

The meager amount of rain that managed to fall on Oklahoma during June was no match for the extreme heat and wind that was so prevalent for much of the month. The statewide average rainfall total for June was 1.17 inches, more than 3 inches below normal and the fourth driest June on record dating back to 1895. Southwestern Oklahoma suffered through its driest June on record with an average of 0.52 inches. Add heat to the equation and you have the ingredients for drought intensification. That is exactly what occurred during what became the second warmest June on record. The statewide average temperature finished seven degrees above normal at 83.5 degrees, second only to 1953's 84.6 degrees. For southwestern and west central Oklahoma, where high temperatures averaged more than 100 degrees during the month, it was the warmest June on record. Altus' average high temperature of 104.8 degrees is the highest recorded by the Mesonet for any month. Temperature records for the network began in 1997. Grandfield was a close second at 104.4 degrees.

intensity scale. Severe-to-exceptional drought covered nearly 56 percent of the state. Eastern Oklahoma had been drought-free through much of May and June but it too succumbed to the intense heat and wind. Moderate drought and abnormally dry conditions continued to intensify and covered the eastern half of Oklahoma by the end of the month.

TEMPERATURE

Grandfield was the warmest location in the state with an average temperature of 89.9 degrees, the third highest average recorded by the Mesonet for any month. Kenton enjoyed the state's coolest weather with an average of 76 degrees. The highest temperature of the month was 115 degrees at both Erick and Hollis on the 26th. The lowest reading was 49 degrees at Kenton on the eighth.

June 2011 Statewide Extremes

Description	Extreme	Station	Day
High Temperature	115°F	Hollis, Erick	26
Low Temperature	44°F	Kenton 12	2
High Precipitation	4.77 in. Seiling		
Low Precipitation	0.01 in.	Grandfield, Ketchum Ranch	--

PRECIPITATION

The Oklahoma Mesonet site at Seiling led the state's precipitation totals with 4.77 inches. The Mesonet sites at Ketchum Ranch and Grandfield had the lowest totals at a hundredth of an inch. Of the 120 Mesonet sites, 36 had less than a half-inch of rainfall during what is normally Oklahoma's second wettest month. The U.S. Drought Monitor map released on June 30 indicated 33 percent of Oklahoma – virtually the entire western third of the state – was experiencing exceptional drought, the highest designation on the drought

June 2011 Statewide Statistics

Temperature

	Average	Depart.	Rank (1895-2011)
Month (Jun)	83.5°F	7.0°F	2nd Warmest
Year-to-Date (Jan-Jun)	56.7°F	1.3°F	23rd Warmest

Precipitation

	Average	Depart.	Rank (1895-2011)
Month (Jun)	1.18 in.	-3.08 in.	4th Driest
Year-to-Date (Jan-Jun) 11.21 in.	11.21 in.	-7.94 in.	7th Driest

Depart. = departure from 30-year normal

JUNE 1-7: Other than a few well-placed showers and storms in the far western Panhandle, the first seven days of June were hot, dry and windy. High temperatures were generally in the 90s and 100s with lows in the 70s. There were some 60s and even 50s for lows in the northwest. Boise City received a nice shower on the month's first day for a total of 1.05 inches of rain. Other areas of the state received a pittance at best with most remaining dry.

JUNE 8-12: A dryline and stationary front allowed storms to form through this five-day period. While rainfall amounts were not massive, they did bring a bit of relief to drought-ravaged northwestern Oklahoma. The storms on the eighth produced wind gusts up to 77 mph at Altus and golf ball size hail. A police car in Tipton was damaged when a 35-foot tall tree fell on it. More storms formed along a slow-moving cold front the evening of the ninth. The storms quickly went severe and once again the big problem was high winds and large hail. There were many reports of winds in excess of 70 mph and hail as large as 2 inches in diameter. Several heat burst events struck later that night as the storms began to collapse. The same story once again on the 10th as the now-stationary front was a focus for showers and storms in western Oklahoma. An 18-wheeler was blown over on I-40 near Hinton due to 70 mph winds. A final round of showers and storms struck the evening of the 11th thanks to the frontal boundary and leftover outflow boundaries. Tennis ball size hail was reported near Shattuck to go along with a possible tornado. Winds of over 70 mph were reported in northern Oklahoma once again. Rainfall totals from these rounds of convection were more robust in north central Oklahoma where more than two inches fell in Garfield County. Other totals of more than an inch surrounded that area. Other parts of the state were not quite as lucky, receiving very little in the way of rainfall. High temperatures across the state were in the 90s and 100s for the most part. Areas behind the frontal boundary stayed in the 80s at times.

JUNE 13-14: The thirteenth was dry and hot with strong winds gusting to over 40 mph along a dryline in western Oklahoma. A cold front on the 14th produced severe storms in central Oklahoma. A wet microburst event struck Norman, producing winds estimated at more than 80 mph and hail to the size of baseballs. Significant damage was reported in northern and eastern Norman due to the combination of the two hazards. Norman received over an inch of rain in about 15 minutes with the microburst. An 89 mph wind gust was reported near Elgin. High temperatures during these two days were mostly in the 90s and 100s, although a few 80s were found in the Panhandle.

JUNE 15-19: Very little rain fell over these five days, although storms did erupt a time or two. A possible tornado was spotted near Hulah in Osage County. Several instances of large hail were reported from northeastern Oklahoma. The big story was the heat, however. Oklahoma City broke its record high with 104 degrees on the 18th and tied their record high of 101 degrees on the 19th. The Mesonet site at Grandfield reached 114 degrees on the 17th. Showers and storms on the 16th in southwestern Oklahoma produced severe winds and tennis ball size hail. The Mesonet site at Medicine Park recorded a wind gust of 80 mph. The severe winds in Altus lasted nearly 20 minutes.

JUNE 20-26: A cold front entered the state on the 20th and kicked off a round of storms. The storms became severe quickly and brought golf ball size hail and winds of up to 70 mph to central Oklahoma. The storms marched to the northeast and exited the state overnight on the 21st. The storms also brought large hail and severe winds to that part of the state. Highs only reached the 80s and 90s on the 21st following the cold front. The temperatures soared once again after that into the upper 90s and 100s through the 26th accompanied by southerly winds gusting up to 40 mph. There were a few storms on the 23rd and 24th but very little rain fell. Wildfires burned out of control in western Oklahoma. A fire forced the evacuation of Medicine Park and burned about 5,500 acres and several homes. High temperatures soared into the 110s on the 26th with Hollis and Erick reaching 115 degrees. Many other sites were about 110 degrees. Vinita came in the coolest at 95 degrees.

JUNE 27-30: A hot end to the month saw the temperature soar to 110 degrees at Walters on the 27th. A cold front in the northern parts of the state that day kept highs in the 90s in that area. Showers and storms along the front on the 28th and 29th dropped more than 2 inches of rain in the Seiling area and near Broken Bow in the southwest. The month's last day was hot and dry, much like the previous 29 days, with highs in the 90s and 100s.

JUNE 2011 SEVERE WEATHER

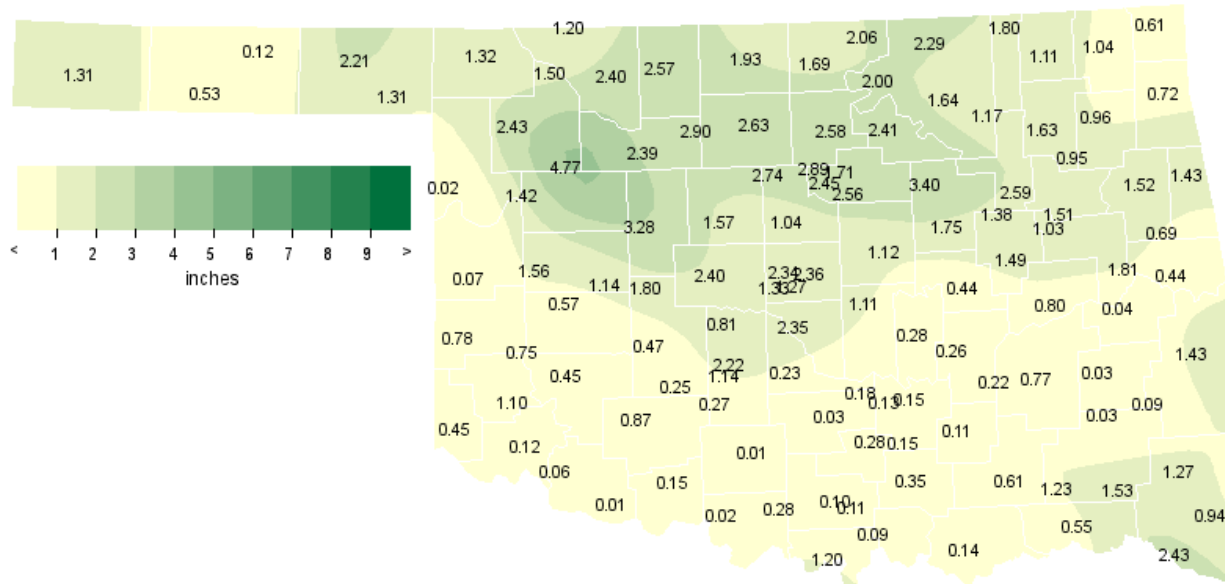
Wind Gusts (70 mph or greater)

Speed (m.p.h)	Location	County	Day
71	4 SSW Enid	Garfield	9
76	4 SSW Enid	Garfield	9
72	4 SSW Enid	Garfield	9
70	7 WSW Hinton	Caddo	10
70	Carrier	Garfield	11
72	1 SW Medford	Grant	11
70	2 SW Blackwell	Kay	12
70	2 SW Newcastle	McClain	14
70	Norman	Cleveland	14
89	3 NE Elgin	Comanche	14
82	Norman	Cleveland	14
70	Kremlin	Garfield	16
74	Altus Air Force Base	Jackson	16
80	3 W Medicine Park	Comanche	16
71	3 W Grandfield	Tillman	16
70	3 W Tryon	Lincoln	20

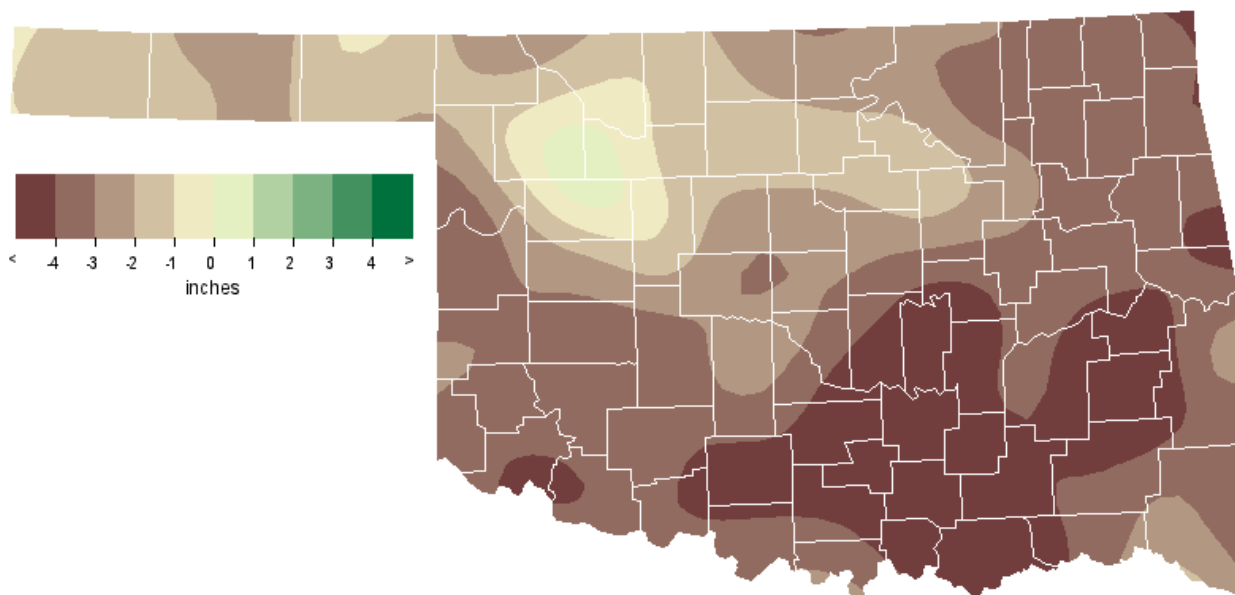
Hail (2 inches in diameter or greater)

Size (in.)	Location	County	Day
2.00	Cherokee	Alfalfa	9
2.00	Roll	Roger Mills	9
2.50	7 NNW Shattuck	Ellis	11
2.50	Lake Hefner	Oklahoma	14
2.75	Avery	Lincoln	14
2.50	Nashoba	Pushmataha	28

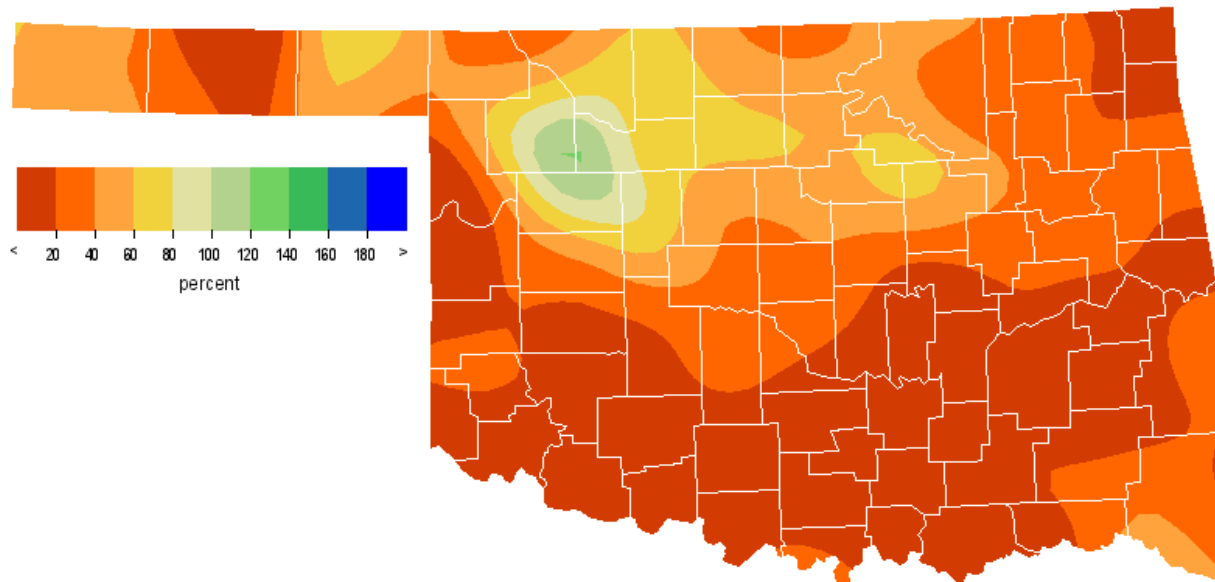
JUNE 2011 OBSERVED PRECIPITATION



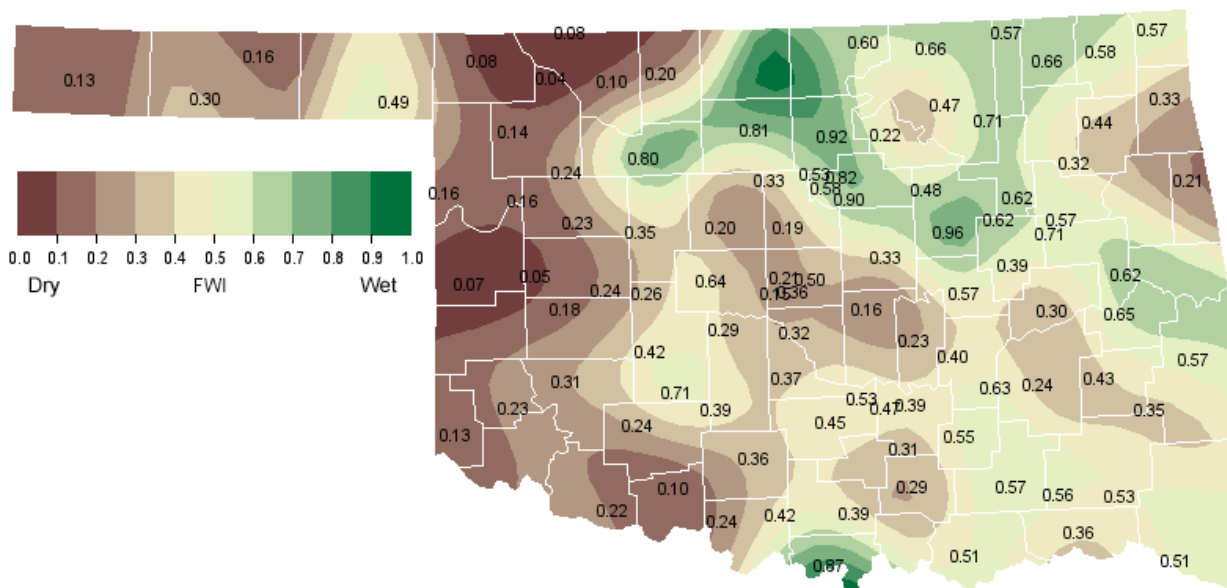
JUNE 2011 DEPARTURE FROM NORMAL PRECIPITATION



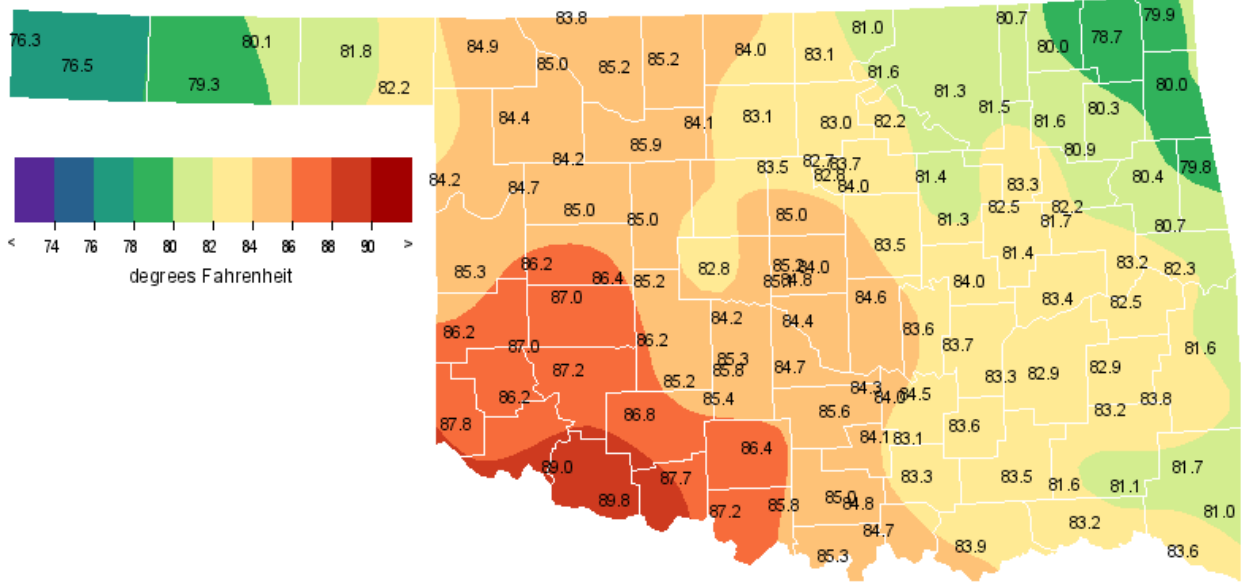
JUNE 2011 PERCENT OF NORMAL PRECIPITATION



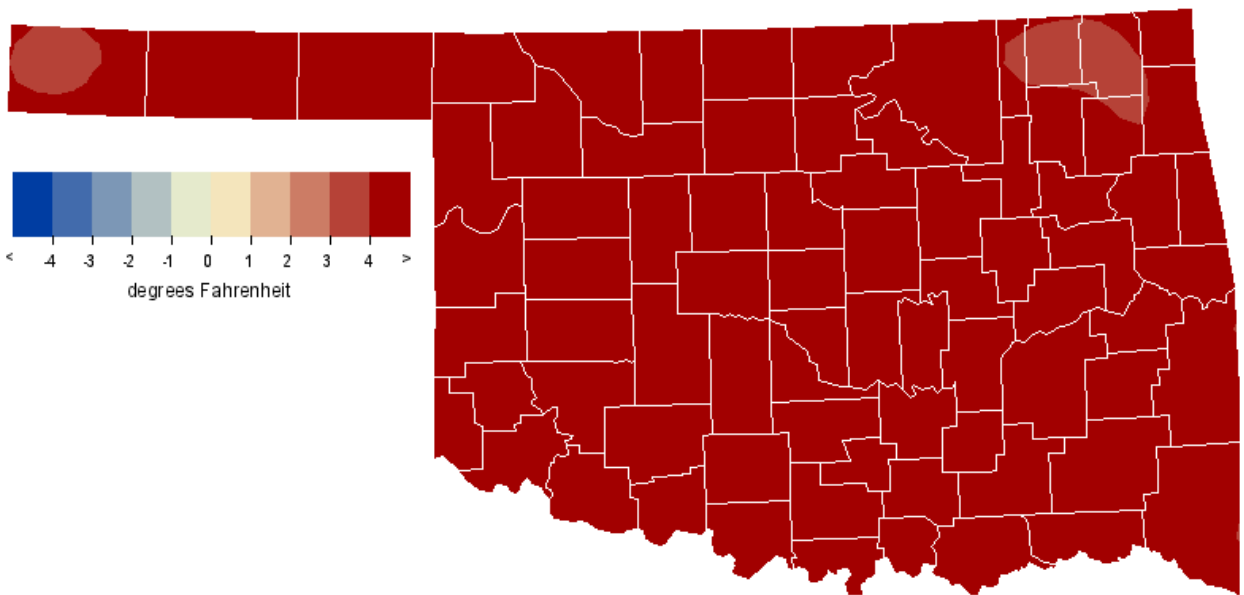
JUNE 2011 AVERAGE SOIL MOISTURE AT 25CM



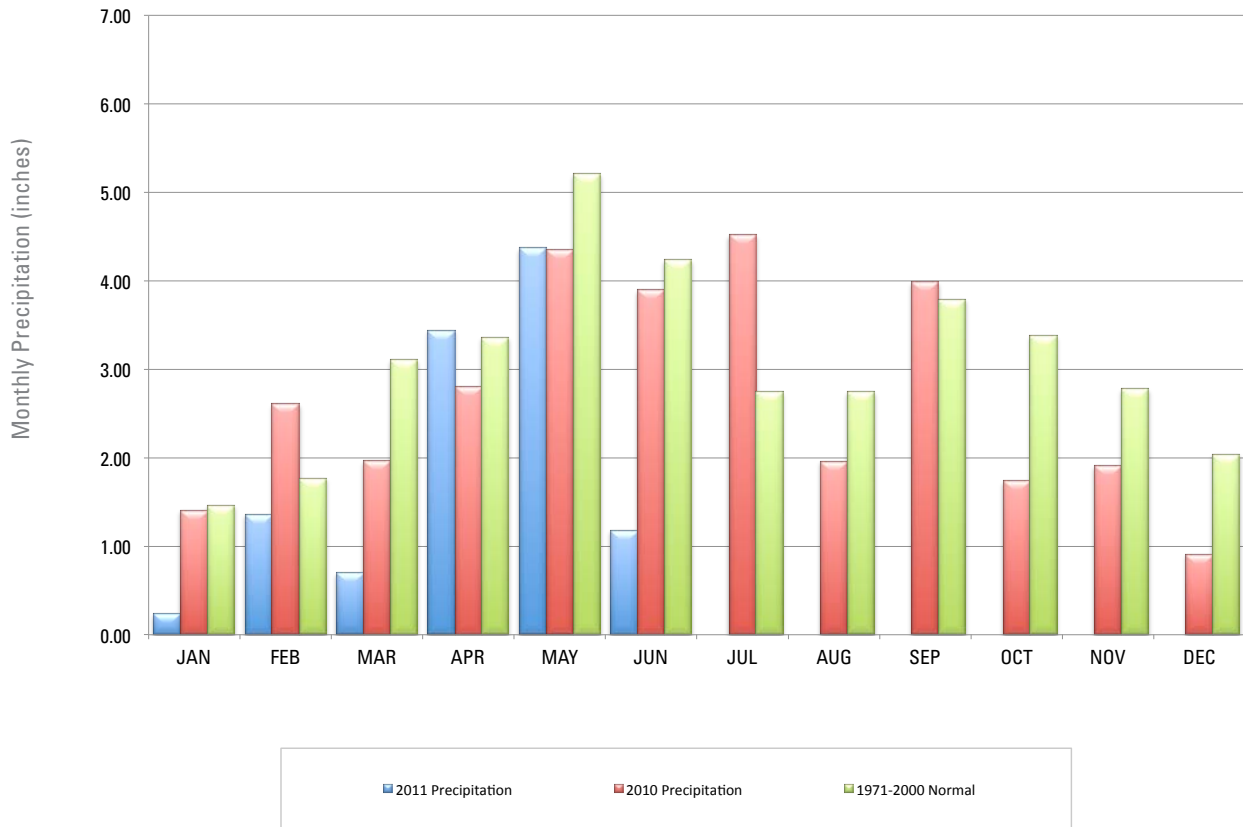
JUNE 2011 AVERAGE TEMPERATURE



JUNE 2011 DEPARTURE FROM NORMAL TEMPERATURE



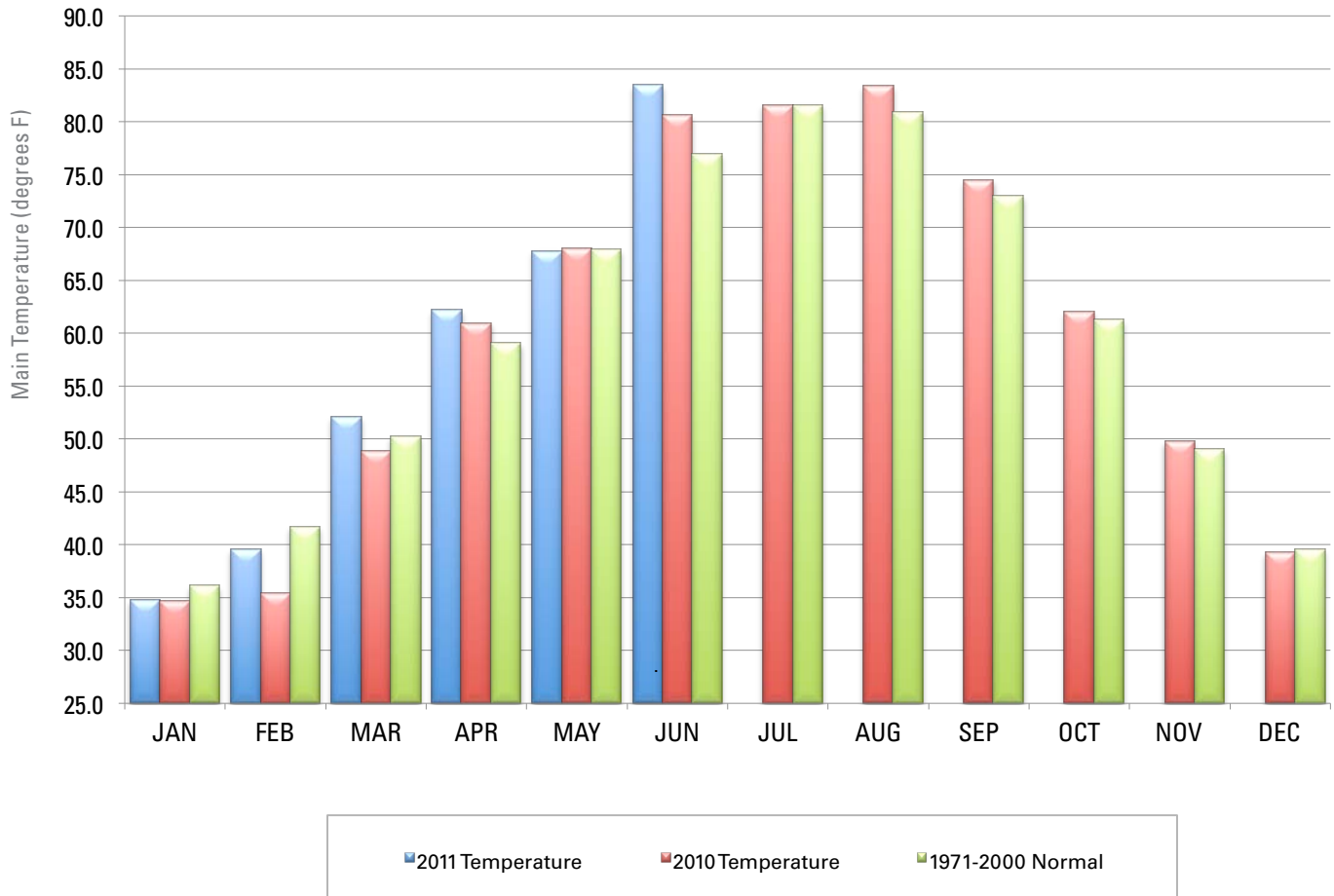
2010 AND 2011 STATEWIDE PRECIPITATION MONTHLY TOTALS VS. NORMAL



June 2011 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	June-10
Panhandle	0.97	-1.96	11th Driest	7.70 (1962)	0.01 (1924)	3.04
North Central	2.39	-1.55	31st Driest	11.10 (2007)	0.43 (1933)	3.99
Northeast	1.50	-3.12	6th Driest	12.06 (2007)	0.08 (1933)	6.85
West Central	1.20	-2.66	8th Driest	10.48 (2007)	0.32 (1910)	1.31
Central	1.66	-2.91	19th Driest	13.65 (2007)	0.00 (1914)	5.62
East Central	0.91	-3.95	4th Driest	12.69 (1935)	0.00 (1914)	7.38
Southwest	0.52	-3.64	1st Driest	10.82 (2007)	0.56 (1933)	2.90
South Central	0.23	-4.41	3rd Driest	10.91 (2007)	0.00 (1914)	3.66
Southeast	0.95	-3.75	5th Driest	11.00 (1945)	0.00 (1914)	2.87
Statewide	1.18	-3.08	4th Driest	9.84 (2007)	0.46 (1933)	4.33

2010 AND 2011 STATEWIDE TEMPERATURE MONTHLY TOTALS VS. NORMAL



June 2011 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	June-10 (F)
Panhandle	80.7	6.3	3rd Warmest	82.0 (1953)	67.7 (1903)	78.9
North Central	84.0	7.2	3rd Warmest	85.7 (1953)	69.7 (1903)	80.7
Northeast	81.0	5.3	5th Warmest	83.7 (1953)	68.9 (1903)	80.5
West Central	85.9	9.5	1st Warmest	85.6 (1953)	69.1 (1903)	81.7
Central	84.0	7.2	2nd Warmest	84.4 (1953)	69.9 (1903)	80.9
East Central	82.1	5.9	2nd Warmest	84.4 (1953)	69.8 (1903)	81.4
Southwest	87.1	8.7	1st Warmest	86.7 (1953)	71.5 (1903)	83.0
South Central	84.7	7.0	2nd Warmest	85.2 (1953)	71.1 (1903)	81.8
Southeast	82.4	6.0	3rd Warmest	83.9 (1953)	70.3 (1903)	81.0
Statewide	83.5	7.0	2nd Warmest	84.6 (1953)	69.8 (1903)	81.0

RECORD EVENT REPORTS

Description	Day	Location	Record	Previous Record	Year
High Temperature	17	Oklahoma City	103	102	1924
High Minimum Temperature	17	Oklahoma City	79	78	1990
High Temperature	17	McAlester	96	96	1996
High Minimum Temperature	17	McAlester	79	78	1998
High Temperature	17	McAlester	97	96	1996
High Temperature	18	Oklahoma City	104	101	1936
High Minimum Temperature	18	Oklahoma City	79	78	1924
High Minimum Temperature	18	McAlester	81	78	1964
High Minimum Temperature	18	Tulsa	81	80	1953
High Temperature	19	Oklahoma City	101	101	1953
High Minimum Temperature	19	McAlester	82	79	2010
High Minimum Temperature	26	Tulsa	81	80	1998
High Temperature	27	Oklahoma City	103	103	1994
High Minimum Temperature	27	Oklahoma City	80	79	1947
High Temperature	27	Tulsa	106	102	1980
High Minimum Temperature	27	Tulsa	80	80	1980
High Minimum Temperature	27	McAlester	81	78	1999
High Temperature	30	Oklahoma City	102	102	1925
90-degree days		Tulsa	29	29	1934/1911
90 degree days		Oklahoma City	30	27	1911

MESONET EXTREMES FOR JUNE 2011

Climate Division	High Temp (F)			Low Temp (F)			High Monthly Rainfall (inches)		High Daily Rainfall (inches)		
	Day	Station	Day	Day	Station	Station	Station	Day	Station		
Panhandle	114	26th	Buffalo	44	12th	Kenton	2.21	Beaver	1.13	11th	Beaver
North Central	113	26th	Freedom	56	22nd	Cherokee	4.77	Seiling	1.84	11th	Seiling
Northeast	105	27th	Bixby	57	22nd	Nowata	2.59	Bixby	1.27	12th	Pawnee
West Central	115	26th	Erick	60	21st	Erick	3.28	Watonga	1.25	29th	Camargo
Central	108	27th	Okemah	56	22nd	Oilton	3.40	Oilton	1.59	12th	Perkins
East Central	105	27th	Hectorville	59	23rd	Tahlequah	1.81	Webbers Falls	1.16	12th	Okmulgee
Southwest	115	26th	Hollis	58	21st	Mangum	1.80	Hinton	1.02	10th	Hinton
South Central	109	18th	Waurika	64	6th	Centrahoma	1.20	Burneyville	1.06	29th	Burneyville
Southeast	102	23rd	Talihina	60	6th	Talihina	2.43	Idabel	2.27	28th	Idabel
Statewide	115	26th	Hollis	44	12th	Kenton	4.77	Seiling	2.27	28th	Idabel

JULY OUTLOOK

July in Oklahoma means summer. By the beginning of the month, the jet stream and its accompanying weather systems have retreated to the U.S.-Canadian border. The western arm of a broad area of high pressure at the earth's surface, centered in the central Atlantic Ocean, has migrated northward and spreads across the state. Winds are persistently from the south, but not as strong as during preceding months. As a result, the seventh month of the year is the Oklahoma's warmest with an average temperature of 82 degrees and is the 4th driest month with a statewide-averaged precipitation of 2.73 inches.

Temperature

Mean	82.0 degrees
Hottest July	1954, 88.6 degrees
Coollest July	1906, 76.4 degrees
Hottest location	Waurika, 85.1 degrees
Coollest location	Boise City, 77.2 degrees
Hottest recorded	120 degrees, Alva, July 18, 1936 Altus, July 19, 1936 Tishomingo, July 26, 1943
Coldest recorded	41 degrees, Goodwell, July 15, 1915

Oklahoma's hottest July, at least since record keeping began in 1892, occurred in 1954. That month produced the highest statewide-averaged temperature (88.6 degrees) of any month during the period of record. The thermometer indicated 120 degrees at Alva July 18, 1936, at Altus July 19, 1936, and at Tishomingo July 26, 1943. The lowest July statewide-averaged monthly temperature on record was 76.4 degrees in 1906. The lowest temperature ever reported in Oklahoma during July is 41 degrees at Goodwell, July 15, 1915. Humidity, vegetation, and elevation contribute to the variations in temperature across the state. The higher elevation and somewhat drier air in the panhandle lead to cooler nights and a greater range in daily temperatures than in other parts of the state. The more humid air in the southeast typically warms less in the daytime, but also retains more heat through the night. Southwestern Oklahoma suffers the most from the heat.

July precipitation, all rainfall unless you count an occasional hailstorm, is primarily a result of localized events. While the panhandle enjoys its summer rainy season and rain certainly doesn't disappear from north central Oklahoma, the forested southeast, though drier than it is in other months, still receives more precipitation than other parts of the state. The wettest July, based on a statewide average of rainfall, was 1950 (9.26 inches). The driest July occurred in 1980 (0.41 inches).

Precipitation

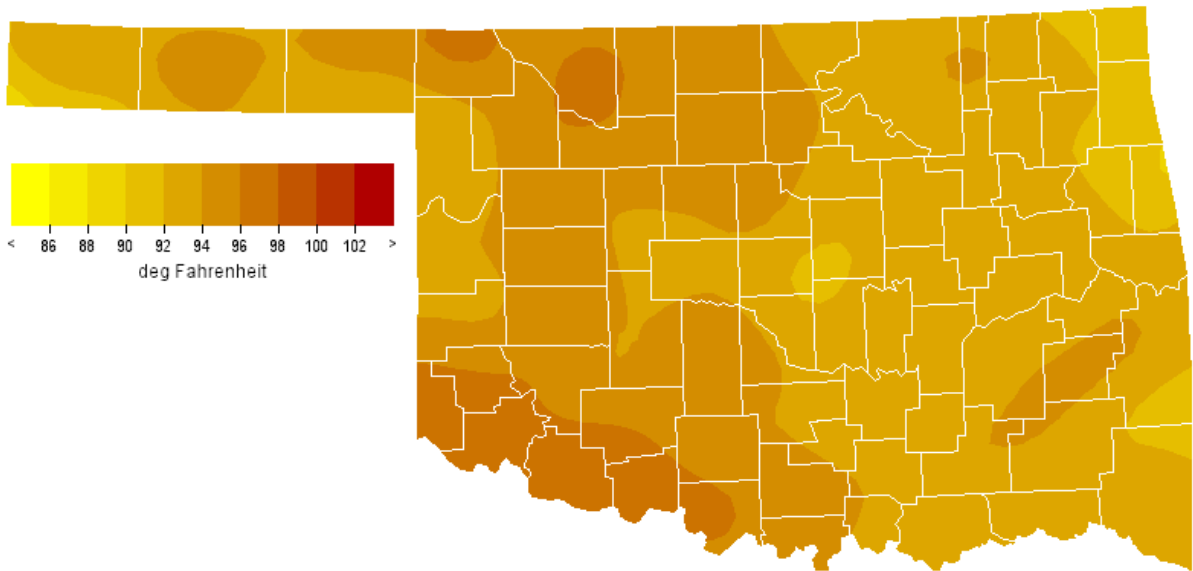
Mean	2.73 inches
Wettest July	1950, 9.26 inches
Driest July	1980, 0.41 inches
Wettest location	arnasaw Fire Tower (McCurtain County), 4.50 inches
Driest location	Altus and Reydon, 1.77 inches
Most recorded	18.83 inches, Wewoka, 1950

Tornadoes

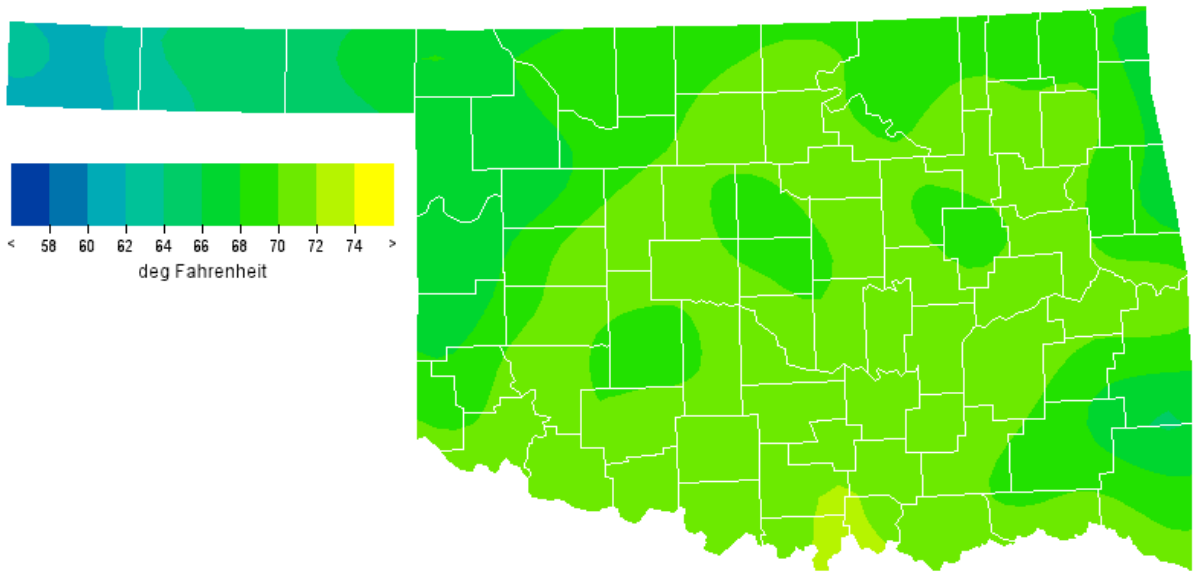
Average June Tornadoes	2.0
Most	7 (1956)

Oklahoma averages only 2.1 tornadoes in July each year. Since 1950, the July record for tornadoes is seven in 1956. Fifteen of those 52 months have been free of confirmed tornadoes. In the absence of well-organized systems, the vast majority of recorded July tornadoes have been of the weaker variety, and multiple occurrences on the same day are extremely rare. Only one fatality has been attributable to a tornado since 1950, that occurring in Murray County in 1955. Lightning, thunderstorm-induced winds, locally heavy rain, and, of course, heat are more likely to provide Oklahoma with its "weather misery" during the month.

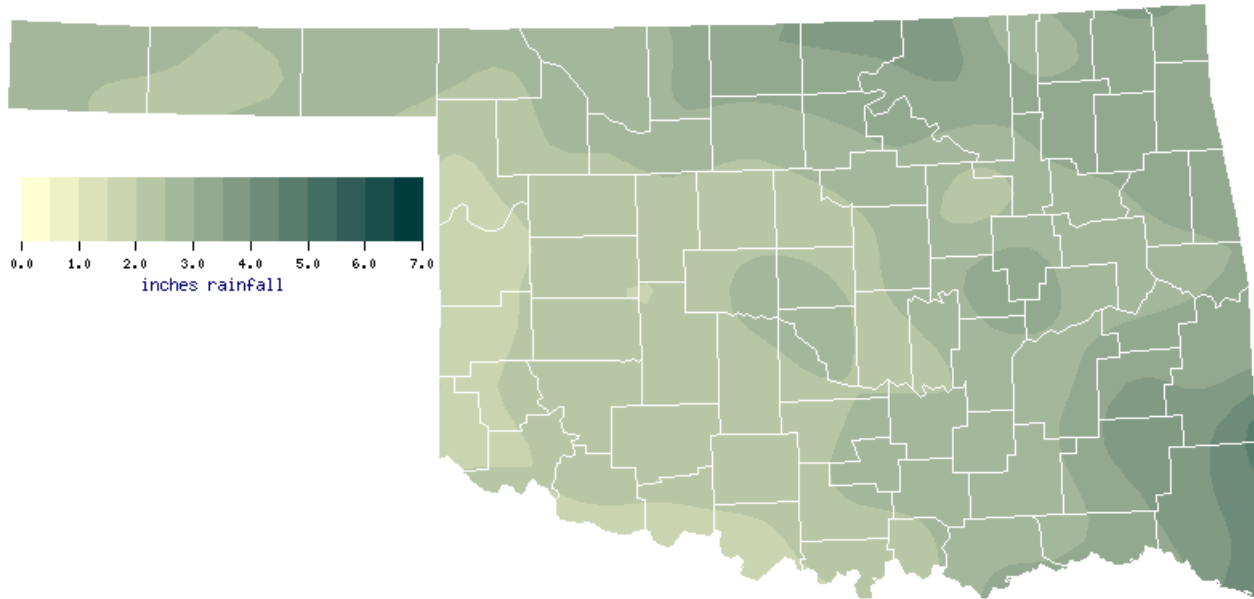
JULY NORMAL DAILY MAXIMUM TEMPERATURE (1971-2000)



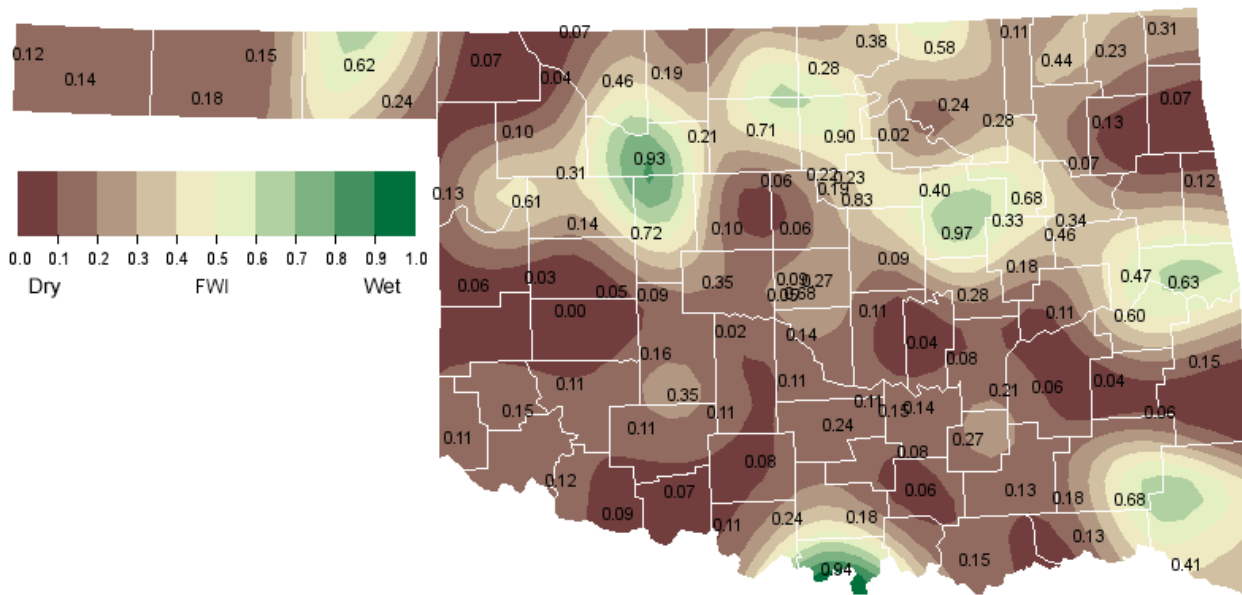
JULY NORMAL DAILY MINIMUM TEMPERATURE (1971-2000)



JULY NORMAL PRECIPITATION (1971-2000)



JULY 1, 2011 SOIL MOISTURE CONDITIONS AT 25CM



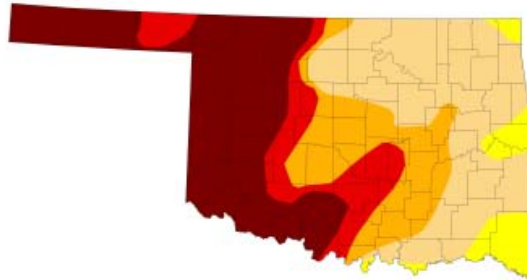
U.S. Drought Monitor

Oklahoma

July 5, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	93.77	60.75	44.18	32.78
Last Week (06/28/2011 map)	0.13	99.87	75.59	55.96	41.22	32.55
3 Months Ago (04/05/2011 map)	3.53	96.47	92.57	72.31	24.38	0.00
Start of Calendar Year (12/28/2010 map)	13.82	86.18	47.90	1.50	0.00	0.00
Start of Water Year (09/28/2010 map)	66.28	33.72	4.21	0.00	0.00	0.00
One Year Ago (06/29/2010 map)	85.92	14.08	3.21	0.00	0.00	0.00



Intensity:

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

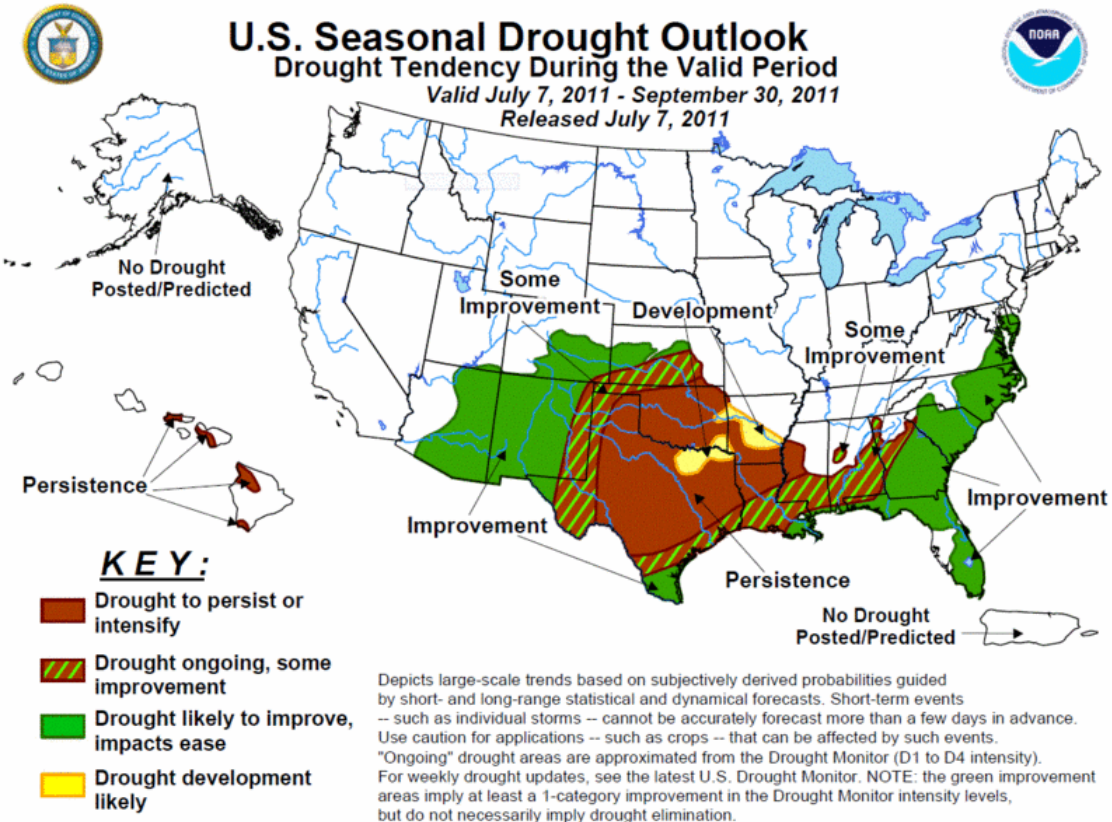
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



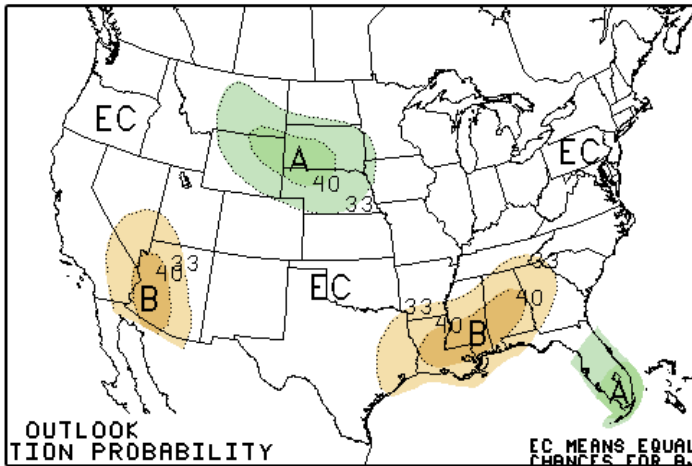
Released Thursday, July 7, 2011

Richard Heim, NOAA/NESDIS/National Climatic Data Center

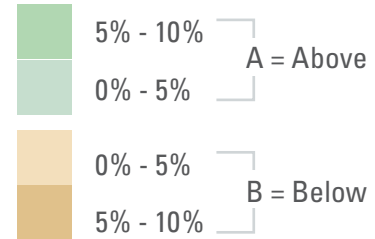
<http://drought.unl.edu/dm>



JULY 2011 U.S. PRECIPITATION FORECAST

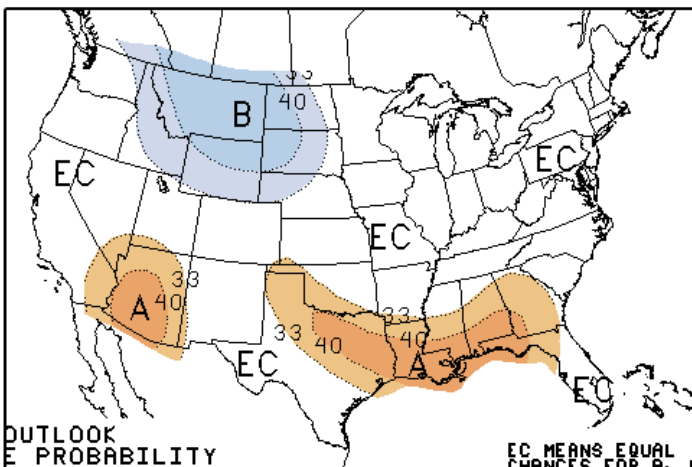


Percent Likelihood of Above or Below Average Precipitation*

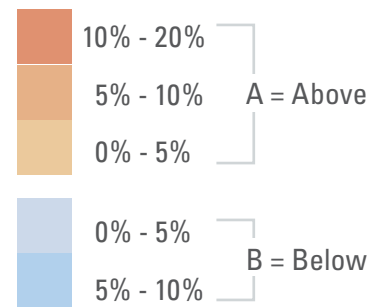


*EC indicates no forecasted anomalies due to lack of model skill.

JULY 2011 U.S. TEMPERATURE FORECAST



Percent Likelihood of Above or Below Average Temperatures*

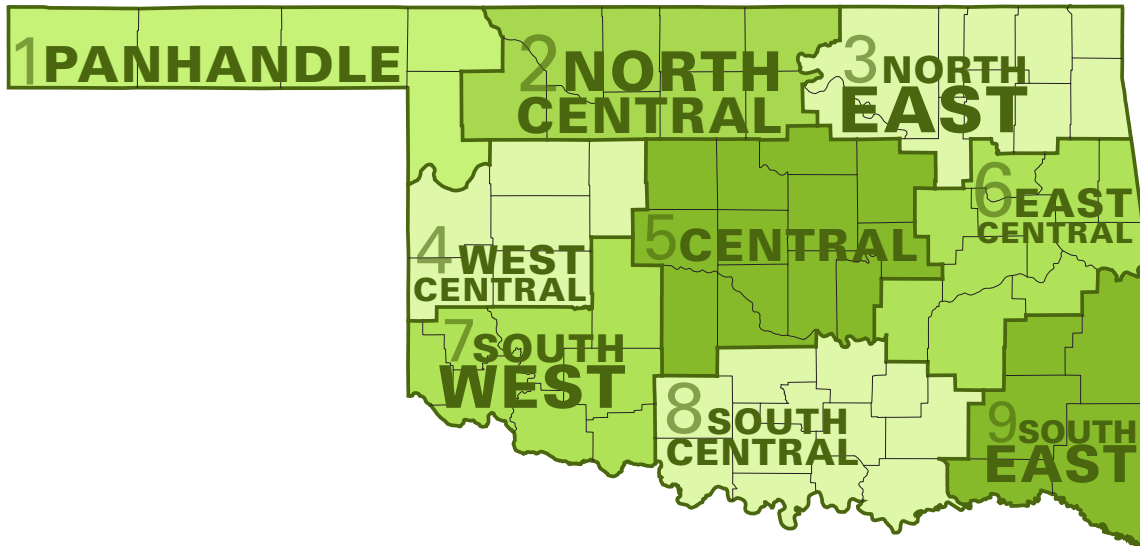


*EC indicates no forecasted anomalies due to lack of model skill.

JULY CLIMATE NORMALS

Climate Division	Max. Temperature (°F)	Min. Temperature (°F)	Avg. Temperature (°F)	Precipitation (inches)
1	94.2	65.6	79.9	2.50
2	94.9	69.4	82.2	2.98
3	92.8	69.9	81.4	3.14
4	94.4	69.2	81.8	2.10
5	93.7	70.5	82.1	2.53
6	92.7	70.1	81.5	2.97
7	96.0	70.1	83.1	2.12
8	94.3	71.1	82.7	2.53
9	93.4	69.0	81.2	3.59
Statewide	94.0	69.6	81.8	2.73

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/wwwcgi.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.mesonet.org> or <http://climate.ok.gov/>



Oklahoma Climatological Survey is the State Climate Office for Oklahoma

Dr. Kevin Kloesel Director

Dr. Renee McPherson State Climatologist

EDITOR

Gary D. McManus Associate State Climatologist

CONTRIBUTORS

Gary D. McManus

Dr. Mark A. Shafer Director of Climate Services

Howard Johnson Associate State Climatologist (Ret.)

DESIGN

Stdrovia Blackburn Graphic Design Manager

Ada Shih Graphic Designer

For more information, contact:

Oklahoma Climatological Survey

The University of Oklahoma

120 David L. Boren Blvd., Suite 2900

Norman, OK 73072-7305

TEL: 405-325-2541

FAX: 405-325-2550

E-MAIL: ocs@ou.edu

WEBSITE: <http://climate.ok.gov>