

NWS FORM E-5 (11-88) (PRES. by NWS Instruction 10-924)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	HYDROLOGIC SERVICE AREA (HSA)	
		Tulsa, Oklahoma (TSA)	
MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS		REPORT FOR:	MONTH
		YEAR	November
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283		SIGNATURE	Steven F. Piltz (Meteorologist-in-Charge)
		DATE	December 1, 2017

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Instruction 10-924)

An "X" in the box indicates no flood stages were reached in this Hydrologic Service Area (HSA) during the month above.

It was a very dry month across eastern OK and northwest AR, with a large portion of the area receiving less than 5% of the normal November rainfall. Normal precipitation for November ranges from 2.6 inches in Pawnee County to 4.4 inches in Haskell County. Normal precipitation for the Ozark region of northwest Arkansas averages 4.2 inches. This report, past E-5 reports, and monthly hydrology and climatology summaries can be found at <http://www.weather.gov/tsa/hydro-monthly-summary>.

Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for November 2017 ranged from a few hundredths of an inch to 3". Most of southeast OK received less than 0.25" of rain this month. This corresponds to 60% to less than 5% of the normal November rainfall (Fig. 1b). Only far northeast OK, far northwest AR, and small portions of Osage and eastern Kay Counties had 25% to 60% of the normal November rainfall. A significant portion of eastern OK and west central AR received less than 5% of the normal November rainfall!

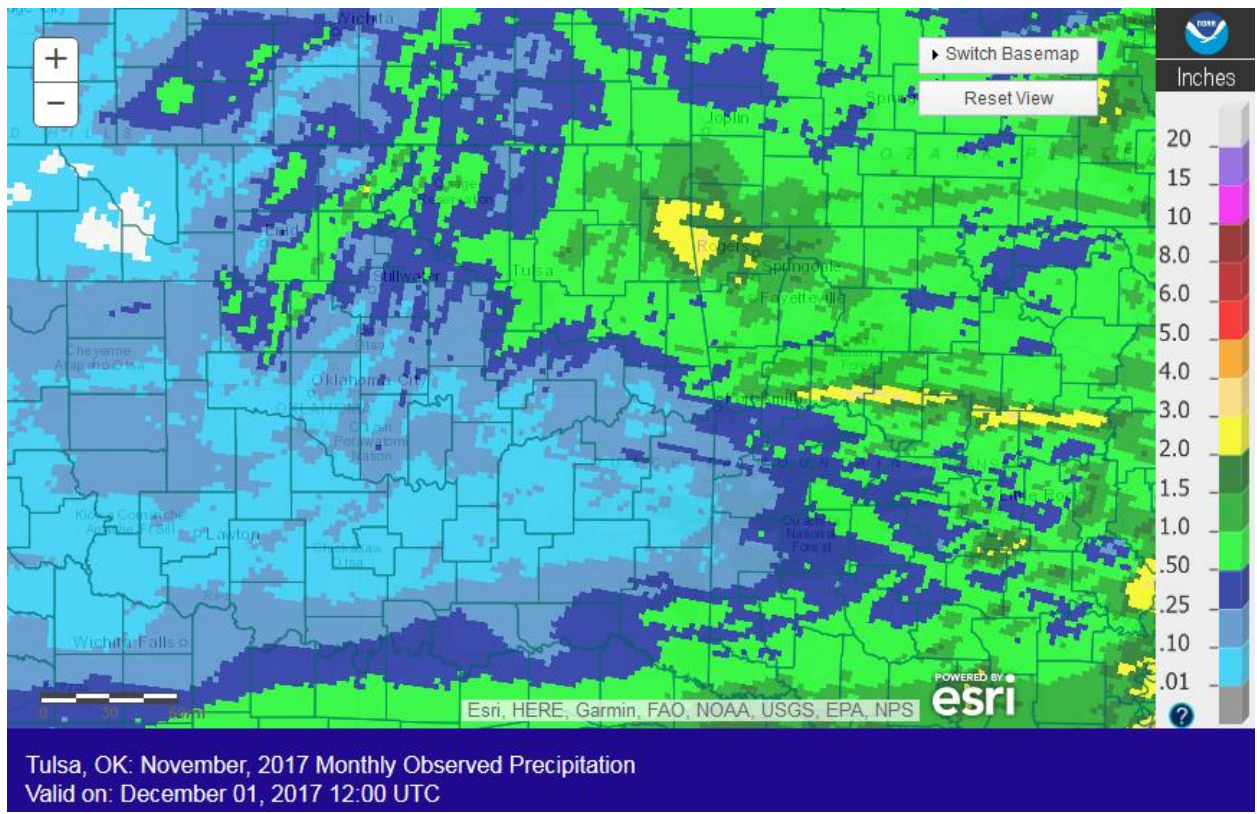


Fig. 1a. Estimated Observed Rainfall for November 2017

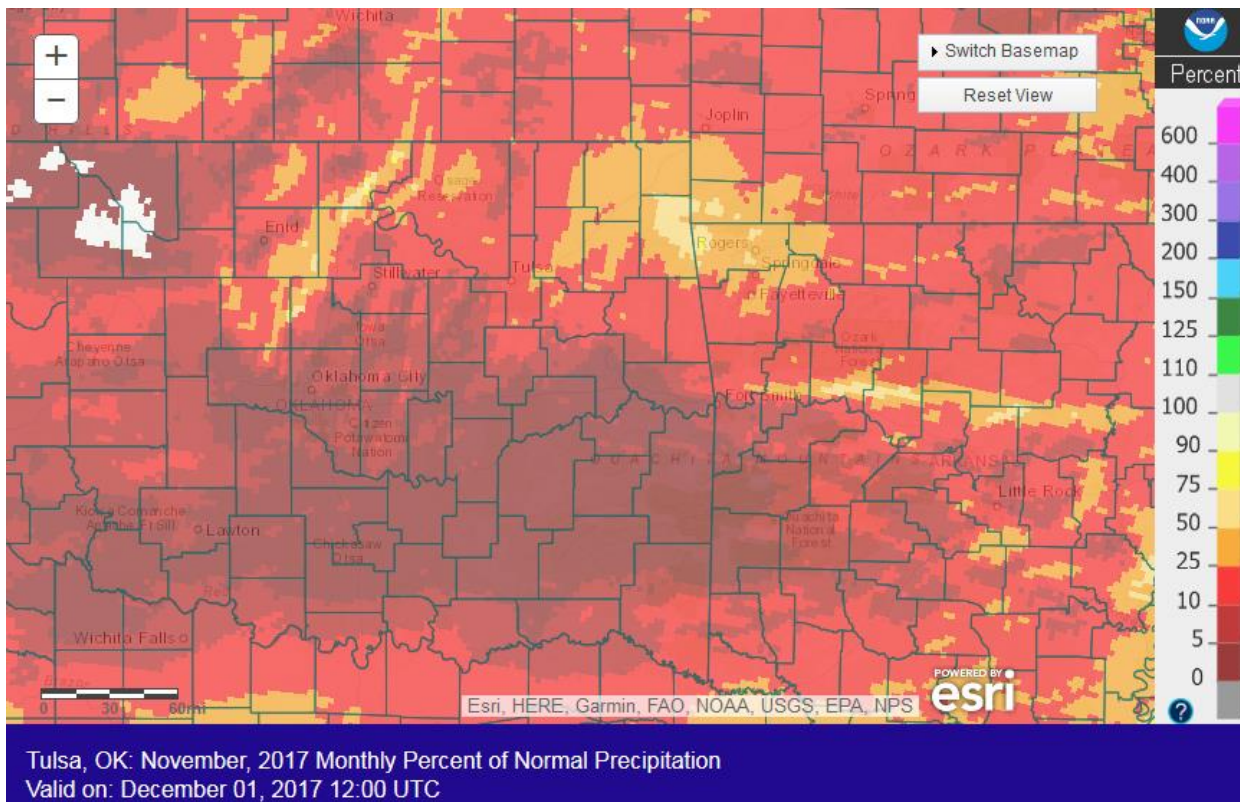


Fig. 1b. Estimated % of Normal Rainfall for November 2017

In Tulsa, OK, November 2017 ranked as the 16th warmest November (53.7°F; since records began in 1905) and the 21st driest November (0.64"; since records began in 1888). In Tulsa, OK, Autumn (Sep-Oct-Nov) 2017 ranked as the 27th warmest Autumn (64.0°F; since records began in 1905) and the 58th wettest Autumn (9.60"; since records began in 1888). Fort Smith, AR had the 11th warmest November (55.5°F; since records began in 1882) and the 2nd driest November (0.28"; since records began in 1882). Fort Smith, AR had the 17th warmest Autumn (65.3°F, tied 1922; since records began in 1882) and the 3rd driest Autumn (3.57"; since records began in 1882). Fayetteville, AR had the 9th warmest (51.3°F, tied 1964) and the 12th driest (1.11") November since records began in 1949. Fayetteville, AR had the 19th warmest (59.6°F, tied 1999) and the 12th driest (6.47", tied 2005) Autumn since records began in 1949.

Some of the larger precipitation reports (in inches) for November 2017 included:

Jay, OK (meso)	2.34	Upper Spavinaw Port, OK (coop)	2.09	Hindsville 10NNE, AR (coop)	1.73
Claremore 2ENE, OK (coop)	1.58	NW AR Regional Arpt, AR (ASOS)	1.38	Ozark, AR (coop)	1.20
Mountainburg 2NE, AR (coop)	1.19	Winslow 7NE, AR (coop)	1.17	Hindsville 7.1NW, AR (coco)	1.15

Some of the lowest precipitation reports (in inches) for November 2017 included:

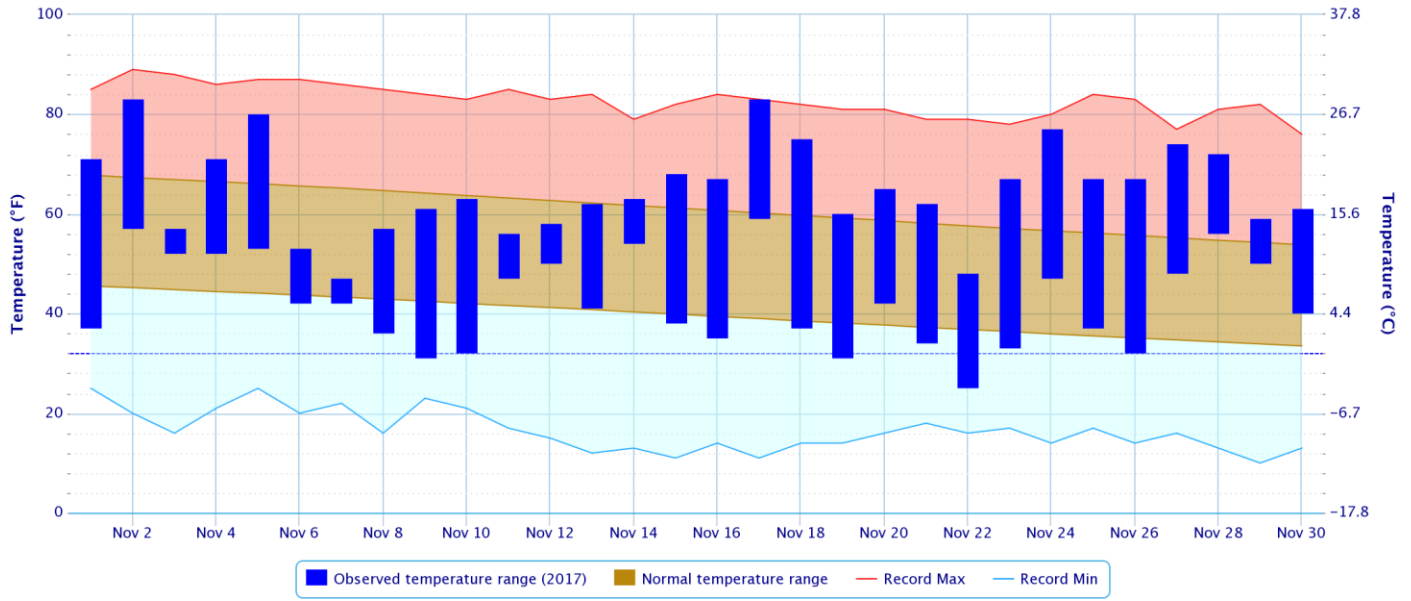
McAlester, OK (ASOS)	0.05	Muskogee, OK (ASOS)	0.11	Wister, OK (meso)	0.11
Webbers Falls, OK (meso)	0.11	Clayton, OK (meso)	0.11	Bristow, OK (meso)	0.11
Talihina, OK (meso)	0.15	Eufaula, OK (meso)	0.15	Okmulgee, OK (meso)	0.16

According to mesonet station only statistics from the [Oklahoma Climatological Survey](#) (OCS) Mesonet:

Rank since 1921	November 2017	Water-Year-to-Date (Oct 1 – Nov 30)	Autumn (Sep 1 – Nov 30)	Last 120 Days (Aug 3 – Nov 30)	Last 180 Days (Jun 4 – Nov 30)	Year-to-Date (Jan 1 – Nov 30)	Last 365 Days (Dec 1, 2016 – Nov 30, 2017)
Northeast OK	15 th driest	37 th wettest	36 th driest	37 th wettest	47 th wettest	11 th wettest	16 th wettest
East Central OK	3 rd driest	28 th driest	12 th driest	48 th wettest	38 th wettest	15 th wettest	19 th wettest
Southeast OK	1 st driest	12 th driest	2 nd driest	30 th driest	37 th wettest	49 th wettest	37 th driest
Statewide	4 th driest	30 th driest	21 st driest	32 nd wettest	43 rd wettest	17 th wettest	21 st wettest

Daily Temperature Data – Tulsa Area, OK (ThreadEx)

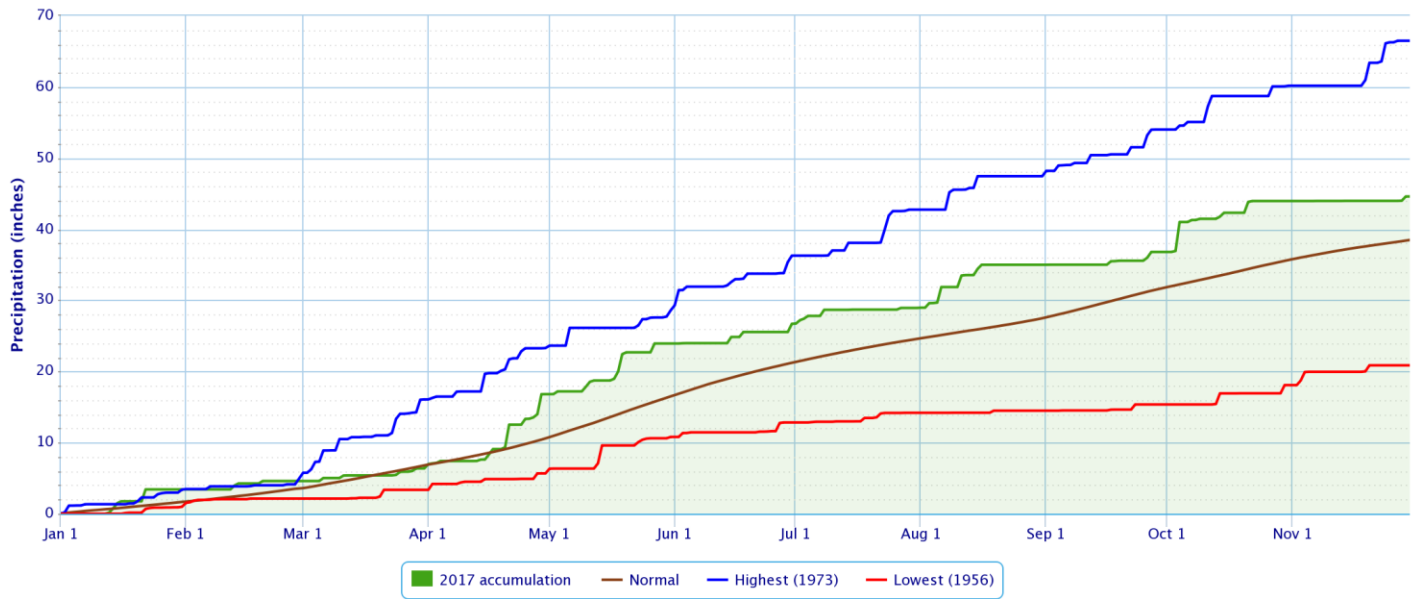
Period of Record – 1905-01-06 to 2017-11-30. Normals period: 1981-2010. Click and drag to zoom chart.



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Accumulated Precipitation – Tulsa Area, OK (ThreadEx)

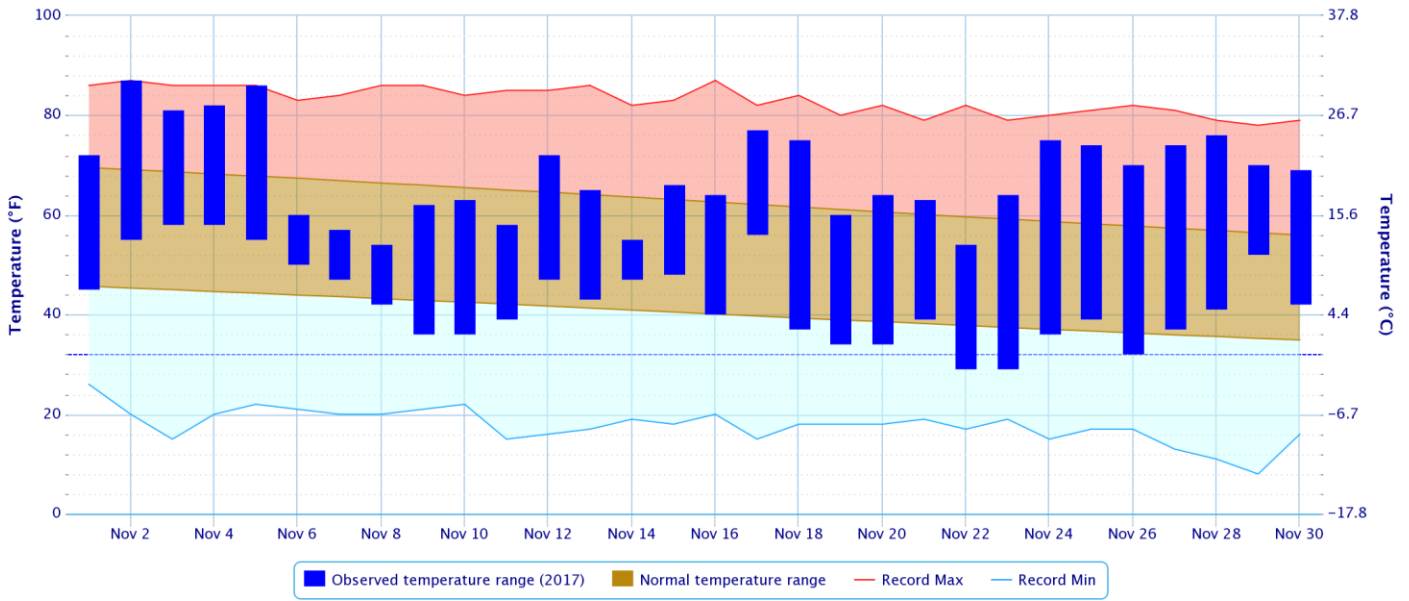
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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Daily Temperature Data – Fort Smith Area, AR (ThreadEx)

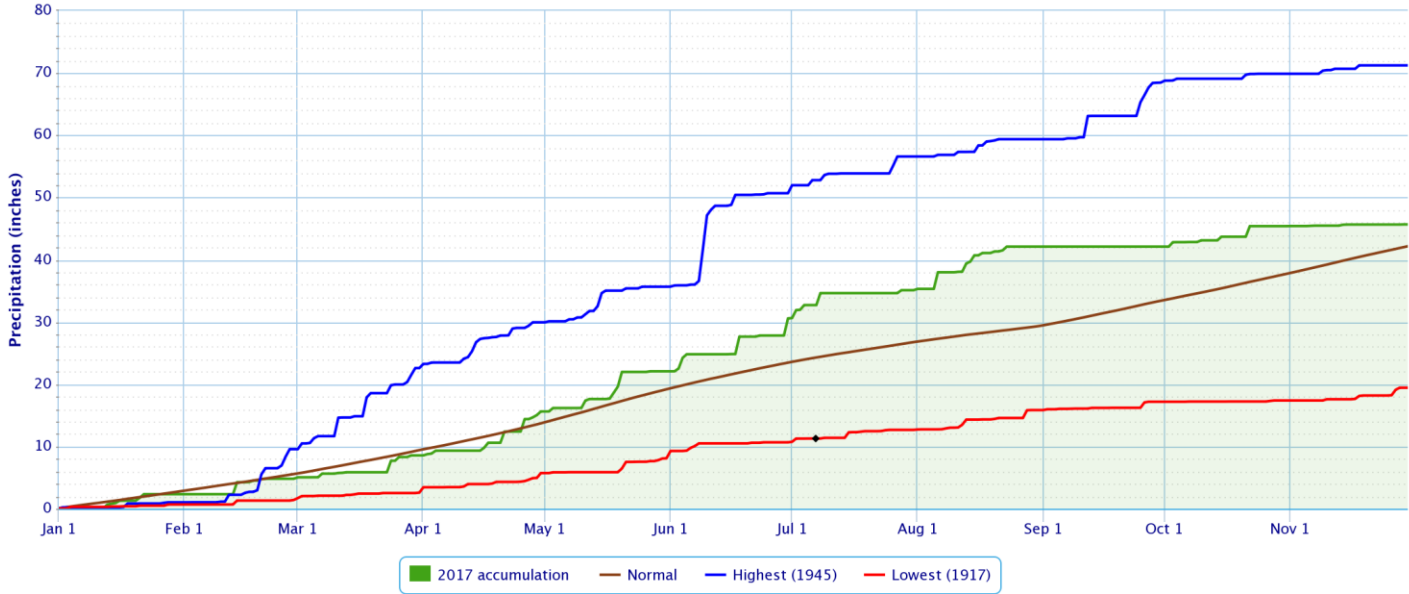
Period of Record – 1882-06-01 to 2017-11-30. Normals period: 1981-2010. Click and drag to zoom chart.



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Accumulated Precipitation – Fort Smith Area, AR (ThreadEx)

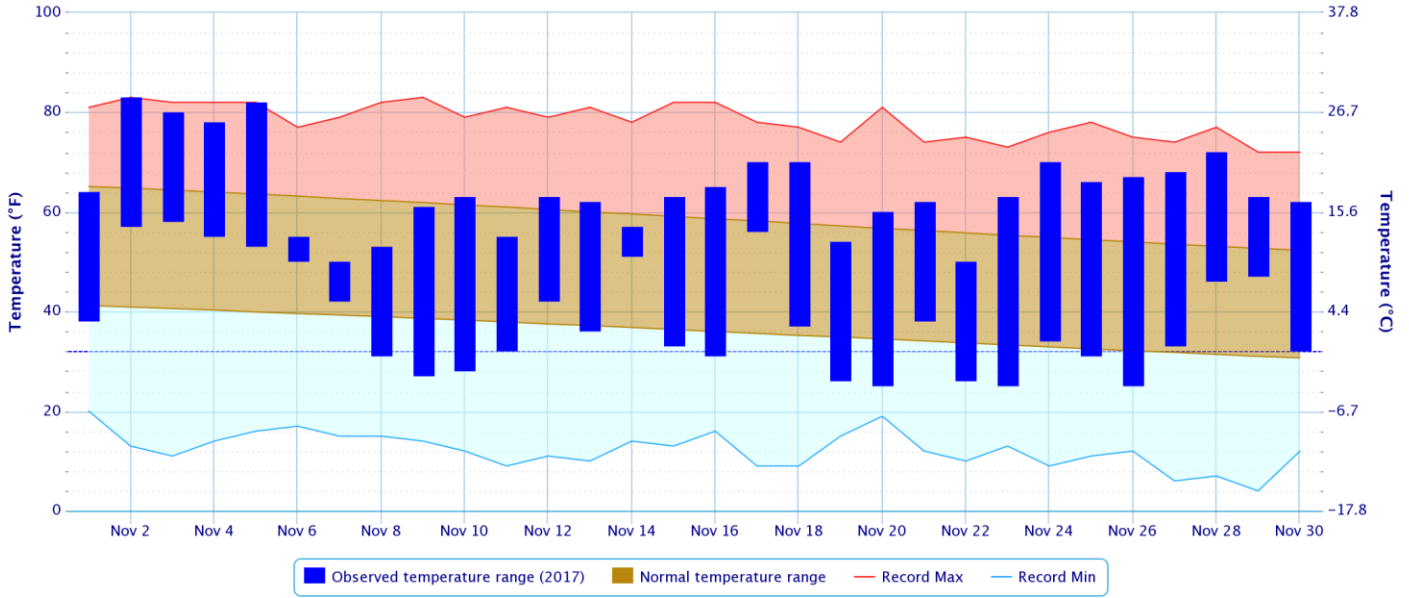
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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Daily Temperature Data – FAYETTEVILLE DRAKE FIELD, AR

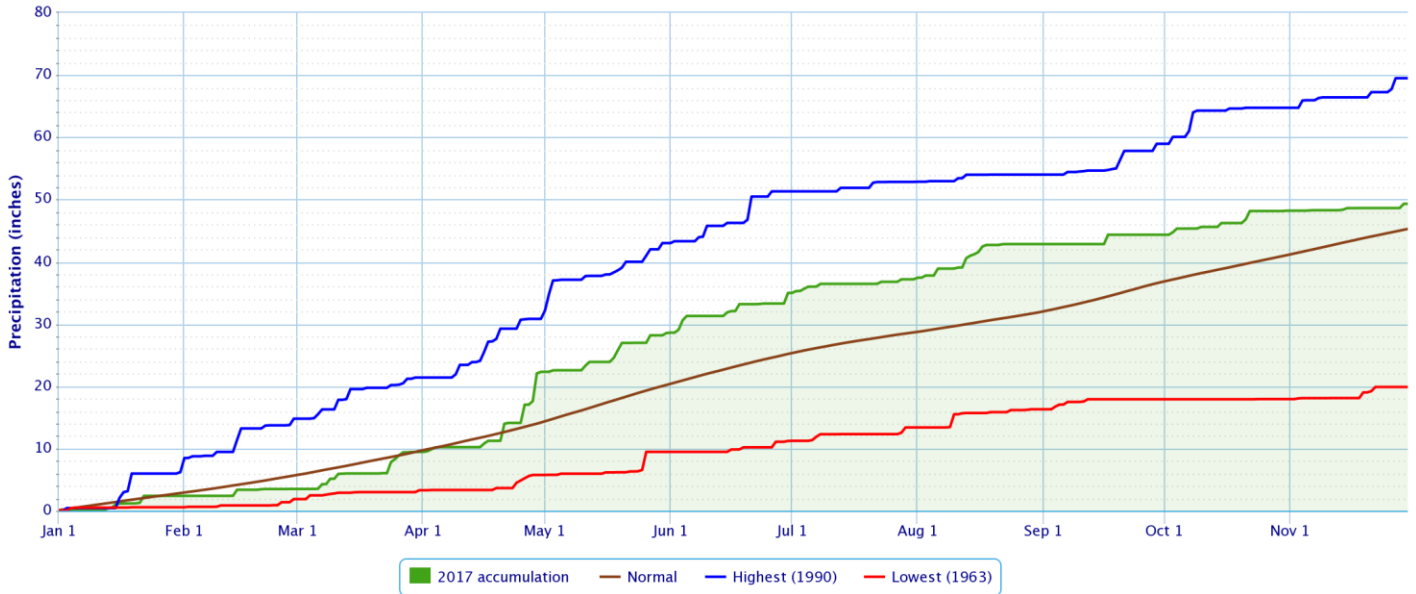
Period of Record – 1949-07-14 to 2017-11-30. Normals period: 1981-2010. Click and drag to zoom chart.



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Accumulated Precipitation – FAYETTEVILLE DRAKE FIELD, AR

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values

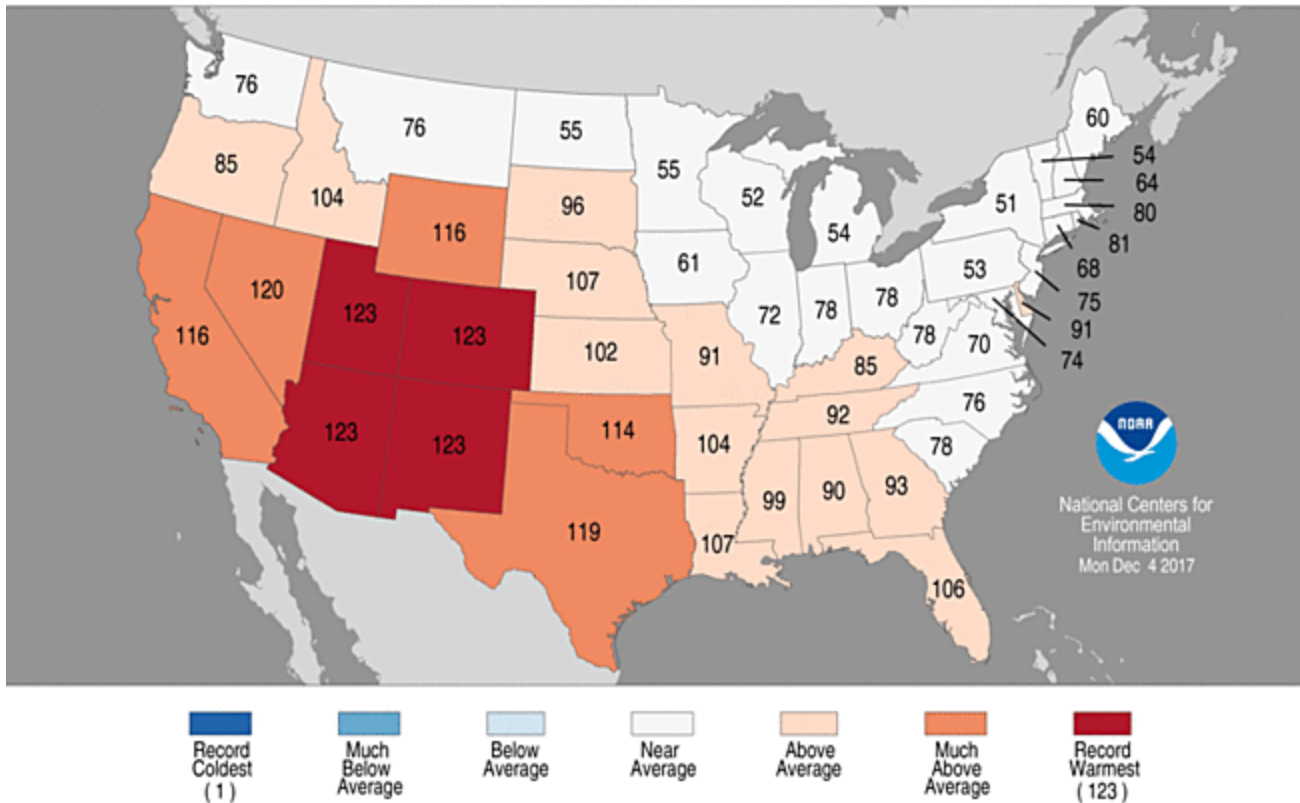


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Statewide Average Temperature Ranks

November 2017

Period: 1895–2017

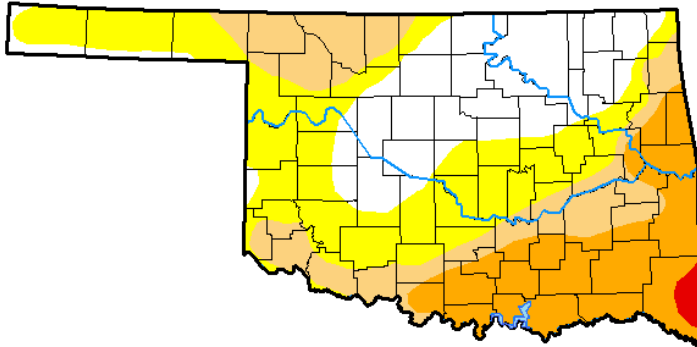


Drought

Drought increased significantly this month. According to the [U.S. Drought Monitor](#) (USDM) from November 28, 2017 (Figs. 2, 3), Severe Drought (D2) developed over parts of Cherokee, Adair, Muskogee, Sequoyah, Haskell, Le Flore, Latimer, Pittsburg, Pushmataha, and Choctaw Counties in eastern OK and Benton, Carroll, Washington, Madison, Crawford, Sebastian, and Franklin Counties in northwest AR. Moderate (D1) drought conditions were present across portions of Delaware, Cherokee, Muskogee, McIntosh, Haskell, Pittsburg, and Latimer Counties in eastern OK and Carroll, Madison, Washington, and Benton Counties in northwest AR. Abnormally dry, but not in drought, (D0) conditions were occurring over portions of Ottawa, Delaware, Mayes, Wagoner, Cherokee, Okmulgee, Creek, Okfuskee, Muskogee, and McIntosh Counties in eastern Oklahoma.

U.S. Drought Monitor Oklahoma

November 28, 2017
(Released Thursday, Nov. 30, 2017)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	27.12	72.88	39.90	20.80	0.78	0.00
Last Week 11-21-2017	38.60	61.40	28.26	8.87	0.00	0.00
3 Months Ago 08-29-2017	97.84	2.16	0.00	0.00	0.00	0.00
Start of Calendar Year 01-03-2017	5.61	94.39	83.21	55.75	5.55	0.00
Start of Water Year 09-26-2017	64.46	35.54	0.77	0.00	0.00	0.00
One Year Ago 11-29-2016	15.59	84.41	56.94	18.48	2.80	0.00

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:

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Western Regional Climate Center

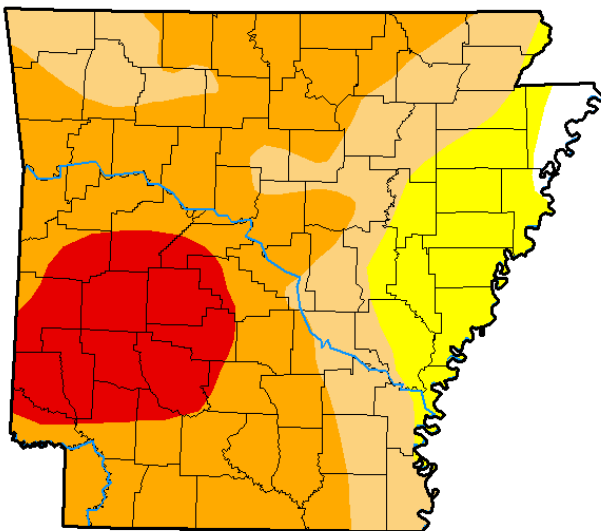


<http://droughtmonitor.unl.edu/>

Fig. 2. Drought Monitor for Oklahoma

U.S. Drought Monitor Arkansas

November 28, 2017
(Released Thursday, Nov. 30, 2017)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.39	98.61	85.20	61.27	14.66	0.00
Last Week 11-21-2017	2.99	97.01	83.12	56.64	0.00	0.00
3 Months Ago 08-29-2017	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year 01-03-2017	27.05	72.95	39.03	7.99	2.02	0.00
Start of Water Year 09-26-2017	39.57	60.43	0.46	0.00	0.00	0.00
One Year Ago 11-29-2016	0.00	100.00	86.49	46.92	0.49	0.00

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:

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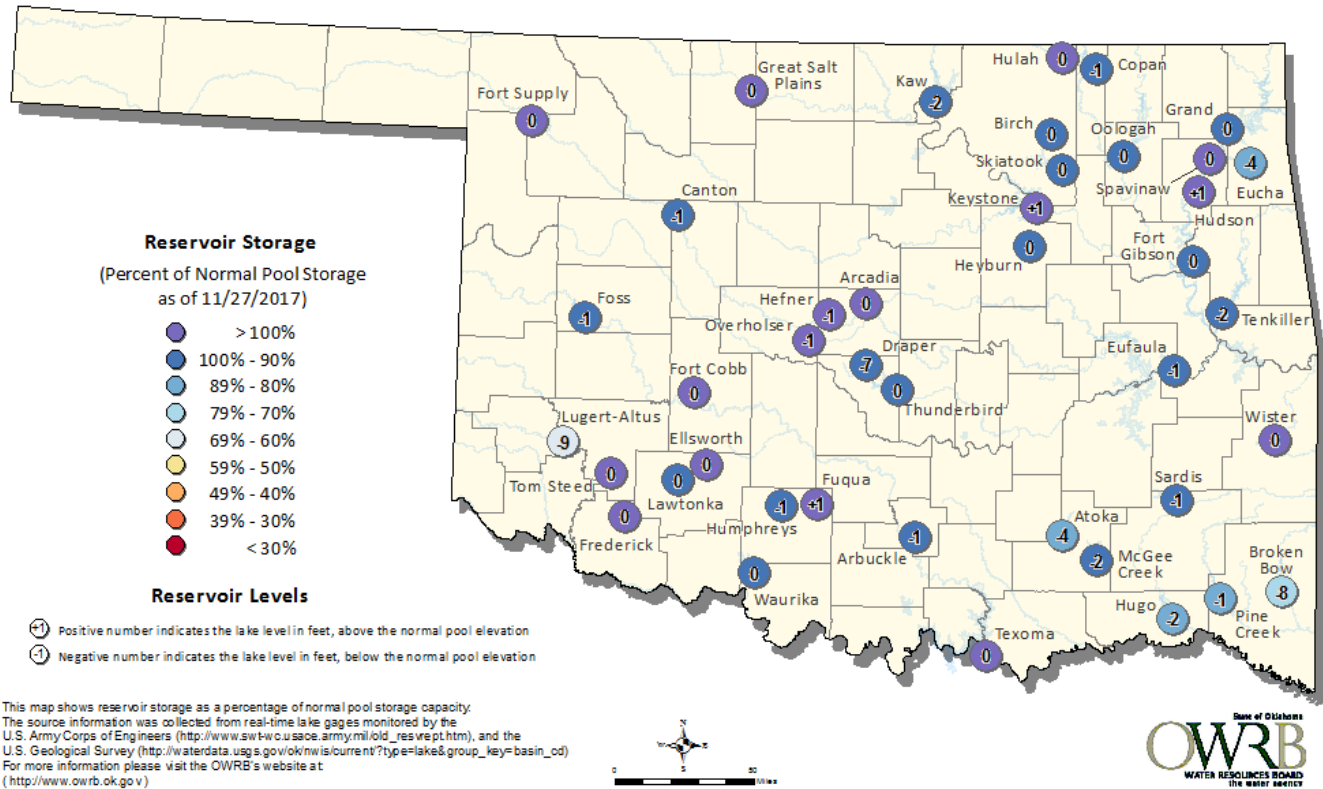


<http://droughtmonitor.unl.edu/>

Fig. 3. Drought Monitor for Arkansas

Reservoirs

Oklahoma Surface Water Resources Reservoir Levels and Storage as of 11/27/2017



According to the USACE, most of the lakes in the HSA were $\pm 3\%$ of their conservation pool levels as of 12/01/2017. However, a few reservoirs were operating at more than 3% below the top of their conservation pools: Hugo Lake 83%, Kaw Lake 91%, Copan Lake 92%, Tenkiller Lake 92%, Eufaula Lake 92%, and Beaver Lake 93%.

Outlooks

The [Climate Prediction Center](#) (CPC) outlook for December 2017 (issued November 30, 2017) indicates an enhanced chance for below median precipitation and equal chances for above, near, and below normal temperatures across all of eastern OK and northwest AR. This outlook takes into account weather conditions forecast over the next 1-2 weeks, including a long-wave pattern shift over the CONUS, and subseasonal climate signals, including the Madden-Julian Oscillation, in the weeks 3-4 time frame, as well as influence from the expected weak La Niña.

For the 3-month period December-January-February 2017-18, CPC is forecasting an enhanced chance for above normal temperatures across all of eastern OK and northwest AR (outlook issued November 16, 2017). This outlook also indicates a slightly enhanced chance for below median precipitation across far southern Oklahoma and equal chances for above, near, and below median precipitation elsewhere. This outlook is based on both statistical and dynamical forecast tools and decadal timescale climate trends, as well as impacts from La Niña. According to CPC, Pacific sea surface temperatures along the equator indicate La Niña

conditions are now present. La Niña conditions are predicted to continue (65-75% chance) through winter 2017-18. CPC has issued a La Niña Advisory.

Summary of Heavy Precipitation Events Daily quality controlled rainfall maps can be found at:
http://water.weather.gov/precip/index.php?location_type=wfo&location_name=tsa

Only a few minor storm systems affected the region this month, with no significant rainfall occurring in eastern Oklahoma or northwest AR.

Written by:

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Products issued in November 2017:

*CWYO2 became a daily river forecast point September 7, 2016

*MLBA4 and OZGA4 transferred to NWS Tulsa HSA February 5, 2014

*Mixed case River Flood products began July 31, 2013

- 0 Flash Flood Warnings (FFW)
- 0 Flash Flood Statements (FFS)
- 0 Flash/Areal Flood Watches (FFA) (0 Watch FFA CON/EXT/EXA/EXB/CAN)
- 0 Urban and Small Stream Advisories (FLS)
- 0 Areal Flood Warnings (FLW)
- 0 Areal Flood Statements (FLS)
- 0 River Flood Warnings (FLW) (includes category increases)
- 0 River Flood Statements (FLS)
- 0 River Flood Advisories (FLS) (4 Advisory FLS CON/EXT/CAN)
- 0 River Flood Watches (FFA) (0 Watch FFA CON/EXT/CAN)
- 0 River Statements (RVS)
- 0 Hydrologic Outlooks (ESF)
- 1 Drought Information Statements (DGT)

Preliminary Hydrographs:

None