Oklahoma Monthly Climate Summary

SEPTEMBER 2013

OKLAHOMA CLIMATOLOGICAL SURVEY

Autumn returned to Oklahoma nearly right on cue during the last week of September thanks to a moisture-laden cold front. The temperatures got downright chilly with lows in the 40s and 50s and highs in the 60s and 70s for a couple of days, although temperatures zoomed back into the 80s on the month's final day. The cold front provided a brief respite to what had become, at least for most of the state, a decidedly dry and warm September. The late heroics by Mother Nature were not enough to avoid the inevitable, however, as the month finished both drier and warmer than normal. According to preliminary data from the Oklahoma Mesonet, the statewide average temperature was 75.4 degrees, 3 degrees above normal and the 22nd warmest September since records began in 1895. The month's highest temperature, 108 degrees, occurred at Waurika on the first day of the month. Kenton was the winner of the lowest temperature contest with a reading of 39 degrees on the 28th. The last triple-digit temperatures of September, and almost certainly for the year, occurred at several locations on the eighth.

September 2013 Statewide Extremes

Description	Extreme	Station	Day
High Temperature	108°F	Waurika	1
Low Temperature	39°F	Kenton	28
High Precipitation	6.52 in.	Burbank	--
Low Precipitation	0.55 in.	Hollis	--

their normal September total of 4.06 inches. Their January-September total of 47.13 inches is still the second highest total on record for that period, trailing 2007's 49.27 inches. Oklahoma City's normal annual precipitation total is 36.52 inches. Tulsa has experienced differing fortunes during 2013, unfortunately. Their September total of 1.25 inches was 2.04 inches below normal and brought their January-September total to 25.88 inches, their 35th driest such period on record and nearly 6 inches below normal. Tulsa's normal annual total is 40.93 inches. Records for Oklahoma City and Tulsa date back to 1891 and 1894, respectively.

September 2013 Statewide Statistics

Temperature

	Average	Depart.	Rank (1895-2013)
Month (September)	75.4°F	3.0°F	21st Warmest
Year-to-Date (Jan-Sep)	62.7°F	-0.3°F	49th Coolest

Precipitation

	Average	Depart.	Rank (1895-2013)
Month (September)	2.60 in.	-1.21 in.	51st Driest
Year-to-Date (Jan-Sep)	30.72 in.	2.25 in.	26th Wettest

Depart. = departure from 30-year normal

The rainfall was a bit trickier since the totals were quite variable across the state. Nevertheless, the statewide average total was 2.60 inches, 1.21 inches below normal and the 51st driest September on record. Kenton, normally one of the driest stations in the state, nearly led all Mesonet sites with a whopping 6.2 inches of rainfall, but was eventually bested by Burbank's 6.5 inches. Those two generous totals stand in stark contrast to the fortunes of most of southern Oklahoma. The Mesonet site at Tishomingo had a September total of 0.74 inches, and Hollis in the far southwest came in with the state's lowest total of 0.55 inches. The Panhandle region was the big winner with their 13th wettest September on record at more than an inch above normal. South central Oklahoma had an average total of 1.71 inches, 2.63 inches below normal to rank as the 27th driest for that area. Oklahoma City, which had been on pace to break their annual rainfall total, finally came back to earth with a total of 1.95 inches. That falls well below

The widespread rains late in the month helped improve drought conditions that had been creeping throughout the state since mid-August. The U.S. Drought Monitor had gone from 38 percent of the state in drought at the end of August to 49 percent on the final September map. The southwest continued to be the hardest hit area with Jackson and Tillman counties covered by the "exceptional" drought, the worst category on the Drought Monitor intensity scale. The late-month moisture will be reflected on the first October Drought Monitor map.

The October outlooks from the National Weather Service's Climate Prediction Center (CPC) call for increased chances of above normal temperatures for the entire state, and below normal precipitation across northwestern Oklahoma. Accordingly, that led CPC to issue a drought outlook for October that sees drought persisting across those areas where it currently exists, but no intensification across the rest of the state.

SEPTEMBER 2013 DAILY SUMMARIES

SEPTEMBER 1: September 1st marked what would be the hottest day of the month for locations in southern Oklahoma. As a cold front pushed through northern OK from the northwest, the range for maximum temperatures widened. Although a high of 108 was reported in Waurika and 106 was observed in Ringling, Grady, and Newport, the coolest maximum temperatures were 85 in Copan and 86 in Newkirk. Minimum temperatures were anywhere between 85 in the panhandle and 77 in Tulsa. A few isolated showers dropped .33 inches of precipitation in Talihina and .16 inches in Ketchum Ranch and Mt. Herman. Scattered light rain triggered by the cold front produced less than a tenth of an inch in the north. Average daily wind speeds were less than 10mph.

SEPTEMBER 2: The passing cold front caused maximum temperatures to plummet around the state. The highest temperatures dropped from the previous day's 108 degrees to 98 degrees in the south. The lowest maximum temperatures were again in the mid-80s. Minimum temperatures were also cooler, ranging from 57 in El Reno to 74 in south-central OK. A stalled frontal boundary produced isolated showers in the southeast. Most places received less than two-tenths of an inch of rain, however, Idabel managed to get a slight soaking with 1.33 inches. Daily average wind speeds were between 3 and 10mph.

SEPTEMBER 4-8: A high-pressure system sitting over the region produced dry weather throughout Oklahoma. The highest maximum temperatures crept up from 97 degrees in the south on Wednesday to the low triple digits the following days. The lowest maximum temperatures occurred in the northeast and gradually increased from the mid-80s to the low 90s. The panhandle joined the list of coolest maximum temperatures by the 8th. High minimum temperatures stayed around 73-75 degrees and low minimum temperatures climbed from 51 in El Reno to 63 in Boise City, Hooker, Broken Bow, and Antlers. Only a miniscule amount of rain was seen in Tipton (.19 inches) and Burneyville (.12 inches) on the 7th. Average wind speeds were generally less than 12mph from the 4th to the 6th, less than 10mph on the 7th, and 5-13mph on the 8th. Peak wind gusts in the low 40s occurred on the 7th in Tipton, Erick, and Altus.

SEPTEMBER 9-10: Conditions were dry yet again on the 9th and 10th. Maximum temperatures were a few degrees cooler at 98 in Wilburton and Clayton on the 9th, and 97 in Clayton and Talihina on the 10th. The lowest maximum temperatures were observed in the panhandle, falling from 91 on Monday to 87 on Tuesday. Minimum temperatures varied throughout the state by 15 degrees. Boise City and Wister were at the low end of the spectrum at 60 degrees and Tulsa was on the high end with an average low of 75. Average wind speeds were around 5 to 15mph.

SEPTEMBER 11-15: Cool air moved in from the northwest, moving the highest maximum temperatures (mid-upper 90s) to the south. The lowest maximum temperatures were chilly, ranging from 70 degrees on the 11th to 77 and 74 degrees on the 14th and 15th, respectively. Low temperatures ranged from 49 in Jay and Miami on the 14th to 73 in Oklahoma City (12th), Altus (13th), and Hobart (15th). Showers and thunderstorms persisted during this period, bringing the heaviest rainfall to portions of northwest, central, east-central, and southeast Oklahoma. The highest amounts of daily precipitation occurred in the following locations: Kenton on the 11th (1.62in.), Kenton again on the 12th (2.12in.), Walters on the 13th (1.23in.), Erick on the 14th (1.04in.), and Kenton on the 15th (1.64in.). Most areas, however, measured less than three-quarters of an inch on the 11th and 15th, less than one inch on the 12th and 13th, and less than one-quarter of an inch on the 14th. For the most part, daily average wind speeds were less than 10mph on the 11th and 12th and less than 15mph from the 13th-15th. A peak wind gust of 43mph was measured in Watonga on the 12th, 41mph in Retrop on the 13th, and 40mph in Hooker on the 14th.

SEPTEMBER 16: The 16th was hit with a double whammy when showers and thunderstorms moved in from the north in the morning and from the southwest in the afternoon. The cold front induced storms in the north brought as much as 3.52 inches of rain to Burbank and 2.88 inches to Wynona. Other areas in the west and far northeast received 1-2 inches. The cold front cooled maximum temperatures down to a range of 70 in Hooker and Beaver to 96 in Burneyville. Minimum temperatures were between 57 in Kenton and Boise City and 74 in Ketchum Ranch. Despite an average of 11.4mph in Hollis, the daily average wind speeds were generally less than 10mph. A peak wind gust of 40mph was measured in Retrop.

SEPTEMBER 17-20: Scattered showers and thunderstorms continued to drop precipitation from the 17th to the 20th, but not to the extent it did on the 16th. The primary areas affected by these passing showers included the western two-thirds ok Oklahoma on the 17th, central and southern OK on the 18th, northern OK on the 19th, and southern OK on the 20th. While half an inch to two inches of rain was common in many areas, Waurika measured a lofty 2.36 inches on Friday. The 18th provided a bit of relief from the wetness by accumulating only as much as .23 inches in Stigler, .18 inches in Centrahoma, and less than one-tenth of an inch elsewhere. Although the highest maximum temperatures were in the mid-90s in southern and east-central portions of the state Tuesday through Thursday, they drastically dropped into the mid-70s by the 20th. Low maximum temperatures varied anywhere between 68 in Weatherford, Hinton, and Watonga to 84 in Kenton. Minimum temperatures were between a chilly 50 degrees on the 20th and 77 degrees on the 18th. Average wind speeds were less than 15mph on the 17th, less than 20mph on the 18th, and less than 14mph on the 19th and 20th.

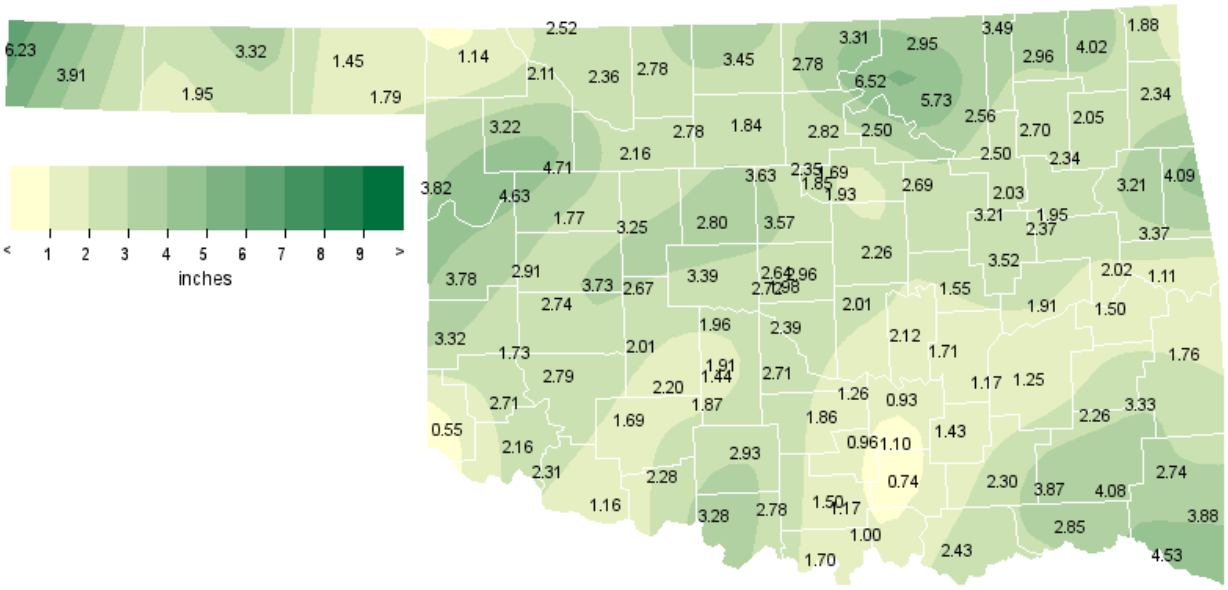
SEPTEMBER 21-26: Pleasant weather with increasing temperatures and negligible rainfall ensued during this period. The highest maximum temperatures gradually climbed from 85 degrees in Burneyville on the 21st to 97 degrees in Hollis, Beaver, Cherokee, and Newport on the 26th. The coolest maximum temperatures ranged from a comfortable 75 degrees to 85 degrees. Minimum temperatures increased as well with the warmest lows climbing from 57 to 71 degrees and the coolest lows climbing from 45 to 50 degrees Saturday through Thursday. Average wind speeds varied quite a bit day to day. Wind speeds were less than ~13mph on the 21st and 24th, less than 20mph on the 22nd, 5-15mph on the 23rd, less than 18mph on the 25th, and 5-22mph on the 26th. A peak wind gust of 47mph was observed on the 22nd (Goodwell), 43mph on the 23rd (Boise City), and 42mph on the 24th (Buffalo).

SEPTEMBER 27: Showers returned on the 27th, spreading into the panhandle from the northwest. Camargo received 1.29 inches of rain, Beaver measured 1.01 inches, and most other areas got less than half an inch. Maximum temperatures ranged from 67 degrees in rain-cooled Boise City to a warm 92 degrees in southeast and south-central portions of the state. Minimum temperatures were sandwiched between 54 degrees at Boise City and Wister, and 69 degrees at Ketchum Ranch and Eufaula. High wind gusts of 62mph occurred in May Ranch, as well as 57mph in Buffalo. Average wind speeds were 5-20mph

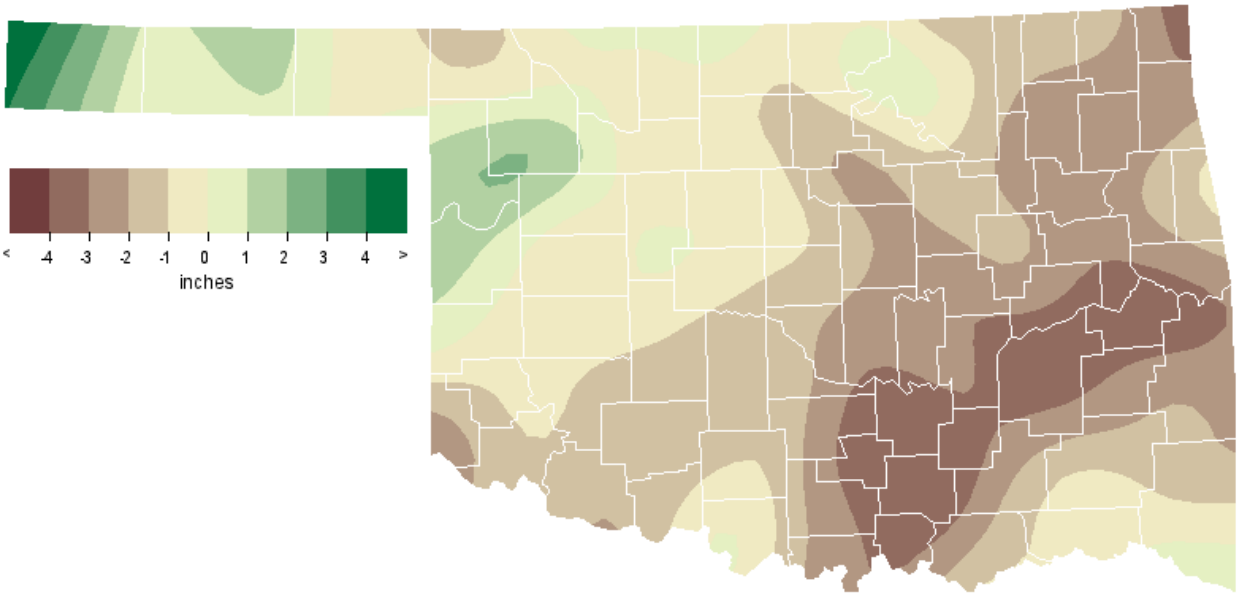
SEPTEMBER 28: A cold front returned to the area causing widespread showers and thunderstorms. The large spatial spread of these storms was evident in the Mesonet's top-five list of stations measuring the most precipitation: 3.03 inches in Seiling, 2.79 inches in Antlers, 2.55 inches in Burbank, 2.22 inches in Okmulgee, and 2.21 inches in Medford. Half an inch to two inches was common elsewhere. Maximum temperatures dropped from the previous day and measured between 67 in Boise City and 85 in Idabel, Eufaula, and Sallisaw. Minimum temperatures averaged in the 60s and low 70s. Daily average wind speeds were 5-15mph with 50mph gusts in Arnett.

SEPTEMBER 29-30: Although the last two days of September had drastically different temperatures, both were sunny and rain-free. Sunday's highs ranged from 73 in Skiatook and Vinita to 84 in Broken Bow, and Monday's highs ranged from 79 in Nowata to 90 in Hollis and Grady. Minimum temperatures were consistent on both days, varying between 42 degrees in Kenton and 65 degrees in Mt. Herman. Average wind speeds were less than 14mph.

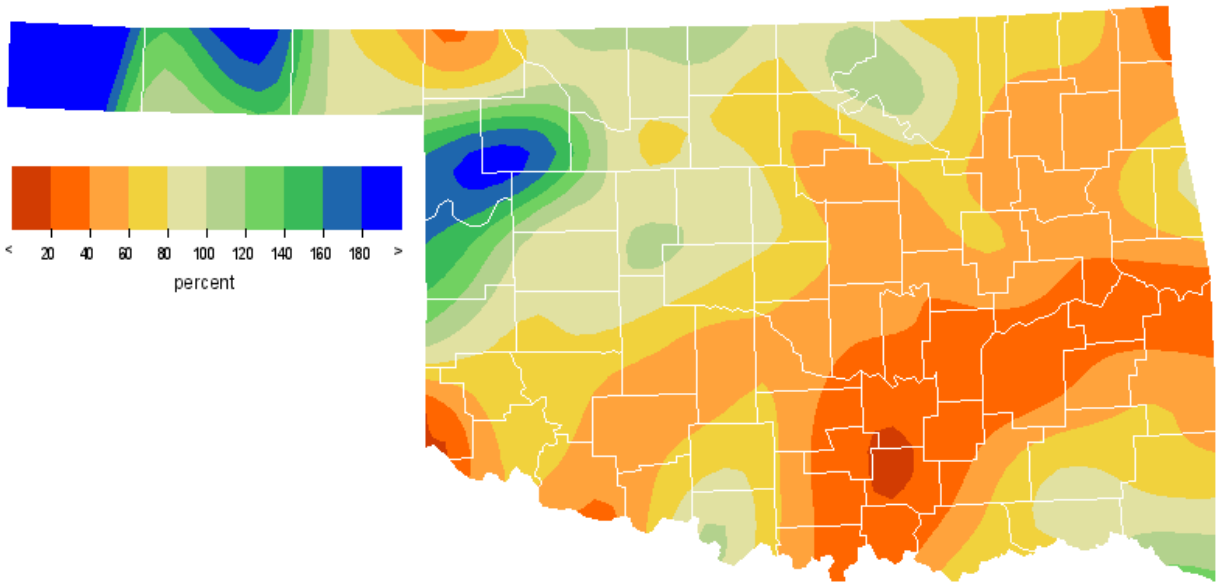
SEPTEMBER 2013 OBSERVED PRECIPITATION



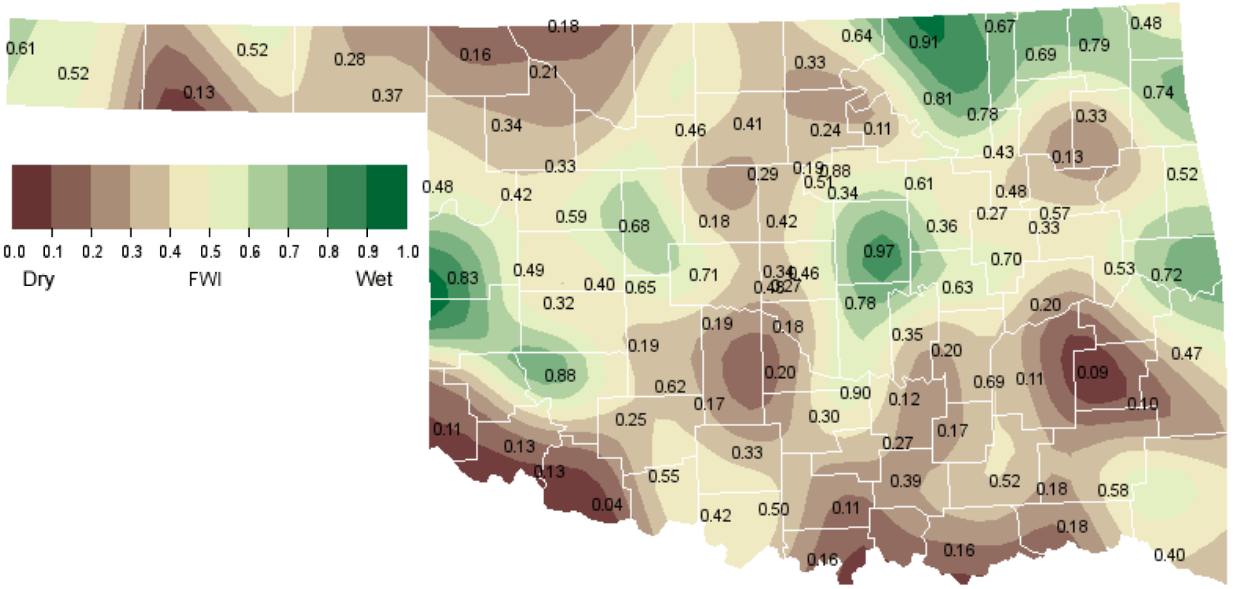
SEPTEMBER 2013 DEPARTURE FROM NORMAL PRECIPITATION



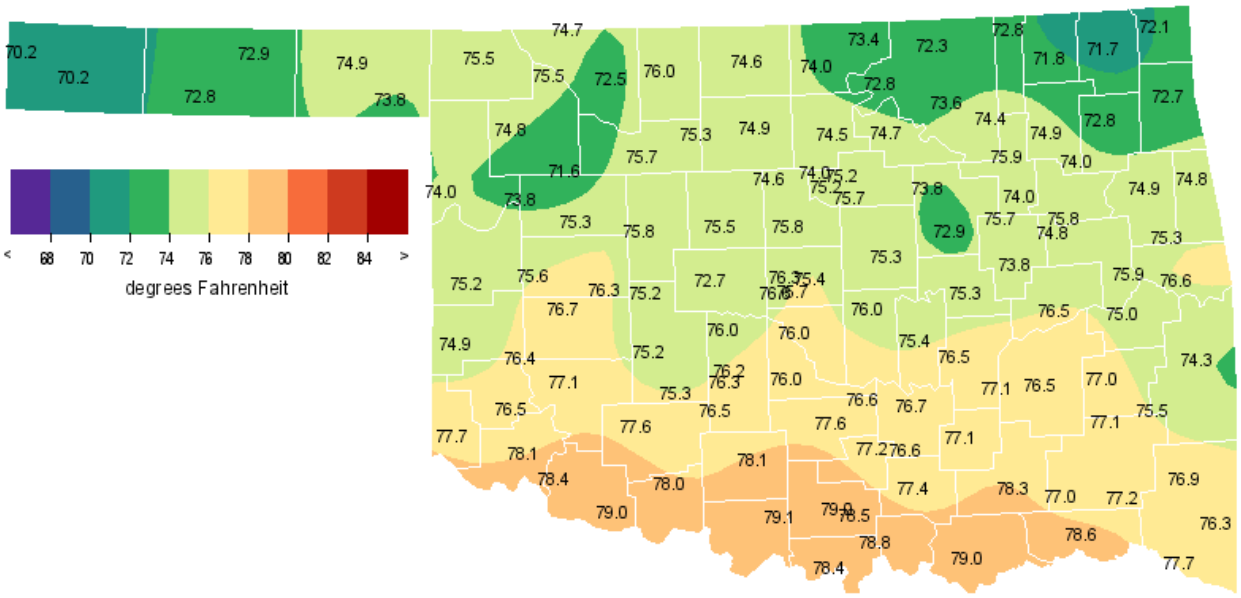
SEPTEMBER 2013 PERCENT OF NORMAL PRECIPITATION



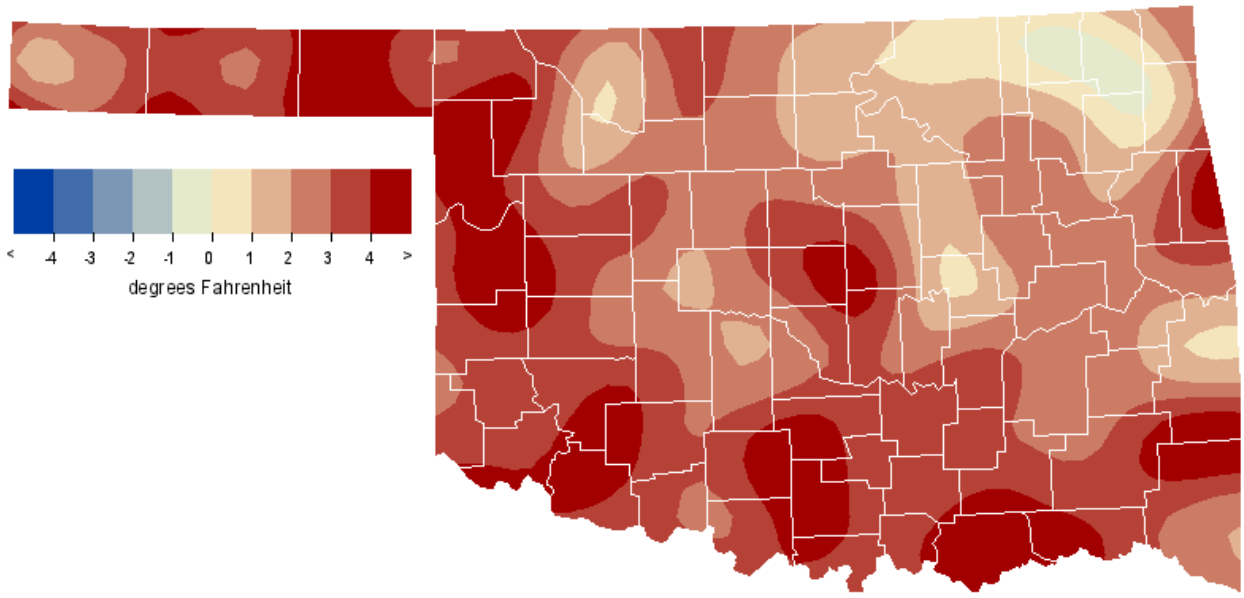
SEPTEMBER 2013 AVERAGE SOIL MOISTURE AT 25CM



SEPTEMBER 2013 AVERAGE TEMPERATURE



SEPTEMBER 2013 DEPARTURE FROM NORMAL TEMPERATURE

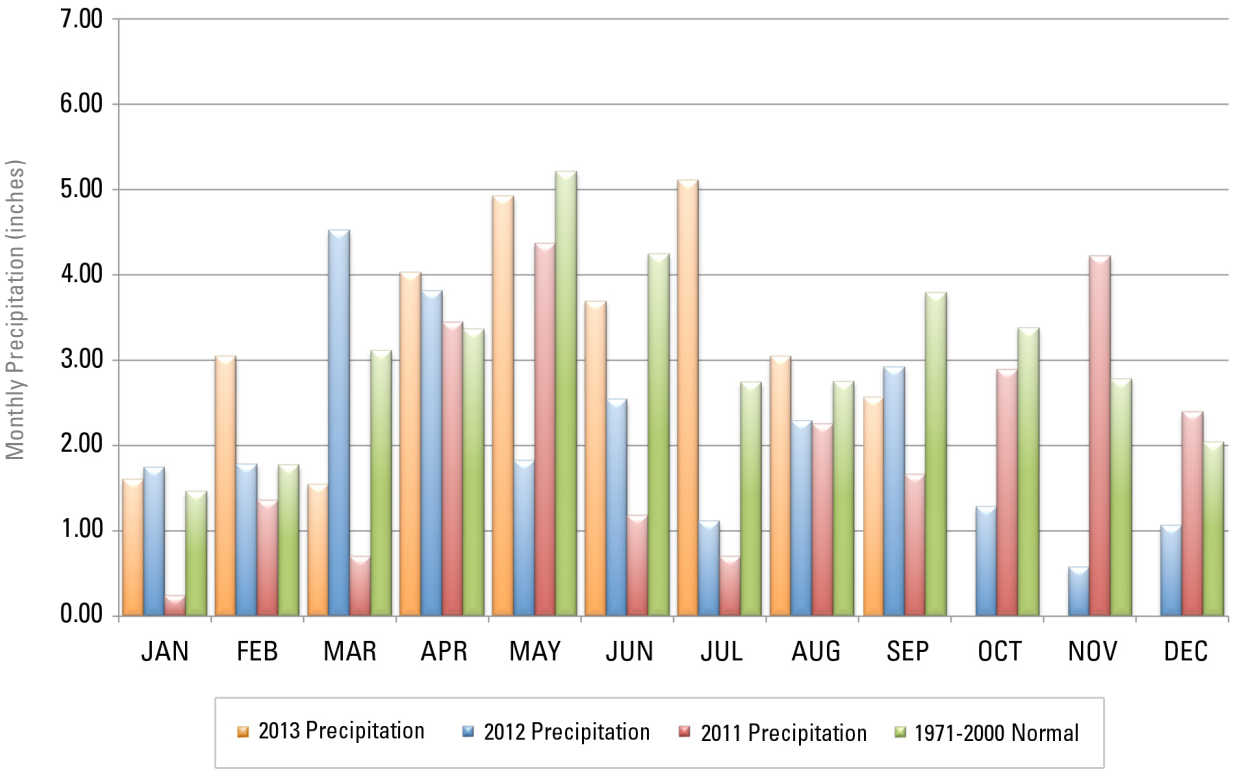


MESONET MONTHLY SUMMARY FOR SEPTEMBER 2013

NAME	MEAN TEMP	HIGH TEMP	HIGH DAY	LOW TEMP	LOW DAY	HDD	CDD	TOT PPT	HIGH 24-HR	HIGH DAY
PANHANDLE										
Arnett	73.9	100	7	44	29	11	279	3.82	1.15	16
Beaver	74.9	101	7	42	29	10	307	1.45	1.01	27
Boise City	70.2	96	4	42	28	21	177	3.91	1.84	12
Buffalo	75.5	102	7	45	29	7	323	1.14	.82	28
NORTH CENTRAL										
Alva	75.0	102	7	45	29	****	****	2.36	.78	16
Blackwell	74.0	102	7	45	29	11	282	2.78	1.58	28
Breckinridge	74.9	101	7	46	29	9	307	1.84	.91	28
Cherokee	76.0	101	7	48	29	3	333	2.78	1.42	28
Fairview	75.6	103	7	48	29	5	324	2.16	.97	16
Freedom	75.5	102	7	46	29	6	322	2.11	.80	19
Lahoma	75.3	101	7	49	29	3	313	2.78	1.48	28
NORTHEAST										
Bixby	73.9	96	12	48	22	7	275	2.03	1.31	28
Burbank	72.8	97	7	46	30	14	249	6.52	3.52	16
Claremore	74.8	98	8	50	30	5	298	2.70	1.43	28
Copan	72.9	98	8	45	29	16	252	3.49	1.70	16
Foraker	72.3	96	7	44	30	16	235	2.95	1.64	28
Inola	74.0	98	8	47	23	8	279	2.34	1.33	28
Jay	72.7	94	8	45	21	12	243	2.34	.89	28
Miami	72.1	94	8	45	21	12	225	1.88	.94	28
WEST CENTRAL										
Bessie	76.7	102	7	49	29	5	356	2.74	1.26	16
Butler	75.6	102	7	46	29	8	325	2.91	1.00	16
Camargo	73.8	100	7	43	29	13	279	4.63	2.01	28
Cheyenne	75.2	99	7	47	29	6	312	3.78	2.02	16
Erick	74.8	101	7	45	29	7	302	3.32	1.04	14
CENTRAL										
Acme	76.6	100	7	43	29	10	357	1.87	1.28	28
Bowlegs	75.4	98	7	46	22	4	315	2.12	1.70	28
Bristow	73.0	96	7	43	30	17	256	*****	*****	***
Lake Carl Blac	74.0	99	7	44	29	11	281	2.35	1.36	28
Chandler	75.3	97	7	47	29	5	313	2.26	1.17	28
Chickasha	76.2	101	7	47	30	4	339	1.91	1.21	28
El Reno	72.7	97	7	43	30	16	246	3.39	1.47	16
Guthrie	75.9	99	7	47	29	4	330	3.57	1.76	28
Kingfisher	75.6	101	7	49	29	6	323	2.80	1.24	16
Marena	75.2	98	7	47	29	6	311	1.85	1.39	28
Minco	76.0	99	7	49	29	3	332	1.96	1.61	28
Marshall	74.6	98	7	46	29	7	295	3.63	1.82	16
EAST CENTRAL										
Cookson	75.4	96	7	46	22	4	315	3.37	1.67	20
Eufaula	76.5	96	8	51	30	0	344	1.91	.82	28
Haskell	74.8	97	7	46	22	4	297	2.37	1.89	28
Hectorville	75.6	98	7	50	30	3	322	3.21	1.22	28
Holdenville	76.4	98	7	50	22	2	344	1.71	1.04	28
McAlester	76.5	103	1	46	22	0	345	1.25	.53	19
Okmulgee	73.7	97	7	46	22	7	268	3.52	2.22	28
SOUTHWEST										
Altus	78.1	105	1	48	29	3	398	2.16	1.13	28
Apache	75.5	98	7	48	29	7	320	2.20	1.35	28
Fort Cobb	75.2	99	7	48	29	6	311	2.01	1.59	28
Grandfield	79.0	106	1	51	29	1	421	1.16	.63	28
Hinton	75.2	100	7	49	29	7	312	2.67	1.17	28
Hobart	77.1	102	7	48	29	6	368	2.79	1.40	16
SOUTH CENTRAL										
Ada	76.7	100	7	45	22	5	357	.93	.65	28
Ardmore	78.4	103	1	51	22	0	403	1.17	.82	28
Burneyville	78.4	105	1	45	30	0	401	1.70	.94	28
Byars	76.7	98	7	50	29	3	353	1.26	.90	28
Centrahoma	77.0	104	1	47	22	0	361	1.43	.66	28
Durant	79.0	104	1	53	30	0	421	2.43	.95	28
Fittstown	76.6	102	1	50	22	0	349	1.10	.90	28
Ketchum Ranch	78.0	103	1	49	29	2	394	2.93	1.93	20
Lane	78.2	105	1	49	22	0	397	2.30	1.21	28
SOUTHEAST										
Antlers	77.0	102	1	45	22	1	361	3.87	2.79	28
Antlers	*****	***	***	***	***	****	****	*****	*****	***
Broken Bow	76.3	100	1	48	22	0	340	3.88	2.03	20
Clayton	77.1	102	1	44	22	1	364	2.26	1.38	28
Cloudy	77.2	100	1	51	22	0	365	4.08	1.65	28
Hugo	78.5	101	1	51	22	0	406	2.85	1.90	28

NAME	MEAN TEMP	HIGH TEMP	HIGH DAY	LOW TEMP	LOW DAY	HDD	CDD	TOT PPT	HIGH 24-HR	HIGH DAY
Goodwell	72.8	98	4	42	30	11	245	1.95	.58	15
Hooker	72.9	101	7	42	29	11	249	3.32	.98	19
Kenton	70.2	97	4	39	28	24	180	6.23	2.12	12
Slapout	73.9	99	7	46	30	8	274	1.79	.91	27
May Ranch	74.7	100	7	48	30	5	296	2.52	1.19	13
Medford	74.7	101	7	44	29	9	299	3.45	2.21	28
Newkirk	73.4	96	7	47	29	7	260	3.31	1.52	16
Red Rock	74.6	100	7	46	29	8	294	2.82	1.32	28
Seiling	74.1	100	7	44	29	****	****	3.79	3.03	28
Woodward	74.9	101	7	45	29	12	309	3.22	1.58	19
Nowata	71.7	97	8	45	22	20	222	2.96	1.27	28
Pawnee	74.7	98	7	45	29	11	301	2.50	1.70	28
Porter	75.8	98	7	48	22	1	325	1.95	1.47	28
Pryor	72.7	96	8	44	22	14	245	2.05	1.28	28
Skiatook	74.4	97	7	49	29	8	291	2.56	1.80	28
Vinita	71.7	95	8	47	29	17	218	4.02	2.11	16
Wynona	73.6	98	7	46	30	11	270	5.73	2.88	16
Putnam	75.4	99	7	48	29	6	319	1.77	1.11	28
Retrop	76.3	100	7	50	29	4	344	1.73	1.10	28
Watonga	75.9	101	7	51	30	5	330	3.25	1.38	28
Weatherford	76.3	102	7	52	29	4	343	3.73	1.36	28
Ninnekah	76.3	100	7	47	29	4	342	1.44	1.10	28
Norman	76.0	98	7	47	29	5	337	2.39	1.39	28
Oilton	73.8	99	7	43	29	19	283	2.69	1.35	28
OKC East	75.7	98	7	46	29	6	327	1.98	1.49	28
OKC North	76.3	97	7	49	29	3	342	2.64	1.46	28
OKC West	76.6	97	7	48	29	5	353	2.72	1.30	28
Okemah	75.3	98	7	48	30	3	311	1.55	.81	28
Perkins	75.7	99	7	47	29	5	325	1.93	1.54	28
Shawnee	76.0	98	7	49	29	4	335	2.01	1.13	28
Spencer	75.4	96	7	48	29	6	319	2.96	1.87	28
Stillwater	75.2	99	7	46	22	7	312	1.69	1.35	28
Washington	76.0	101	7	47	30	2	333	2.71	1.69	28
Sallisaw	76.5	98	1	47	22	1	347	1.11	.84	28
Stigler	75.0	97	1	44	22	3	303	1.50	1.05	28
Stuart	77.0	100	1	48	22	0	361	1.17	.71	28
Tahlequah	74.9	97	7	47	22	4	300	3.21	1.74	19
Webbers Falls	75.9	96	7	50	22	1	327	2.02	1.09	28
Westville	74.7	95	7	48	22	3	296	4.09	1.38	19
Hollis	77.7	101	7	46	29	3	383	.55	.33	28
Mangum	76.4	102	7	47	29	6	349	2.71	1.16	28
Medicine Park	77.5	99	7	51	29	1	377	1.69	.71	16
Tipton	78.4	104	1	50	29	3	406	2.31	1.13	17
Walters	*****	***	***	***	***	****	****	*****	*****	***
Madill	78.8	105	1	49	22	0	414	1.00	.65	28
Newport	79.0	106	1	52	29	0	421	1.50	.92	28
Pauls Valley	77.6	101	1	50	22	1	379	1.86	.86	28
Ringling	79.1	106	1	51	29	0	424	2.78	1.06	19
Sulphur	77.2	102	1	49	25	1	369	.96	.82	28
Tishomingo	77.4	104	1	49	30	0	371	.74	.49	28
Vanoss	*****	***	***	***	***	****	****	*****	*****	***
Waurika	*****	***	***	***	***	****	****	3.28	2.36	20
Idabel	77.7	102	1	52	22	0	381	4.53	1.71	20
Mt Herman	77.0	98	1	49	22	0	359	2.74	1.54	20
Talihina	75.4	100	1	43	22	3	316	3.33	1.59	28
Wilburton	77.0	103	1	47	22	1	360	*****	*****	***
Wister	74.4	100	1	42	22	5	285	1.76	1.18	28

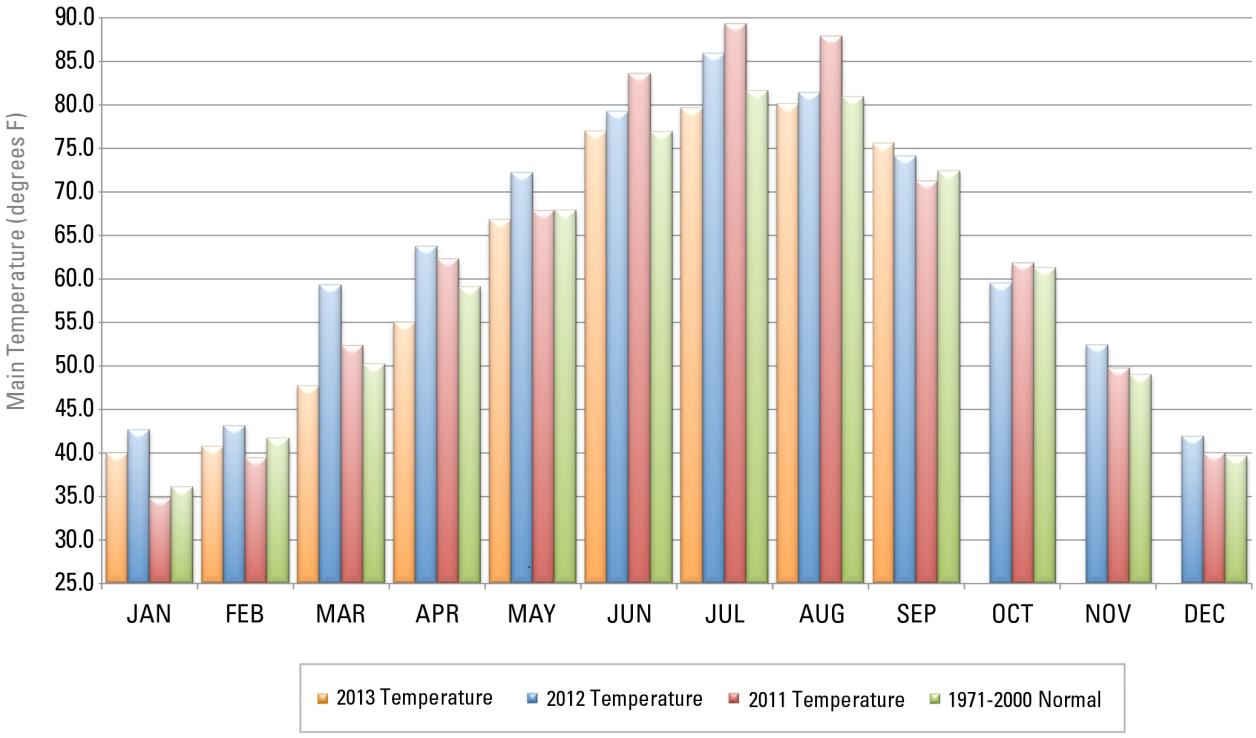
2011, 2012 AND 2013 STATEWIDE PRECIPITATION MONTHLY TOTALS VS. NORMAL



September 2013 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	Sep-12
Panhandle	2.95	1.07	13th Wettest	4.57 (1985)	0.05 (1956)	2.20
North Central	2.83	-0.30	51st Wettest	7.08 (1945)	0.04 (2000)	1.77
Northeast	3.03	-1.75	50th Driest	12.42 (1986)	0.13 (1948)	2.24
West Central	3.10	0.07	37th Wettest	8.64 (1986)	0.02 (2000)	3.45
Central	2.37	-1.74	44th Driest	10.68 (1945)	0.19 (1956)	3.25
East Central	2.34	-2.62	34th Driest	10.40 (1970)	0.23 (1948)	5.02
Southwest	2.05	-1.34	49th Driest	8.68 (1936)	0.00 (1898)	3.28
South Central	1.71	-2.63	27th Driest	9.98 (1936)	0.00 (1909)	3.35
Southeast	3.26	-1.31	57th Driest	11.75 (1974)	0.29 (1948)	2.41
Statewide	2.60	-1.21	51st Driest	7.86 (1945)	0.27 (1956)	2.97

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



September 2013 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	Sep-12 (F)
Panhandle	73.0	3.6	13th Warmest	76.2 (1931)	62.4 (1974)	71.6
North Central	74.4	2.3	28th Warmest	80.8 (1931)	64.0 (1974)	73.2
Northeast	73.5	1.8	37th Warmest	79.1 (1931)	63.4 (1974)	74.2
West Central	75.6	3.7	17th Warmest	80.4 (1931)	64.4 (1974)	74.0
Central	75.4	2.6	24th Warmest	81.3 (1931)	65.0 (1974)	75.0
East Central	75.6	2.9	26th Warmest	80.5 (1939)	65.1 (1974)	75.7
Southwest	77.1	3.4	15th Warmest	81.2 (1931)	66.4 (1974)	75.6
South Central	77.9	3.8	16th Warmest	81.3 (1998)	66.3 (1974)	75.9
Southeast	76.8	3.7	23rd Warmest	81.2 (1939)	65.9 (1974)	75.3
Statewide	75.4	3.0	21st Warmest	79.8 (1931)	64.7 (1974)	74.5

MESONET EXTREMES FOR SEPTEMBER 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	102	7th	Buffalo	39	28th	Kenton	6.23	Kenton	2.12	12th	Kenton
North Central	103	7th	Fairview	44	29th	Seiling	4.71	Seiling	3.03	28th	Seiling
Northeast	98	8th	Inola	44	22nd	Pryor	6.52	Burbank	3.52	16th	Burbank
West Central	102	7th	Butler	43	29th	Camargo	4.63	Camargo	2.02	16th	Cheyenne
Central	101	7th	Kingfisher	43	30th	El Reno	3.63	Marshall	1.87	28th	Spencer
East Central	103	1st	McAlester	44	22nd	Stigler	4.09	Westville	2.22	28th	Okmulgee
Southwest	106	1st	Grandfield	46	29th	Hollis	2.79	Hobart	1.59	28th	Fort Cobb
South Central	106	1st	Ringling	45	22nd	Ada	3.28	Waurika	2.36	20th	Waurika
Southeast	103	1st	Wilburton	42	22nd	Wister	4.53	Idabel	2.79	28th	Antlers
Statewide	106	1st	Ringling	39	28th	Kenton	6.52	Burbank	3.52	16th	Burbank

OCTOBER 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.

Temperature

Mean	62.0 degrees
Warmest October	1963, 69.9 degrees
Coolest October	1925 and 2009, 54.4 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

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.

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.

Precipitation

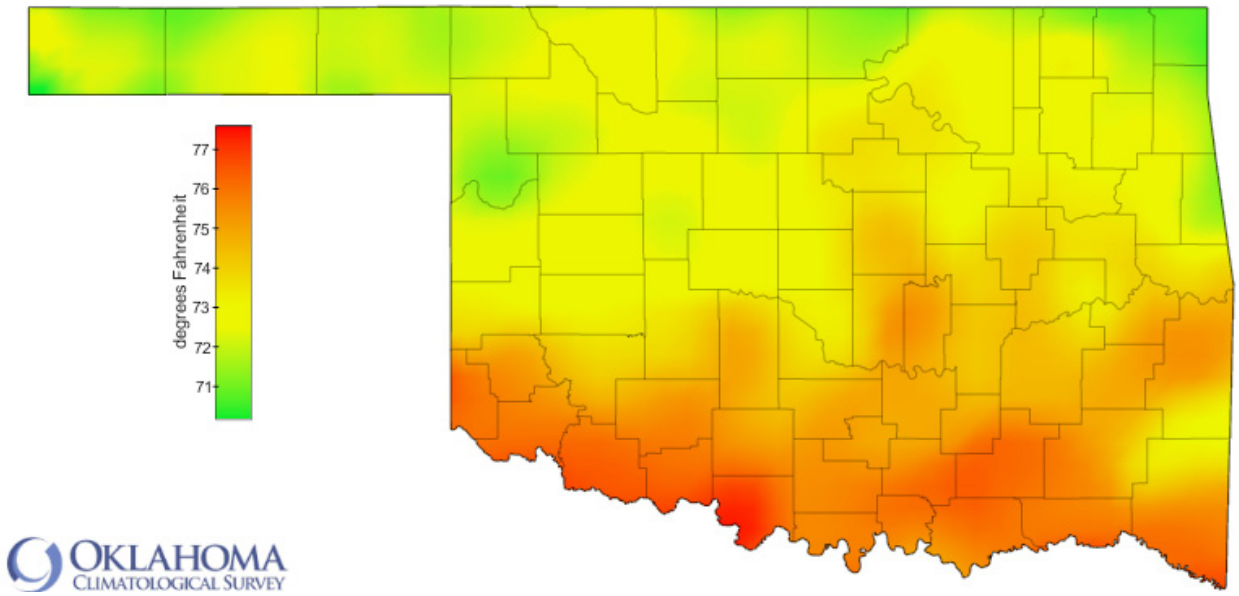
Mean	3.38 inches
Wettest October	1941, 11.32 inches
Driest October	1917, 0.21 inches
Wettest location	Smithville, 6.22 inches
Driest location	Kenton, 0.99 inches
Most recorded	25.80 inches, Madill, 1981

Tornadoes

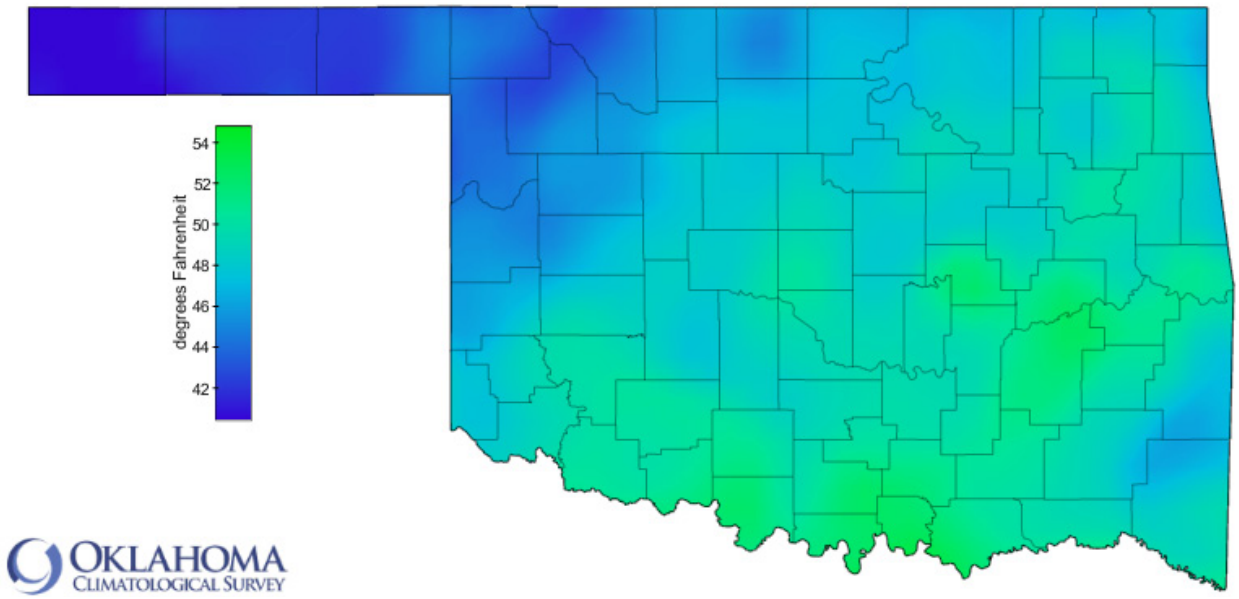
Average October Tornadoes	2.1
Most	27 (1998)

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.

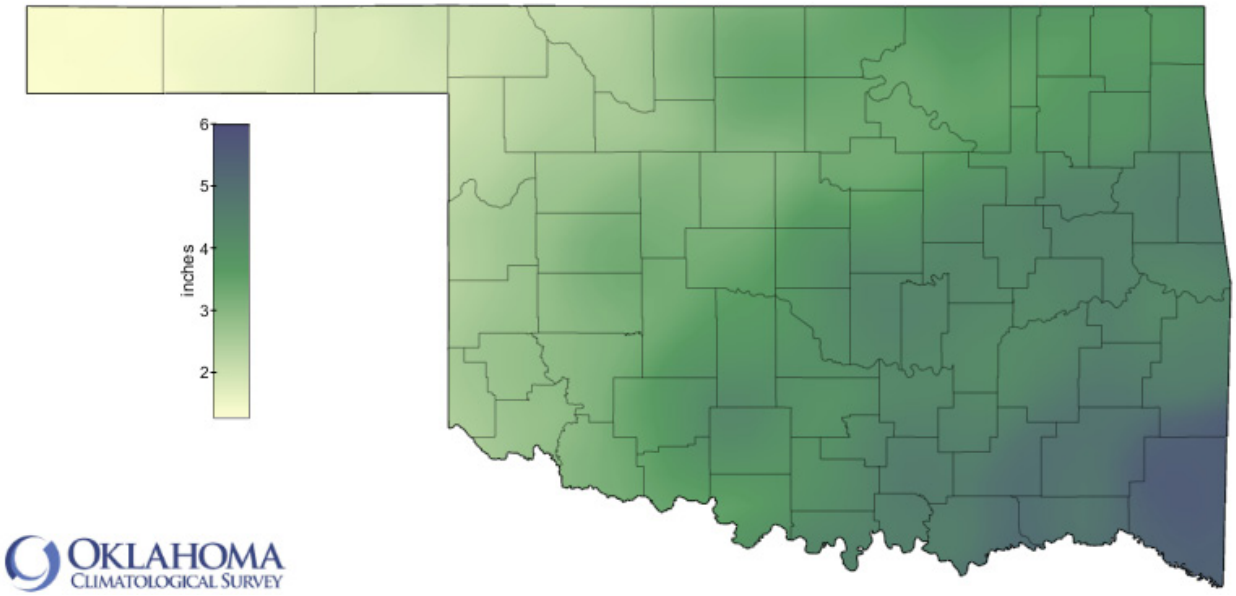
OCTOBER NORMAL DAILY MAXIMUM TEMPERATURE (1981-2010)



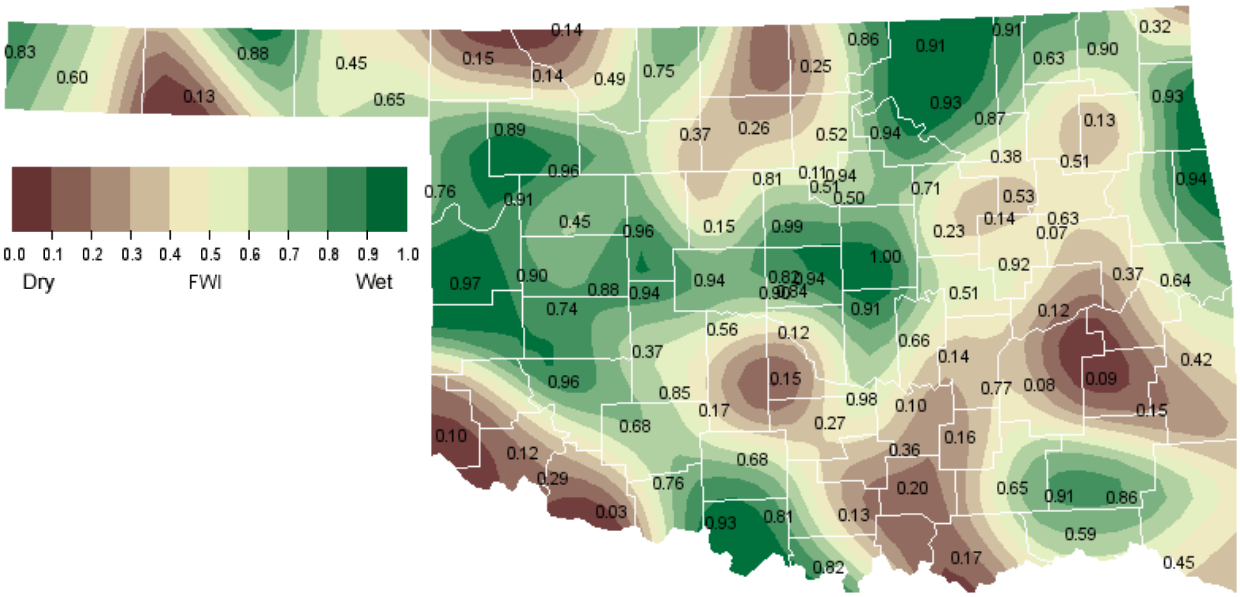
OCTOBER NORMAL DAILY MINIMUM TEMPERATURE (1981-2010)



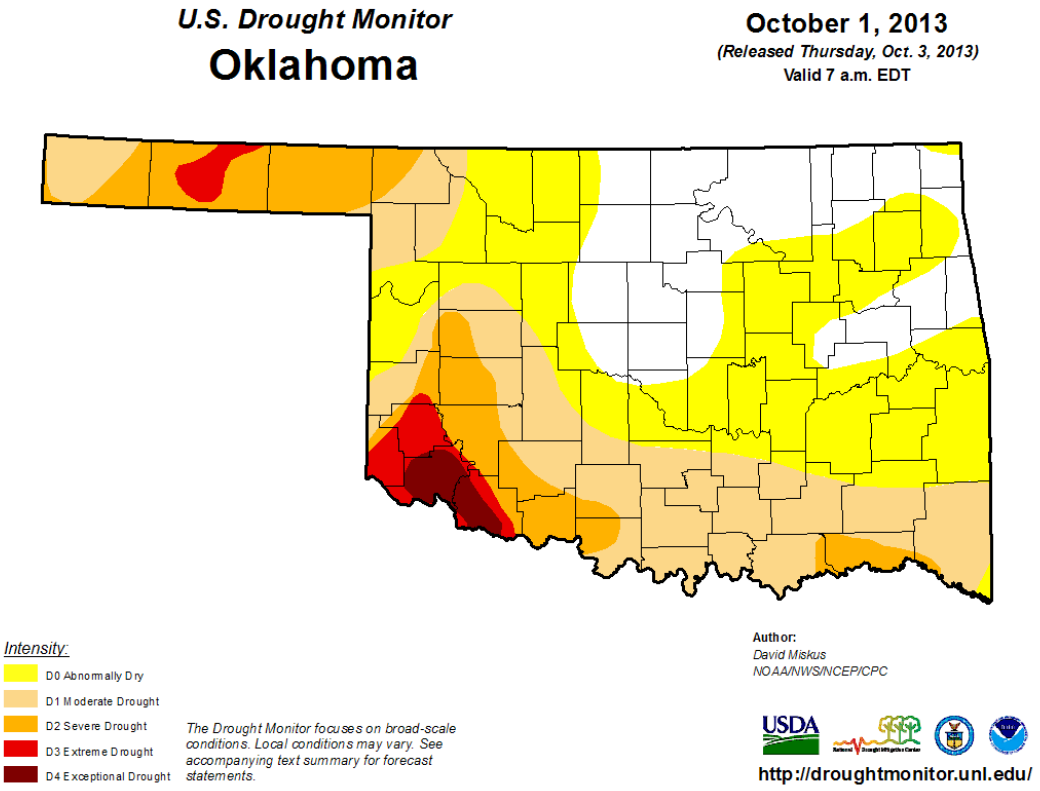
OCTOBER NORMAL PRECIPITATION (1981-2010)

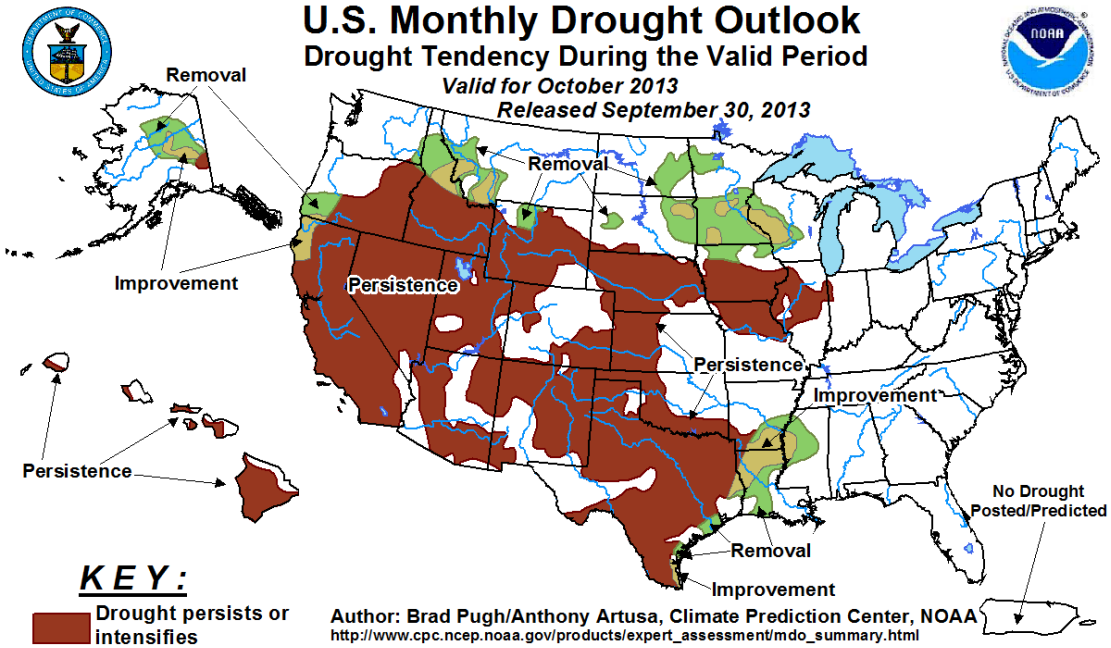


OCTOBER 1, 2013 SOIL MOISTURE CONDITIONS AT 25CM

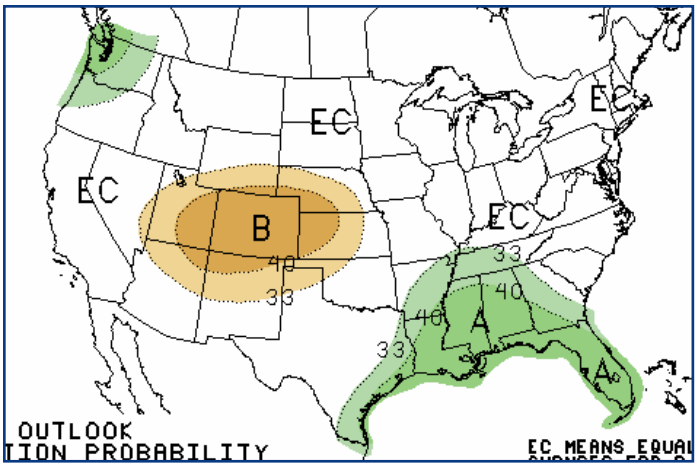


OCTOBER 2013 DROUGHT INDICES





OCTOBER 2013 U.S. PRECIPITATION FORECAST



Percent Likelihood of Above or Below Average Precipitation*

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

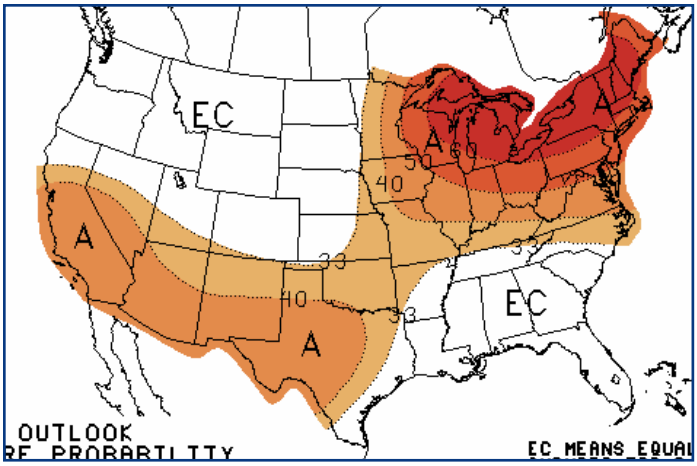
A = Above

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

B = Below

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

OCTOBER 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%

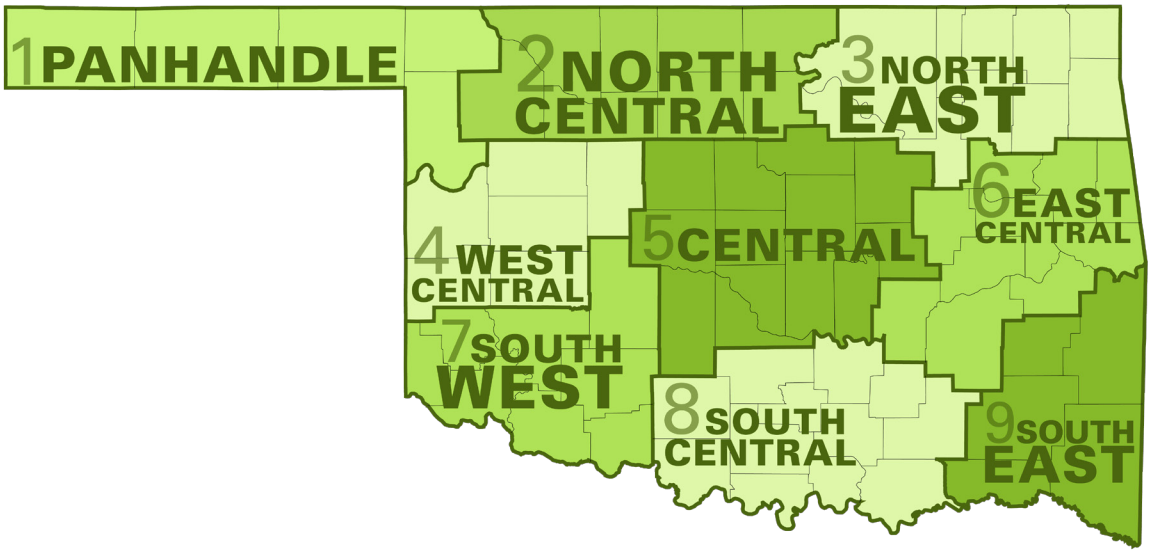
B = Below

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

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 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

Dr. Kevin Kloesel Director
Dr. Renee McPherson State Climatologist

EDITOR
Gary D. McManus Associate State Climatologist

CONTRIBUTORS
Gary D. McManus Associate State Climatologist
Dr. Mark A. Shafer Director of Climate Services
Howard Johnson Associate State Climatologist (Ret.)
Monica Deming Service Climatologist

DESIGN
Ada Shih Graphic Designer
Nicholas Richardson 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