

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)
		REPORT FOR: MONTH July YEAR 2022
MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS		SIGNATURE Steven F. Piltz (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 August 12, 2022

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.

Well above normal temperatures and a lack of rain allowed for a rapid increase in drought this month. However, a couple of isolated heavy rain events did result in localized flash flooding. Normal rainfall for the month of July ranges from 2.6 inches in McIntosh County to 3.4 inches in Ottawa County. The Ozark region of northwest Arkansas averages 3.1 inches for the month. This report, past E-5 reports, and monthly hydrology and climatology summaries can be found at https://www.weather.gov/tsa/climo_summary_e5list.

Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for July 2022 ranged from 0.1" to 8" across eastern OK and northwest AR, with much of the area receiving only 0.5"-3". These rainfall totals correspond to 5% to 75% of the normal July rainfall for most of eastern OK and northwest AR (Fig. 1b). Isolated locations received 75% to around 200% of the normal July rainfall.

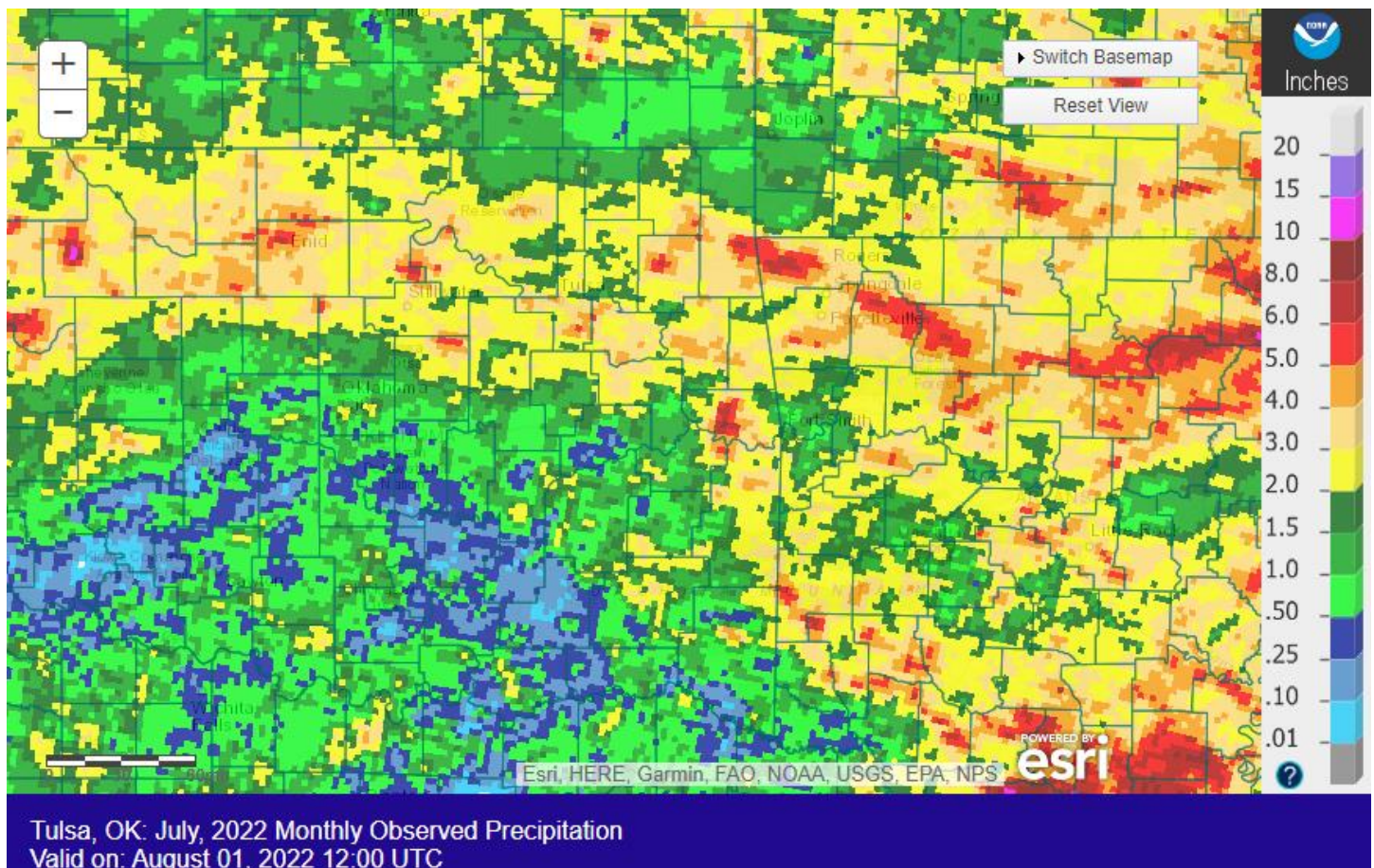
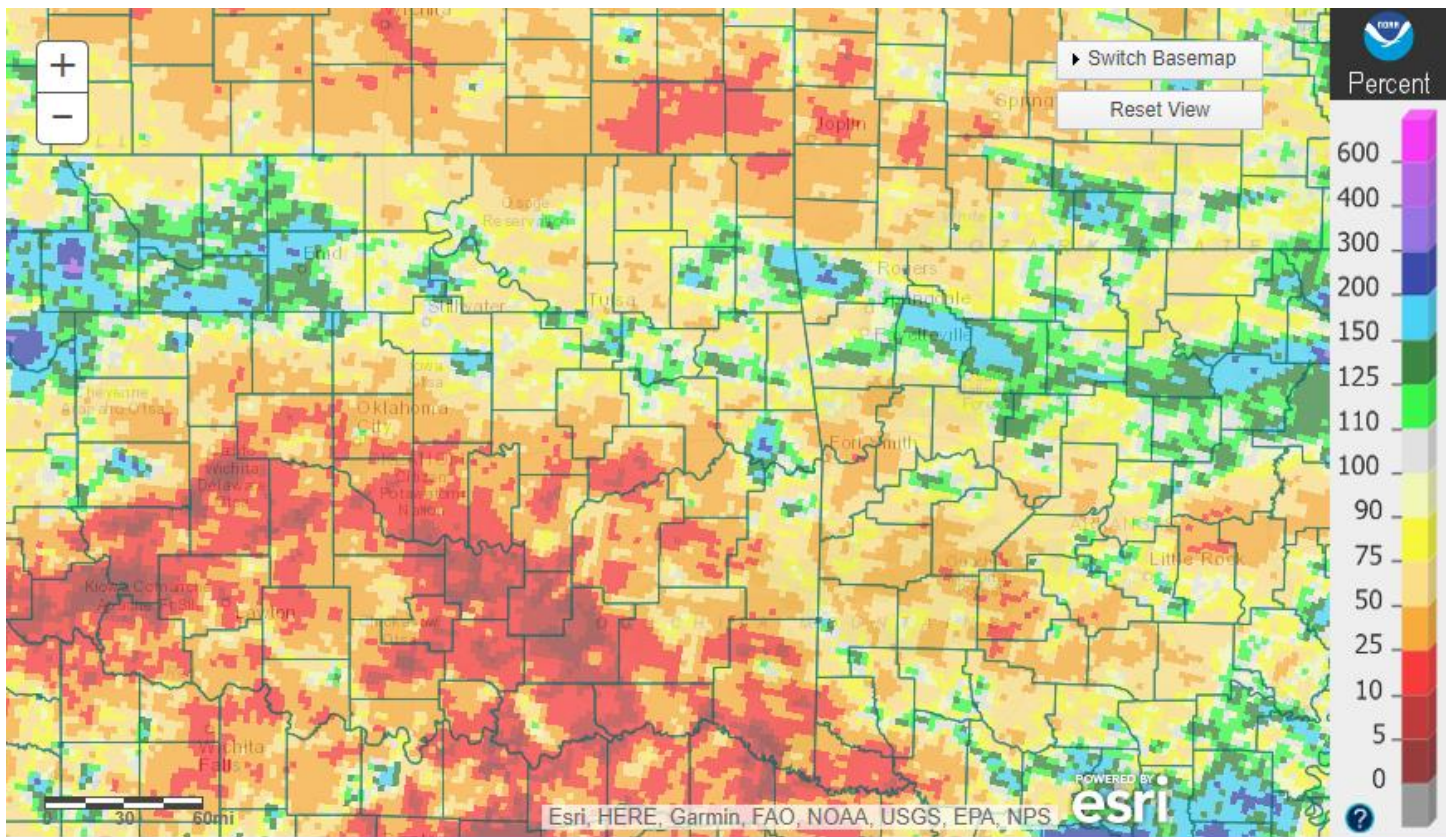


Fig. 1a. Estimated Observed Rainfall for July 2022



Tulsa, OK: July, 2022 Monthly Percent of Normal Precipitation
Valid on: August 01, 2022 12:00 UTC

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

In Tulsa, OK, July 2022 ranked as the 7th warmest July (88.0°F; since records began in 1905) and the 62nd wettest July (2.83"; since records began in 1888). Fort Smith, AR had the 3rd warmest July (88.3°F; since records began in 1882) and the 55th driest July (2.06", tied 1892; since records began in 1882). Fayetteville, AR had the 3rd warmest (84.0°F) and the 35th driest (2.45") July since records began in 1950.

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

Sallisaw, OK (meso)	7.73	Sallisaw 1.0SE, OK (coco)	7.51	Kingston 2S, AR (coop)	5.88
NW AR Reg. Airport (ASOS)	5.06	Pryor, OK (meso)	4.89	Decatur 2.6ESE, AR (coco)	4.80
Jay, OK (meso)	4.57	Broken Arrow 3.0NNW, OK (coco)	4.49	Bixby, OK (meso)	4.36

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

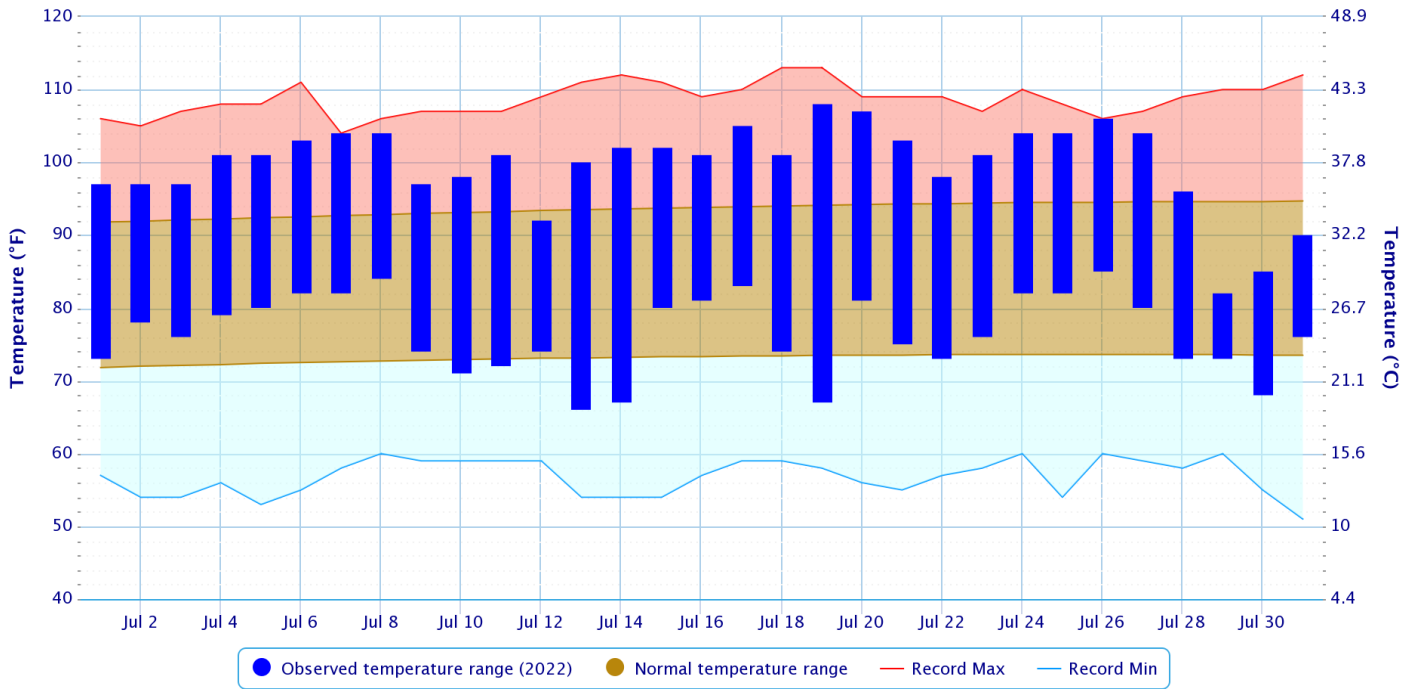
Eufaula, OK (meso)	0.22	Antlers, OK (coop)	0.30	Antlers, OK (meso)	0.36
Wilburton, OK (meso)	0.57	Hugo, OK (meso)	0.57	Miami, OK (meso)	0.78
Okemah, OK (meso)	0.83	Webbers Falls, OK (meso)	0.86	Cloudy, OK (meso)	0.87

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

Rank since 1921	Last 30 Days (Jul 2-31)	Summer-to-Date (Jun 1 – Jul 31)	Last 90 Days (May 3 – Jul 31)	Last 120 Days (Apr 3 – Jul 31)	Year-to-Date (Jan 1 – Jul 31)	Water Year-to-Date (Oct 1, 2021 – Jul 31, 2022)	Last 365 Days (Aug 1, 2021 – Jul 31, 2022)
Northeast OK	44 th driest	27 th driest	33 rd wettest	41 st wettest	48 th wettest	50 th wettest	33 rd driest
East Central OK	35 th driest	49 th driest	44 th wettest	21 st wettest	26 th wettest	25 th wettest	43 rd wettest
Southeast OK	10 th driest	22 nd driest	11 th driest	29 th driest	30 th driest	18 th driest	20 th driest
Statewide	29 th driest	30 th driest	39 th driest	39 th driest	35 th driest	29 th driest	20 th driest

Daily Temperature Data – Tulsa Area, OK (ThreadEx)

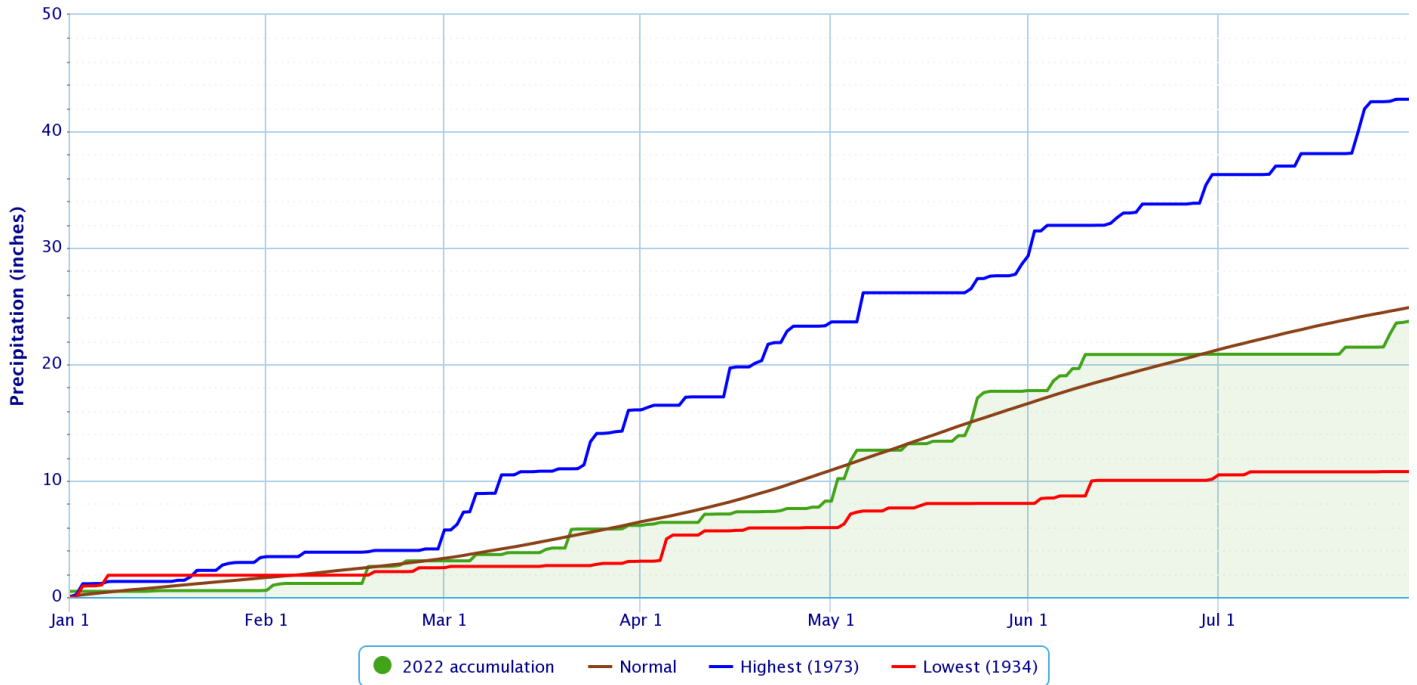
Period of Record – 1905-01-06 to 2022-08-01. Normals period: 1991-2020. Click and drag to zoom chart.



Powered by ACIS

Accumulated Precipitation – Tulsa Area, OK (ThreadEx)

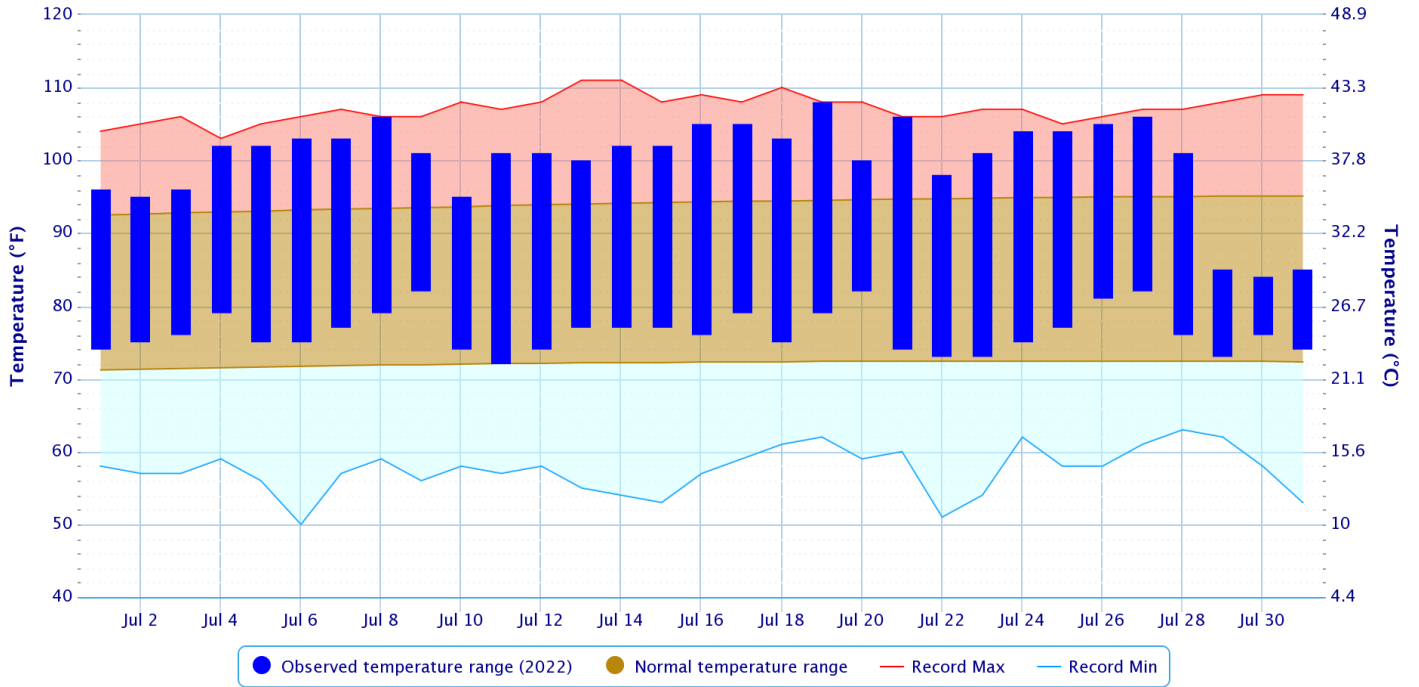
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

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

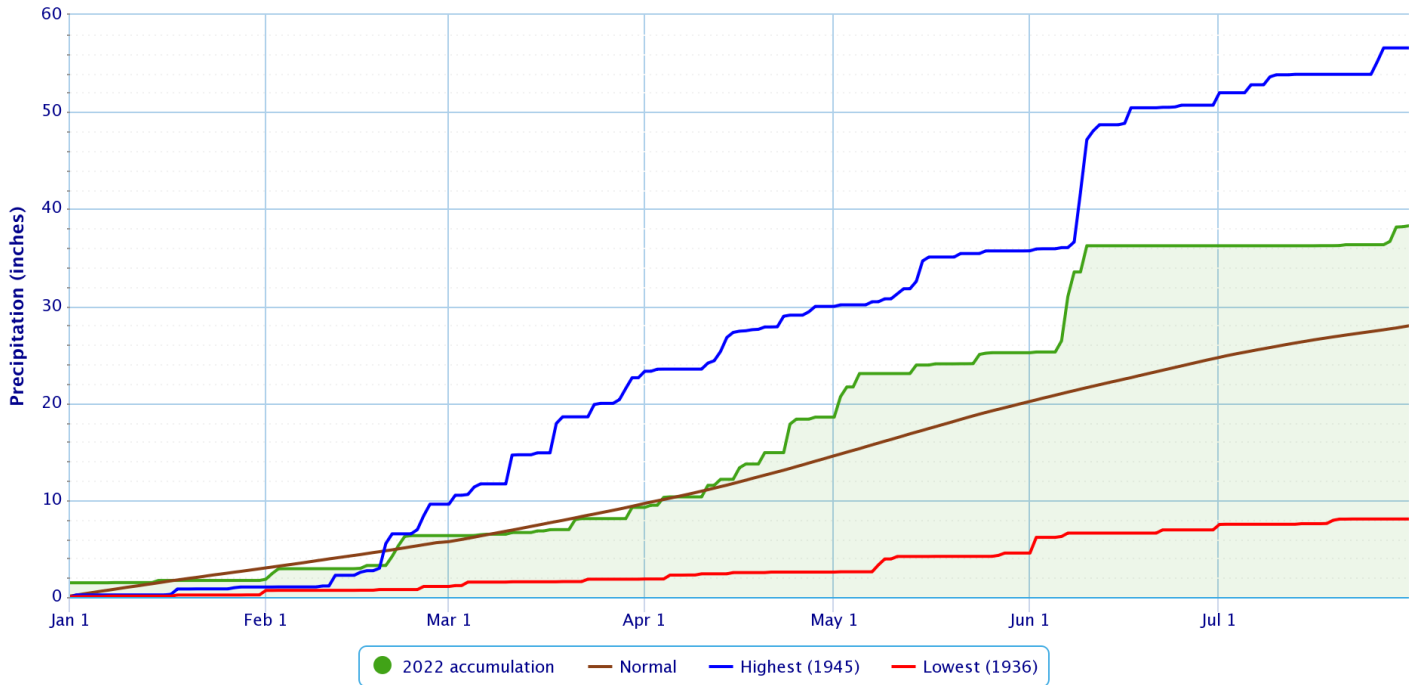
Period of Record – 1882-06-01 to 2022-08-01. Normals period: 1991-2020. Click and drag to zoom chart.



Powered by ACIS

Accumulated Precipitation – Fort Smith Area, AR (ThreadEx)

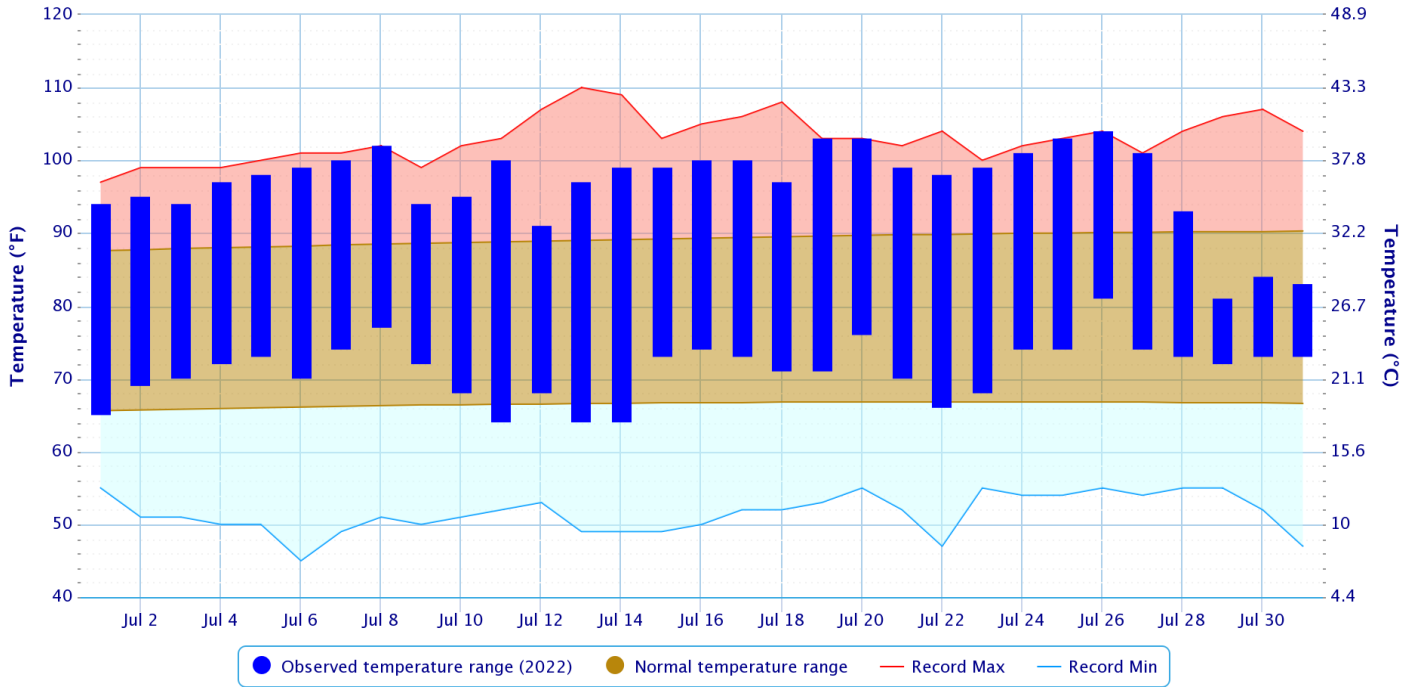
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

Daily Temperature Data – FAYETTEVILLE DRAKE FIELD, AR

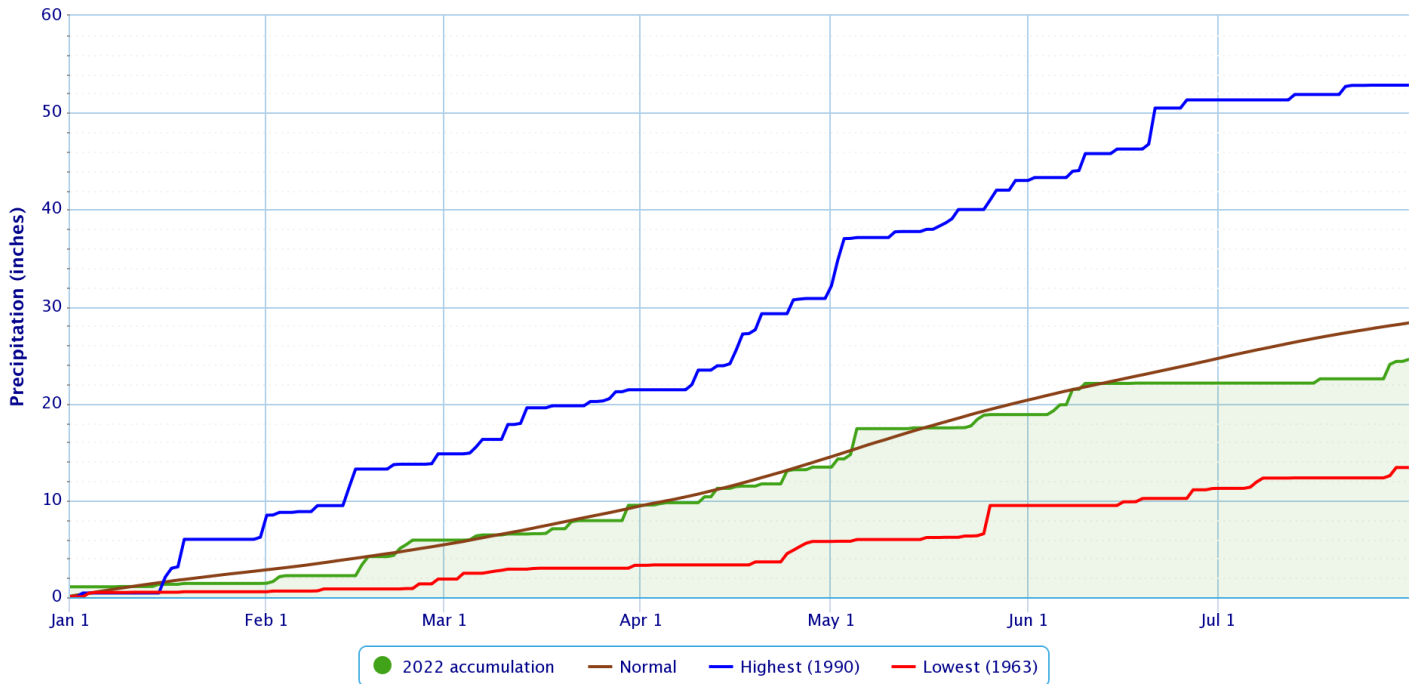
Period of Record – 1949-07-14 to 2022-08-01. Normals period: 1991-2020. Click and drag to zoom chart.



Powered by ACIS

Accumulated Precipitation – FAYETTEVILLE DRAKE FIELD, AR

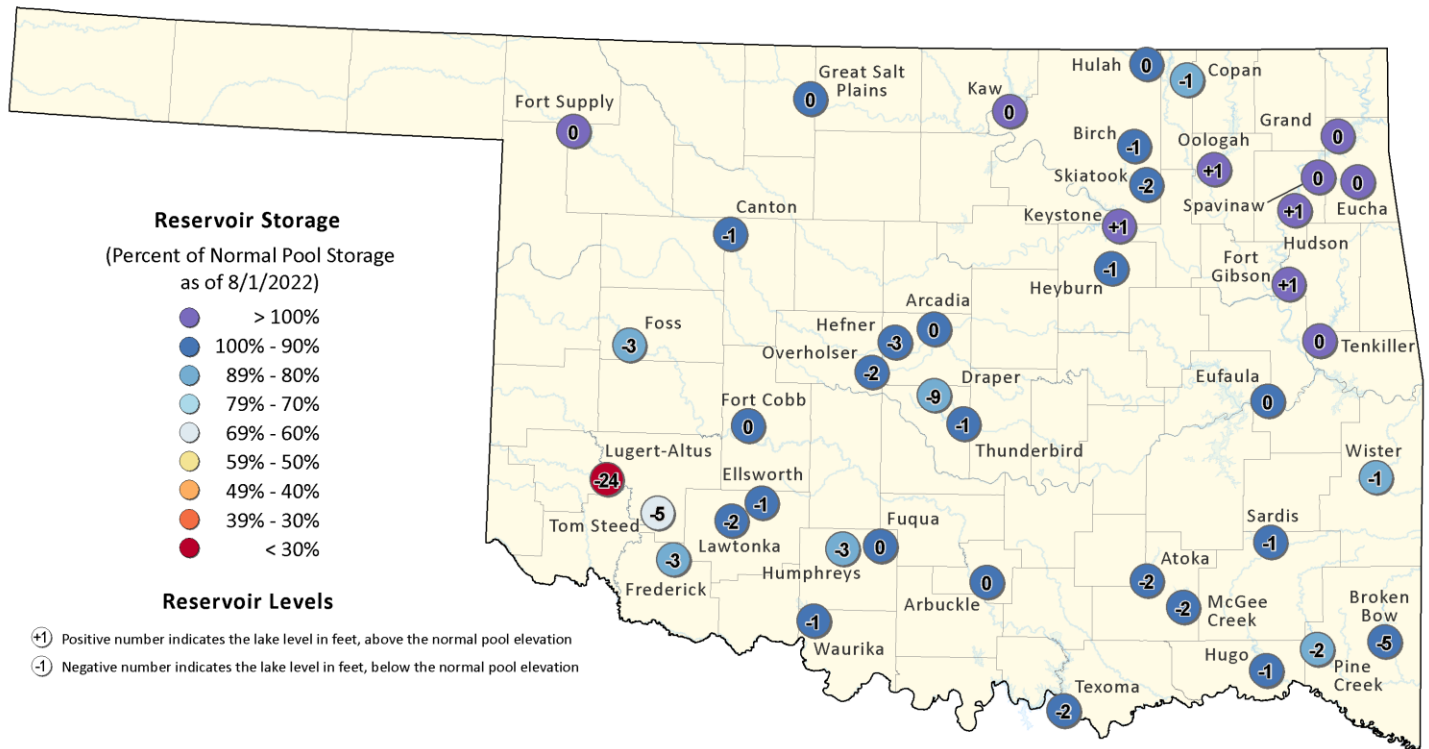
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



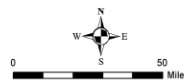
Powered by ACIS

Reservoirs

Oklahoma Reservoir Levels and Storage as of 8/1/2022



This map shows reservoir storage as a percentage of normal pool storage capacity. The source information was collected from real-time lake gages monitored by the U.S. Army Corps of Engineers (https://www.swt-wc.usace.army.mil/Daily_Morning_Reservoir_Report.pdf), and the U.S. Geological Survey (https://waterdata.usgs.gov/ok/nwis/current/?type=lake&group_key=basin_cd). For more information please visit the OWRB's website: (<https://www.owrb.ok.gov>).



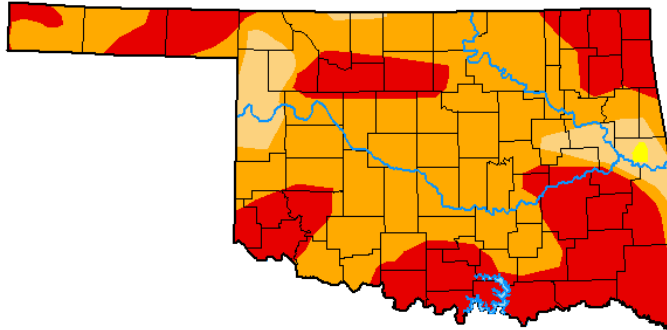
According to the USACE, several of the lakes in the HSA were below 3% of top of their conservation pools as of 8/02/2022: Wister Lake 86%, Hugo Lake 88%, Heyburn Lake 88%, Copan Lake 88%, Birch Lake 92%, Skiatook Lake 94%, and Sardis Lake 96%. A couple lakes were above 3% of top of their conservation pools: Beaver Lake 15% and Hudson Lake 5%.

Drought

According to the [U.S. Drought Monitor](#) (USDM) from June 26, 2022 (Figs. 2, 3), Extreme (D3) Drought conditions were occurring in portions of Washington, Nowata, Craig, Ottawa, Delaware, Mayes, Rogers, Adair, Okfuskee, McIntosh, Pittsburg, Haskell, Latimer, Le Flore, Pushmataha, and Choctaw Counties in eastern Oklahoma, and Benton, Washington, Carroll, and Madison Counties in northwest Arkansas. Severe (D2) Drought conditions exist in portions of Osage, Pawnee, Washington, Nowata, Tulsa, Rogers, Mayes, Creek, Okfuskee, Okmulgee, Muskogee, Wagoner, Cherokee, Adair, Sequoyah, McIntosh, Haskell, and Le Flore Counties in eastern Oklahoma, and Washington, Madison, Crawford, Sebastian, and Franklin Counties in northwest Arkansas. Moderate (D1) Drought conditions were present in portions of Okmulgee, McIntosh, Muskogee, Cherokee, Adair, Sequoyah, Haskell, and Le Flore Counties in eastern Oklahoma, and Sebastian County in northwest Arkansas. Only a small area near Sallisaw in Sequoyah County was not in drought, but this area is designated as Abnormally Dry (D0).

U.S. Drought Monitor Oklahoma

July 26, 2022
(Released Thursday, Jul. 28, 2022)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	99.81	92.11	37.45	0.00
Last Week <i>07-19-2022</i>	0.00	100.00	99.69	57.51	6.80	0.00
3 Months Ago <i>04-26-2022</i>	22.73	77.27	65.40	55.30	39.39	11.03
Start of Calendar Year <i>01-04-2022</i>	5.02	94.98	88.14	72.26	40.44	0.00
Start of Water Year <i>09-28-2021</i>	6.45	93.55	73.23	23.72	2.65	0.00
One Year Ago <i>07-27-2021</i>	91.45	8.55	1.13	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

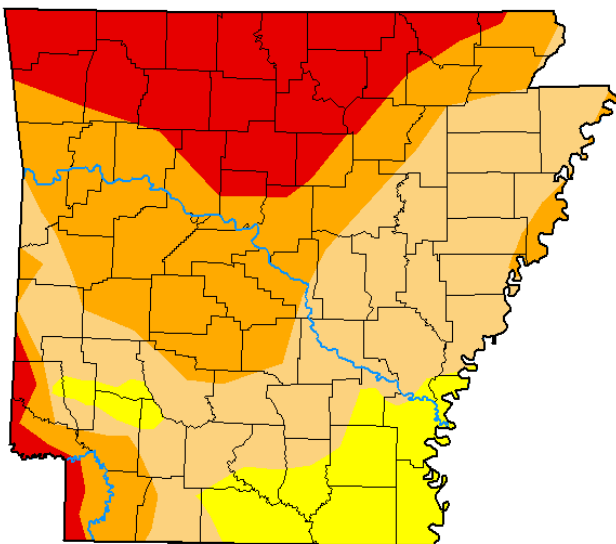


droughtmonitor.unl.edu

Fig. 2. Drought Monitor for Oklahoma

U.S. Drought Monitor Arkansas

July 26, 2022
(Released Thursday, Jul. 28, 2022)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	89.08	54.43	22.38	0.00
Last Week <i>07-19-2022</i>	0.00	100.00	89.60	26.78	1.35	0.00
3 Months Ago <i>04-26-2022</i>	82.98	17.02	5.96	0.00	0.00	0.00
Start of Calendar Year <i>01-04-2022</i>	39.91	60.09	28.99	14.24	0.41	0.00
Start of Water Year <i>09-28-2021</i>	51.41	48.59	5.17	0.00	0.00	0.00
One Year Ago <i>07-27-2021</i>	100.00	0.00	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

Fig. 3. Drought Monitor for Arkansas

Outlooks

The [Climate Prediction Center](#) (CPC) outlook for August 2022 (issued July 31, 2022) indicates a very likely chance for above normal temperatures and an enhanced chance for below median precipitation across all of eastern OK and northwest AR. This outlook was largely based on dynamical model output, La Niña influence, and soil moisture.

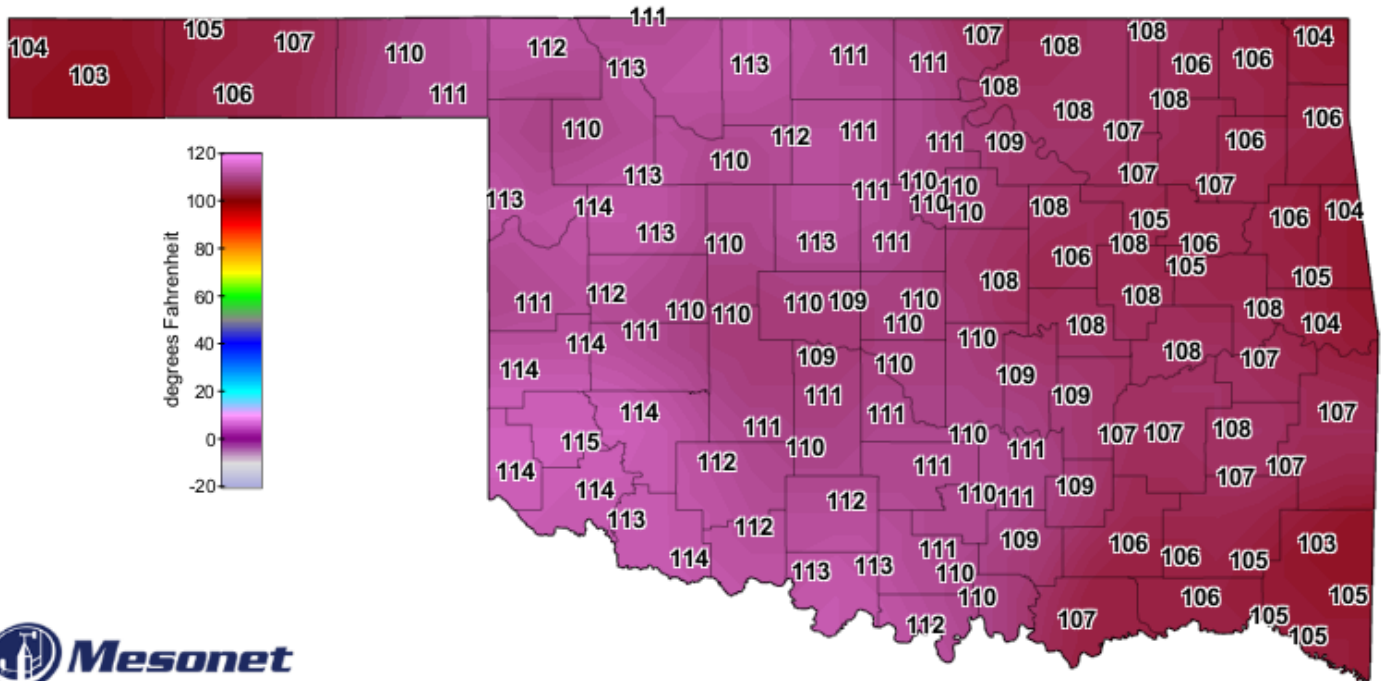
For the 3-month period August-September-October 2022, CPC is forecasting an enhanced chance for above normal temperatures across all of eastern OK and northwest AR. This outlook also indicates an enhanced chance for below median precipitation in northeast OK generally along and northwest of I-44 and an equal chance for above, near, and below median precipitation elsewhere across eastern OK and northwest AR (outlook issued July 21, 2022). This outlook is based on long-term trends, La Niña impacts, current soil moisture, 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. La Niña conditions are expected to continue through the remainder of summer 2022 (62% chance) and there is a 56-66% chance of La Niña continuing in the fall and winter. 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

After a lot of rain in May and the first 10 days of June, little to no rain fell from June 11 through July 20. During this dry spell, temperatures climbed well above normal, with numerous days of high temperatures at or above 100°F. Tulsa, OK recorded 20 days with high temperatures at or above 100°F this month, which was the 5th highest number of days on record for July. Fayetteville, AR had 11 days at or above 100°F, ranking as 3rd most for July. Fort Smith, AR had 23 days at or above 100°F, also ranking as 3rd most on record for July. The heat culminated on July 19, 2022, as a strong heat dome (597 dm high pressure center over eastern AZ) dominated the southern plains. For the first time in OK Mesonet history (mid-1990s), all 120 sites were at or above 103°F (Fig. 4). Previously, all sites were at or above 100°F on the same day in 7/09/2011 and 7/10/2011. The state-wide average temperature on the 19th was 109.17°F (3rd highest on record behind 8/2/2011 at 109.98°F and 8/1/2012 at 109.9°F). As of the 20th, the majority of the area had gone 32 to 40 consecutive days with less than 0.25" of rain and much of eastern OK had gone 32-40 consecutive days with less than 0.10" of rain (Figs. 5-13). According to the OK Mesonet, the period from June 11-July 21 was the record driest for all of eastern OK (Fig. 14). The combination of little to no rain and hot temperatures resulted in a flash drought across eastern OK and northwest AR.

On the 21st, thunderstorms developed during the afternoon as a northward lifting boundary interacted with an area of higher moisture situated from the Arkansas River valley toward north central OK. Showers and thunderstorms remained active in this high moisture corridor through the evening hours before waning with the loss of daytime heating. Heavy rain fell across east central OK, with a large area of 1.5"-4" of rain across Sequoyah, northern Le Flore, and far northeastern Haskell Counties. The area around Sallisaw in eastern Sequoyah County received 3"-6" of rain (Fig. 15). The OK Mesonet station in Sallisaw measured a damaging downburst wind gust of 61.5 mph (5:10 pm) as well as 5.85" of rain in just 2 hours and 15 minutes from 4:45 to 7pm (5.92" storm total rainfall; Fig. 16)! This rainfall is about a 0.1% annual chance of occurrence. Additionally, several of these storms produced severe downburst winds, including a 70 mph gust (7:51 pm) measured at the Tulsa International Airport ASOS, and numerous wind damage reports were received across the region.

Widely scattered thunderstorms once again developed within the deeper moisture axis from southeast OK into north central OK during the afternoon hours of the 22nd, producing locally heavy rainfall of around 0.50" to 2.5" (Fig. 17). This activity also waned by late evening with the loss of daytime heating.

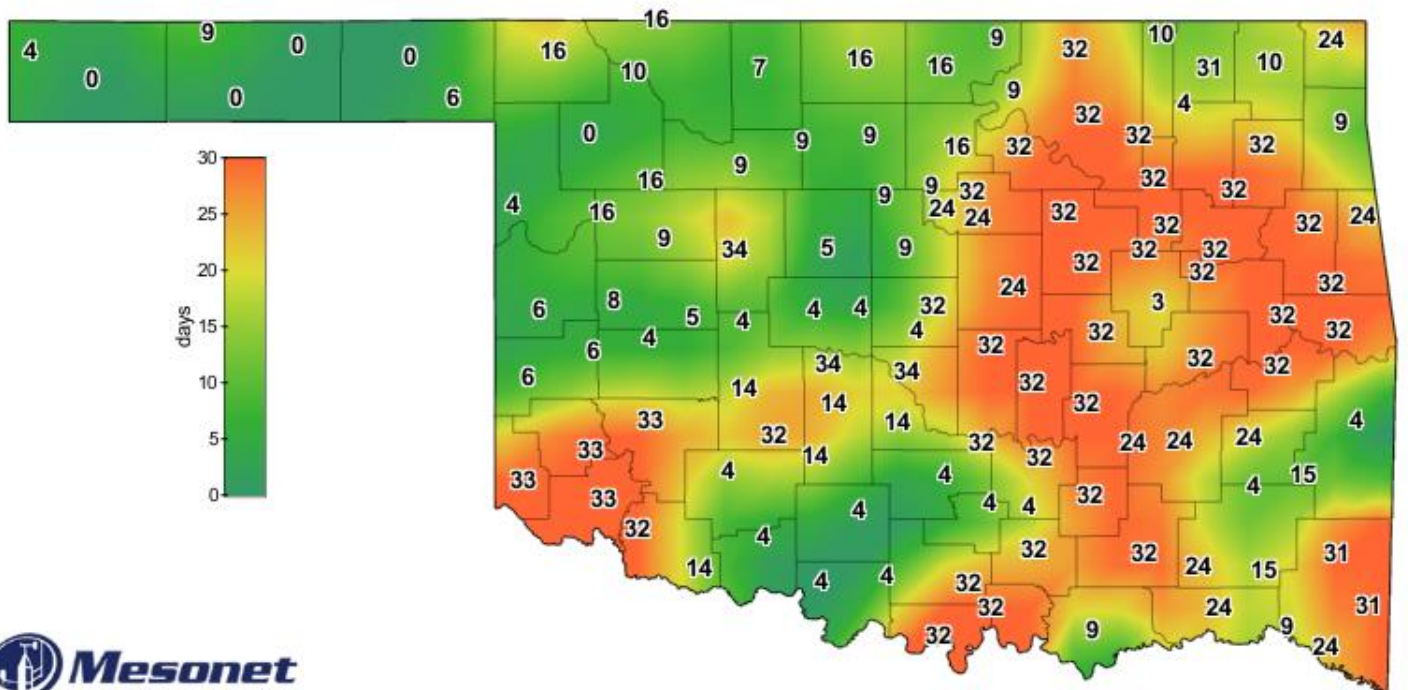


Maximum Air Temperature (°F)

July 19, 2022

Created 7:30:15 AM July 20, 2022 CDT. © Copyright 2022

Fig. 4. Maximum temperature July 19, 2022. First time in OK Mesonet history (mid-1990s) for all 120 sites to be at or above 103°F and the state-wide average temperature was 109.17°F.

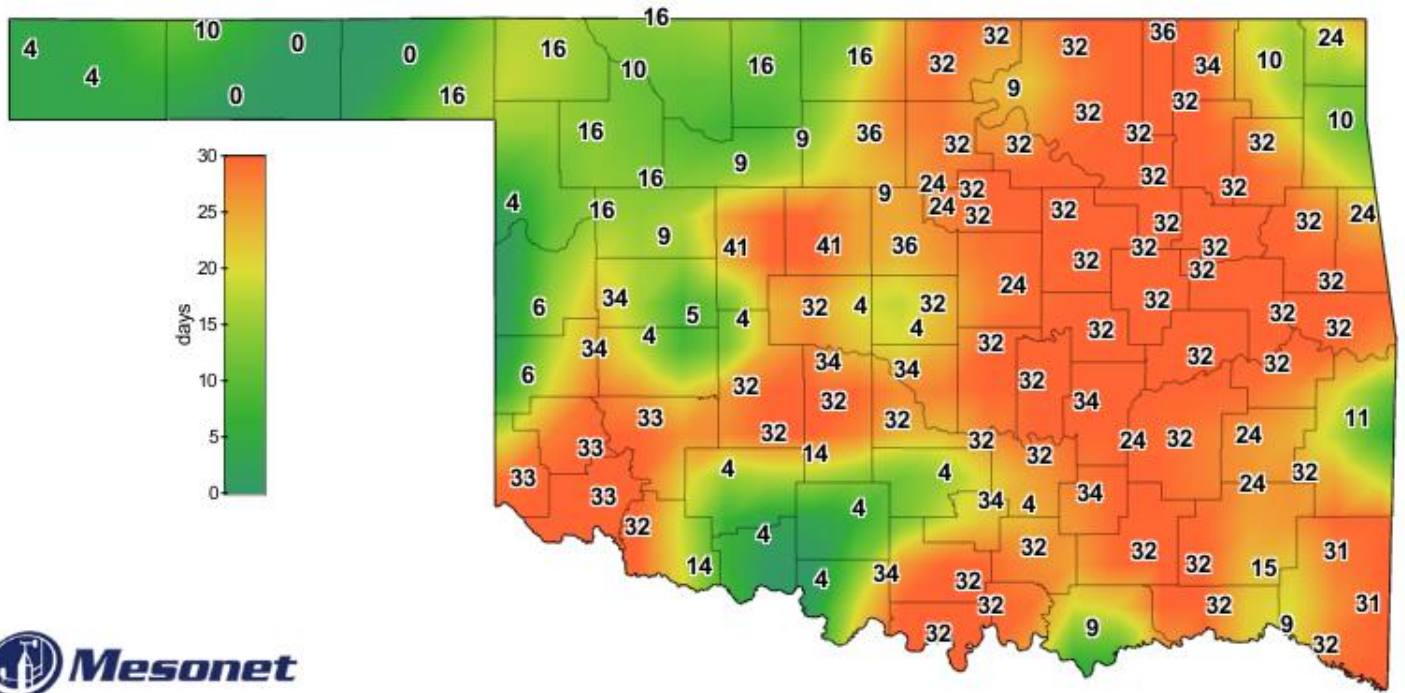


Consecutive Days With Less Than 0.10" Rainfall

July 12, 2022

Created 8:15:02 AM July 13, 2022 CDT. © Copyright 2022

Fig. 5. OK Mesonet consecutive number of days with less than 0.10" of rain through 7/12/2022.

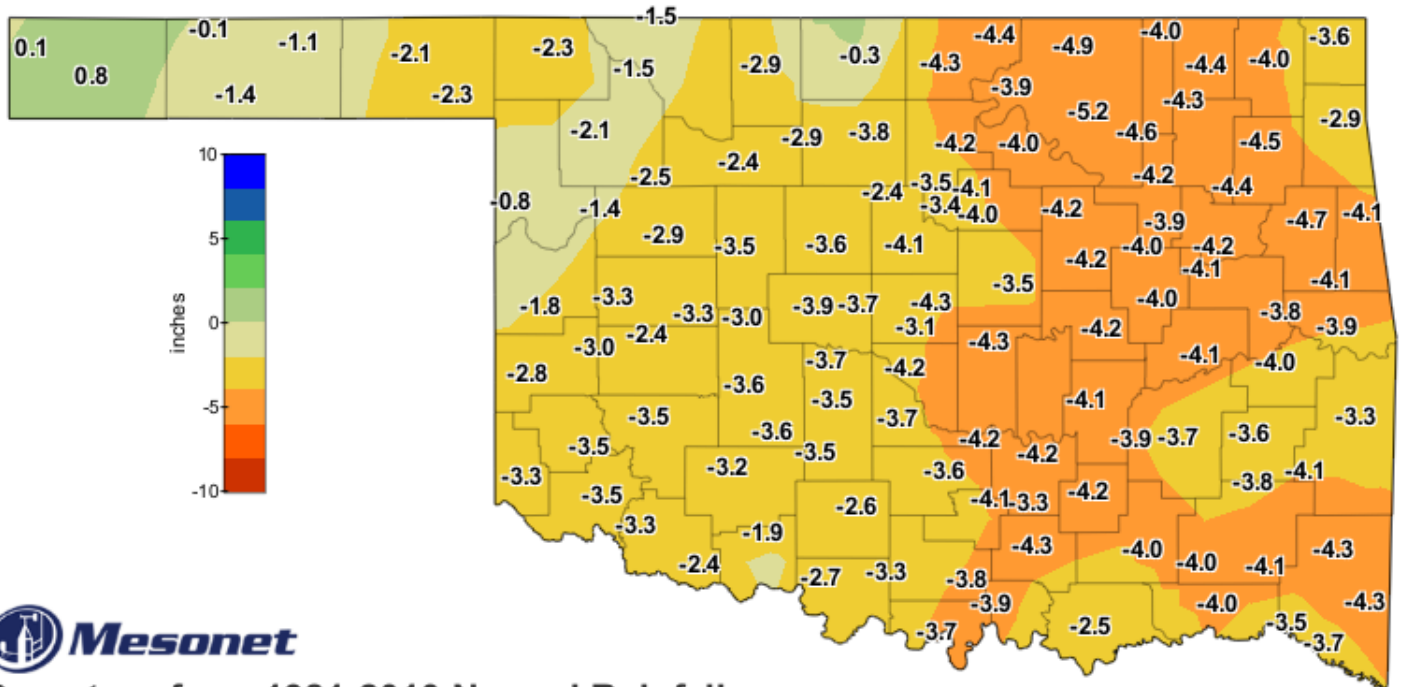


Consecutive Days With Less Than 0.25" Rainfall

July 12, 2022

Created 8:15:02 AM July 13, 2022 CDT. © Copyright 2022

Fig. 6. OK Mesonet consecutive number of days with less than 0.25" of rain through 7/12/2022.

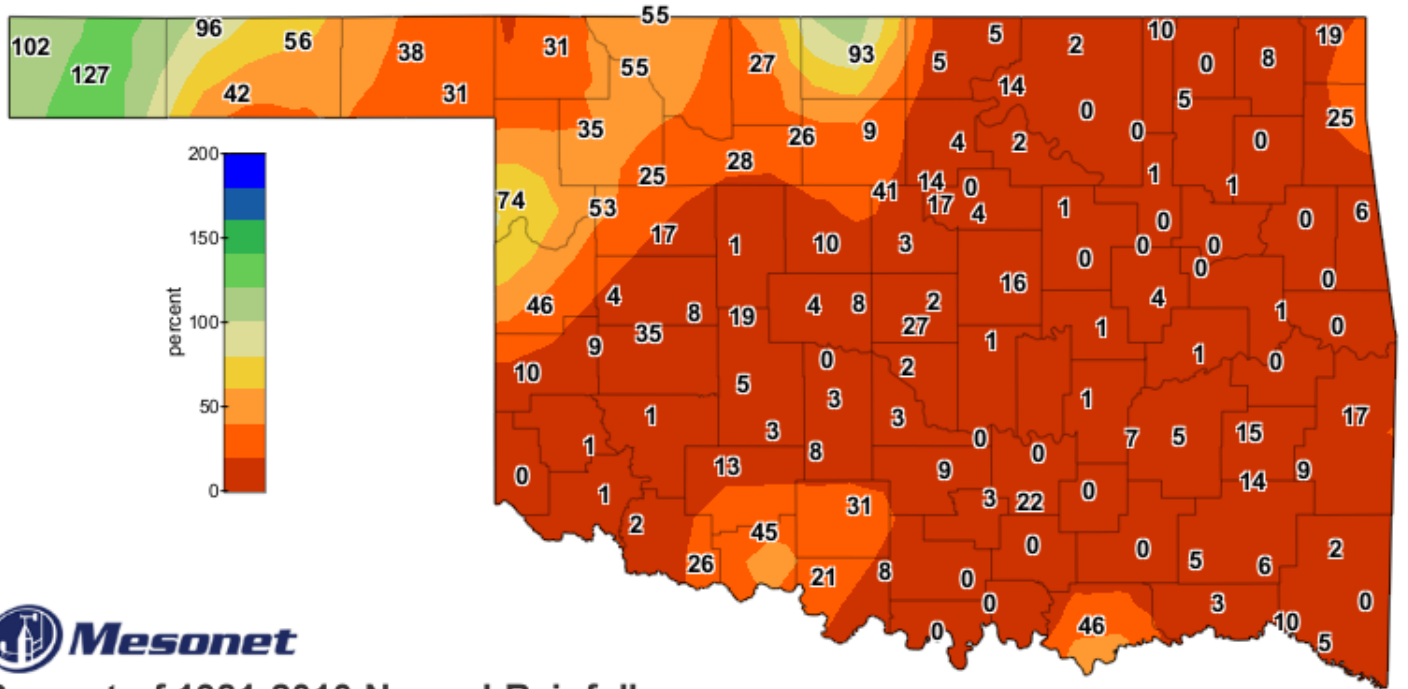


Departure from 1981-2010 Normal Rainfall Last 30 Days

Jun 13, 2022 through Jul 12, 2022

Created 3:40:30 AM July 13, 2022 CDT. Copyright 2022

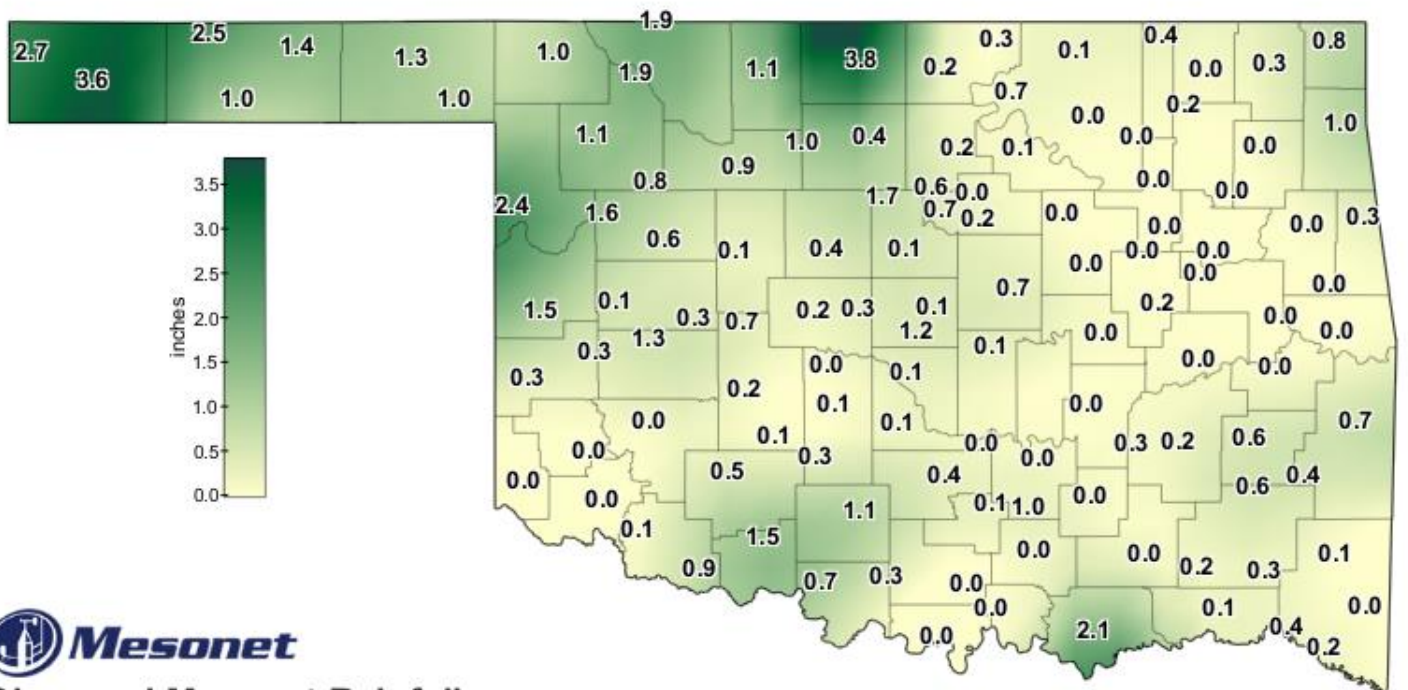
Fig. 7. OK Mesonet 30-day departure from normal rainfall ending 7/12/2022.



**Percent of 1981-2010 Normal Rainfall
Last 30 Days**

Jun 13, 2022 through Jul 12, 2022
Created 3:40:30 AM July 13, 2022 CDT. Copyright 2022

Fig. 8. OK Mesonet 30-day percent of normal rainfall ending 7/12/2022.



**Observed Mesonet Rainfall
Last 30 Days**

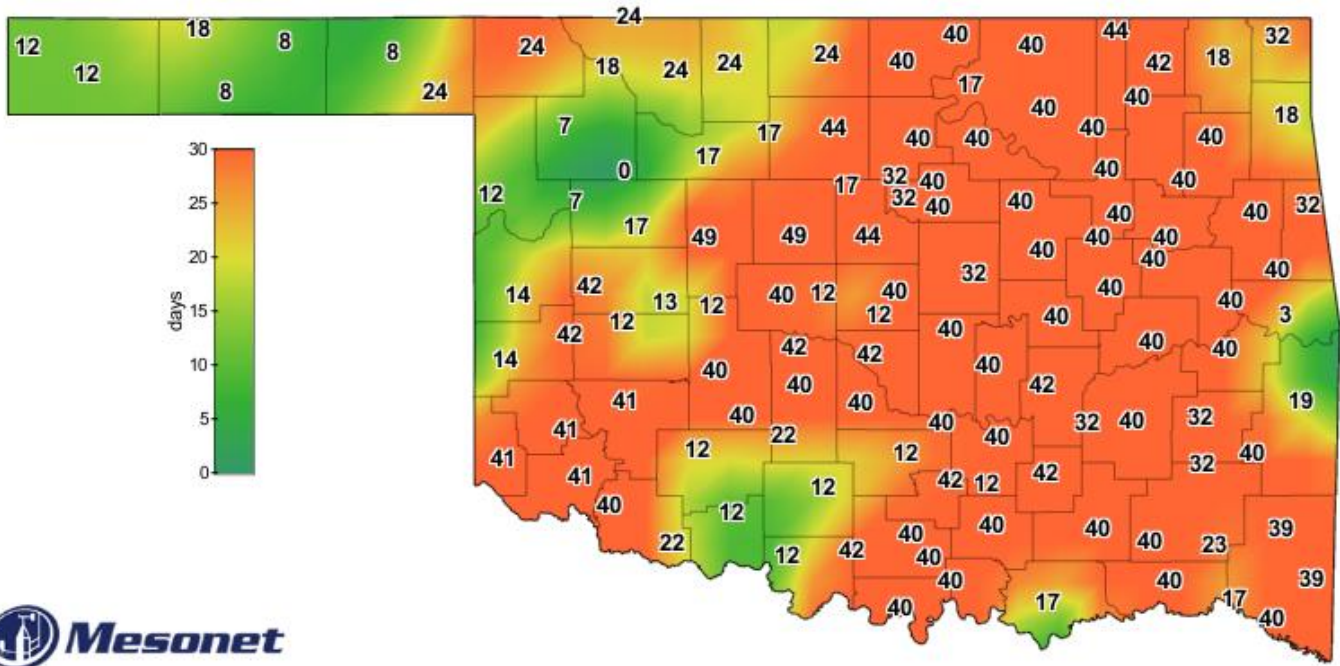
Jun 13, 2022 through Jul 12, 2022
Created 3:40:28 AM July 13, 2022 CDT. Copyright 2022

Fig. 9. OK Mesonet 30-day rainfall total ending 7/12/2022.

Last 30 Days: Jun 13, 2022 through Jul 12, 2022
 Normals data from 1981-2010

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (102 periods)	Driest on Record	Wettest on Record
Panhandle	1.88"	-0.96"	66%	37th driest	0.48" (1974)	5.85" (1947)
N. Central	1.15"	-2.72"	30%	10th driest	0.24" (1936)	10.96" (2007)
Northeast	0.23"	-4.10"	5%	1st driest	0.32" (1974)	12.62" (1948)
W. Central	0.67"	-2.43"	21%	6th driest	0.29" (1974)	8.08" (2007)
Central	0.31"	-3.73"	8%	1st driest	0.38" (1923)	14.31" (2007)
E. Central	0.08"	-3.84"	2%	1st driest	0.49" (1952)	13.93" (2015)
Southwest	0.36"	-3.01"	11%	3rd driest	0.31" (2011)	10.10" (2007)
S. Central	0.35"	-3.49"	9%	3rd driest	0.28" (1934)	14.69" (2015)
Southeast	0.32"	-3.80"	8%	1st driest	0.35" (1923)	12.87" (2007)
Statewide	0.60"	-3.14"	16%	1st driest	0.66" (1974)	10.80" (2007)

Fig. 10. OK Mesonet last 30 days rainfall statistics ending 7/12/2022.

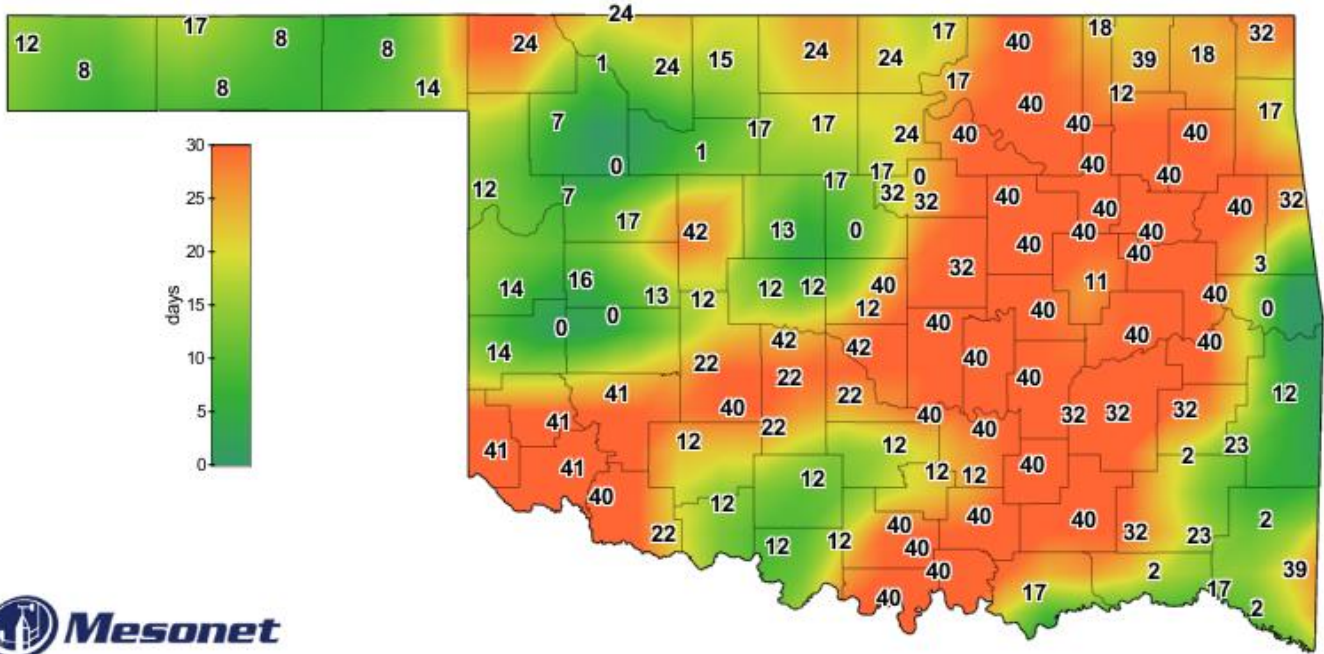


Consecutive Days With Less Than 0.25" Rainfall

July 20, 2022

Created 7:15:02 AM July 21, 2022 CDT. © Copyright 2022

Fig. 11. OK Mesonet consecutive number of days with less than 0.25" of rain through 7/20/2022.

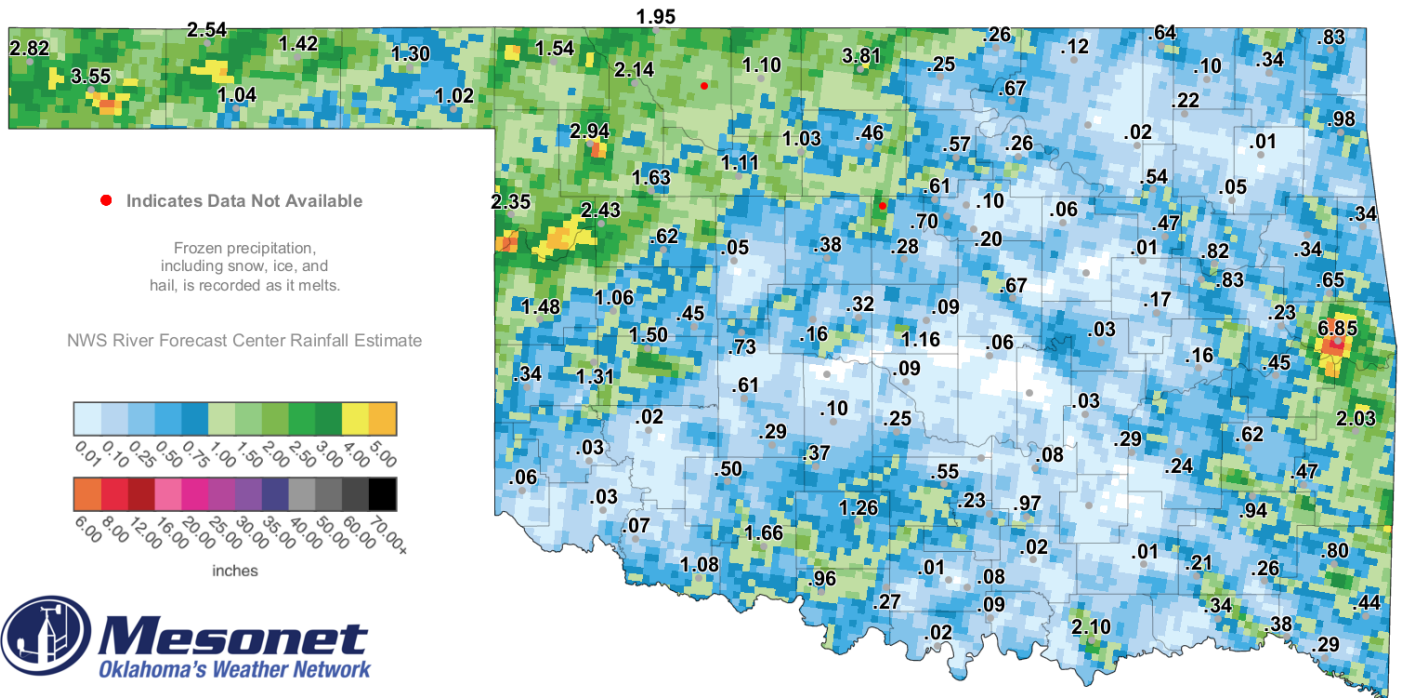


Consecutive Days With Less Than 0.10" Rainfall

July 20, 2022

Created 7:15:02 AM July 21, 2022 CDT. © Copyright 2022

Fig. 12. OK Mesonet consecutive number of days with less than 0.10" of rain through 7/20/2022.



41-Day Rainfall Accumulation (inches)

Jun 11, 2022 12:00 AM CDT - Jul 22, 2022 12:00 AM CDT

Created 8:10:30 AM July 22, 2022 CDT. © Copyright 2022

Fig. 13. OK Mesonet 41-day rainfall total ending 12:00am CDT 7/22/2022.

Web Request: Jun 11, 2022 through Jul 21, 2022

Normals data from 1981-2010

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (102 periods)	Driest on Record	Wettest on Record
Panhandle	1.89"	-1.89"	50%	19th driest	0.51" (1974)	8.66" (1950)
N. Central	1.41"	-3.54"	28%	6th driest	0.29" (1936)	12.57" (2007)
Northeast	0.25"	-5.40"	4%	1st driest	0.62" (1936)	14.93" (1948)
W. Central	0.81"	-3.15"	21%	4th driest	0.29" (1974)	9.41" (2007)
Central	0.32"	-4.82"	6%	1st driest	0.57" (1936)	16.99" (2007)
E. Central	0.18"	-5.00"	3%	1st driest	0.67" (1974)	14.58" (2007)
Southwest	0.42"	-3.88"	10%	2nd driest	0.41" (1936)	11.21" (2007)
S. Central	0.38"	-4.56"	8%	1st driest	0.51" (2011)	14.79" (2015)
Southeast	0.49"	-4.98"	9%	1st driest	0.68" (1923)	14.44" (2007)
Statewide	0.68"	-4.17"	14%	1st driest	0.87" (1974)	12.55" (2007)

Fig. 14. OK Mesonet rainfall statistics 6/11/2022 through 7/12/2022.

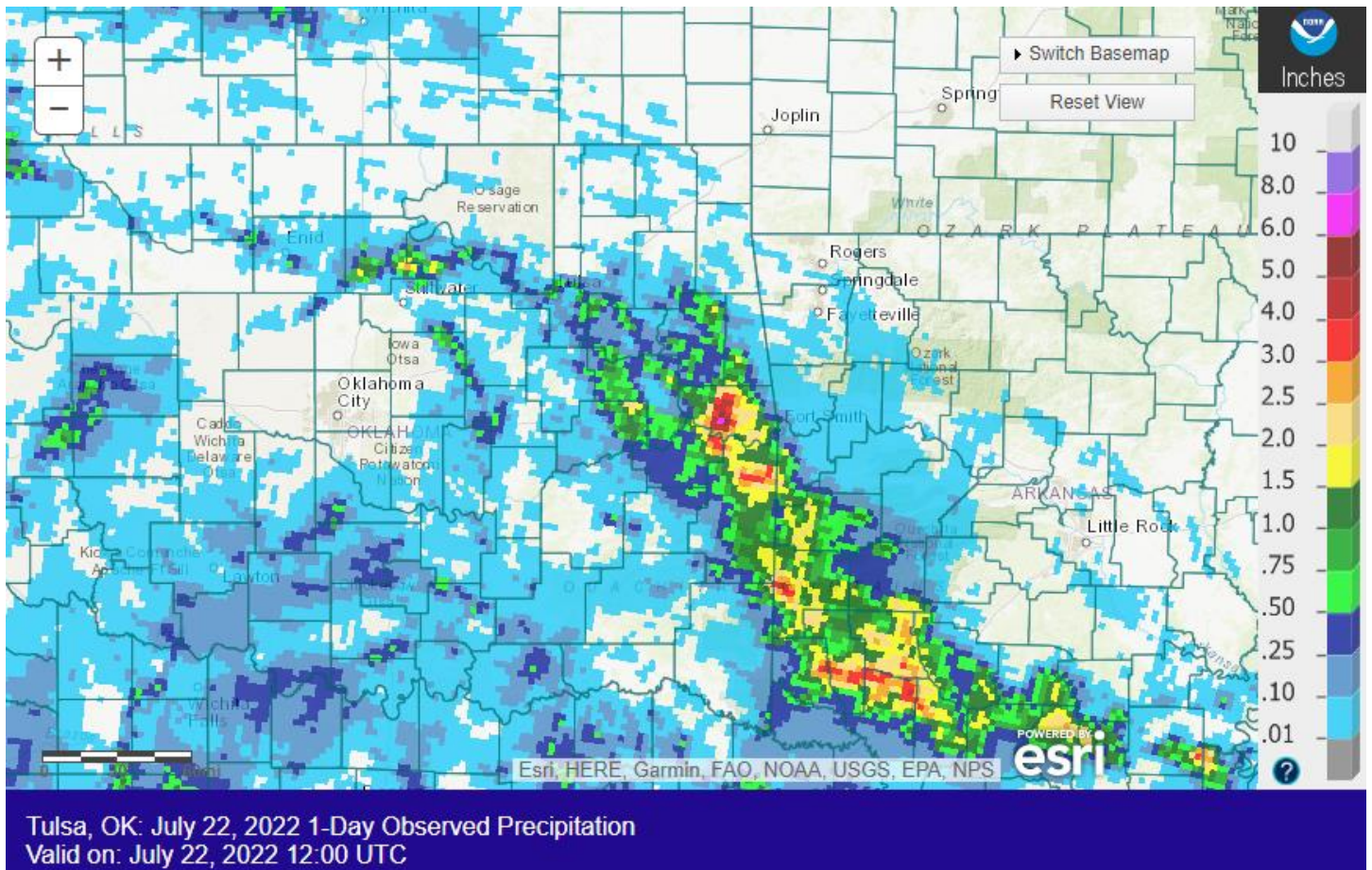
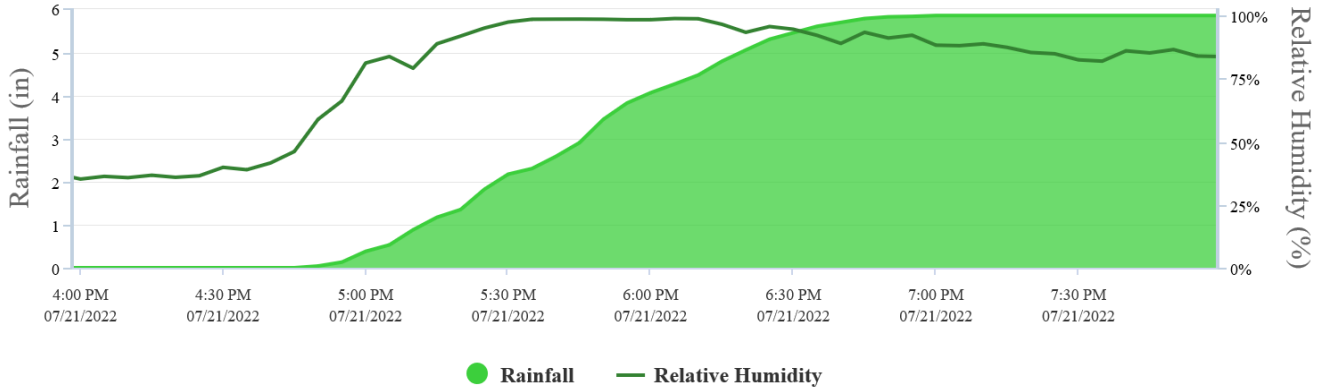


Fig. 15. 24-hour Estimated Observed Rainfall ending at 7am CDT 7/22/2022.

Meteogram for Sallisaw



www.mesonet.org

Fig. 16. OK Mesonet meteogram of rainfall and relative humidity for Sallisaw, OK on July 21, 2022.

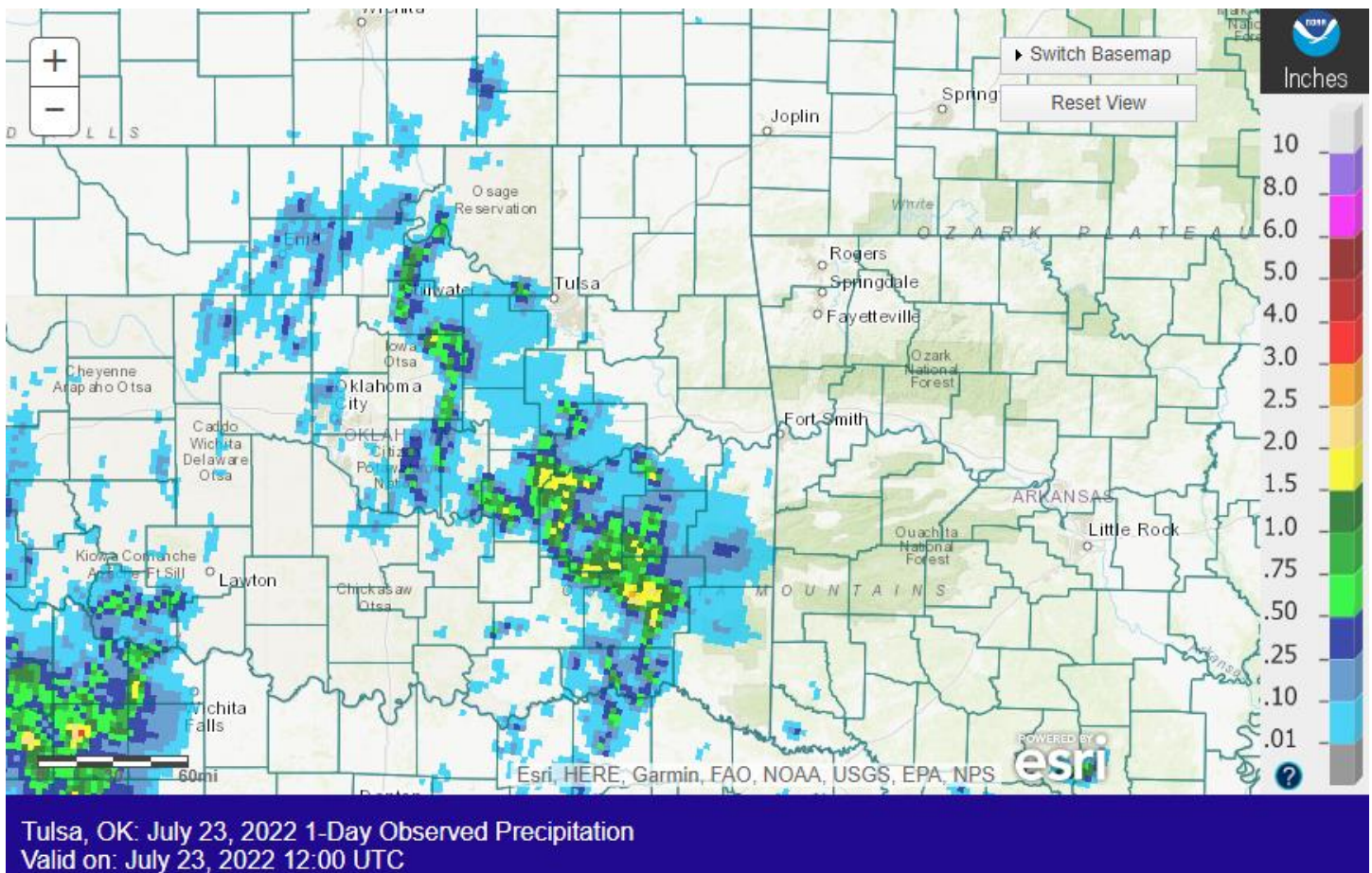
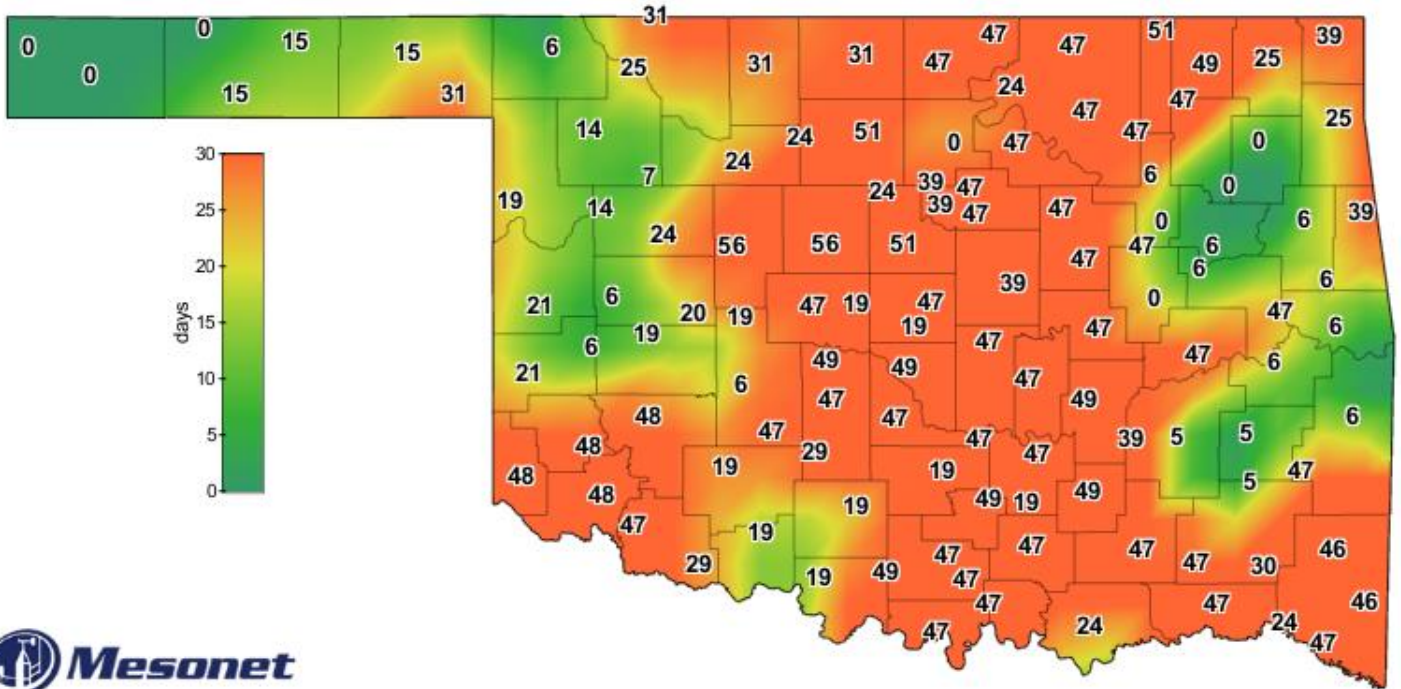


Fig. 17. 24-hour Estimated Observed Rainfall ending at 7am CDT 7/23/2022.

A cold front moved into the area and stalled over northeast OK and northwest AR on the 27th, with showers and thunderstorms developing along it by mid- to late-afternoon and continuing between I-44 and I-40 through mid-evening. A couple of isolated thunderstorms developed further south. Prior to this rain, many OK Mesonet stations had gone 25 to 51 consecutive days with less than 0.25" of rain, and 19 to 47 consecutive days with less than 0.10" of rain (Figs. 18, 19). Convection reignited during the late evening hours across northeast OK and northwest AR. The activity over northwest AR dissipated through the overnight hours, while showers and thunderstorms continued to fester over northeast OK through the night and into the morning of the 28th. By 7 am 7/28, the 24-hour rainfall totals were 0.25"-2.5" (Fig. 20). Unfortunately, many locations received less than 0.25", resulting in a longer period of consecutive days with little rainfall (Figs. 21, 22).

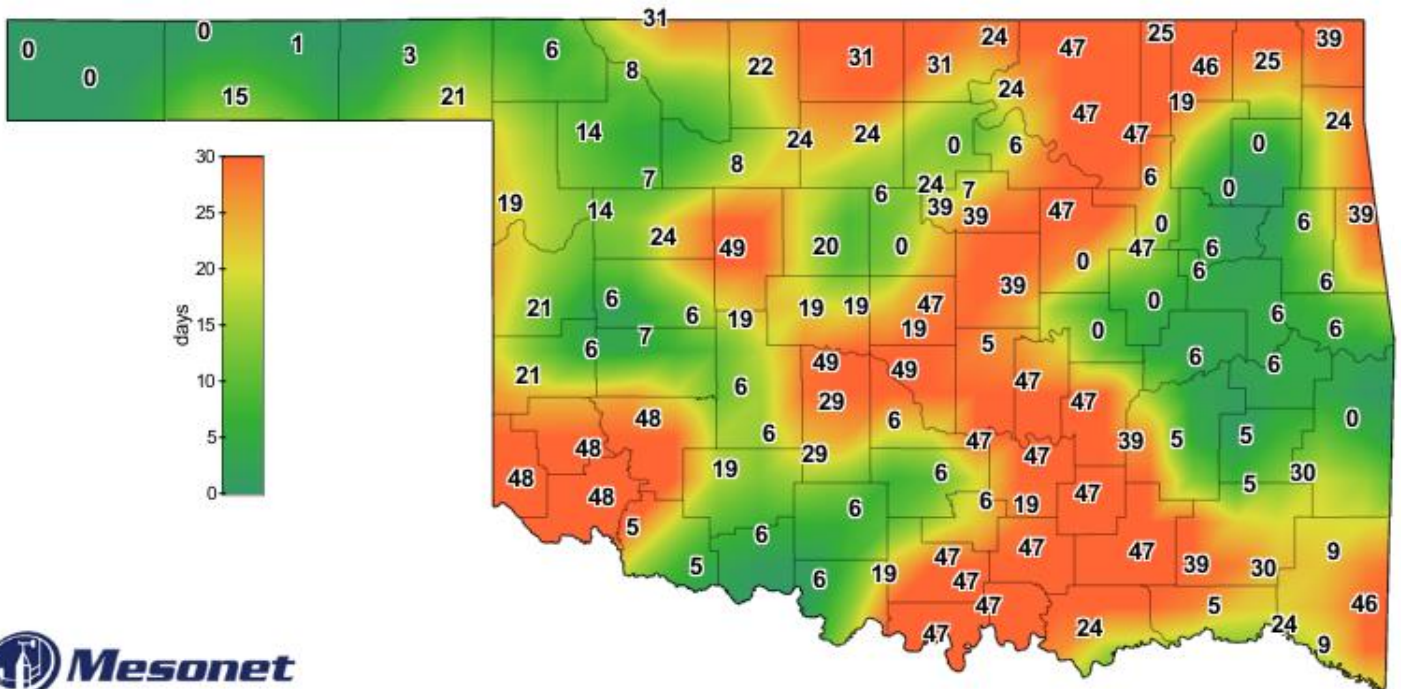


Consecutive Days With Less Than 0.25" Rainfall

July 27, 2022

Created 8:15:02 AM July 28, 2022 CDT. © Copyright 2022

Fig. 18. OK Mesonet consecutive number of days with less than 0.25" of rain through 7/27/2022.

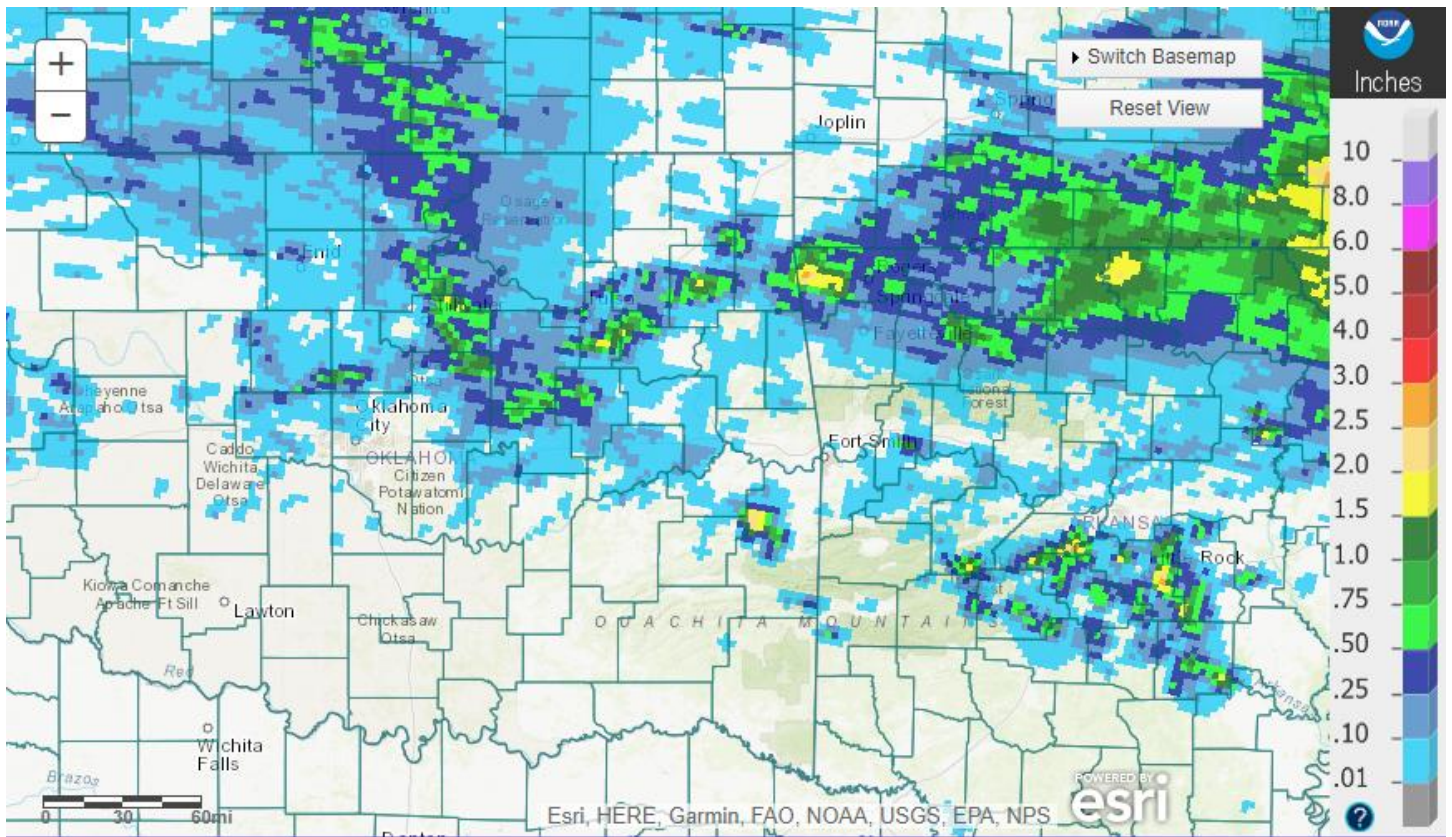


Consecutive Days With Less Than 0.10" Rainfall

July 27, 2022

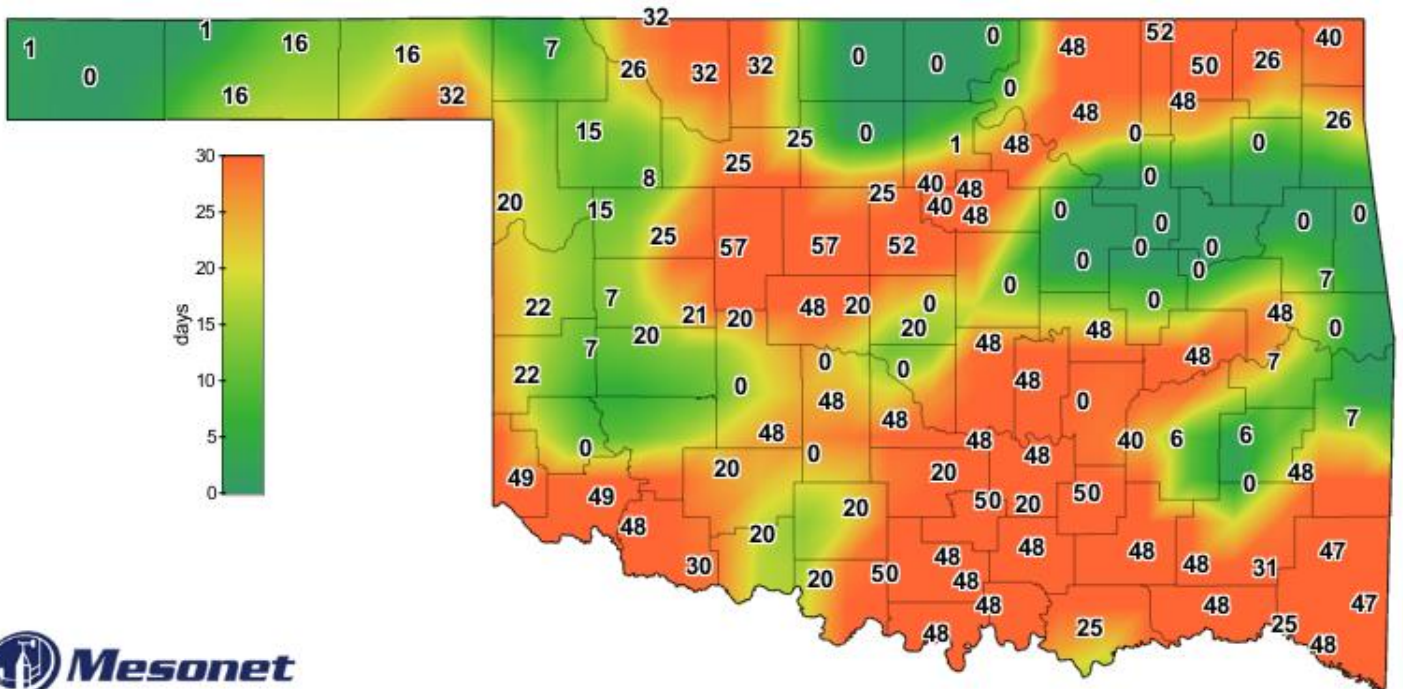
Created 8:15:02 AM July 28, 2022 CDT. © Copyright 2022

Fig. 19. OK Mesonet consecutive number of days with less than 0.10" of rain through 7/27/2022.



Tulsa, OK: July 28, 2022 1-Day Observed Precipitation
 Valid on: July 28, 2022 12:00 UTC

Fig. 20. 24-hour Estimated Observed Rainfall ending at 7am CDT 7/28/2022.

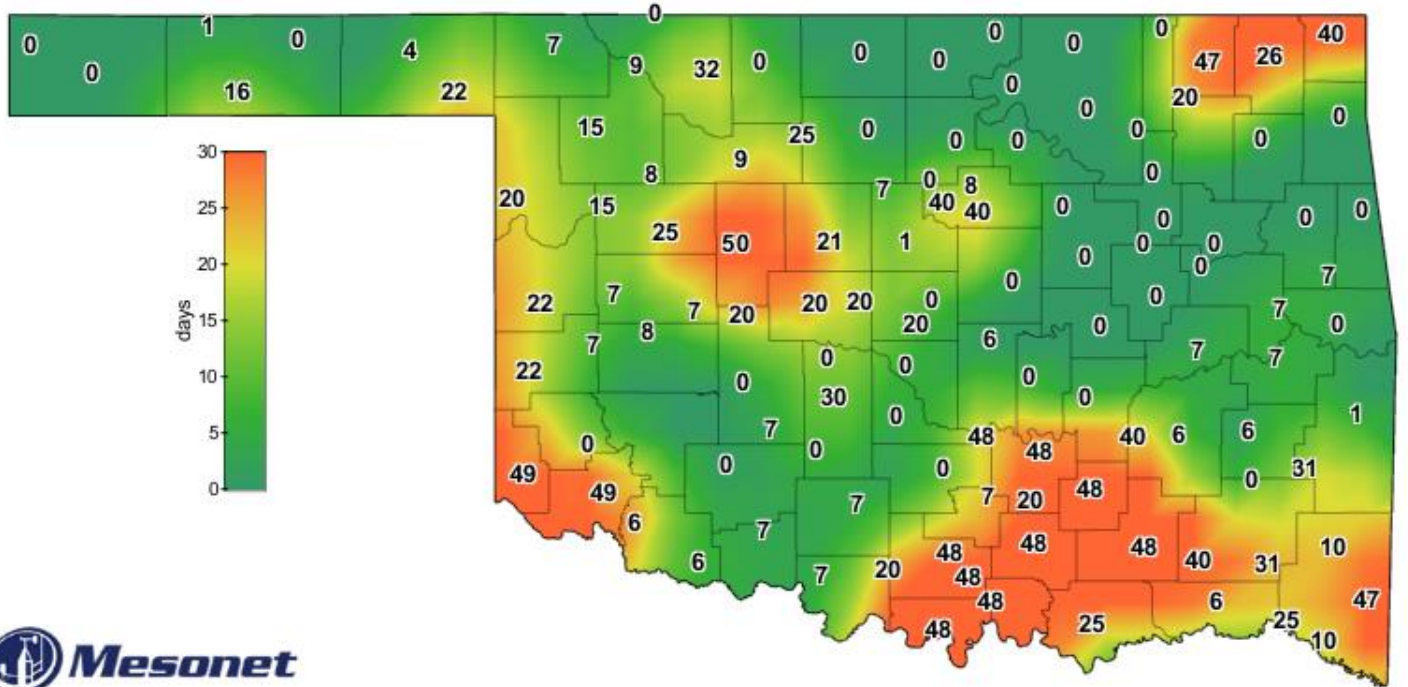


Mesonet
 Consecutive Days With Less Than 0.25" Rainfall

July 28, 2022

Created 8:15:02 AM July 29, 2022 CDT. © Copyright 2022

Fig. 21. OK Mesonet consecutive number of days with less than 0.25" of rain through 7/28/2022.

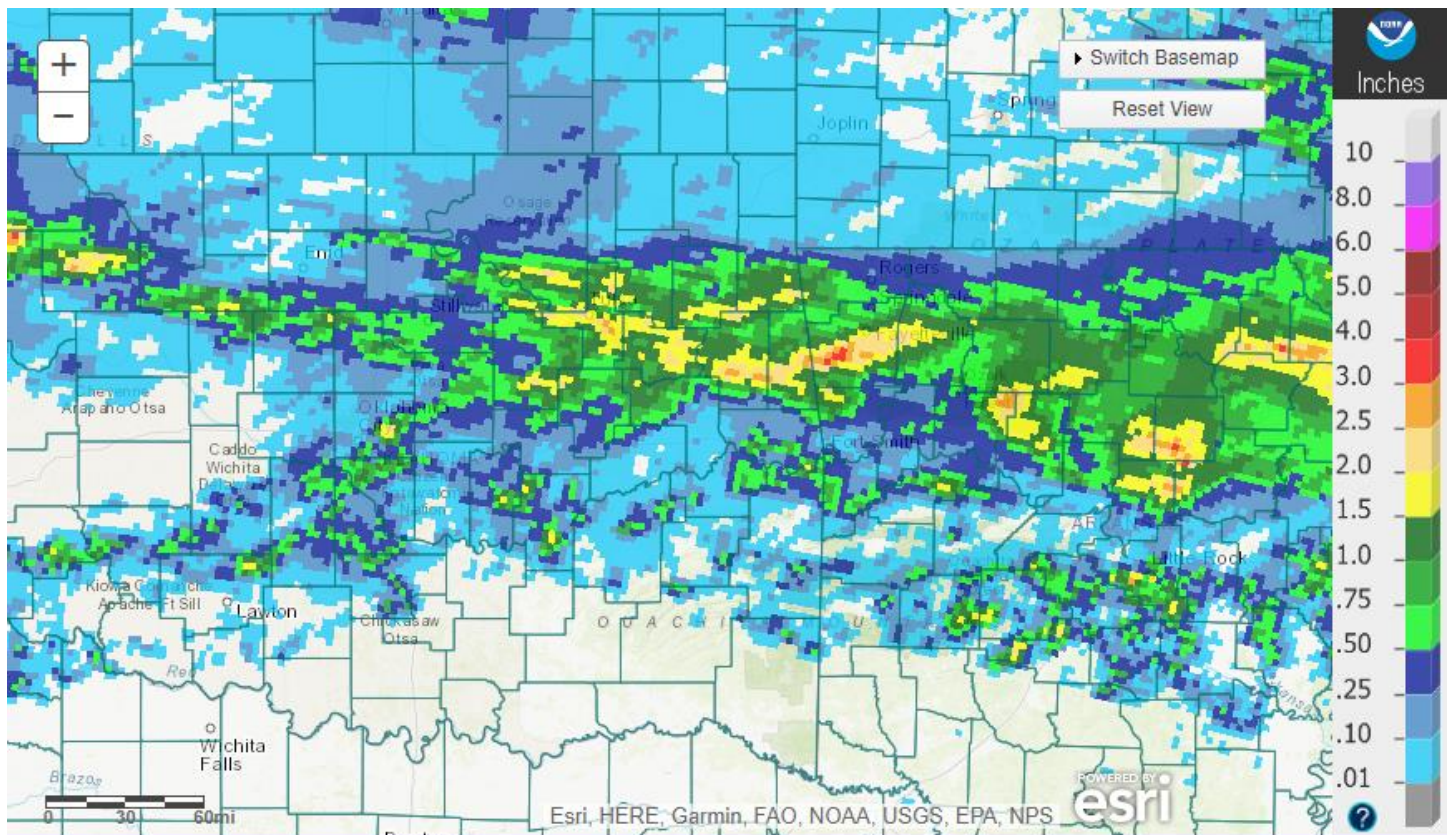


Consecutive Days With Less Than 0.10" Rainfall

July 28, 2022

Created 8:15:02 AM July 29, 2022 CDT. © Copyright 2022

Fig. 22. OK Mesonet consecutive number of days with less than 0.10" of rain through 7/28/2022.



Tulsa, OK: July 29, 2022 1-Day Observed Precipitation
Valid on: July 29, 2022 12:00 UTC

Fig. 23. 24-hour Estimated Observed Rainfall ending at 7am CDT 7/29/2022.

With the boundary remaining over the area, widespread showers and isolated thunderstorms continued across northeast OK through the morning of the 28th. This activity spread eastward into northwest AR, dissipating during the afternoon. By evening, the stalled surface boundary was located near I-40. Thunderstorms developed near and north of the boundary during the evening under the influence of a modest low-level jet, affecting a large part of northeast and east central OK, and northwest and west central AR through the overnight hours. A storm over eastern Tulsa County interacted with an outflow boundary from storms to the north, and quickly produced an EF-1 QLCS tornado that resulted in a swath of damage across portions of Broken Arrow, OK (see <https://arcg.is/1eT4580> for details). Showers and thunderstorms were still ongoing by sunrise in a broad corridor around Hwy 412. With high precipitable water (PWAT) values over the region, rainfall totals by 7 am 7/29 were 0.50" to 4" across a large part of northeast OK and northwest AR (Fig. 23).

Widespread showers and thunderstorms continued near the elevated frontal zone across eastern OK and northwest AR along and north of I-40 through the rest of the morning of the 29th and dissipated during the afternoon. Meanwhile, after noon, isolated thunderstorms developed across southeast OK near the surface front. These storms shifted south of the Red River by early evening. A little before sunrise on the 30th, showers and thunderstorms once again developed over northeast OK and northwest AR as a zone of stronger low-level moisture transport expanded into the area from the west. Through 7 am 7/30, the 24-hour rainfall totals were around 0.25" to around 2.5" (Fig. 24). Widespread convection continued through the morning near the elevated boundary across northeast OK and northwest AR, generally along and north of Hwy 412. With PWAT values around 2", this morning convection was efficient at producing rain before the activity shifted northeast of the HSA shortly after noon. Training of storms resulted in 3"-4" in three hours in parts of far northeast OK and northwest AR. During the late morning hours, additional scattered storms developed further south across eastern OK and west central AR, south of the surface front. This activity continued through the afternoon before shifting southeast of the region. 24-hour rainfall totals by 7 am 7/31 ranged from 0.10" to 4" (Fig. 25).

Around sunrise on the 31st, showers and thunderstorms spread into northeast OK from the west. This activity expanded, affecting a large portion of eastern OK and northwest AR as it progressed southeastward through the morning. By noon, the heaviest rain had shifted southeast of the region, with just some scattered showers lingering through the afternoon. Rainfall totals were lighter on this day, ranging from a few hundredths of an inch to near 1.5" (Fig. 26).

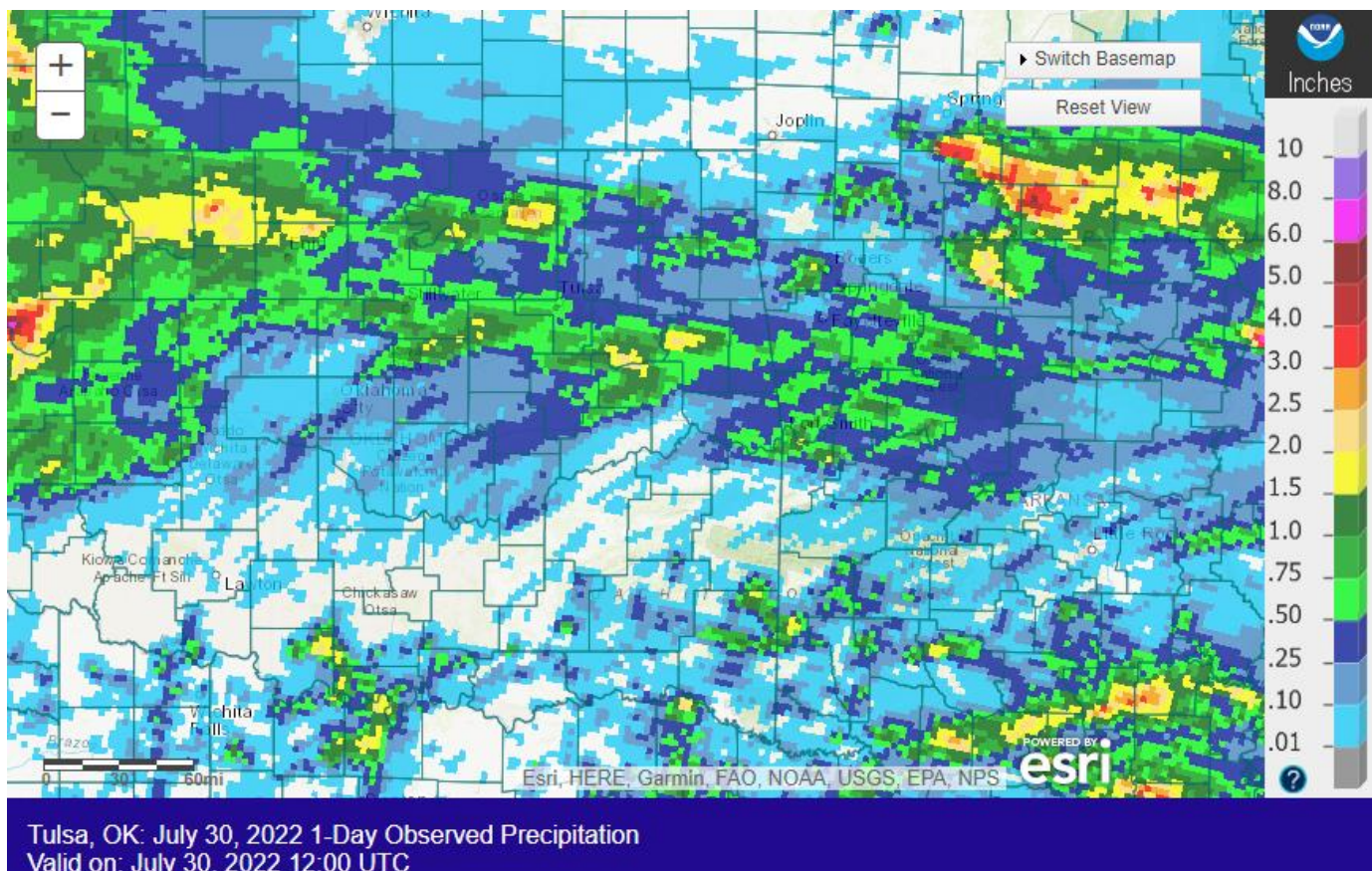
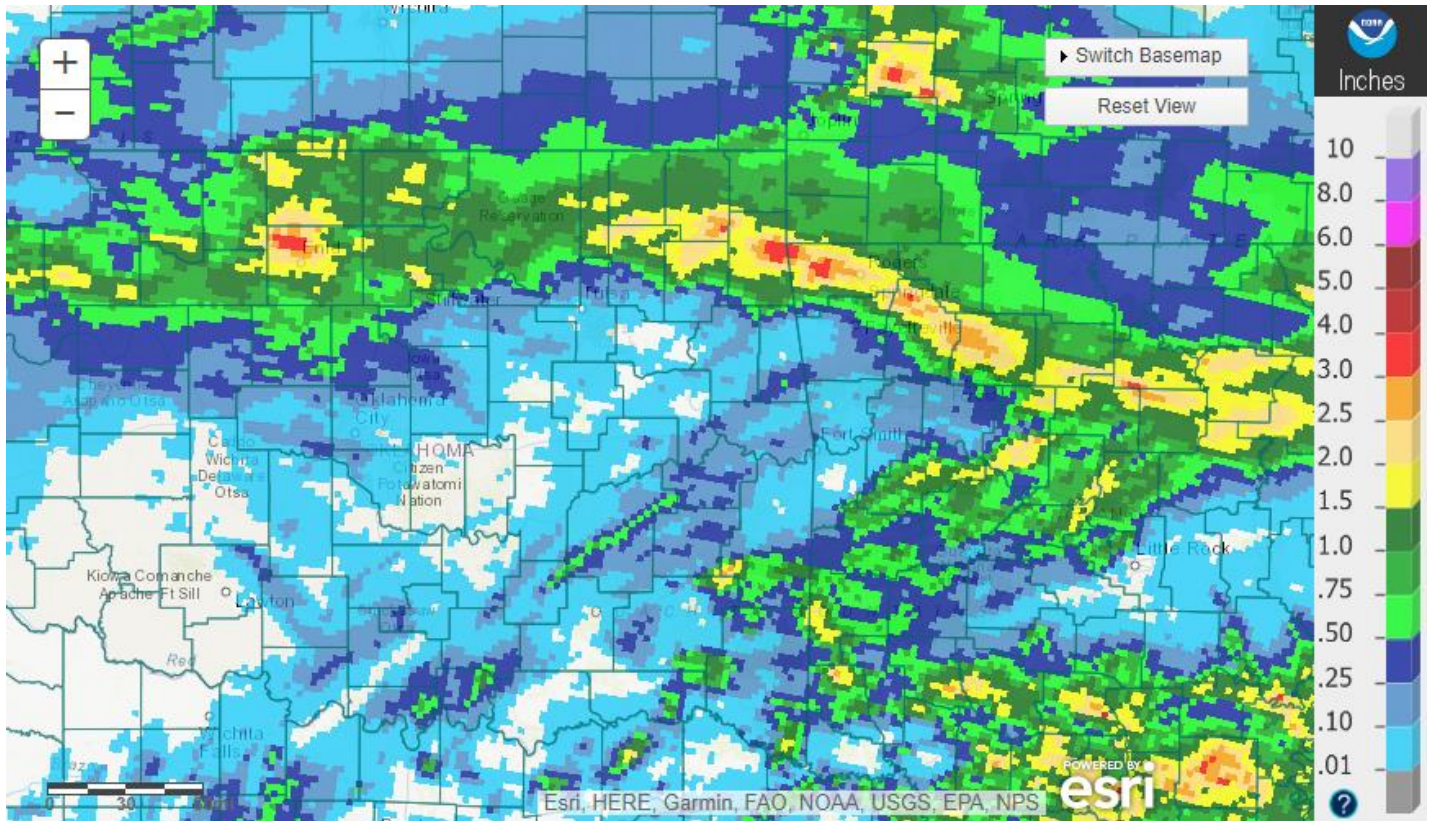
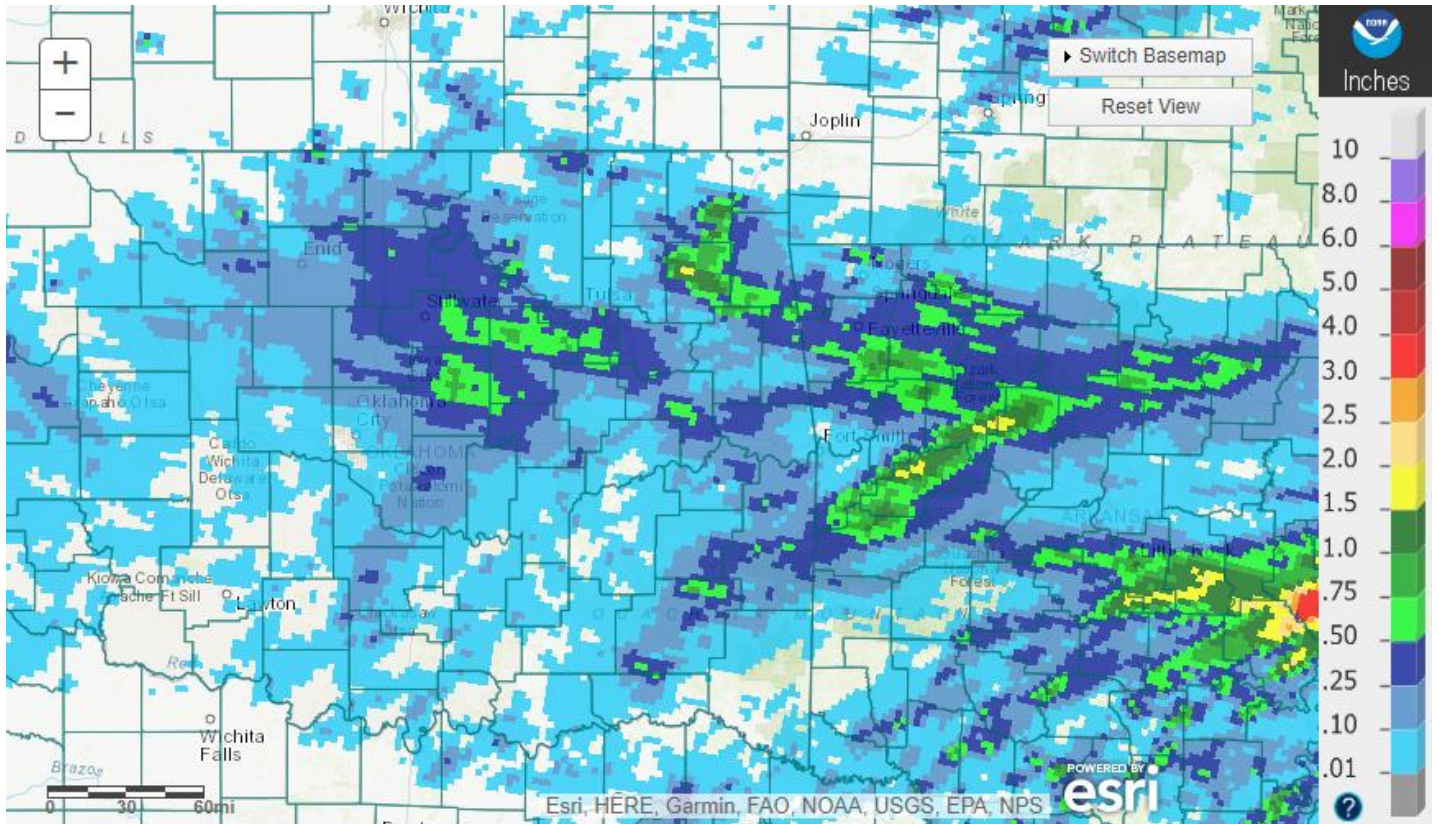


Fig. 24. 24-hour Estimated Observed Rainfall ending at 7am CDT 7/30/2022.



Tulsa, OK: July 31, 2022 1-Day Observed Precipitation
 Valid on: July 31, 2022 12:00 UTC

Fig. 25. 24-hour Estimated Observed Rainfall ending at 7am CDT 7/31/2022.



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

Fig. 26. 24-hour Estimated Observed Rainfall ending at 7am CDT 8/01/2022.

Written by:

Nicole McGavock
Service Hydrologist
WFO Tulsa

Products issued in July 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

- 2 Flash Flood Warnings (FFW)
- 2 Flash Flood Statements (FFS)
- 0 Flash/Areal Flood Watches (FFA) (0 Watch FFA CON/EXT/EXA/EXB/CAN)
- 7 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) (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)
- 0 Drought Information Statements (DGT)

Preliminary Hydrographs:

None