

<b>NWS FORM E-5</b> (11-88) (PRES. by NWS Instruction 10-924)	<b>U.S. DEPARTMENT OF COMMERCE</b> NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	HYDROLOGIC SERVICE AREA (HSA)  <b>Tulsa, Oklahoma (TSA)</b>
		REPORT FOR: MONTH <b>January</b> YEAR <b>2022</b>
<b>MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS</b>		SIGNATURE <b>Steven F. Piltz</b> (Meteorologist-in-Charge)
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283		DATE <b>February 4, 2022</b>

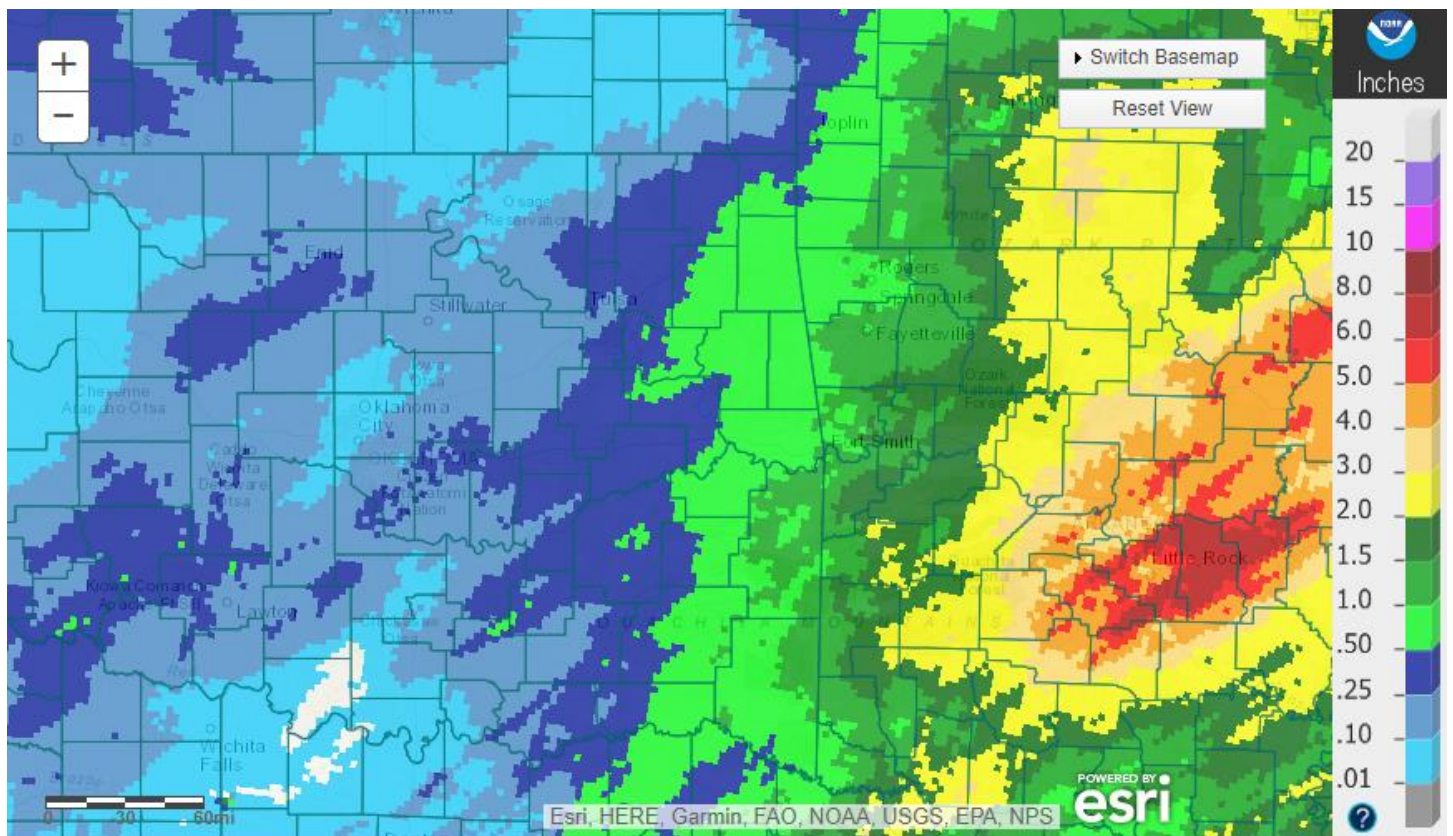
When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Instruction 10-924)

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 start to 2022, with well below normal precipitation in January. There was one snow event that brought 1"-7" across much of the HSA. Normal precipitation for January ranges from 1.2 inches in Pawnee County to 2.2 inches in Haskell County. In the Ozark region of northwest Arkansas, precipitation averages 2.2 inches for the month. 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 January 2022 ranged from less than 0.10" to near 2" across eastern OK and northwest AR, with much of the area only receiving 0.25"-1". These rainfall totals correspond to less than 5% to around 50% of the normal January rainfall (Fig. 1b).



Tulsa, OK: January, 2022 Monthly Observed Precipitation  
 Valid on: February 01, 2022 12:00 UTC

Fig. 1a. Estimated Observed Rainfall for January 2022

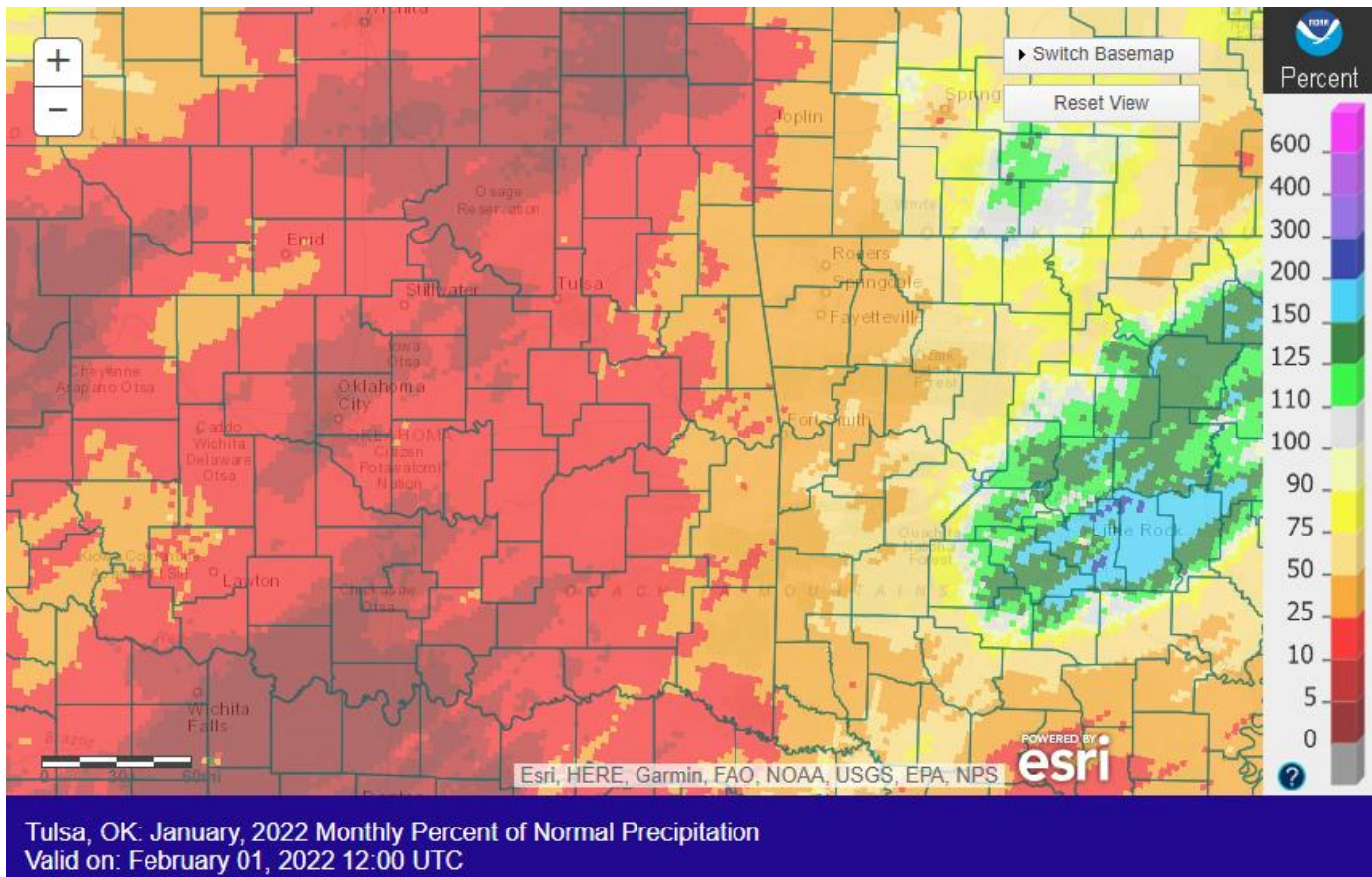


Fig. 1b. Estimated % of Normal Rainfall for January 2022

In Tulsa, OK, January 2022 ranked as the 59<sup>th</sup> coldest January (37.7°F; since records began in 1905), the 24<sup>th</sup> driest January (0.55", tied 1940; since records began in 1888), and the 31<sup>st</sup> least snowy January (0.1", tied 2021; since records began in 1900). Fort Smith, AR had the 57<sup>th</sup> coldest January (38.8°F, tied 1904; since records began in 1883), the 51<sup>st</sup> driest January (1.71", tied 1900; since records began in 1883), and the 42<sup>nd</sup> snowiest January (2.0", tied 2017, 1996, 1945, 1936, 1888; since records began in 1884). Fayetteville, AR had the 28<sup>th</sup> coldest (35.1°F, tied 1957), the 24<sup>th</sup> driest (1.42"), and the 17<sup>th</sup> snowiest (3.6", tied 1956) January since records began in 1950.

Some of the larger precipitation reports (in inches) for January 2022 included:

Ozark, AR (coop)	2.07	Talihina, OK (meso)	1.86	Wister, OK (meso)	1.84
Fort Smith, AR (ASOS)	1.71	Busch 0.4E, AR (coco)	1.59	Antlers, OK (meso)	1.51
Cloudy, OK (meso)	1.48	Holiday Island 1.3SSW, AR (coco)	1.47	Cookson, OK (meso)	1.36

Some of the lowest precipitation reports (in inches) for January 2022 included:

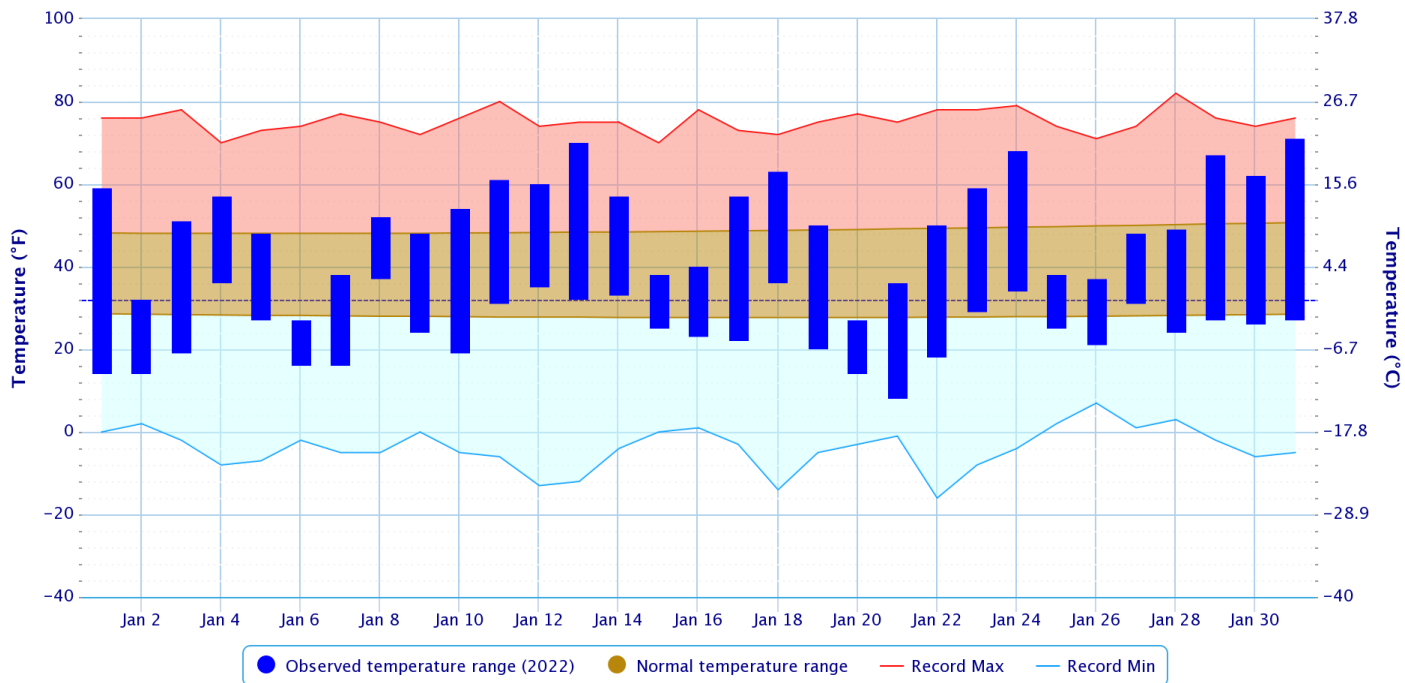
Bartlesville, OK (ASOS)	0.04	Foraker, OK (meso)	0.06	Copan, OK (meso)	0.11
Burbank, OK (meso)	0.13	Wynona, OK (meso)	0.19	Pawnee, OK (meso)	0.19
Nowata, OK (meso)	0.44	Jenks Riverside Arpt, OK (ASOS)	0.51	Tulsa, OK (ASOS)	0.55

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

Rank since 1921	January 2022	Winter-to-Date 2021-22	Last 90 Days (Nov 3 – Jan 31)	Water Year-to-Date (Oct 1, 2021 – Jan 31, 2022)	Cool Growing Season (Sep 1 – Jan 31)	Last 180 Days (Aug 5 – Jan 31)	Last 365 Days (Feb 1, 2021 – Jan 31, 2022)
Northeast OK	11 <sup>th</sup> driest	22 <sup>nd</sup> driest	<b>8<sup>th</sup> driest</b>	38 <sup>th</sup> driest	25 <sup>th</sup> driest	19 <sup>th</sup> driest	48 <sup>th</sup> driest
East Central OK	26 <sup>th</sup> driest	40 <sup>th</sup> driest	23 <sup>rd</sup> driest	45 <sup>th</sup> wettest	38 <sup>th</sup> driest	43 <sup>rd</sup> driest	44 <sup>th</sup> driest
Southeast OK	22 <sup>nd</sup> driest	15 <sup>th</sup> driest	<b>6<sup>th</sup> driest</b>	21 <sup>st</sup> driest	11 <sup>th</sup> driest	16 <sup>th</sup> driest	44 <sup>th</sup> driest
Statewide	16 <sup>th</sup> driest	<b>10<sup>th</sup> driest</b>	<b>5<sup>th</sup> driest</b>	23 <sup>rd</sup> driest	<b>10<sup>th</sup> driest</b>	<b>9<sup>th</sup> driest</b>	31 <sup>st</sup> driest

### Daily Temperature Data – Tulsa Area, OK (ThreadEx)

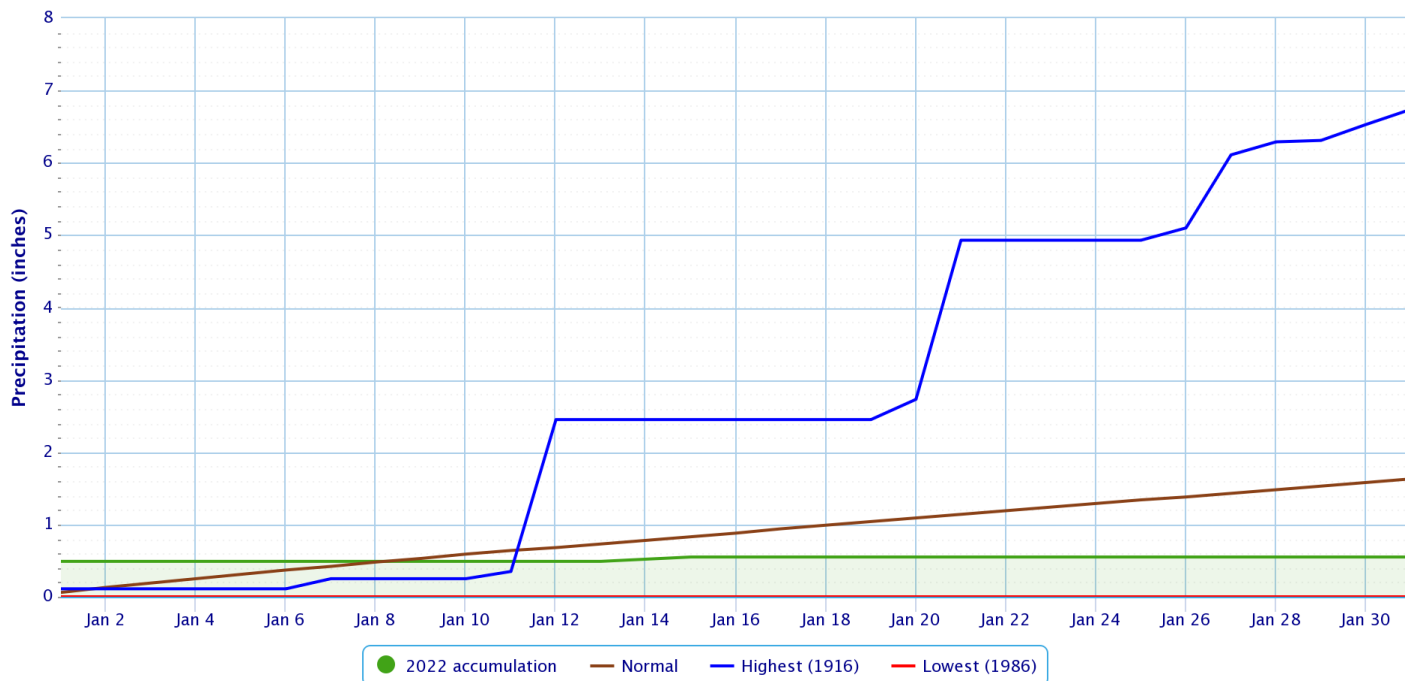
Period of Record – 1905-01-06 to 2022-02-01. Normals period: 1991-2020. Click and drag to zoom chart.



Powered by ACIS

### Accumulated Precipitation – Tulsa Area, OK (ThreadEx)

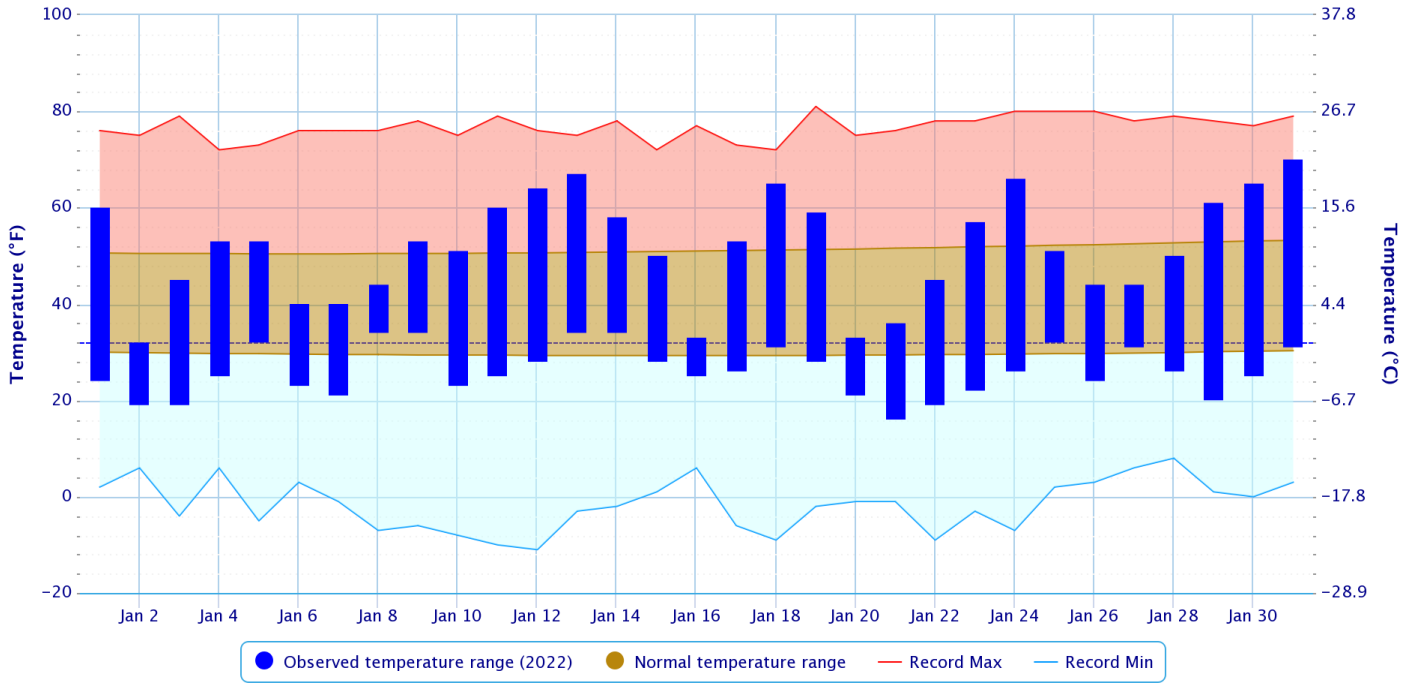
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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

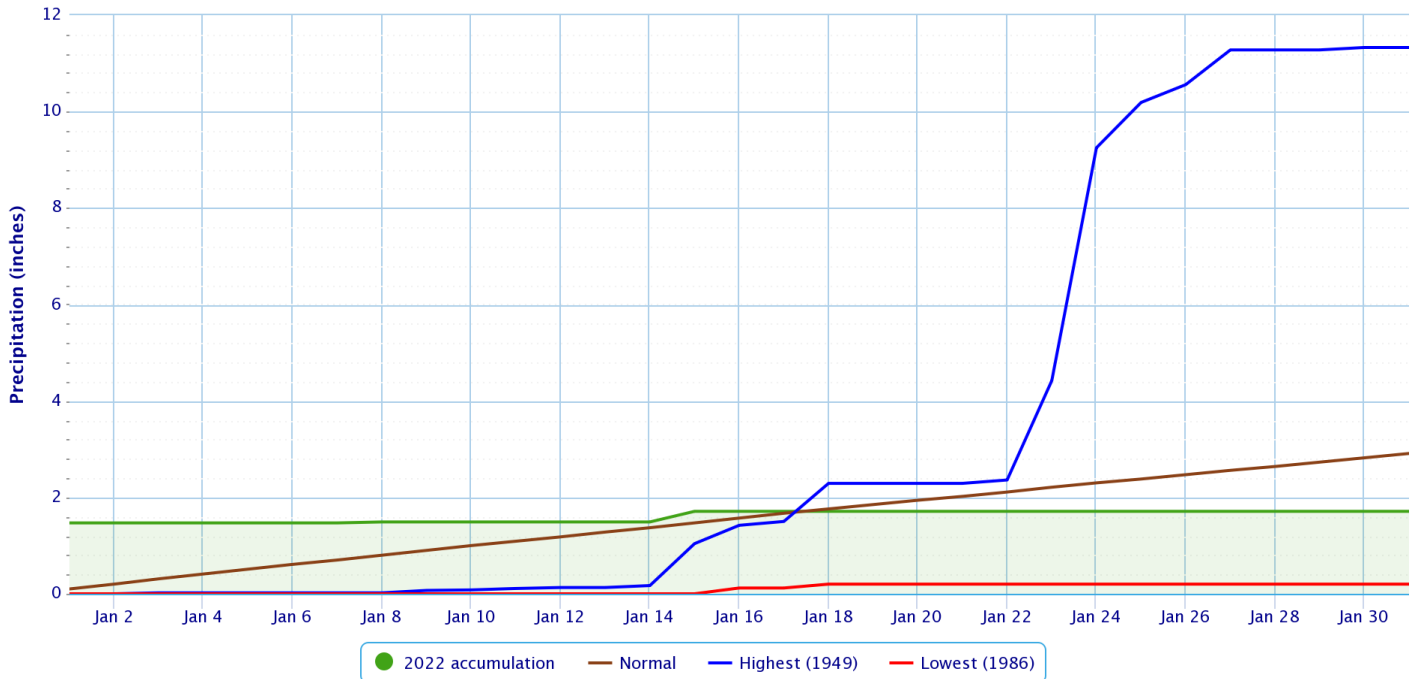
Period of Record – 1882-06-01 to 2022-02-01. Normals period: 1991-2020. Click and drag to zoom chart.



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### Accumulated Precipitation – Fort Smith Area, AR (ThreadEx)

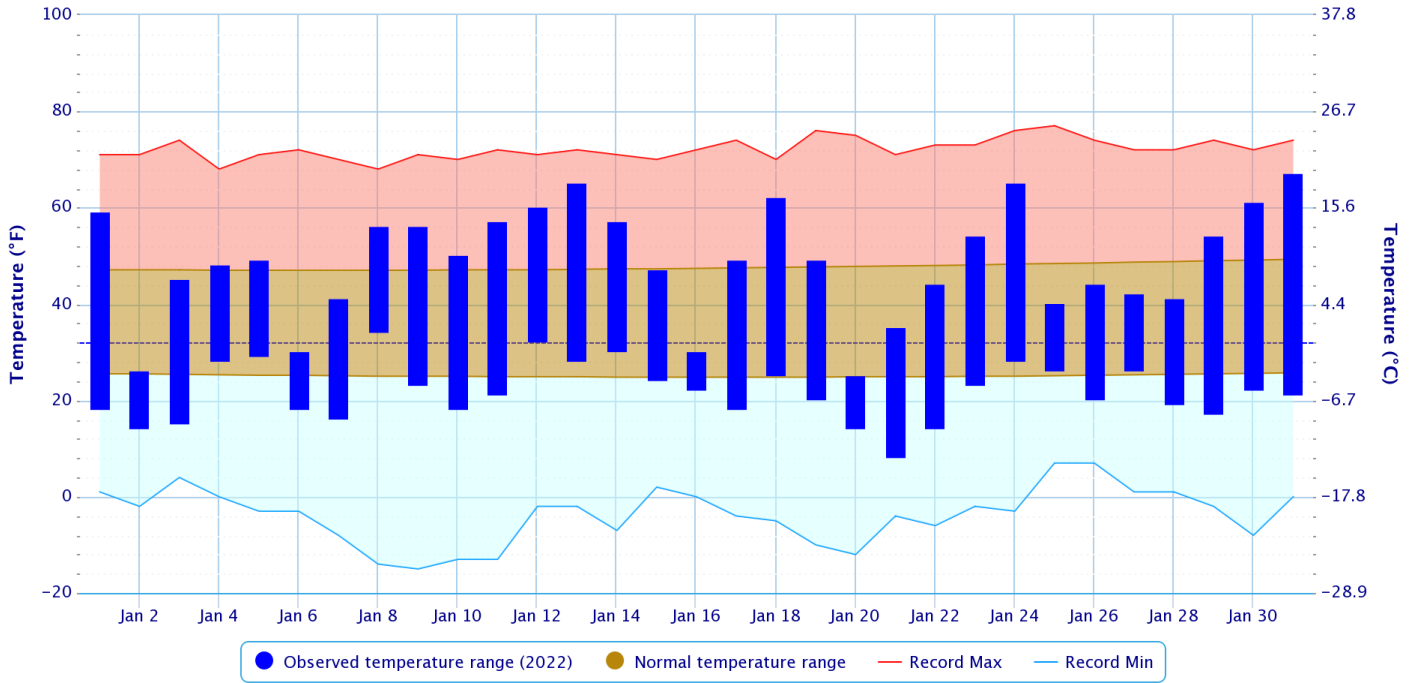
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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### Daily Temperature Data – FAYETTEVILLE DRAKE FIELD, AR

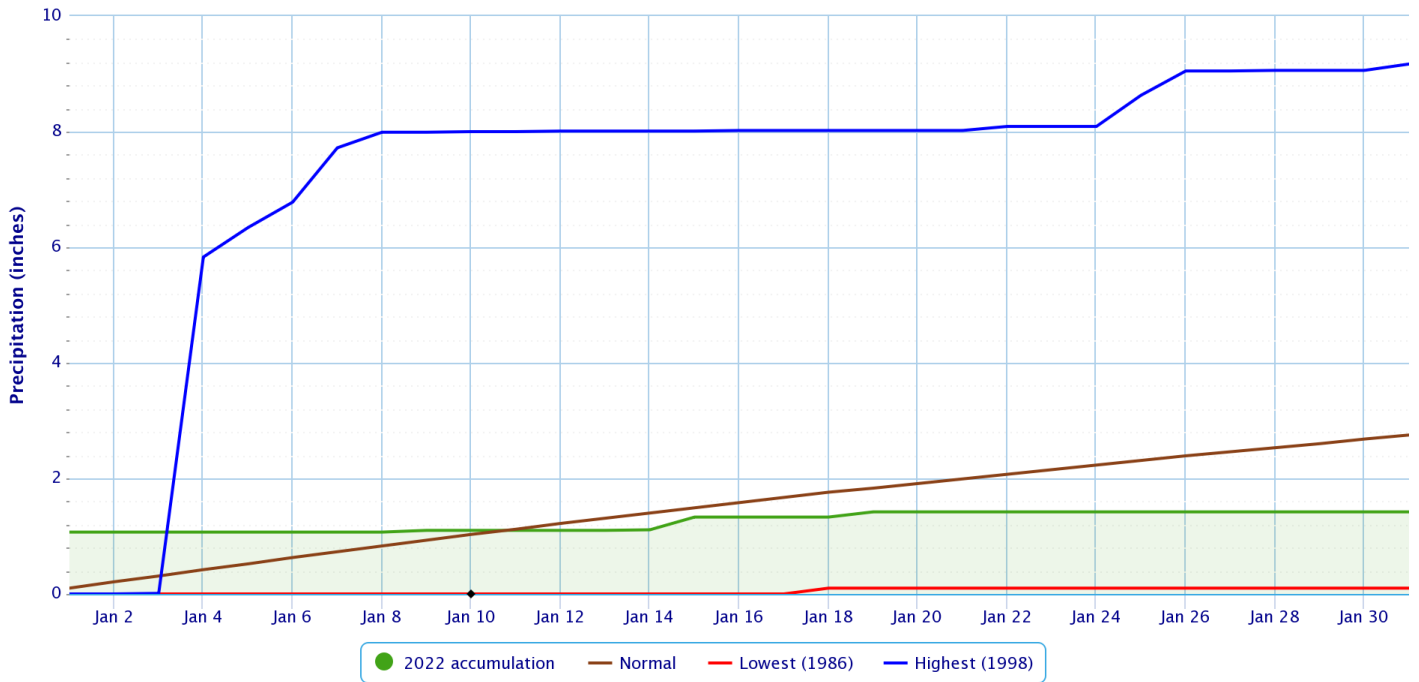
Period of Record – 1949–07–14 to 2022–02–01. Normals period: 1991–2020. Click and drag to zoom chart.



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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

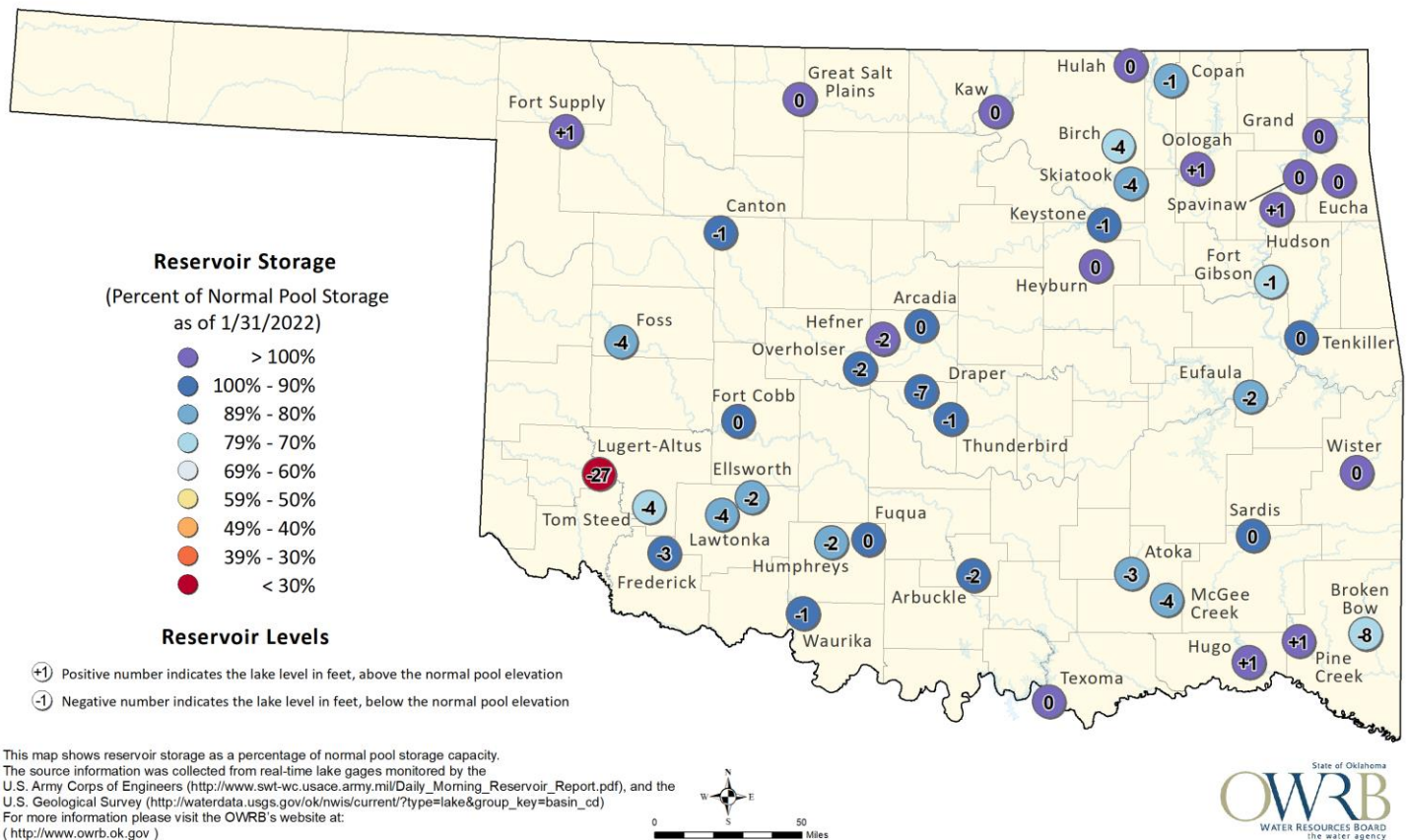


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## Reservoirs

# Oklahoma Surface Water Resources

## Reservoir Levels and Storage as of 1/31/2022



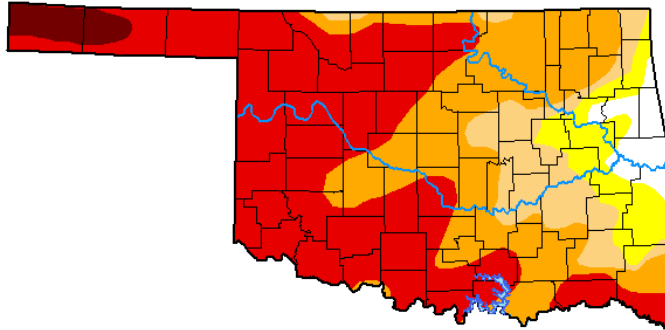
According to the USACE, several lakes in the HSA were below 3% of top of their conservation pools as of 2/01/2022: Birch Lake 76%, Ft. Gibson Lake 79%, Copan Lake 85%, Skiatook Lake 87%, Lake Eufaula 87%, and Keystone 96%. One lake was more than 3% above the top of its conservation pool: Hudson Lake 5%.

## Drought

According to the [U.S. Drought Monitor](#) (USDM) from February 1, 2022 (Figs. 2, 3), drought conditions were present across a large portion of eastern OK. Extreme (D3) Drought conditions were ongoing across most of Choctaw, far southern Pushmataha, and far western Osage Counties in eastern OK. Severe (D2) Drought conditions were present over parts of eastern Kay, Osage, Pawnee, Tulsa, Creek, Washington, Nowata, Craig, Rogers, Mayes, Wagoner, Pittsburg, Pushmataha and Choctaw Counties in eastern OK. Moderate (D1) Drought conditions were occurring across portions of Osage, Creek, Rogers, Tulsa, Ottawa, Delaware, Mayes, Wagoner, Okfuskee, Okmulgee, McIntosh, Pittsburg, Latimer, Pushmataha, and Le Flore Counties in eastern OK. Abnormally Dry (but not in drought) (D0) conditions were ongoing over portions of Tulsa, Ottawa, Delaware, Cherokee, Wagoner, Mayes, Muskogee, Okmulgee, McIntosh, Pittsburg, Latimer, Haskell, and Le Flore Counties in eastern OK. No drought or abnormally dry conditions were present in northwest AR.

# U.S. Drought Monitor Oklahoma

**February 1, 2022**  
(Released Thursday, Feb. 3, 2022)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	3.91	96.09	88.62	77.66	49.17	2.90
<b>Last Week</b> 01-25-2022	3.91	96.09	88.23	77.66	49.17	2.90
<b>3 Months Ago</b> 11-02-2021	17.84	82.16	36.86	10.80	0.77	0.00
<b>Start of Calendar Year</b> 01-04-2022	5.02	94.98	88.14	72.26	40.44	0.00
<b>Start of Water Year</b> 09-28-2021	6.45	93.55	73.23	23.72	2.65	0.00
<b>One Year Ago</b> 02-02-2021	75.76	24.24	10.93	4.05	0.23	0.00

Intensity:

- None
- 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. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Curtis Riganti  
National Drought Mitigation Center

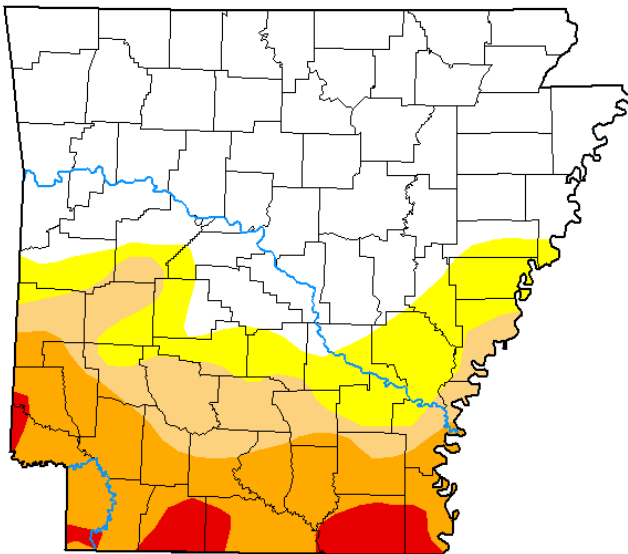


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Fig. 2. Drought Monitor for Oklahoma

# U.S. Drought Monitor Arkansas

**February 1, 2022**  
(Released Thursday, Feb. 3, 2022)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	57.18	42.82	29.99	19.32	3.78	0.00
<b>Last Week</b> 01-25-2022	57.18	42.82	29.99	19.32	1.27	0.00
<b>3 Months Ago</b> 11-02-2021	39.44	60.56	7.35	0.00	0.00	0.00
<b>Start of Calendar Year</b> 01-04-2022	39.91	60.09	28.99	14.24	0.41	0.00
<b>Start of Water Year</b> 09-28-2021	51.41	48.59	5.17	0.00	0.00	0.00
<b>One Year Ago</b> 02-02-2021	90.44	9.56	0.00	0.00	0.00	0.00

Intensity:

- None
- 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. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Curtis Riganti  
National Drought Mitigation Center



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Fig. 3. Drought Monitor for Arkansas

## **Outlooks**

The [Climate Prediction Center](#) (CPC) outlook for February 2022 (issued January 31, 2022) indicates equal chances for above, near, and below normal temperatures across all of eastern OK and northwest AR. This outlook also indicates an enhanced chance for above median precipitation across far southeast OK, west central AR, and a portion of northwest AR, with equal chances for above, near, and below median precipitation elsewhere across eastern OK and far northwest AR. This outlook was largely based on dynamical model output and La Niña impacts. Colder than normal temperatures are expected at the beginning of the month, followed by warmer than normal temperatures during the second week of February, and no strong signal for the second half of the month. Hence, equal chances for temperatures. Changes in the North Atlantic Oscillation (NAO) and Madden-Julian Oscillation (MJO) could impact temperatures during the second week of February. The precipitation outlook relies heavily on the typical La Niña pattern.

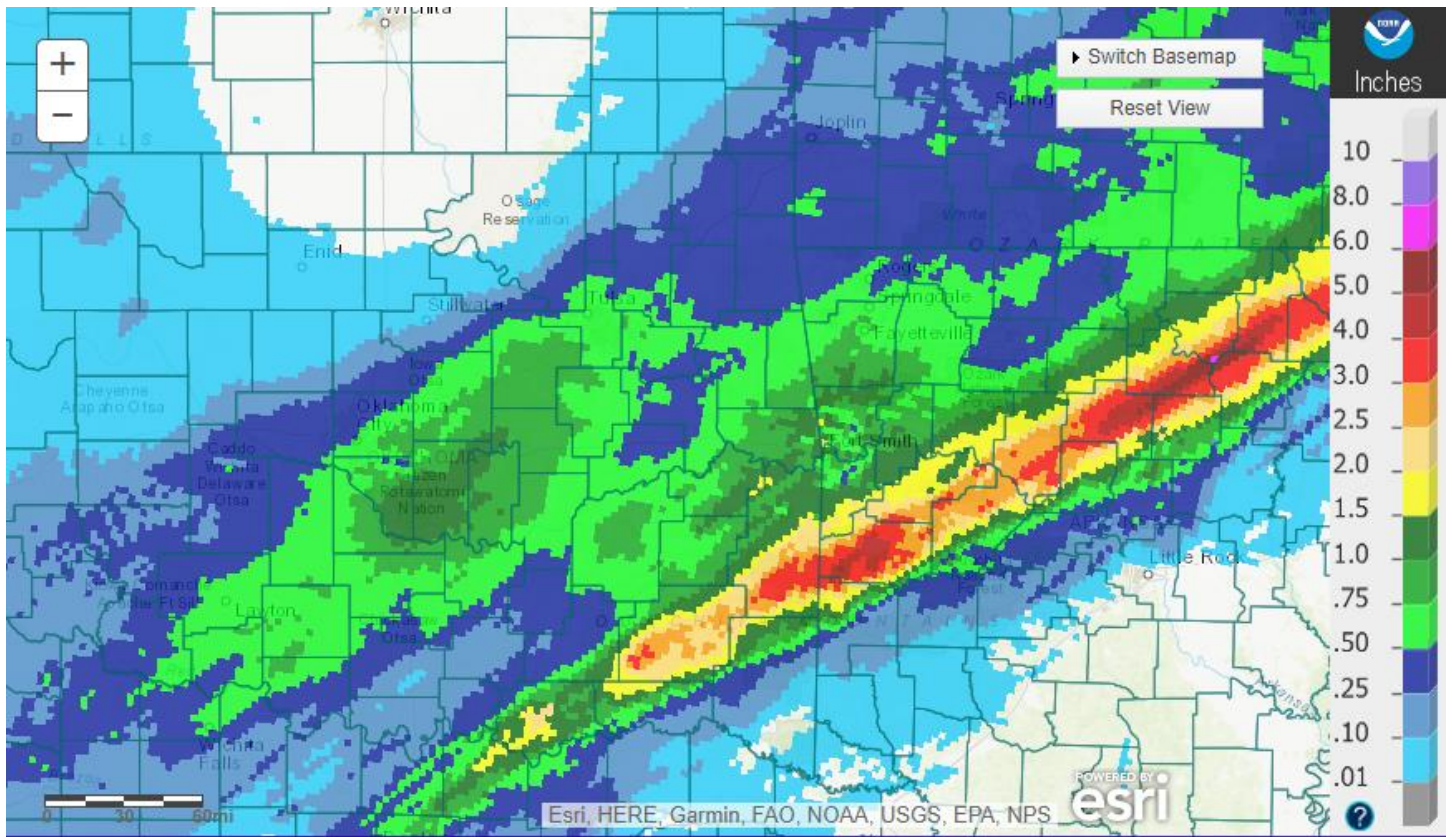
For the 3-month period February-March-April 2022, CPC is forecasting an enhanced chance for above normal temperatures and equal chance for above, near, and below median precipitation across all of eastern OK and northwest AR (outlook issued January 20, 2022). This outlook is based on long-term trends, La Niña impacts, MJO impacts, and incorporates both statistical and dynamical forecast tools. According to CPC, the combined effect of the ocean-atmosphere system remains consistent with La Niña conditions. There is a 67% chance that La Niña conditions will continue through spring 2022 and a 50% chance for ENSO-neutral conditions in late spring 2022. CPC continues the 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](http://water.weather.gov/precip/index.php?location_type=wfo&location_name=tsa)

Rain moved into southeast OK and west central AR from the southwest during the afternoon of December 31<sup>st</sup> and continued to spread across much of eastern OK and northwest AR through the evening hours. As the low-level moisture increased from the south (precipitable water (PWAT) values once again near historic levels for this time of year), a new warm front took shape from southeast OK into west central AR, where thunderstorms then developed by late evening and overrunning precipitation continued north of the front. Rain continued over much of eastern OK and northwest AR through the overnight hours. A strong cold front moved out of KS and into northeast OK during the early morning hours of the new year and continued southward through the day, finally moving east of the area by noon on the 1<sup>st</sup>. Rainfall totals ranged from 0.25" to near 4", with the highest rainfall axis of 1.5"-4" located from northwest Choctaw County, OK into Scott County, AR (Figs. 4-6). The heavy rainfall over the southern portion of Le Flore County caused a large rise of the Poteau River; however, the river remained below flood stage (see preliminary hydrographs at the end of this report).

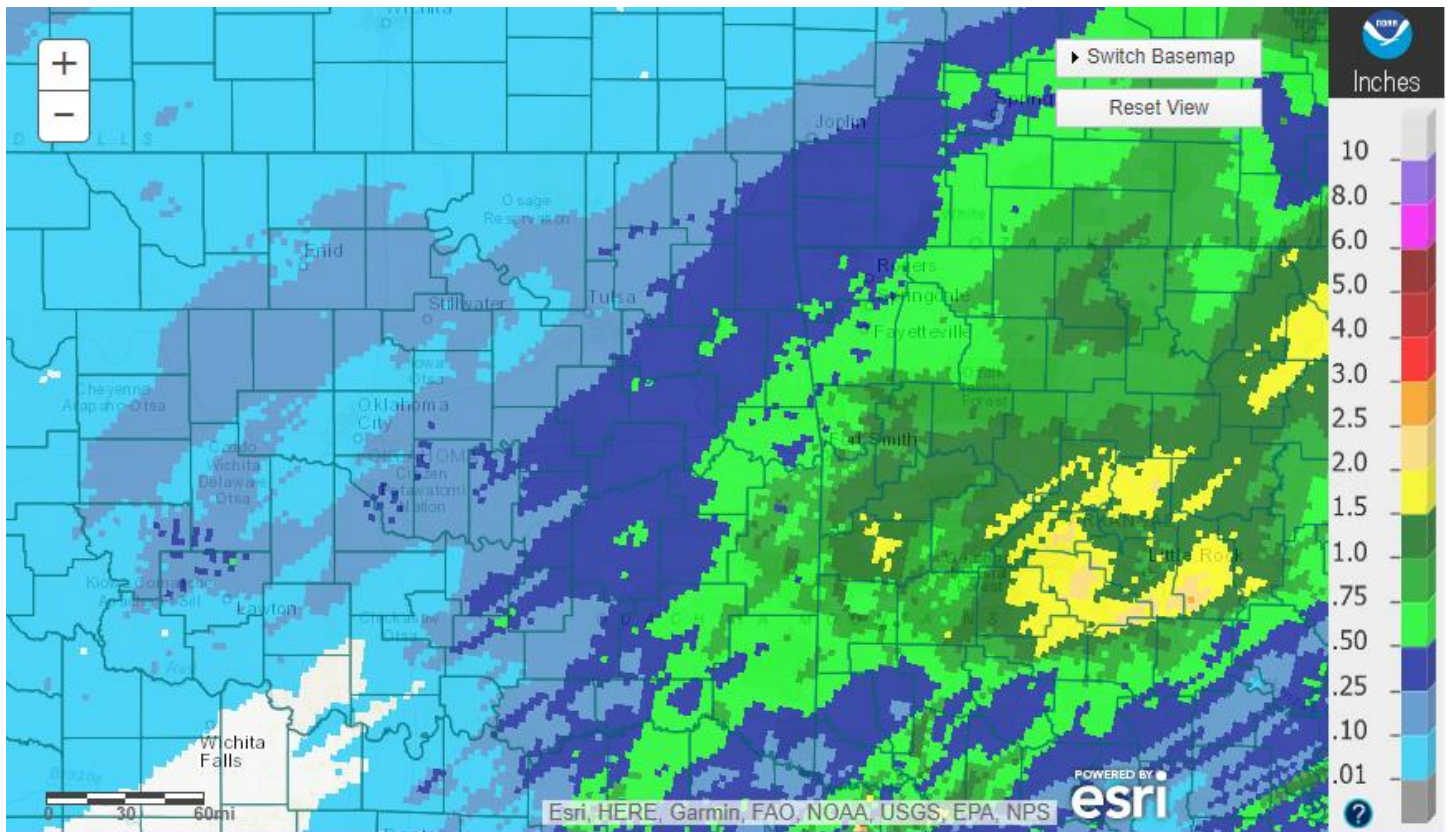
A cold front moved into the region during the evening of the 14<sup>th</sup>, bringing light rain initially to northeast OK and northwest AR. By the early morning hours of the 15<sup>th</sup>, the cold front had moved across the entire area. Sub-freezing temperatures caused a change over from rain to snow in the pre-dawn hours of the 15<sup>th</sup> across far northeast OK and northwest AR. After a lull in precipitation, snow began in earnest during the afternoon and continuing through the evening hours across far eastern OK and western AR as the upper-level low moved from central OK into the Arklatex area. The snow moved out the area by midnight. A large portion of southeast OK and northwest AR had snowfall totals of 3"-4", with 6"-7" of snow in the higher terrain of northwest AR (Fig. 7). The remainder of eastern OK that saw snow reported a dusting to around 2" of snow. Rainfall and snowfall liquid equivalent ranged from a few hundredths to around one third of an inch.





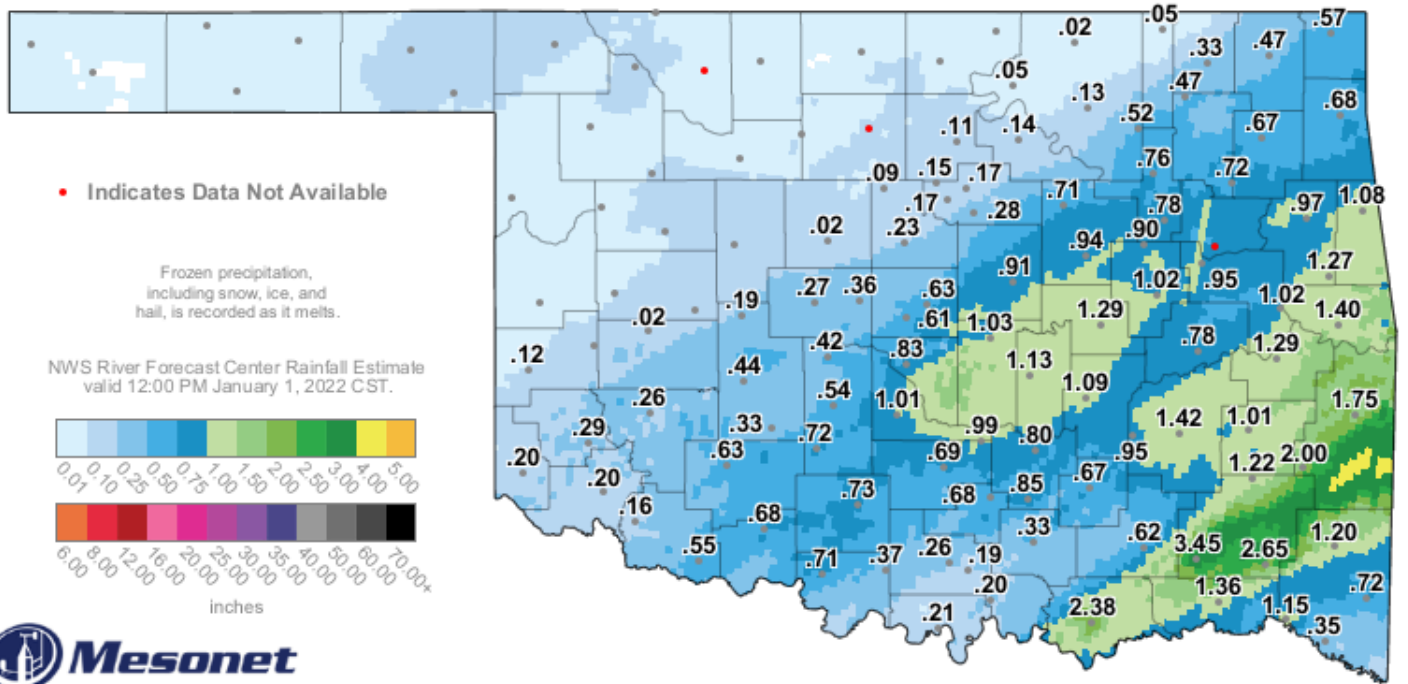
Tulsa, OK: January 01, 2022 1-Day Observed Precipitation  
 Valid on: January 01, 2022 12:00 UTC

Fig. 4. 24-hour Estimated Observed Rainfall ending at 6am CST 1/01/2022.



Tulsa, OK: January 02, 2022 1-Day Observed Precipitation  
 Valid on: January 02, 2022 12:00 UTC

Fig. 5. 24-hour Estimated Observed Rainfall ending at 6am CST 1/02/2022.



### 24-Hour Rainfall Accumulation (inches)

1:25 PM January 1, 2022 CST

Created 1:30:57 PM January 1, 2022 CST. © Copyright 2022

Fig. 6. OK Mesonet (values) and NWS RFC rainfall estimate (image) 24-hour rainfall ending at 01:25 pm CST 1/01/2022.

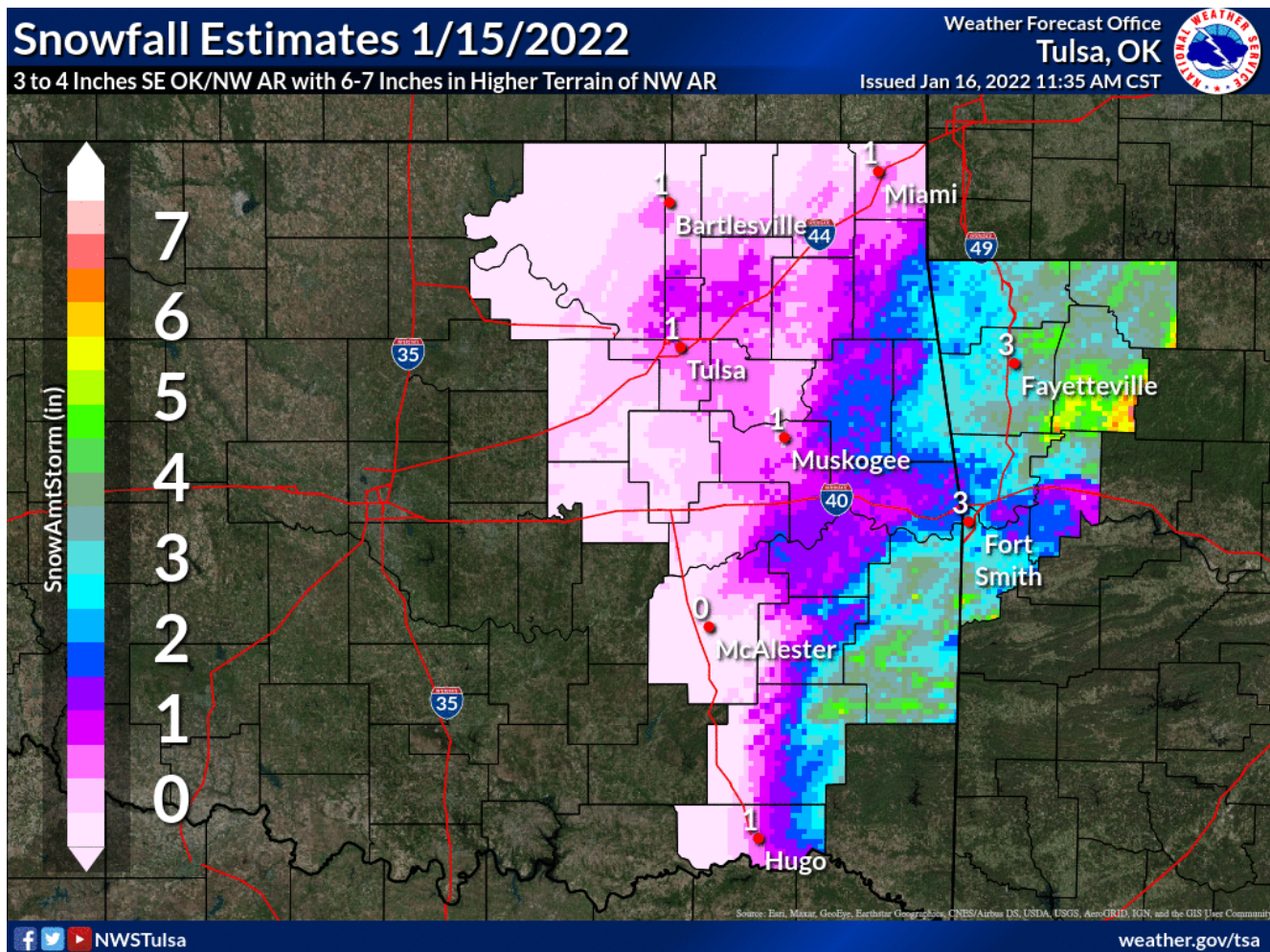


Fig. 7. Snowfall estimates for January 15, 2022.

Written by:

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Service Hydrologist  
WFO Tulsa

**Products issued in January 2022:**

\*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)
- 1 Flash Flood Statements (FFS)
- 0 Flash/Areal Flood Watches (FFA) (2 Watch FFA CON/EXT/EXA/EXB/CAN)
- 1 Urban and Small Stream Advisories (FLS)
- 0 Areal Flood Warnings (FLW)
- 0 Areal Flood Statements (FLS)
- 1 River Flood Warnings (FLW) (includes category increases)
- 3 River Flood Statements (FLS)
- 0 River Flood Advisories (FLS) (0 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:**

