Oklahoma Monthly Climate Summary

DECEMBER 2013

OKLAHOMA CLIMATOLOGICAL SURVEY

A frigid and sometimes icy December seemed a fitting way to close out the boisterous weather of 2013. Preliminary data from the Oklahoma Mesonet ranked the month as the 17th coolest December on record at nearly 4 degrees below normal. Records of this type for Oklahoma date back to 1895. The statewide average temperature as recorded by the Mesonet was 35.2 degrees. As chilly as it seemed, however, that mark provided little threat to 1983's record cold of 25.8 degrees, but also far cooler than 2012's 42.1 degrees. There were two significant winter storms during December, each creating headaches for travelers and power utility companies. The first storm struck on December 5-6 in two separate waves and brought freezing rain, sleet and snow across the state. Significant snow totals of 5-6 inches fell from southwestern up through central Oklahoma, with lesser amounts surrounding that narrow swath. Heavy sleet and freezing rain created havoc across southern Oklahoma, particularly in Choctaw and Pushmataha counties where Oklahoma National Guard units were deployed to help with timber debris removal. More than 9000 homes and businesses were left without power from this storm.

December 2013 Statewide Extremes

Description	Extreme	Station	Day
High Temperature	79°F	Hollis	3
Low Temperature	-5°F	Camargo	10
High Precipitation	4.45 in.	Mt. Herman	--
Low Precipitation	0.03 in.	Kenton	--

State emergency management officials noted more than 800 storm related injuries reported by local hospitals, as well as at least 10 fatalities. The second storm on December 20-22 was more of an ice event for much of the state, although significant snow did fall in some areas. Total ice accumulations of a half-inch to an inch covered much of southwestern through northeastern Oklahoma along the I-44 corridor. Snow totals from 2-6 inches fell across far northwestern Oklahoma. Power outages peaked at close to 50,000 homes and businesses due to ice accumulations on trees and power lines.

The winter storms provided the southeastern two-thirds of the state with decent moisture, although much of drought-plagued western Oklahoma remained significantly dry. The statewide average precipitation total from the Mesonet was 1.53 inches, about a half-inch below normal, to rank as the 59th wettest December on record. That total is possibly an underestimate due to the frozen precipitation, although the moisture pattern across various parts of the state was quite clear. Far southeastern Oklahoma received from 3-5 inches during the month while western areas of the state received less than a half-inch, in general.

The cold December propelled 2013's statewide average annual temperature to a mark of 58.9 degrees, 0.8 degrees below normal and the 27th coolest calendar year on record for the state. That mark stands in stark contrast to 2012's record warm year of 63.1 degrees. The highest temperature recorded by the Mesonet during 2013 was 111 degrees at Freedom on June 27. Kenton recorded the Mesonet's lowest temperature with a reading of -10 degrees on January 2. The annual average precipitation total came in at 37.01 inches, 0.32 inches above normal to rank as the 36th wettest year on record. That total was certainly not representative of how each region of the state fared, however. The tallies ranged from 50-60 inches across portions of central through eastern Oklahoma, to 15-20 inches across far western Oklahoma. Central Oklahoma received an average of 44.65 inches to rank as the 11th wettest year on record for that region. Oklahoma City itself finished at 52.78 inches for its second wettest year on record, dating back to 1891 – only 2007 was wetter at 56.95 inches. Meanwhile, the Mesonet site at Goodwell recorded a meager 12.8 inches for

December 2013 Statewide Statistics

Temperature

	Average	Depart.	Rank (1895-2013)
Month (December)	35.2°F	-3.8°F	17th Coolest
Year-to-Date (Jan-Dec)	58.9°F	-0.8°F	27th Coolest

Precipitation

	Total	Depart.	Rank (1895-2013)
Month (December)	1.64 in.	-1.18 in.	47th Driest
Year-to-Date (Jan-Dec)	37.01 in.	0.32 in	36th Wettest

Depart. = departure from 30-year normal

the year, the state's lowest annual total. Goodwell's driest year on record is 9.16 inches from 1952. Mt. Herman led all Mesonet sites with 60.8 inches.

The state's drought picture improved during December in some areas thanks to the wintry precipitation, but other areas saw drought intensify. Over 38 percent of the state was classified in at least moderate drought at the end of the month according to the U.S. Drought Monitor, an increase of approximately eight percent during December. Most of that increase occurred in west central and northwestern Oklahoma. The relief throughout 2013 was much more widespread and significant, however. At the start of the year, the entire state was covered by at least severe drought, with 95 percent of that in the extreme-exceptional category. The Drought Monitor's intensity scale slides from moderate-severe-extreme-exceptional, with exceptional being the worst classification. Most of the drought reduction throughout the year occurred in the eastern two-thirds of the state. Unfortunately, much of far southwestern Oklahoma and the Panhandle have remained in significant drought for more than three years. Altus' main water supply reservoir, Tom Steed Lake, was approximately 13 feet below normal at year's end. The Jackson County city has been under emergency water conservation orders since early May. Even farther north in Blaine and Dewey counties, Canton Lake is also approximately 13 feet below normal. Oklahoma Governor Mary Fallin declared a drought emergency for Jackson, Tillman, Greer, Harmon and Texas counties in October 2013.

Oklahoma's preliminary tornado count for 2013 stands at 79 according to the National Weather Service (NWS), although that number could increase as more tornado reports are investigated. Of the 79 twisters, 56 occurred between May 19 and May 31. Included in that total is the violent EF5 tornado that tore through McClain and Cleveland counties from Newcastle to east Moore. That tornado killed 23, including seven third-grade students at Plaza Towers Elementary in the Moore school district. Another massive tornado struck Canadian County on May 31. Reportedly the widest in recorded history at more than 2.6 miles across, that tornado killed eight and injured hundreds of others. It was once classified as an EF5 due to radar-measured winds of nearly 300 mph before later being downgraded to an EF3 in the absence of EF5 damage indicators. Tornadoes killed 34 people during 2013, the most in the state since 1999's 42. Unfortunately, the weather-related fatalities were not confined to tornadoes. Flash flooding killed 15 others across the state during 2013, and there were several other deaths attributable both directly and indirectly to severe winter weather late in the year.

DECEMBER 2013 DAILY SUMMARIES

DECEMBER 1-3: The beginning of December had many areas covered with dense fog. At times, visibility was near zero. A warming trend ensued the first three days, starting with the highest maximum temperatures at 66 degrees in Idabel and Pauls Valley, and ending at 79 degrees in Hollis by the 3rd. The lowest temperature maximums in the state were in the 50s on all three days. Minimum temperatures decreased, however, with ranges shifting from 21-51 degrees on the 1st to about 24-47 degrees on the 2nd and 3rd. Although skies were mostly sunny during this period, clouds began to increase by the 3rd. Daily average wind speeds were generally light and variable with the highest speeds only reaching 13.5mph in Boise City on Tuesday.

DECEMBER 4-7: A strong cold front swept through the state, creating much cooler temperatures behind it. The high maximum temperatures of 76 degrees in Idabel and 75 degrees in Broken Bow on the 4th occurred in areas not yet touched by the front. In the following days, the highest maximum temperatures in the state fell from 52 degrees in Broken Bow on the 5th, to 35 degrees in Broken Bow and Idabel on the 6th and 7th. The lowest maximum temperatures decreased from 33 degrees in Kenton and Boise City to 13 degrees in Kenton on the 5th, 12 degrees in Boise City on the 6th, and 15 degrees in Cheyenne on the 7th. The 7th had a slight boost in warming as a high pressure system became situated over the region. The highest minimum temperatures, which occurred in Broken Bow, dwindled from 51 degrees to 26 degrees and the lowest minimum temperatures fell from 13 degrees in Kenton to -2 degrees in Buffalo during this four-day period. Buffalo's minimum was the first Mesonet site to fall below zero this winter. The daily coldest high temperature record was tied in Oklahoma City on the 5th at 31 degrees and the daily coldest temperature record was broken in McAlester on the 7th at 10 degrees. A mix of wintry precipitation fell in portions of south-central, southeast, and east-central OK on the 4th with light snow falling in the northwest. On the 5th, a dusting of snow covered the northwest and 1-6 inches of precipitation fell elsewhere, finally passing through the eastern half of the state and out of our region by the afternoon. The highest daily average wind speeds were a bit gusty at 18mph on the 4th, 23mph on the 5th (48mph gust in Medicine Park), 19mph on the 6th, and 14mph on the 7th.

DECEMBER 8-9: Cloudy skies and passing bands of snow occurred during the 8th and 9th. Although only trace amounts of precipitation fell in north and north-central Oklahoma, snow amounts were between 1 and 3 inches in the northeast on the 9th. The highest maximum temperatures dropped drastically, falling from 52 degrees in Arnett on the 8th, to 35 degrees in Idabel and Broken Bow on the 9th. Accordingly, the lowest maximums in the state fell from 25 degrees in Watonga, Weatherford, and Hinton, to 17 degrees in Slapout. Minimum temperatures ranged from -2 degrees in Seiling to 31 degrees at Broken Bow. Average daily wind speeds were generally less than 10mph on the 8th, however, the panhandle averaged between 10mph and 18mph. That same day, a gust of 50mph was reported in Kenton. Average wind speeds were less than 13mph on the 9th.

DECEMBER 10-13: Despite a weak cold front passing through the region on the 11th, this period experienced a warming trend. The highest maximums increased from 54 degrees in Beaver on the 10th to 59 degrees in Hollis on the 13th. The

slight decrease in temperature was evident on the 11th as the highest maximums only reached 46 degrees in the southeast. The coolest maximums started at 31 degrees on the 10th and increased to 33 degrees on the 11th, and 36 degrees on the 12th and 13th. Minimum temperatures ranged from -5-20 degrees, 10-24 degrees, 9-23 degrees, and 17-38 degrees on each consecutive day. A daily low temperature record of 6 degrees on the 10th broke the previous record of 11 degrees in McAlester. The highest average wind speeds were 15mph on the 10th, 14mph on the 11th, and 17mph on the 12th and 13th. Most areas in the state, however, averaged less than 10mph from the 10th-12th.

DECEMBER 14: Fog covered much of the state on the 14th with visibilities less than a mile. A cold front also pushed southeast through Oklahoma that day. The warmest maximum temperature was 51 degrees at Beaver and the coolest maximum was 36 degrees in Westville. Minimum temperatures ranged between 18 degrees at Nowata and Pryor and 30 degrees in Ardmore and Medicine Park. While the western half of the state remained relatively dry during this period, the Oklahoma Mesonet measured .50 inches of liquid precipitation in Hugo and .43 inches of liquid precipitation in Durant. Generally less than a third of an inch was observed in the west. Average wind speeds were between 5mph in the southeast and 17mph in Minco. A peak wind gust of 43mph was reported in Minco and Camargo.

DECEMBER 15-19: Following the previous day's frontal passage, the region began to gradually warm up. Although a weak cold front moved through on the 17th, it was hard to tell as the majority of temperatures continued to rise. The highest temperature in the state was 63 degrees in north-central OK on the 15th, 71 degrees in Butler and Wynona on the 16th, 72 degrees in south-central OK on the 17th, 74 degrees in Slapout on the 18th, and 73 degrees in Kenton on the 19th. The coolest maximum temperatures wavered in the 50s and 60s. The warmest minimum temperatures climbed from 35 in Cheyenne on the 15th to 55 in Stillwater, Talihina, and Marshall on the 19th. With such warm highs, Oklahoma City was able to tie their daily maximum temperature record at 69 degrees on the 18th. The previous record was set in 1982. The coolest temperatures bottomed out in the upper teens and 20s during this period. Rainfall was negligible as skies were sunny and average wind speeds were generally less than 10mph on all days except the 18th and 19th in which they were less than 18mph and 20mph, respectively.

DECEMBER 20-21: Clouds and a strong cold front moved into the region on the 20th, producing strong winds, rain, and chilly temperatures. Most of Oklahoma had light to moderate freezing rain with ice accumulations of up to .5 inches on trees on the 20th. Showers continued on the 21st with amounts ranging from half an inch to just over two inches. The Mesonet measured melted liquid precipitation values of .63 inches in Stuart and .51 inches in Burneyville on the 20th, and as much as 2.55 inches in Centrahoma and 2.53 inches in Tishomingo on the 21st. McAlester hit a daily maximum rainfall record of 1.36 inches on the 21st. The only area to remain relatively rain free was the northwest and panhandle. Maximum temperatures ranged from 28 degrees in Hooker (20th) and 25 degrees in Boise City (21st) to 70 degrees in Broken Bow (20th) and 65 degrees in Mt. Herman (21st). Minimum temperatures had a hefty range of 15 degrees in Goodwell (20th) and 6 degrees in Hooker (21st) to 67 degrees in Mt. Herman (20th) and 43 degrees in Broken Bow (21st). Most wind sensors were frozen up on these two days and unable to produce measurements, however, those that were operable measured 5-15mph on the 20th.

DECEMBER 22-23: Precipitation ended on the 22nd and only remnants of light snow fell in the northeast. The Mesonet reported a maximum amount of liquid precipitation of .25 inches at Altus and Ft. Cobb during these two days. Due to cold air advection, temperatures plummeted by nearly 20 degrees. The warmest temperatures in the state were 44 degrees in Idabel on the 22nd and 46 degrees in Broken Bow on the 23rd. Lahoma only got as warm as 25 degrees the first day and northern portions of the state, such as Foraker and Newkirk, only reached 20 degrees the following day. Minimum temperatures ranged from 3 degrees in Buffalo to 31 degrees in the southeast on the 22nd and 2 degrees in Buffalo to 25 degrees in the southeast and south-central OK on the 23rd. The majority of wind speeds averaged less than 12mph.

DECEMBER 24-26: During this period, mornings of freezing fog were the theme. Visibilities were down to one mile in western Oklahoma on the 24th and a quarter of a mile in central Oklahoma on the 25th. Southerly winds and sunny skies allowed for maximum temperatures to hit the mid-60s in the panhandle on the 24th. However, the highest temperatures only reached 52 degrees (25th) and 58 degrees (26th). Each day, the coolest maximums increased from the 30s to the 40s. Although minimum temperatures averaged in the teens and 20s, Foraker and Nowata fell to the single digits of 8 degrees and 9 degrees on the 24th. With mostly sunny skies, rainfall was absent throughout the state. Despite many of the Mesonet wind sensors remaining frozen during the 24th, they gradually came back to life by the 26th. Of the measurements taken, average wind speeds were between 3mph (Broken Bow) and 15mph (Boise City) on the 24th, between 2mph (Broken Bow) and 11mph (Hollis) on the 25th, and calm (southeast OK) to 13mph (Watonga) on the 26th.

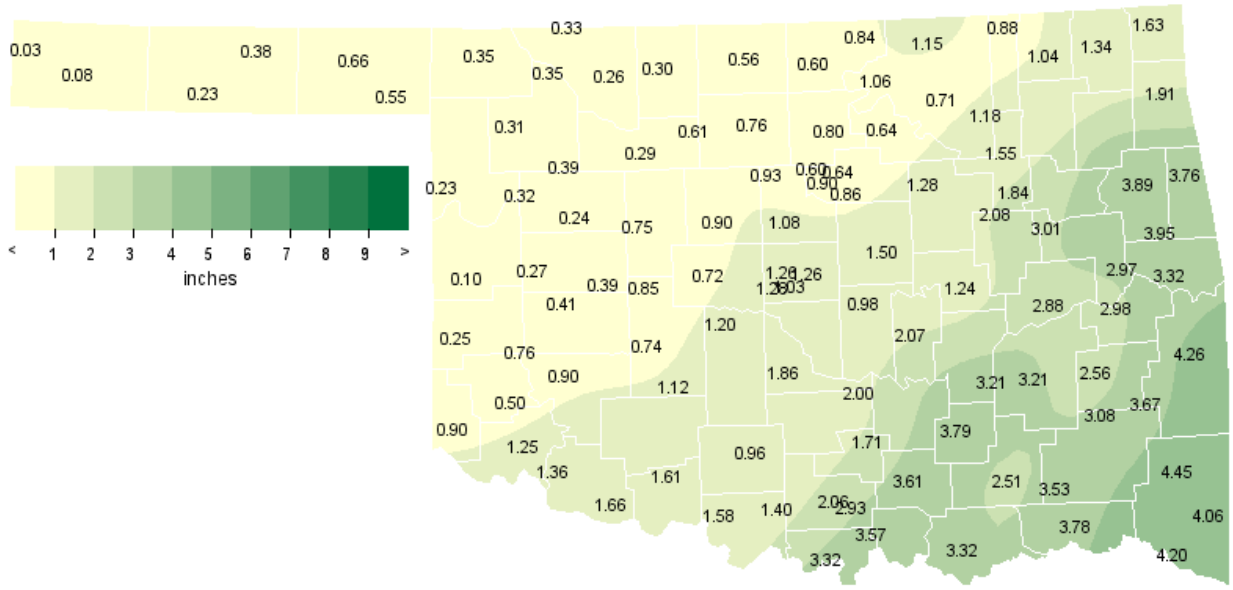
DECEMBER 27: The 27th was fog free with clear skies and maximum temperatures pleasantly ranging from 51 degrees in Beaver to 61 degrees in portions of northern OK. Minimum temperatures were between 18 degrees in Kenton and 36 degrees in Medicine Park. Average wind speeds were less than 10mph.

DECEMBER 28-30: A cold front started to push into the panhandle on the 28th and swept through the rest of the state on the 29th. The front was reflective in the declining maximum temperatures throughout the last Saturday, Sunday, and Monday of December.

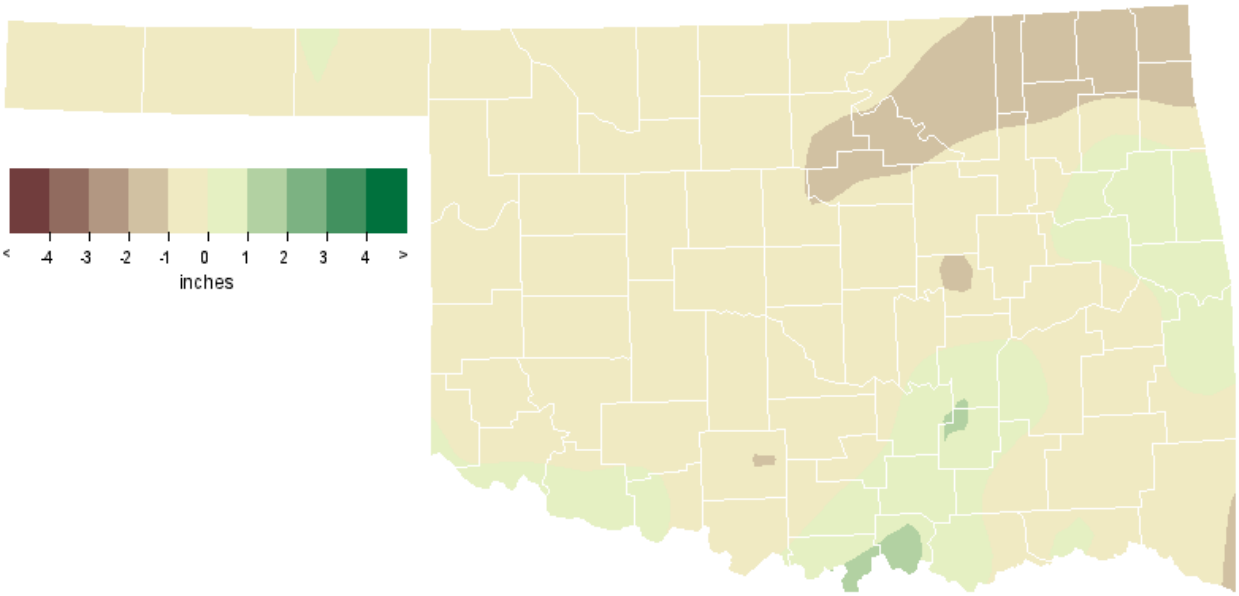
The warmest temperatures in the state dropped from 63 degrees in Kenton to 52 degrees in Beaver, Buffalo, and Hooker. Likewise, the coolest highs in the state decreased from 54 degrees in Westville, Weatherford, and Cookson on the 28th to 32 degrees in Cookson on the 30th. Minimum temperatures ranged from 20 degrees (Erickson) to 38 degrees (Spencer), 10 degrees (Breckinridge) to 33 degrees (Broken Bow and Idabel), and 7 degrees (Breckinridge) to 27 degrees (Hugo) on each consecutive day. Precipitation was negligible and average wind speeds were 5-14mph on the 28th, 7-21mph on the 29th, and less than 13mph on the 30th. Gusts were as high as 49mph in Medicine Park and Retrop on the 29th.

DECEMBER 31: New Year's Eve experienced a slight warm-up with maximum temperatures between 51 degrees in many portions of the state and 64 degrees in Kenton. Minimum temperatures ranged from 14 degrees in Sulphur and Talihina to 33 degrees in Cheyenne. Skies were rain free and average wind speeds were 5-17mph.

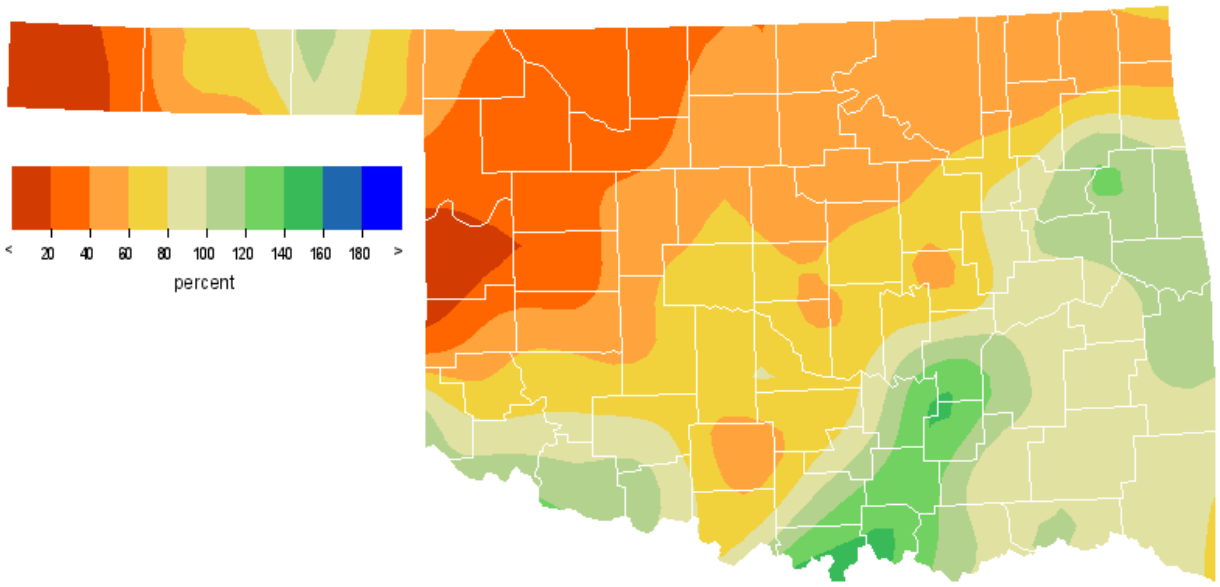
DECEMBER 2013 OBSERVED PRECIPITATION



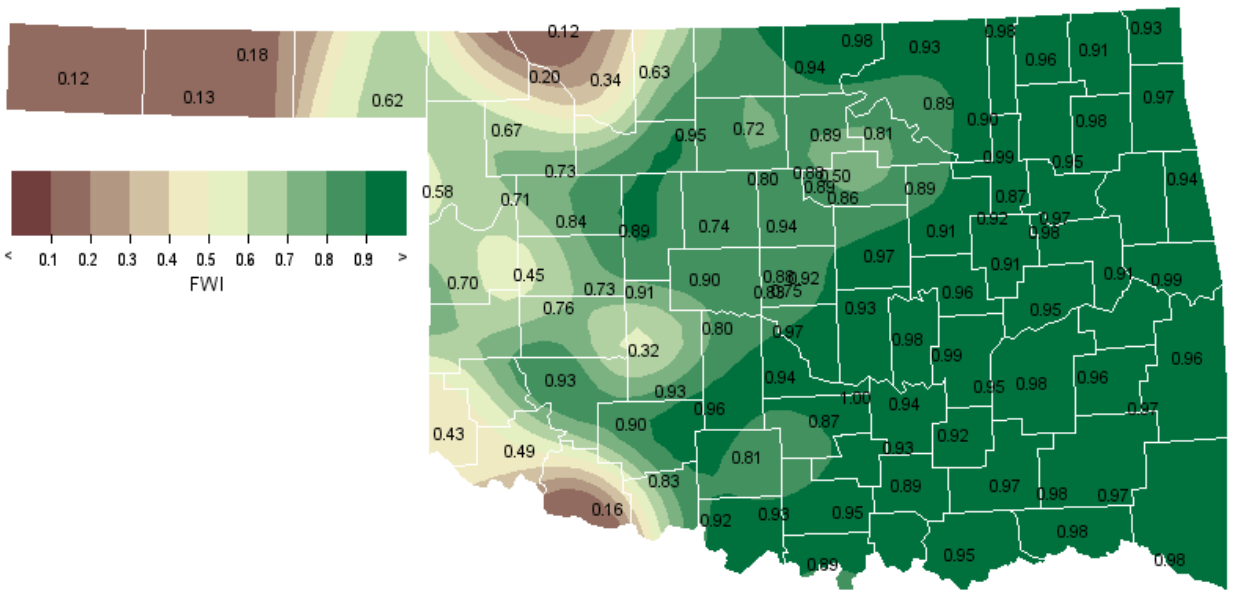
DECEMBER 2013 DEPARTURE FROM NORMAL PRECIPITATION



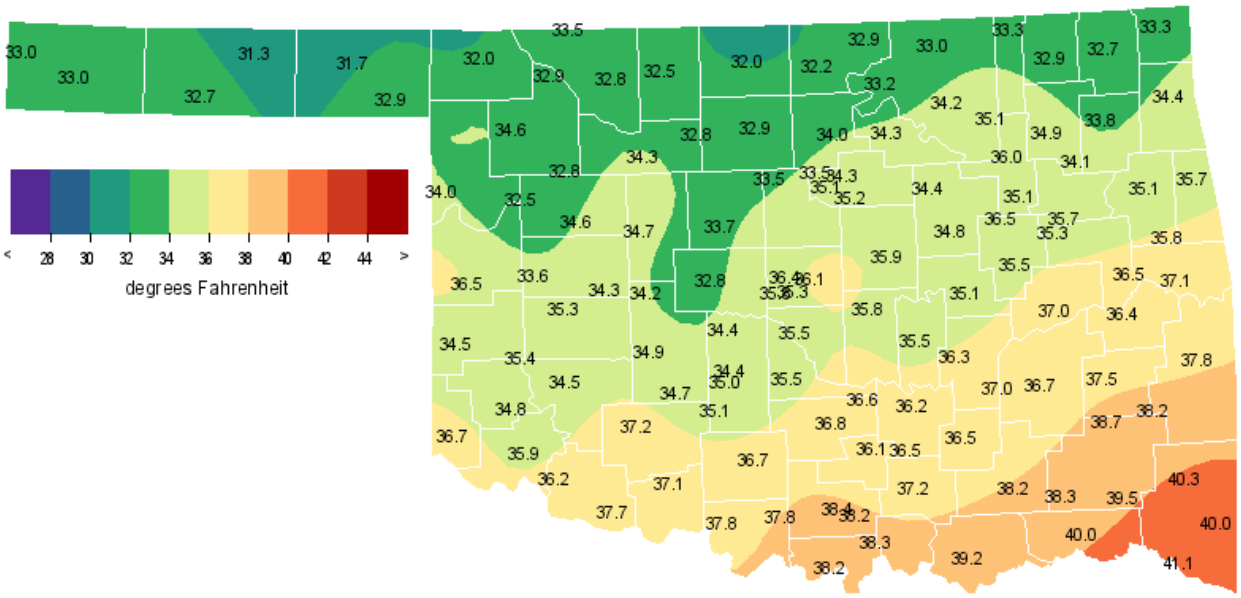
DECEMBER 2013 PERCENT OF NORMAL PRECIPITATION



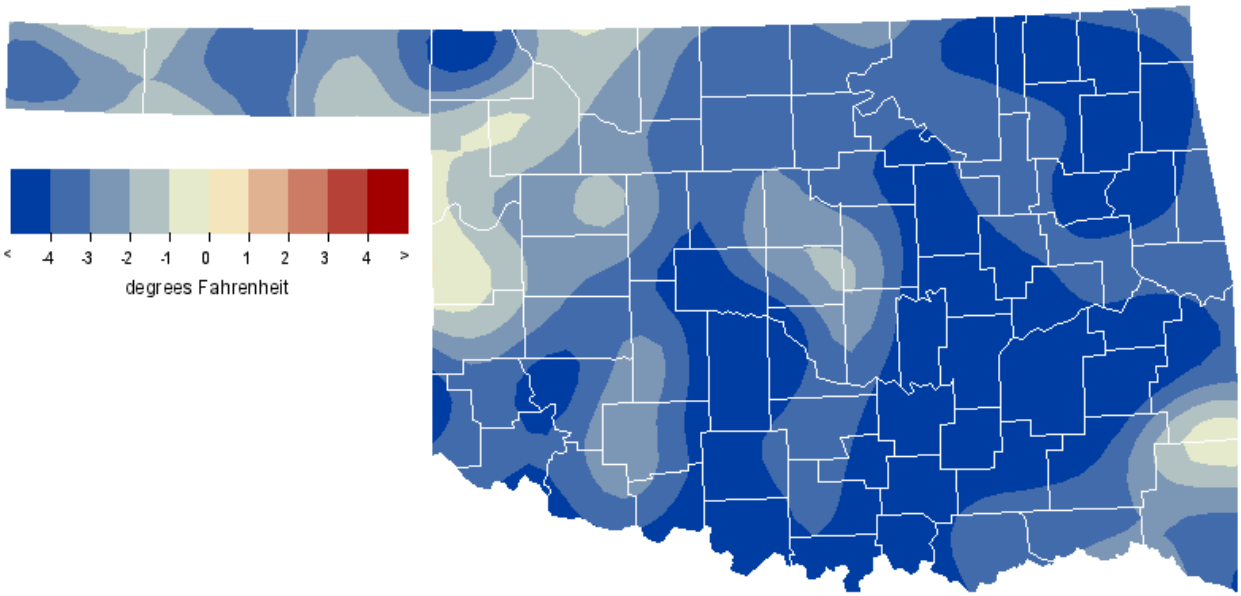
DECEMBER 2013 AVERAGE SOIL MOISTURE AT 25CM



DECEMBER 2013 AVERAGE TEMPERATURE



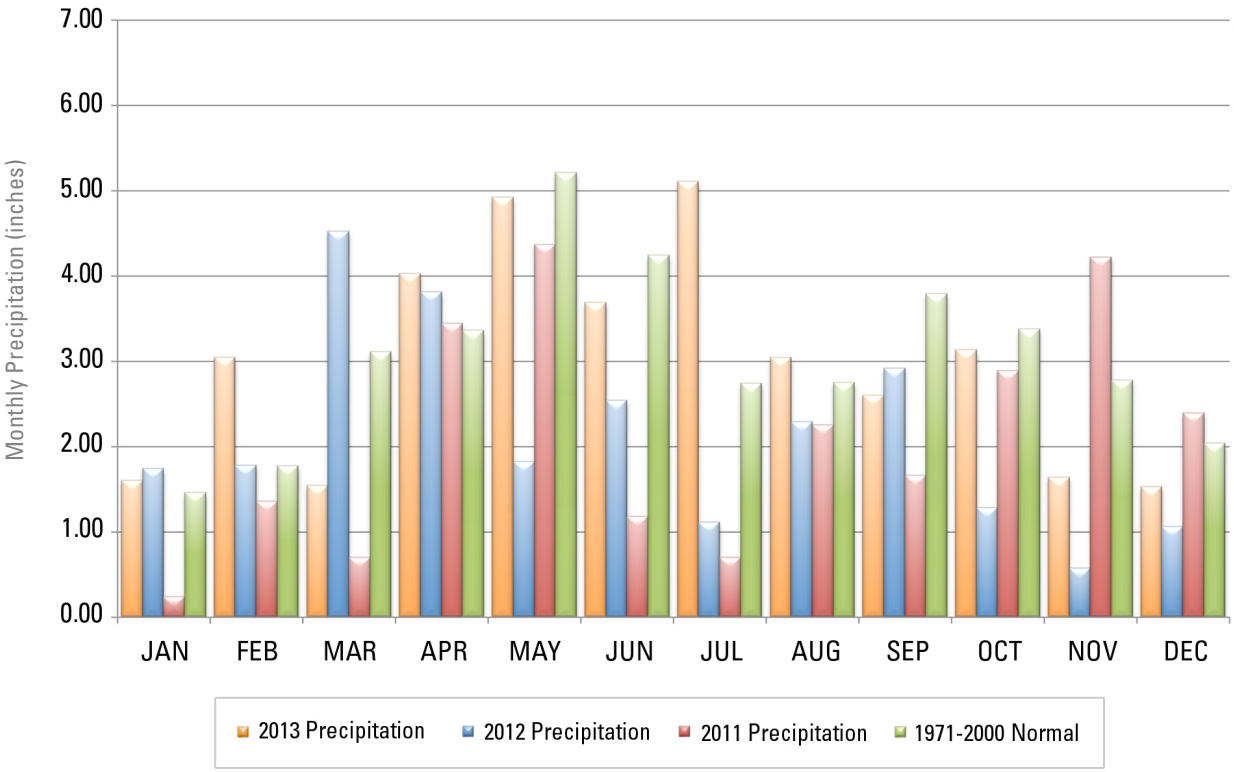
DECEMBER 2013 DEPARTURE FROM NORMAL TEMPERATURE



MESONET MONTHLY SUMMARY FOR DECEMBER 2013

NAME	MEAN TEMP	HIGH TEMP	HIGH DAY	LOW TEMP	LOW DAY	HDD	CDD	TOT PPT	HIGH 24-HR	HIGH DAY
PANHANDLE										
Arnett	34.0	75	3	1	10	961	0	.23	.12	25
Beaver	31.6	74	3	4	23	1034	0	.66	.27	24
Boise City	33.0	71	19	2	5	993	0	.08	.05	22
Buffalo	32.0	71	18	-2	7	1022	0	.35	.14	24
Goodwell	32.7	72	3	3	7	1002	0	.23	.16	22
Hooker	31.3	73	3	5	6	1046	0	.38	.20	22
Kenton	32.9	73	19	0	5	995	0	.03	.03	8
Slapout	33.0	74	18	3	9	993	0	.55	.22	24
NORTH CENTRAL										
Alva	32.8	70	18	2	7	998	0	.26	.13	25
Blackwell	32.3	69	18	1	10	1015	0	.60	.37	25
Breckinridge	32.8	70	18	3	10	998	0	.76	.54	25
Cherokee	32.5	70	18	2	10	1006	0	.30	.21	25
Fairview	34.3	69	16	4	10	950	0	.29	.12	25
Freedom	32.9	72	3	1	7	994	0	.35	.19	25
Lahoma	32.9	69	18	3	10	996	0	.61	.38	25
May Ranch	33.5	70	18	2	7	977	0	.33	.21	25
Medford	32.0	68	18	-1	10	1023	0	.56	.38	25
Newkirk	32.9	69	18	5	7	997	0	.84	.46	25
Red Rock	34.0	71	18	1	10	961	0	.80	.40	25
Seiling	32.8	70	3	-4	10	997	0	.39	.20	25
Woodward	34.6	72	3	2	7	944	0	.31	.17	25
NORTHEAST										
Bixby	35.1	68	18	6	7	926	0	1.84	.94	21
Burbank	33.2	70	18	4	10	986	0	1.06	.50	25
Claremore	34.9	67	18	7	7	932	0	*****	*****	***
Copan	33.3	68	16	5	10	982	0	.88	.30	25
Foraker	33.1	69	18	5	10	989	0	1.15	.49	25
Inola	34.1	66	18	7	10	958	0	*****	*****	***
Jay	34.4	69	3	5	7	950	0	1.91	.99	13
Miami	33.3	68	3	5	10	982	0	1.63	.68	21
Nowata	32.9	67	18	5	10	996	0	1.04	.30	25
Pawnee	34.3	70	16	5	10	952	0	.64	.28	25
Porter	35.1	69	18	8	7	****	****	*****	*****	***
Pryor	33.8	65	20	5	7	967	0	*****	*****	***
Skiatook	35.1	68	16	8	7	926	0	1.18	.52	25
Vinita	32.7	65	3	3	10	1002	0	1.34	.34	25
Wynona	34.2	71	16	5	7	954	0	.71	.41	25
WEST CENTRAL										
Bessie	35.2	68	2	6	7	923	0	.41	.27	25
Butler	33.6	71	3	2	10	973	0	.27	.16	22
Camargo	32.5	74	3	-5	10	1006	0	.32	.18	22
Cheyenne	36.4	74	3	3	7	886	0	.10	.06	22
Erick	34.6	76	3	5	10	944	0	.25	.18	22
Putnam	34.6	69	16	4	7	943	0	.24	.20	25
Retrop	35.4	72	3	5	7	916	0	.76	.18	25
Watonga	34.7	68	16	5	7	938	0	.75	.52	25
Weatherford	34.3	65	16	4	10	950	0	.39	.23	25
CENTRAL										
Acme	35.1	68	19	0	10	927	0	*****	*****	***
Bowlegs	35.4	69	18	8	7	916	0	2.07	.48	24
Bristow	34.8	70	16	7	10	938	0	*****	*****	***
Lake Carl Blac	33.4	71	18	0	10	978	0	.60	.24	25
Chandler	35.9	70	18	4	7	903	0	1.50	.44	24
Chickasha	34.5	69	19	2	10	947	0	*****	*****	***
El Reno	32.8	70	16	5	10	999	0	.72	.17	25
Guthrie	*****	***	***	***	***	****	****	1.08	.41	24
Kingfisher	33.7	70	16	2	10	971	0	.90	.43	25
Marena	35.1	71	18	4	10	928	0	.90	.40	25
Minco	34.4	67	19	4	7	950	0	1.20	.53	25
Marshall	33.5	69	18	2	10	978	0	.93	.50	25
Ninnekah	35.0	69	19	3	10	931	0	*****	*****	***
Norman	35.4	68	16	8	7	917	0	*****	*****	***
Oilton	34.4	71	18	2	7	948	0	1.28	.30	24
OKC East	35.3	68	18	7	7	919	0	1.03	.41	24
OKC North	36.4	68	18	6	7	888	0	1.26	.60	24
OKC West	35.7	68	18	8	7	907	0	1.28	.63	24
Okemah	35.1	69	3	7	7	927	0	1.24	.44	13
Perkins	35.2	70	16	6	7	924	0	.86	.24	25
Shawnee	35.8	67	16	5	7	906	0	.98	.38	24
Spencer	36.2	68	16	5	7	894	0	1.26	.50	24
Stillwater	34.2	71	18	5	10	954	0	.64	.32	25
Washington	35.5	69	18	6	10	914	0	1.86	1.05	21
EAST CENTRAL										
Cookson	35.9	66	18	7	7	903	0	3.95	1.76	21
Eufaula	36.9	67	18	10	10	871	0	2.88	1.49	21
Haskell	35.3	68	18	8	10	922	0	3.01	1.54	21
Hectorville	36.4	69	18	8	7	886	0	2.08	.69	13
Holdenville	36.2	69	18	7	7	893	0	*****	*****	***
McAlester	36.6	72	3	6	10	881	0	3.21	1.93	21
Okmulgee	35.5	69	18	8	7	915	0	*****	*****	***
Sallisaw	37.0	68	18	8	7	868	0	3.32	1.72	21
Stigler	36.4	67	18	6	7	886	0	2.98	1.35	21
Stuart	37.0	69	3	9	10	868	0	3.21	1.57	21
Tahlequah	35.1	68	3	7	10	928	0	3.89	1.50	21
Webbers Falls	36.5	67	18	6	7	883	0	2.97	1.57	21
Westville	35.7	68	3	9	7	909	0	3.76	1.66	21
SOUTHWEST										
Altus	36.0	77	3	0	7	900	0	1.25	.46	21
Apache	34.7	68	19	4	7	941	0	1.12	.26	25
Fort Cobb	34.8	69	19	3	10	937	0	.74	.17	23
Grandfield	37.6	75	3	7	7	850	0	1.66	1.19	21
Hinton	34.0	67	19	4	10	960	0	.85	.54	25
Hobart	34.4	67	3	3	10	948	0	.90	.25	23
Hollis	36.7	79	3	3	7	877	0	.90	.37	20
Mangum	34.7	75	3	1	10	940	0	.50	.15	22
Medicine Park	37.2	69	19	7	7	863	0	*****	*****	***
Tipton	36.2	73	3	2	7	894	0	1.36	.99	21
Walters	*****	***	***	***	***	****	****	*****	*****	***
SOUTH CENTRAL										
Ada	36.2	69	18	8	7	893	0	*****	*****	***
Ardmore	38.2	71	17	12	7	830	0	2.93	1.89	21
Burneyville	38.2	72	17	10	10	830	0	3.32	1.81	21
Byars	36.6	68	18	7	10	880	0	2.00	.51	13
Centrahoma	36.5	69	18	8	10	884	0	3.79	2.55	21
Durant	39.2	69	17	14	10	800	0	3.32	1.73	21
Fittstown	36.5	68	17	9	7	883	0	*****	*****	***
Ketchum Ranch	36.7	70	17	7	10	877	0	.96	.46	21
Lane	38.2	69	17	13	7	831	0	2.51	1.16	21
Madill	38.3	72	17	13	10	828	0	3.57	2.14	21
Newport	38.4	72	17	11	10	825	0	2.06	1.16	21
Pauls Valley	36.8	70	17	8	10	875	0	*****	*****	***
Ringling	37.7	72	17	9	10	845	0	1.40	.69	21
Sulphur	36.2	71	17	7	10	894	0	1.71	1.06	21
Tishomingo	37.2	72	17	11	7	861	0	3.61	2.53	21
Vanoss	*****	***	***	***	***	****	****	*****	*****	***
Waurika	37.8	71	17	11	10	845	0	1.58	1.01	21
SOUTHEAST										
Antlers	38.2	71	17	15	10	830	0	3.53	1.14	21
Antlers	*****	***	***	***	***	****	****	*****	*****	***
Broken Bow	41.0	75	4	18	31	743	0	4.06	1.78	21
Clayton	38.8	67	4	14	7	814	0	3.08	1.27	21
Cloudy	39.5	70	17	18	10	792	0	*****	*****	***
Hugo	39.9	70	4	16	10	777	0	3.78	1.25	21
Idabel	41.1	76	4	20	11	742	0	4.20	1.89	21
Mt Herman	40.3	71	17	16	10	766	0	4.45	1.31	21
Talihina	38.2	69	4	13	10	832	0	3.67	1.18	21
Wilburton	37.4	72	3	6	7	855	0	2.56	1.02	21
Wister	37.8	69	3	15	10	845	0	4.26	1.89	21

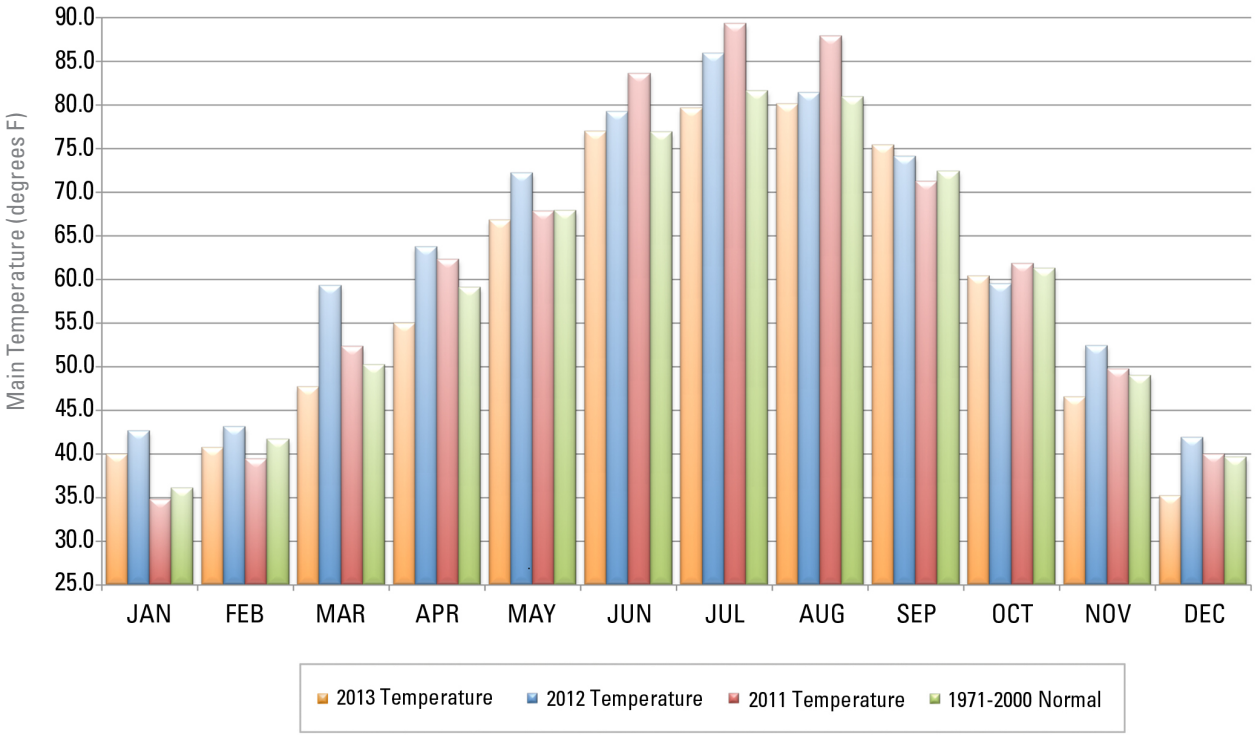
2011, 2012 AND 2013 STATEWIDE PRECIPITATION MONTHLY TOTALS VS. NORMAL



December 2013 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	Dec-12
Panhandle	0.31	-0.39	45th Driest	4.49 (2006)	0.00 (1922)	0.70
North Central	0.49	-0.81	37th Driest	4.55 (1913)	0.00 (1922)	0.20
Northeast	1.24	-1.04	45th Driest	6.72 (1984)	0.16 (1950)	0.79
West Central	0.39	-0.75	38th Driest	4.03 (1932)	0.00 (1908)	0.74
Central	1.14	-0.87	55th Driest	6.67 (1984)	0.00 (1908)	0.66
East Central	3.21	0.23	34th Wettest	8.95 (1987)	0.21 (1908)	1.05
Southwest	1.09	-0.29	56th Wettest	4.94 (1991)	0.00 (1908)	0.68
South Central	2.52	-0.01	40th Wettest	7.01 (1932)	0.07 (1950)	1.39
Southeast	3.73	-0.34	50th Wettest	12.76 (1971)	0.25 (1917)	3.07
Statewide	1.53	-0.49	60th Driest	4.98 (1984)	0.10 (1950)	0.99

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



December 2013 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	Dec-12 (F)
Panhandle	32.6	-2.4	30th Coolest	41.6 (1933)	22.6 (1983)	37.9
North Central	33.1	-3.4	21st Coolest	43.7 (1965)	21.9 (1983)	39.3
Northeast	34.1	-4.1	16th Coolest	45.1 (1931)	24.3 (1983)	42.1
West Central	34.6	-2.8	22nd Coolest	44.2 (1965)	24.0 (1983)	40.1
Central	34.9	-4.4	16th Coolest	46.4 (1965)	25.3 (1983)	42.3
East Central	36.2	-4.4	14th Coolest	47.6 (1933)	27.4 (1983)	45.6
Southwest	35.8	-4.0	17th Coolest	46.7 (1965)	27.5 (1983)	42.1
South Central	37.4	-4.7	12th Coolest	48.5 (1965)	29.2 (1983)	44.7
Southeast	39.1	-3.3	15th Coolest	50.7 (1984)	30.7 (1983)	45.5
Statewide	35.2	-3.8	17th Coolest	45.4 (1965)	25.8 (1983)	42.1

RECORD EVENT REPORTS

Description	Day	Location	Record	Previous Record	Year
Daily coldest high temperature	5	Oklahoma City	31	31	2002
Daily low temperature	7	McAlester	10	16	2011
Daily low temperature	10	McAlester	6	11	1995
Daily maximum temperature	18	Oklahoma City	69	69	1982
Daily maximum rainfall	21	McAlester	1.36	1.22	1968

MESONET EXTREMES FOR DECEMBER 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	75	3rd	Arnett	-2	7th	Buffalo	0.66	Beaver	0.27	24th	Beaver
North Central	72	3rd	Woodward	-4	10th	Seiling	0.84	Newkirk	0.54	25th	Breckinridge
Northeast	71	16th	Wynona	3	10th	Vinita	1.91	Jay	0.99	13th	Jay
West Central	76	3rd	Erick	-5	10th	Camargo	0.76	Retrop	0.52	25th	Watonga
Central	71	18th	Lake Carl Blackwell	0	10th	Lake Carl Blackwell	2.07	Bowlegs	1.05	21st	Washington
East Central	72	3rd	McAlester	6	10th	McAlester	3.95	Cookson	1.93	21st	McAlester
Southwest	79	3rd	Hollis	0	7th	Altus	1.66	Grandfield	1.19	21st	Grandfield
South Central	72	17th	Burneyville	7	10th	Byars	3.79	Centrahoma	2.55	21st	Centrahoma
Southeast	76	4th	Idabel	6	7th	Wilburton	4.45	Mt Herman	1.89	21st	Idabel
Statewide	79	3rd	Hollis	-5	10th	Camargo	4.45	Mt Herman	2.55	21st	Centrahoma

JANUARY OUTLOOK

The weather in Oklahoma during January, Oklahoma's coldest and driest month, is marked by many and rapid variations. Cold fronts move through the state on a regular basis, bringing air from colder regions of the earth, but cold weather rarely lasts for more than a few days at a time. The north or northwest winds that spread the colder air typically give way to a day or so of calm and sunshine, followed by a return to the prevailing southerly winds which dominate the state's weather throughout the year. The state is located within the range of the winter meandering of the jet stream. Oklahoma's proximity to both the warm waters of the Gulf of Mexico to the southeast and the mountain barrier to the west enhances the potential for the development of winter storms beneath the jet. The Gulf provides moisture and is a source of thermal energy that interacts with the areas of low pressure, which are initiated under the jet stream east of the mountains. This interaction often results in the development of winter storms. Many of the winter storms in the eastern half of the country are born in Oklahoma.

Temperature

Mean	36.8 degrees
Warmest January	1923, 47.5 degrees
Coolest January	1930, 24.9 degrees
Warmest location	Waurika, 41.9 degrees
Coolest location	Turpin, 30.7 degrees
Hottest recorded	92 degrees, Cloud Chief, January 31, 1911.
Coldest recorded	-27 degrees, Watts, January 18, 1930

According to National Weather Service cooperative network data from 1971 through 2000, the statewide-averaged normal temperature for the month is 36.8 degrees. Normal temperatures across Oklahoma range from 41.9 degrees at Waurika in the south to 30.7 degrees at Turpin in the eastern panhandle. Normal daily maximum temperatures vary between 54.0 degrees at Waurika, near the Red River at Oklahoma's southern border, down to 41.9 degrees at Newkirk, near the state's northern border. Normal daily minimum temperatures range from 30.8 degrees at Okemah to 16.7 degrees at Turpin. The coldest January temperature ever recorded in the state is -27 degrees, recorded at Watts on January 18, 1930. At the other extreme, Cloud Chief reported a daily maximum temperature of 92 degrees on January 31, 1911. The warmest and coldest Januarys, averaged statewide, were 47.5 degrees in 1923 and 24.9 degrees in 1930, respectively.

Precipitation

Mean	1.46 inches
Wettest January	1949, 5.23 inches
Driest January	1986, 0.04 inches
Wettest location	Broken Bow, 3.49 inches
Driest location	Goodwell, 0.29 inches
Most recorded	13.85 inches, Smithville, 1950

Tornadoes

Average September Tornadoes	0.3
Most	4 (1957, 1967, 2008)

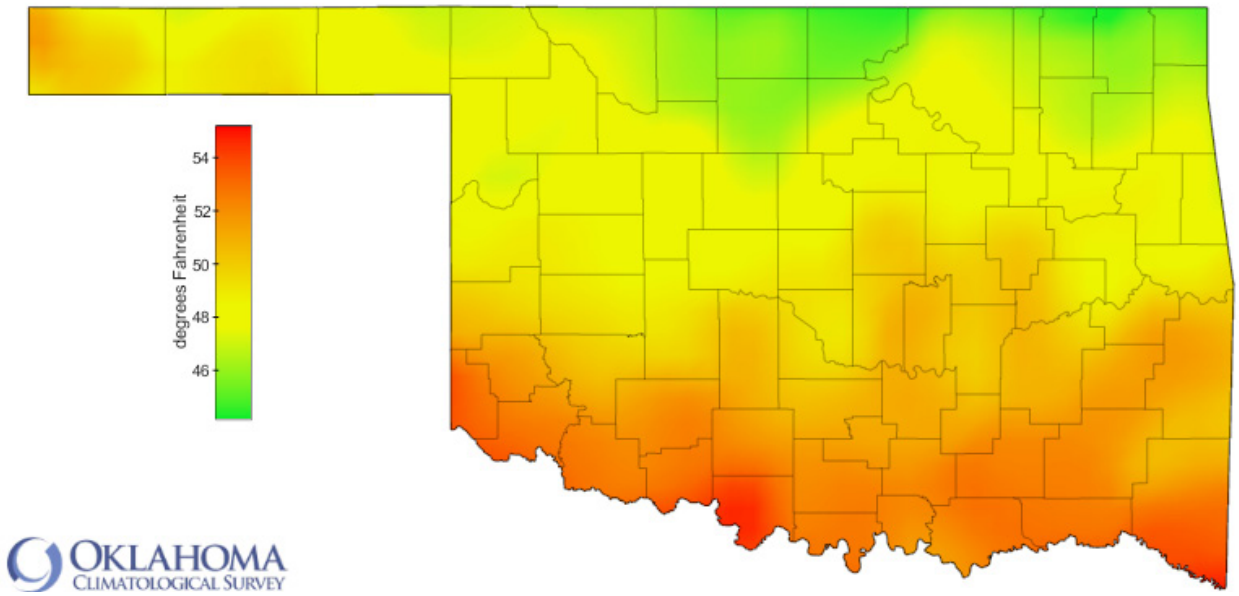
Oklahoma's normal monthly precipitation during January, averaged across the state, is 1.46 inches. Normal monthly precipitation for the month ranges from 3.49 inches in the southeast at Broken Bow to 0.29 inch in the panhandle at Goodwell. Most of the precipitation falls as rain, although snow, sleet, and freezing rain are all observed. The statewide-averaged normal snowfall (including sleet) is 2.4 inches, most of which falls in the northern half of the state. The panhandle town of Boise City averages 7.0 inches of snow during January. On average, snowfalls of at least one inch occur on 2.5 January days at Boise City. The wettest January in the state's weather record is 1949, when the statewide average was 5.23 inches. The driest January was 1986, when the state's rain gauges collected an average of only 0.04 inches of precipitation. Smithville was deluged with 13.85 inches of precipitation during January 1950.

Snowfall records are not as reliable as those for temperature and total precipitation (which includes water obtained from melted snow), but the greatest January snowfalls appear to have been recorded in 1905, 1930, 1949, 1988, 1990, and 2001. Statewide information is somewhat sketchy regarding the 1905 event, but it is known that Fort Reno recorded a cumulative depth of 24.5 inches of snow over the course of the month. In January 1930, noted above for its extreme cold, 25.0

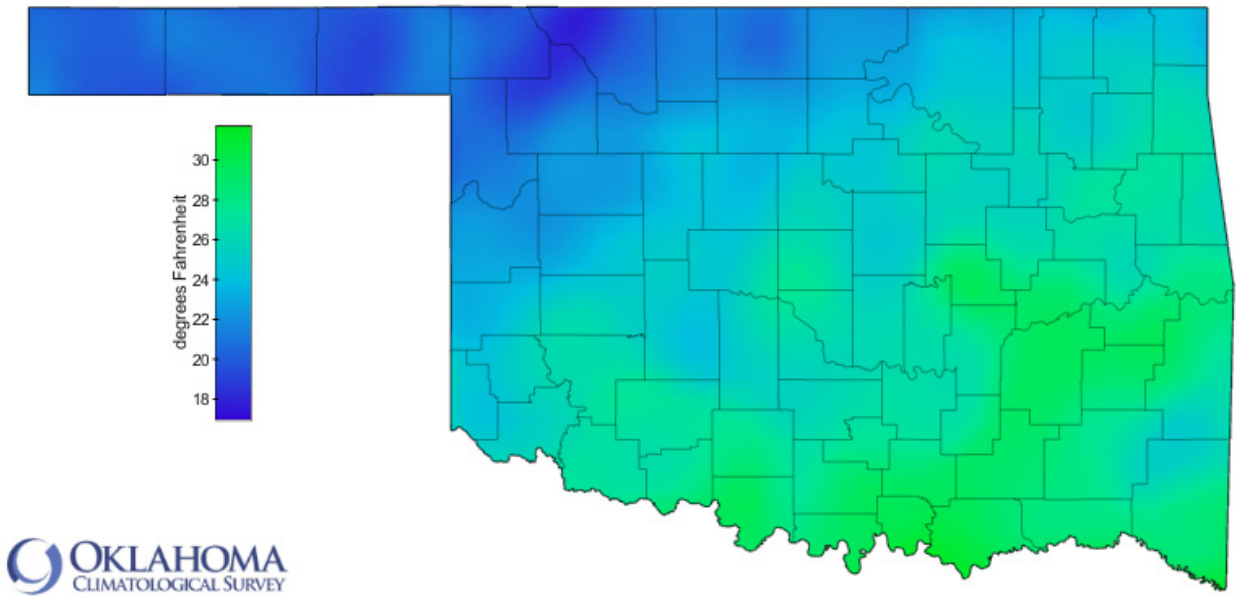
inches of snow fell at Jefferson, and the state's reporting stations averaged 11.7 inches for the month. The reported January 1949 snowfall totals include 30.1 inches at Union City and 25.3 inches at Ponca City. In 1988, most of the state was blanketed by 10 inches of snow (16 to 18 inches in some locales) in a major snowstorm that came on the heels of an ice storm during the previous month. Goodwell reported 16 inches on snow on January 19, 1990, accumulating 18 inches over a two-day period, in a snowstorm whose Oklahoma extent was mainly confined to the panhandle. The state record for January monthly snowfall is 32.7 inches, set at Kenton in 2001. Nearly half of that total (16 inches) was reported on the 16th.

Tornadoes are not usually a part of the January weather in Oklahoma, but the month is not immune to them. Reasonably reliable counts of tornadoes in the state are available since 1950. During that time, 12 tornadoes have occurred during January, including 4 each in 1957 and 1967. On January 4, 1917, an F3 tornado (severe damage, estimated wind speeds of 158-206 miles per hour) struck a Choctaw boarding school at Vireton (13 miles northeast of McAlester), killing 16 students and injuring 10 others.

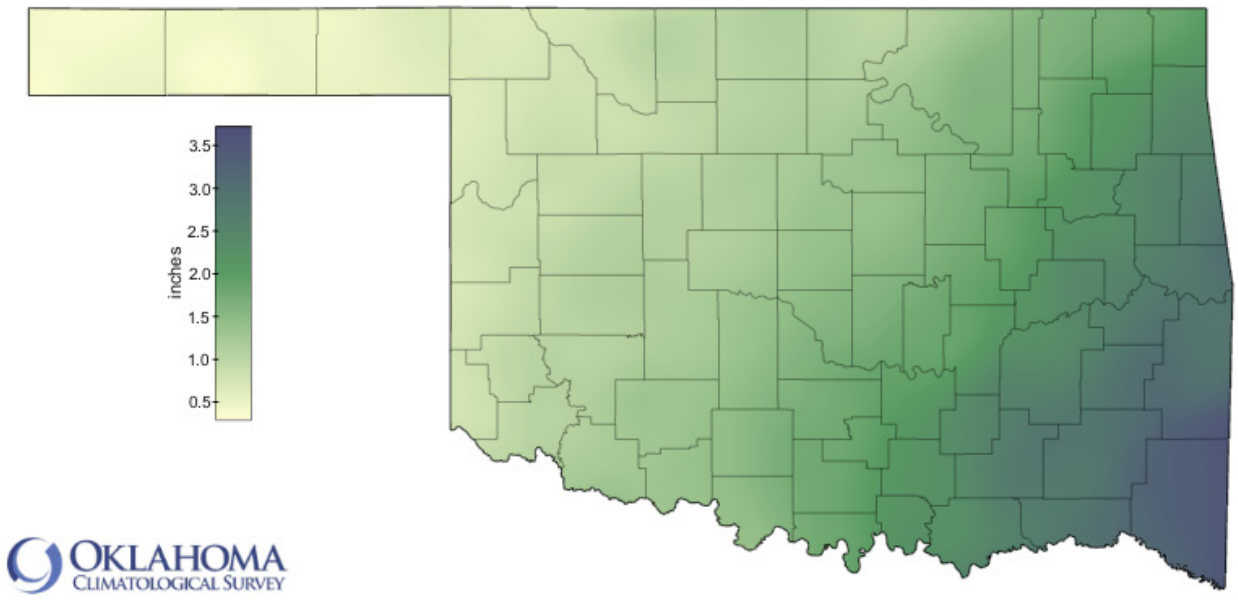
JANUARY NORMAL DAILY MAXIMUM TEMPERATURE (1981-2010)



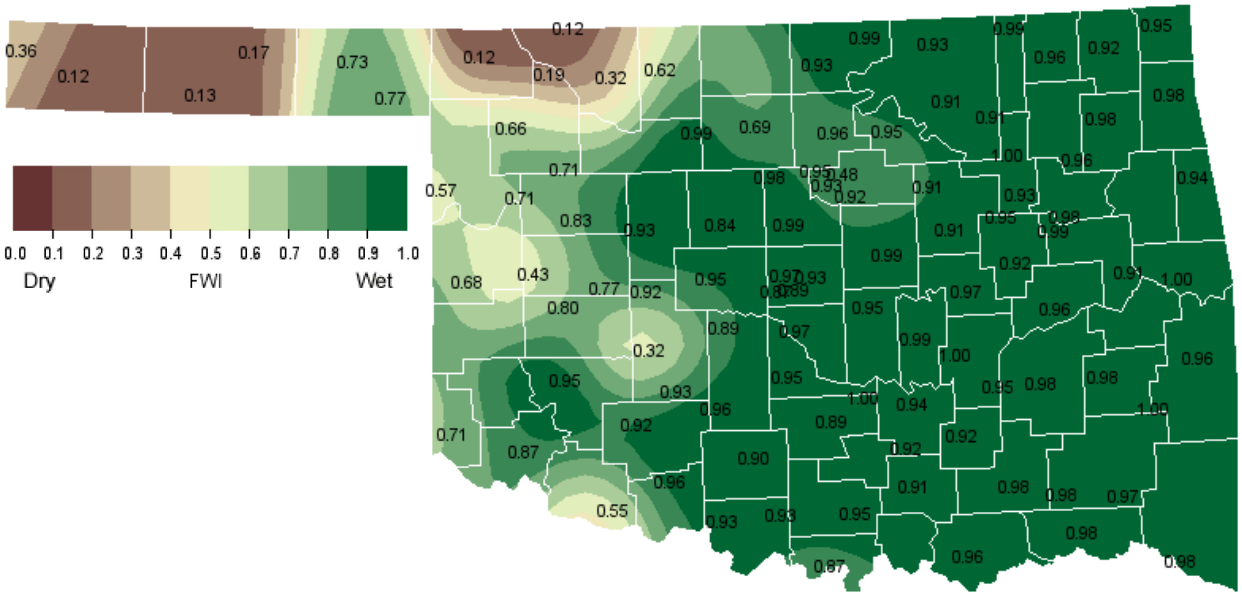
JANUARY NORMAL DAILY MINIMUM TEMPERATURE (1981-2010)



JANUARY NORMAL PRECIPITATION (1981-2010)

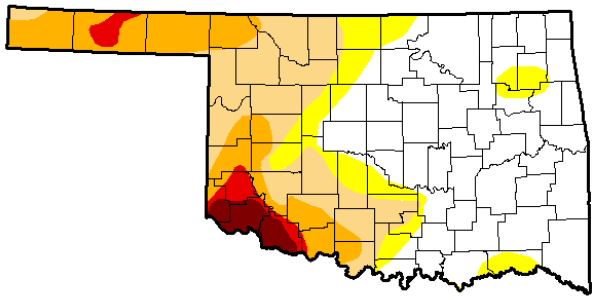


JANUARY 1, 2014 SOIL MOISTURE CONDITIONS AT 25CM



JANUARY 2014 DROUGHT INDICES

U.S. Drought Monitor
Oklahoma



December 31, 2013
(Released Thursday, Jan. 2, 2014)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	50.84	49.16	38.17	18.99	4.84	2.40
Last Week 12/24/2013	50.84	49.16	38.17	18.99	4.84	2.40
3 Months Ago 10/1/2013	21.74	78.26	43.00	17.62	4.42	1.45
Start of Calendar Year 1/1/2013	0.00	100.00	100.00	100.00	94.89	37.06
Start of Water Year 10/1/2013	21.74	78.26	43.00	17.62	4.42	1.45
One Year Ago 1/1/2013	0.00	100.00	100.00	100.00	94.89	37.06

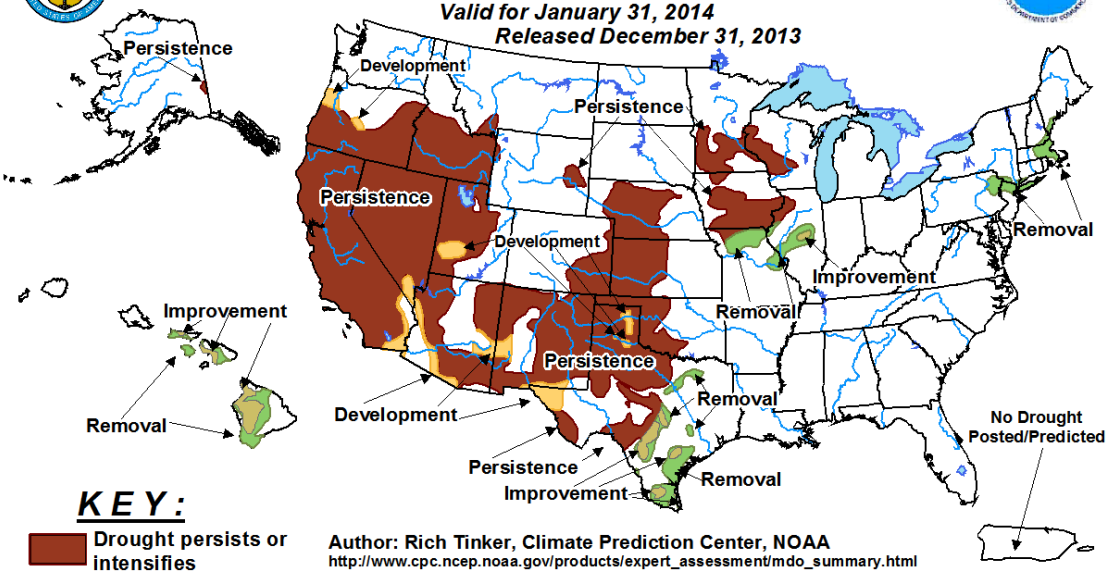
Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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

Author:
Matthew Rosencrans
CPC/NCEP/NWS/NOAA

http://droughtmonitor.unl.edu/

U.S. Monthly Drought Outlook
Drought Tendency During the Valid Period
Valid for January 31, 2014
Released December 31, 2013

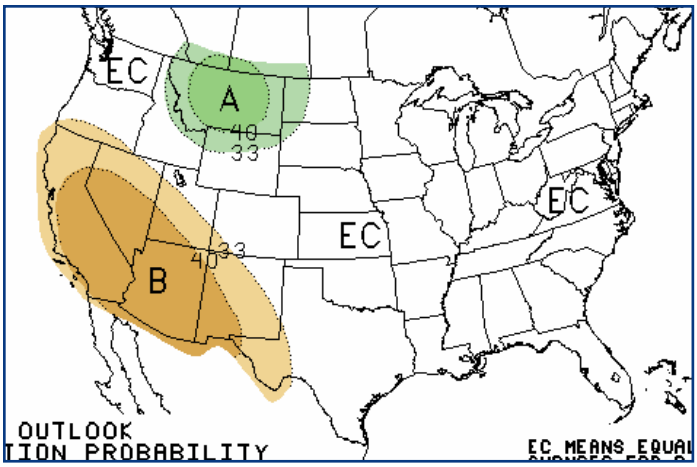


KEY:
- **Drought persists or intensifies**
- **Drought remains but improves**
- **Drought removal likely**
- **Drought development likely**

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

JANUARY 2014 U.S. PRECIPITATION FORECAST



Percent Likelihood of Above or Below Average Precipitation*

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

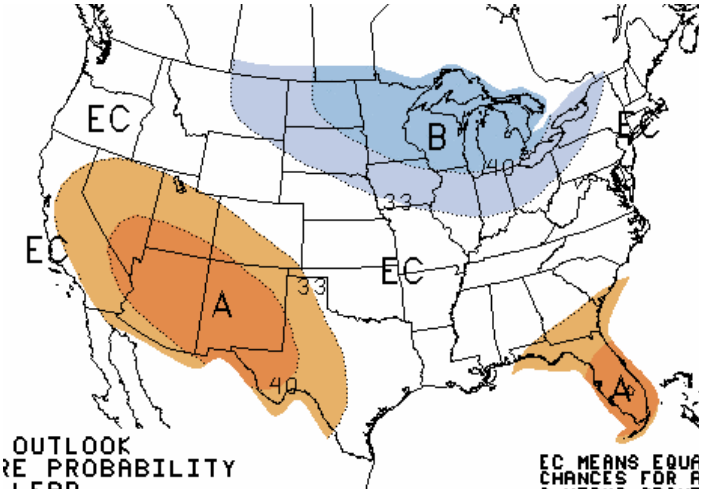
A = Above

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

B = Below

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

JANUARY 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%

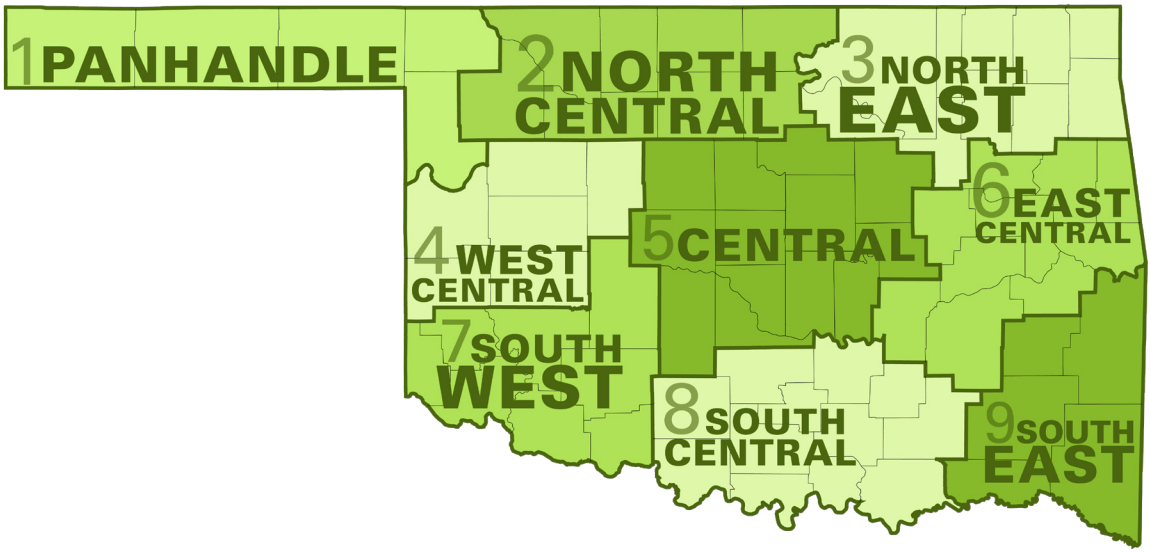
B = Below

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

JANUARY CLIMATE NORMALS

Climate Division	Max. Temperature (°F)	Min. Temperature (°F)	Avg. Temperature (°F)	Precipitation (inches)
1	47.3	19.2	33.3	0.51
2	44.7	20.5	32.6	0.95
3	46.3	24.0	35.2	1.58
4	46.9	22.4	34.6	0.83
5	47.5	24.5	36.0	1.33
6	48.0	26.4	37.2	2.10
7	49.7	24.2	37.0	1.08
8	50.4	27.2	38.8	1.91
9	51.3	27.7	39.5	2.81
Statewide	47.9	24.1	36.0	1.51

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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