

# OKLAHOMA MONTHLY CLIMATE SUMMARY SEPTEMBER 2005



Summer warmth was the big story during September 2005, along with a bit of hurricane-fueled relief for the parched southeast. The statewide-averaged temperature for the month was nearly four degrees above normal, the 15th warmest September since record-keeping began in 1892. The statewide-averaged precipitation finished on the opposite side, however, the 38th driest on record. The extreme southeastern corner of Oklahoma, which has been languishing in moderate-to-severe drought for most of the year, did receive some beneficial rainfall from the remnants of Hurricane Rita. Most of that rainfall was confined to McCurtain County, however, but that county was also affected the most by the droughty conditions. For the year-to-date period of January through September, the southeast region of the state remained over 11 inches below normal. Severe weather was limited to a few outbreaks of severe storms associated with cold front passages, the threats consisting mainly of severe winds and large hail. No tornadoes were reported for the third straight month, and the yearly total through September stands at 25, according to preliminary statistics from the National Weather Service. That total is the ninth-lowest reported since accurate record-keeping began in 1950. The average number of tornadoes for the January-September period is 50.

## Precipitation

Save for the far southeast and a corridor from southwestern through northeastern Oklahoma, nearly the entire state was below normal in precipitation for September. The Panhandle's average total was less than an inch, which dropped their ranking for the month into the 20 driest on record. East central Oklahoma was particularly dry at over three inches below normal. For the state as a whole, the statewide-averaged precipitation total of just over two inches came up nearly one and one-half inches short of normal. The year-to-date deficit grew to nearly four inches, the 39th driest January-September period on record. Only west central Oklahoma remains above normal for that period with a surplus of over one-half of an inch, the 27th wettest on record. The drought-stricken southeast's year-to-date total of just over 25 inches is the 25th driest on record.

## Temperature

All sections of the state finished with above normal temperatures for the month, and ranked in the 20 warmest on record. The southeast led the pack at over five degrees above normal, ranking as the 9th warmest on record for that region of the state. The region closest to normal was the southwest at just under three degrees above normal. For the year, the state remains warmer than normal by over a degree, ranking January-September as the 21st warmest on record.

### September 2005 Statewide Extremes

Description	Extreme	Station	Date
High Temperature	102°F	Buffalo	Sep 18th
Low Temperature	39°F	Foraker, Newkirk	Sep 29th
High Precipitation	7.14 in.	Mangum	
Low Precipitation	0.07 in.	Boise City	

## September Daily Highlights

**September 1-6:** The month's first six days were fairly uneventful, with seasonable temperatures and a couple of visits by cool fronts. The frontal passages provided a few showers and thunderstorms, although rainfall amounts with the storms was generally light. High temperatures exceeded 100 degrees on the 1st and 2nd in the eastern half of the state, but remained in the 90s otherwise. The east also saw a few showers and storms on the 4th, along with some cooler temperatures. High temperatures only rose into the upper 80s and low 90s that day. Quiet and cooler conditions arrived on the 5th, which allowed lows to drop into the 60s, as opposed to the 70s of the previous few days. A few showers and storms struck the northwest early on the 6th along a stalled cold front, triggered by an upper-level disturbance moving in from the west.

**September 7-12:** The upper-level disturbance from the 6th remained in the area on the 7th, providing light rain and cloudy skies to the northwest. The weather during the proceeding five days was warm and muggy with little rainfall. Haze was reported over much of the state under the sinking air of a high pressure dome which had settled over the southern U.S. High temperatures were predominantly in the 90s, and lows remained in the upper 60s and lower 70s.

**September 13-15:** This three day period was one of the few truly rainy periods the state experienced during September. An approaching cold front combined with an upper-level storm system approaching from the west to generate several bouts of severe thunderstorms. Large hail and severe winds were commonly reported across the state with the storms. The largest hail was reported on the 14th as hail to the size of baseballs fell near Mangum. Severe winds damaged the roof of a grocery store in Tipton early in the morning on the 14th, and downed numerous power poles. Flash flooding occurred near Cashion with six inches of water flowing over Highway 74F. Temperatures during this period were dependent upon the proximity of precipitation; areas near precipitation had highs in the 70s and 80s, with other areas in the 90s. Lows were in the 60s and 70s, although the extreme northwest flirted with low 40s behind the intruding cold front.

**September 16-22:** The 16th was a near perfect day with crisp blue skies and light winds, a by-product of the cool, dry airmass ushered into the state following the frontal passage. For the first several days of this period, that airmass dominated the weather, bringing highs in the 70s and 80s and lows in the 50s and 60s. A deepening low pressure system over the Central Plains kicked winds up from the south at 10-20 mph on the 18th, drawing warm, moist air over the state from the Gulf of Mexico. High temperatures returned to triple-digit territory, and lows struggled to dip below 70. A cold front intruded into the northwest on the 22nd, bringing cooler temperatures to that area.

**September 23-24:** The remnants of Hurricane Rita made their presence felt in the state on the 23rd and 24th. For most of the state, that influence was confined to high cloudiness from the storm's spiral bands. Southeastern Oklahoma received appreciable rainfall from Rita, however, with nearly three inches of warm rain falling in Idabel. That rainfall was confined to the extreme southeastern tip of the state. Otherwise, temperatures rose into the mid-90s, and winds swung around to the northeast under the storm's influence.

**September 25-30:** The weather turned hot with the withdrawal of Rita to the east. Temperatures soared into the 90s and 100s under sunny skies, nearly 15 degrees above normal. A cold front entered the northwest on the 26th bringing cloudiness to that area. Northerly winds gusted to 30 mph behind the front. As the front passed through the state, temperatures dropped into the 80s, nearly 15 degrees cooler than the previous day in some areas. A stronger cold front entered the state on the 28th

and combined with an upper-level storm system to produce a few showers and thunderstorms. The strong northerly winds with the front caused massive dust storms in central Oklahoma, reducing visibilities down to one mile in a few locations. Two motorists were killed in Kay County due to a traffic accident partially blamed on the reduced visibility. The coldest temperatures of the season were reported on the 29th after the front's passage with low temperatures dropping to 39 degrees at several locations in the north. The month's last day was chaotic with the approach of another upper-level disturbance from the west. Strong storms formed across the state in the afternoon on the 30th, accompanied by many severe wind and large hail reports.

<b>September 2005 Statewide Statistics</b>			
<b>Temperature</b>			
	<b>Average</b>	<b>Depart.</b>	<b>Rank (1892-2005)</b>
Month (Sep)	76.2°F	3.8°F	15th Warmest
Year-to-Date (Jan-Sep)	64.3°F	1.3°F	21st Warmest
<b>Precipitation</b>			
	<b>Total</b>	<b>Depart.</b>	<b>Rank (1892-2005)</b>
Month (Sep)	2.29 in.	-1.52 in.	38th Driest
Year-to-Date (Jan-Sep)	24.54 in.	-3.93 in.	39th Driest
Depart. = Departure from 30-year normal			

## **September 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	4 S Mangum	Greer	14
2.50	Mangum	Greer	14

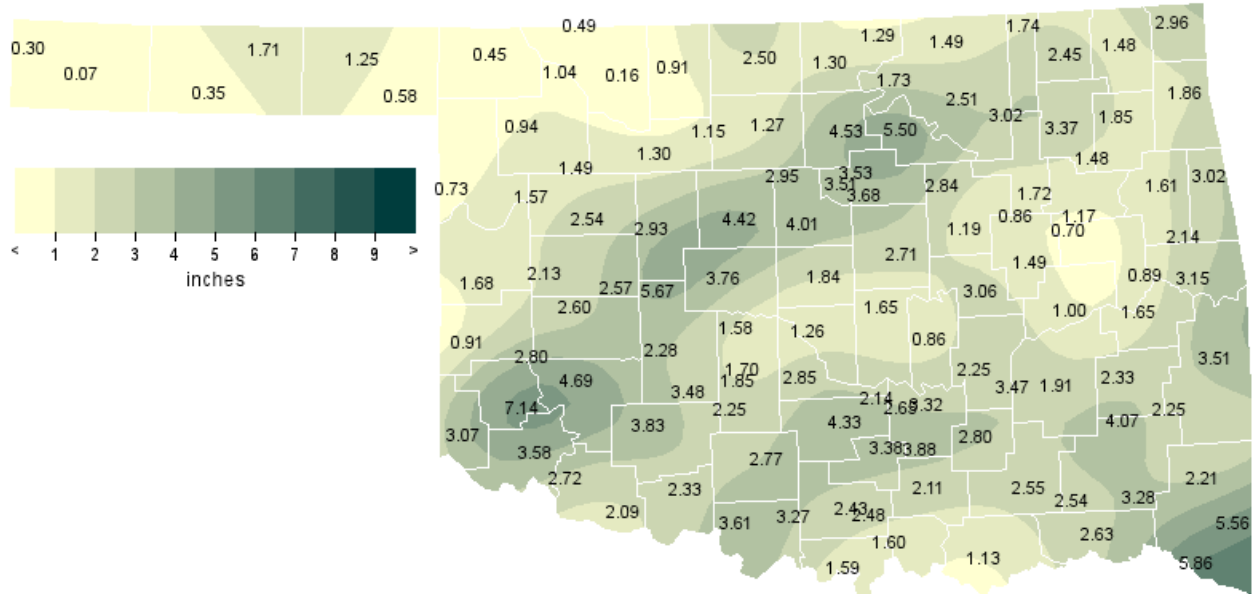
### **Wind Gusts (70 mph or greater)**

Speed (m.p.h)	Location	County	Day
75	Valliant	McCurtain	28
72	4 WSW Guthrie	Logan	13

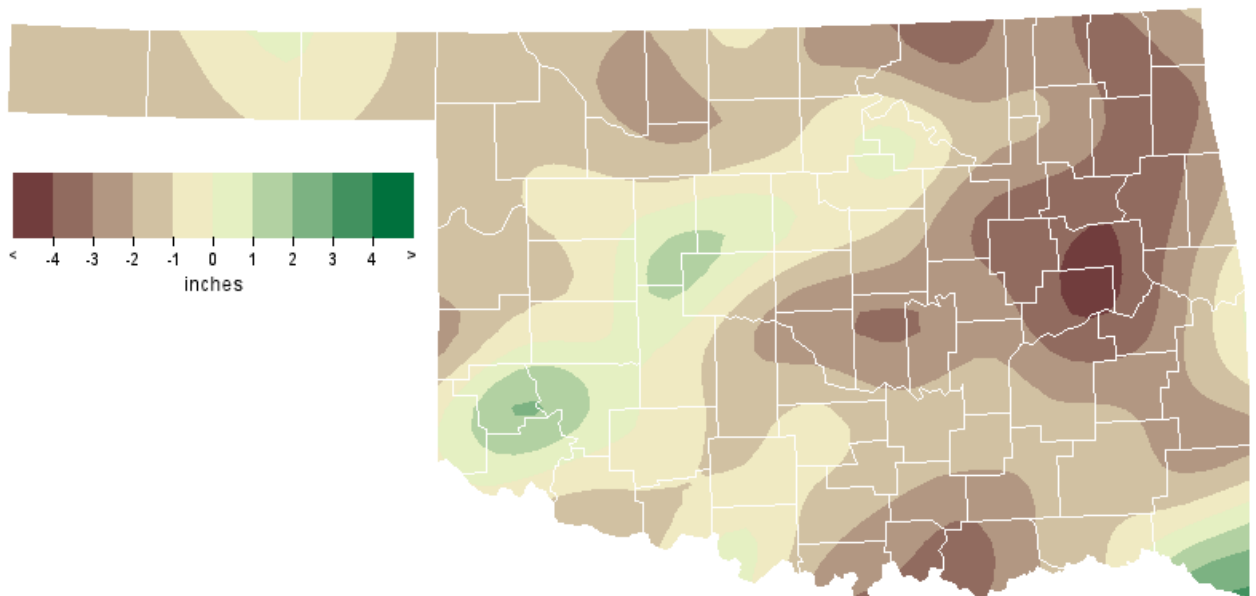
### **Flooding**

Location	County	Day
Cashion	Kingfisher	14

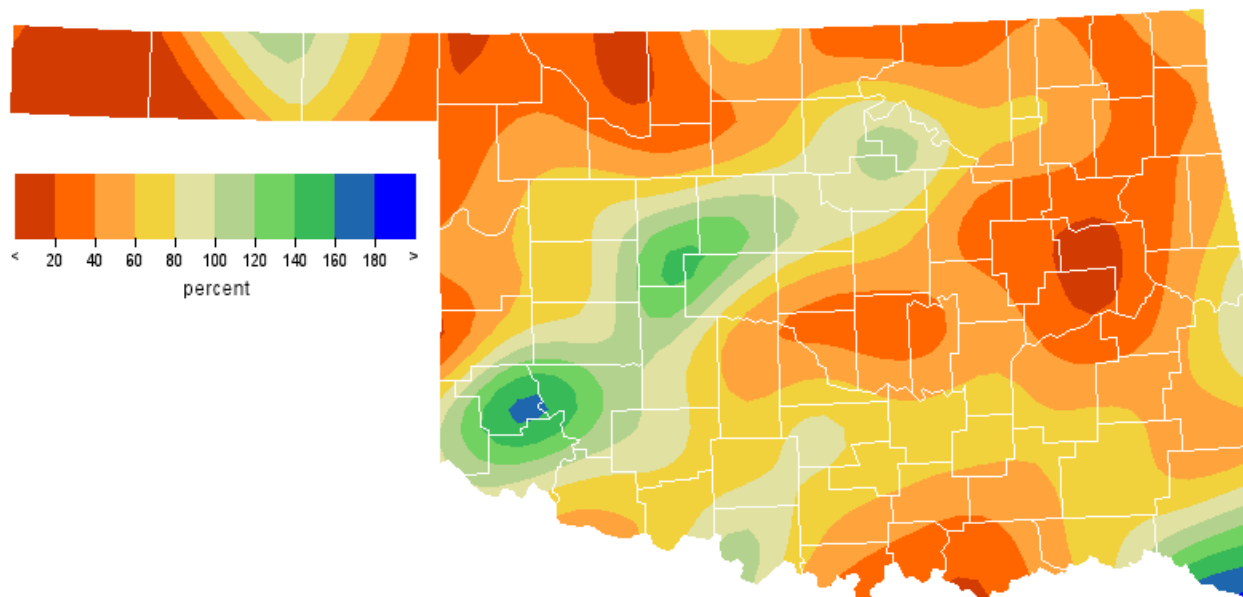
## September 2005 Observed Precipitation



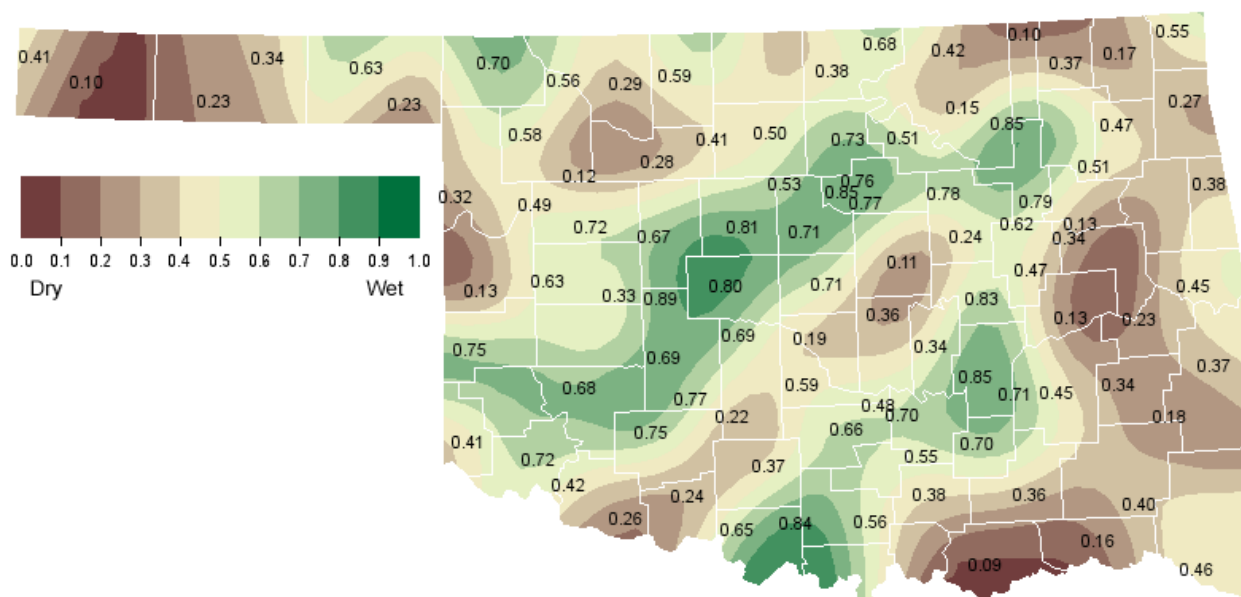
## September 2005 Departure from Normal Precipitation



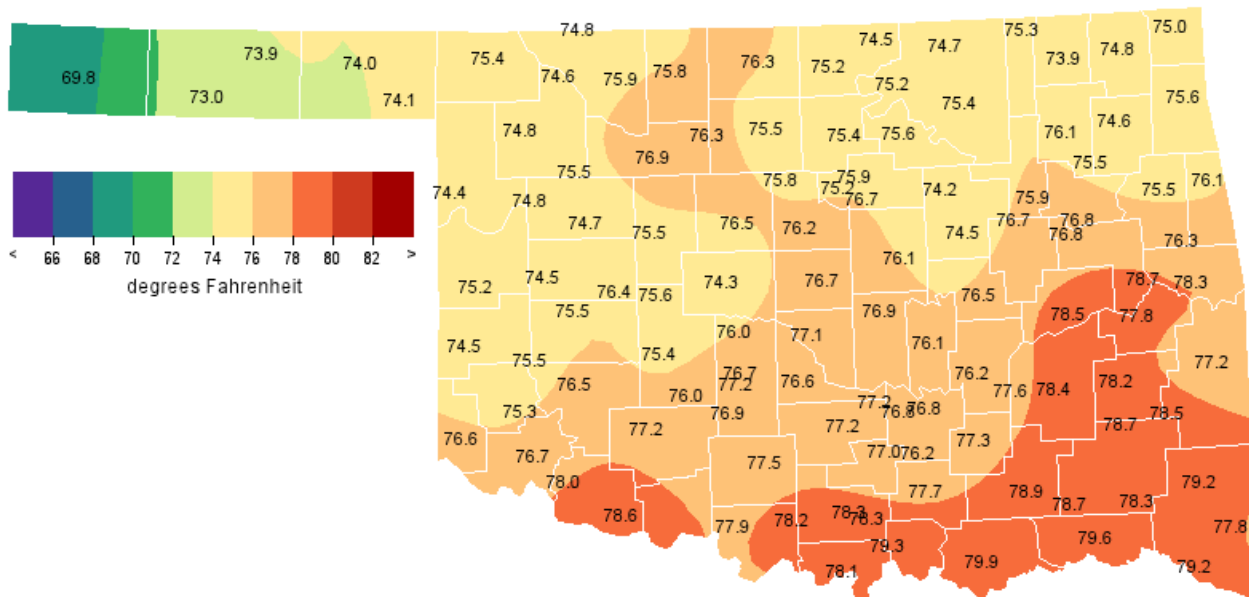
## September 2005 Percent of Normal Precipitation



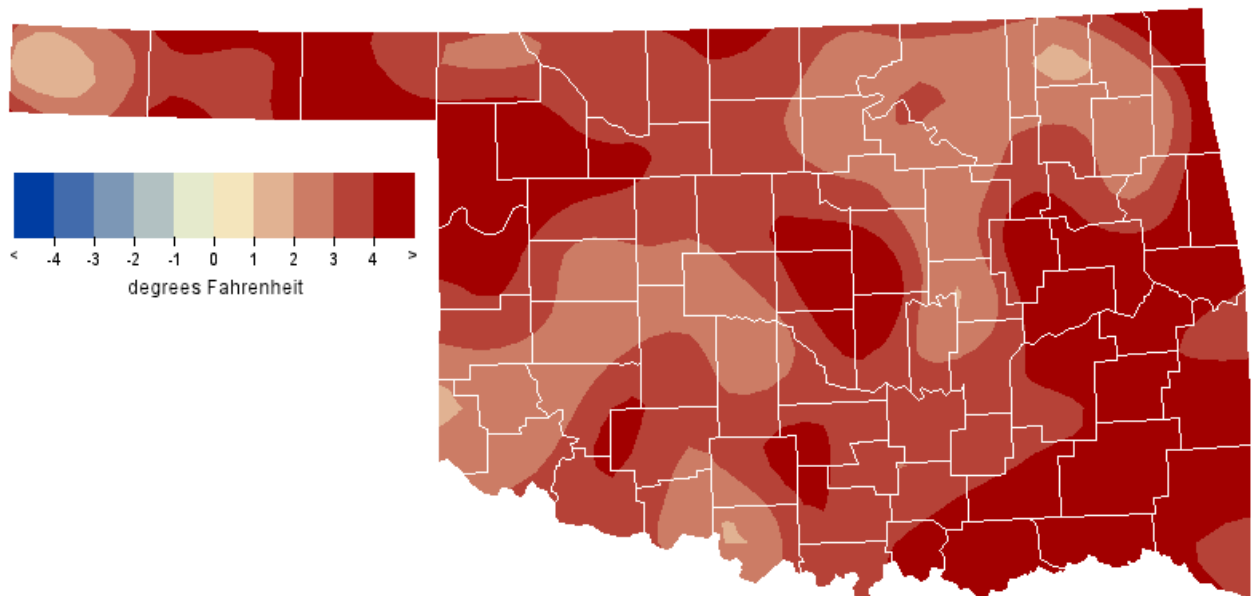
## September 2005 Average Soil Moisture at 25cm



## September 2005 Average Temperature



## September 2005 Departure from Normal Temperature

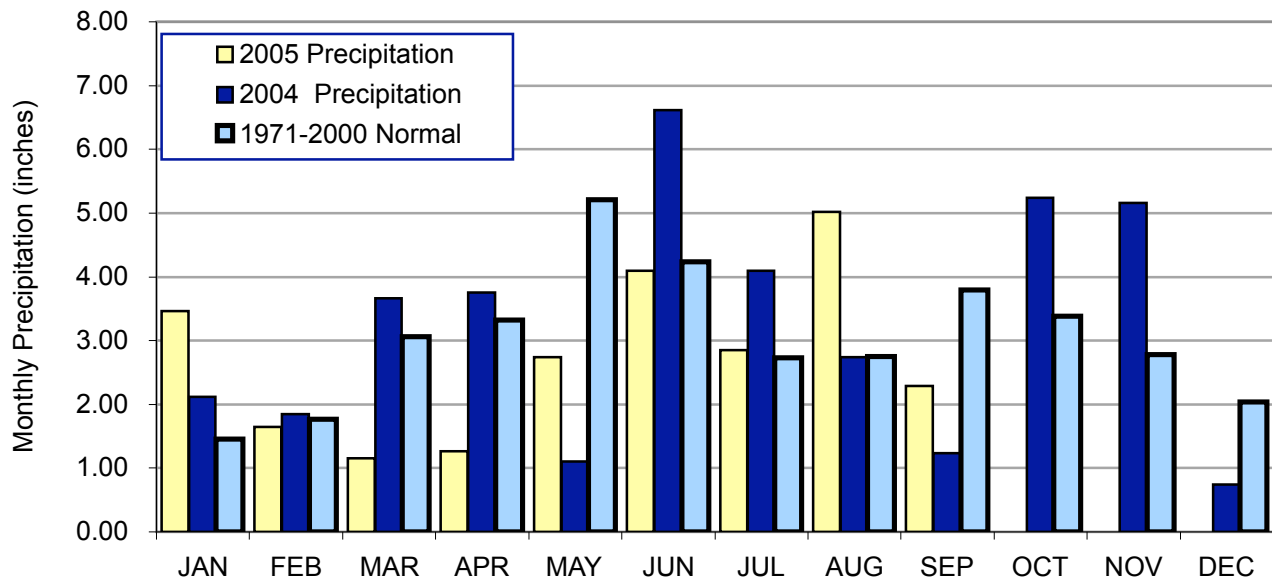




## September 2005 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	Sep-04
Panhandle	0.68	-1.20	18th Driest	4.57 (1985)	0.05 (1956)	2.26
North Central	1.41	-1.72	20th Driest	7.08 (1945)	0.04 (2000)	1.29
Northeast	2.29	-2.49	28th Driest	12.42 (1986)	0.13 (1948)	0.89
West Central	2.19	-0.84	50th Driest	8.64 (1986)	0.02 (2000)	0.99
Central	2.57	-1.54	44th Driest	10.68 (1945)	0.19 (1956)	0.88
East Central	1.86	-3.10	27th Driest	10.40 (1970)	0.23 (1948)	1.02
Southwest	3.72	0.33	31st Wettest	8.68 (1936)	0.00 (1898)	1.14
South Central	2.71	-1.63	48th Driest	9.98 (1936)	0.00 (1909)	1.07
Southeast	3.42	-1.15	55th Driest	11.75 (1974)	0.29 (1948)	1.65
Statewide	2.29	-1.52	38th Driest	7.86 (1945)	0.27 (1956)	1.23

## 2004 and 2005 Statewide Precipitation Monthly Totals vs. Normal

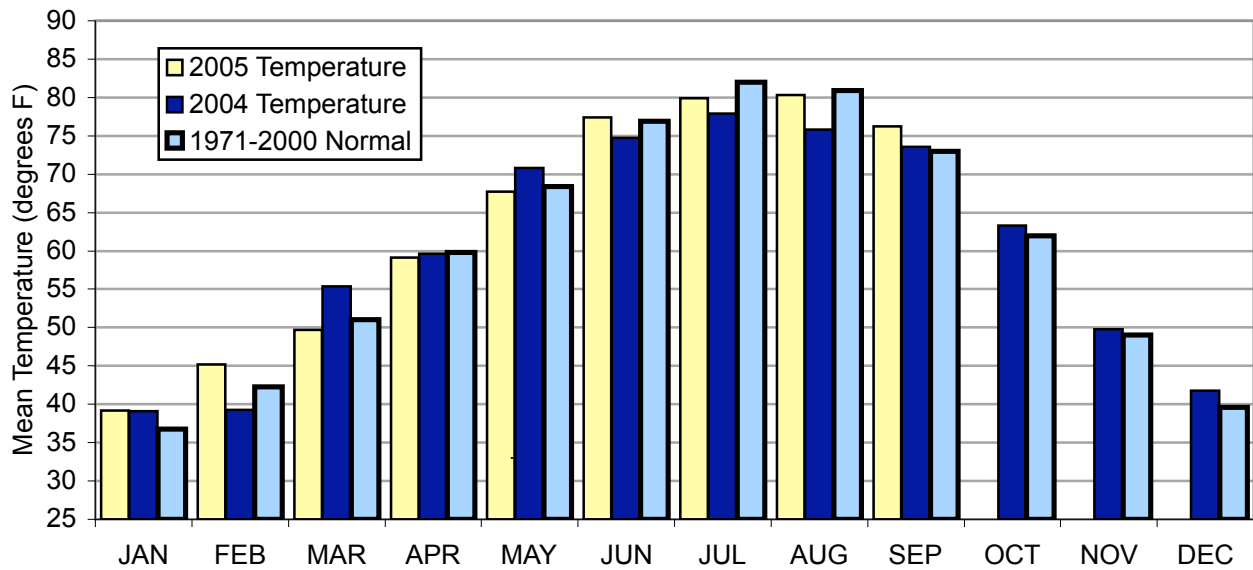




## September 2005 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	Sep-04 (F)
Panhandle	73.5	4.1	9th Warmest	76.2 (1931)	62.4 (1974)	70.6
North Central	75.5	3.4	17th Warmest	80.8 (1931)	64.0 (1974)	73.2
Northeast	75.3	3.6	18th Warmest	79.1 (1931)	63.4 (1974)	72.6
West Central	75.2	3.3	16th Warmest	80.4 (1931)	64.4 (1974)	73.1
Central	76.1	3.3	18th Warmest	81.3 (1931)	65.0 (1974)	73.8
East Central	77.2	4.5	12th Warmest	80.5 (1939)	65.1 (1974)	73.7
Southwest	76.6	2.9	20th Warmest	81.2 (1931)	66.4 (1974)	75.1
South Central	77.8	3.7	15th Warmest	81.3 (1998)	66.3 (1974)	74.4
Southeast	78.5	5.4	9th Warmest	81.2 (1939)	65.9 (1974)	71.9
Statewide	76.2	3.8	15th Warmest	79.8 (1931)	64.7 (1974)	73.2

## 2004 and 2005 Statewide Temperature Monthly Averages vs. Normal



## Mesonet Extremes for September 2005

Climate Division	High Temp (F)			Low Temp (F)			High Monthly Rainfall (inches)			High Daily Rainfall (inches)		
	Temp (F)	Day	Station	Temp (F)	Day	Station	Temp (F)	Day	Station	Temp (F)	Day	Station
Panhandle	102	18th	Buffalo	41	29th	Buffalo	1.71	Hooker	0.97	6th	Hooker	
North Central	101	18th	Freedom	39	29th	Newkirk	4.53	Red Rock	2.11	14th	Red Rock	
Northeast	97	13th	Copan	39	29th	Foraker	5.50	Pawnee	2.72	13th	Pawnee	
West Central	98	19th	Camargo	44	29th	Putnam	2.93	Watonga	1.84	30th	Weatherford	
Central	97	22nd	Chickasha	44	29th	Oilton	4.42	Kingfisher	2.84	14th	El Reno	
East Central	101	20th	Webbers Falls	45	29th	Cookson	3.47	Stuart	2.50	15th	Stuart	
Southwest	100	25th	Grandfield	47	30th	Mangum	7.14	Mangum	3.04	15th	Mangum	
South Central	100	28th	Burneyville	50	30th	Vanoss	4.33	Pauls Valley	3.80	15th	Fittstown	
Southeast	101	1st	Antlers	47	30th	Wister	5.86	Idabel	2.87	15th	Idabel	
Statewide	102	18th	Buffalo	39	29th	Newkirk	7.14	Mangum	3.80	15th	Fittstown	

# October Climatological Outlook

October typically brings Oklahoma some of its most pleasant weather. Days are usually pleasantly warm and nights typically are refreshingly cool. On the occasions that the weather does turn nasty, however, the result too often is flood, as October seems to be a favored time for extreme precipitation events. The year's tenth month is Oklahoma's 6th warmest and 4th wettest, according to the most recently compiled statewide normals. From 1971 through 2000, the period from which current normals of temperature and precipitation were calculated, Oklahoma's October average temperature was 62.0 degrees Fahrenheit and the average reporting station received a monthly precipitation of 3.38 inches.

## Precipitation

Mean: 3.38 inches  
Wettest year: 1941, 11.32 inches  
Driest year: 1917 and 1952, 0.14 inches  
Wettest location: Smithville, 6.22 inches  
Driest location: Kenton, 0.99 inches  
Most recorded: 25.80 inches, Madill, 1981

October is given to wide extremes of precipitation. The larger monthly figures are usually impacted by one or two very large events. Remnants of tropical storms or hurricanes, usually from the Gulf of Mexico, but occasionally originating in the Pacific Ocean, occasionally bring widespread heavy rains to the state during October. At other times, mid-latitude storm systems have stalled over the state and, taking advantage of moisture borne from the Gulf by the prevailing southerly winds, produced prodigious amounts of rain. In many other years, October is virtually without rain. Monthly precipitation totals include a statewide-averaged high of 11.32 inches in 1941, the largest total ever recorded for Oklahoma (any month), and a low of 0.14 inch, attained in 1952. The remnants of Hurricane Norma provided enough rain over a three-day period in October 1981 to give Madill the greatest monthly precipitation total (25.80 inches) ever recorded at a recognized reporting station in Oklahoma (all months). A thoroughly extra-tropical thunderstorm system inundated Enid with 15.68 inches of rain in about 12 hours (12 inches in just 3 hours) on October 11, 1973. That total, reported the following morning, is the state's greatest 24-hour precipitation in any month, as measured at an official reporting station.

## Temperature

Mean: 62.0 degrees  
Warmest October: 1963, 70.7 degrees  
Coolest October: 1974, 65.4 degrees  
Warmest location: Waurika, 66.3 degrees  
Coolest location: Turpin, 56.6 degrees  
Hottest recorded: 110 degrees, Waukomis, October 2, 1898  
Coldest recorded: 6 degrees, Kenton, October 30, 1993

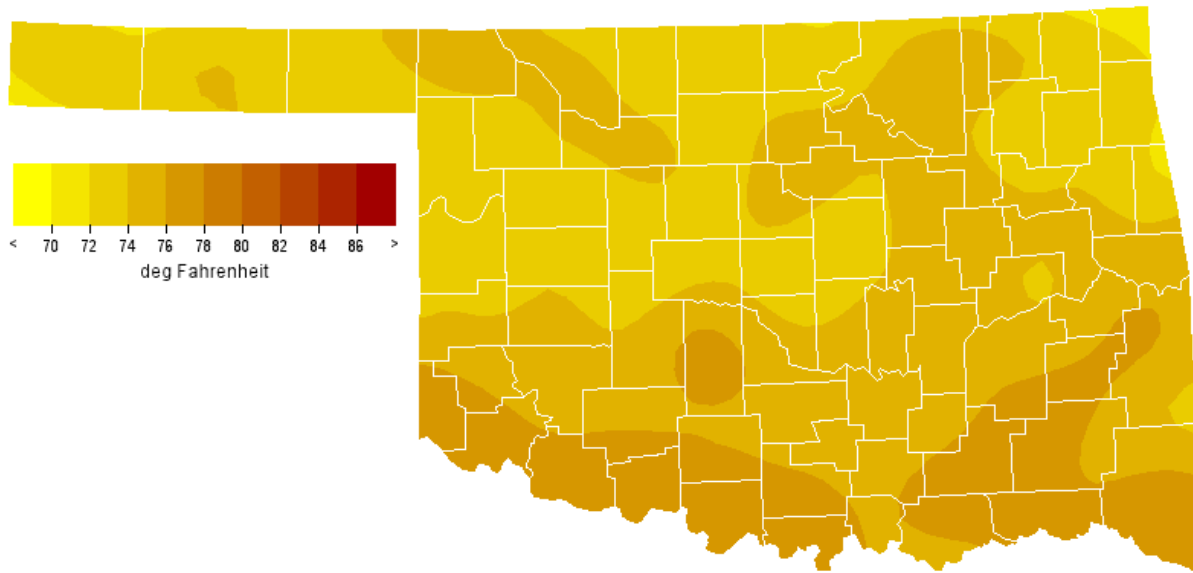
The normal precipitation pattern across Oklahoma in October returns to its familiar configuration with eastern stations receiving substantially more rainfall than those in the west. Normal monthly precipitation across the state during October ranges from 6.22 inches at Smithville to 0.99 inches at Kenton. Snowfall is not common during October, but Regnier, Kenton, and Boise City each average receiving about one inch of snow during the month. Those averages were inflated by a freak snowstorm on October 25 and 26, 1997 that dropped 15 inches of snow on Kenton. As many as 15,000 head of cattle across the panhandle died during that snowstorm.

Severe thunderstorms, apart from the floods, historically have been little more than footnotes in October for most of the state's history. However, recent occurrences have altered that notion somewhat. Reasonably comprehensive and well-documented tornado records in the state date from 1950. During those 54 years, 123 October tornadoes have been identified in Oklahoma, an average of 2.3 per year. There were no October tornadoes reported during 23 of those years. However, 25 tornadoes were reported in the state on October 4, 1998 and 19 more were reported on October 9, 2001. Those two days account for over one-third of the tornadoes reported (and confirmed) within the state in October during that 54-year period. The state's monthly total of 27 tornadoes during October 1998 represents the most tornadoes ever reported within any state during an October.

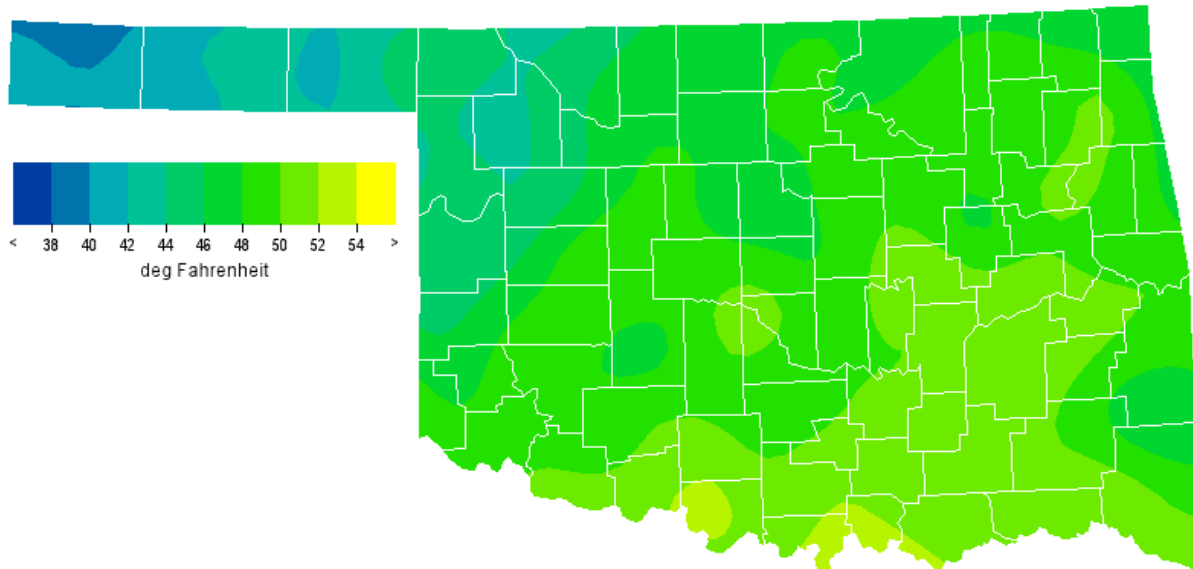
## Tornadoes

Average October Tornadoes: 2  
Most: 27 (1998)

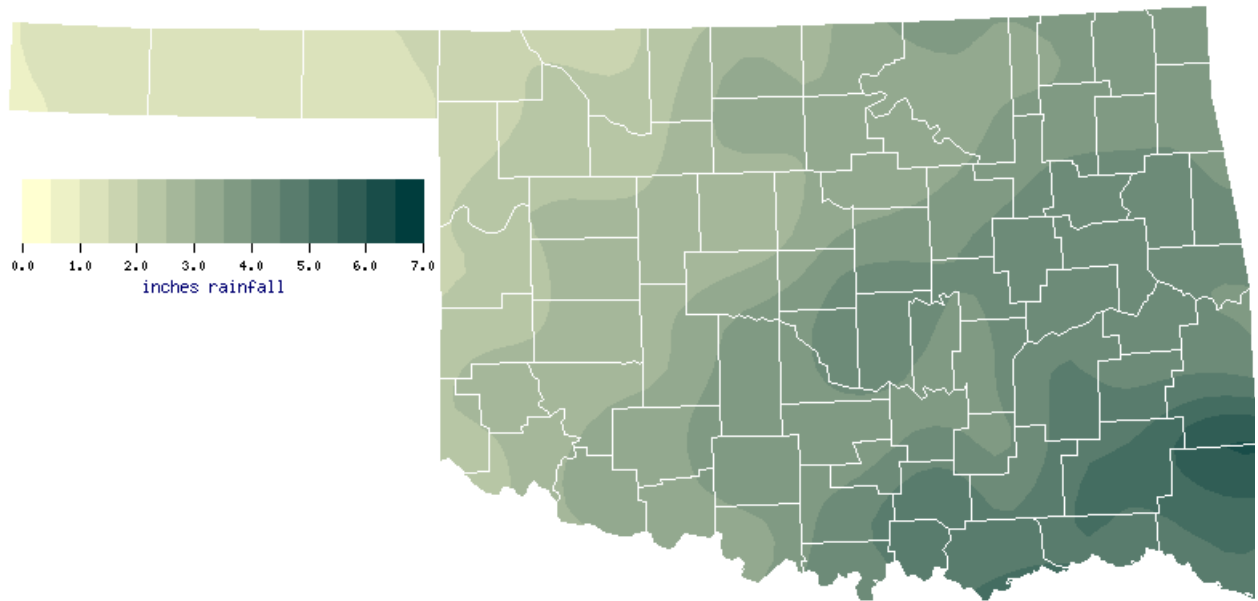
**October Normal Monthly Maximum Temperature (1971-2000)**



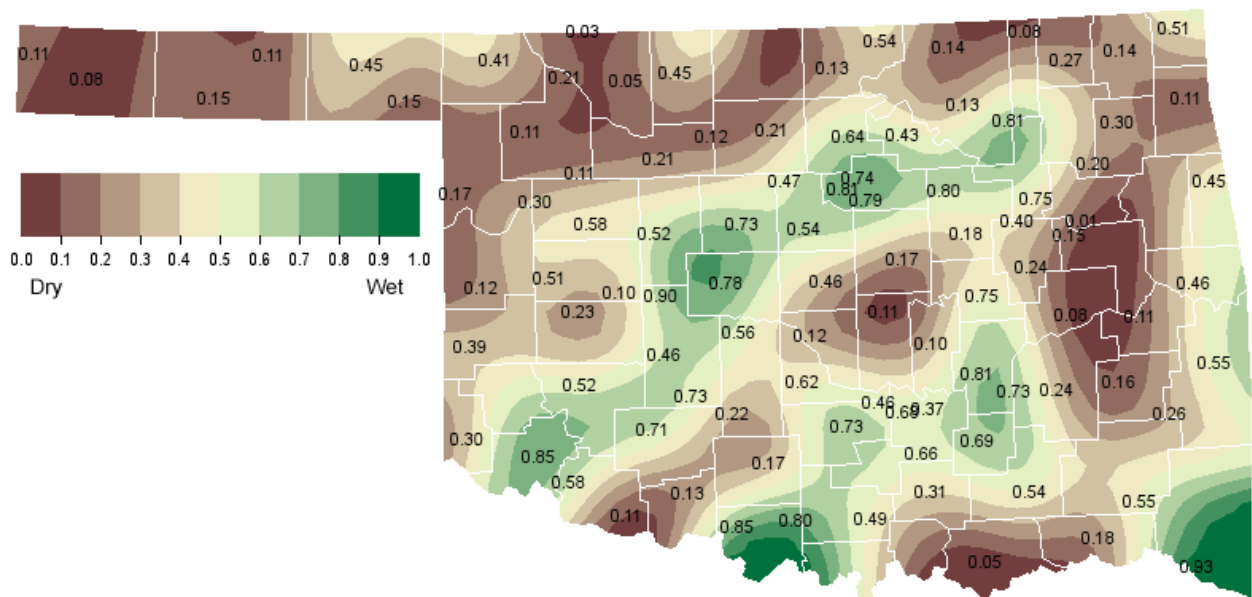
**October Normal Monthly Minimum Temperature (1971-2000)**



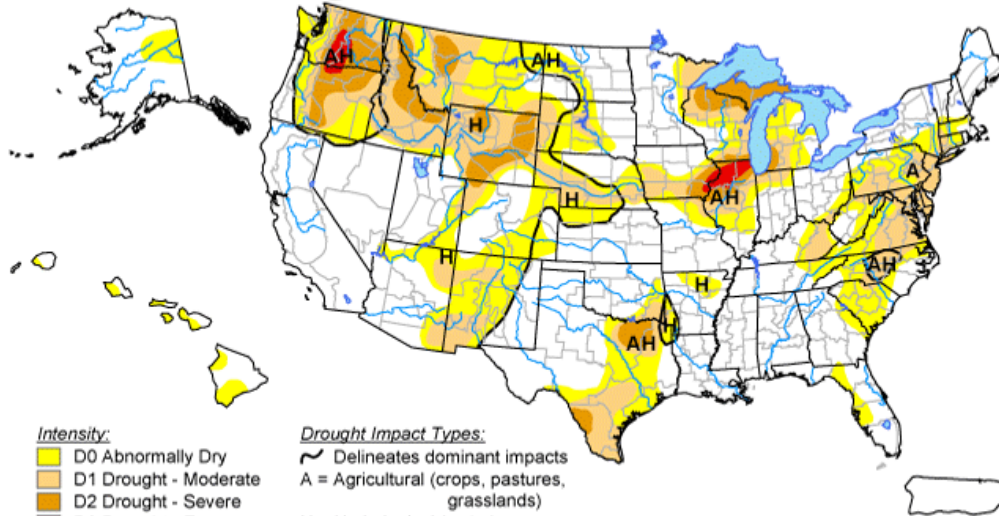
## October Normal Precipitation (1971-2000)



## October 1, 2005 Soil Moisture Conditions at 25cm



# U.S. Drought Monitor September 27, 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.



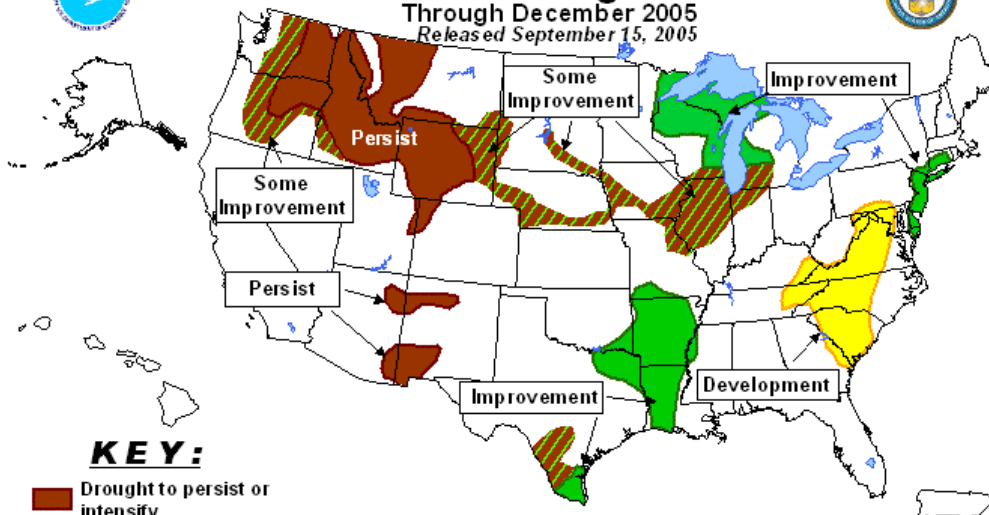
Released Thursday, September 29, 2005  
 Author: Douglas Le Comte, CPC/NOAA

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



## U.S. Seasonal Drought Outlook

Through December 2005  
 Released September 15, 2005

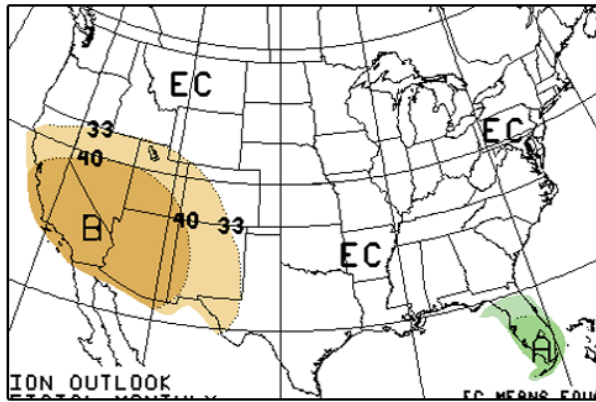


**KEY:**

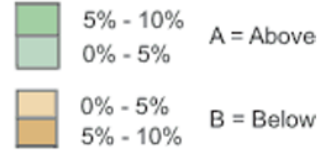
- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

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.

## October 2005 U.S. Precipitation Forecast

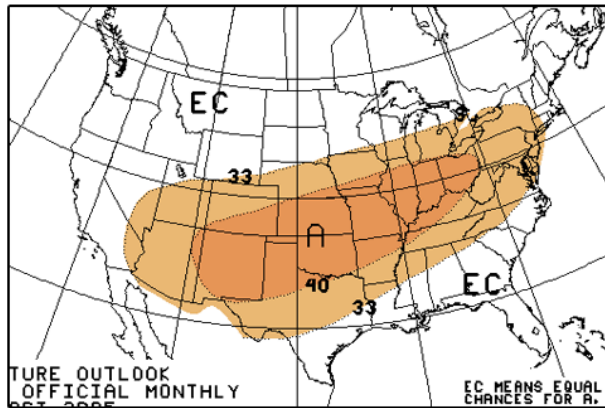


Percent Likelihood of Above or Below Average Precipitation\*

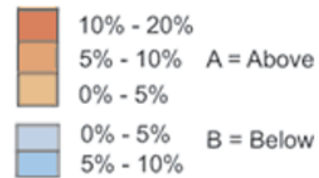


\*EC indicates no forecasted anomalies due to lack of model skill.

## October 2005 U.S. Temperature Forecast



Percent Likelihood of Above and Below Average Temperatures\*

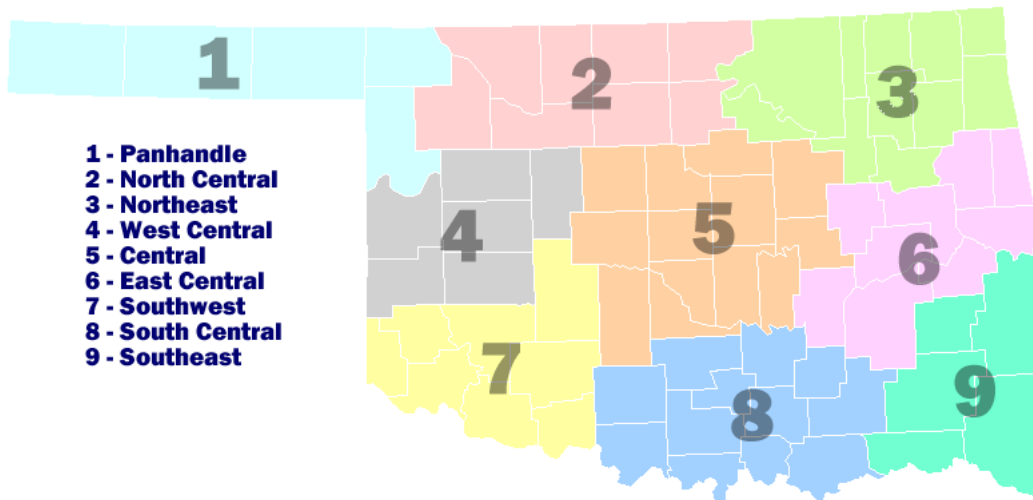


\*EC indicates no forecasted anomalies due to lack of model skill.

## October Climate Normals

Climate Division	Max. Temperature (∞F)	Min. Temperature (∞F)	Avg. Temperature (∞F)	Precipitation (inches)
1	73.70	42.90	58.30	1.49
2	73.50	46.50	60.00	2.66
3	73.80	48.70	61.30	3.62
4	73.70	47.20	60.50	2.47
5	74.40	49.30	61.80	3.64
6	74.50	50.00	62.30	4.19
7	75.80	48.90	62.30	2.99
8	76.10	50.80	63.50	4.17
9	76.10	49.50	62.80	4.98
Statewide	74.60	48.30	61.50	3.48

## 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](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](mailto:ocs@ou.edu)) or telephone (405/325-2541)



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