Oklahoma Monthly Climate Summary

JULY 2013

OKLAHOMA CLIMATOLOGICAL SURVEY

It was not the wettest July on record in Oklahoma, at least not on a statewide basis. That mark belongs to 1950's statewide average of 9.26 inches. Nor was it the coolest. That title is held by 1906's statewide average of 75.9 degrees. Nevertheless, this July will be remembered as one of the wettest and mildest in recent memory, especially compared to the blast furnace versions of the last few summers. It featured a July 4th holiday with highs in the 80s and lows in the 50s, and enough rain to kick drought to the curb across much of the state. According to preliminary data from the Oklahoma Mesonet, July's statewide average precipitation total was 5.11 inches, a surplus of 2.37 inches and ranked as the 15th wettest since records began in 1895. The statewide average temperature was a very pleasant 79.6 degrees, 2 degrees below normal and the 28th coolest July on record. The highest temperature recorded during the month was 107 degrees at Alva, Buffalo and Freedom on the ninth, and again at Grandfield on the 11th. The lowest temperature reported was an unseasonably chilly 49 degrees at Seiling on July 2.

July 2013 Statewide Extremes

Description	Extreme	Station	Day
High Temperature	107°F	Freedom	9
Low Temperature	49°F	Seiling	2
High Precipitation	10.99 in.	Kingfisher	--
Low Precipitation	1.02 in.	Goodwell	--

While nearly all areas of the state received beneficial rain, a wide discrepancy existed between locations. The Mesonet's Kingfisher site led the state with 10.99 inches of rainfall during July while Goodwell brought up the rear at 1.02 inches. Oklahoma City's total of 9.84 inches, 6.91 inches above normal, ranked this July as its second wettest on record, bested only by 1996's 11.9 inches. That also keeps Oklahoma City on pace to have its wettest calendar year on record with a January-July total of 41.69 inches, more than 3 inches ahead of 2007's total of 38.15 inches over the same period. The calendar year record for Oklahoma City currently stands at 56.95 inches from that same year of 2007. Records for Oklahoma City date back to 1891. On the other side of the moisture spectrum, the Mesonet site at Goodwell has recorded a meager 5.2 inches of rain since the first of the year. That's the third driest January-July for that area since 1910. Not surprisingly, 2011 earned the driest mark for Goodwell with 1.73 inches.

JULY 2013 DAILY HIGHLIGHTS

JULY 1-3: The beginning of July was pleasant with temperatures below seasonable for this time of year. The highest maximum temperatures slowly increased from a reported 88 degrees in Grady on the 1st to 93 degrees in Grady on the 3rd. The lowest maximums gradually climbed from 76 in the panhandle to 81. Lows ranged from 50 in Bristow to 65 in Medicine Park. These cool minimums broke records in McAlester on all three days—a daily low of 61, 56 and 54, as well as record daily low mean temperatures of 71 on the 2nd and 3rd. Despite an isolated measure of .68 inches of rain in Boise City on the 2nd, rainfall was negligible throughout the state. An average wind speed of 15mph was measured in Boise City on the 3rd; however, the majority of Oklahoma kept an average wind speed of less than 10mph Monday through Wednesday.

July 2013 Statewide Statistics

Temperature

	Average	Depart.	Rank (1895-2013)
Month (July)	79.6°F	-2.0°F	29th Coolest
Season-to-Date (Jun-Jul)	78.9°F	-0.2°F	57th Coolest
Year-to-Date (Jan-Jul)	58.3°F	-0.9°F	31st Coolest

Precipitation

	Average	Depart.	Rank (1895-2013)
Month (July)	5.11 in.	2.37 in.	15th Wettest
Season-to-Date (Jun-Jul)	9.17 in.	2.17 in.	26th Wettest
Year-to-Date (Jan-Jul)	24.92 in.	3.03 in.	24th Wettest

Depart. = departure from 30-year normal

JULY 4-5: Independence Day had a few scattered showers and thunderstorms in the eastern one-third of Oklahoma as well as a few lighter periods of rainfall in the west. Showers and weak storms continued on the 5th in the northwest and central one-third portions of the state. Except for .27 inches in McAlester, precipitation amounts were less than a tenth of an inch on the 4th. Likewise, rainfall was generally less than a tenth of an inch on the 5th; however, about two-tenths of an inch fell in Burneyville and Weatherford, and .25 inches fell in Medford and Ringling. Maximum temperatures continued on a warming trend, with highs reaching 98 in Grady on the 4th and 101 in the southeast on the 5th. The lowest maximum was 86 degrees

on both days in the northwest. Minimums ranged from the mid-50s in the east to the low 70s in central and north-central OK. Average daily wind speeds were a little gusty, measuring less than 14mph on the 4th and 20mph on the 5th.

JULY 6-9: An upper-level ridge sat over Oklahoma, producing fair weather and a daily increase of temperatures. The highest maximum temperatures in the state were in the triple digits, climbing from 101 in the southeast on the 6th to a blistering 107 in the northwest on the 9th. The lowest maximums ranged from 83 at Foraker to 93 at Mt. Herman. Minimum temperatures varied between 59 (Broken Bow and Wister) to 79 (Buffalo) on the 6th, but slowly increased by the 9th with a range between 68 (Boise City and Wister) and 81 (Buffalo and Fairview). Precipitation amounts were few and far between during this period. Trace amounts fell in the northeast on the 6th, as well as a report of .65 inches in Boise City and .25 inches in Kenton on the 9th. Average wind speeds were commonly between 5- 20mph on the 6th and 5-15mph the following three days.

JULY 10-11: Scattered showers and strong-severe thunderstorms moved through northwest OK on Wednesday and north-central OK on Thursday. Severe wind reports of 72mph occurred in Fairview and Bessie. The largest amounts of rainfall observed were 2.68 in. at Mt. Herman, 1.35 in. at Broken Bow, and 1.01 in. at Fairview on the 10th, as well as 1.38 in. at Chandler and 1.05 in. at Bessie on the 11th. Most other rain-fed areas received less than a quarter inch the first day and less than half an inch the second day. The 10th wasn't as hot as the previous day with the highest temperatures only reaching 105 in the west; however, reports of 107 came back on the 11th (Grady) in addition to a National Weather Service report of 108 in Frederick. The lowest maximum temperatures were in the low-mid 90s and occurred in the panhandle. Minimum temperatures were between 63 in Kenton and 80 in May Ranch. Average wind speeds were less than 13mph and multiple gusts were in the 40s and 50s.

JULY 12-13: A few overnight showers and thunderstorms made way for fairly clear skies on the 12th and 13th. However, a few areas in the northeast received minimal amounts of precipitation. Most measurements were well below a tenth of an inch except for Skiatook which measured .12 inches. Temperatures were hot with highs between 89 in the southeast and 106 in the northwest and southwest. Minimum temperatures ranged from 60 in the southwest to 76 in the northern half of the state. Average wind speeds were less than 17mph on the 12th and less than 15mph on the 13th. Winds were primarily out of the southeast on both days.

JULY 14-17: Cooler than normal temperatures and a spread of showers and thunderstorms throughout the state accompanied an upper-level low. All regions in the state, except for the northeast, received substantial amounts of precipitation. The strongest storms were observed in north-central and east-central OK on the 14th and northwest OK on the 16th. 1-2 inches was common in many areas on the 14th, however, Kingfisher and Ketchum Ranch measured a respective 2.12 and 2.42 inches. On the following day, it was more common to see a quarter of an inch to 1 inch in the southwest quadrant of the state. Staying on par with Sunday's rainfall, the 16th had a maximum daily precipitation total of 2.42 inches in Erick, followed by 2.31 inches in Tipton and 2.12 inches in Retrop. The 17th had significantly less rain than the previous days', but it was none the less significant. The western half of the state generally got a quarter to three quarters of an inch. Medicine Park was the only station that measured greater than half an inch (.89 inches). The highest temperatures occurred in the northeast, reaching only the upper 80s and low-mid 90s. The coolest maximum temperatures were in the 70s. Minimum temperatures varied between 55 in the panhandle to 74 in Idabel. Average wind speeds were generally less than 15mph on the 15th, 10mph on the 15th and 16th, and less than 13mph on the 17th. All four days had peak wind gusts in the 40s.

JULY 18-20: Weather patterns shifted slightly as an upper-level high built over the region and temperatures began to warm. The highest maximum temperatures increased from 97 on the 18th to 99 on the 19th and 20th. The northeast remained warmer than other portions of Oklahoma. The low end of maximum temperatures huddled around the mid-80s. Minimum temperatures fell between the low 60s in the panhandle to the mid-70s in the northeast. Warm and moist unstable air allowed for the development of showers and thunderstorms. A brief storm occurred in the south on the 18th that brought .23 inches to Burneyville. Showers released nearly 3 inches in Hugo, 2.15 inches in Wister, and .76 inches in Cloudy on the 19th. All other areas in the southeast received less than a quarter inch. Slow moving storms dumped a quarter to 1.5 inches of rain in the northwest, southeast, and northeast on the 19th and caused a severe wind gust of 73mph in Blackwell. Average wind speeds were gusty as well, measuring less than 18mph on the 18th and 19th and less than 13mph on the 20th.

JULY 21-23: Maximum temperatures over 100 (105 at Hooker and Beaver) coupled with passing thunderstorms and rain showers made for very hot and humid conditions. The lowest reported highs were 84 at Miami on the 21st, 87 at Miami and Vinita on the 22nd, and 94 at Mt. Herman and Spencer on the 23rd. Minimum temperatures were fairly warm, ranging from the upper 60s in the panhandle to 80 degrees in central OK. Severe flooding was reported in Osage County on the 21st as copious amounts of rain left 5.10 inches in Foraker, 4.54 inches in Skiatook, and 3.71 inches in Wynona. Many other areas received over half an inch to nearly 3 inches in the northeast. Isolated storms moved in from the north and northwest on the 22nd, leaving behind less than one-tenth of an inch in the northeast. Copan and Miami received more generous amounts at .84 inches. Isolated showers continued in eastern Oklahoma on the 23rd, dumping 4.28 in. in Tahlequah, 2.39 in. in Westville, and 2.22 in. in Wister. One quarter to 2 inches

was common elsewhere. As the hot temperatures continued, a heat advisory was issued for the eastern half of the state on Tuesday. Average wind speeds were 5-13mph on Sunday and 5-15mph the following two days. Peak wind gusts were reported in the 40s, 50s, and 70s on each subsequent day, with a few severe reports of 73mph in Burbank and 71mph in Tulsa on the 23rd.

JULY 24-26: Rain and thunderstorms continued, adding to the already very wet July. Storm intensity increased on the 24th, creating floods in Ottawa, Cherokee, and Sequoyah County, as well as severe thunderstorm wind gusts of 76 and 77mph in Eufaula. Over two inches of rain fell in central and east-central OK. The majority of rain fed areas received .5 to 1.5 inches. On the 24th, the western half of the state had its share of thunderstorms. Although rainfall amounts generally ranged from a quarter of an inch to one inch, Hinton measured 2.72 inches, Weatherford measured 2.43 inches, and Buffalo measured 1.88 inches. Continuing into the 26th, precipitation migrated to the southeast and flooded areas of Oklahoma, Comanche, Cleveland, Mayes, and McCurtain County. Over two inches of rain was common throughout the state except for in the panhandle which stayed pretty dry. Most Mesonet stations received well over a quarter inch. As much as 5.09, 5.08, and 4.48 inches were observed in Broken Bow, Walters, and Medicine Park, respectively. With all of the heavy rainfall occurring on the 26th, Oklahoma City managed to break its daily maximum rainfall record at 3.53 inches. Temperatures during this time were still warm, but started to gradually decline. Maximums fell from 98 degrees (southwest) on the 24th to 91 degrees (Burneyville and Altus) on the 26th. The lowest maximums were in the low 80s and mid-70s. Minimums ranged from 62 in the panhandle to 75 degrees in the southwest. Average daily wind speeds were less than 13mph on the 24th and less than 15mph on the 25th and 26th.

JULY 27-28: The morning started with patches of fog that had reduced visibility to less than one half mile in many portions of the state. As a cold front moved through later in the day on the 27th, maximum temperatures fell below the seasonal norm with highs ranging from 79 to 98 on Saturday and 73 to 96 on Sunday. The warmest temperatures were observed in the panhandle and the coolest temperatures were observed in the northeast. Minimum temperatures were between 59 and 69 degrees. Although rain and thunderstorms associated with the cold front stayed clear of Oklahoma on the 27th, they moved into northwest and southwest Oklahoma on the 28th. The heaviest precipitation measured that day was .74 inches in Kenton, followed by .28 in Foraker, and .27 in Newkirk. As the rain moved east, it started to dissipate and rainfall accumulations decreased. Average wind speeds were a little gusty, measuring as high as 18mph in the panhandle on the 27th and ~17mph in the northwest on the 28th.

JULY 29-31: The last three days of the month ended with the highest maximum temperatures back in the triple digits. The highest temperatures occurred in the southwest and the coolest maximum temperatures of 82 degrees (30th) and 86 degrees (29th and 31st) occurred in the northwest and northeast. The range of minimum temperatures was similar on all three days, varying between 62 in the panhandle to 77 at Grady, Eufaula, Walters, and Sallisaw. Rainfall was significant on the 29th and 30th, but became negligible by the 31st. Storms moved northeast into southern OK, the panhandle, and parts of western OK on the 29th and then became strong-severe in the northwest and north-central regions of the state. Overnight, storms moved into north and central Oklahoma, but later dropped the heaviest amounts of rainfall in east-central and south-central OK as the afternoon progressed. One half to 3.54 inches (Lake Carl Blackwell) was common in many areas on the 29th and one quarter to 1 inch (1.13 in. in Ada) was common on the 30th. Wind speeds were swift on the 29th, averaging between 5 and 19mph and gusting over 60mph in Logan, Custer, and Blaine County. Both the 30th and 31st had daily average wind speeds below 10mph.

JULY 2013 SEVERE WEATHER

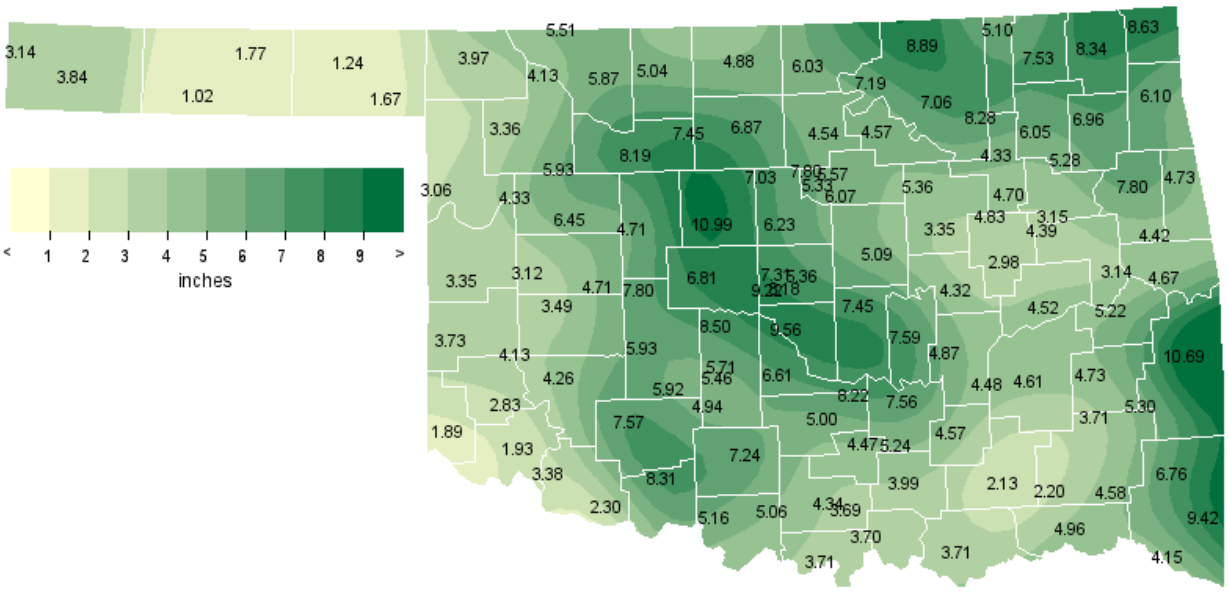
Wind Gusts (70 mph or greater)

Speed (m.p.h)	Location	County	Day
72	1 W Fairview	Major	10
72	4 WNW Bessie	Washita	11
73	Blackwell	Kay	20
75	2 W Blackwell	Kay	23
73	7 SW Burbank	Osage	23
76	Tulsa	Tulsa	23
71	4 NE Tulsa	Tulsa	23
70	3 W Tulsa	Tulsa	23
75	Tulsa	Tulsa	23
80	6 SW Tulsa	Tulsa	23
91	Tulsa	Tulsa	23
76	Eufaula	McIntosh	24
77	Eufaula	McIntosh	24

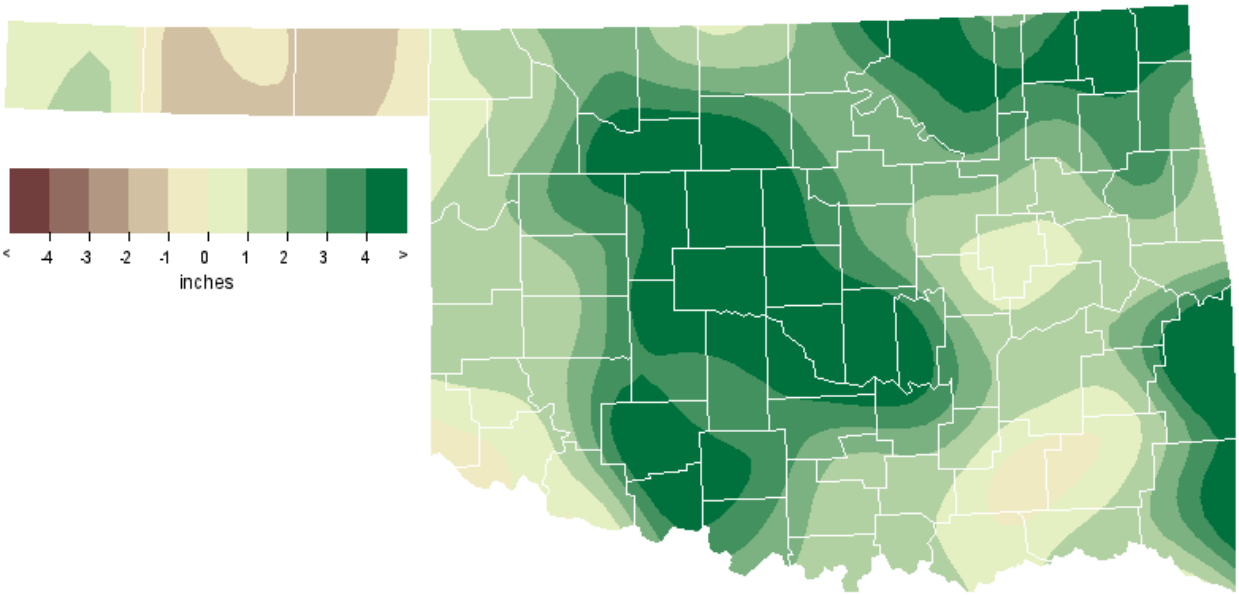
Flooding

Location	County	Day
Barnsdall	Osage	21
Miami	Ottawa	24
Tahlequah	Cherokee	24
5 E Peggs	Cherokee	24
Vian	Sequoyah	24
2 WSW Valley Brook	Oklahoma	26
3 NE Will Rogers Airport	Oklahoma	26
Lawton	Comanche	26
2 SW Oklahoma City	Oklahoma	26
3 W Norman	Cleveland	26
1 SSW Norman	Cleveland	26
1 SSE Norman	Cleveland	26
1 S Noble	Cleveland	26
Adair	Mayes	26
2 S Broken Bow	McCurtain	26

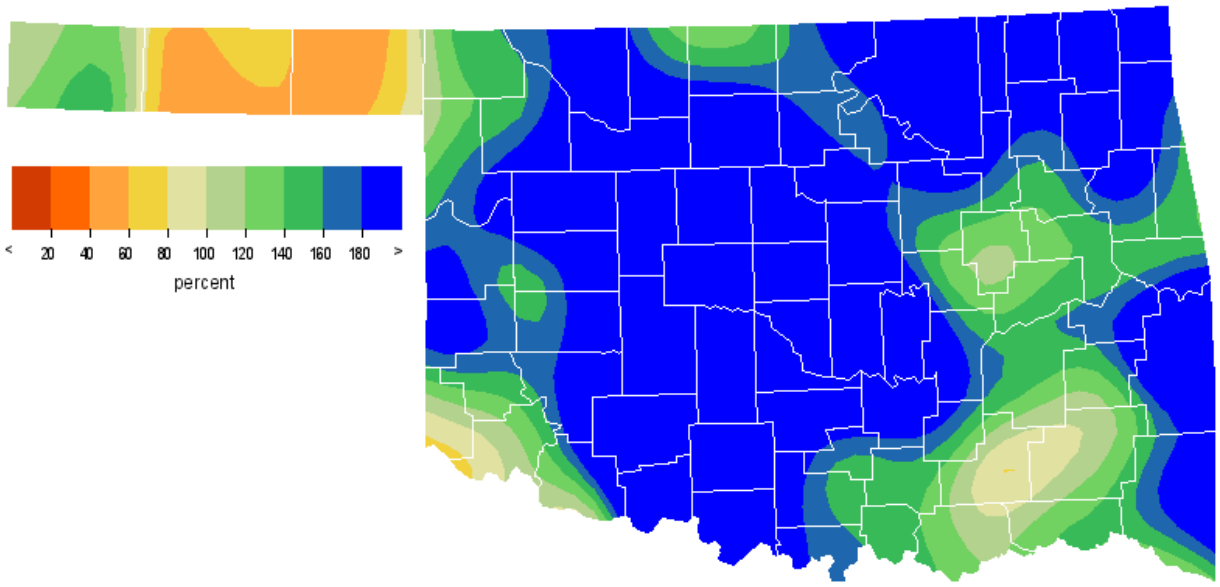
JULY 2013 OBSERVED PRECIPITATION



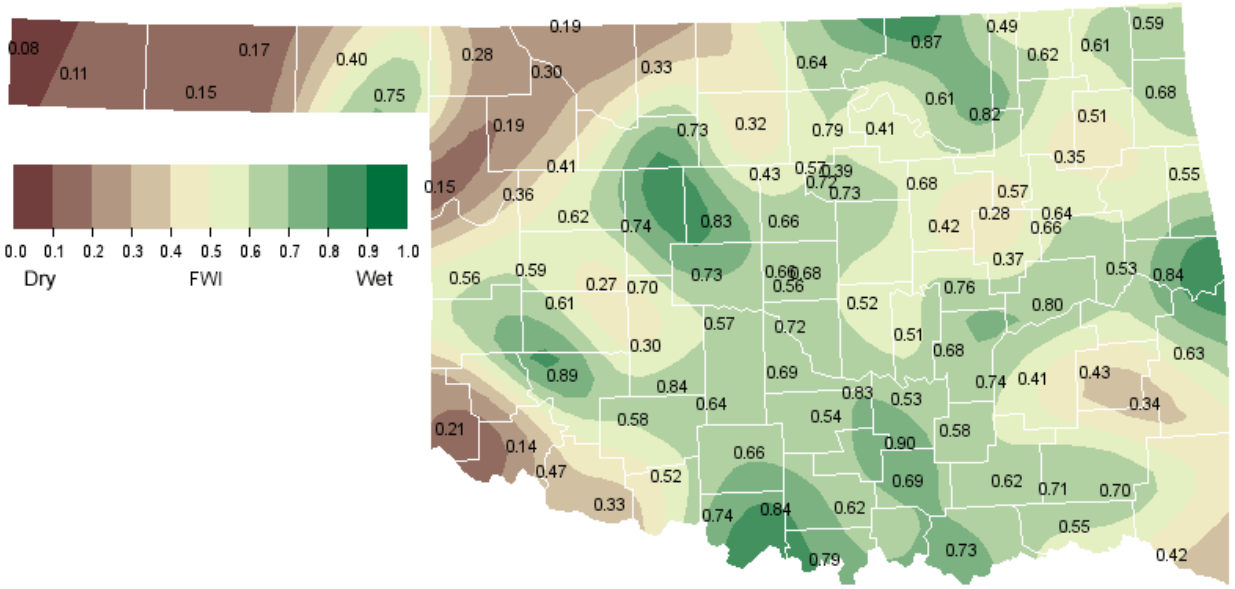
JULY 2013 DEPARTURE FROM NORMAL PRECIPITATION



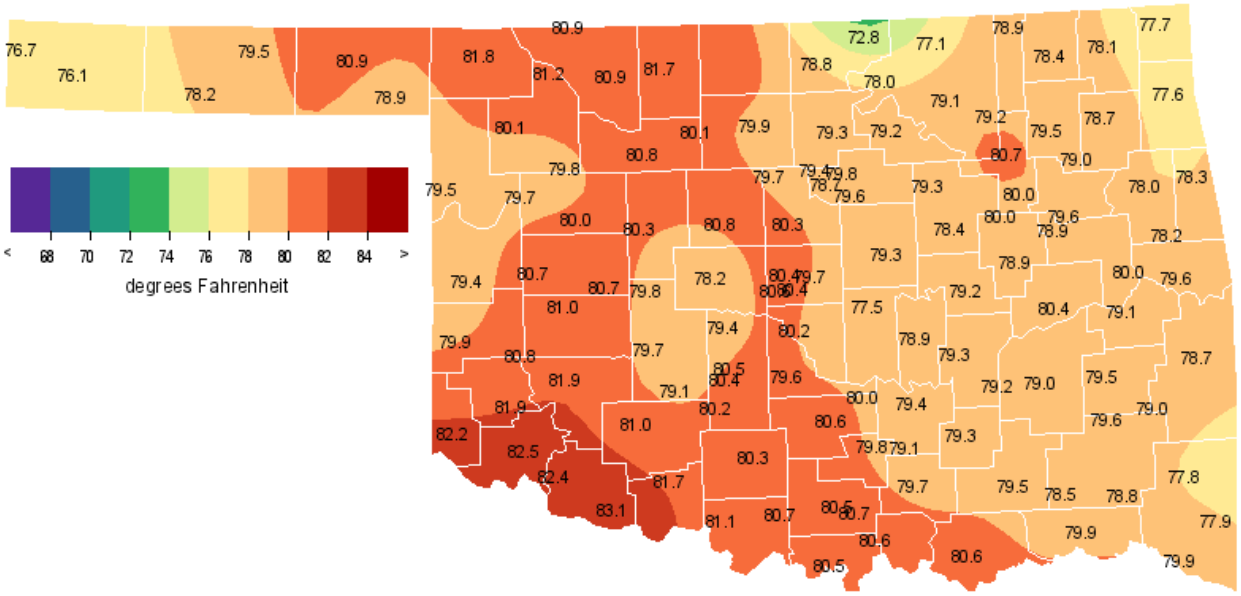
JULY 2013 PERCENT OF NORMAL PRECIPITATION



JULY 2013 AVERAGE SOIL MOISTURE AT 25CM



JULY 2013 AVERAGE TEMPERATURE



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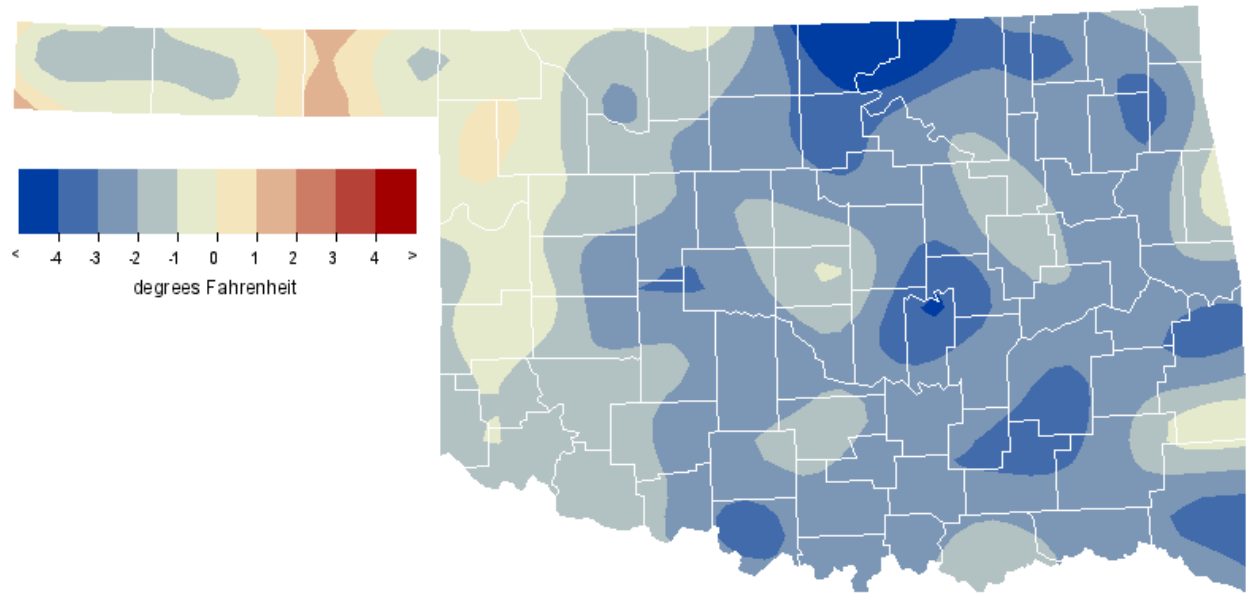
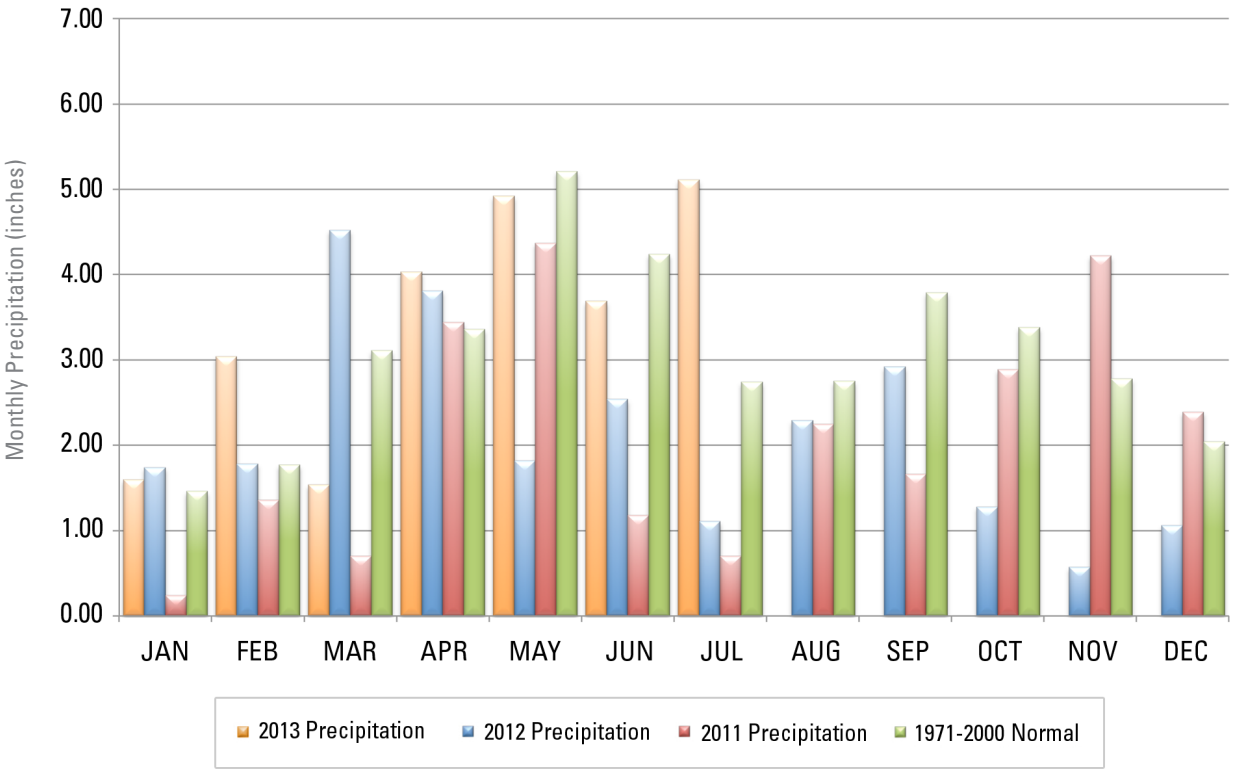


MESONET MONTHLY SUMMARY FOR JULY 2013

NAME	MEAN TEMP	HIGH TEMP	HIGH DAY	LOW TEMP	LOW DAY	HDD	CDD	TOT PPT	HIGH 24-HR	HIGH DAY
PANHANDLE										
Arnett	79.5	103	13	55	2	0	449	3.06	1.29	16
Beaver	80.9	105	23	52	2	0	492	1.24	.40	20
Boise City	76.1	102	23	55	3	0	344	3.84	1.10	25
Buffalo	81.9	107	9	55	2	0	522	3.97	1.88	25
NORTH CENTRAL										
Alva	80.9	107	9	53	2	0	494	5.87	2.50	29
Blackwell	78.8	103	9	51	3	0	428	6.03	1.51	21
Breckinridge	79.9	104	9	51	3	0	462	6.87	2.63	29
Cherokee	81.7	106	9	54	2	0	517	5.04	2.60	29
Fairview	80.8	105	10	55	3	0	491	8.19	2.32	26
Freedom	81.2	107	9	53	2	0	503	4.13	1.09	25
Lahoma	80.0	104	9	55	2	0	466	7.45	2.68	29
NORTHEAST										
Bixby	79.9	101	23	54	3	0	463	4.70	.97	26
Burbank	78.0	100	10	53	3	0	404	7.19	2.59	21
Claremore	79.5	100	10	56	3	0	448	6.05	2.84	21
Copan	78.9	100	9	55	3	0	431	5.10	1.43	21
Foraker	77.2	98	10	55	4	0	377	8.89	5.10	21
Inola	78.9	100	10	54	2	0	432	5.28	1.58	26
Jay	77.6	98	10	51	2	0	391	6.10	1.76	23
Miami	77.8	97	10	54	2	0	395	8.63	1.94	26
WEST CENTRAL										
Bessie	80.9	103	13	58	2	0	494	3.49	1.05	11
Butler	80.8	105	13	53	2	0	489	3.12	.89	16
Camargo	79.7	104	13	51	2	0	456	4.33	2.65	29
Cheyenne	79.4	103	13	57	2	0	445	3.35	1.17	16
Erick	79.9	105	13	51	2	0	460	3.73	2.42	16
CENTRAL										
Acme	80.2	102	11	52	2	0	471	4.94	2.13	26
Bowlegs	78.9	101	10	55	3	0	430	7.59	2.33	24
Bristow	78.4	100	10	50	3	0	416	3.35	.83	26
Lake Carl Blac	79.4	100	9	51	3	0	446	7.80	3.54	29
Chandler	79.3	100	10	55	2	0	443	5.09	1.38	11
Chickasha	80.5	102	11	55	2	0	480	5.71	2.82	26
El Reno	78.2	99	10	51	2	0	408	6.81	2.26	26
Guthrie	80.3	102	10	55	2	0	474	6.23	1.94	14
Kingfisher	80.8	105	9	51	2	0	491	10.99	3.52	26
Marena	78.8	98	9	57	3	0	426	5.33	2.20	29
Minco	79.4	100	10	55	2	0	447	8.50	3.04	26
Marshall	79.7	102	9	52	3	0	457	7.03	1.95	14
EAST CENTRAL										
Cookson	78.2	99	23	51	2	0	410	4.42	2.61	24
Eufaula	80.3	102	10	56	2	0	475	4.52	1.28	24
Haskell	78.8	99	10	53	3	0	428	4.39	1.56	26
Hectorville	80.0	100	10	59	2	0	466	4.83	1.07	23
Holdenville	79.2	101	10	57	2	0	440	4.87	1.27	26
McAlester	79.0	101	10	54	2	0	433	4.61	1.55	24
Okmulgee	78.9	101	10	53	3	0	431	2.98	.86	23
SOUTHWEST										
Altus	82.5	106	11	56	2	0	543	1.93	1.36	16
Apache	79.1	100	13	54	2	0	436	5.92	3.57	26
Fort Cobb	79.7	100	9	56	2	0	455	5.93	3.25	26
Grandfield	83.1	107	11	56	3	0	561	2.30	1.15	16
Hinton	79.8	103	13	54	2	0	459	7.80	2.72	25
Hobart	81.9	105	13	55	2	0	524	4.26	1.88	26
SOUTH CENTRAL										
Ada	79.4	103	11	54	2	0	447	7.56	2.45	24
Ardmore	80.7	101	11	60	3	0	486	3.69	1.15	26
Burneyville	80.5	103	11	52	2	0	480	3.71	.89	26
Byars	80.1	99	10	58	3	0	467	8.22	2.12	24
Centrahoma	79.4	101	10	54	2	0	445	4.57	1.65	26
Durant	80.5	101	11	60	2	0	482	3.71	1.84	26
Fittstown	79.1	101	11	57	3	0	438	5.24	1.39	26
Ketchum Ranch	80.3	102	11	58	2	0	474	7.24	2.42	14
Lane	79.5	101	11	56	2	0	450	2.13	.88	24
SOUTHEAST										
Antlers	78.5	99	11	54	3	0	418	2.20	1.02	24
Antlers	*****	***	***	***	***	****	****	*****	*****	***
Broken Bow	77.9	99	10	56	3	0	399	9.42	5.09	26
Clayton	79.6	101	11	53	3	0	453	3.71	1.48	24
Cloudy	78.8	99	10	56	3	0	428	4.58	2.21	26
Hugo	79.9	101	11	58	3	0	461	4.96	2.92	19

NAME	MEAN TEMP	HIGH TEMP	HIGH DAY	LOW TEMP	LOW DAY	HDD	CDD	TOT PPT	HIGH 24-HR	HIGH DAY
Goodwell	78.3	103	23	51	2	0	411	1.02	.23	10
Hooker	79.5	105	23	50	2	0	450	1.77	.89	25
Kenton	76.7	102	23	53	2	0	364	3.14	1.06	14
Slapout	78.9	103	13	54	2	0	431	1.67	.63	21
May Ranch	80.8	106	9	57	2	0	491	5.51	3.48	29
Medford	*****	***	***	***	***	****	****	4.88	1.29	14
Newkirk	77.8	100	10	54	2	****	****	5.08	2.04	23
Red Rock	79.3	100	9	53	3	0	444	4.54	1.36	29
Seiling	79.7	104	13	49	2	0	457	5.93	2.21	26
Woodward	80.1	104	9	52	2	0	467	3.36	1.46	26
Nowata	78.3	99	9	52	2	0	413	7.53	2.97	26
Pawnee	79.2	100	10	53	3	0	440	4.57	1.21	21
Porter	79.7	101	10	56	3	0	455	3.15	.92	26
Pryor	78.7	99	23	53	2	0	425	6.96	1.87	26
Skiatook	79.2	99	10	58	3	0	439	8.28	4.54	21
Vinita	78.1	99	19	54	3	0	406	8.34	2.70	21
Wynona	79.2	101	10	54	3	0	439	7.06	3.71	21
Putnam	80.0	103	13	54	2	0	465	6.45	2.89	26
Retrop	80.9	103	13	57	3	0	492	4.13	2.12	16
Watonga	80.3	104	10	57	1	0	474	4.71	1.66	26
Weatherford	80.7	104	13	59	1	0	488	4.71	2.43	25
Ninnekah	80.4	101	10	54	2	0	477	5.46	2.72	26
Norman	80.2	100	10	56	2	0	470	9.56	3.96	26
Oilton	79.3	100	23	50	3	0	444	5.36	1.85	29
OKC East	80.4	101	10	57	2	0	476	8.18	2.00	26
OKC North	80.4	101	10	60	1	0	478	7.31	1.85	26
OKC West	80.6	99	10	60	2	0	484	9.22	2.31	26
Okemah	79.3	102	10	55	3	0	442	4.32	1.55	26
Perkins	79.6	99	23	55	3	0	451	6.07	2.26	29
Shawnee	80.2	101	10	57	2	****	****	7.45	2.72	24
Spencer	79.6	101	10	57	2	0	454	5.36	1.73	14
Stillwater	79.8	98	9	53	3	0	458	5.57	2.50	29
Washington	79.6	102	10	57	3	0	453	6.61	2.84	26
Sallisaw	79.6	100	10	56	2	0	454	4.67	1.56	23
Stigler	79.1	100	10	54	3	0	436	5.22	1.59	24
Stuart	79.2	102	10	57	3	0	440	4.48	1.72	14
Tahlequah	78.1	98	10	51	2	0	406	7.80	4.28	23
Webbers Falls	80.0	99	11	57	2	0	466	3.14	.80	26
Westville	78.3	98	10	52	2	0	413	4.73	2.39	23
Hollis	82.1	106	13	57	2	0	531	1.89	1.35	16
Mangum	81.9	106	13	54	2	0	523	2.83	1.59	16
Medicine Park	81.0	103	11	63	15	0	497	7.57	4.48	26
Tipton	82.4	106	13	54	2	0	540	3.38	2.31	16
Walters	*****	***	***	***	***	****	****	*****	*****	***
Madill	80.6	102	11	58	3	0	482	3.70	1.15	15
Newport	80.5	103	11	57	2	0	479	4.34	1.29	15
Pauls Valley	80.6	102	11	57	2	0	482	5.00	1.28	26
Ringling	80.7	103	11	57	2	0	486	5.06	1.51	15
Sulphur	79.8	102	11	54	2	0	460	4.47	1.16	26
Tishomingo	79.6	102	11	55	3	0	453	3.99	1.71	26
Vanoss	*****	***	***	***	***	****	****	*****	*****	***
Waurika	81.1	104	11	57	2	0	498	5.16	2.08	26
Idabel	79.9	99	10	57	3	0	460	4.15	1.71	23
Mt Herman	77.8	96	10	56	2	0	398	6.76	2.68	10
Talihina	79.0	101	11	52	3	0	433	5.30	2.05	26
Wilburton	79.4	102	10	53	2	0	447	4.73	1.56	24
Wister	78.7	103	10	53	3	0	425	10.69	2.78	26

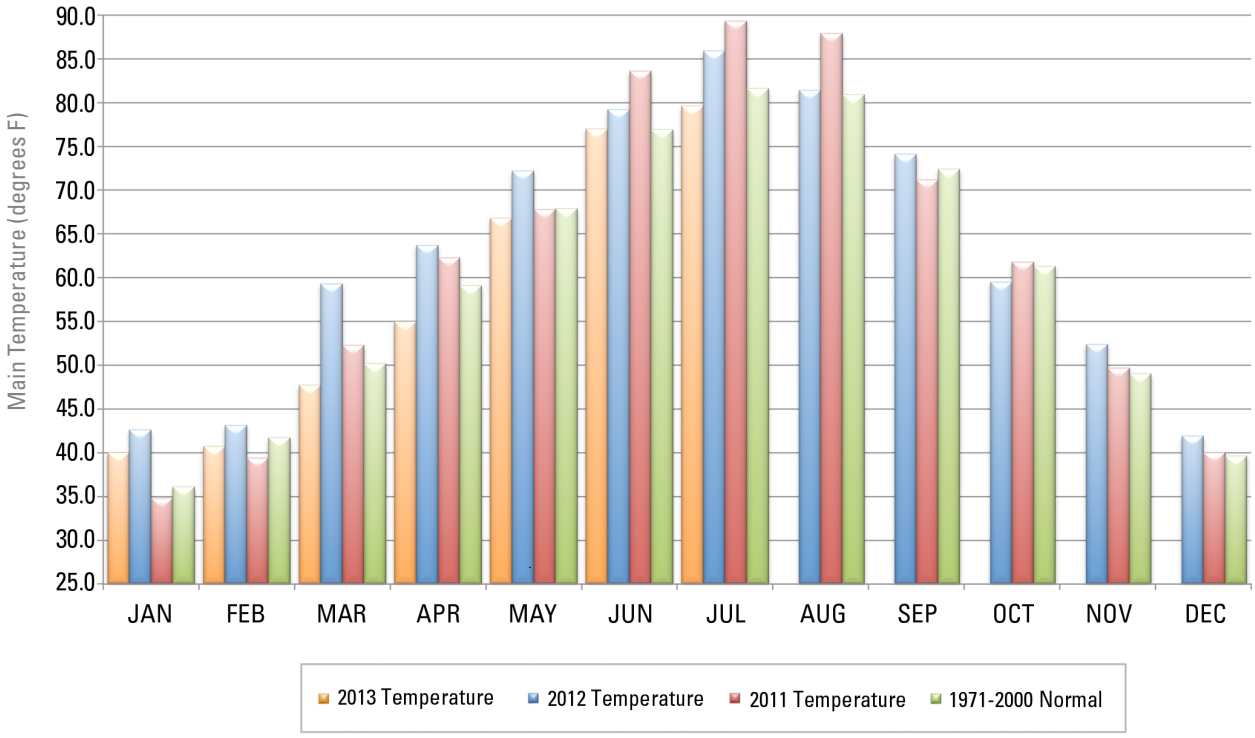
2011, 2012 AND 2013 STATEWIDE PRECIPITATION MONTHLY TOTALS VS. NORMAL



July 2013 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	Jul-12
Panhandle	2.46	-0.06	54th Driest	9.79 (1950)	0.37 (1935)	1.55
North Central	5.65	2.67	5th Wettest	9.06 (1950)	0.13 (1983)	0.59
Northeast	6.39	3.23	10th Wettest	9.31 (1959)	0.00 (1914)	0.50
West Central	4.22	2.09	17th Wettest	7.21 (1950)	0.05 (1936)	0.51
Central	6.66	4.09	7th Wettest	10.17 (1950)	0.16 (1980)	0.53
East Central	4.67	1.69	27th Wettest	10.15 (1950)	0.17 (1930)	1.66
Southwest	4.74	2.56	8th Wettest	7.35 (2010)	0.03 (1980)	0.65
South Central	4.86	2.32	14th Wettest	8.45 (1950)	0.08 (1998)	0.91
Southeast	5.65	2.07	20th Wettest	13.02 (1950)	0.00 (1930)	3.32
Statewide	5.11	2.37	15th Wettest	9.26 (1950)	0.41 (1980)	1.08

2011, 2012 AND 2013 STATEWIDE TEMPERATURE MONTHLY TOTALS VS. NORMAL



July 2013 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	Jul-12 (F)
Panhandle	78.9	-0.7	59th Warmest	87.3 (2011)	73.2 (1906)	83.9
North Central	79.7	-2.5	19th Coolest	89.6 (1954)	75.8 (1950)	86.8
Northeast	78.8	-2.1	28th Coolest	89.2 (1954)	75.0 (1906)	86.6
West Central	80.3	-1.4	41st Coolest	90.0 (2011)	75.8 (1906)	86.6
Central	79.6	-2.4	28th Coolest	90.3 (2011)	75.8 (1906)	87.0
East Central	79.1	-2.2	26th Coolest	89.5 (2011)	75.9 (1906)	87.0
Southwest	81.4	-1.8	32nd Coolest	91.6 (2011)	77.9 (1906)	87.2
South Central	80.2	-2.5	20th Coolest	90.1 (2011)	77.2 (1906)	85.2
Southeast	79.0	-1.9	19th Coolest	87.5 (1954)	76.4 (2004)	83.7
Statewide	79.6	-2.0	29th Coolest	89.3 (2011)	75.9 (1906)	86.0

RECORD EVENT REPORTS

Description	Day	Location	Record	Previous Record	Year
Daily Low Temperature	1	McAlester	61	62	1984
Daily Low Temperature	2	McAlester	56	62	1995
Daily Low Mean Temperature	2	McAlester	71	74	1968
Daily Low Temperature	3	McAlester	54	62	1961
Daily Low Mean Temperature	3	McAlester	71	73	1968
Daily Maximum Rainfall	26	Oklahoma City	3.53	1.37	1996
Daily Maximum Rainfall	30	Oklahoma City	1.16	1.06	1996

MESONET EXTREMES FOR JULY 2013

Climate Division	High Temp (F)	Day	Station	Low Temp (F)	Day	Station	High Monthly Rainfall (inches)	Station	High Daily Rainfall (inches)	Day	Station
Panhandle	107	9th	Buffalo	50	2nd	Hooker	3.97	Buffalo	1.88	25th	Buffalo
North Central	107	9th	Freedom	49	2nd	Seiling	8.19	Fairview	3.48	29th	May Ranch
Northeast	101	10th	Wynona	51	2nd	Jay	8.89	Foraker	5.10	21st	Foraker
West Central	105	13th	Erick	51	2nd	Erick	6.45	Putnam	2.89	26th	Putnam
Central	105	9th	Kingfisher	50	3rd	Bristow	10.99	Kingfisher	3.96	26th	Norman
East Central	102	10th	Eufaula	51	2nd	Tahlequah	7.80	Tahlequah	4.28	23rd	Tahlequah
Southwest	107	11th	Grandfield	54	2nd	Mangum	8.31	Walters	5.08	26th	Walters
South Central	104	11th	Waurika	52	2nd	Burneyville	8.22	Byars	2.45	24th	Ada
Southeast	103	10th	Wister	52	3rd	Talihina	10.69	Wister	5.09	26th	Broken Bow
Statewide	107	9th	Freedom	49	2nd	Seiling	10.99	Kingfisher	5.10	21st	Foraker

AUGUST OUTLOOK

According to published daily normal temperatures, the hottest period of the long Oklahoma summer extends from mid-July through mid-August. The gradually shortening days and the occasional arrival of cooler weather from the North frequently bring the state modest relief from the heat by late August. Overall, August, the third and final month of the climatological summer, is Oklahoma's second hottest, fifth driest, and least windy month. Tornado frequency is at its lowest of the March-through-October warm season. Lightning deaths are more frequent in August than during any other month.

Temperature

Mean	80.9 degrees
Hottest August	2011, 87.9 degrees
Coolest August	1915, 73.2 degrees
Hottest location	Waurika, 84.1 degrees
Coolest location	Boise City, 75.3 degrees
Hottest recorded	120 degrees, Poteau, August 10, 1936 Altus, August 12, 1936
Coldest recorded	41 degrees, Goodwell, August 15, 1915

The normal statewide monthly temperature is 80.9 degrees Fahrenheit. Oklahoma's hottest August, according to National Weather Service records that date from 1895, occurred in 2011 when the state's average monthly temperature was a scorching 87.9 degrees. The state's record daily maximum temperature of 120 degrees was equaled at Altus and Poteau on August 12 and 10, 1936, respectively. Relatively cool weather prevailed during August 1915, when the state recorded its lowest August statewide-average monthly temperature, 73.2 degrees. The lowest daily minimum temperature of 39 degrees was recorded at Dacoma on August 26, 1910.

Isolated or widely scattered thunderstorms provide most of the state's August precipitation. As a result, little systematic variation can be seen in the statewide precipitation pattern. At 3.76 inches, Pawnee has the greatest normal precipitation for the month. Meeker, near the center of the state, has the lowest normal monthly accumulation, 1.93 inches. Statewide-averaged monthly precipitation during August has ranged from 6.54 inches in 1906 to a dismal 0.14 inch during the droughty summer of 2000. The greatest August precipitation recorded by any reporting station was 15.15 inches at Holdenville in 1906. A 10.34-inch deluge at Carter Tower in northern McCurtain County on August 28, 1947 is the greatest daily precipitation recorded at a regular observing station during August. Precipitation is observed (.01 inch or more) on an average of as many as 7.8 days at Stilwell and as few as 3.5 days at Bixby. Daily rainfall events of two inches or greater are no more than an every-other-year occurrence everywhere in the state.

Precipitation

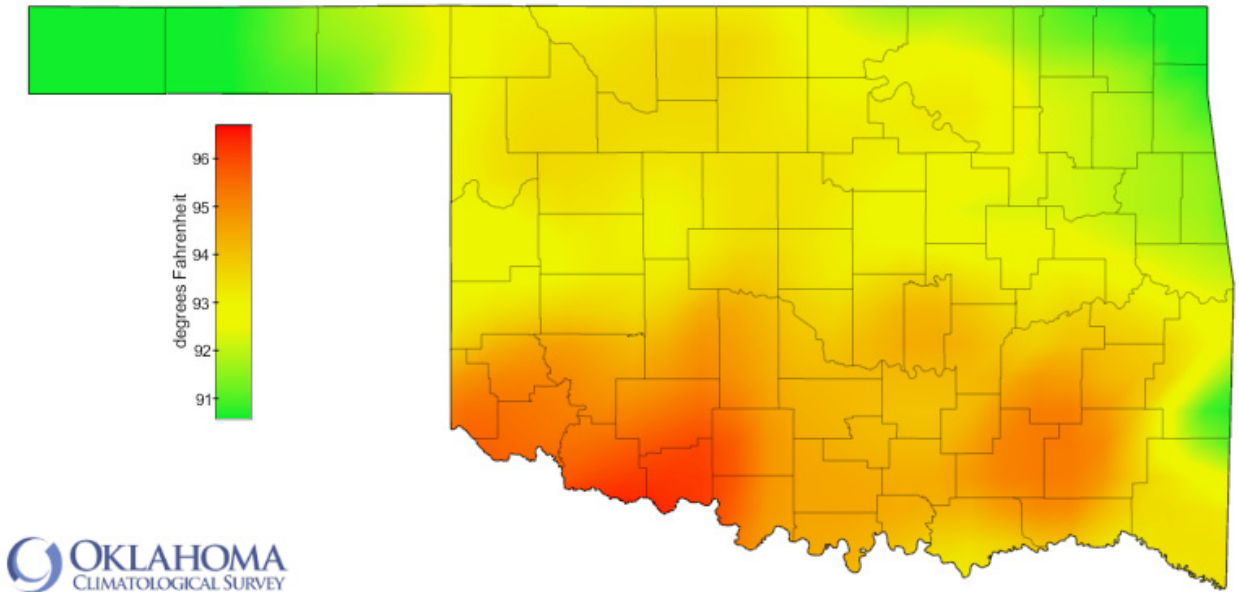
Mean	2.84 inches
Wettest year	1906, 6.54 inches
Driest year	2000, 0.14 inches
Wettest location	Pawnee, 3.76 inches
Driest location	Meeker, 1.93 inches
Most recorded	15.15 inches, Holdenville, 1906

Tornadoes

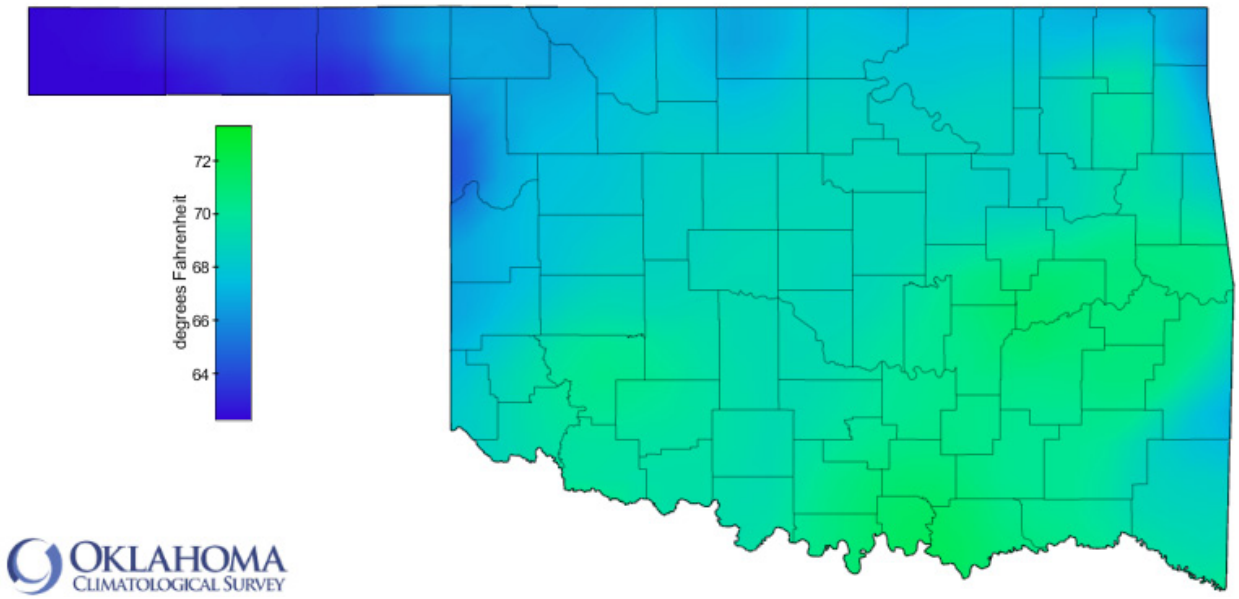
Average August Tornadoes	1.4
Most	13 (1979)

Severe weather appears in the state during August, but its effects are more notable anecdotally than they are apparent in statistics. The exception is that August has presented the state with more lightning deaths (21) than any other month since such record-keeping began in 1959. Only July among the months accounts for more total casualties (deaths and injuries) from lightning strikes. The average number of tornado for the month of August is 1.4. Of the 80 August tornadoes reported in the state between 1950 and 2003, no fatalities and only three injuries (1 in 1959 and 2 in 1982) resulted. Oklahoma's August tornado totals include a high of 13 in 1979. No tornadoes were observed during 22 of the 54 years with comprehensive statistics.

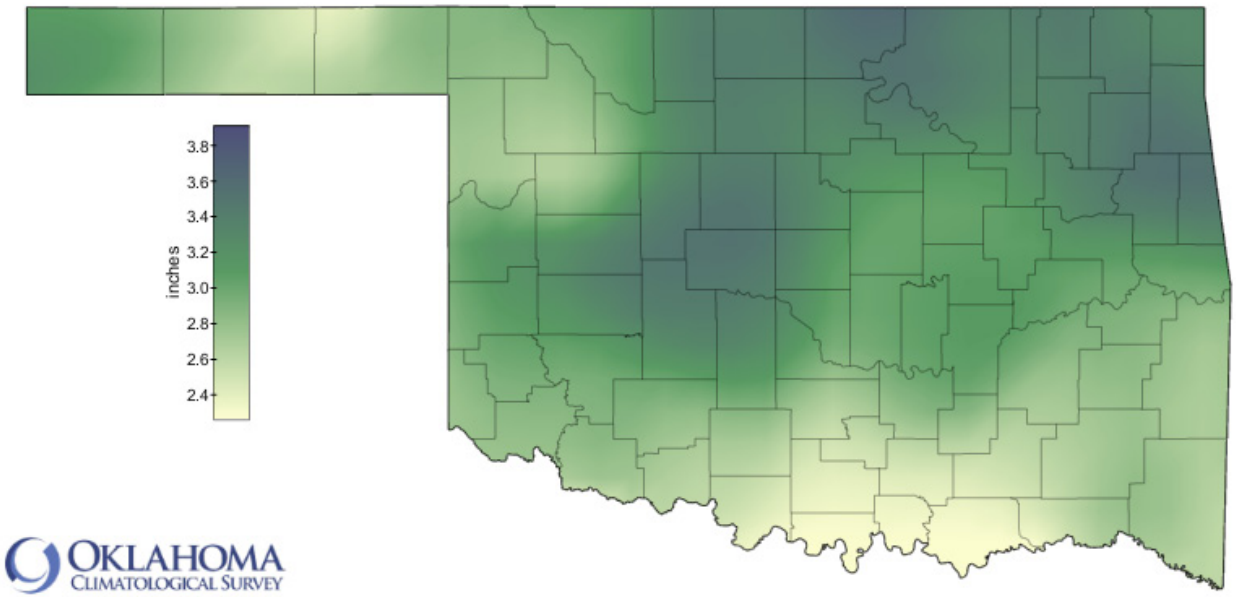
AUGUST NORMAL DAILY MAXIMUM TEMPERATURE (1981-2010)



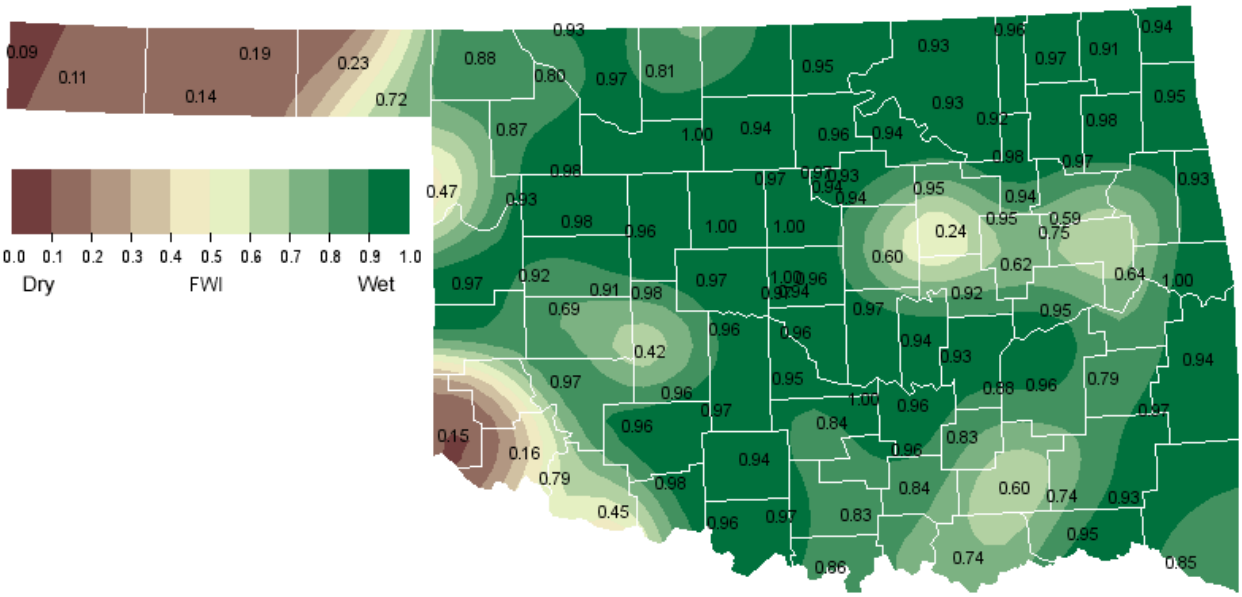
AUGUST NORMAL DAILY MINIMUM TEMPERATURE (1981-2010)



AUGUST NORMAL PRECIPITATION (1981-2010)



AUGUST 1, 2013 SOIL MOISTURE CONDITIONS AT 25CM



AUGUST 2013 DROUGHT INDICES

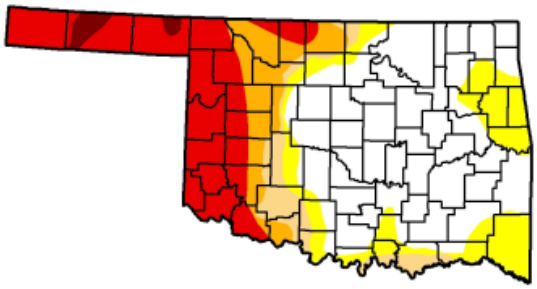
U.S. Drought Monitor

July 30, 2013
Valid 7 a.m. EST

Oklahoma

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.23	52.77	37.93	32.04	23.20	1.42
Last Week (07/23/2013 map)	24.92	75.08	51.42	36.11	30.26	4.32
3 Months Ago (04/30/2013 map)	16.69	83.31	67.94	52.82	30.53	6.39
Start of Calendar Year (01/01/2013 map)	0.00	100.00	100.00	100.00	94.89	37.06
Start of Water Year (09/25/2012 map)	0.00	100.00	100.00	99.98	95.33	42.09
One Year Ago (07/24/2012 map)	0.00	100.00	99.90	91.24	50.39	2.71



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://droughtmonitor.unl.edu

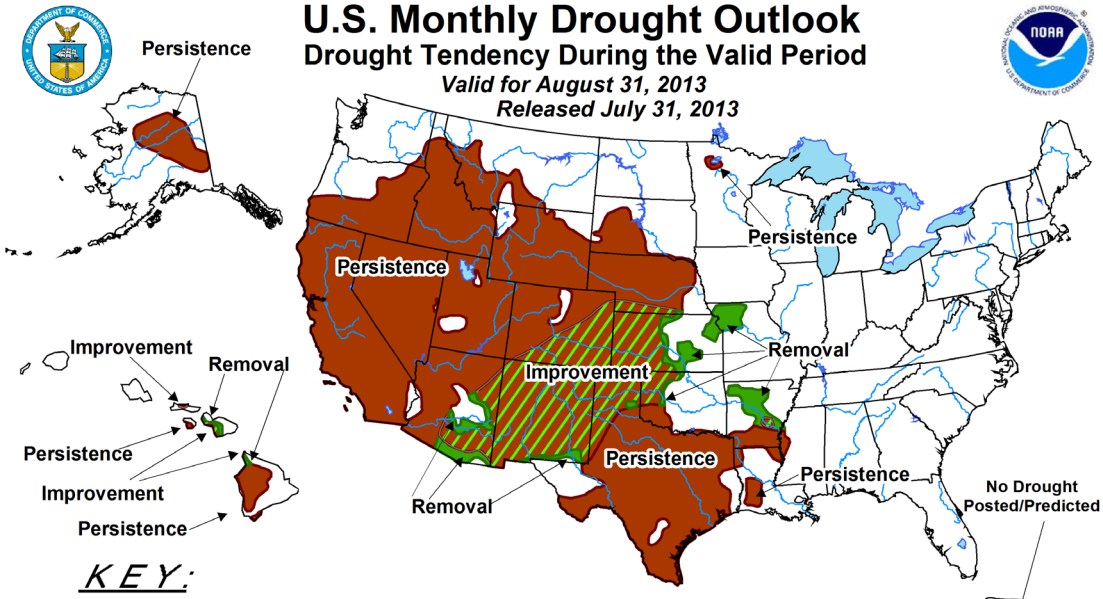
USDA · National Drought Mitigation Center

Released Thursday, August 1, 2013
Brian Fuchs, National Drought Mitigation Center

U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for August 31, 2013
Released July 31, 2013



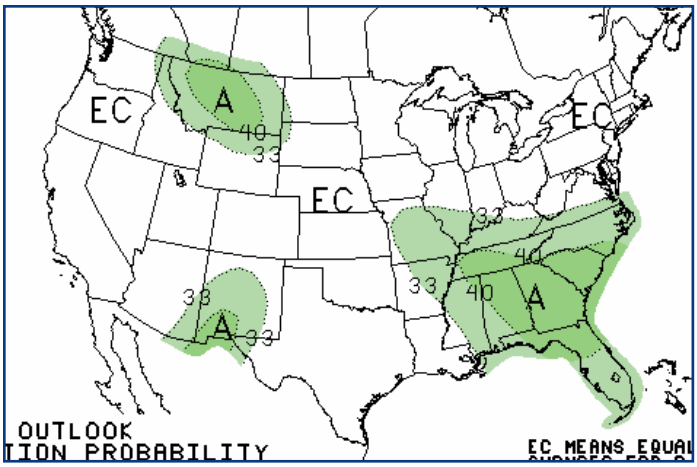
KEY:

- **Drought persists or intensifies**
- **Drought remains but improves**
- **Drought removal likely**
- **Drought development likely**

Author: Rich Tinker, Climate Prediction Center, NOAA
http://www.cpc.ncep.noaa.gov/products/expert_assessment/monthly_drought.html

Depicts large-scale trends based on subjectively derived probabilities guided by 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. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor.
NOTE: The Green and Brown hatched areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain. The Green areas imply drought removal by the end of the period (D0 or none)

AUGUST 2013 U.S. PRECIPITATION FORECAST



Percent Likelihood of Above or Below Average Precipitation*

- 5% - 10%
- 0% - 5%

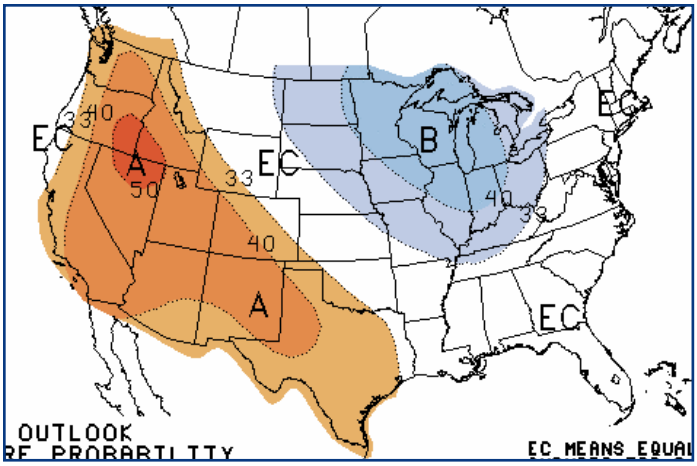
A = Above

- 0% - 5%
- 5% - 10%

B = Below

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

AUGUST 2013 U.S. TEMPERATURE FORECAST



Percent Likelihood of Above or Below Average Temperatures*

- 10% - 20%
- 5% - 10%
- 0% - 5%

A = Above

- 0% - 5%
- 5% - 10%

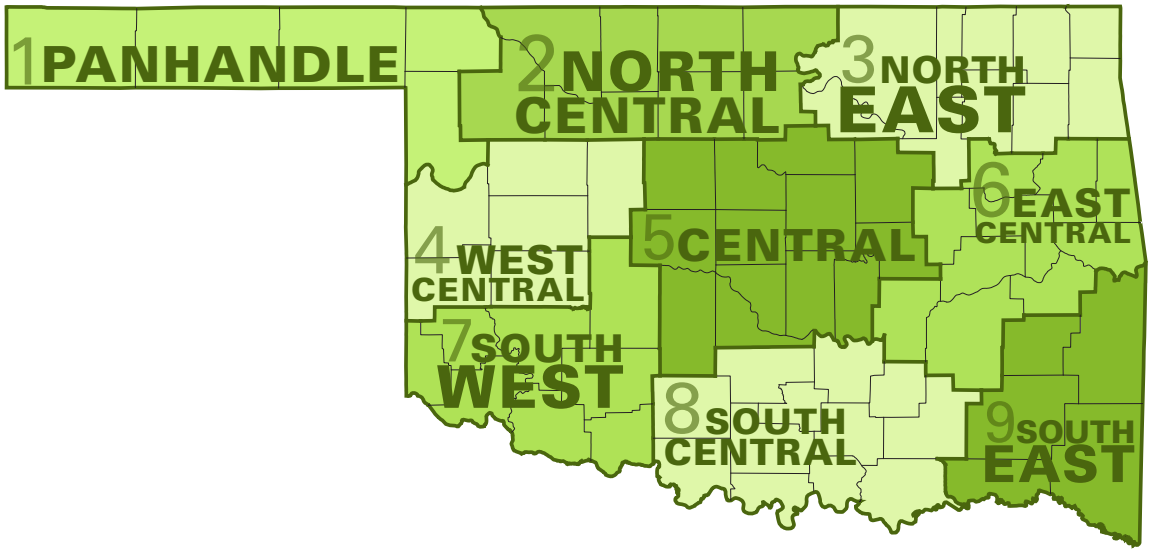
B = Below

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

AUGUST 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 June 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 June 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.mesonet.org or http://climate.ok.gov/

OKLAHOMA CLIMATOLOGICAL SURVEY

Oklahoma Climatological Survey is the State Climate Office for Oklahoma

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