Oklahoma Monthly Climate Summary

SEPTEMBER 2014

OKLAHOMA CLIMATOLOGICAL SURVEY

Hopes were high for much-needed rainfall across Oklahoma after August's disappointing totals. June and July were exceedingly wet, lending optimism that August's step back would be but a brief interruption. Unfortunately, that script did not play out as written and September became yet another dry month in the now four-year-old drought. According to preliminary data from the Oklahoma Mesonet, the statewide average rainfall total was 2.6 inches, 1.3 inches below normal and the 46th driest September since records began in 1895. Of the 48 months since the drought began back in October 2010, 34 have been drier than normal, amounting to a deficit of over 30 inches during that span. Hugo led all Mesonet sites with 8.7 inches of rain during September while Buffalo received a scant 0.3 inches. August and September combined for a statewide average of 3.9 inches, 2.6 inches below normal and the 22nd driest August-September on record in the state. Much of the state had less than 4 inches of rain throughout the two months, with many of the stations across western Oklahoma receiving less than 2 inches. The January-September statewide average reflected the dry start to the year, coming in at 21.7 inches, 6.7 inches below normal and the 18th driest such period on record.

September 2014 Statewide Extremes

Description	Extreme	Station	Day
High Temperature	102°F	Grandfield	2
Low Temperature	40°F	Several	Several
High Precipitation	8.69 in.	Hugo	
Low Precipitation	0.28 in.	Buffalo	

Not surprisingly, temperatures across the state were a bit above normal with the lack of rainfall and accompanying storm systems. The statewide average as measured by the Mesonet was 73.1 degrees, 0.7 degrees above normal and the 63rd warmest September on record. Grandfield led all Mesonet sites with 102 degrees on Sept. 1. The lowest temperature of the month was 40 degrees from several locations on the 12th and 13th. The August-September temperature was also 76.9 degrees and 0.5 degrees above normal. The first nine months of the year were substantially cooler, again a reflection of the chilly winter through early spring as well as the below normal temperatures of June and July. The January-September statewide average temperature was 61.9 degrees, 1.1 degrees below normal and ranked as the 21st coolest such period on record.

September 2014 Statewide Statistics

Temperature

	Average	Depart.	Rank (1895-2014)
Month (September)	73.1°F	0.7°F	59th Coolest
Year-to-Date (Jan-Sept)	61.9°F	-1.1°F	21st Coolest

Precipitation

	Total	Depart.	Rank (1895-2014)
Month (September)	2.55 in.	-1.26 in.	46st Driest
Year-to-Date (Jan-Sept)	21.75 in.	-6.72 in.	18th Driest

Depart. = departure from 30-year normal

The last U.S. Drought Monitor report of the month, released on Sept. 25, gave a clear indication that drought was once again gaining strength. Drought impacts began to worsen across most of western and northern Oklahoma where farm ponds, vegetation and soils showed increasing signs of water stress. By the end of September, more than 49 percent of the state was considered in at least "severe" drought, and 14 percent of that area was in the more significant "extreme" and "exceptional" drought categories. The Drought Monitor's intensity scale slides from moderate-severe-extreme-exceptional, with exceptional being the worst classification. Soil moisture appeared to be critically low across much of the western half of the state according to data from the Oklahoma Mesonet, including the important wheat-producing north central region. The Oklahoma Field Office of the USDA's National Agricultural Statistics Service (NASS) reported 54 percent of the state's topsoil and 77 percent of the subsoil to be in "short" or "very short" condition. Eighty percent of the state's pastures and rangeland were rated from "fair" to "excellent," a benefit of the rains that occurred from late May through July.

SEPTEMBER 2014 DAILY SUMMARIES

SEPTEMBER 1-4: Oklahoma resembled a sauna from the 1st to the 4th with the highest maximum temperatures in the triple digits and showers and thunderstorms passing through the region. The highest state temperatures were 102 degrees in Grandfield on the 1st, 100 degrees in Tipton and Grandfield on the 2nd, 101 degrees in Hooker and Kingfisher on the 3rd, and 101 degrees in Kingfisher on the 4th. The lowest maximum temperatures averaged in the 80s. Minimum temperatures fluctuated from the 50s and low 60s in the panhandle to the upper 70s. Showers and thunderstorms developed along a frontal boundary, with some becoming severe. 2.75 inch hail was reported in Craig County as well as a 73mph wind gust in Foraker and an 80mph wind gust in Bartlesville on the 1st. Despite a brief pause from rain on the 3rd, areas throughout the state measured rainfall totals ranging from trace amounts to 2.08 inches in Foraker on the 1st and 2.86 inches in Chandler on the 2nd. A single isolated reading of .95 inches was measured in Kenton on the 4th. Apart from the severe wind reports in the northeast, peak wind gusts were in the 40s. Daily average wind speeds were less than 19mph on the 1st, less than 16mph on the 2nd, less than 20mph on the 3rd, and less than 21mph on the 4th.

SEPTEMBER 5-7: A cold front moved into the region, causing another slew of showers and thunderstorms. Scattered showers and storms passed over northern Oklahoma on the 5th, extended further south by the 6th to areas north of I-44, and continued mainly throughout central and southern Oklahoma on the 7th. Daily maximum rainfall amounts recorded by the Mesonet were 3.20 inches in Foraker on the 5th, 2.83 inches in Bessie on the 6th, and 3.73 inches in Clayton on the 7th. With cooler air moving into the region, the warmest temperatures dwindled from 98 degrees in central Oklahoma to 85 degrees in Waurika. The lowest maximum temperatures, on the other hand, increased from 64 degrees in Kenton to 77 degrees in Westville and Idabel. Minimum temperatures ranged from 52 degrees each day to the upper 60s and low 70s. Oklahoma City recorded a high of 68 degrees on the 6th which broke its daily low maximum temperature of 71 degrees recorded in 1918. Daily average wind speeds were less than 15mph.

SEPTEMBER 8-9: As skies cleared, temperatures began to rebound. The warmest highs increased to 94 degrees in Waurika on the 8th and 100 degrees in Grandfield on the 9th. The coolest highs were in the mid and upper 80s. Minimum temperatures ranged from 58 degrees in Nowata to 76 degrees at the Oklahoma City North Mesonet station. Average wind speeds were less than 16mph on the 8th and between 5 and 22mph on the 9th.

SEPTEMBER 10-12: Rain returned to the state from its brief hiatus along with an advancing cold front. High maximum temperatures decreased from 100 degrees in the south to 73 degrees in the southeast. Some areas were only able to warm to 75 degrees on the 10th and 55 degrees by the 12th. Minimum temperatures fell from a range of 56 to 78 degrees on Wednesday to a range of 40 to 62 degrees on Friday. With the cooling temperatures, Tulsa managed to break its daily cool maximum temperature record with a high of 62 degrees on the 12th. Showers were fairly heavy as maximum rainfall amounts in the state measured 1.15 inches on the 10th (Webbers Falls), a hefty 4.95 inches on the 11th (Broken Bow), and 3.03 inches on the 12th (Hugo). The large amounts of precipitation caused flash flooding in Eagletown on the 11th. The highest daily average wind speeds for each consecutive day were 17mph, 15mph, and 21mph.

SEPTEMBER 13-14: Similar to the beginning of the week, rain moved out of the region and temperatures started to increase from their record lows. Despite a fairly low temperature of 72 degrees (Kenton) beating all other highs on the 13th, the 14th was much warmer with a high maximum temperature of 88 degrees (Beaver). Lowest maximums were still a rather cool 63 degrees on the 13th and 72 degrees on the 14th. Minimum temperatures ranged from 40 degrees in Newkirk and Blackwell to 61 degrees in Durant. Daily average wind speeds were between 3 and 15mph.

SEPTEMBER 15-18: By the evening of the 15th, another cold front was making its way into northern Oklahoma and Hurricane Odile was gifting the state with additional moisture. The areas hardest hit with showers and thunderstorms were portions of eastern Oklahoma. The top rainfall totals for each day were .86 inches in Burbank on the 15th, .52 inches in Durant on the 16th (most other areas had trace amounts that day), 1.45 inches in Wister on the 17th, and 1.68 inches in Vinita on the 18th. The highest maximum temperature was 91 degrees every day except on the 18th when it hit 96 degrees in Alva, Cherokee, Lahoma, and Medford. The coolest maximums climbed from the 60s to the 80s on the first three days, but fell back down to the 70s by Thursday. The highest minimum temperatures averaged around 70 degrees and the coolest minimums averaged around 55 degrees. Daily average wind speeds were less than 13mph for the majority of the state.

SEPTEMBER 19-20: The highest temperature occurred in Alva on the 19th and 20th at 93 and 94 degrees, respectively. The lowest maximums were 78 degrees in the northeast on the 19th and 84 degrees in Jay and Westville on the 20th. Minimum temperatures ranged from 58 degrees to 72 degrees. Average wind speeds were less than 14mph on Friday and less than 11mph on Saturday. Rainfall amounts were negligible.

SEPTEMBER 21: Mother Nature celebrated the last day of summer with a cold front, scattered showers, and thunderstorms. Rainfall measurements ranged from trace amounts to 1.02 inches in Durant. Arnett had the second

largest amount of precipitation with .67 inches. Highs ranged from 77 degrees in Putnam to 94 degrees in Grandfield and Walters. Lows were between 52 degrees in Oilton and 70 degrees in Grandfield. The maximum peak wind gust reported in the state was 47mph in Ninnekah. Average wind speeds were 2-12mph.

SEPTEMBER 22: The first day of fall was rain-free despite very brief sprinkles in the southwest. Temperatures were mild with highs ranging from 75 degrees (northeast) to 86 degrees (Mangum) and lows ranging from 46 degrees (Oilton) to 65 degrees (Tipton). Average wind speeds were generally calm and less than 10mph. Some areas in the panhandle, however, had average wind speeds around 16mph.

SEPTEMBER 23-24: Albeit relatively light, a trough of low pressure caused rain in a few portions of the state on the 23rd. By the 24th, showers and thunderstorms moved into northern Oklahoma. The highest rainfall amounts measured .33 inches in Beaver on the 23rd and .45 inches in Hollis on the 24th. The warmest maximum temperatures were 91 degrees and 89 degrees in the northwest/panhandle and the lowest maximums were in the mid-upper 70s. Minimum temperatures were between 44 degrees in Talihina and 64 degrees in Bessie. Winds averaged between 3-18mph on the 23rd and were less than 14mph on the 24th.

SEPTEMBER 25-28: Weather conditions remained fairly constant and mild as Oklahoma took an extended four-day hiatus from the rain. The highest maximum temperature was 89 degrees each day, except for on the 26th when it only reached 88 degrees. The lowest maximums fluctuated between 79 degrees and 81 degrees. Lows were between 48 degrees and 65 degrees. Average wind speeds were less than 10mph on the 25th, less than 16mph on the 26th, and less than 19mph on the 27th and 28th.

SEPTEMBER 29: Despite the majority of the state remaining clear, showers passed through the panhandle on the 29th and by the evening of the 30th, a cold front had stalled over western Oklahoma. Most areas received less than one-tenth of an inch of rain, however, .73 inches (Boise City) and .61 inches (Kenton) were reported on the 29th and .17 inches (Bessie) was reported on the 30th. Highs ranged from 79 degrees (Kenton) to 89 degrees (Chickasha) on Monday and 74 degrees (Kenton) to 92 degrees (Mangum, Tipton, and Grandfield) on Tuesday. Lows were between the upper 40s and mid-60s. Daily average wind speeds were generally less than 17mph on both days.

SEPTEMBER 2014 SEVERE WEATHER

Hail (2 inches in diameter or greater)

Size (in.)	Location	County	Day
2.75	7 NW Welch	Craig	1
2.75	7 NW Hollow	Craig	1

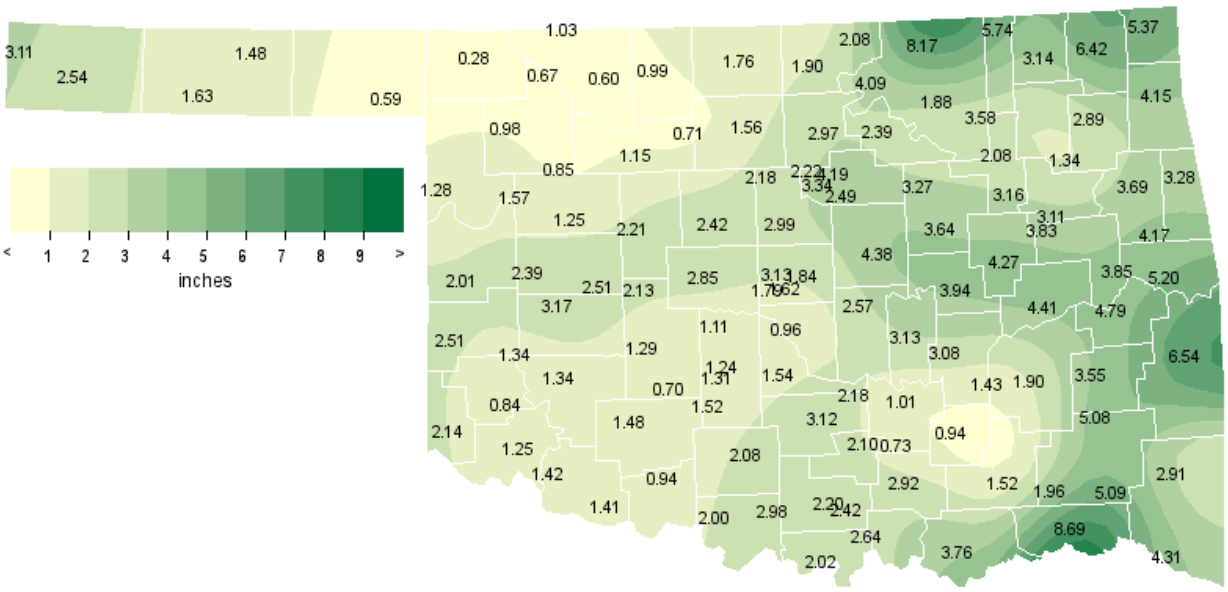
Wind Gusts (70 mph or greater)

Speed (m.p.h)	Location	County	Day
73	8 ESE Foraker	Osage	1
80	Bartlesville	Washington	1

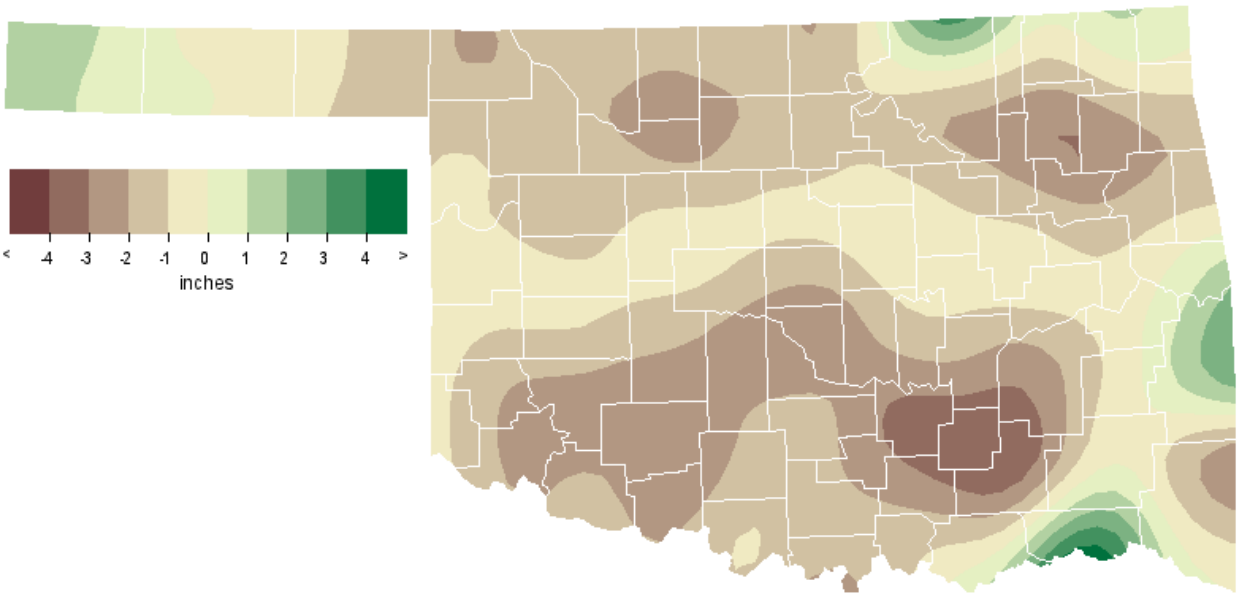
Flooding

Location	County	Day
Eagletown	McCurtain	11

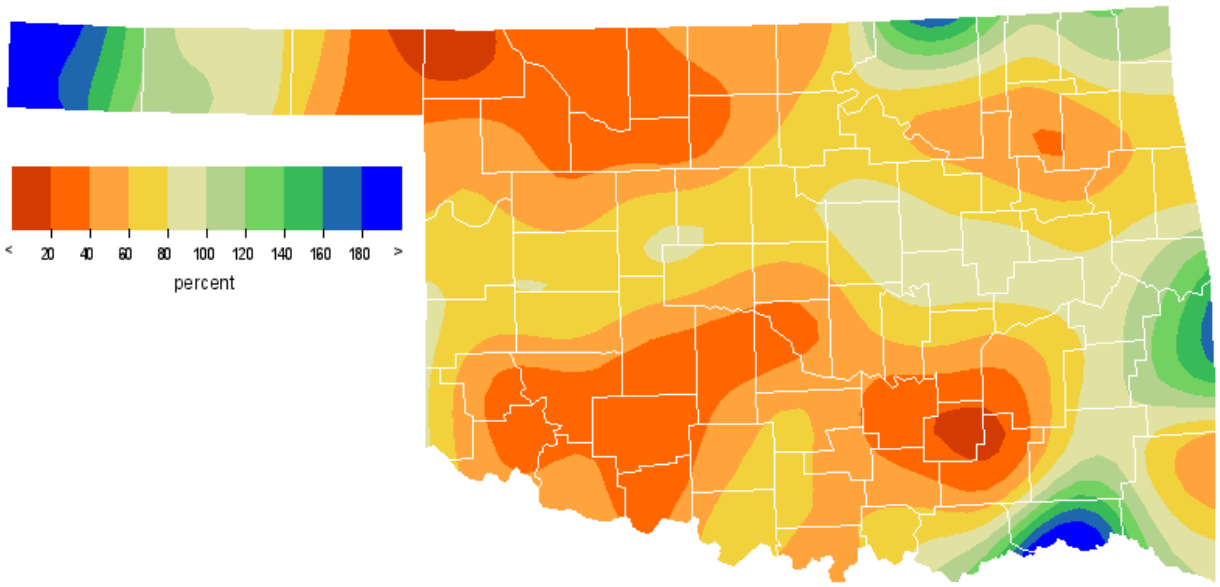
SEPTEMBER 2014 OBSERVED PRECIPITATION



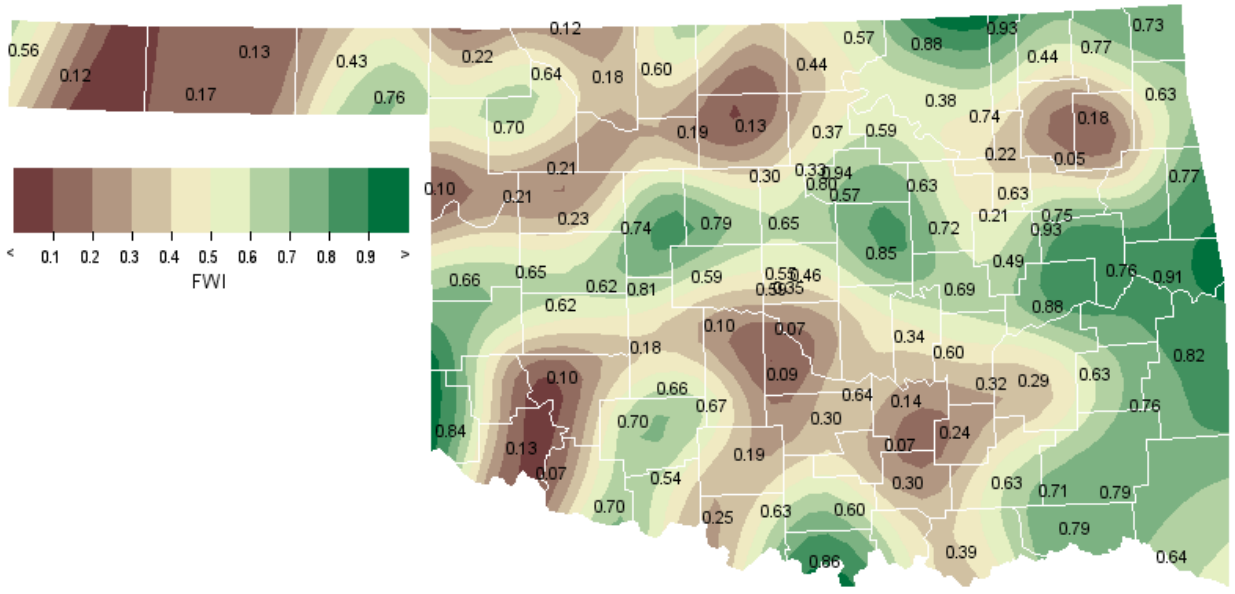
SEPTEMBER 2014 DEPARTURE FROM NORMAL PRECIPITATION



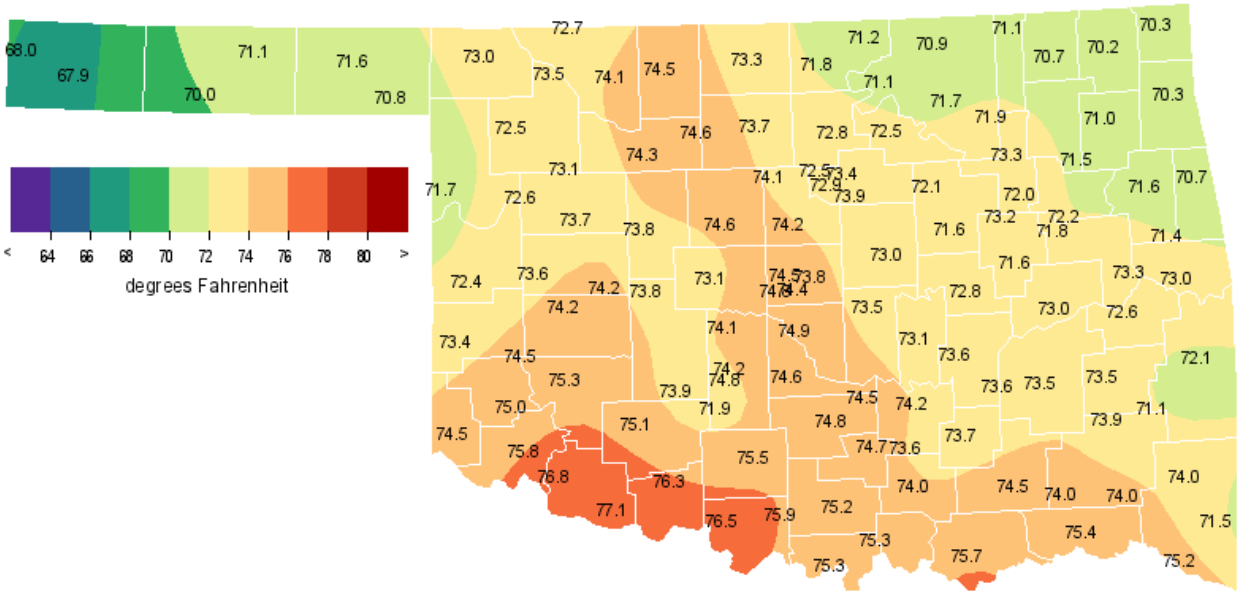
SEPTEMBER 2014 PERCENT OF NORMAL PRECIPITATION



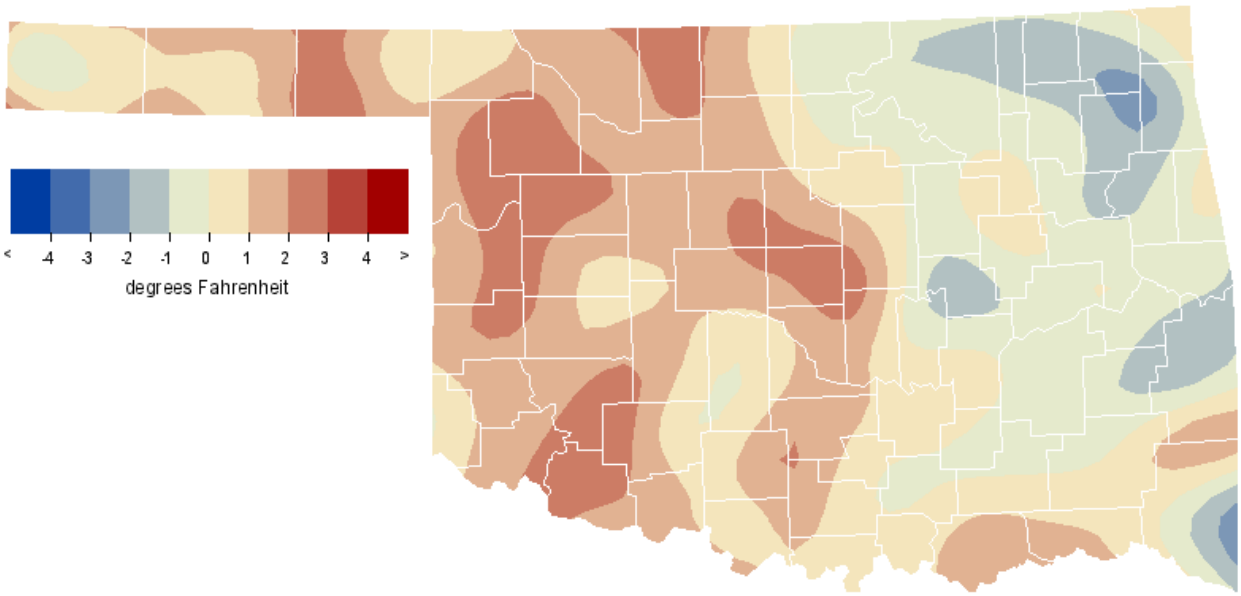
SEPTEMBER 2014 AVERAGE SOIL MOISTURE AT 25CM



SEPTEMBER 2014 AVERAGE TEMPERATURE



SEPTEMBER 2014 DEPARTURE FROM NORMAL TEMPERATURE

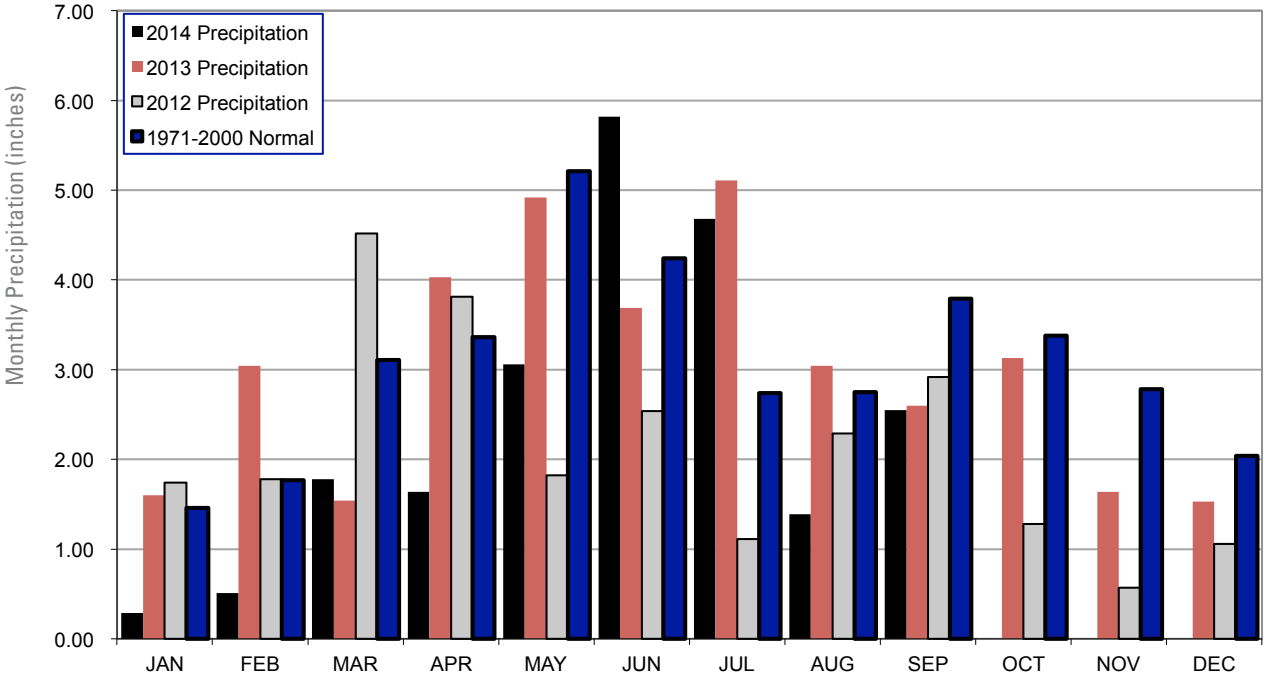


MESONET MONTHLY SUMMARY FOR SEPTEMBER 2014

NAME	MEAN TEMP	HIGH TEMP	HIGH DAY	LOW TEMP	LOW DAY	HDD	CDD	TOT PPT	HIGH 24-HR	HIGH DAY
PANHANDLE										
Arnett	71.7	97	2	47	13	21	221	1.28	.67	21
Beaver	71.6	99	9	43	13	30	227	*****	.33	5
Boise City	67.9	97	3	40	12	42	130	2.54	1.56	5
Buffalo	73.0	98	3	47	12	20	259	.28	.22	5
NORTH CENTRAL										
Alva	74.0	100	3	50	13	15	286	.60	.28	5
Blackwell	71.9	96	4	40	13	24	230	1.90	.75	2
Breckinridge	73.6	98	4	44	13	18	276	1.56	.48	6
Cherokee	74.6	98	9	48	13	15	301	.99	.63	2
Fairview	74.4	100	1	50	13	13	294	1.15	.79	5
Freedom	73.5	100	3	48	13	17	273	.67	.59	5
Lahoma	74.6	100	3	47	13	15	302	.71	.41	6
NORTHEAST										
Bixby	72.0	94	5	50	14	17	226	3.16	1.53	2
Burbank	71.0	95	4	43	13	26	206	4.09	1.27	5
Copan	71.1	94	4	47	13	24	208	5.74	2.44	2
Foraker	70.8	94	4	42	13	29	204	8.17	3.20	5
Inola	71.5	94	5	48	14	17	212	1.34	.55	18
Jay	70.3	91	5	48	14	26	186	4.15	1.76	2
Miami	70.3	92	4	48	14	24	185	5.37	2.12	2
Nowata	70.7	96	5	46	14	23	194	3.14	1.19	2
WEST CENTRAL										
Bessie	74.2	99	1	50	13	13	289	3.17	2.83	6
Butler	73.6	101	1	50	13	15	271	2.39	2.08	6
Camargo	72.6	99	3	48	26	17	244	1.57	.61	5
Cheyenne	72.3	98	1	48	13	25	245	2.01	1.53	6
Erick	73.4	101	1	50	13	17	268	2.51	2.17	6
CENTRAL										
Acme	74.4	96	1	47	13	****	****	1.52	1.26	6
Bowlegs	73.1	96	4	49	25	14	258	3.13	.98	6
Bristow	71.5	96	1	46	23	24	220	3.64	2.22	2
Lake Carl Blac	72.5	96	4	47	22	19	245	2.22	1.20	6
Chandler	72.9	97	1	49	13	18	255	4.38	2.86	2
Chickasha	74.3	97	1	49	13	12	290	1.24	.99	6
El Reno	73.2	97	1	48	13	18	263	2.85	2.08	6
Guthrie	74.2	99	3	49	13	16	293	2.99	2.12	6
Kingfisher	74.6	101	4	51	13	14	302	2.42	1.51	6
Marena	72.9	97	1	48	13	17	255	3.34	1.70	6
Minco	74.0	96	1	48	13	16	287	1.11	.65	6
Marshall	74.1	99	4	49	13	17	290	2.18	1.23	6
EAST CENTRAL										
Cookson	71.4	93	5	49	24	19	211	4.17	2.11	2
Eufaula	73.0	96	10	51	24	12	253	4.41	1.79	2
Haskell	71.7	93	4	51	14	17	219	3.83	2.07	2
Hectorville	73.1	98	1	51	13	15	260	1.89	1.12	18
Holdenville	73.5	96	10	51	13	14	270	3.08	1.23	12
McAlester	73.5	96	10	49	24	10	266	1.90	.84	12
Okmulgee	71.6	95	4	48	23	20	218	4.27	2.41	2
SOUTHWEST										
Altus	75.8	101	1	51	13	9	331	1.25	.72	6
Apache	73.9	97	1	47	13	17	283	.70	.36	6
Fort Cobb	*****	***	***	***	***	****	****	1.29	1.06	6
Grandfield	77.1	102	1	51	13	9	371	1.41	.83	12
Hinton	73.7	97	1	49	13	16	278	2.13	1.99	6
Hobart	75.3	100	1	49	13	12	322	1.34	.98	6
SOUTH CENTRAL										
Ada	74.1	98	10	49	23	12	286	1.01	.61	12
Ardmore	73.9	99	10	53	24	****	****	2.42	1.32	12
Burneyville	75.3	100	10	48	25	6	314	2.02	1.57	12
Byars	74.4	97	4	51	13	13	295	2.18	1.09	6
Centrahoma	73.7	98	10	46	24	11	271	.94	.63	12
Durant	75.7	99	10	53	24	7	328	3.76	1.60	12
Fittstown	73.5	98	10	50	25	12	268	.73	.30	12
Ketchum Ranch	75.5	98	4	51	13	10	324	2.08	1.02	12
SOUTHEAST										
Antlers	74.0	95	10	45	24	8	277	1.96	.99	12
Broken Bow	74.0	94	5	47	24	****	****	5.46	4.95	11
Clayton	73.9	97	5	48	24	7	274	5.08	3.73	7
Cloudy	74.0	95	5	49	24	5	275	5.09	2.37	11
Hugo	75.4	95	5	52	24	3	314	8.69	3.70	7

NAME	MEAN TEMP	HIGH TEMP	HIGH DAY	LOW TEMP	LOW DAY	HDD	CDD	TOT PPT	HIGH 24-HR	HIGH DAY
Goodwell	69.9	100	3	42	12	33	181	1.63	.89	5
Hooker	71.1	101	3	42	12	30	215	1.48	.85	5
Kenton	68.0	97	3	41	12	43	132	3.11	1.19	5
Slapout	70.8	96	9	44	12	28	203	.59	.32	5
May Ranch	72.7	96	3	47	13	20	252	1.03	.69	2
Medford	73.3	98	4	45	13	18	269	1.76	.41	2
Newkirk	71.2	94	4	40	13	26	212	2.08	.60	5
Red Rock	72.8	97	4	48	12	19	252	2.97	.91	2
Seiling	73.1	98	3	49	26	14	256	.85	.35	21
Woodward	72.5	95	3	47	13	21	245	.98	.76	5
Pawnee	72.4	96	5	48	13	21	243	2.39	1.02	6
Porter	72.2	93	4	51	14	15	231	3.11	1.20	2
Pryor	70.9	93	5	47	23	20	196	2.89	1.01	18
Skiatook	71.9	95	1	49	14	20	226	3.58	1.13	5
Tulsa	73.3	96	1	51	13	14	263	2.08	1.13	2
Vinita	70.2	93	4	47	14	25	180	6.42	2.80	2
Wynona	71.7	95	5	47	13	23	224	1.88	.63	2
Putnam	73.6	100	1	49	13	17	276	1.25	.84	6
Retrop	74.6	99	1	51	13	16	303	1.34	1.21	6
Watonga	73.8	98	1	49	13	18	281	2.21	1.70	6
Weatherford	74.2	98	1	50	13	15	292	2.51	2.12	6
Ninnekah	74.8	97	1	48	13	13	307	1.31	1.06	6
Norman	74.9	98	4	48	13	16	312	.96	.62	6
Oilton	72.2	98	1	46	22	22	237	3.27	1.48	2
OKC East	74.3	97	3	48	13	17	297	1.62	1.17	6
OKC North	74.5	97	1	49	13	17	303	3.13	1.71	6
OKC West	74.7	97	1	49	13	16	308	1.79	1.33	6
Okemah	72.7	97	1	51	13	15	246	3.94	2.36	2
Perkins	73.9	98	1	48	13	17	283	2.49	1.20	6
Shawnee	73.5	97	1	50	13	16	270	2.57	1.78	6
Spencer	73.8	96	4	47	13	20	282	1.84	1.29	6
Stillwater	73.4	97	1	50	13	16	269	4.19	2.30	6
Washington	74.6	100	4	50	13	12	300	1.54	1.17	6
Sallisaw	73.1	95	10	52	22	8	252	5.20	2.12	11
Stigler	72.6	96	10	49	24	11	240	4.79	1.86	11
Stuart	73.6	98	10	49	24	13	271	1.43	.76	12
Tahlequah	71.6	92	5	48	24	17	217	3.69	1.57	2
Webbers Falls	73.3	97	10	49	24	8	259	3.85	1.15	10
Westville	70.7	91	4	49	24	20	192	3.28	1.81	2
Hollis	74.5	101	1	52	13	12	297	2.14	1.24	6
Mangum	75.0	100	1	50	26	10	309	.84	.75	6
Medicine Park	75.0	97	1	48	13	16	317	1.48	1.32	6
Tipton	76.8	101	1	51	13	9	363	1.42	.95	6
Walters	76.3	100	1	51	13	10	348	.94	.44	12
Lane	74.4	98	10	47	24	7	290	1.52	1.14	12
Madill	75.2	99	10	53	23	8	315	2.64	1.46	12
Newport	75.2	99	10	52	23	8	315	2.20	1.10	12
Pauls Valley	74.8	98	4	52	13	11	305	3.12	2.30	6
Ringling	75.9	99	10	53	13	8	335	2.98	.96	17
Sulphur	74.7	98	10	51	13	10	302	2.10	1.21	18
Tishomingo	74.0	97	10	49	24	10	279	2.92	1.41	7
Waurika	76.6	100	10	53	13	7	354	2.00	.76	12
Idabel	75.2	96	5	48	24	2	308	4.31	2.70	12
Mt Herman	74.1	93	5	51	24	6	277	2.91	.89	12
Talihina	73.6	97	5	44	24	****	****	4.64	2.39	7
Wilburton	73.5	96	5	51	24	9	263	3.55	1.10	7
Wister	72.2	94	10	45	24	13	228	6.54	2.59	11

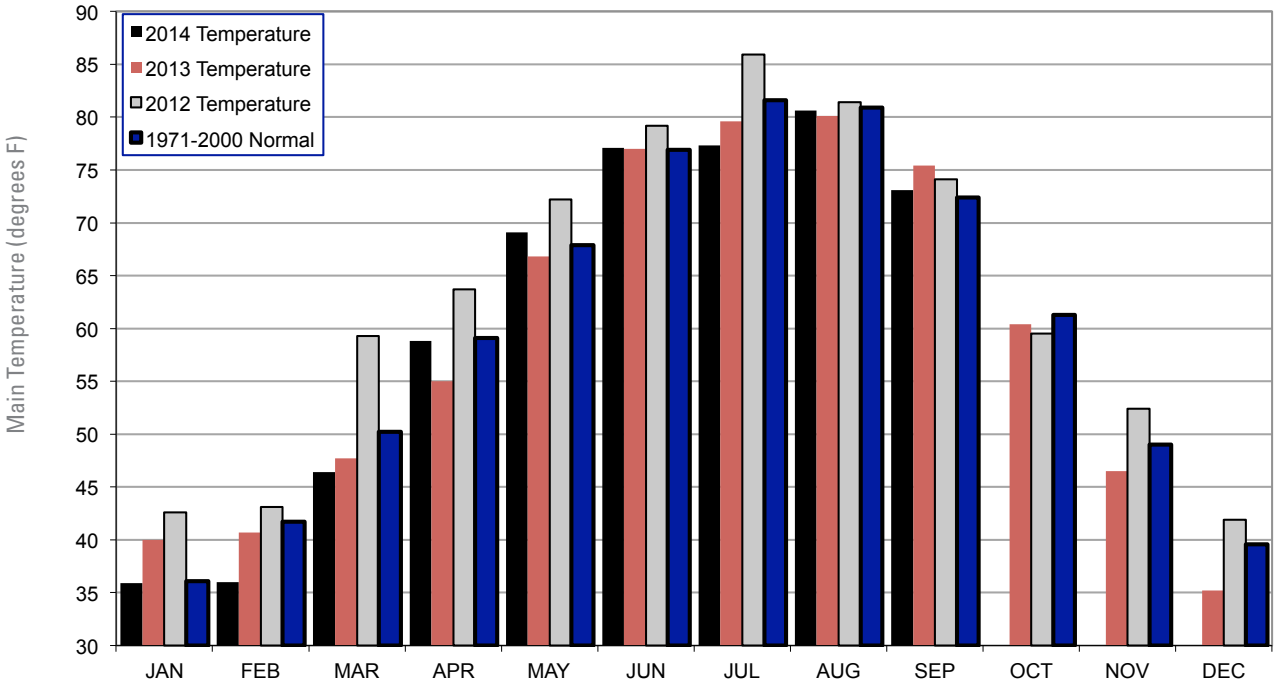
2012, 2013 AND 2014 STATEWIDE PRECIPITATION MONTHLY TOTALS VS. NORMAL



September 2014 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	
Panhandle	1.56	-0.32	52nd Driest	5.03 (1925)	0.04 (1956)	2.83
North Central	1.33	-1.80	22nd Driest	7.43 (1923)	0.07 (2000)	2.86
Northeast	3.83	-0.95	60th Driest	12.12 (1986)	0.29 (1948)	2.93
West Central	2.11	-0.92	53rd Driest	8.68 (1923)	0.06 (1956)	2.62
Central	2.49	-1.62	47th Driest	9.81 (1945)	0.21 (1956)	2.46
East Central	3.66	-1.30	55th Driest	10.16 (1993)	0.24 (1948)	2.26
Southwest	1.36	-2.03	26th Driest	8.48 (1936)	0.04 (1939)	2.34
South Central	2.16	-2.18	42nd Driest	9.69 (1936)	0.13 (1956)	1.90
Southeast	4.77	0.20	38th Wettest	11.97 (1974)	0.57 (1931)	3.12
Statewide	2.55	-1.26	46th Driest	7.77 (1945)	0.25 (1956)	2.58

2012, 2013 AND 2014 STATEWIDE TEMPERATURE MONTHLY TOTALS VS. NORMAL



September 2014 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	
Panhandle	70.5	1.1	48th Warmest	76.9 (1931)	62.3 (1974)	73.0
North Central	73.2	1.1	46th Warmest	80.7 (1931)	63.6 (1974)	74.8
Northeast	71.4	-0.3	43rd Coolest	79.8 (1939)	63.9 (1974)	74.6
West Central	73.6	1.7	40th Warmest	80.2 (1931)	64.5 (1974)	75.2
Central	73.6	0.8	56th Coolest	81.7 (1931)	64.9 (1974)	76.2
East Central	72.5	-0.2	43rd Coolest	81.8 (1939)	65.1 (1974)	76.2
Southwest	75.4	1.7	45th Warmest	81.6 (1931)	66.2 (1974)	77.5
South Central	74.9	0.8	55th Coolest	81.8 (1939)	66.6 (1974)	78.3
Southeast	73.5	0.4	57th Coolest	81.1 (1939)	65.8 (1974)	76.8
Statewide	73.1	0.7	59th Coolest	80.2 (1931)	64.7 (1974)	75.8

RECORD EVENT REPORTS SEPTEMBER 2014

Description	Day	Location	Record	Previous Record	Year
Daily cool maximum temperature	6	Oklahoma City	68	71	1918
Daily cool maximum temperature	12	Tulsa	62	68	1989

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.

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.

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

Precipitation

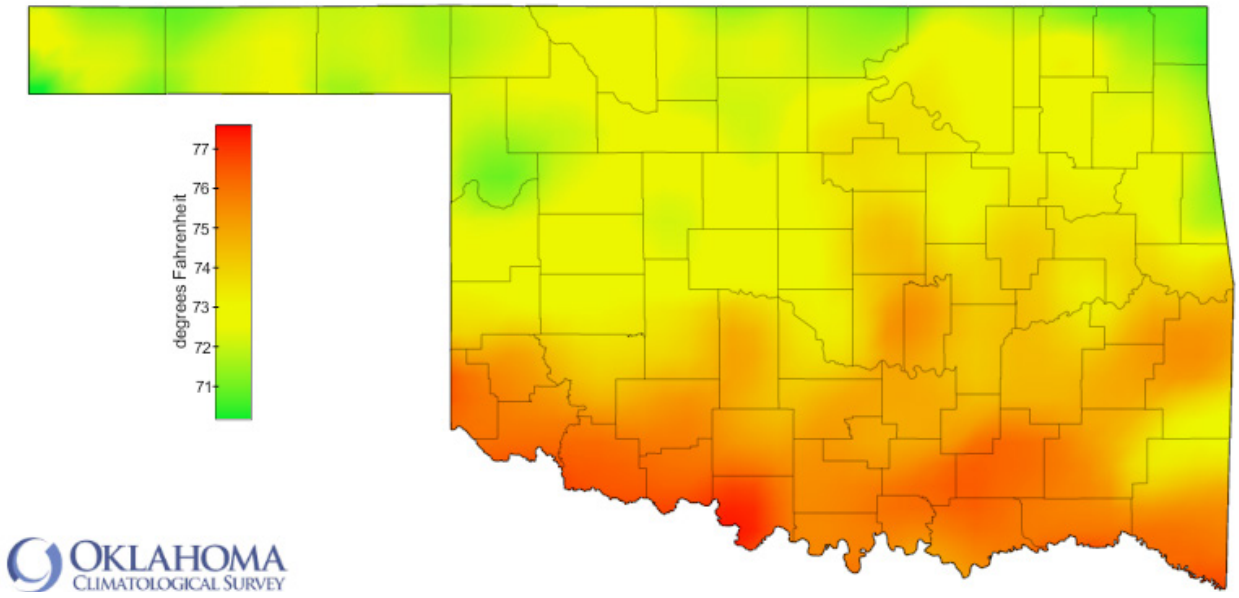
Mean	3.38 inches
Wettest October	1941, 11.32 inches
Driest October	1917, 0.21 inches
Wettest location	Smithville, 6.22 inches
Driest location	Kenton, 0.99 inches
Most recorded	25.80 inches, Madill, 1981

Tornadoes

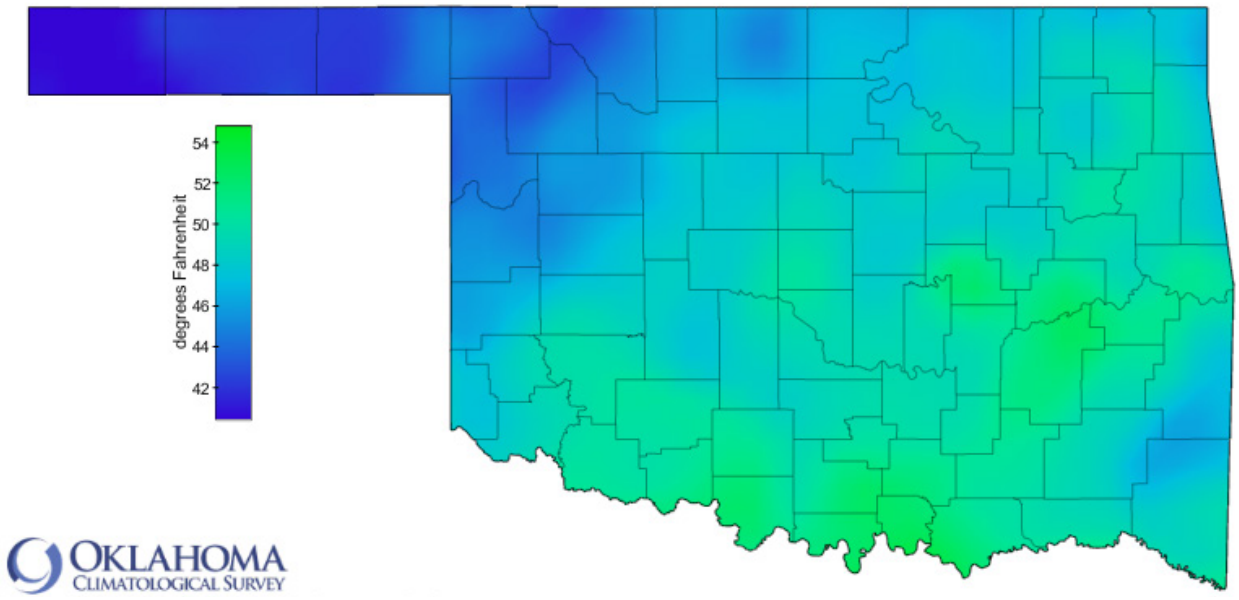
Average October Tornadoes (1950-2013)	2.1
Most	27 (1998)

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.

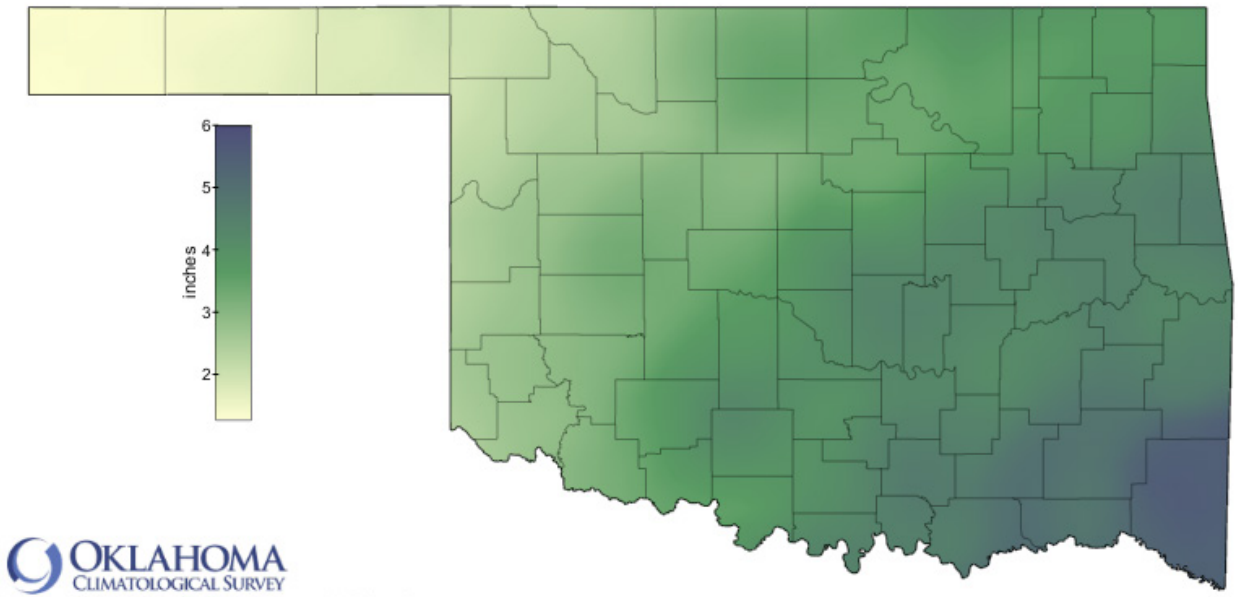
OCTOBER NORMAL DAILY MAXIMUM TEMPERATURE (1981-2010)



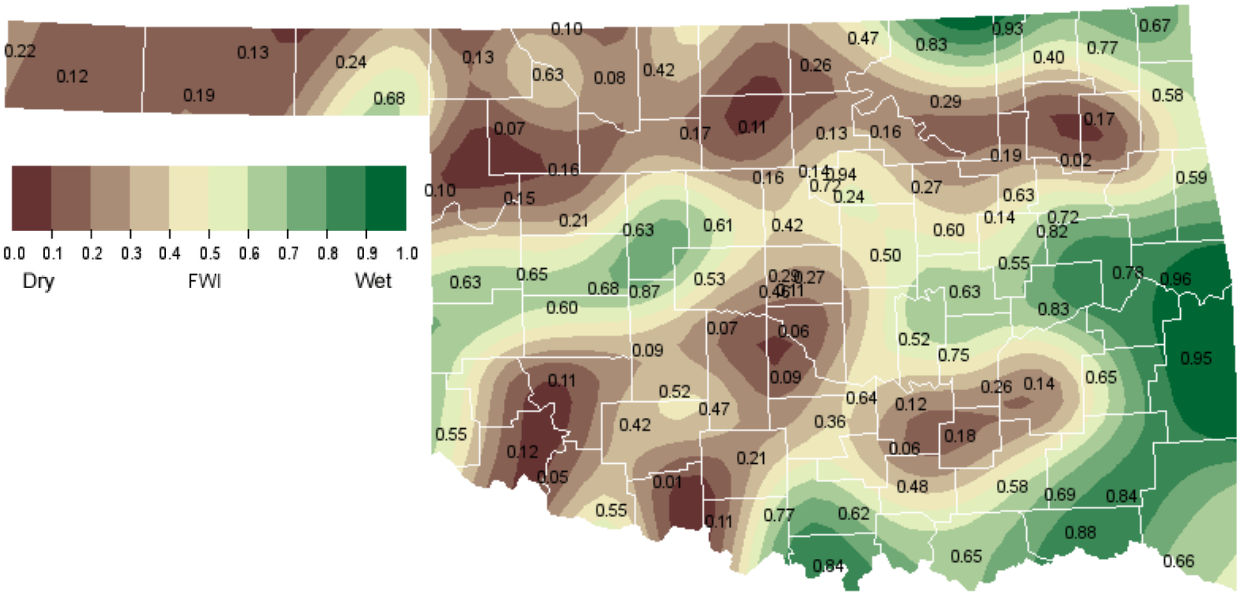
OCTOBER NORMAL DAILY MINIMUM TEMPERATURE (1981-2010)



OCTOBER NORMAL PRECIPITATION (1981-2010)

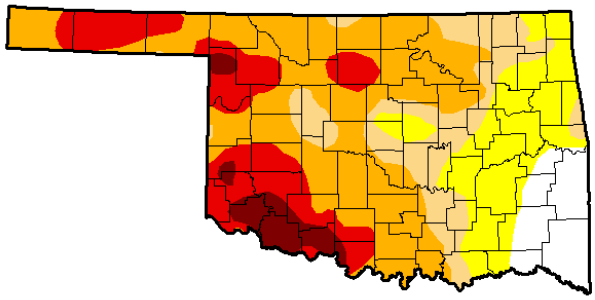


OCTOBER 1, 2014 SOIL MOISTURE CONDITIONS AT 25CM



OCTOBER 2014 DROUGHT INDICES

U.S. Drought Monitor
Oklahoma



September 30, 2014
(Released Thursday, Oct. 2, 2014)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	8.55	91.45	73.31	58.13	20.92	4.64
Last Week 9/23/2014	17.17	82.83	69.10	49.31	13.59	2.25
3 Months Ago 7/1/2014	5.50	94.50	80.12	65.61	30.07	6.67
Start of Calendar Year 12/31/2013	50.84	49.16	38.17	18.99	4.84	2.40
Start of Water Year 10/1/2013	21.74	78.26	43.00	17.62	4.42	1.45
One Year Ago 10/1/2013	21.74	78.26	43.00	17.62	4.42	1.45

Intensity:

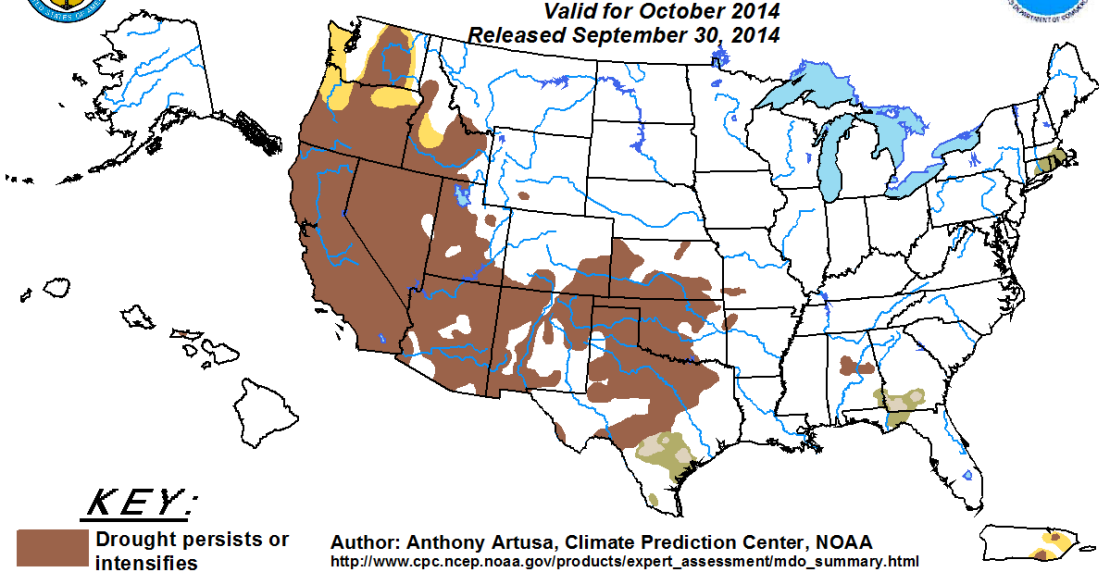
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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

Author:
Richard Heim
NCDC/NOAA

http://droughtmonitor.unl.edu/

U.S. Monthly Drought Outlook
Drought Tendency During the Valid Period
Valid for October 2014
Released September 30, 2014



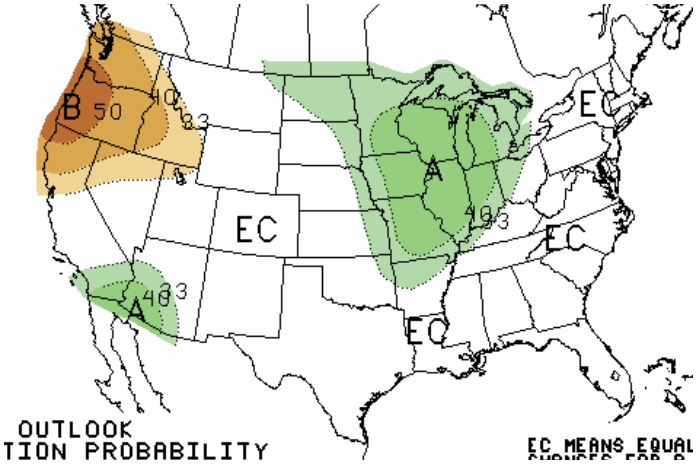
KEY:

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

Author: Anthony Artusa, Climate Prediction Center, NOAA
http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_summary.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 tan 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)

OCTOBER 2014 U.S. PRECIPITATION FORECAST



Percent Likelihood of Above or Below Average Precipitation*

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

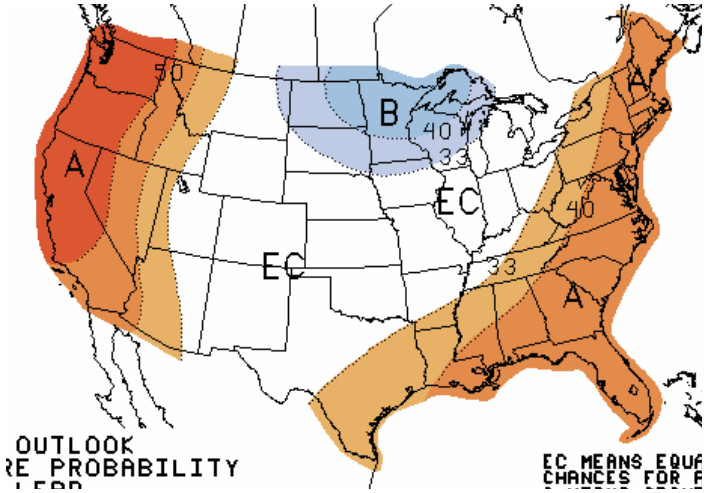
A = Above

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

B = Below

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

OCTOBER 2014 U.S. TEMPERATURE FORECAST



Percent Likelihood of Above or Below Average Temperatures*

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

A = Above

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

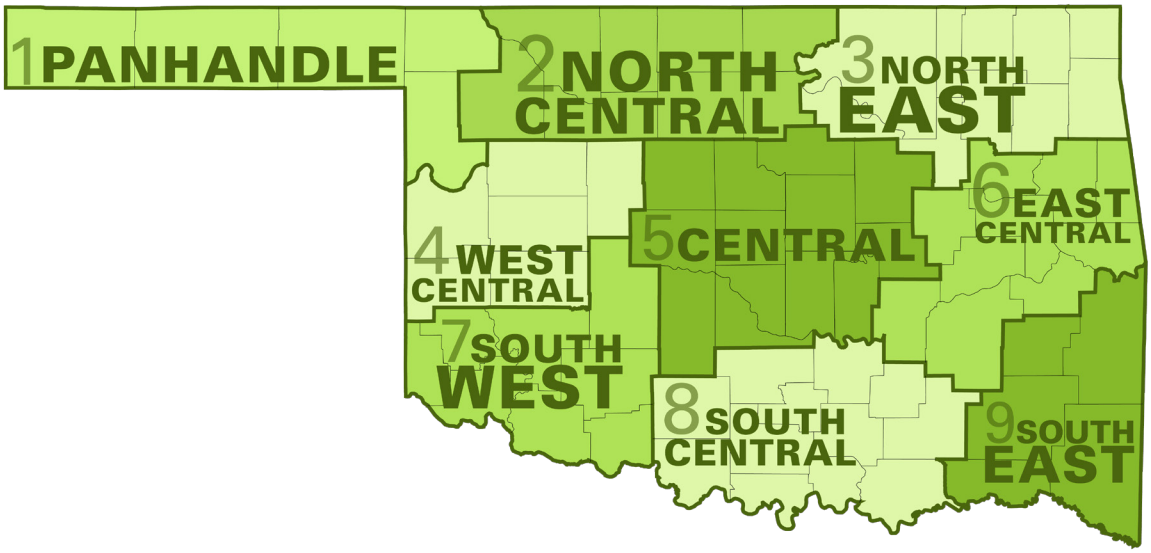
B = Below

*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	71.6	43.2	57.4	1.70
2	72.2	47.2	59.7	2.91
3	72.1	48.4	60.2	3.78
4	72.8	47.9	60.3	2.76
5	73.4	49.5	61.4	3.75
6	73.7	49.8	61.7	4.44
7	74.8	50.2	62.5	3.15
8	75.2	51.3	63.3	4.37
9	74.3	49.6	62.0	4.96
Statewide	73.3	48.5	60.9	3.54

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 October 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 October 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

EDITOR
Gary D. McManus State Climatologist

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

DESIGN
Nicholas Richardson Graphic Designer
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