

Tornadoes and flooding battled it out for Oklahoma’s top weather headline during May 2019, with both combatants bringing mayhem and misery to the state. The scope and scale of the weather disasters prompted Gov. Kevin Stitt to declare a State of Emergency for all 77 counties. According to reports from the Oklahoma Department of Emergency Management, at least six fatalities and 118 injuries were attributed to the flooding and severe weather. Preliminary reports from the National Weather Service (NWS) office in Norman indicate at least 61 twisters struck Oklahoma during May, a number that is expected to rise as more damage areas are investigated. Of those 61 tornadoes, eight were considered “strong” on the Enhanced Fujita Scale, rated as EF2 or EF3. Combined with the 22 confirmed touchdowns during April, the 2019 total stands at 83. Oklahoma averages 23.2 tornadoes during May and 56.2 per year based on 1950-2018 counts. Two fatalities due to tornadoes were reported

the worst that city has seen since 1986 as levee systems designed to protect low lying areas were threatened by the rising water. The small town of Moffett in Sequoyah County was completely swamped by flood waters, forcing its evacuation. Braggs in Muskogee County was surrounded, isolating it from the outside and forcing air evacuations. The swollen Cimarron River swept away homes as it undercut the river’s banks. Hundreds of roads were closed throughout the state due to high waters, and an untold number of stranded motorists required water rescues due to flash flooding.

According to preliminary data from the Oklahoma Mesonet, the statewide average rainfall total was 10.48 inches, 5.66 inches above normal to rank as the third wettest May since records began in 1895. The total also earned fourth place on the list of wettest calendar months in Oklahoma. Tops on that list was May 2015’s 14.44 inches, followed by

May 2019 Statewide Extremes

Description	Extreme	Station	Day
High Temperature	93°F	Beaver, Altus	16, 28
Low Temperature	31°F	Eva	10
High Precipitation	19.60 in.	Talala	--
Low Precipitation	2.14 in.	Kenton	--

during May, both from a trailer park in the path of an EF3 tornado that briefly touched down in eastern El Reno. The total tornado deaths during 2019 rose to four according to NWS reports, all in mobile homes during EF3 tornadoes.

Flooding was the most widespread and damaging of the weather hazards during May, with entire communities seemingly engulfed in flood waters at times. Historic rains in Oklahoma and upstream in Kansas swelled creeks and rivers, and overflowed reservoirs and dams across the state. The flood waters did not discriminate as both urban centers and rural areas were inundated. Voluntary and mandatory evacuations were required downstream of several reservoirs due to water releases and fear of dam failures. Extensive flooding was occurring along the Arkansas River’s path through Oklahoma from the Kansas to Arkansas borders. The river crested near or above record levels along its route through the state. Flooding along the river in Tulsa was

May 2019 Statewide Statistics

Temperature

	Average	Depart.	Rank (1895-2019)
Month (May)	66.7°F	-1.5°F	34th Coolest
Season-to-Date (Mar-May)	58.2°F	-1.1°F	37th Coolest
Year-to-Date (Jan-May)	50.8°F	-0.9°F	54th Coolest

Precipitation

	Total	Depart.	Rank (1895-2019)
Month (May)	10.48 in.	5.66 in.	3rd Wettest
Season-to-Date (Mar-May)	17.16 in.	6.04 in.	4th Wettest
Year-to-Date (Jan-May)	20.74 in.	6.23 in.	4th Wettest

Depart. = departure from 30-year normal

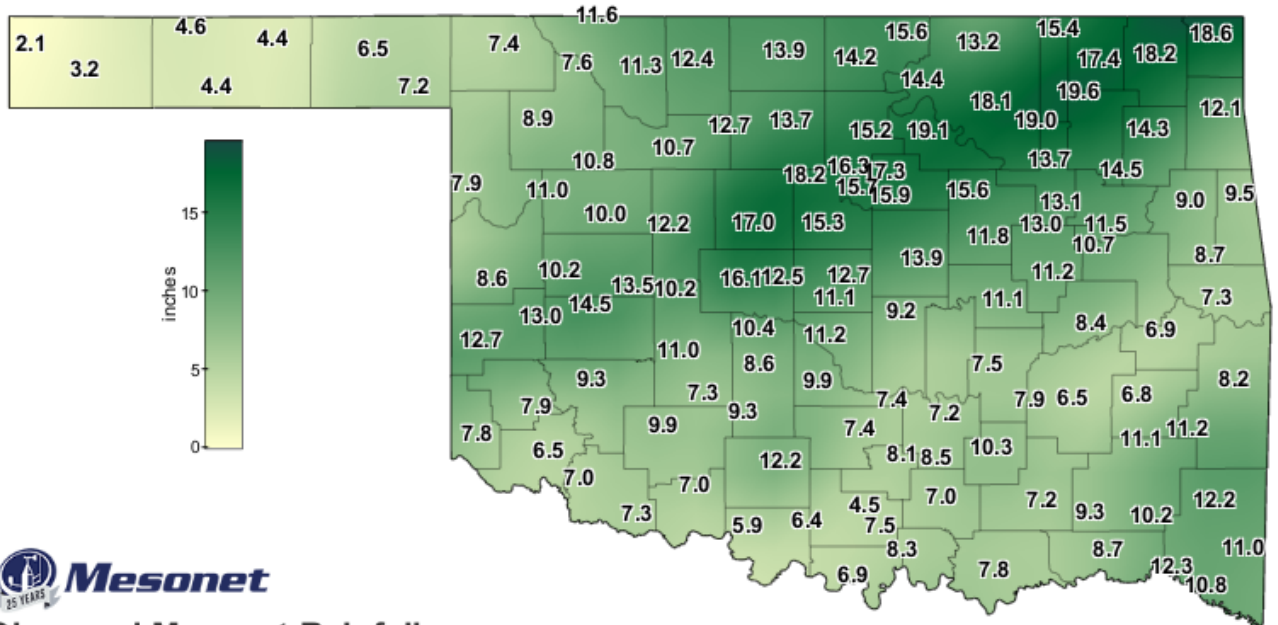
October 1941 and May 1957 with 10.75 inches and 10.54 inches, respectively. North central Oklahoma’s average of 12.2 inches was 7.84 inches above normal, ranking it as the wettest calendar month on record for that part of the state. Central, northeastern, and west central sections saw their second wettest Mays on record. Most of the heftiest rainfall totals occurred along that corridor from west central through

northeastern Oklahoma. The NWS cooperative observer site at Pawnee led the state with 22.52 inches, although there was a report of 24.69 inches by a volunteer observer near Talala. At least 24 NWS sites broke their all-time May rainfall mark. Nineteen of those sites broke their all-time wettest calendar month marks as well, including seven sites whose records date back over 100 years. The Mesonet site at Talala recorded 19.6 inches. Of the 120 Mesonet sites, 66 recorded more than 10 inches of precipitation, while all but six received at least 5 inches. The Kenton site received 2.13 inches of rain during the month for the lowest total, but that was still 0.07 inches above normal. The climatological spring – March 1 through May 31 – ended as the fourth wettest on record with a statewide average of 17.16 inches, 6.04 inches above normal. The first five months of the year were 6.23 inches above normal at 20.74 inches to rank as the fourth wettest such period on record. The northeast experienced its wettest January-May on record with an average of 28.2 inches, 11.16 inches above normal.

The excessive rains and associated cloudiness kept high temperatures 2-3 degrees below normal, although the surge of warm, moist air from the Gulf of Mexico had the opposite impact on low temperatures. The clouds and rain won out, however, and the statewide average temperature finished at 66.7 degrees, 1.5 degrees below normal to rank as the 34th coolest May on record. The season's last freeze occurred on May 22 when Eva reached a low of 32 degrees. Eva recorded the only other sub-freezing temperature of the month with 31 degrees reported on May 10. Altus and Beaver grabbed the state's top reading of 93 degrees on the 28th and 16th, respectively. Spring's statewide average of 58.2 degrees ranked as the 37th coolest on record, 1.1 degrees below normal. The first five months of 2019 ended almost a degree below normal, the 54th coolest on record.

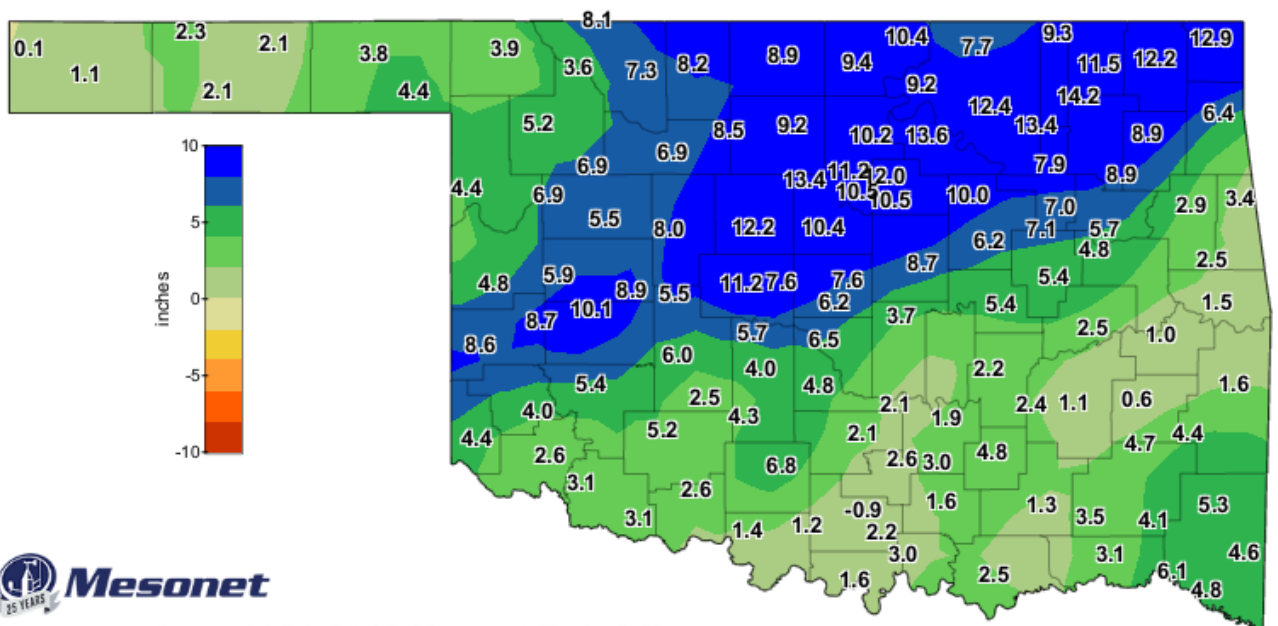
Dry conditions were but a memory for the state by the end of May. The June precipitation and temperature outlooks from the Climate Prediction Center (CPC) indicated greatly increased odds of below normal temperatures and above normal precipitation for much of the state. Given the wet, cool forecast, CPC's U.S. Monthly Drought Outlook for June did not foresee any drought development within the Southern Plains or Oklahoma.

MAY 2019 OBSERVED PRECIPITATION



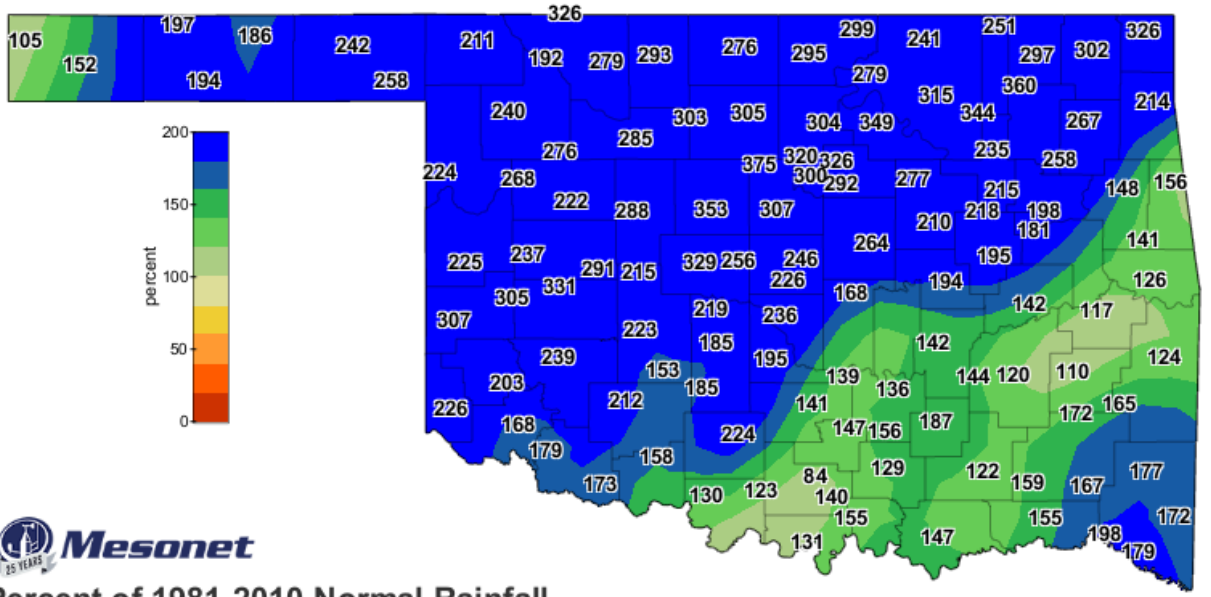
May 1, 2019 through May 31, 2019
Created 12:00:49 PM June 1, 2019 UTC. Copyright 2019

MAY 2019 DEPARTURE FROM NORMAL PRECIPITATION



May 1, 2019 through May 31, 2019
Created 12:00:48 PM June 1, 2019 UTC. Copyright 2019

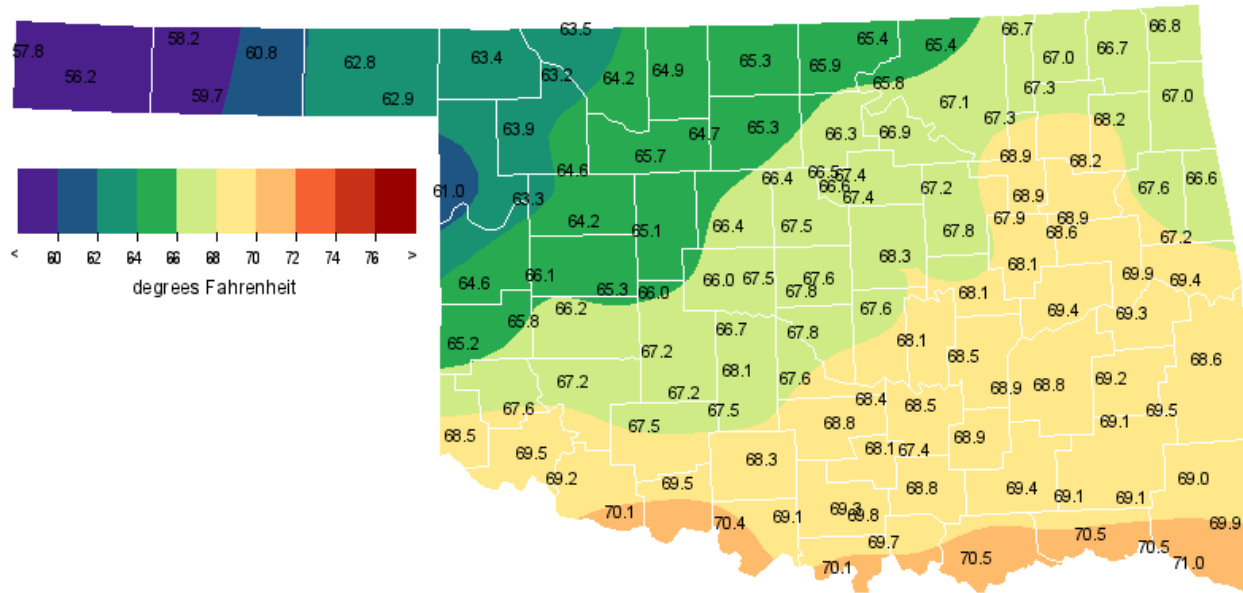
MAY 2019 PERCENT OF NORMAL PRECIPITATION



Percent of 1981-2010 Normal Rainfall
Calendar Month to Date

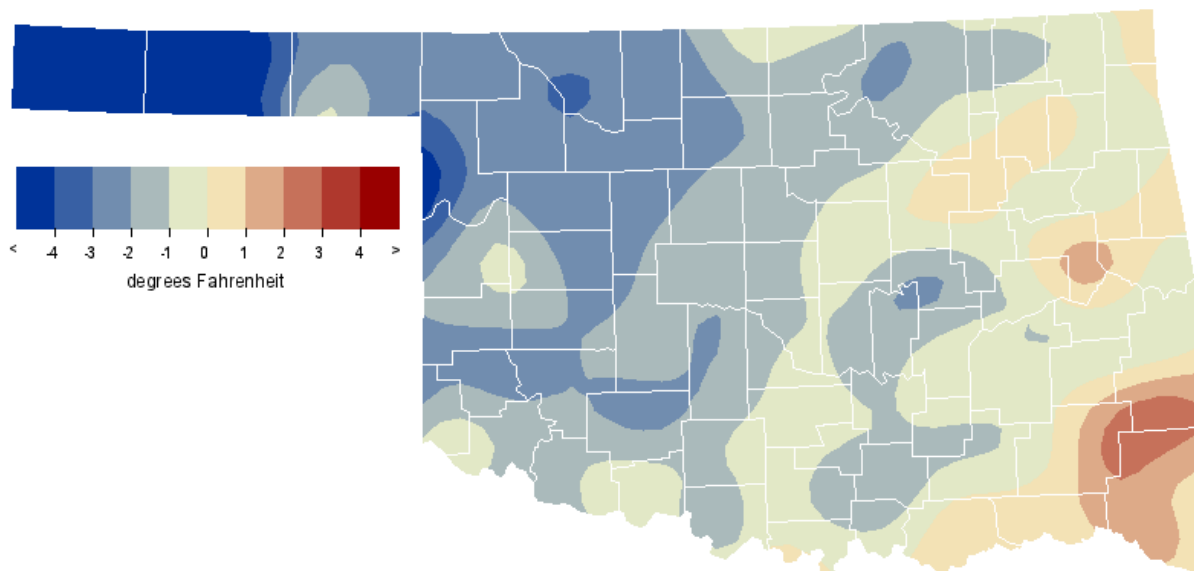
May 1, 2019 through May 31, 2019
Created 12:00:49 PM June 1, 2019 UTC. Copyright 2019

MAY 2019 AVERAGE TEMPERATURE



May 2019
 Copyright (c) 2019 Oklahoma Climatological Survey.
 All rights reserved. Data collected by Oklahoma Mesonet.

MAY 2019 DEPARTURE FROM NORMAL TEMPERATURE

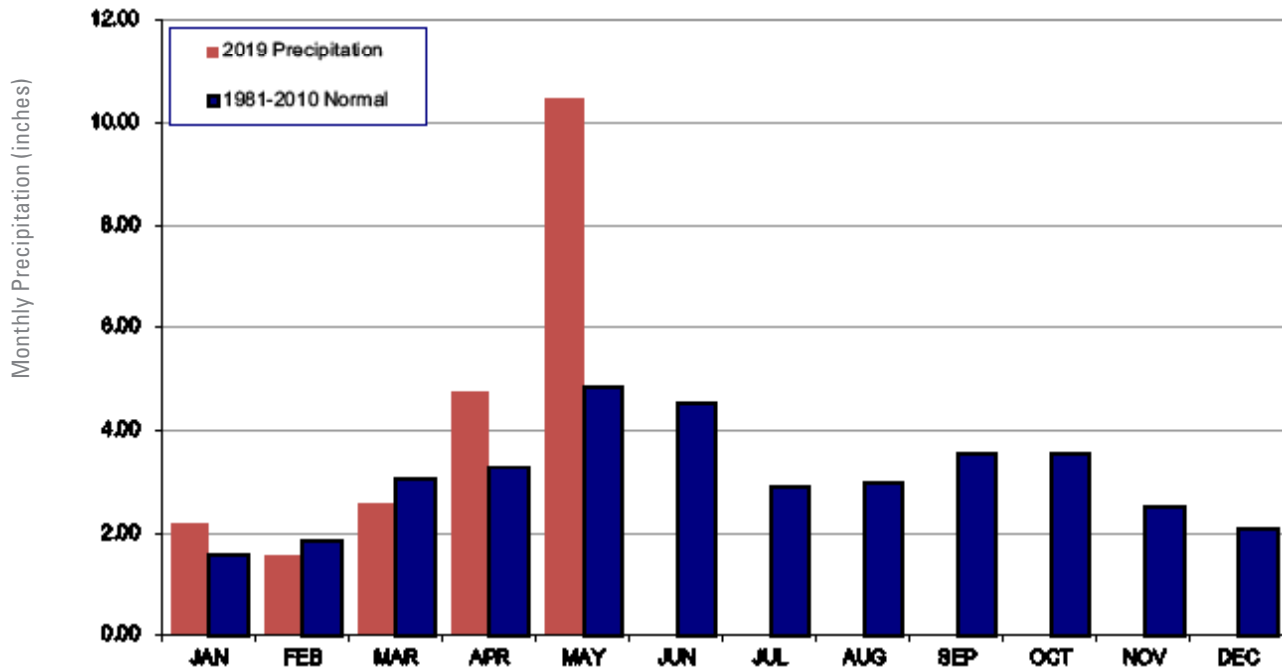


May 2019
 Copyright (c) 2019 Oklahoma Climatological Survey.
 All rights reserved. Data collected by Oklahoma Mesonet.

MESONET MONTHLY SUMMARY FOR MAY 2019

NAME	MEAN TEMP	HIGH TEMP	LOW TEMP	DAY	DAY	HDD	CDD	TOT PPT	HIGH 24-HR	DAY	NAME	MEAN TEMP	HIGH TEMP	LOW TEMP	DAY	DAY	HDD	CDD	TOT PPT	HIGH 24-HR	DAY
PANHANDLE																					
Arnett	63.1	89	15	38	10	****	****	7.94	1.72	20	Goodwell	59.7	89	16	34	10	200	37	4.35	1.17	20
Beaver	62.8	93	16	35	10	140	73	6.52	2.30	20	Hooker	60.8	90	16	34	10	173	44	4.44	1.45	20
Boise City	24.0	89	16	***	2	224	13	3.24	1.41	20	Kenton	57.8	91	16	32	19	236	15	2.14	.64	20
Buffalo	63.4	92	15	37	10	132	82	7.39	1.92	20	Slapout	62.9	91	15	38	10	134	70	7.23	2.48	20
Eva	58.2	91	16	31	10	230	20	4.60	1.53	23											
NORTH CENTRAL																					
Alva	64.2	91	15	40	10	117	92	11.31	3.30	7	May Ranch	63.5	91	15	38	10	128	81	11.61	2.25	7
Blackwell	66.0	87	15	42	10	82	112	14.24	4.34	20	Medford	65.3	89	15	40	10	96	107	13.88	3.86	20
Breckinridge	65.4	88	15	41	10	95	106	13.70	4.15	20	Newkirk	65.4	87	15	41	10	91	104	15.58	4.75	20
Cherokee	65.0	90	15	40	10	102	101	12.40	2.76	7	Red Rock	66.3	87	15	40	10	73	113	15.24	4.24	20
Fairview	65.7	89	28	41	10	94	115	10.66	3.11	20	Seiling	64.5	88	15	39	10	107	92	10.83	3.74	7
Freedom	63.1	90	15	36	10	129	71	7.60	1.95	20	Woodward	63.9	90	15	37	10	122	89	8.92	1.97	20
Lahoma	64.7	87	15	41	10	103	92	12.65	3.28	20											
NORTHEAST																					
Bixby	68.9	87	24	44	10	41	162	13.05	3.80	20	Pawnee	67.0	88	15	40	10	64	124	19.07	6.09	20
Burbank	65.8	87	15	38	10	81	107	14.40	3.96	20	Porter	68.9	87	23	42	10	42	162	11.54	3.50	29
Copan	66.8	87	16	39	10	72	127	15.39	4.42	20	Pryor	68.2	87	23	42	10	49	148	14.29	3.86	20
Foraker	65.5	86	15	37	10	88	103	13.20	4.09	20	Skiatook	67.3	86	15	41	10	60	133	18.96	6.44	20
Inola	68.1	87	24	43	10	48	145	14.45	5.09	20	Talala	67.3	87	15	42	10	60	132	19.60	5.36	20
Jay	67.1	85	23	41	10	58	122	12.09	2.88	20	Tulsa	68.9	87	24	43	10	43	164	13.68	3.91	20
Miami	66.9	85	24	44	10	64	121	18.62	4.60	20	Vinita	66.8	86	24	41	10	65	120	18.21	4.75	20
Nowata	66.9	86	16	41	10	70	130	17.35	4.45	20	Wynona	67.0	87	15	40	10	65	129	18.12	5.59	20
WEST CENTRAL																					
Bessie	66.2	88	28	39	10	76	113	14.48	3.37	25	Erick	65.2	86	28	40	10	74	80	12.73	4.12	7
Butler	66.1	89	15	39	10	75	109	10.24	2.82	25	Putnam	64.2	86	15	39	10	110	85	9.95	3.02	20
Camargo	63.3	87	15	38	10	120	68	11.00	2.92	7	Watonga	65.1	87	28	41	10	95	98	12.24	3.21	24
Cheyenne	64.7	85	15	38	10	100	89	8.56	2.06	25	Weatherford	65.3	87	28	40	10	83	91	13.54	2.38	24
Elk City	65.8	87	28	41	10	73	98	12.97	3.34	25											
CENTRAL																					
Acme	82.9	102	22	65	4	0	555	2.38	1.00	3	Ninnekah	83.6	104	22	64	4	0	577	1.42	1.23	3
Acme	67.5	84	16	40	10	57	134	9.33	1.54	24	Norman	67.8	85	16	42	10	50	136	11.22	2.02	8
Bristow	67.8	87	15	39	10	54	140	11.76	1.70	20	Oilton	67.3	87	15	38	10	64	135	15.63	4.86	20
Lake Carl Blac	66.5	88	15	41	10	71	117	16.28	4.75	20	OKC East	67.8	86	16	41	10	55	141	11.13	2.10	8
Chandler	68.3	88	15	41	10	47	148	13.91	2.39	8	Okemah	68.1	85	24	43	10	47	142	11.06	1.68	29
Chickasha	68.2	87	16	42	10	49	148	8.61	1.34	24	Perkins	67.3	88	15	41	10	56	128	15.89	3.67	20
El Reno	66.0	87	15	39	10	77	110	16.08	4.24	8	Seminole	68.1	85	24	43	10	44	139	8.92	1.77	29
Guthrie	67.5	88	15	43	10	60	139	15.34	2.92	20	Shawnee	67.6	85	24	40	10	48	130	9.18	1.97	8
Kingfisher	66.5	87	15	41	10	69	114	15.89	3.46	24	Spencer	67.6	87	15	39	10	61	141	12.71	2.51	20
Marena	66.6	88	15	41	10	66	115	15.72	3.89	20	Stillwater	67.4	89	15	42	10	56	130	17.30	4.59	20
Minco	66.7	85	16	41	10	64	117	10.41	1.69	8	Washington	67.6	85	31	42	10	47	128	9.92	1.75	28
Marshall	66.5	88	15	42	10	71	116	18.21	4.22	20	Yukon	67.4	87	15	40	10	61	136	12.49	2.71	20
EAST CENTRAL																					
Cookson	67.2	85	24	42	10	60	128	8.74	2.01	29	Sallisaw	69.4	88	24	47	10	34	170	7.33	1.68	29
Eufaula	69.4	86	23	47	10	35	170	8.39	1.47	8	Stigler	69.2	88	22	46	10	35	166	6.92	1.59	1
Haskell	68.7	87	24	43	10	41	154	10.65	2.57	29	Stuart	68.8	86	23	44	10	40	159	7.91	2.02	1
Hectorville	67.9	85	15	42	10	48	139	13.02	3.06	20	Tahlequah	67.6	86	23	40	10	54	134	8.98	2.37	29
Holdenville	68.4	85	16	43	10	41	147	7.46	1.81	21	Webbers Falls	69.9	88	16	46	10	30	182	*****	*****	***
McAlester	68.8	86	22	47	13	40	159	6.47	2.14	1	Westville	66.7	84	23	41	10	58	109	9.45	2.38	29
Okmulgee	68.1	86	23	42	10	47	144	11.19	2.17	29											
SOUTHWEST																					
Altus	69.6	93	28	43	10	46	187	6.46	3.02	24	Hollis	68.5	90	28	44	10	51	159	7.82	1.94	7
Apache	67.1	86	16	39	10	63	129	7.33	2.00	21	Mangum	67.6	91	28	41	10	57	137	7.90	2.08	25
Fort Cobb	67.3	89	16	42	10	61	131	10.95	2.97	20	Medicine Park	67.5	86	28	43	10	55	132	9.90	3.88	24
Grandfield	70.1	91	28	43	10	37	193	7.26	1.22	10	Tipton	69.2	91	28	43	10	43	175	7.01	1.93	24
Hinton	66.0	86	28	41	10	76	106	10.20	2.38	8	Walters	69.4	88	28	44	10	34	170	6.95	1.57	21
Hobart	67.2	89	28	40	10	64	133	9.33	3.76	25											
SOUTH CENTRAL																					
Ada	68.5	86	24	43	10	43	152	7.16	1.84	1	Lane	69.3	87	22	46	10	32	165	7.22	2.05	1
Ardmore	69.9	87	25	45	10	34	185	7.54	2.22	1	Madill	69.7	87	25	45	10	34	179	8.33	3.29	1
Burneyville	70.1	88	22	44	10	31	190	6.85	1.94	1	Newport	69.3	86	24	45	10	36	170	4.52	1.15	8
Byars	68.4	85	16	42	10	45	150	7.36	1.31	18	Pauls Valley	68.8	86	23	43	10	39	156	7.43	1.42	1
Centrahoma	69.0	87	22	45	10	37	161	10.30	4.62	1	Ringling	69.2	87	25	45	10	36	165	6.38	1.61	29
Durant	70.6	87	22	47	10	28	201	7.76	2.75	1	Sulphur	68.0	85	23	44	10	46	140	8.05	2.77	1
Fittstown	67.5	84	23	43	10	51	128	8.48	3.50	1	Tishomingo	68.7	86	23	45	10	41	156	6.95	1.97	1
Ketchum Ranch	68.3	86	22	43	10	41	143	12.22	3.44	1	Waurika	70.5	89	16	44	10	33	202	5.87	1.18	18
SOUTHEAST																					
Antlers	69.1	87	22	46	13	30	157	9.33	3.13	1	Mt Herman	69.0	86	23	48	13	27	152	12.15	3.69	1
Broken Bow	70.0	88	25	48	13	15	169	10.97	2.65	1	Talihina	69.5	87	22	47	13	32	172	11.23	4.12	1
Clayton	69.1	87	22	46	13	34	162	11.14	4.11	1	Valliant	70.5	87	23	49	13	18	188	12.32	2.88	18
Cloudy	69.1	86	25	48	13																

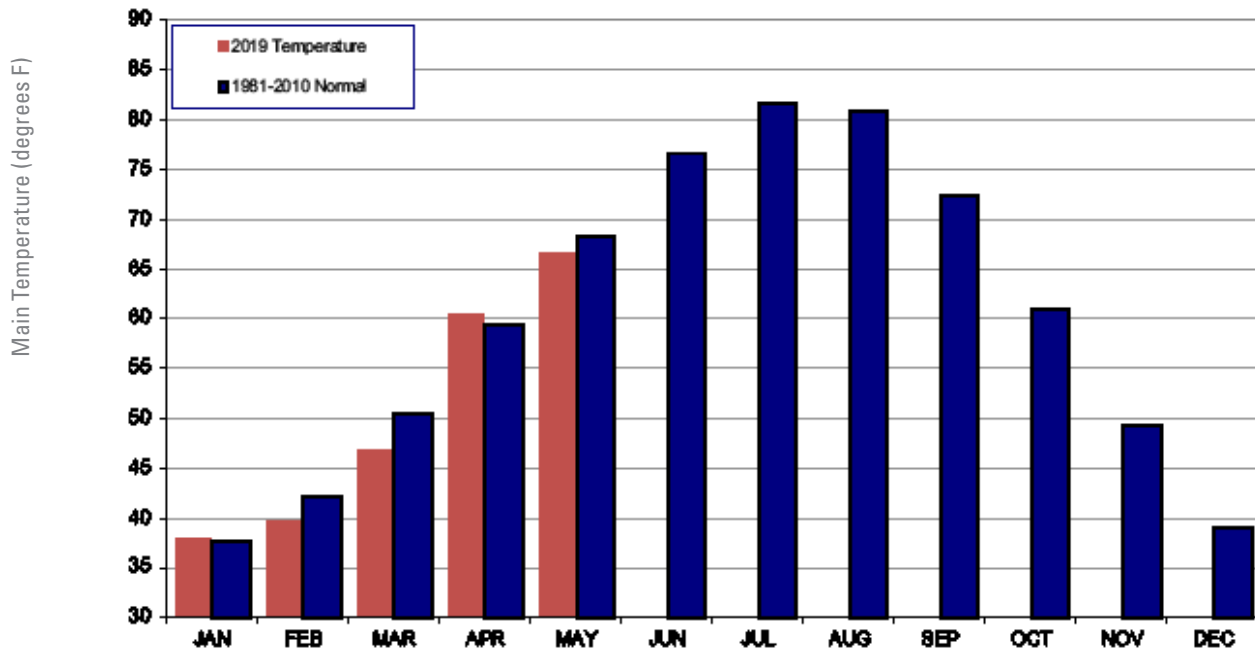
2019 STATEWIDE PRECIPITATION MONTHLY TOTALS VS. NORMAL



May 2019 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	May-18 (inches)
Panhandle	5.32	2.62	12th Wettest	7.12 (2015)	0.19 (2004)	2.69
Central	12.20	7.84	1st Wettest	11.11 (1957)	0.63 (1970)	4.40
Northeast	15.75	10.06	2nd Wettest	17.98 (1943)	1.45 (1911)	4.24
West Central	11.75	7.68	2nd Wettest	12.10 (1982)	0.42 (1966)	2.85
Central	13.09	8.07	2nd Wettest	15.50 (2015)	0.92 (1988)	4.53
East Central	8.88	3.05	17th Wettest	17.48 (2015)	1.56 (1921)	4.54
Southwest	8.38	4.17	11th Wettest	16.40 (2015)	0.44 (1966)	4.14
South Central	7.65	2.33	19th Wettest	20.69 (2015)	0.58 (1988)	4.75
Southeast	10.17	4.02	9th Wettest	20.03 (2015)	1.21 (1988)	2.52
Statewide	10.48	5.66	3rd Wettest	14.42 (2015)	1.23 (1988)	3.93

2019 STATEWIDE TEMPERATURE MONTHLY TOTALS VS. NORMAL



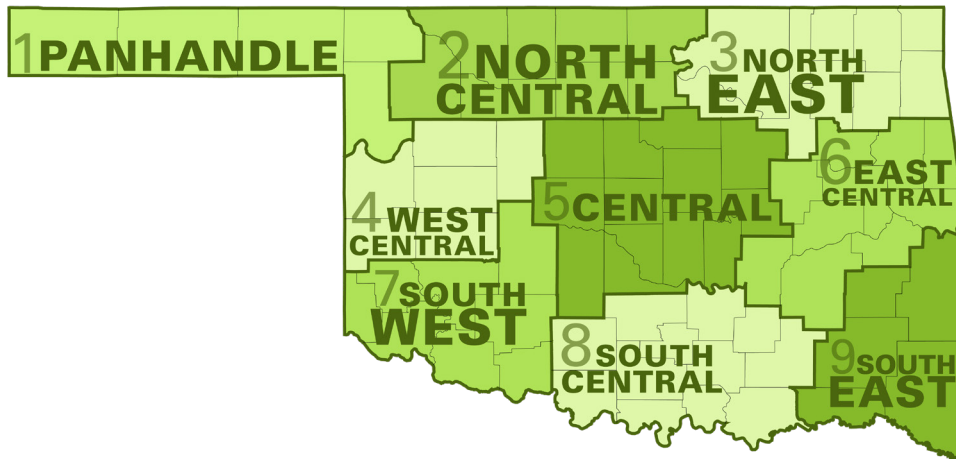
May 2019 Mesonet Temperature Comparison

Climate Division	Average Temp (F)	Departure from Normal (F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	May-18 (F)
Panhandle	60.3	-4.8	7th Coolest	72.5 (2018)	58.0 (1907)	72.5
North Central	64.8	-2.6	24th Coolest	75.4 (2018)	60.6 (1907)	75.4
Northeast	67.3	-0.2	54th Coolest	74.4 (1962)	61.7 (1917)	74.4
West Central	65.1	-2.8	20th Coolest	76.4 (2018)	60.9 (1907)	76.4
Central	67.4	-1.2	38th Coolest	75.2 (2018)	62.0 (1907)	75.2
East Central	68.5	0.0	56th Coolest	75.0 (2018)	63.2 (1917)	75.0
Southwest	68.1	-1.9	33rd Coolest	77.0 (2018)	63.5 (1907)	77.0
South Central	69.1	-1.0	40th Coolest	75.5 (2018)	63.5 (1907)	75.5
Southeast	69.6	1.0	47th Warmest	74.4 (2018)	62.8 (1917)	74.4
Statewide	66.7	-1.5	34th Coolest	75.0 (2018)	61.9 (1907)	75.0

MESONET EXTREMES FOR MAY 2019

Climate Division	High Temp (F)	Day	Station	Low Temp (F)	Day	Station	High Monthly Rainfall (inches)	Station	High Daily Rainfall (inches)	Day	Station
Panhandle	93	16th	Beaver	31	10th	Eva	7.94	Arnett	2.48	20th	Slapout
North Central	91	15th	May Ranch	36	10th	Freedom	15.58	Newkirk	4.75	20th	Newkirk
Northeast	88	15th	Pawnee	37	10th	Foraker	19.60	Talala	6.44	20th	Skiatook
West Central	89	15th	Butler	38	10th	Camargo	14.48	Bessie	4.12	7th	Erick
Central	89	15th	Stillwater	38	10th	Oilton	18.21	Marshall	4.86	20th	Oilton
East Central	88	24th	Sallisaw	40	10th	Tahlequah	13.02	Hectorville	3.06	20th	Hectorville
Southwest	93	28th	Altus	39	10th	Apache	10.95	Fort Cobb	3.88	24th	Medicine Park
South Central	89	16th	Waurika	42	10th	Byars	12.22	Ketchum Ranch	4.62	1st	Centrahoma
Southeast	90	24th	Idabel	45	13th	Wister	12.32	Valliant	4.12	1st	Talihina
Statewide	93	28th	Altus	31	10th	Eva	19.60	Talala	6.44	20th	Skiatook

Oklahoma Climate Divisions

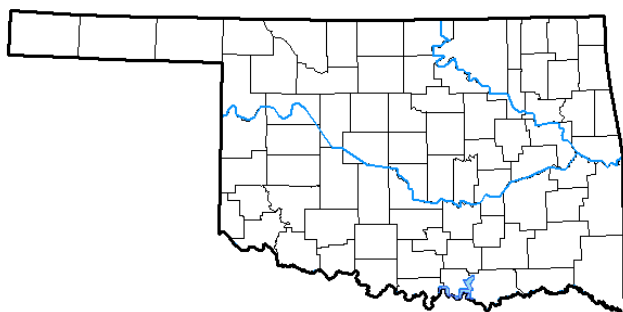


U.S. Drought Monitor Oklahoma

May 28, 2019

(Released Thursday, May. 30, 2019)

Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.00	0.00	0.00	0.00	0.00	0.00
Last Week 05-21-2019	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago 02-26-2019	88.61	11.39	0.98	0.00	0.00	0.00
Start of Calendar Year 01-01-2019	94.85	5.15	0.00	0.00	0.00	0.00
Start of Water Year 09-25-2018	72.93	27.07	9.11	4.16	0.00	0.00
One Year Ago 05-29-2018	37.27	62.73	45.53	40.54	29.71	9.81

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
NCEI/NOAA



<http://droughtmonitor.unl.edu/>

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 November 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 November result in an artificially high or low value.

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 Centers for Environmental Information:
<https://www.ncdc.noaa.gov/stormevents/>

SEASONAL OUTLOOKS

Climate Prediction Center:
http://www.cpc.ncep.noaa.gov/products/OUTLOOKS_index.shtml

CLIMATE CALENDARS AND OTHER LOCAL WEATHER AND CLIMATE INFORMATION

Oklahoma Climatological Survey:
<http://climate.mesonet.org> or <http://climate.ok.gov/>



Oklahoma Climatological Survey is the State Climate Office for Oklahoma

Dr. Kevin Kloesel Director
Dr. Chris Fiebrich Associate Director

EDITOR

Gary D. McManus State Climatologist

CONTENT AND LAYOUT ASSISTANT

Andrea Dawn Melvin Outreach Coordinator

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: 405-325-7282

E-MAIL: ocs@ou.edu

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