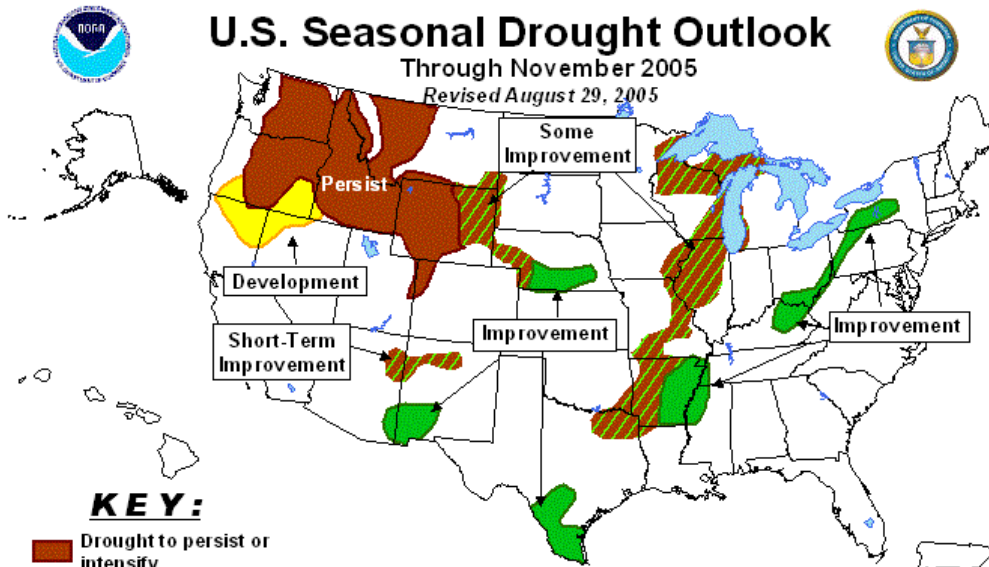


Released Thursday, September 1, 2005
 Author: Brad Rippey, U.S. Department of Agriculture

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

U.S. Seasonal Drought Outlook

Through November 2005
 Revised August 29, 2005

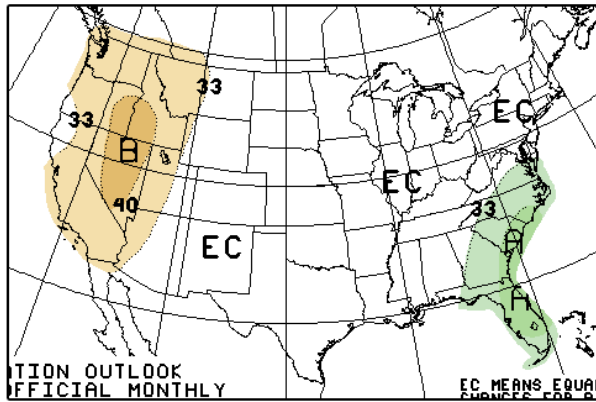


KEY:

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts general, large-scale trends based on subjectively derived probabilities guided by numerous indicators, including 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, so use caution if using this outlook for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are schematically approximated from the Drought Monitor (D1 to D4). For weekly drought updates, see the latest Drought Monitor map and text. 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.

September 2005 U.S. Precipitation Forecast

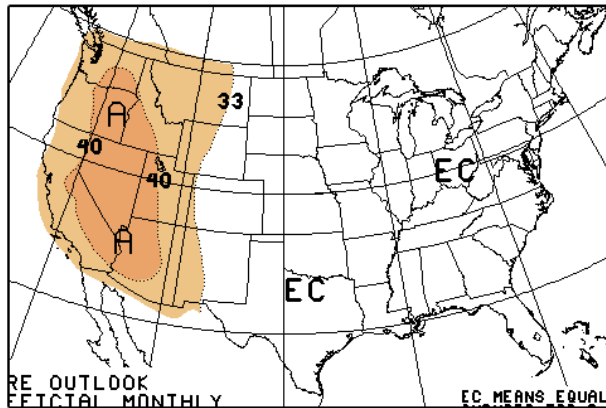


Percent Likelihood
of Above or Below
Average Precipitation*

	5% - 10%	A = Above
	0% - 5%	
	0% - 5%	B = Below
	5% - 10%	

*EC indicates no forecasted anomalies due to lack of model skill.

September 2005 U.S. Temperature Forecast



Percent Likelihood
of Above and Below
Average Temperatures*

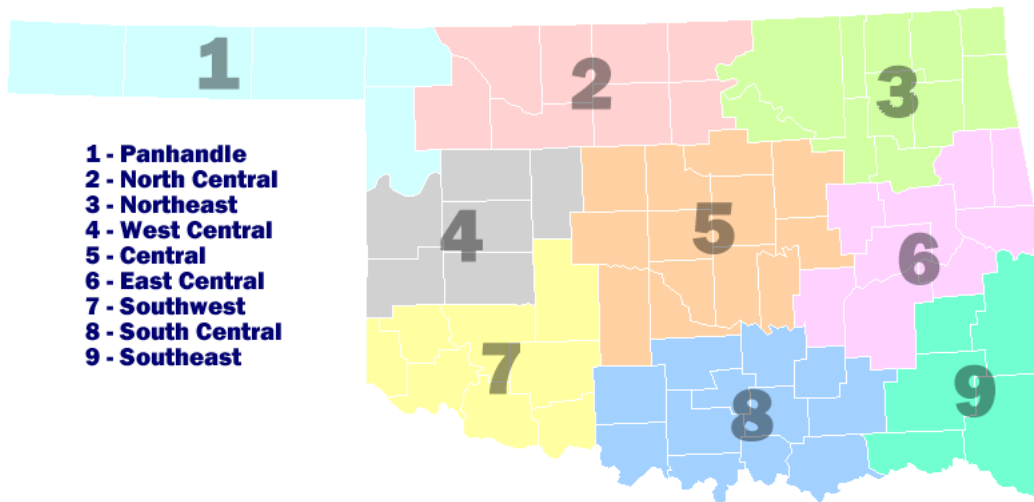
	10% - 20%	A = Above
	5% - 10%	
	0% - 5%	
	0% - 5%	B = Below
	5% - 10%	

*EC indicates no forecasted anomalies due to lack of model skill.

September Climate Normals

Climate Division	Max. Temperature (°F)	Min. Temperature (°F)	Avg. Temperature (°F)	Precipitation (inches)
1	84.5	55.6	70.1	1.86
2	84.8	59.2	72	3.13
3	84.1	60.5	72.3	4.83
4	84.7	59.5	72.1	2.95
5	84.8	61.0	72.9	4.03
6	84.5	61.3	72.9	4.88
7	86.4	61.0	73.7	3.34
8	86.2	62.3	74.3	4.27
9	85.9	60.9	73.4	4.52
Statewide	85.1	60.3	72.7	3.9

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)



Oklahoma Climatological Survey is the State
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