

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 May 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 June 15, 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.

May 2022 was a very active month, with several heavy rain events resulting in significant flash flooding and major river flooding across northeast OK and northwest AR. Normal precipitation values climatologically rank May as the wettest month of the year. These averages range from 5.0 - 5.5 inches across northeast Oklahoma to 5.5 - 6.0 inches across southeast Oklahoma. The Ozark region of northwest Arkansas averages 5.8 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 May 2022 ranged from 5" to around 20" north of I-40 in eastern OK and northwest AR, and 2"-8" south of I-40. These rainfall totals correspond to 110% to around 300% of the normal May rainfall north of I-40 (Fig. 1b). However, south of I-40, this was only 25%-90% of normal for most of southeast OK and around 75% to around 125% of normal for west central AR.

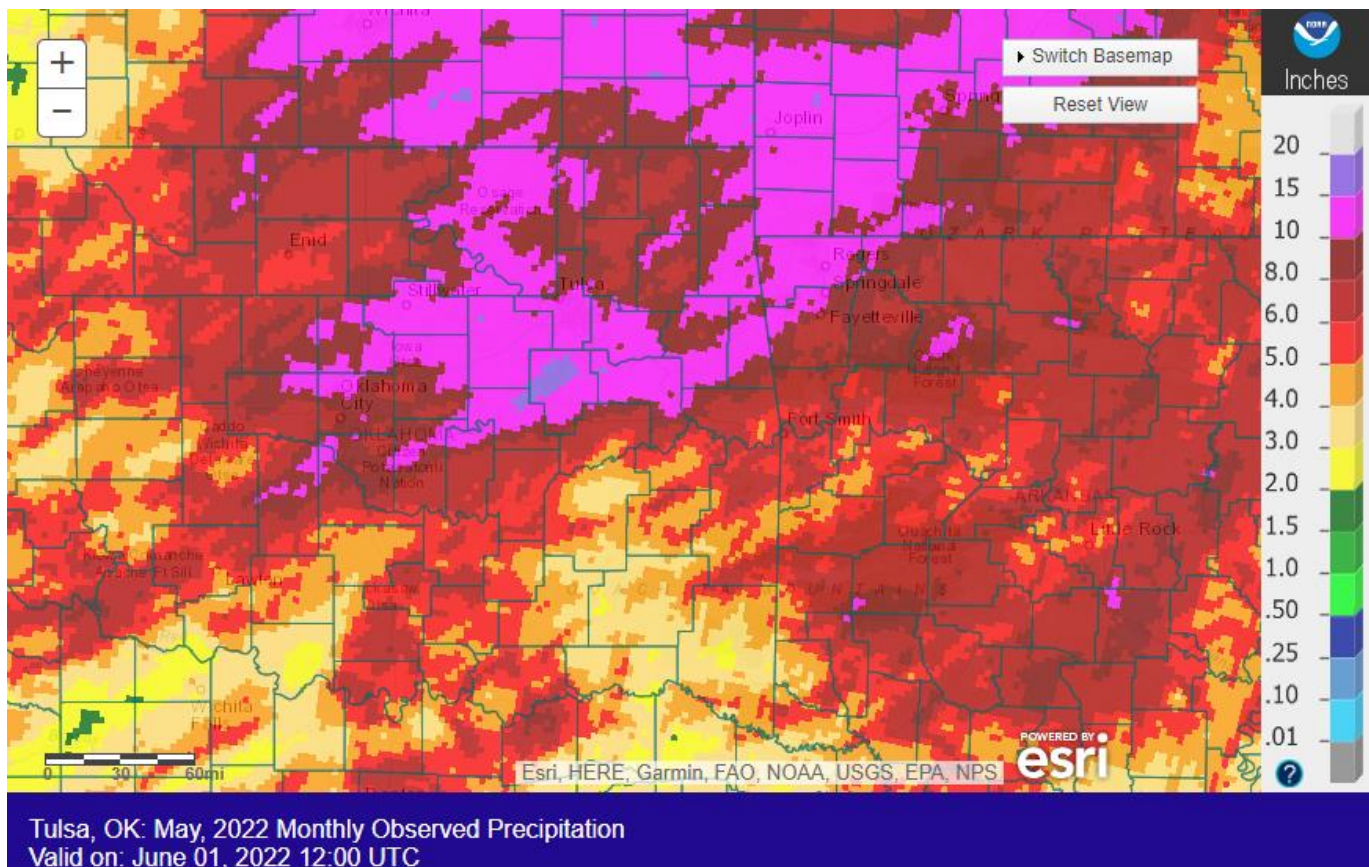


Fig. 1a. Estimated Observed Rainfall for May 2022

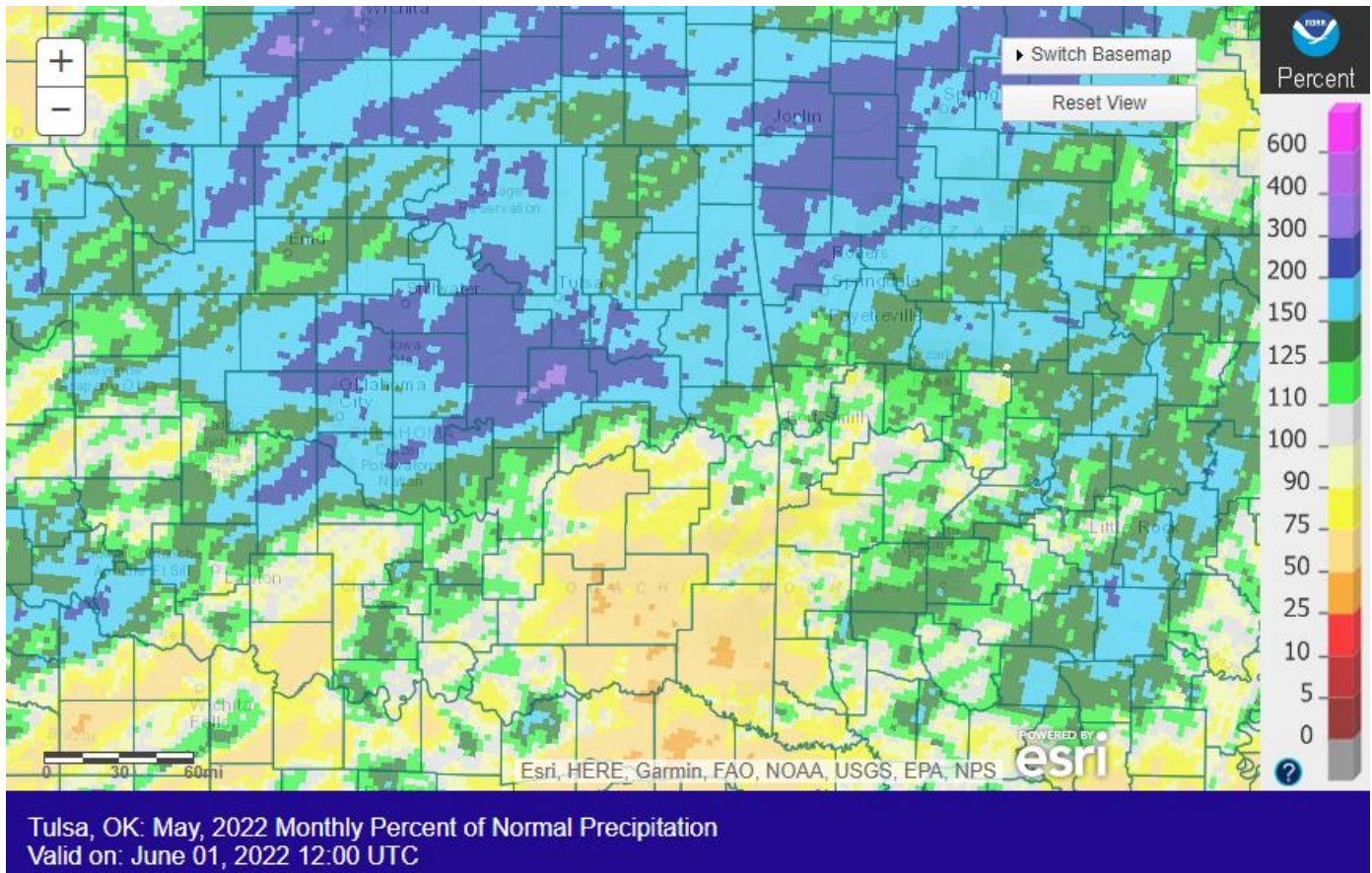


Fig. 1b. Estimated % of Normal Rainfall for May 2022

In Tulsa, OK, May 2022 ranked as the 29th warmest May (70.8°F, tied 1916, 2000; since records began in 1905) and the 15th wettest May (9.43"; since records began in 1888). Fort Smith, AR had the 21st warmest May (72.2°F, tied 1920, 2010; since records began in 1883) and the 31st wettest May (6.64"; since records began in 1883). Fayetteville, AR had the 8th warmest (69.5°F) and the 36th driest (5.42") May since records began in 1950.

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

Beggs, OK (USGS)	20.73	Tulsa 2.4W, OK (coco)	16.54	Haskell, OK (meso)	13.90
Oilton, OK (meso)	13.70	Hectorville, OK (meso)	13.49	Briston, OK (meso)	13.30
Terlton 3.7ESE, OK (coco)	13.17	Drumright 0.6SW, OK (coco)	13.09	Siloam Springs 1.8N, AR (coco)	12.66

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

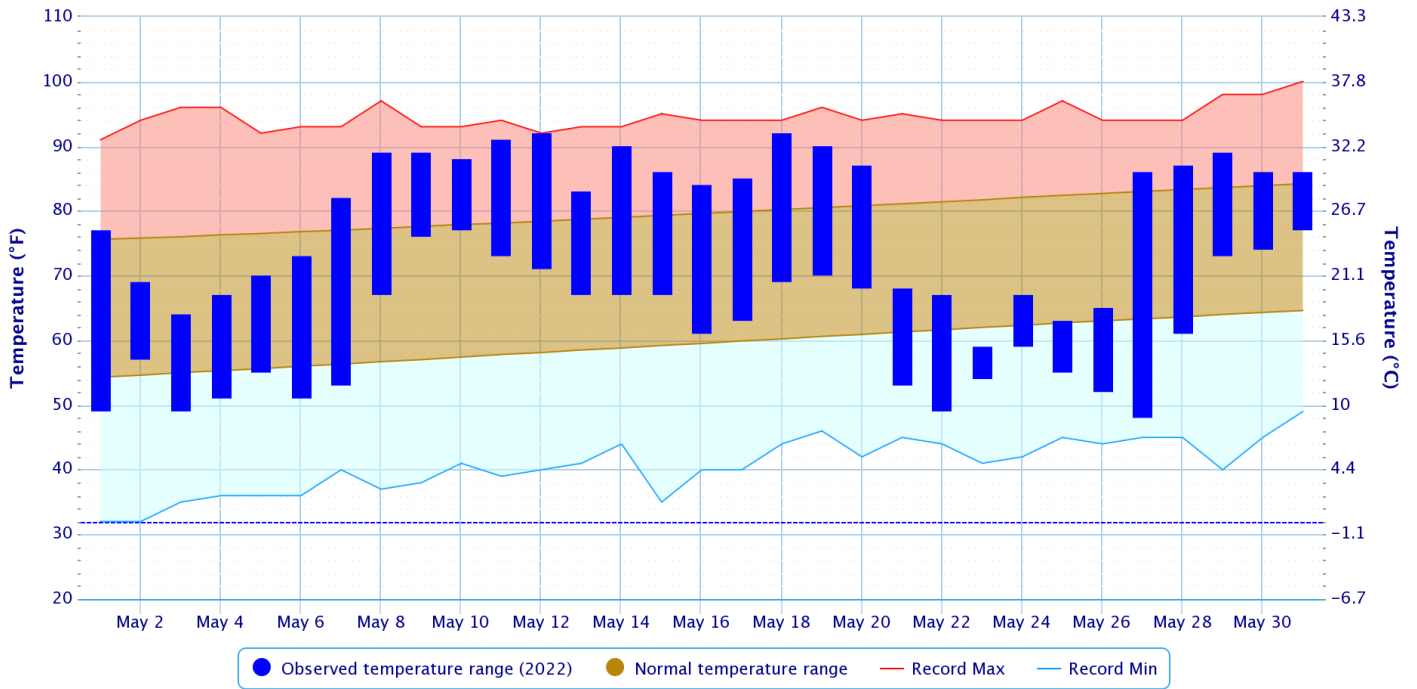
Clayton, OK (meso)	3.45	Cloudy, OK (meso)	3.51	Antlers 5NW, OK (coop)	3.54
Talihina, OK (meso)	3.76	McAlester, OK (ASOS)	3.93	Krebs 0.3WNW, OK (coco)	3.97
Hugo 1.9ENE, OK (coco)	4.56	Eufaula, OK (meso)	4.82	Ozark 4.6S, AR (coco)	4.92

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

Rank since 1921	Last 30 Days (May 2-31, 2022)	Spring 2022	Last 60 Days (Apr 2 – May 31)	Last 120 Days (Feb 1 – May 31)	Year-to-Date (Jan 1 – May 31)	Water Year-to-Date (Oct 1, 2021 – May 31, 2022)	Last 365 Days (Jun 1, 2021 – May 31, 2022)
Northeast OK	7th wettest	19 th wettest	15 th wettest	23 rd wettest	33 rd wettest	39 th wettest	46 th wettest
East Central OK	13 th wettest	10th wettest	8th wettest	10th wettest	15 th wettest	23 rd wettest	37 th wettest
Southeast OK	36 th driest	48 th wettest	47 th wettest	41 st wettest	48 th driest	30 th driest	36 th driest
Statewide	25 th wettest	40 th wettest	41 st driest	46 th wettest	51 st wettest	37 th driest	32 nd driest

Daily Temperature Data – Tulsa Area, OK (ThreadEx)

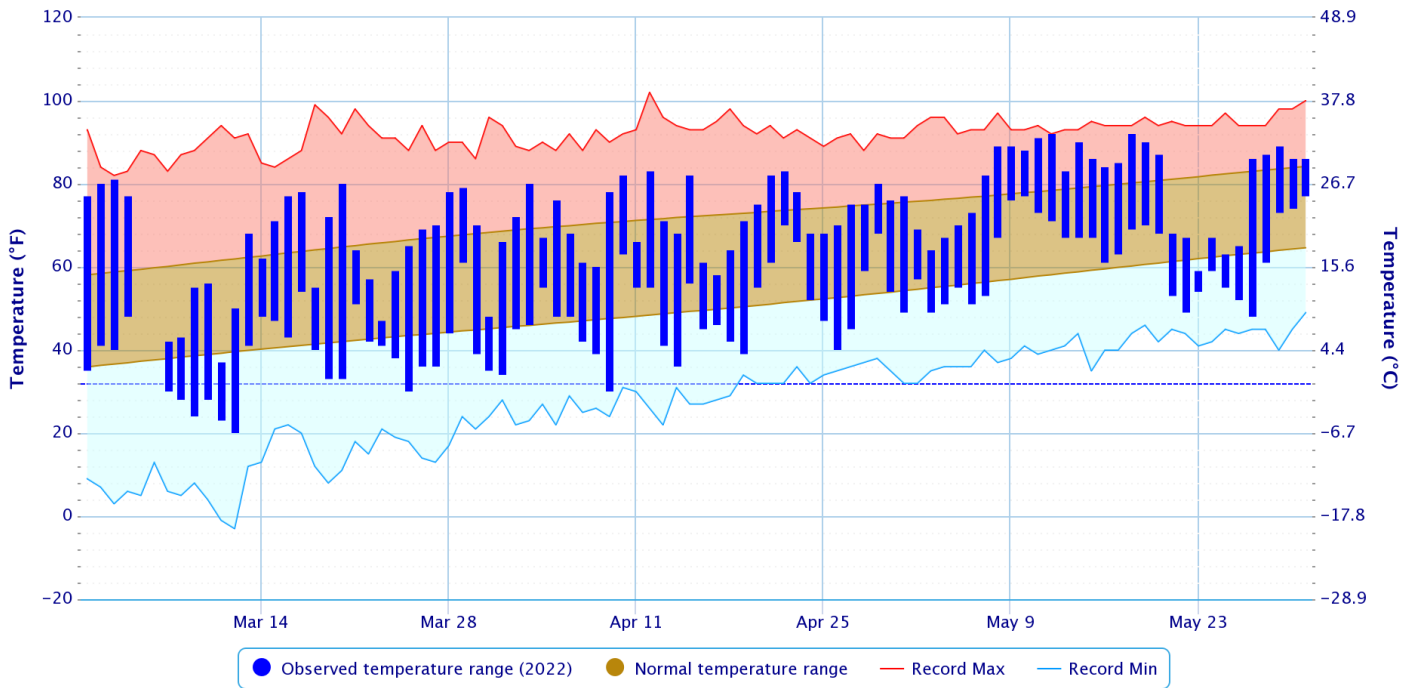
Period of Record – 1905-01-06 to 2022-06-07. Normals period: 1991-2020. Click and drag to zoom chart.



Powered by ACIS

Daily Temperature Data – Tulsa Area, OK (ThreadEx)

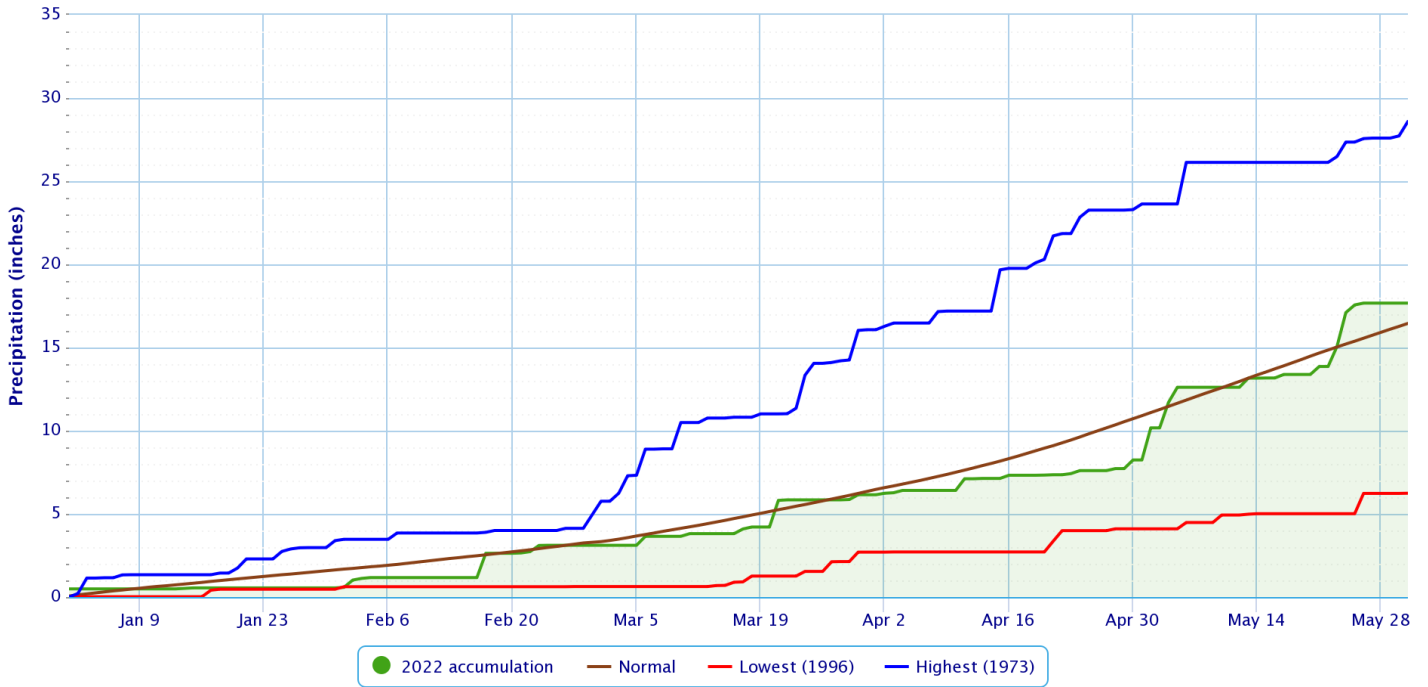
Period of Record – 1905-01-06 to 2022-06-07. Normals period: 1991-2020. Click and drag to zoom chart.



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Accumulated Precipitation – Tulsa Area, OK (ThreadEx)

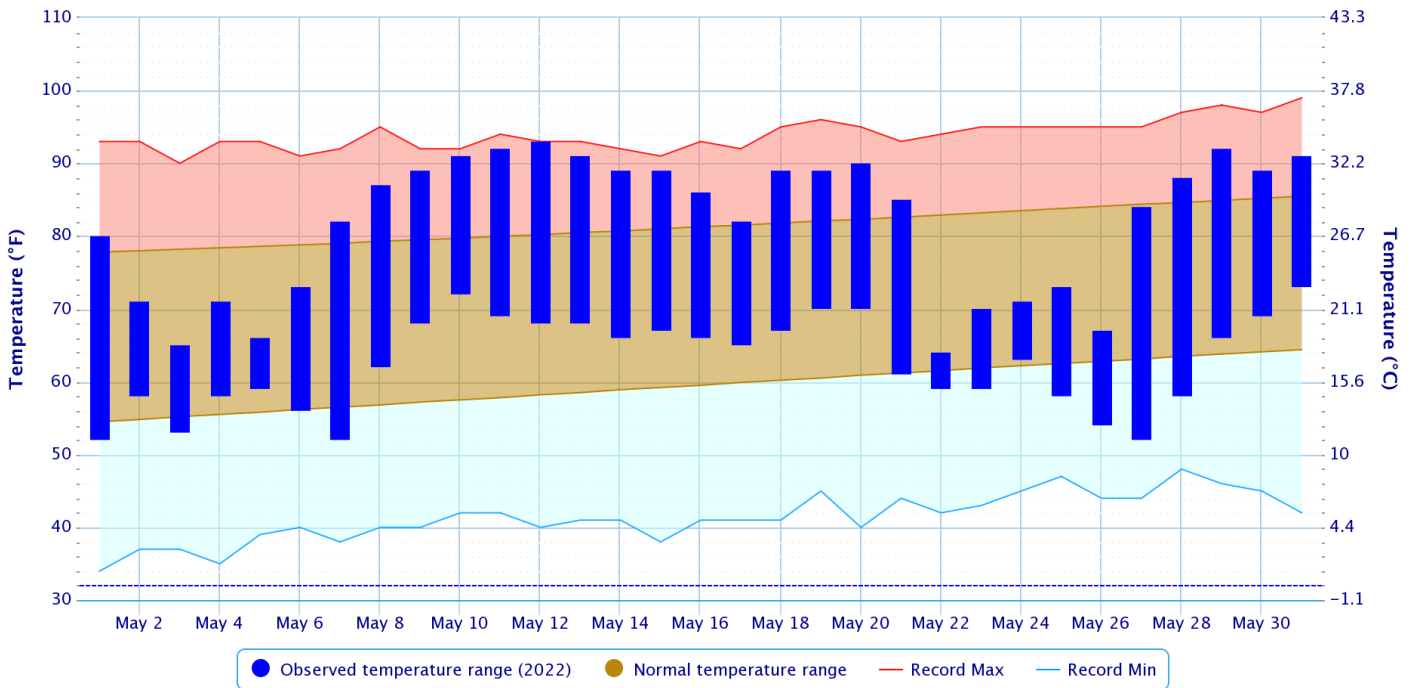
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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

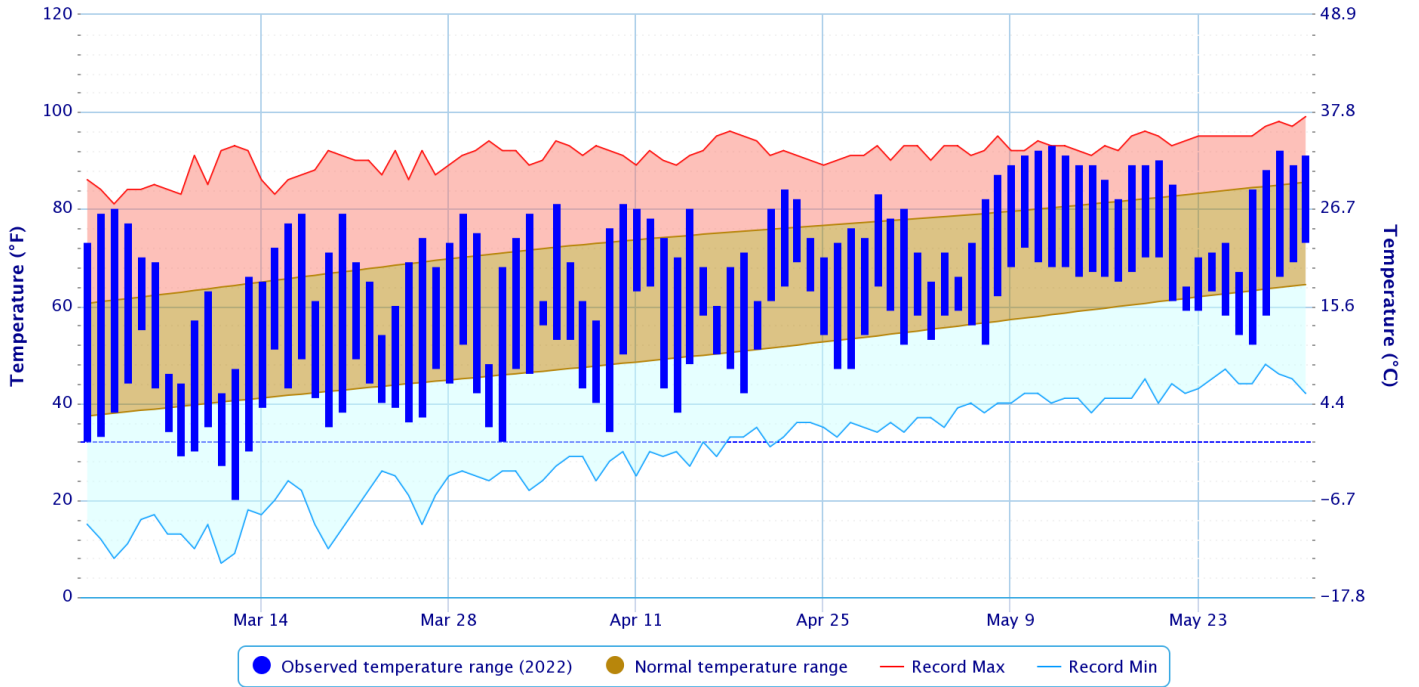
Period of Record – 1882-06-01 to 2022-06-07. Normals period: 1991-2020. Click and drag to zoom chart.



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

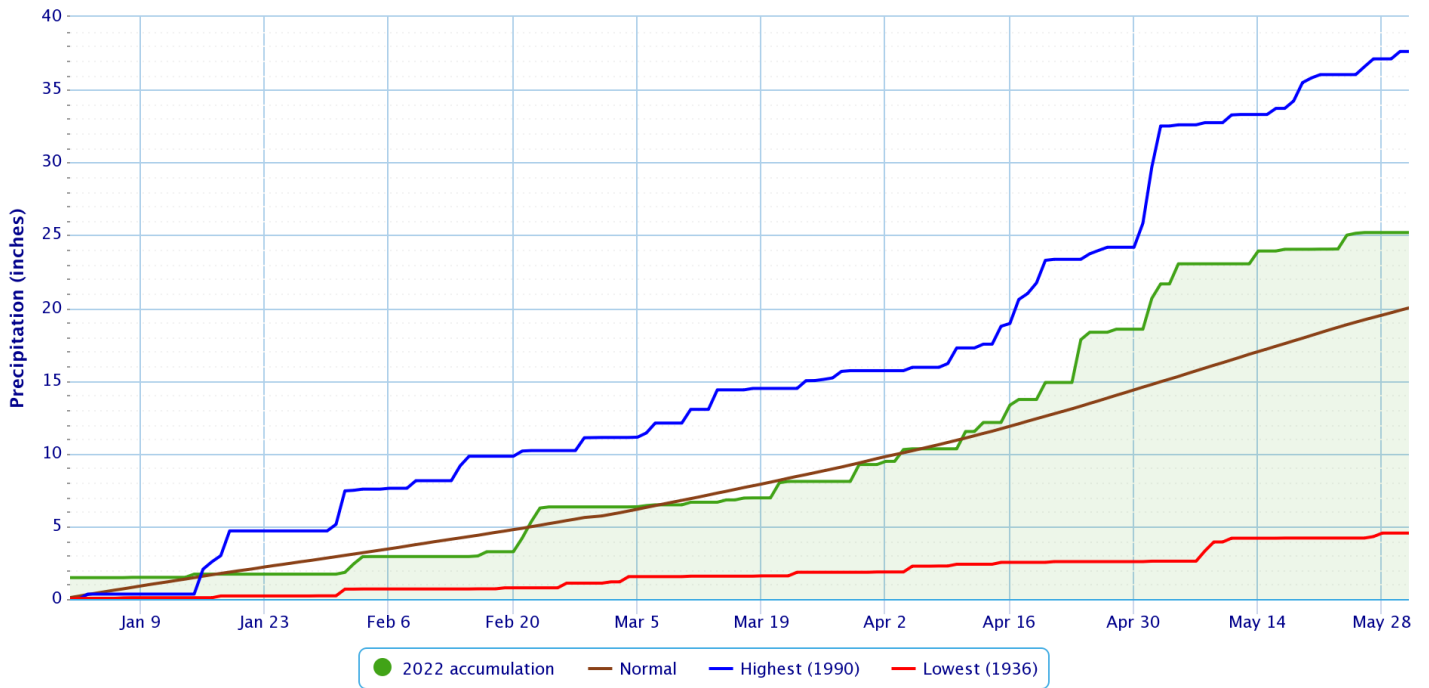
Period of Record – 1882-06-01 to 2022-06-07. Normals period: 1991-2020. Click and drag to zoom chart.



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Accumulated Precipitation – Fort Smith Area, AR (ThreadEx)

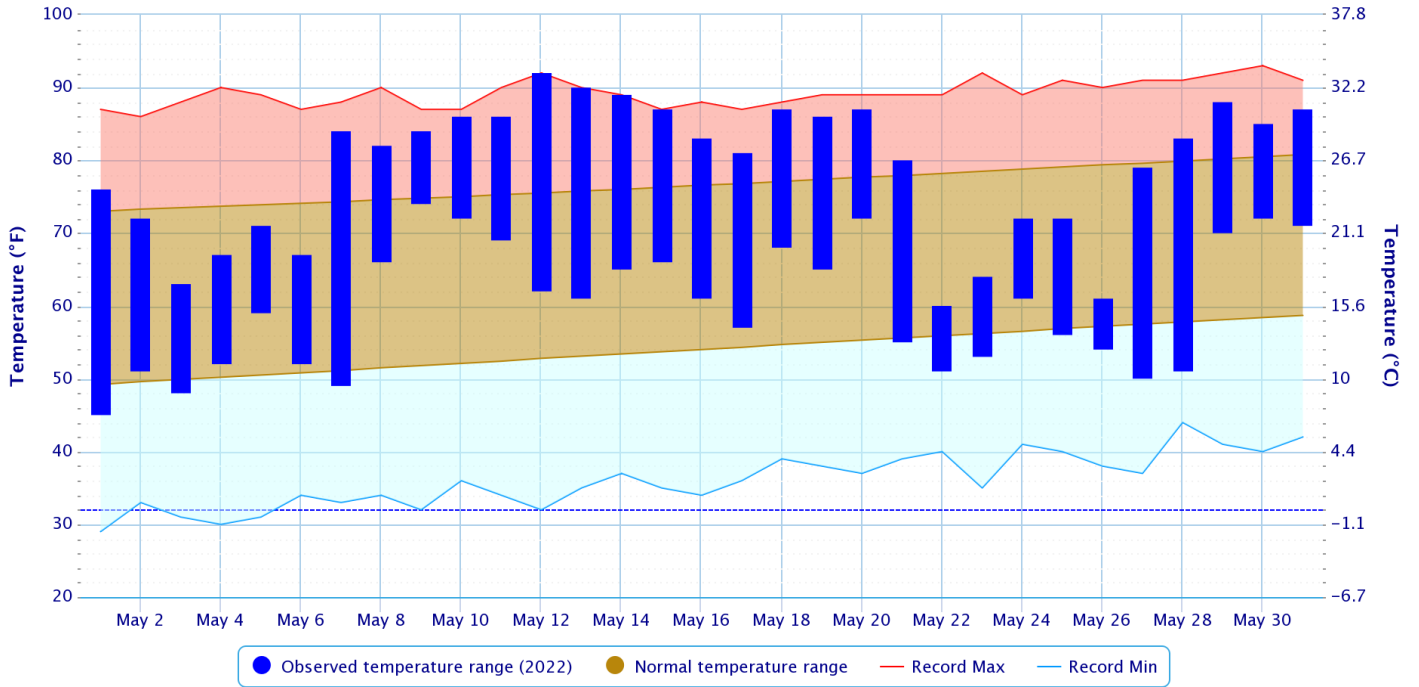
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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Daily Temperature Data – FAYETTEVILLE DRAKE FIELD, AR

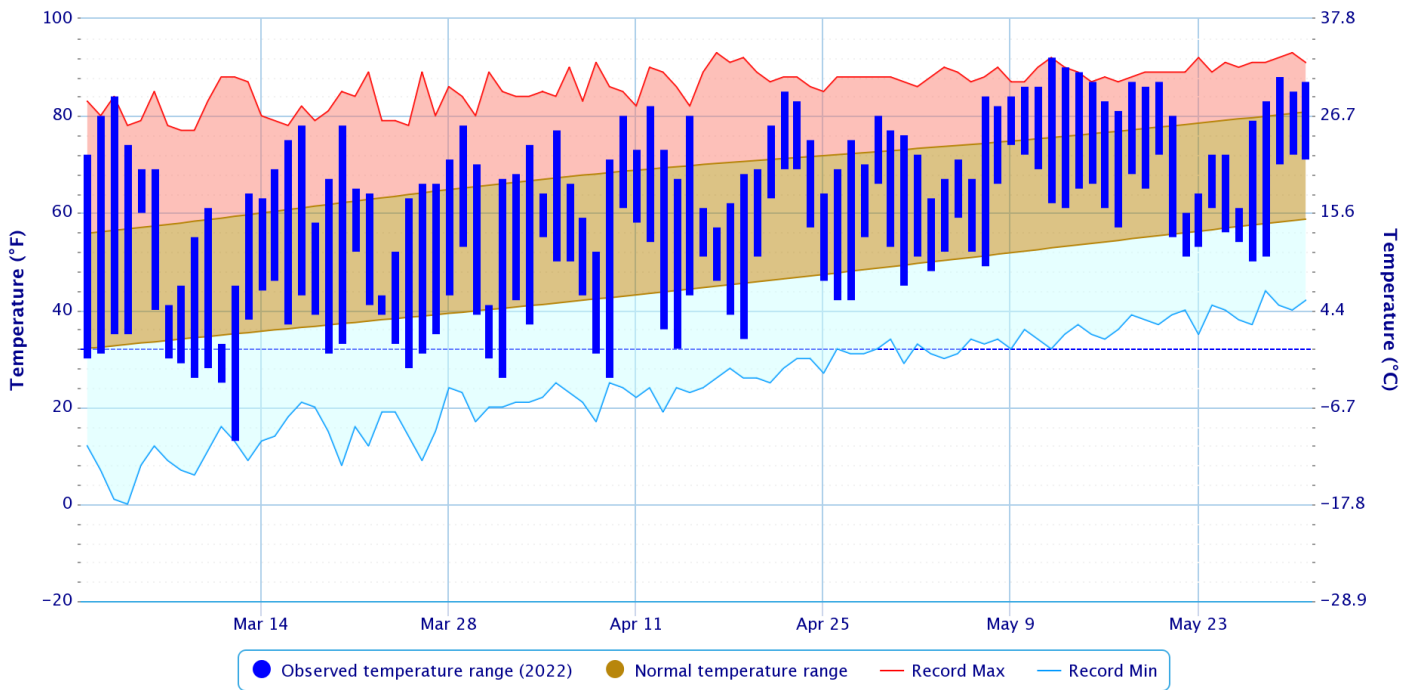
Period of Record – 1949-07-14 to 2022-06-07. Normals period: 1991-2020. Click and drag to zoom chart.



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Daily Temperature Data – FAYETTEVILLE DRAKE FIELD, AR

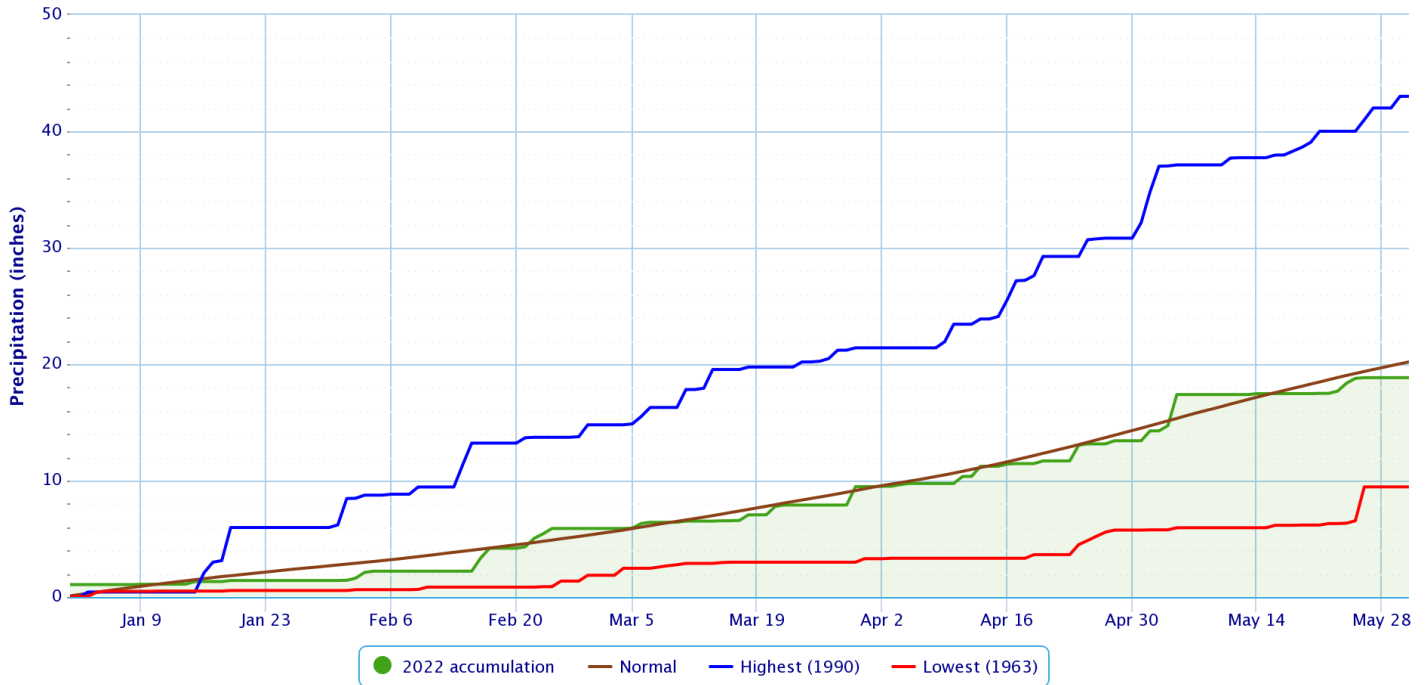
Period of Record – 1949-07-14 to 2022-06-07. Normals period: 1991-2020. Click and drag to zoom chart.



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Accumulated Precipitation – FAYETTEVILLE DRAKE FIELD, AR

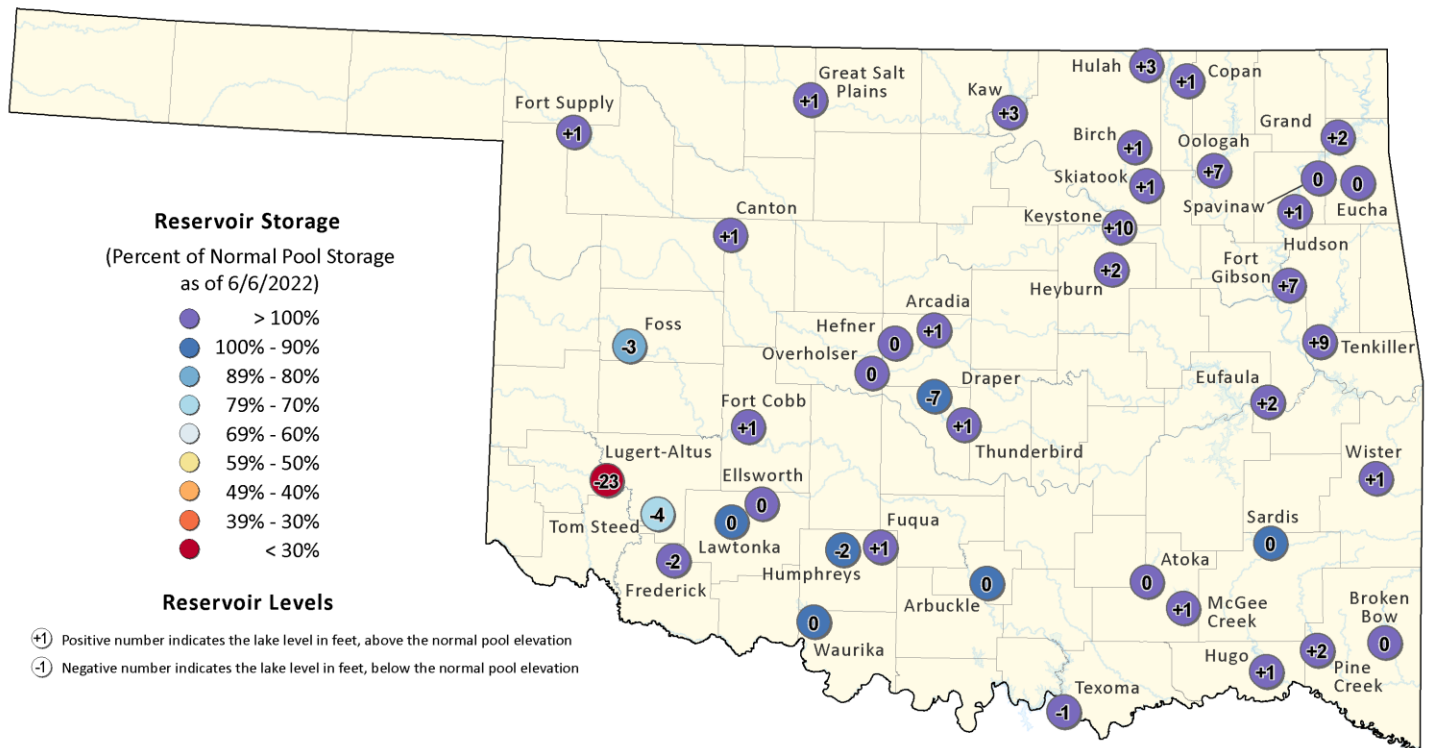
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

Reservoirs

Oklahoma Reservoir Levels and Storage as of 6/6/2022



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.sv4-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, most of the lakes in the HSA were above 3% of top of their conservation pools as of 5/31/2022: Beaver Lake 78%, Keystone 27%, Lake Tenkiller 25%, Grand Lake 24%, Ft. Gibson Lake 23%, Oologah Lake 22%, Skiatook Lake 21%, Kaw Lake 20%, Lake Eufaula 19%, Hulah Lake 13%, and Copan Lake 5%.

Drought

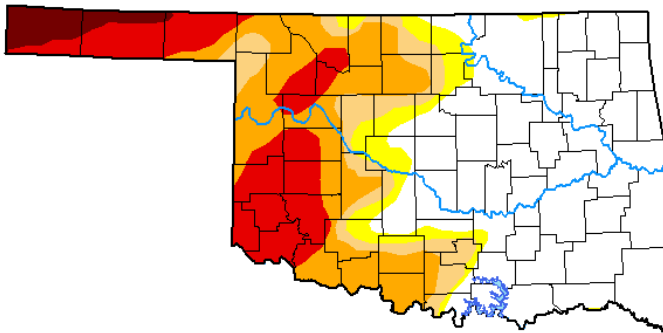
According to the [U.S. Drought Monitor](#) (USDM) from May 31, 2022 (Figs. 2, 3), drought conditions were no longer present across eastern OK. However, Abnormally Dry (but not in drought) (D0) conditions were present over a small portion of Osage, Pawnee, and Washington Counties in eastern OK. No drought or abnormally dry conditions were occurring in northwest AR.

**U.S. Drought Monitor
Oklahoma**

May 31, 2022
(Released Thursday, Jun. 2, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	51.02	48.98	42.58	34.82	17.16	2.93
Last Week <small>05-24-2022</small>	46.90	53.10	43.63	35.97	18.25	2.93
3 Months Ago <small>03-01-2022</small>	7.72	92.28	86.65	74.04	52.05	3.05
Start of Calendar Year <small>01-04-2022</small>	5.02	94.98	88.14	72.26	40.44	0.00
Start of Water Year <small>09-28-2021</small>	6.45	93.55	73.23	23.72	2.65	0.00
One Year Ago <small>06-01-2021</small>	84.37	15.63	5.98	1.04	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

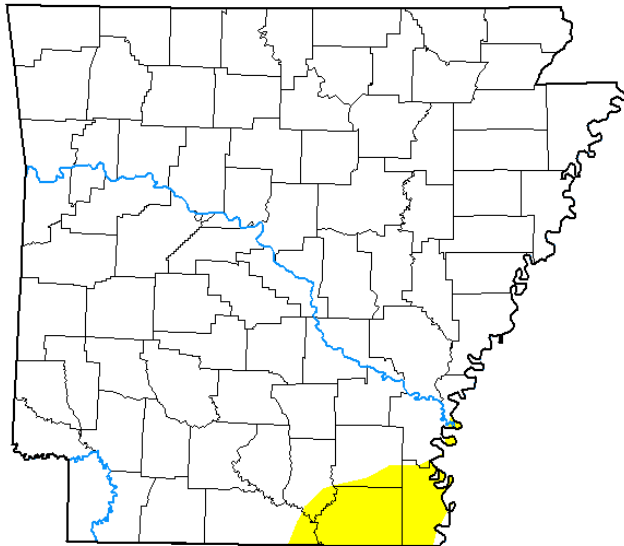


droughtmonitor.unl.edu

Fig. 2. Drought Monitor for Oklahoma

U.S. Drought Monitor
Arkansas

May 31, 2022
(Released Thursday, Jun. 2, 2022)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	96.22	3.78	0.00	0.00	0.00	0.00
Last Week 05-24-2022	96.22	3.78	0.00	0.00	0.00	0.00
3 Months Ago 03-01-2022	59.66	40.34	34.22	24.33	4.52	0.00
Start of Calendar Year 01-04-2022	39.91	60.09	28.99	14.24	0.41	0.00
Start of Water Year 09-28-2021	51.41	48.59	5.17	0.00	0.00	0.00
One Year Ago 06-01-2021	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>

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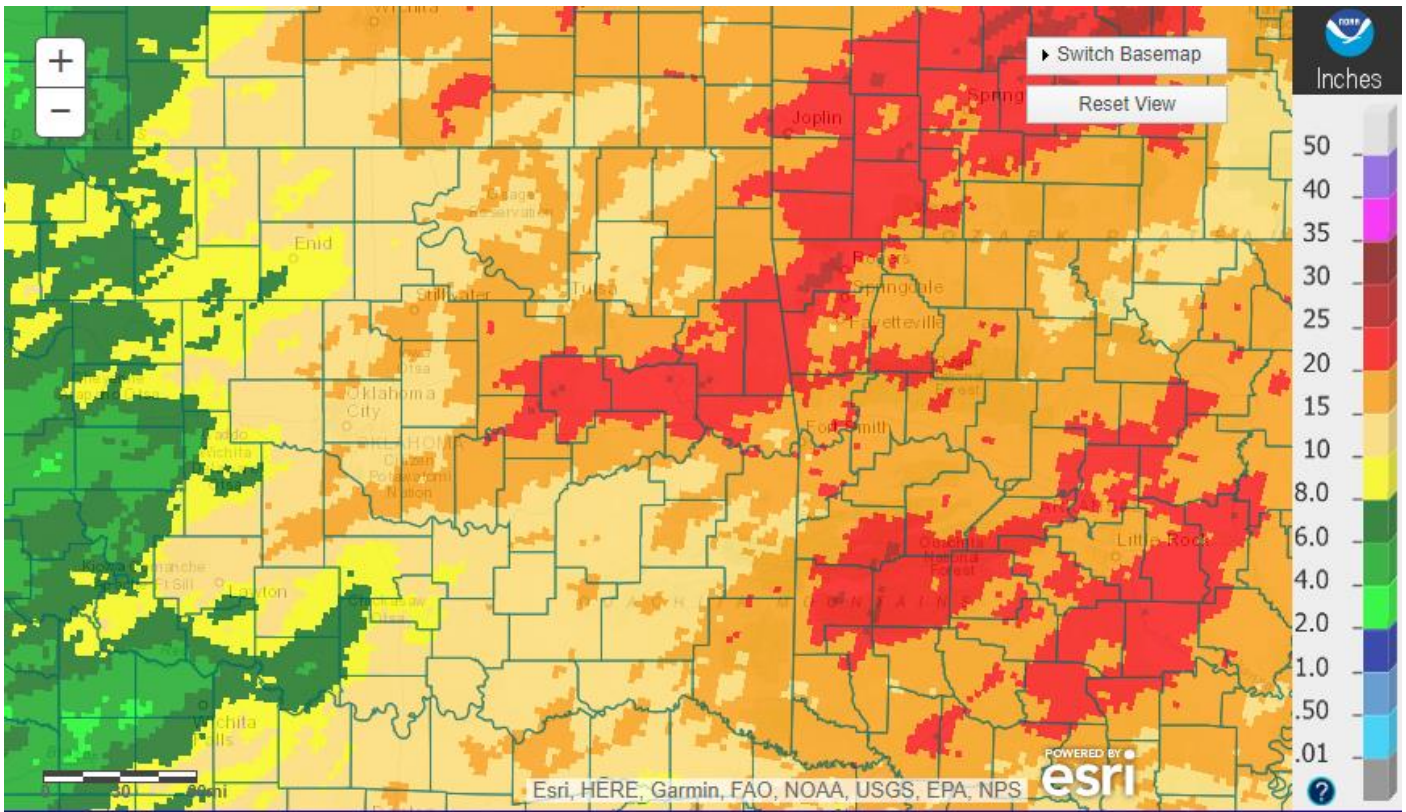
droughtmonitor.unl.edu

Fig. 3. Drought Monitor for Arkansas

Spring (March-April-May) 2022 Summary

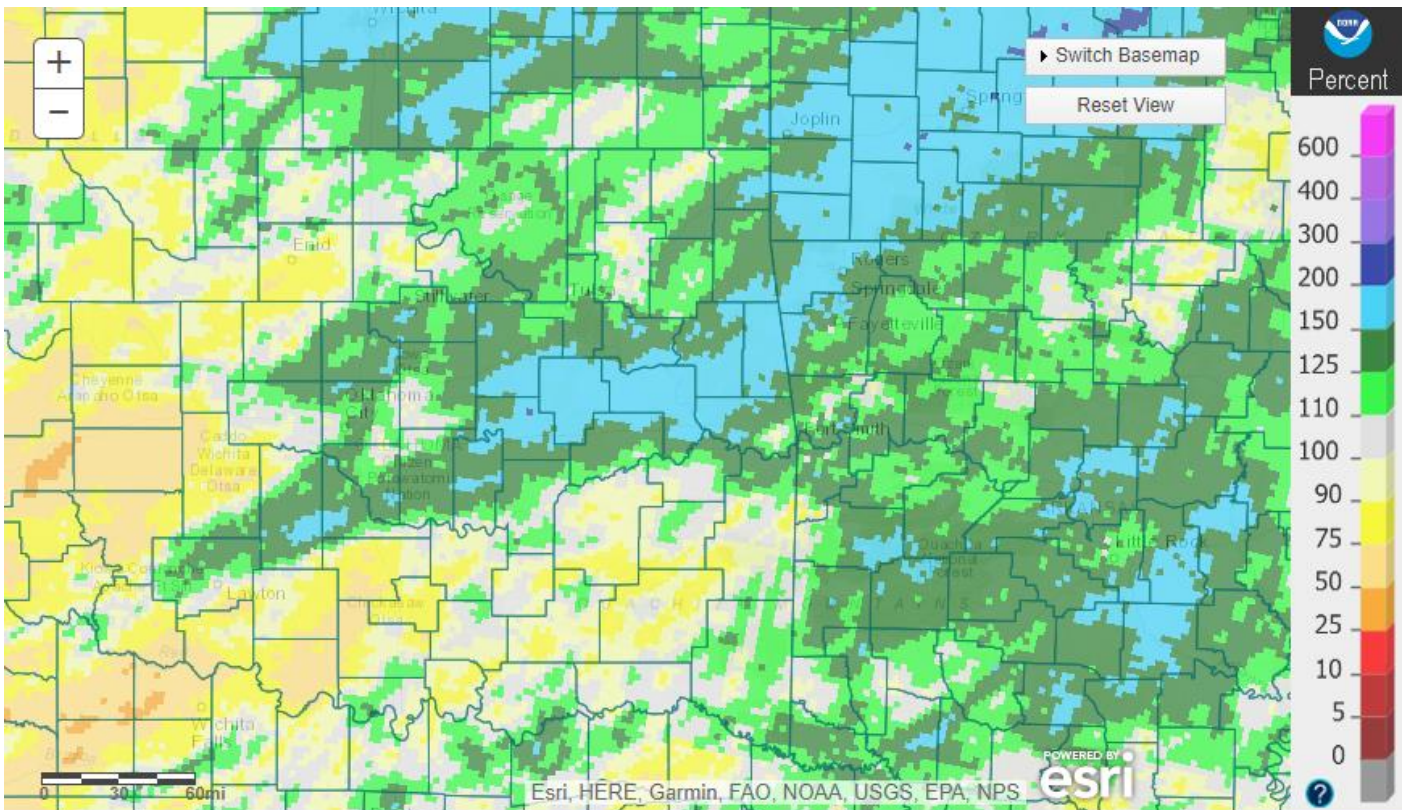
Using the radar-derived estimated observed precipitation from the RFCs (Fig. 4a), rainfall totals for Spring 2022 ranged from 10" to around 25" across eastern OK and northwest AR. These rainfall totals correspond to 90% to 200% of the normal Spring rainfall for most of northeast and east central OK and northwest AR, and 75% to 110% of the normal Spring rainfall for most of southeast OK (Fig. 4b). There were nine tornadoes during spring 2022 (see <https://arcg.is/1eT4580> for details).

In Tulsa, OK, Spring 2022 ranked as the 43rd warmest Spring (61.0°F, tied 1939; since records began in 1905) and the 40th wettest Spring (14.56"; since records began in 1888). Fort Smith, AR had the 36th warmest Spring (62.3°F, tied 1889, 1916, 1994; since records began in 1883) and the 16th wettest Spring (18.85"; since records began in 1883). Fayetteville, AR had the 10th warmest (59.4°F) and the 31st driest (12.95") Spring since records began in 1950.



Tulsa, OK: Last 90-Day Observed Precipitation
Valid on: June 01, 2022 12:00 UTC

Fig. 4a. Estimated Observed Rainfall for Spring 2022



Tulsa, OK: Last 90-Day Percent of Normal Precipitation
Valid on: June 01, 2022 12:00 UTC

Fig. 4b. Estimated % of Normal Rainfall for Spring 2022

Outlooks

The [Climate Prediction Center](#) (CPC) outlook for June 2022 (issued May 31, 2022) indicates an enhanced chance for above normal temperatures along and south of I-40 and equal chances for above, near, and below normal temperatures north of I-40. This outlook also indicates an enhanced chance for above median precipitation across all of eastern OK and northwest AR, except along the Red River in southeast OK where there are equal chances for above, near, and below median rainfall. This outlook was largely based on dynamical model output, including above normal rain chances the first week of June and a favorable pattern for episodes of convective rainfall during the first half of the month.

For the 3-month period June-July-August 2022, CPC is forecasting an enhanced chance for above normal temperatures and a slightly enhanced chance for below median precipitation across all of eastern OK and northwest AR (outlook issued May 19, 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 summer 2022 (58% chance) and there is a 60% chance of La Niña continuing in the fall and early 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

During the very early hours of the 2nd, scattered showers and thunderstorms moved into eastern OK from the west. As the activity moved east, it became more widespread across northeast OK and parts of southeast OK and northwest AR, with a minimum of activity in between. This round of storms exited the area by mid-morning. By 7 am, rainfall totals ranged from 0.10" to around 1.5" (Fig. 5). However, more shower and thunderstorm activity had moved into eastern OK, again from the west, around sunrise. These storms became more widespread across northeast OK and northwest AR, primarily along and north of I-40, and were associated with elevated frontogenetic forcing combined with warm advection ahead of a northward advancing warm front. The most intense storms occurred between I-44 and I-40, producing very heavy rain. By mid-afternoon, this area of storms had shifted east of the area. Isolated thunderstorms then continued across southeast OK into northwest AR through early evening. One of these storms was a supercell that produced an EF-1 tornado near Monroe, OK (see <https://arcg.is/1eT4580> for details). Meanwhile, yet another round of storms impacted the area during the evening as a cold front overtook the dry line. This line of strong to severe thunderstorms moved northwest to southeast across the area with the cold front, with isolated thunderstorms ahead of the main line. By late evening, this mesoscale convective complex (MCS) stretched from southwest MO into north central TX, with numerous bowing segments along the line. The MCS finally moved southeast of the area soon after midnight of the 3rd. The numerous rounds of rain resulted in 0.25" to 4" of rainfall across eastern OK and northwest AR (Figs. 6, 7), with the highest totals of 1.5"-4" between I-44 and I-40. This rainfall led to rises across the river basins in east central OK and west central AR, with minor flooding occurring along the Illinois River near Tahlequah (see E3 and preliminary hydrographs at the end of this report).

Major Flood Event May 4-5, 2022

Showers and thunderstorms developed around sunrise on the 4th within a broad low-level jet and associated warm air advection. The storms spread across northeast OK and northwest AR during the morning and early afternoon hours, before shifting east of the region by mid-afternoon. This activity helped set the stage for significant flooding, with an axis of 1"-3" of rain extending from southern Creek County northeastward into Delaware County (Fig. 8). A warm front was lifting north out of the Arklatex region and was located near I-40 by midday. Precipitable water values of 1.8" along with a strengthening low-level jet during the evening and overnight hours set the stage for a significant rainfall event. Strong to severe thunderstorms that developed along a dryline to the west moved into northeast and east central OK during the evening hours. High precipitation (HP) supercells trained over Okfuskee and Okmulgee Counties, near the warm front, mid-evening followed by additional training thunderstorms, with nearly constant heavy rain from 7 pm continuing through 1 am. Two supercell tornadoes occurred in Okfuskee County on the evening of the 4th, and a third tornado developed within a squall line during the overnight hours in Pittsburg County (see <https://arcg.is/1eT4580> for details). Heavy rainfall from these storms also impacted southern Tulsa, Wagoner, and Muskogee Counties. Widespread, considerable flash flooding ensued. A Flash Flood Emergency was issued for a large portion of Okmulgee County at 11:54 pm CDT. Home evacuations were required in the city of Okmulgee. Additional

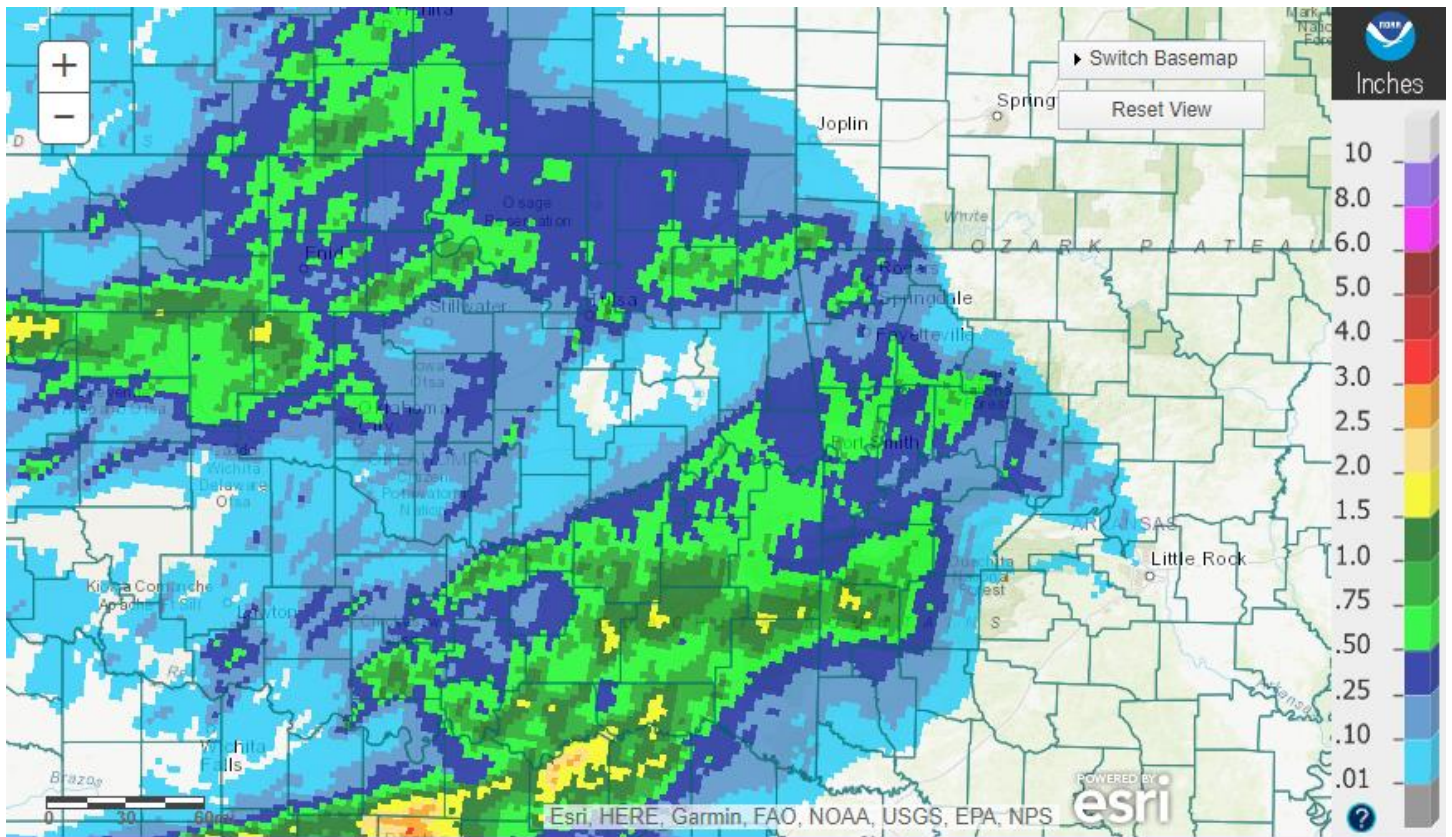
scattered thunderstorms were ongoing elsewhere across northeast OK during the evening hours. All of this activity then organized into a mesoscale convective system (MCS), with the leading line of strong thunderstorms moving into northwest AR shortly after midnight of the 5th. Heavy rain continued from east central OK through northwest AR as the MCS slowly shifted eastward, resulting in more flash flooding. By 4:30 am on the 5th, the leading edge of the MCS moved east out of the NWS Tulsa area, though widespread rain continued across northeast and east central OK and northwest and west central AR. Heavy rainfall also occurred across southeast KS and southwest MO during the evening of the 4th through the early morning hours of the 5th. By 7 am on the 5th, rainfall totals ranged from 0.50" to 10" across all but far southeast OK (Fig. 9). Most of northeast and east central OK, northwest AR, southeast KS, and southwest MO received 2"-8" of rain. Widespread 4"-8" occurred between Interstates 44 and 40 from Creek and Okfuskee Counties in Oklahoma across to Benton and Washington Counties in AR (Figs. 9-11). An area of 8"-10" fell from northeast Okfuskee County, across Okmulgee County, and into northwest Muskogee County (Fig. 10). The rain gage at the Deep Fork River near Beggs, OK river forecast point site (BGSO2) measured 10.34" in 15 hours (from 11 am May 4 through 2 am May 5) and 12.26" storm total from 7 am May 4 through 12:30 pm May 5. Scattered showers and thunderstorms continued through the morning hours of the 5th across eastern OK and northwest AR. Then around noon, more organized convection developed as a cold front moved into the area. This activity impacted the region through the afternoon, ending from west to east by early evening. Some scattered showers remained across northeast OK and northwest AR during the evening hours. The additional rainfall on the 5th after 7 am CDT ranged from 0.10" to around 1.5" (Fig 12). Higher totals of 1"-3" fell over the Spring River basin in southwest MO. By the end of this event, a large portion of east central OK into northwest AR received 4"-10" of rain (Fig. 13). The two heavy rain events the first week of May combined brought 6"-12" of rain to this area (Fig. 14; for reference, the normal rainfall for the entire month of May is 5"-6".)

In addition to the flash flooding, this heavy rain caused widespread river flooding along portions of the Deep Fork River (major flooding), Spring River (major flooding), Illinois River (major flooding), Baron Fork Creek (major flooding), Polecat Creek (moderate flooding), Neosho River (moderate flooding), lower Arkansas River (minor to moderate flooding), Poteau River (moderate flooding), Lee Creek (minor flooding), Flint Creek (minor flooding), Caney River (minor flooding), and Verdigris River (minor flooding) (see E3 and preliminary hydrographs at the end of this report). The crest on the Deep Fork River near Beggs was the second highest crest on record.

Numerous swift water rescues (55 total in Wagoner and Muskogee Counties; 50 rescues from homes and cars in Okmulgee County) occurred and many roads were inundated across northeast and east central OK and northwest AR. In Okmulgee County, about 35 homes were damaged from the flooding, 4 of which were caused by the Deep Fork River, and around 200 miles of roads were damaged. In Tulsa County, 1 infrastructure item (sewage system), 3 commercial properties, and 37 homes were impacted by flooding in the Bixby area. When responders arrived to help evacuate residents in this area, water was waist deep in the road and yards. Sadly, a 28-year old female drowned after falling into the swollen Town Branch in Fayetteville, AR at around 2 am CDT May 5.

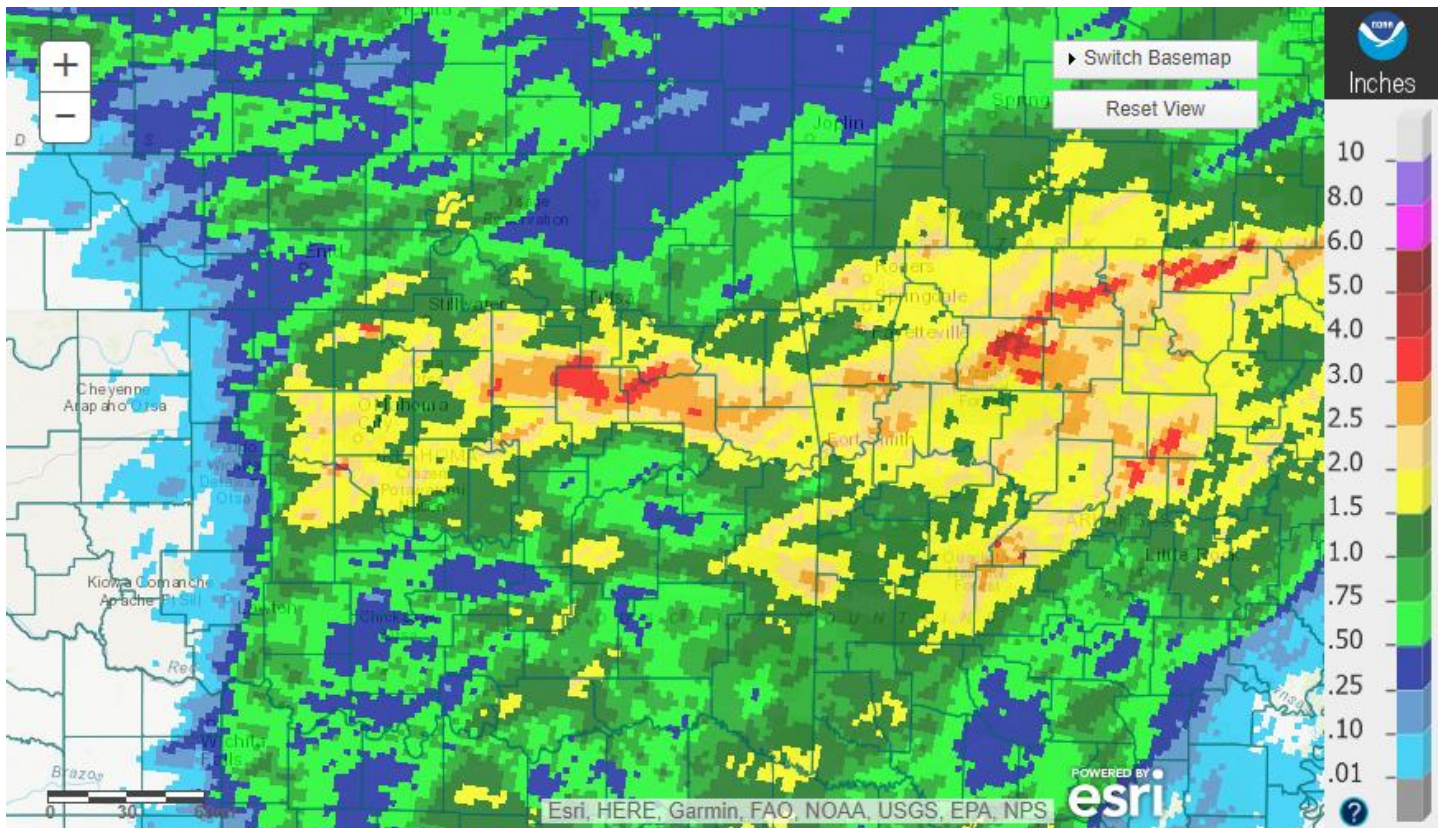


Deep Fork River west of Weleetka, OK on May 6, 2022. Photo credit: Steve Piltz, NWS Tulsa



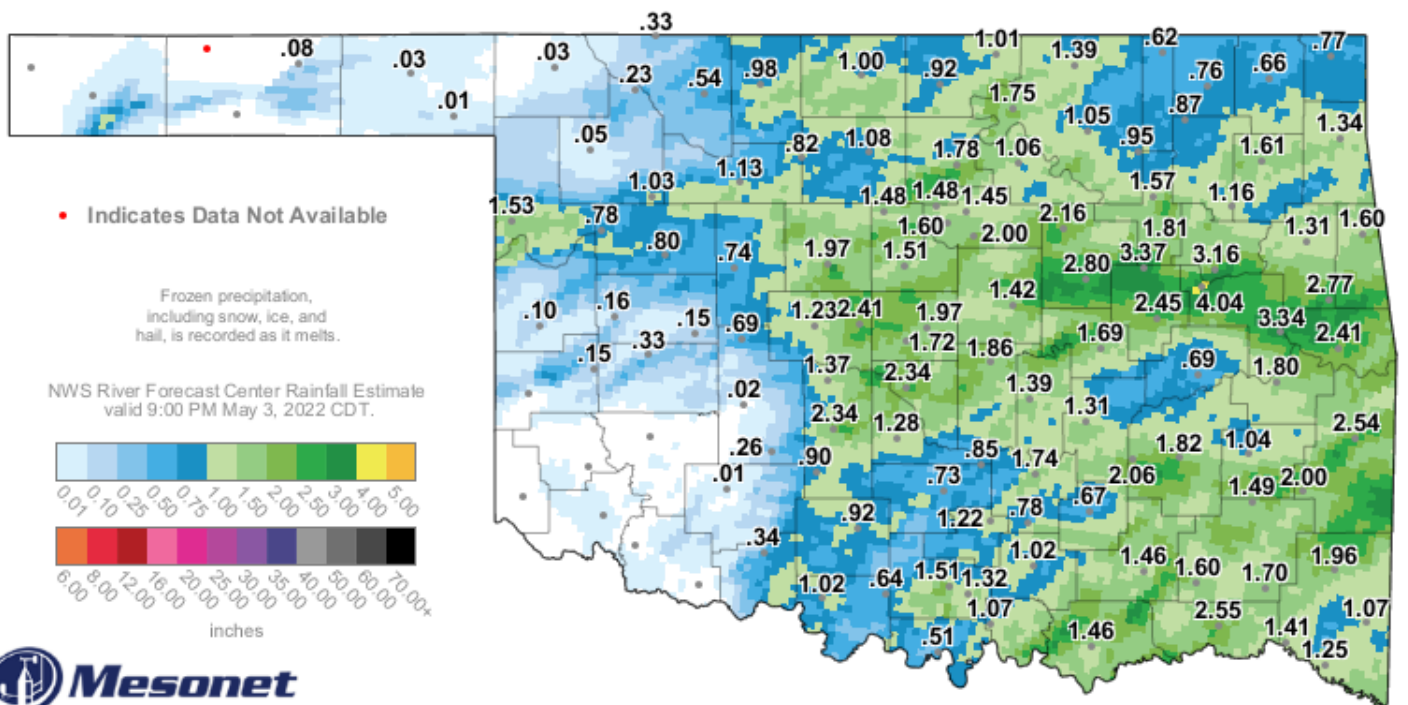
Tulsa, OK: May 02, 2022 1-Day Observed Precipitation
Valid on: May 02, 2022 12:00 UTC

Fig. 5. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/02/2022.



Tulsa, OK: May 03, 2022 1-Day Observed Precipitation
Valid on: May 03, 2022 12:00 UTC

Fig. 6. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/03/2022.

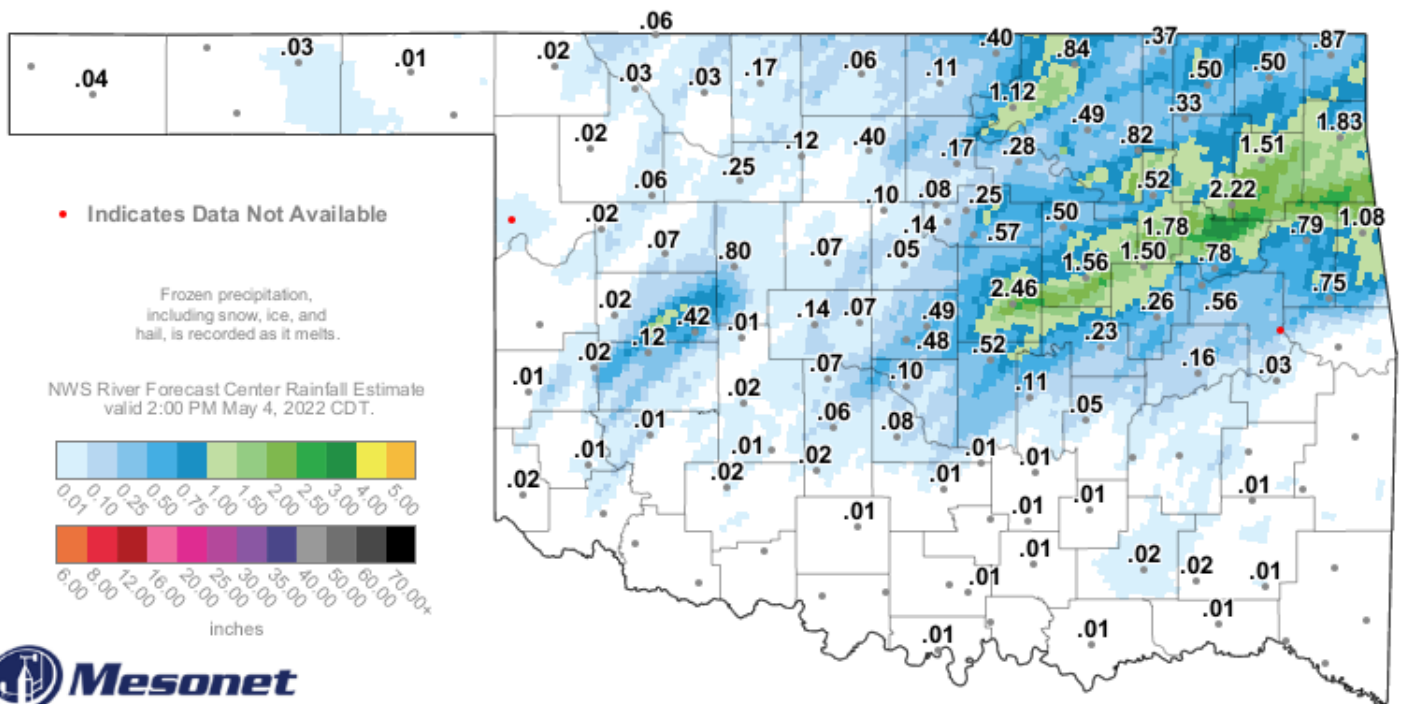


2-Day Rainfall Accumulation (inches)

10:25 PM May 3, 2022 CDT

Created 10:30:53 PM May 3, 2022 CDT. © Copyright 2022

Fig. 7. OK Mesonet (values) and NWS RFC rainfall estimate (image) 48-hour rainfall ending at 10:25 pm CDT 5/03/2022.

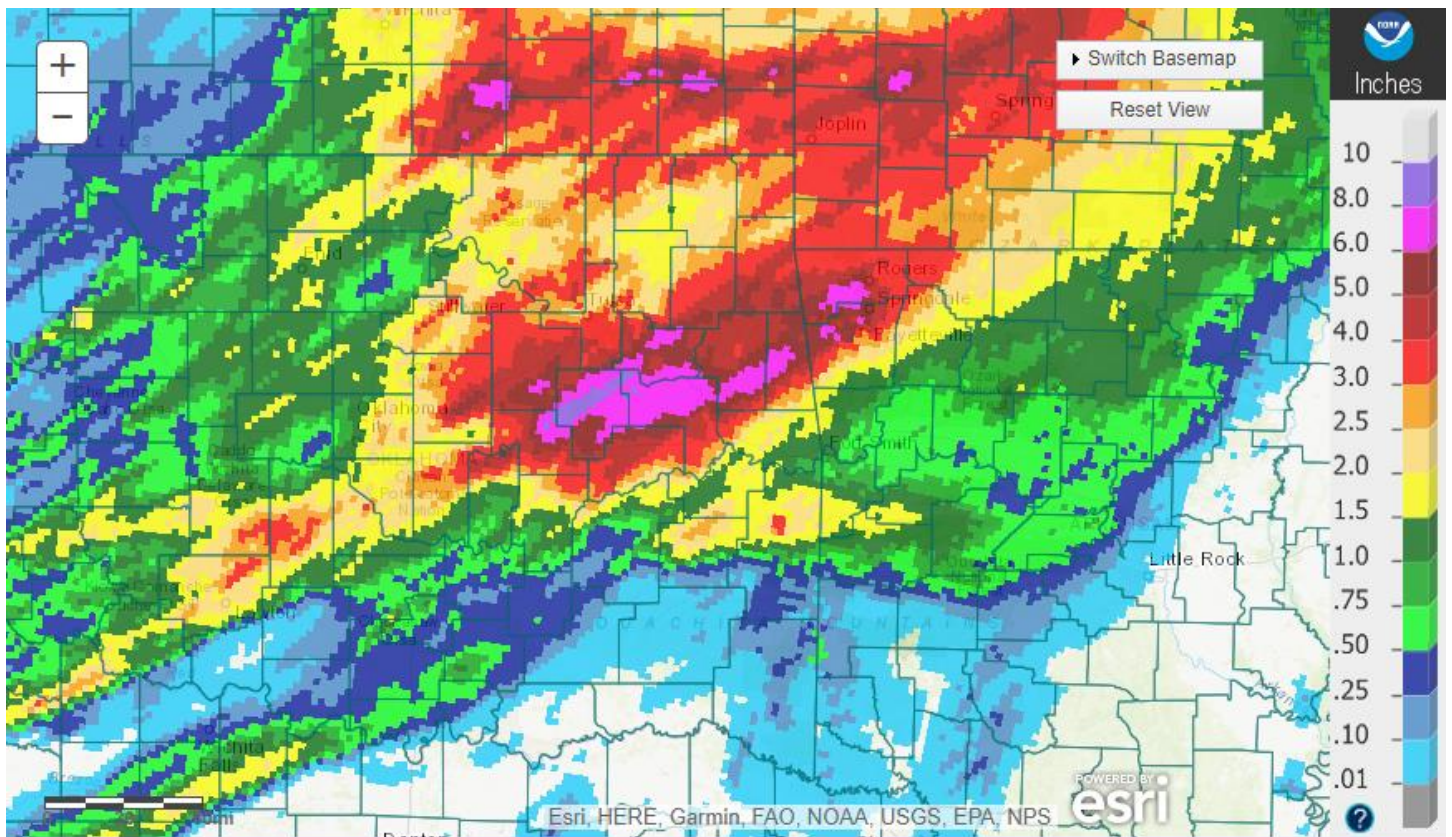


12-Hour Rainfall Accumulation (inches)

3:30 PM May 4, 2022 CDT

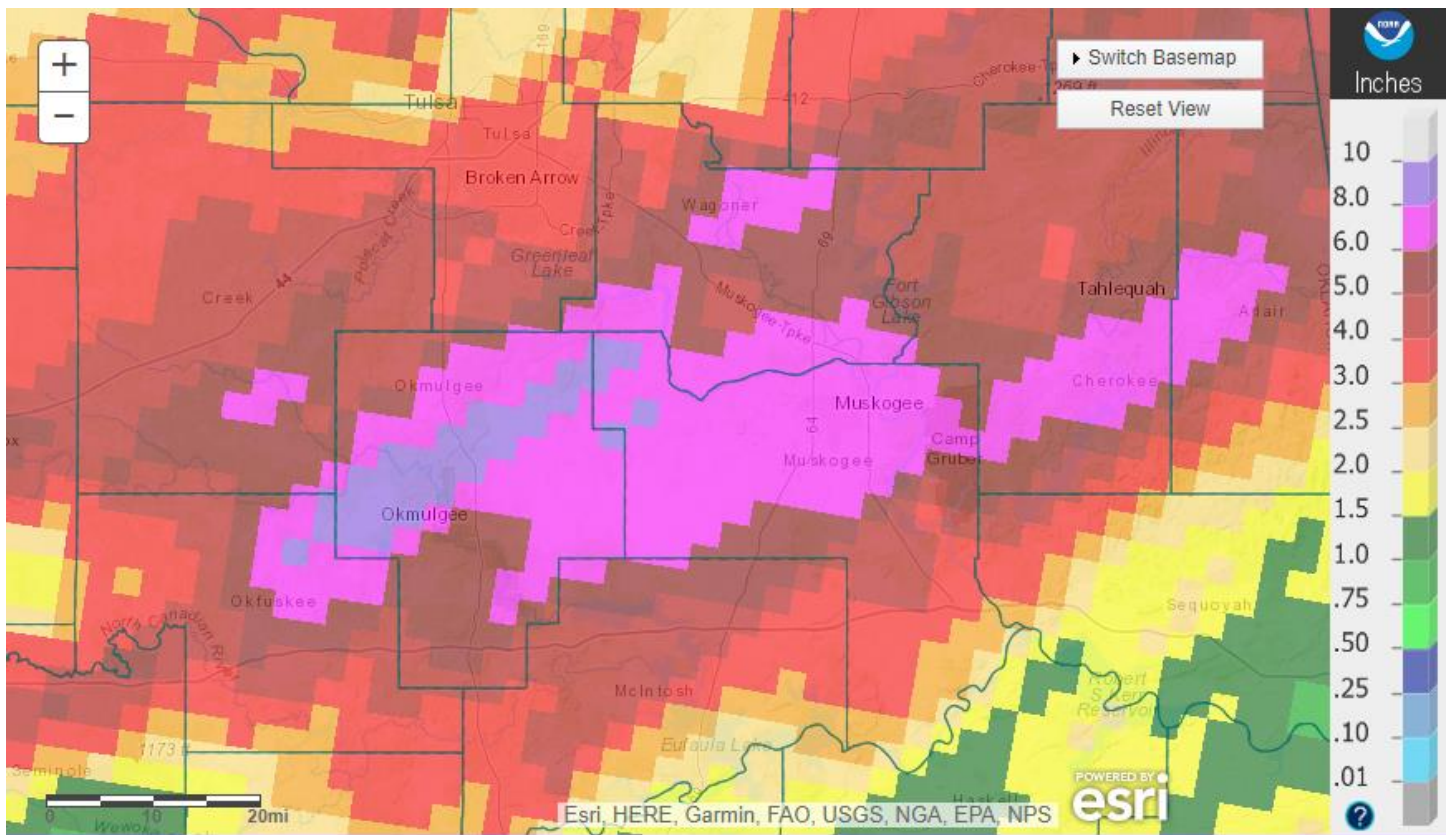
Created 3:35:59 PM May 4, 2022 CDT. © Copyright 2022

Fig. 8. OK Mesonet (values) and NWS RFC rainfall estimate (image) 12-hour rainfall ending at 3:30 pm CDT 5/04/2022.



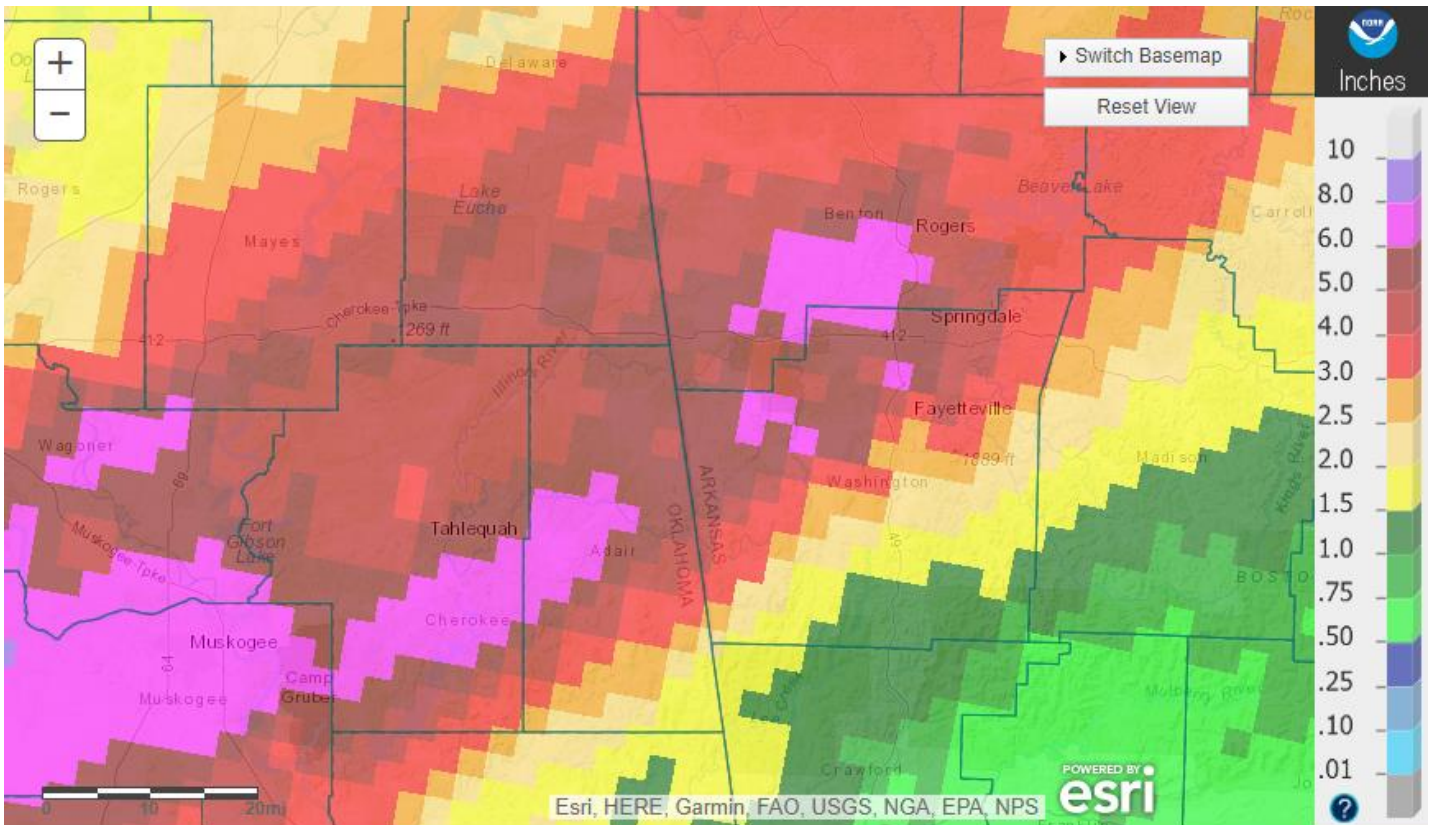
Tulsa, OK: May 05, 2022 1-Day Observed Precipitation
Valid on: May 05, 2022 12:00 UTC

Fig. 9. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/05/2022.



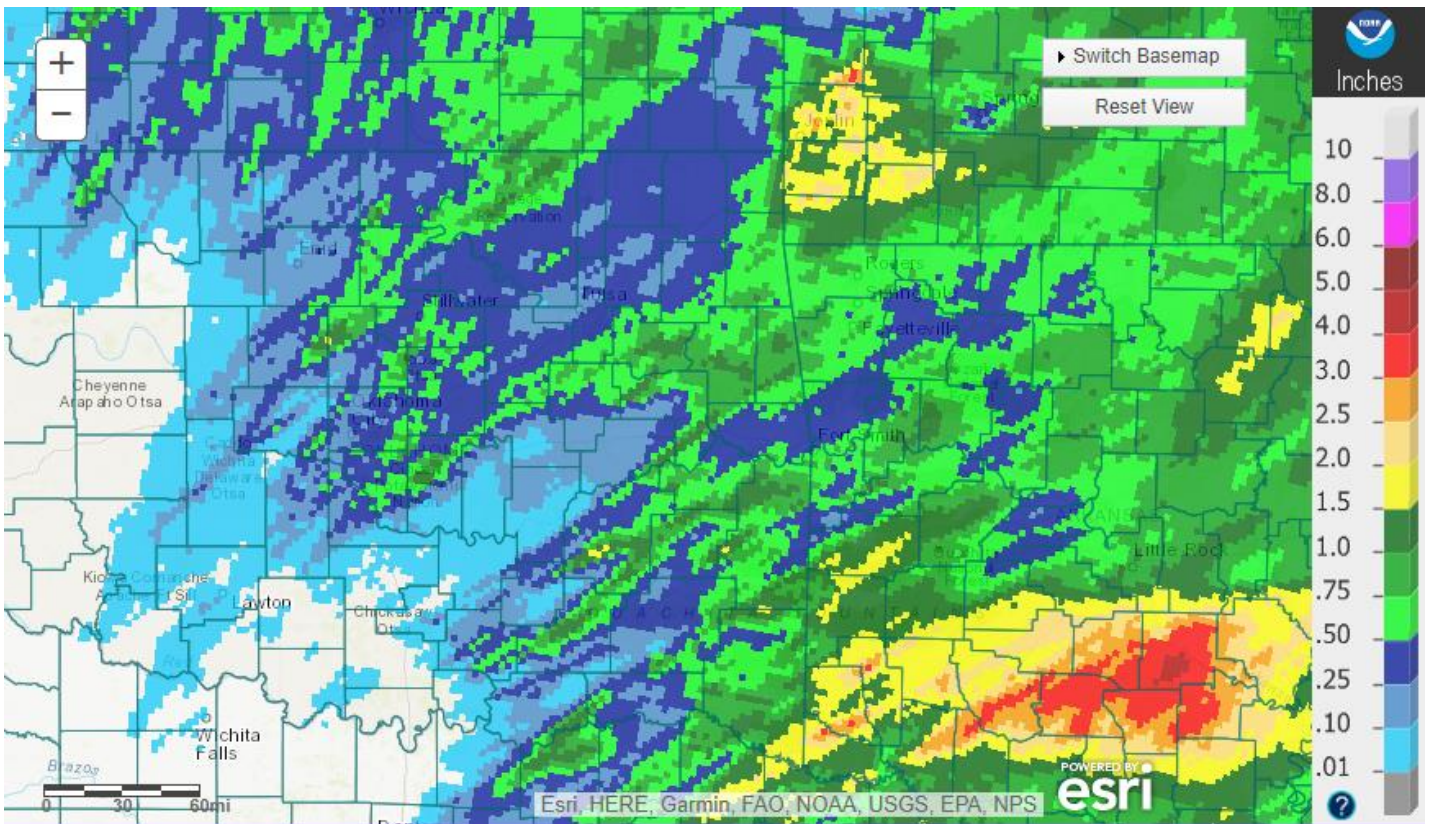
Tulsa, OK: May 05, 2022 1-Day Observed Precipitation
Valid on: May 05, 2022 12:00 UTC

Fig. 10. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/05/2022.



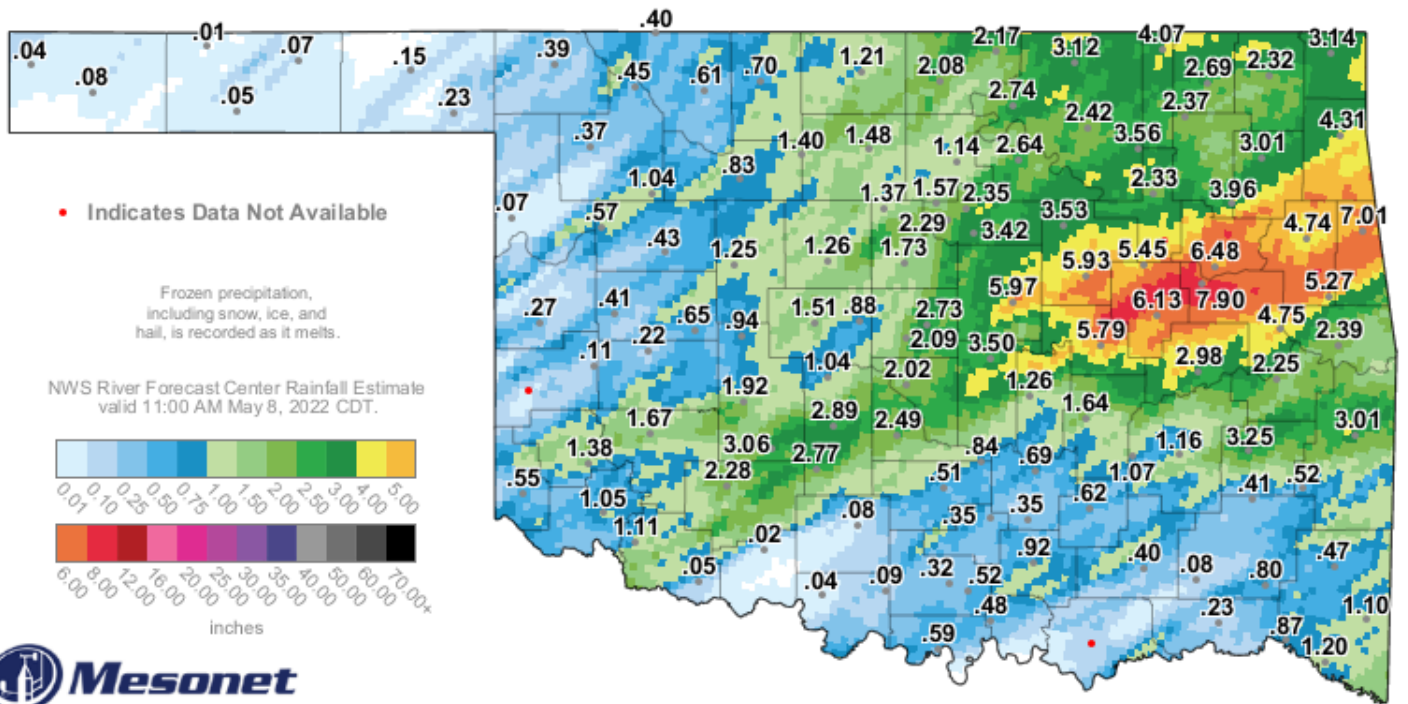
Tulsa, OK: May 05, 2022 1-Day Observed Precipitation
Valid on: May 05, 2022 12:00 UTC

Fig. 11. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/05/2022.



Tulsa, OK: May 06, 2022 1-Day Observed Precipitation
Valid on: May 06, 2022 12:00 UTC

Fig. 12. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/06/2022.

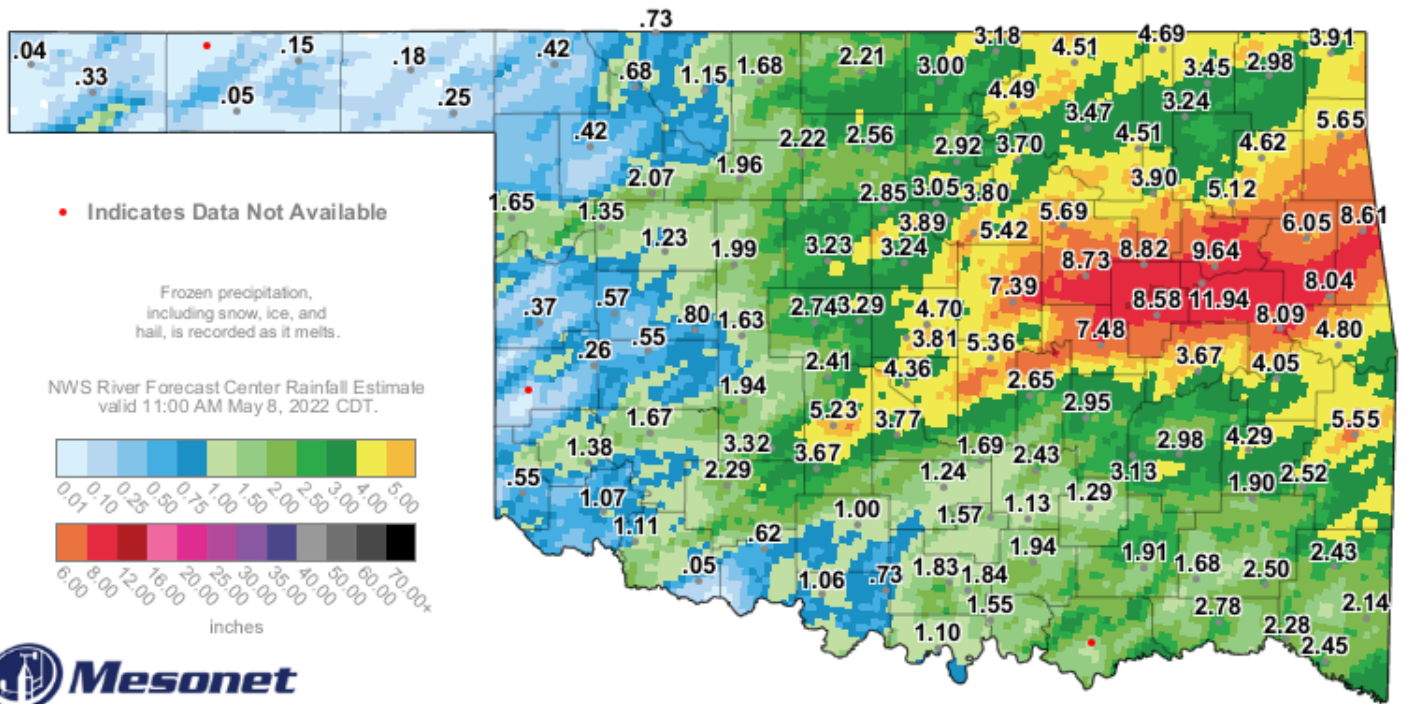


5-Day Rainfall Accumulation (inches)

12:15 PM May 8, 2022 CDT

Created 12:20:53 PM May 8, 2022 CDT. © Copyright 2022

Fig. 13. OK Mesonet (values) and NWS RFC rainfall estimate (image) 5-day rainfall ending at 12:15 pm CDT 5/08/2022.



7-Day Rainfall Accumulation (inches)

12:15 PM May 8, 2022 CDT

Created 12:20:53 PM May 8, 2022 CDT. © Copyright 2022

Fig. 14. OK Mesonet (values) and NWS RFC rainfall estimate (image) 7-day rainfall ending at 12:15 pm CDT 5/08/2022.

During the early morning hours of the 13th, thunderstorms rapidly developed along and west of the Highway 75 corridor in eastern OK as an upper-level wave moved into the region. Storms kept redeveloping over this same area, with little eastward progression through the morning. Training storms continued across Okfuskee and Okmulgee Counties during the afternoon, while the northern portion of storms trekked east. This activity primarily impacted northeast OK north of I-40 and dissipated during the afternoon as it entered western AR. Rainfall totals ranged from 0.50" to 4", with the highest totals of 2"-4" falling over Okfuskee and Okmulgee Counties (Figs. 15, 16). Convection then flared up over northwest and west central AR during the early morning hours of the 14th, dissipating shortly after sunrise. These storms brought 0.50"-2.5" of rain (Fig. 16).

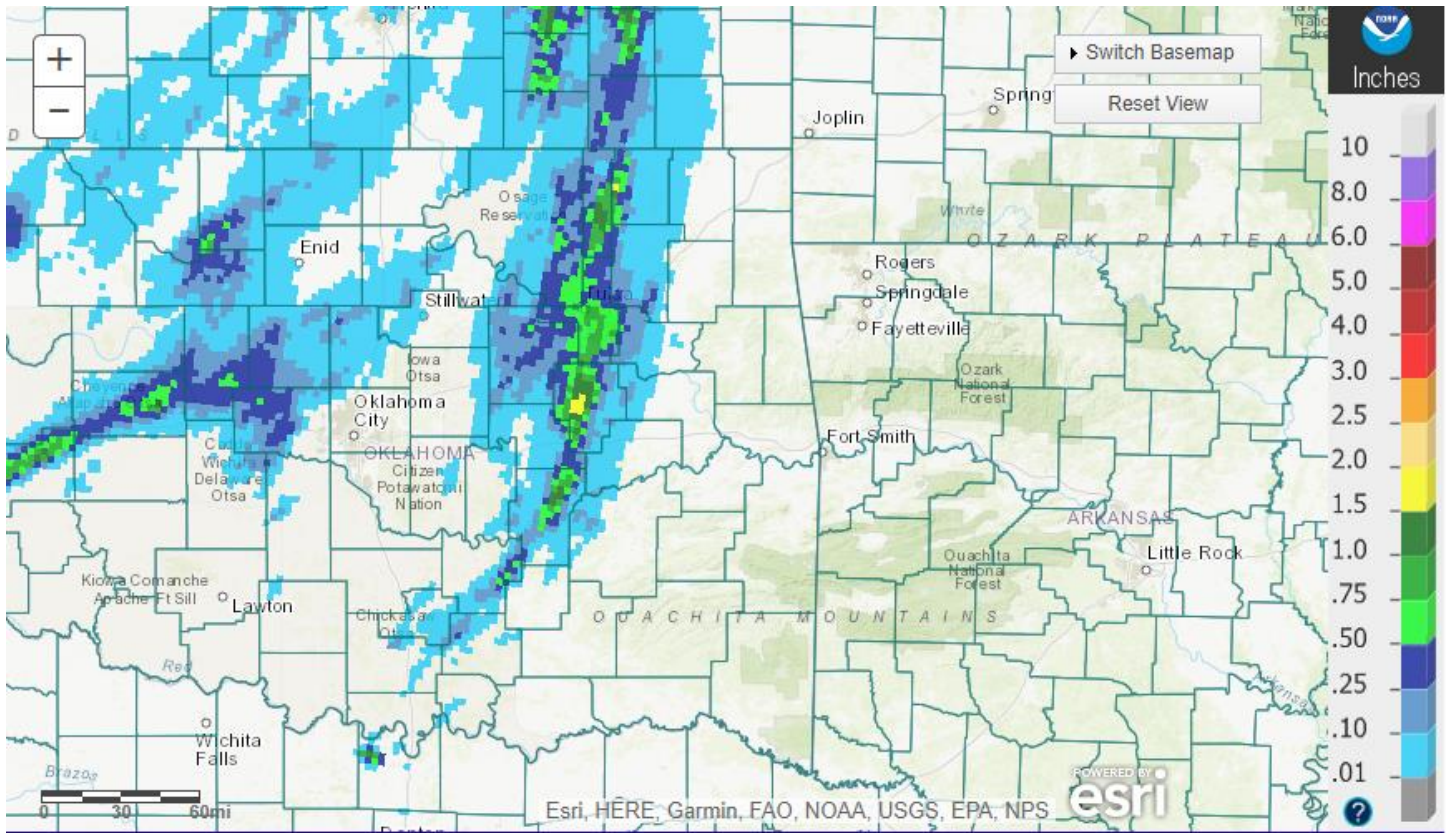
Isolated thunderstorms affected some higher terrain areas of northwest AR during the evening of the 14th. Then shortly after midnight of the 15th, showers and thunderstorms moved into northeast OK from north central OK/south central KS. This activity moved quickly east, while also weakening, across northeast OK and far northwest AR, exiting the area by sunrise. Rainfall totals ranged from a few hundredths of an inch to 3" in the affected locations (Fig. 17).

At midday of the 15th, a complex of storms that originated in Nebraska moved southeast out of KS and MO and into far northeast OK and northwest AR. By late afternoon, new thunderstorms developed along an outflow boundary (left over from the morning convection) located east to west across east central OK and west central AR. Additional storms developed a little further north during the evening. Several of the storms became strong to severe due to around 5000 J/kg of CAPE and 40-50 knots of northwesterly deep-layer shear. Quarter- to golf ball-sized hail was reported, with one supercell in Okfuskee County producing a 4.5" hailstone. These storms moved south and dissipated by late evening. Rainfall totals were around 0.50" to around 2" (Fig. 18).

Showers and thunderstorms developed along and north of a cold front draped over northeast OK during the late evening of the 20th. These storms brought rain to northeast OK and far northwest AR during the late evening hours. A second area of showers and thunderstorms developed further north along the 850mb front over northeast OK during the overnight hours. This activity was more widespread as it moved east across northeast OK and northwest AR during the early morning of the 21st, and finally exited the region by mid-morning. Rainfall totals ranged from around 0.50" to around 2.5" (Fig. 19).

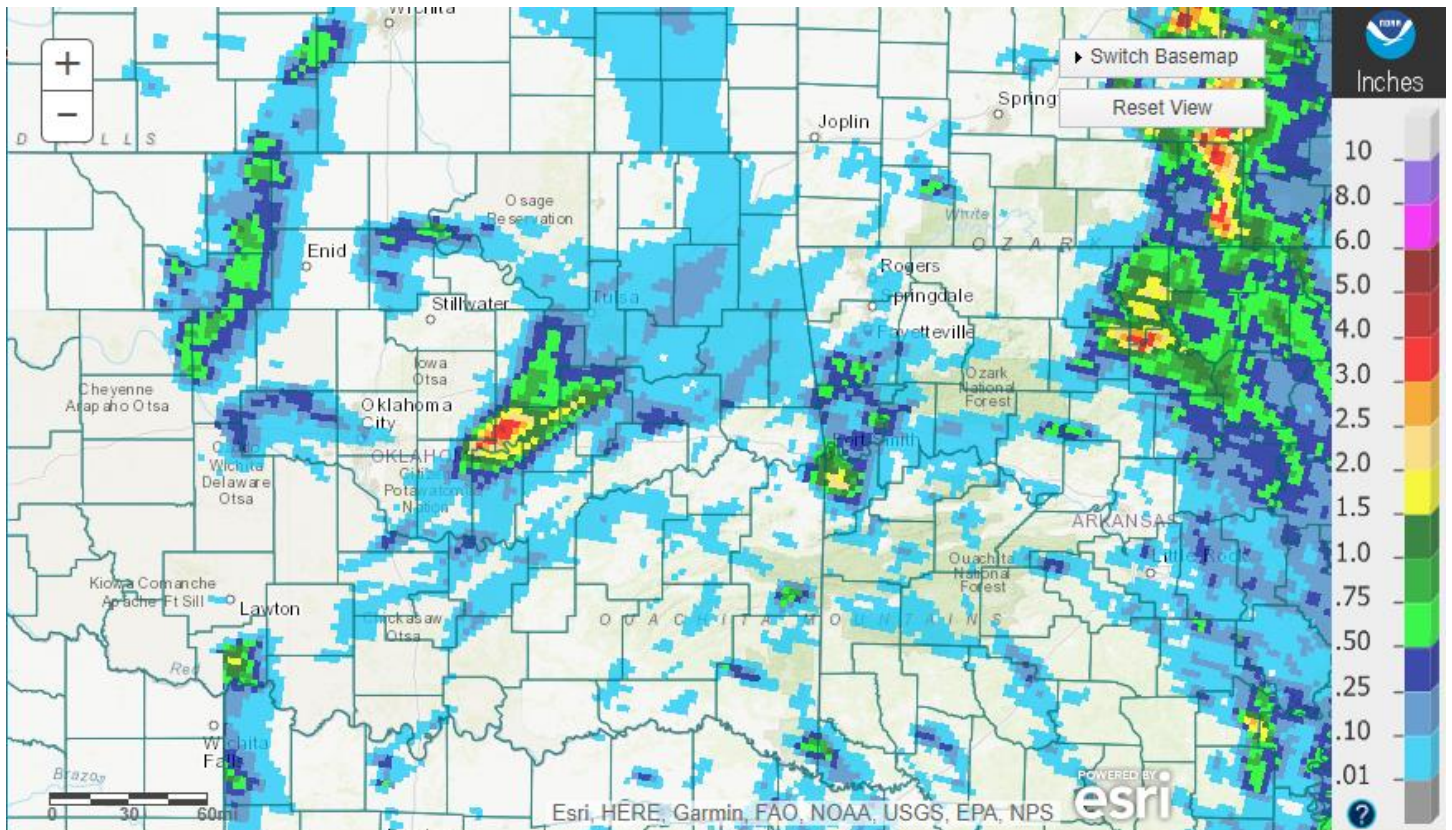
Another active weather pattern brought more heavy rain and well below normal temperatures to the region May 23-26. Scattered showers and thunderstorms first began on the morning of the 23rd and spread east northeast into northeast OK and northwest AR, primarily north of I-40. By afternoon, the rain had moved out of northwest AR, but widespread showers and thunderstorms continued across northeast OK. During the evening hours, this activity continued along and northwest of the I-44 corridor within a zone of isentropic lift, remaining persistent through midnight, with heavier rainfall training over northern Creek, Pawnee, and southern Osage Counties for about 9 hours (this area had nearly continuous rain for a total of about 30 hours). While the rain didn't stop during the early morning hours, it did become lighter. By 7 am on the 24th, 1"-6" of rain had fallen along and northwest of I-44 in northeast OK, with a large area of 3"-6" across northern Creek, eastern Pawnee, southern Osage, and far western Tulsa Counties (Figs. 20, 21). These higher rainfall totals fell over an area that has been in a long-term drought and did not receive the heaviest rainfall during the first part of May. A large portion of this rain also fell over and near Keystone Lake and its large contributing tributaries. These factors helped to minimize the flooding impacts. However, the additional rainfall over the Caney River resulted in minor flooding near Ramona and Collinsville. Bird Creek also saw a large rise, with the area near Sperry had minor flooding (see E3 and preliminary hydrographs at the end of this report). Scattered light to moderate rain continued across eastern OK through the morning hours of the 24th, with more widespread showers and thunderstorms moving in from the west around noon. Stronger storms, with moderate to heavy rain, developed along the leading edge as this activity moved across eastern OK and western AR during the afternoon and evening hours. Most of this rain came to an end by midnight. An additional 0.10" to around 2" of rain fell (Figs. 22, 23).

Additional showers and isolated thunderstorms affected eastern OK and northwest AR north of I-40 during the morning hours of the 25th as an upper-level low wobbled across OK into KS. Most of the area remained rain-free through the afternoon and evening, but after midnight of the 26th, showers once again moved across northeast OK and northwest AR as the upper low continued east into MO. The rain finally came to an end shortly after sunrise. Rainfall amounts ranged from 0.10" to 1" (Fig. 24). By mid-afternoon on the 25th, the 3-day rainfall total across much of Osage, Pawnee, northern Creek, and far western Tulsa Counties was 4"-8" (Fig. 25).



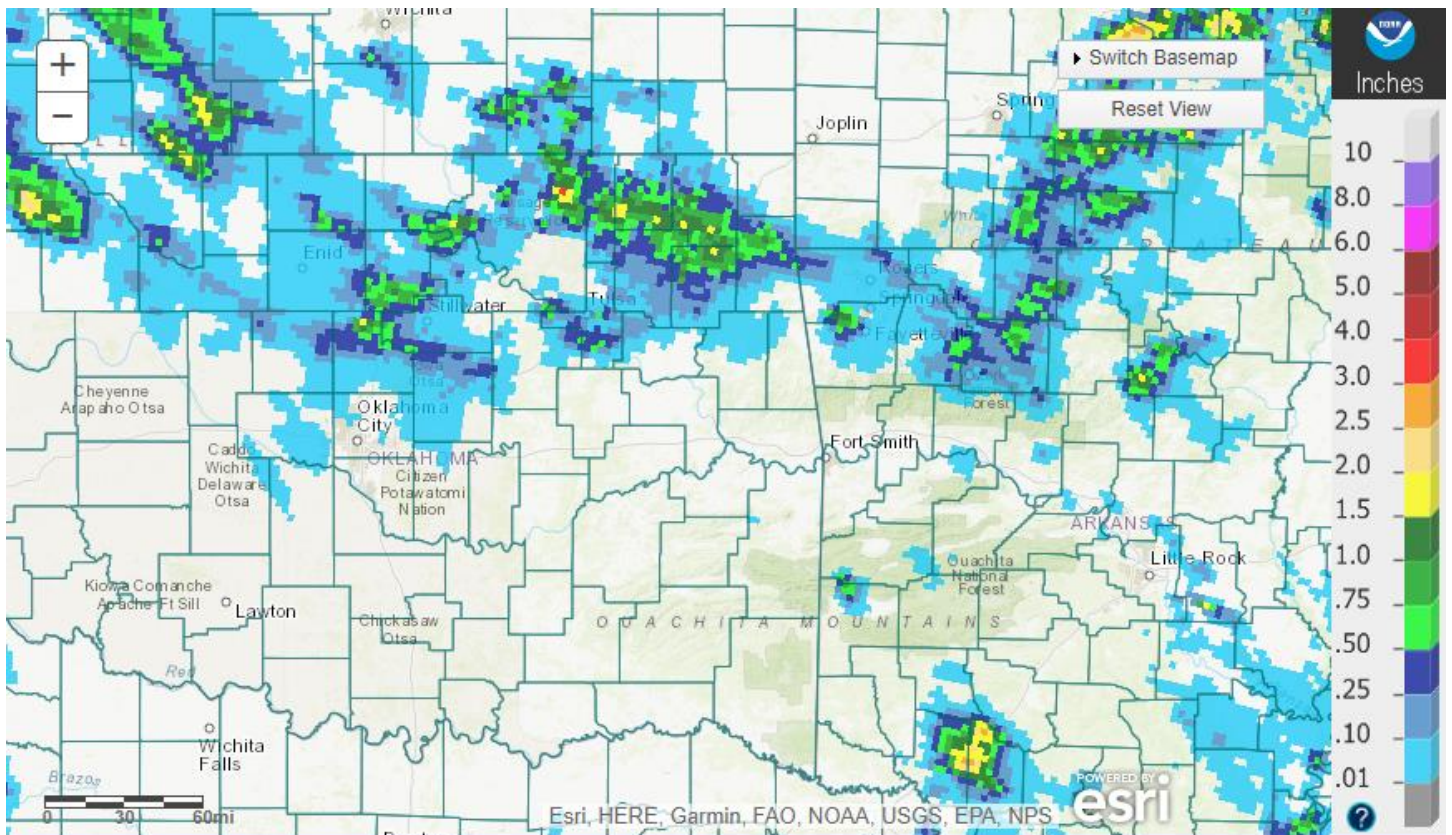
Tulsa, OK: May 13, 2022 1-Day Observed Precipitation
Valid on: May 13, 2022 12:00 UTC

Fig. 15. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/13/2022.



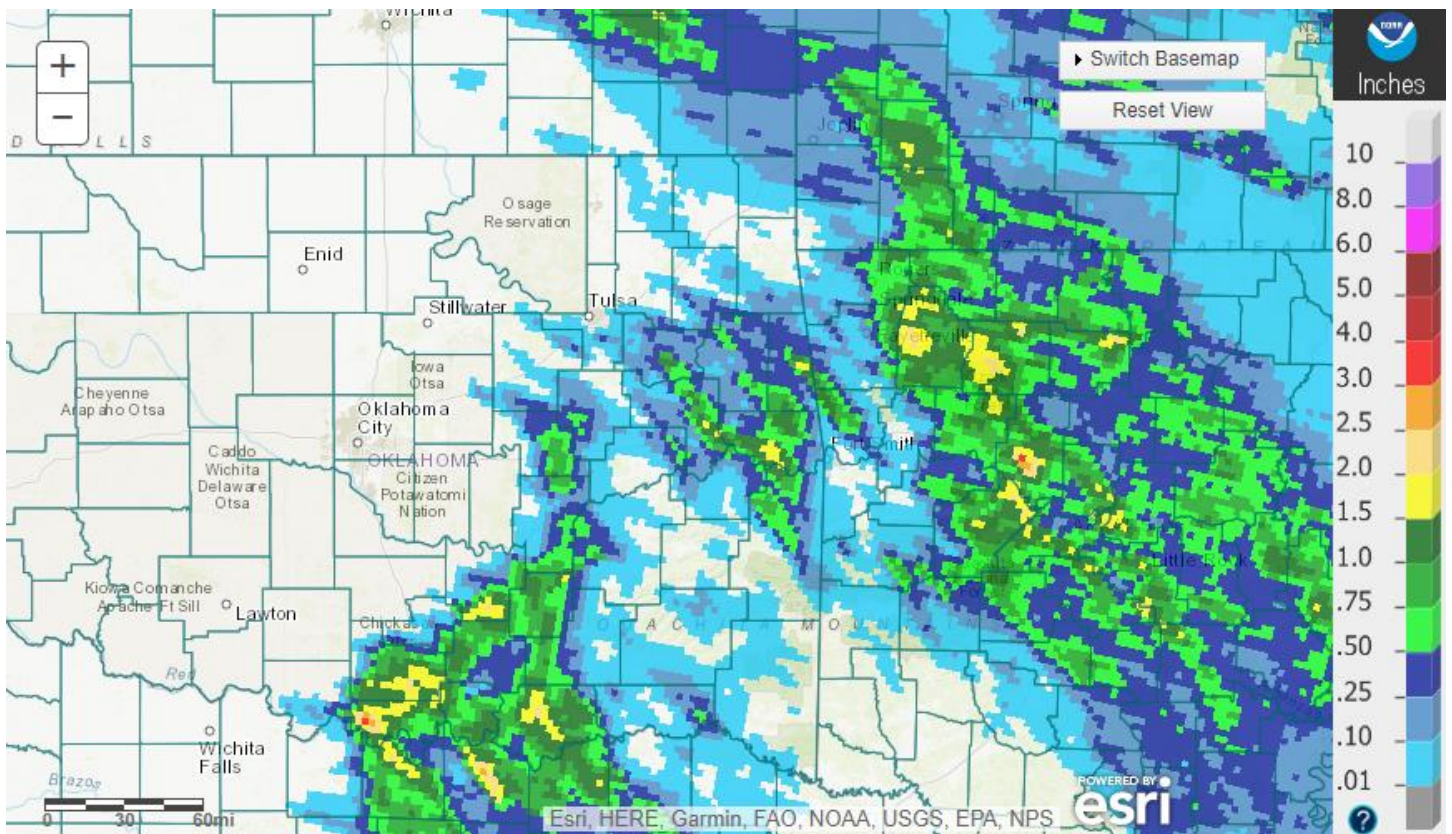
Tulsa, OK: May 14, 2022 1-Day Observed Precipitation
Valid on: May 14, 2022 12:00 UTC

Fig. 16. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/14/2022.



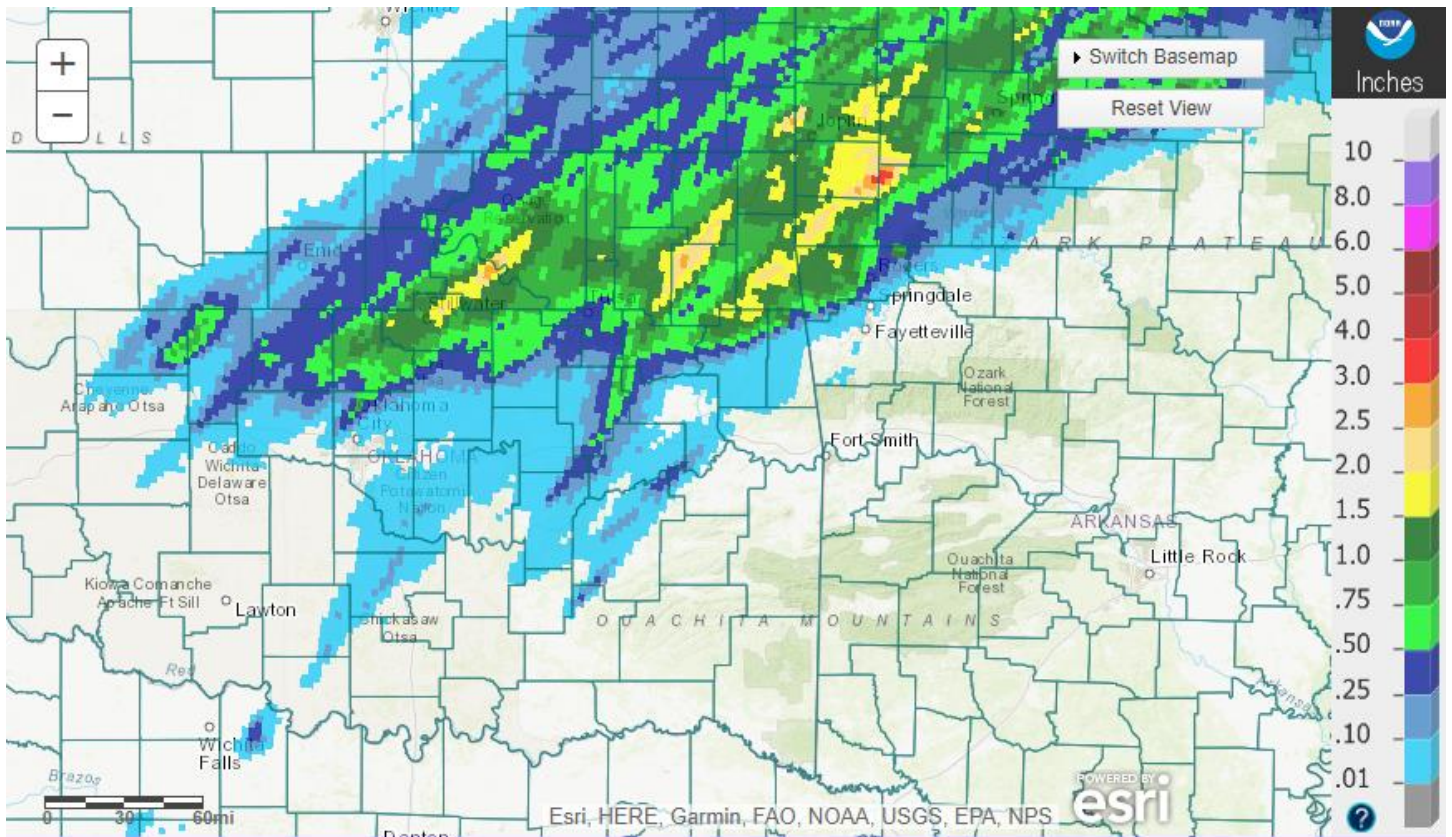
Tulsa, OK: May 15, 2022 1-Day Observed Precipitation
Valid on: May 15, 2022 12:00 UTC

Fig. 17. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/15/2022.



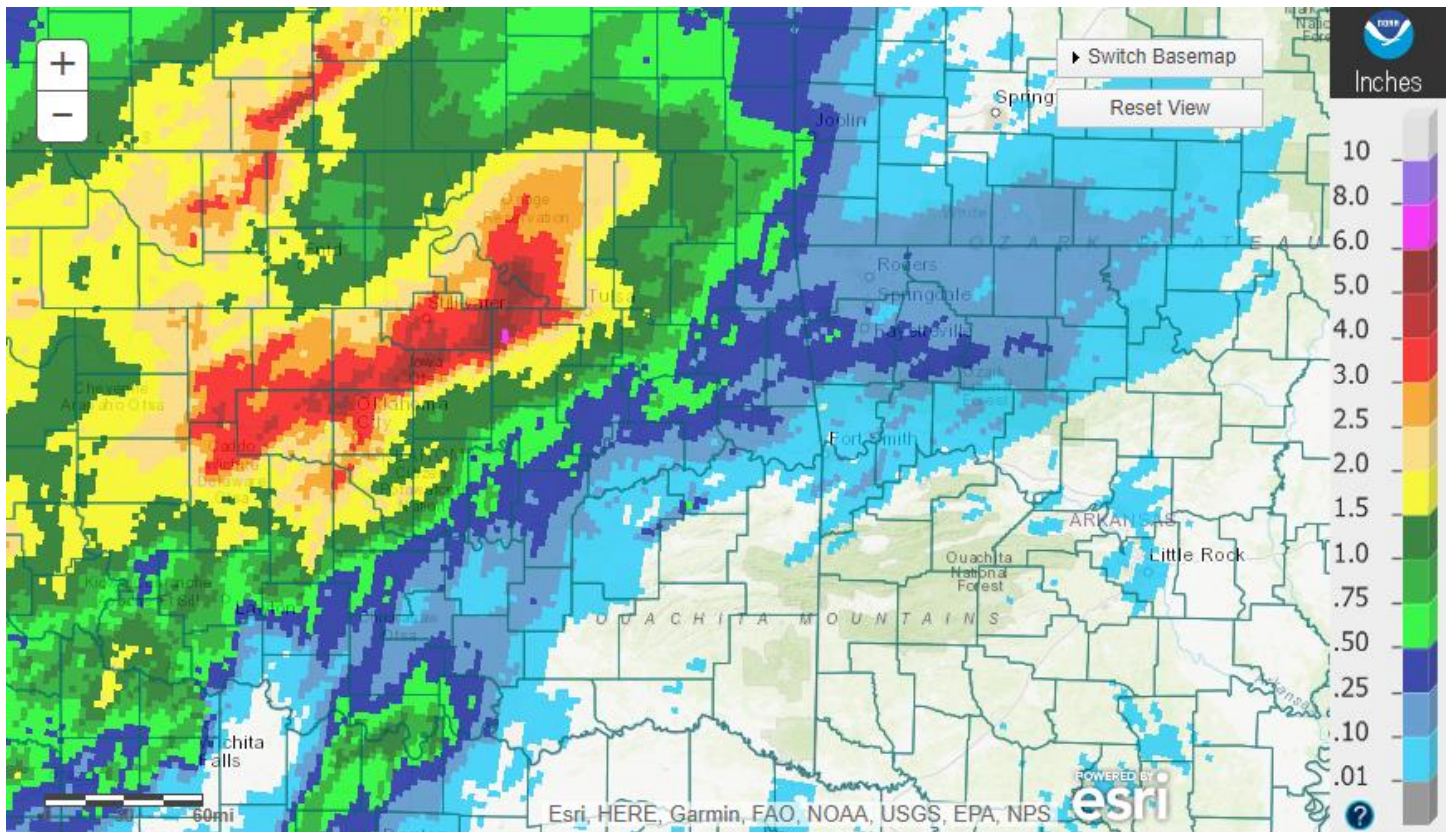
Tulsa, OK: May 16, 2022 1-Day Observed Precipitation
Valid on: May 16, 2022 12:00 UTC

Fig. 18. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/16/2022.



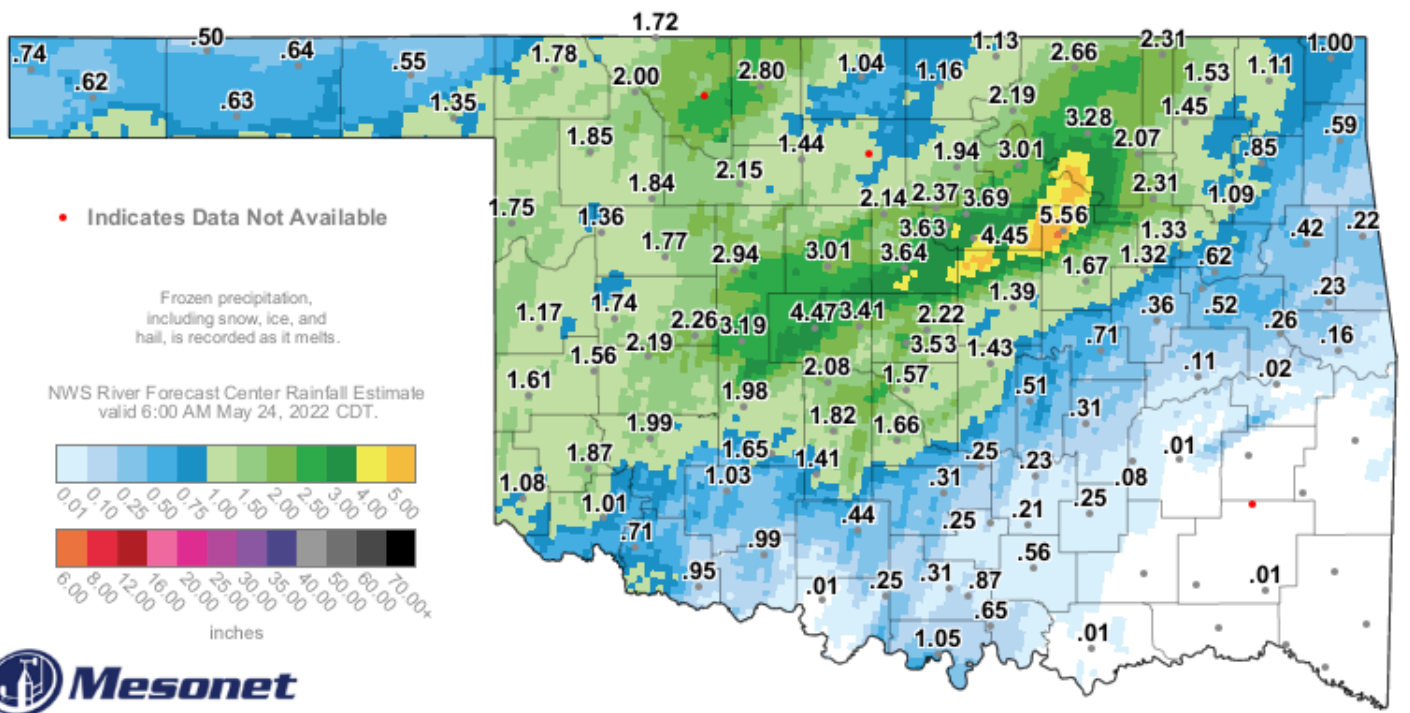
Tulsa, OK: May 21, 2022 1-Day Observed Precipitation
Valid on: May 21, 2022 12:00 UTC

Fig. 19. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/21/2022.



Tulsa, OK: May 24, 2022 1-Day Observed Precipitation
Valid on: May 24, 2022 12:00 UTC

Fig. 20. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/24/2022.

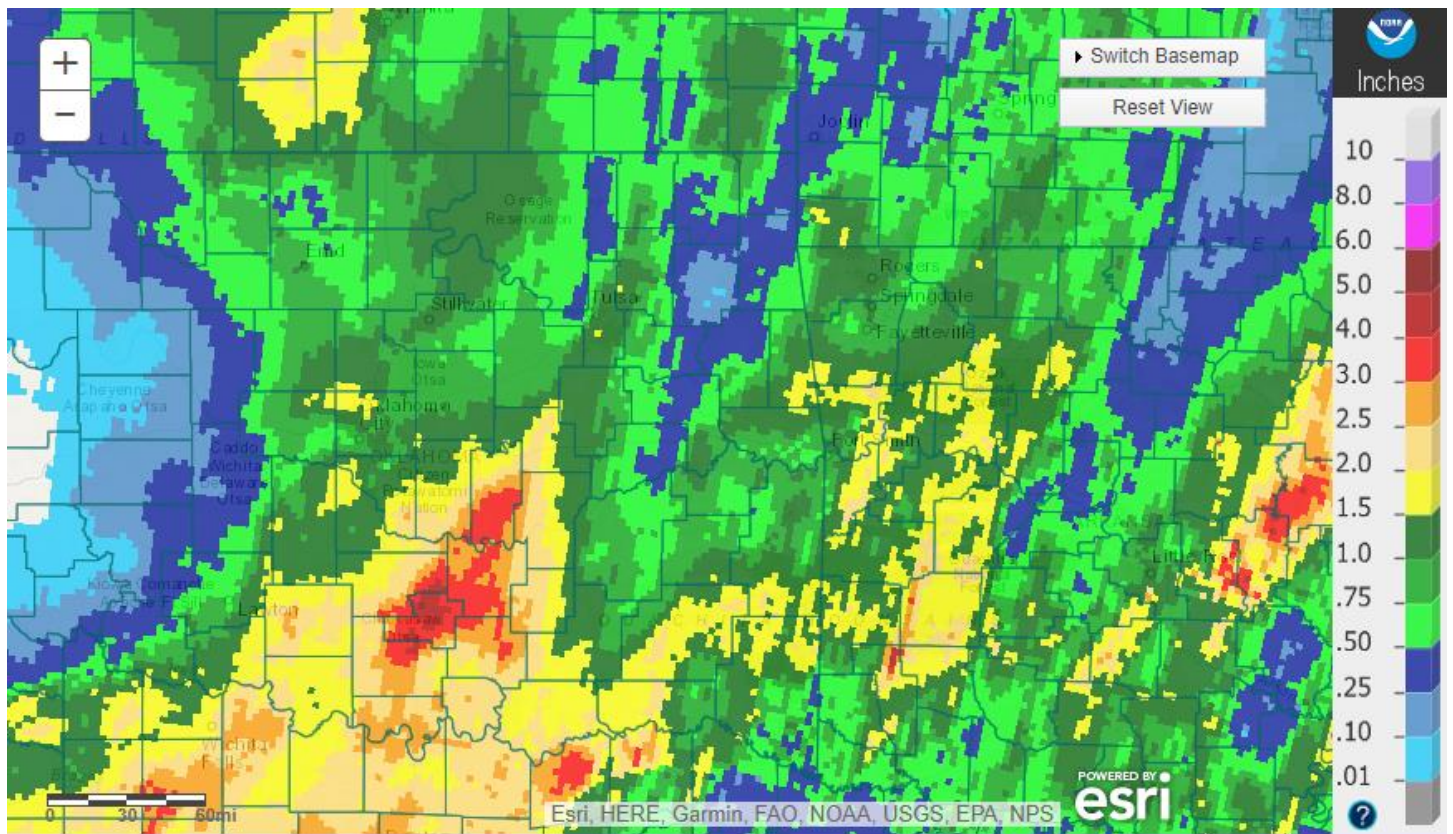


24-Hour Rainfall Accumulation (inches)

7:35 AM May 24, 2022 CDT

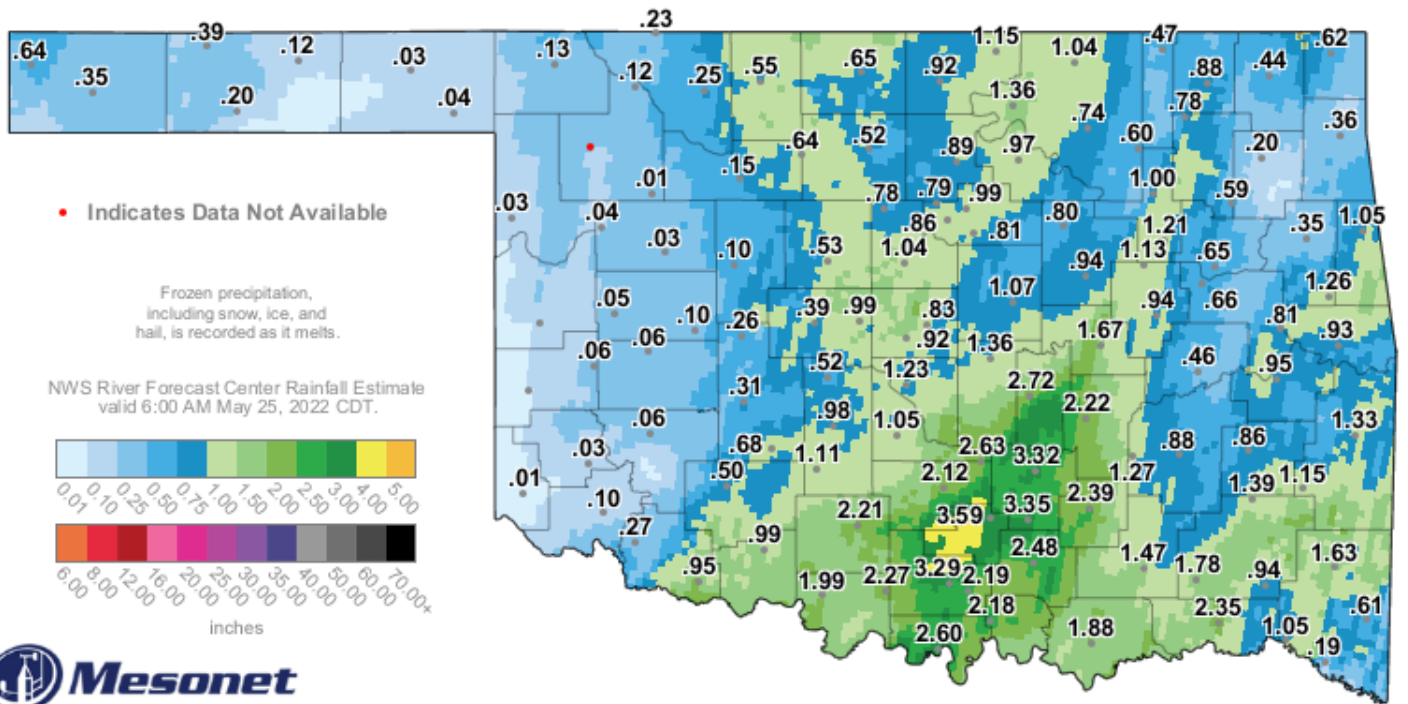
Created 7:41:01 AM May 24, 2022 CDT. © Copyright 2022

Fig. 21. OK Mesonet (values) and NWS RFC rainfall estimate (image) 24-hour rainfall ending at 7:35 am CDT 5/24/2022.



Tulsa, OK: May 25, 2022 1-Day Observed Precipitation
Valid on: May 25, 2022 12:00 UTC

Fig. 22. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/25/2022.

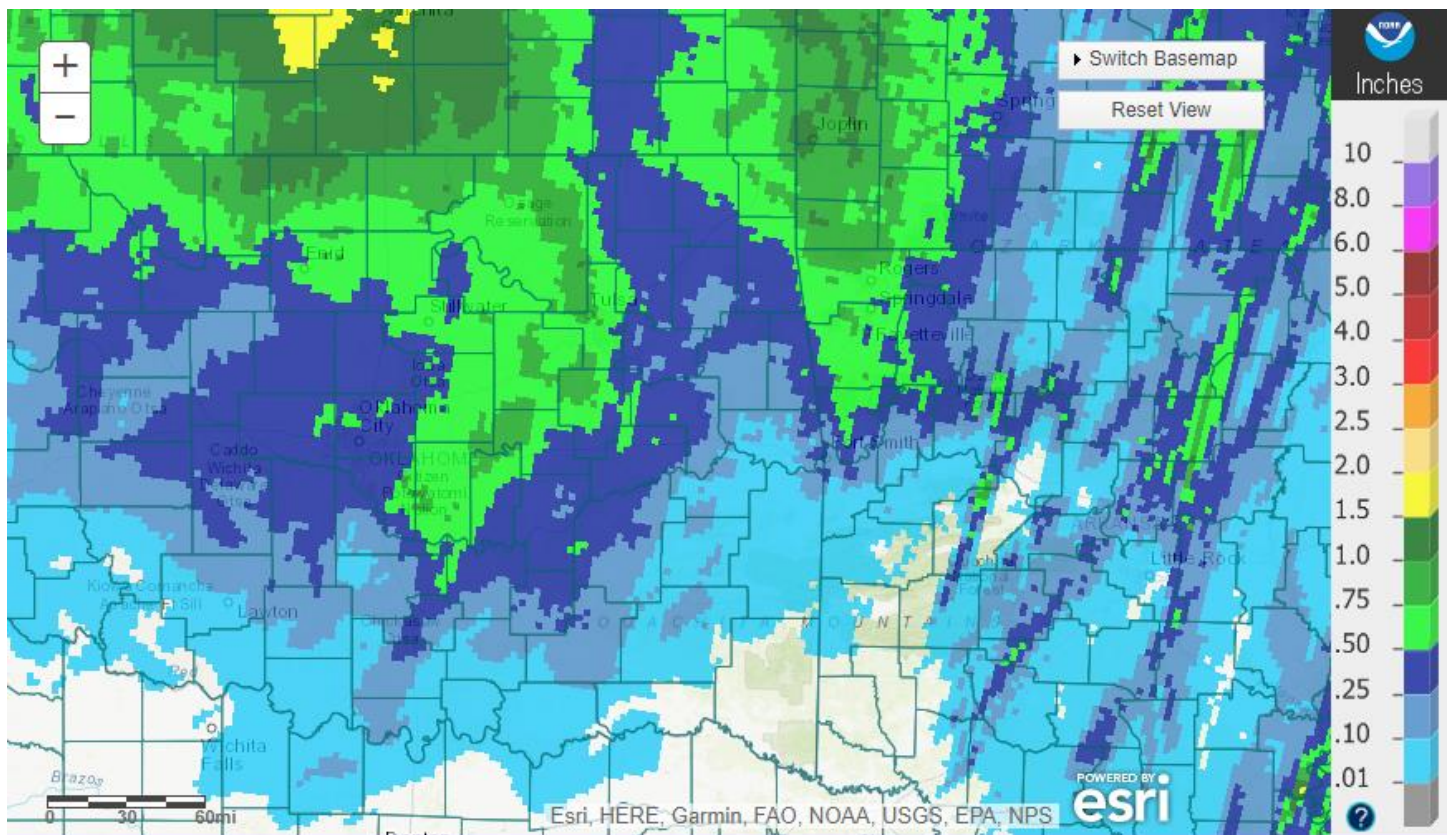


24-Hour Rainfall Accumulation (inches)

7:35 AM May 25, 2022 CDT

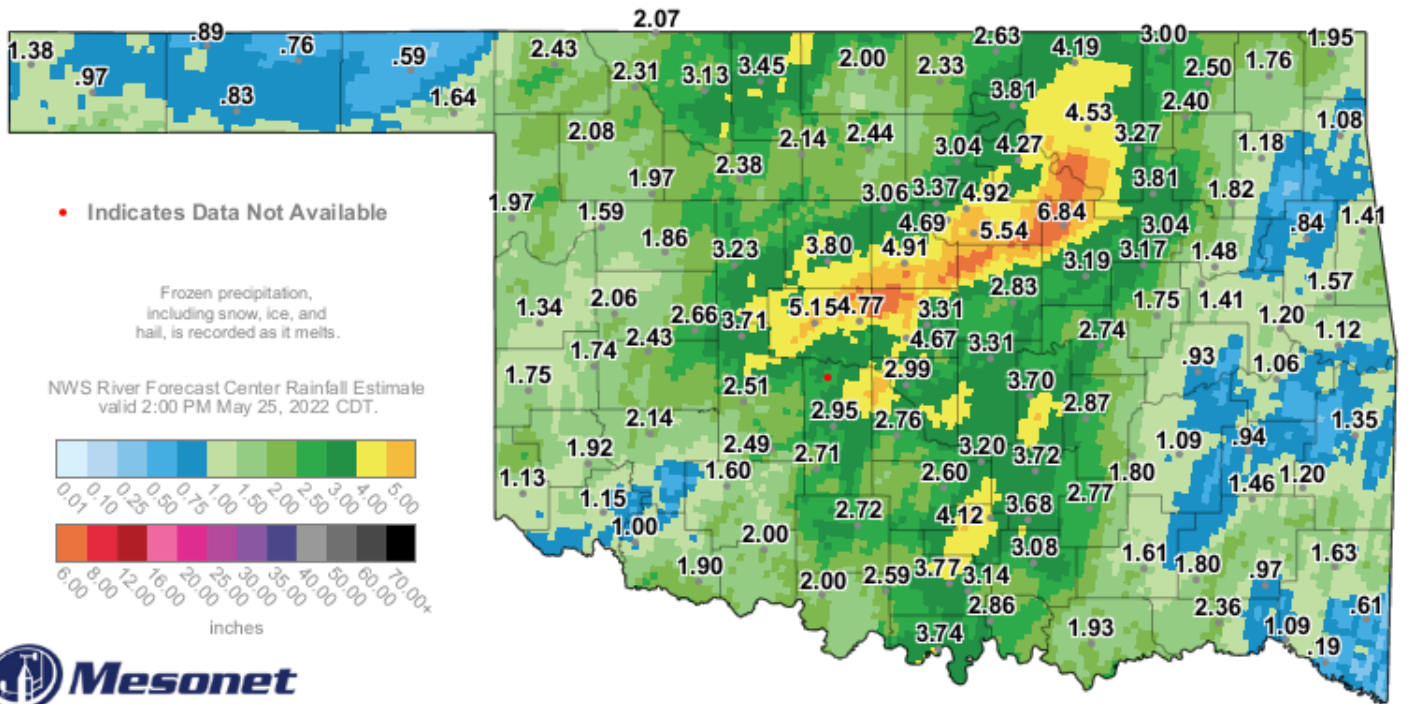
Created 7:41:01 AM May 25, 2022 CDT. © Copyright 2022

Fig. 23. OK Mesonet (values) and NWS RFC rainfall estimate (image) 24-hour rainfall ending at 7:35 am CDT 5/25/2022.



Tulsa, OK: May 26, 2022 1-Day Observed Precipitation
Valid on: May 26, 2022 12:00 UTC

Fig. 24. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/26/2022.



3-Day Rainfall Accumulation (inches)

3:35 PM May 25, 2022 CDT

Created 3:41:05 PM May 25, 2022 CDT. © Copyright 2022

Fig. 25. OK Mesonet (values) and NWS RFC rainfall estimate (image) 3-day rainfall ending at 3:35 pm CDT 5/25/2022.

Written by:

Nicole McGavock
Service Hydrologist
WFO Tulsa

Products issued in May 2022:

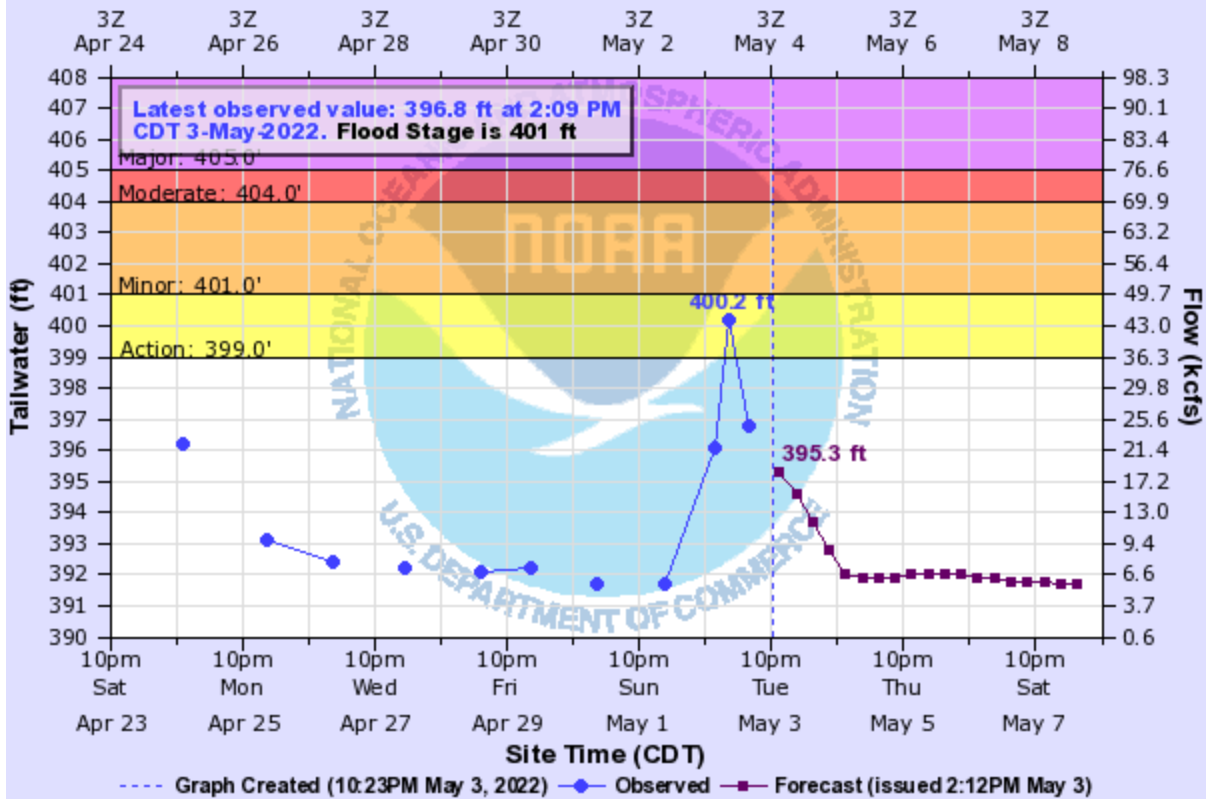
- *CWYO2 became a daily river forecast point September 7, 2016
- *MLBA4 and OZGA4 transferred to NWS Tulsa HSA February 5, 2014
- *Mixed case River Flood products began July 31, 2013

- 26 Flash Flood Warnings (FFW)
- 25 Flash Flood Statements (FFS)
- 3 Flash/Areal Flood Watches (FFA) (14 Watch FFA CON/EXT/EXA/EXB/CAN)
- 26 Urban and Small Stream Advisories (FLS)
- 10 Areal Flood Warnings (FLW)
- 4 Areal Flood Statements (FLS)
- 46 River Flood Warnings (FLW) (includes category increases)
- 241 River Flood Statements (FLS)
- 15 River Flood Advisories (FLS) (49 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:

LEE CREEK NEAR VAN BUREN LCR

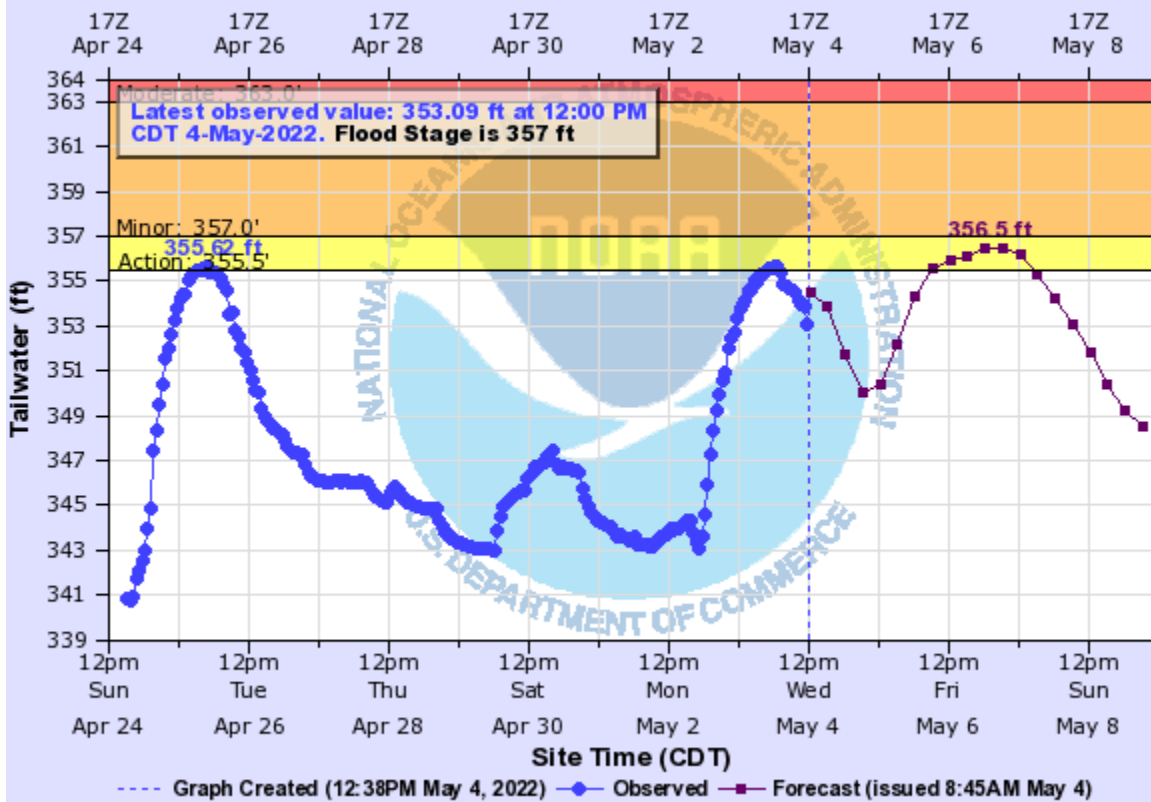
Universal Time (UTC)



VBRA4(plotting HTIRZ) "Gage 0" Datum: 0'

ARKANSAS RIVER AT OZARK L/D TAILWATER

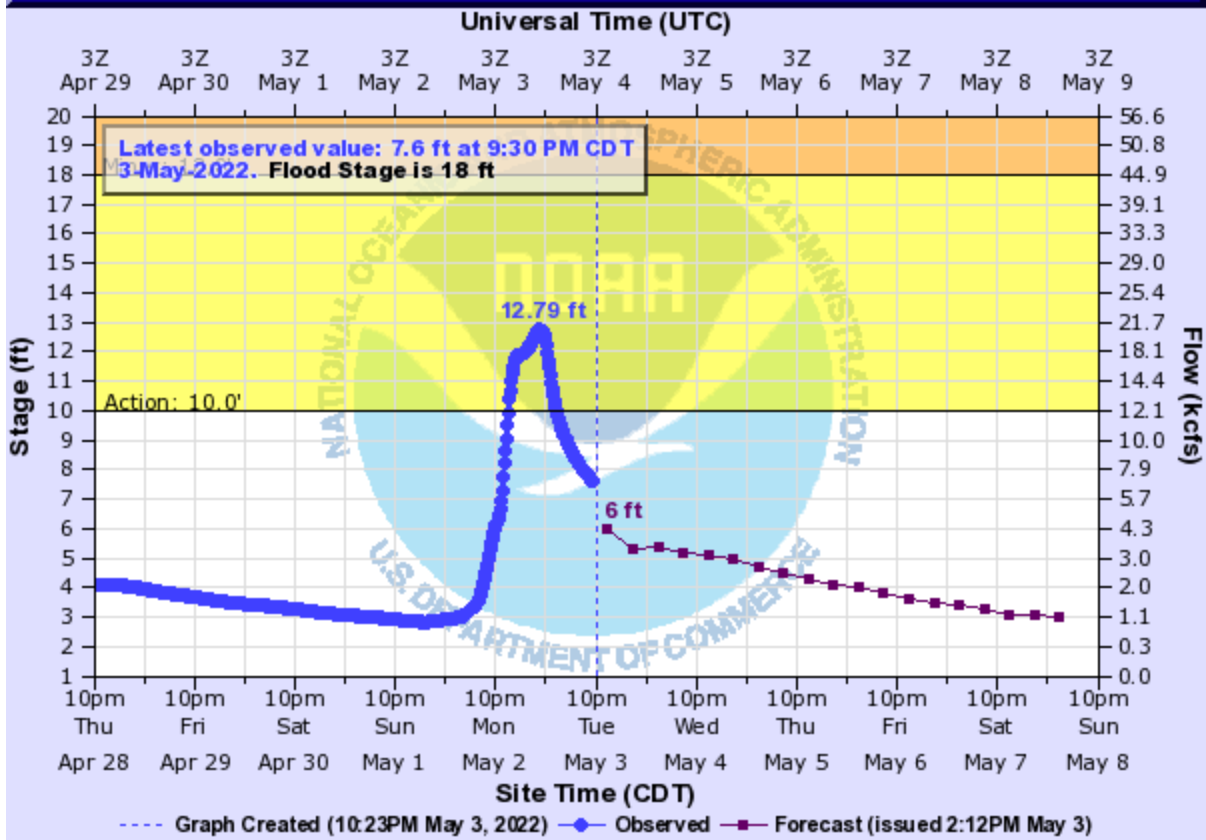
Universal Time (UTC)



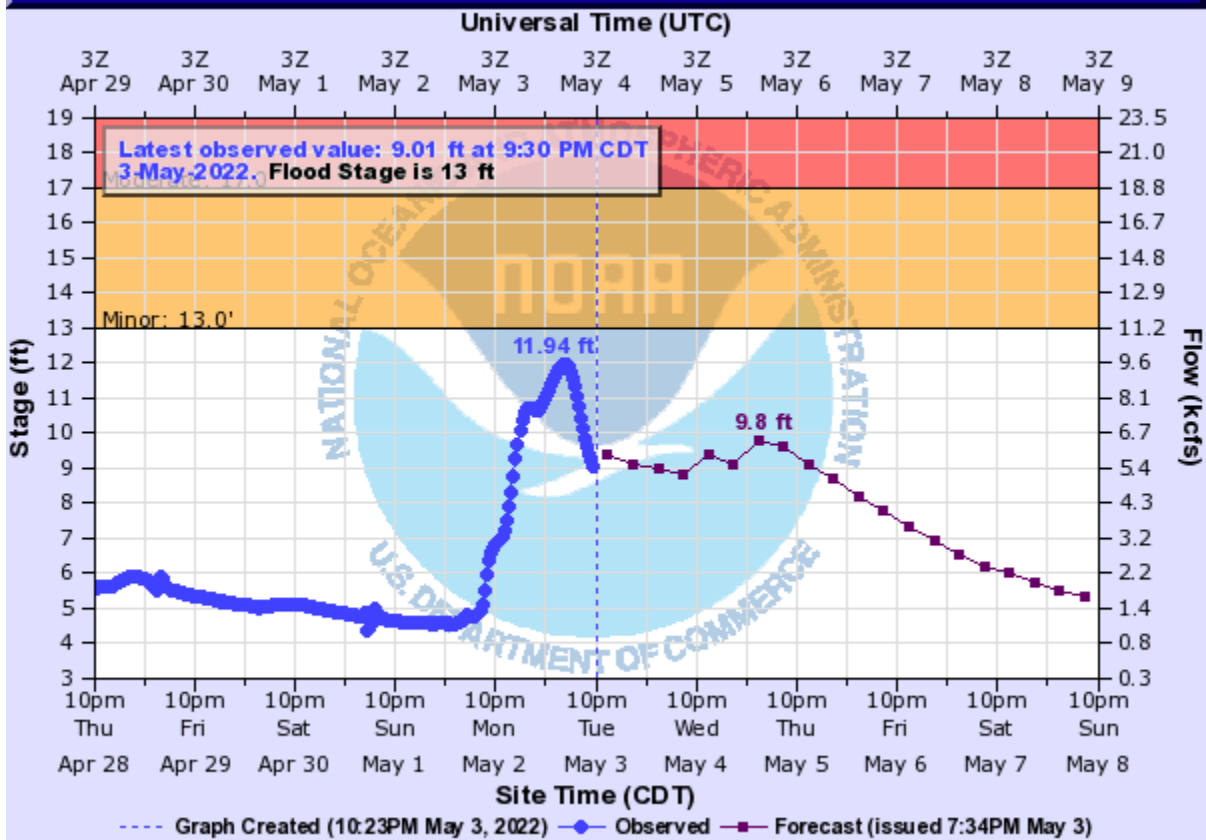
OZGA4(plotting HTIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers - LRD

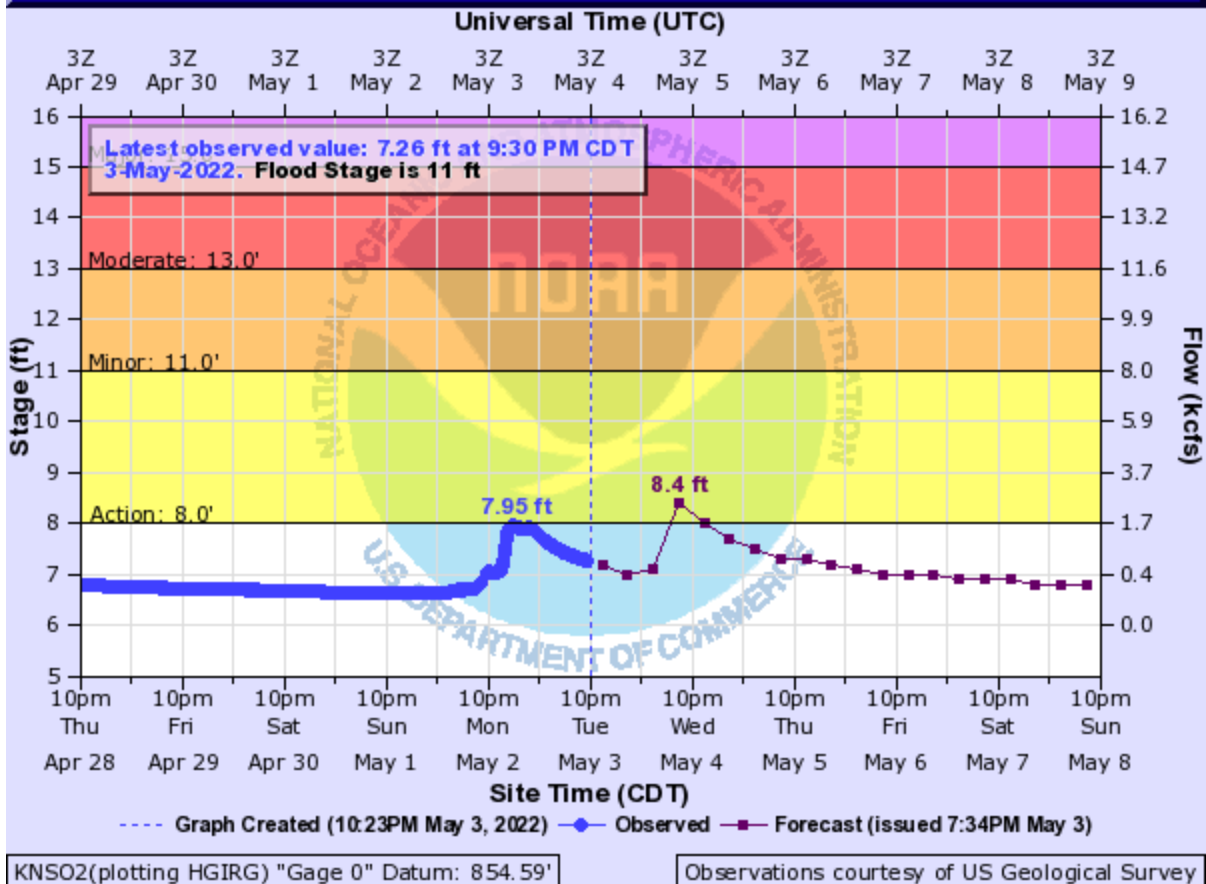
MULBERRY RIVER (AR) NEAR MULBERRY



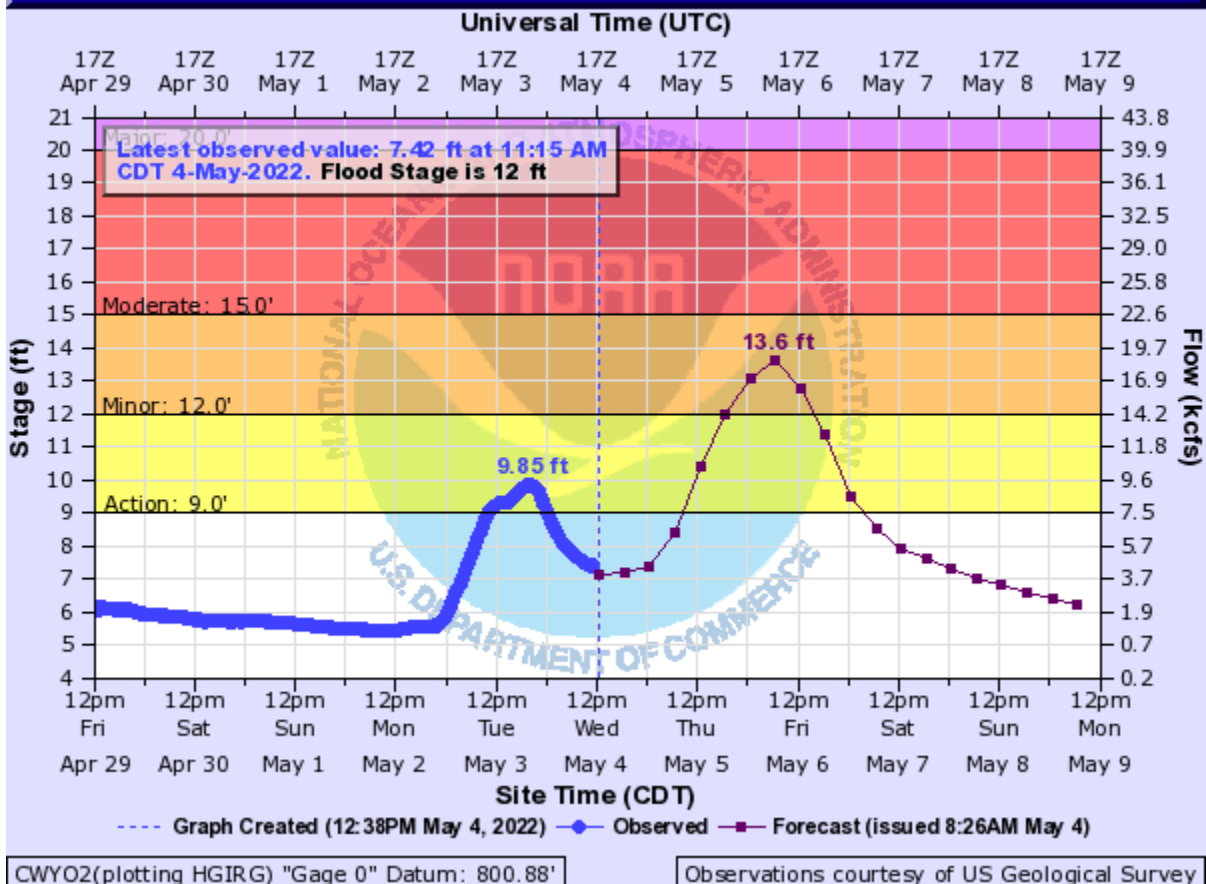
ILLINOIS RIVER (AR OK) NEAR WATTS



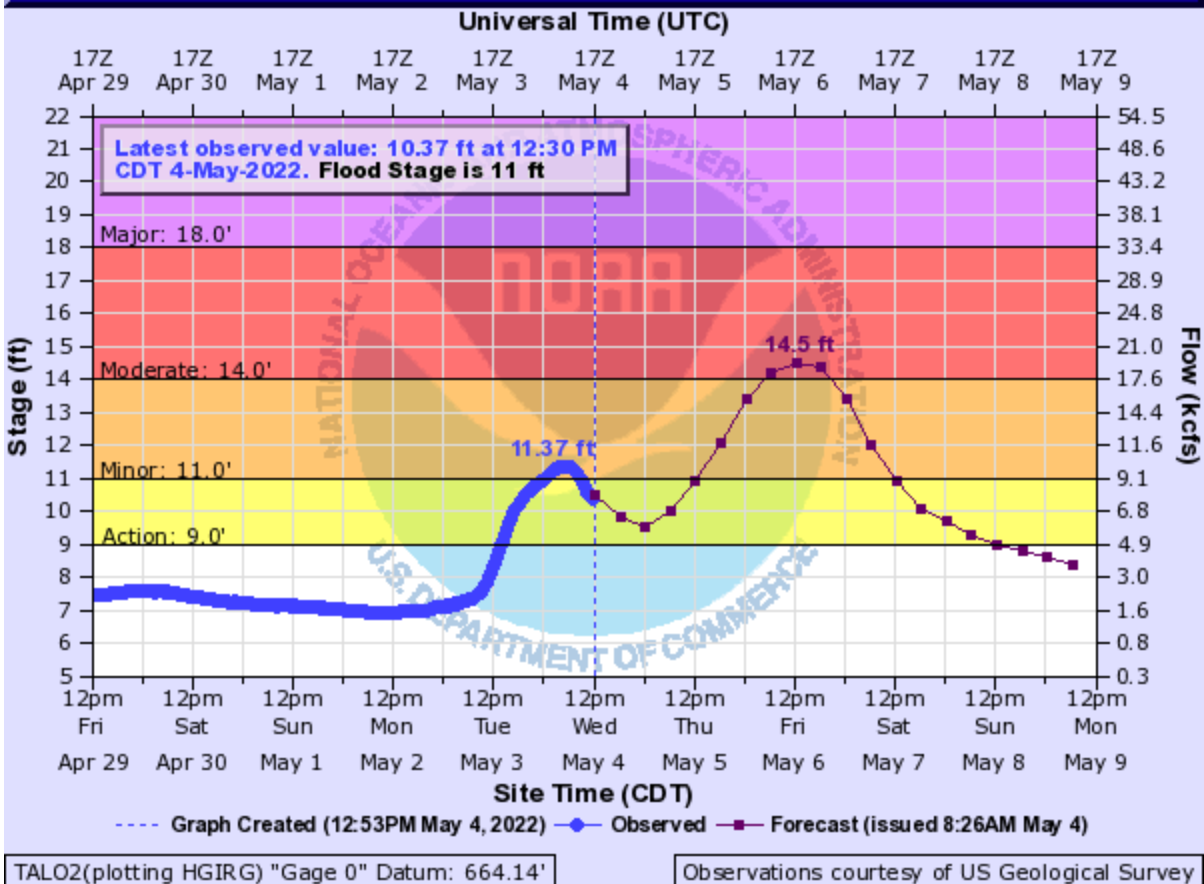
FLINT CREEK (OK) NEAR KANSAS



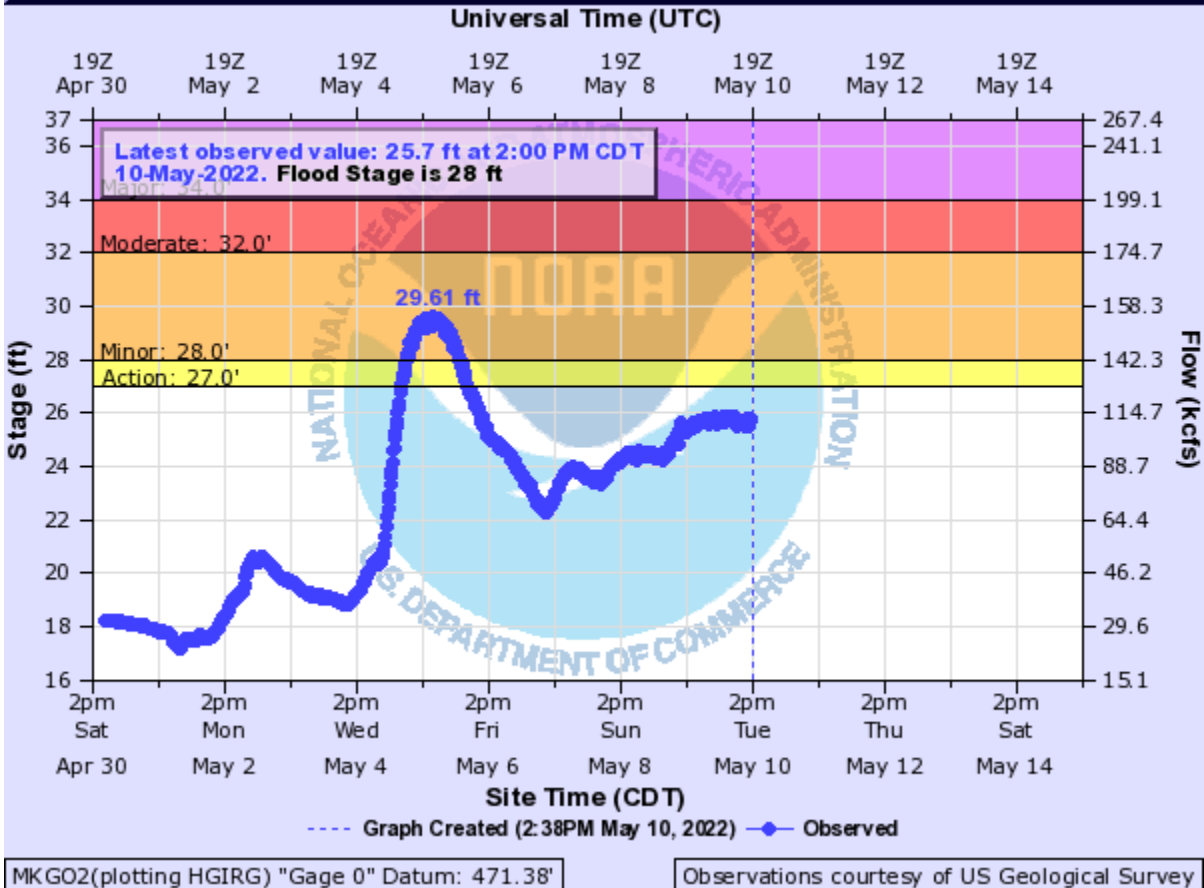
ILLINOIS RIVER (AR OK) AT CHEWEY



ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH

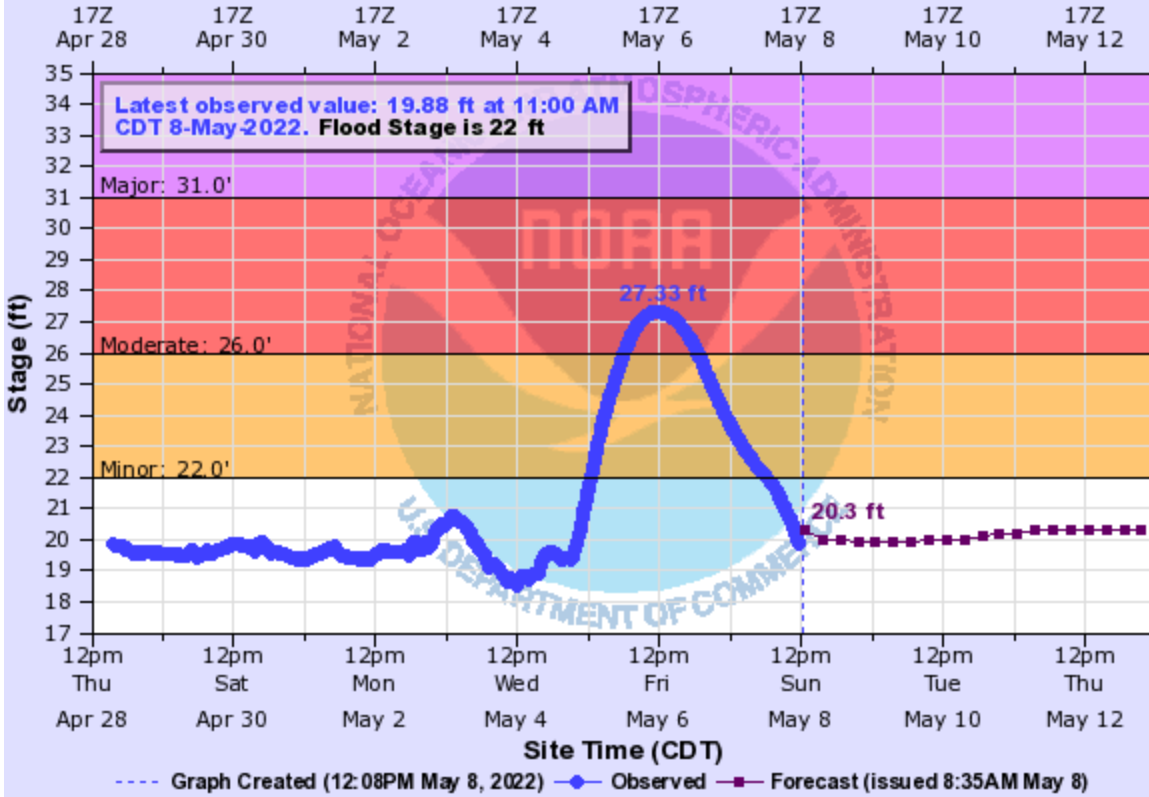


ARKANSAS RIVER NEAR MUSKOGEE



ARKANSAS RIVER AT VAN BUREN

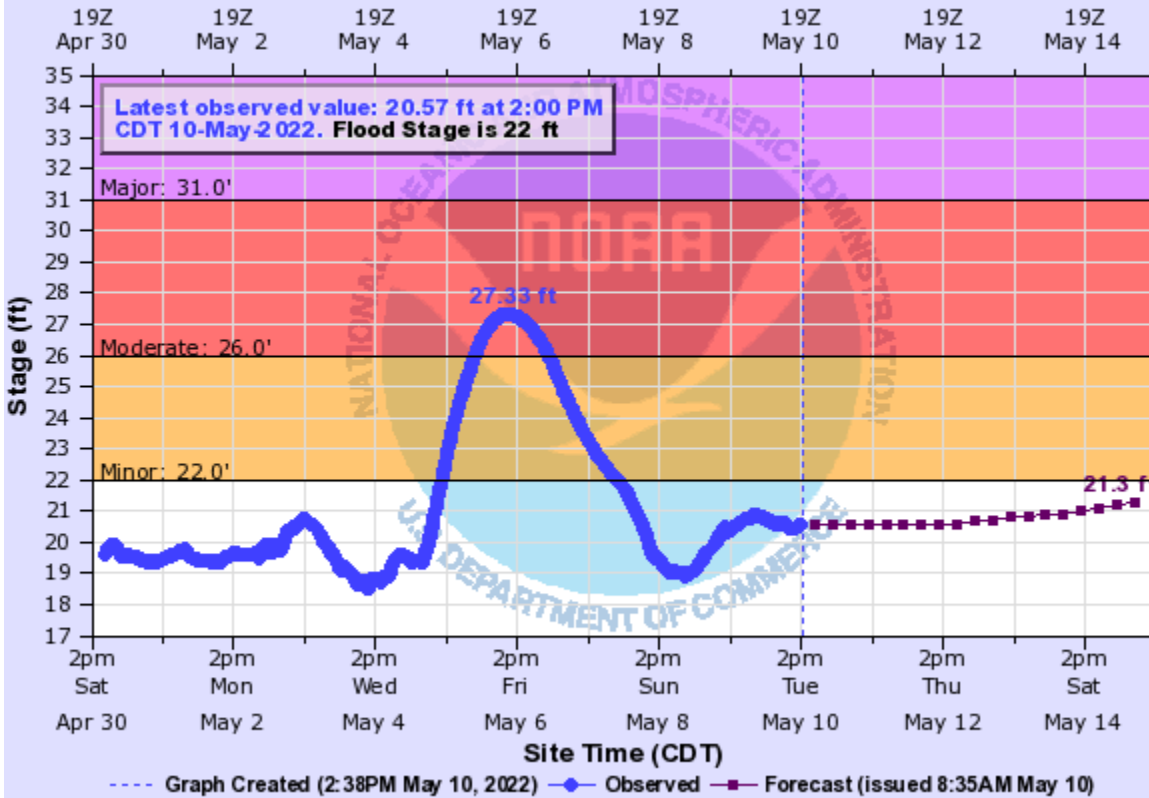
Universal Time (UTC)



VBUA4(plotting HGIRG) "Gage 0" Datum: 372.57'

ARKANSAS RIVER AT VAN BUREN

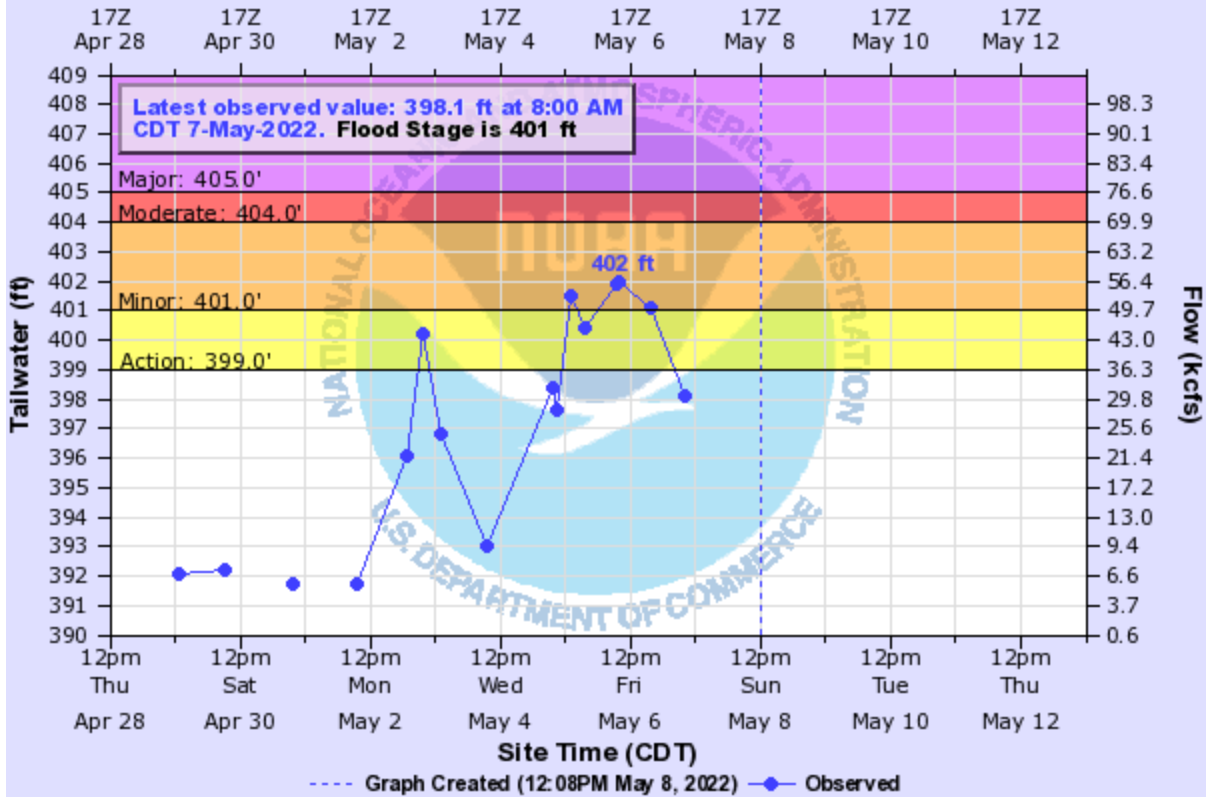
Universal Time (UTC)



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LEE CREEK NEAR VAN BUREN LCR

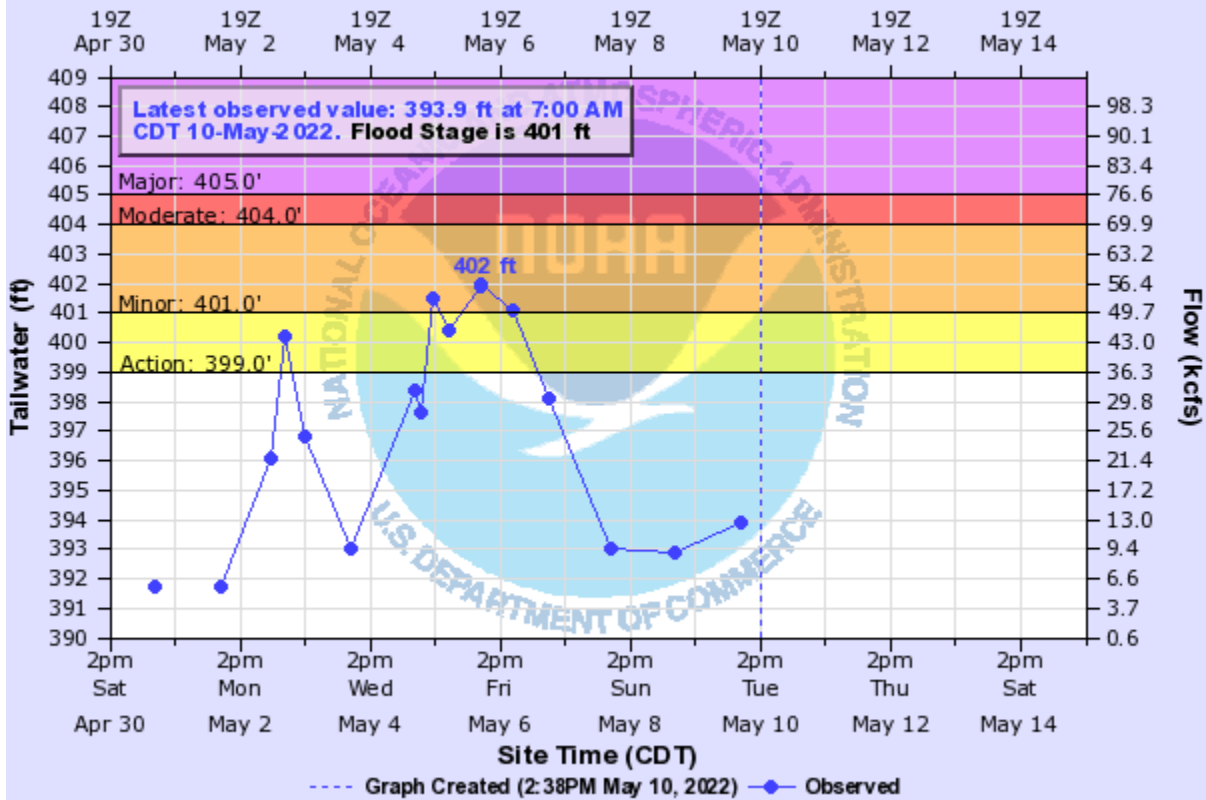
Universal Time (UTC)



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LEE CREEK NEAR VAN BUREN LCR

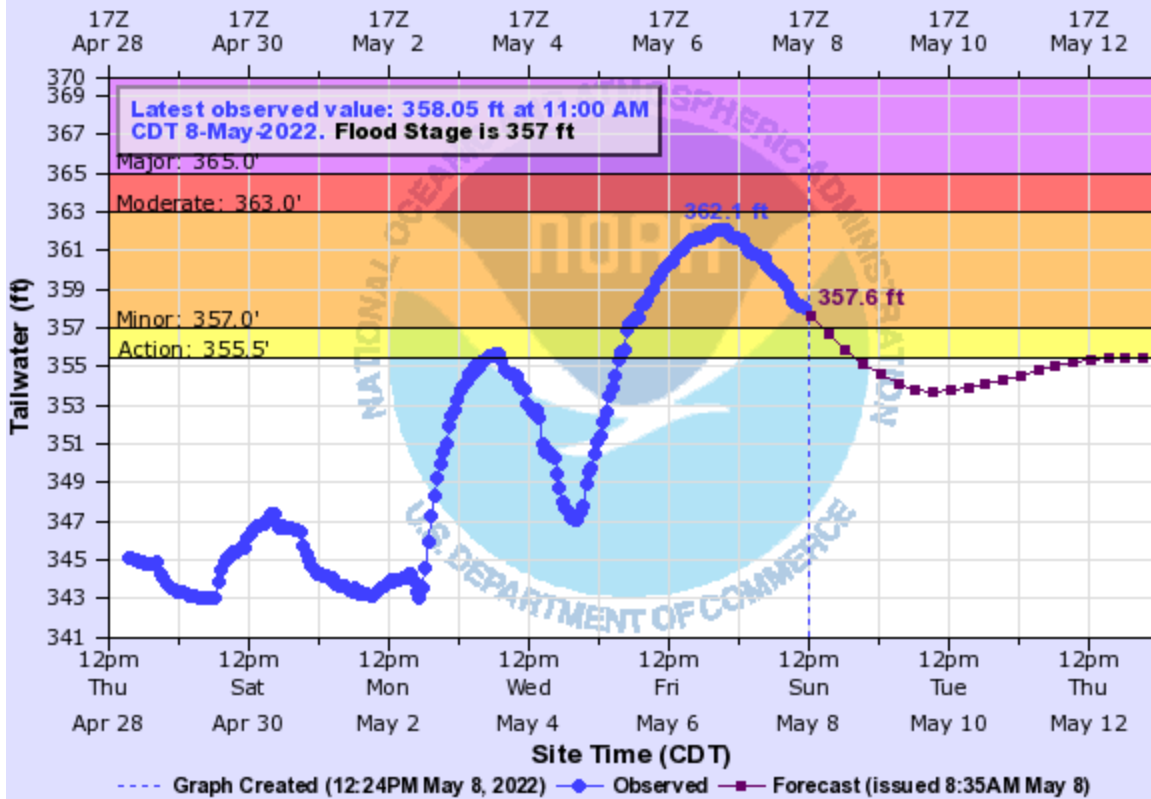
Universal Time (UTC)



VBRA4(plotting HTIRZ) "Gage 0" Datum: 0'

ARKANSAS RIVER AT OZARK L/D TAILWATER

Universal Time (UTC)

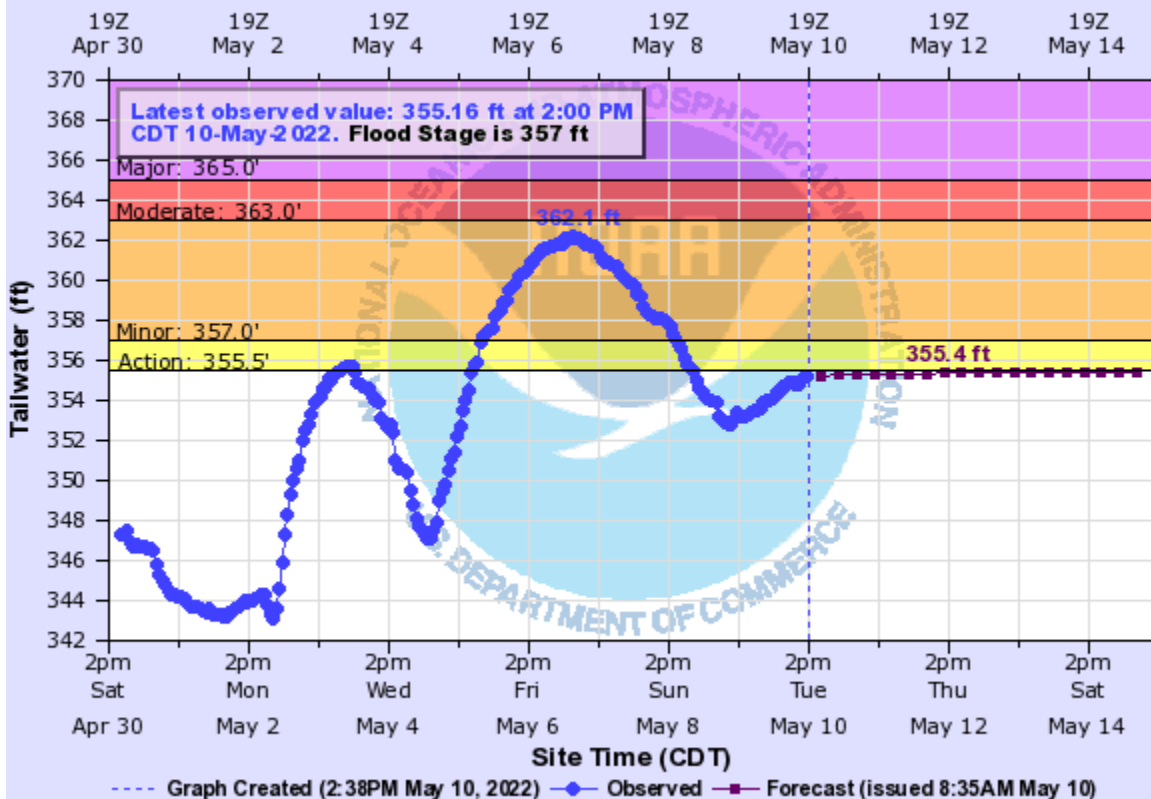


OZGA4(plotting HTIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers - LRD

ARKANSAS RIVER AT OZARK L/D TAILWATER

Universal Time (UTC)

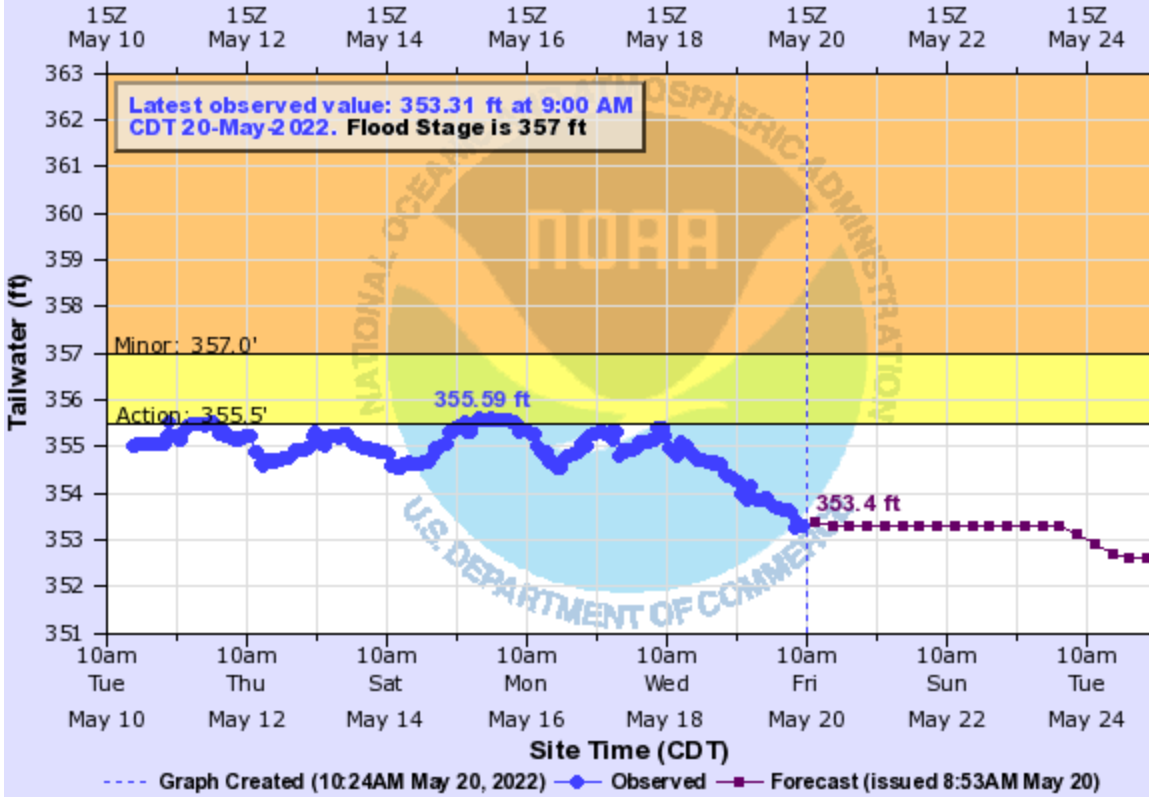


OZGA4(plotting HTIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers - LRD

ARKANSAS RIVER AT OZARK L/D TAILWATER

Universal Time (UTC)

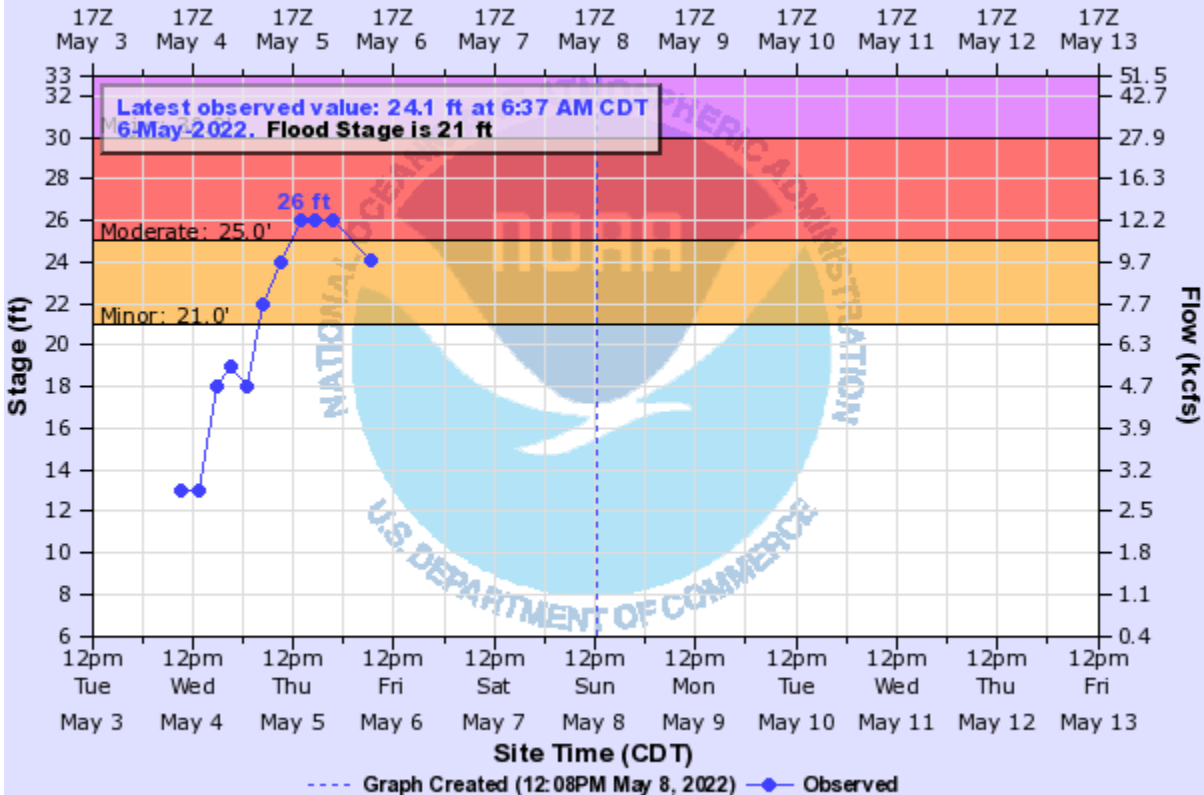


OZGA4(plotting HTIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers - LRD

POLECAT CREEK NEAR SAPULPA

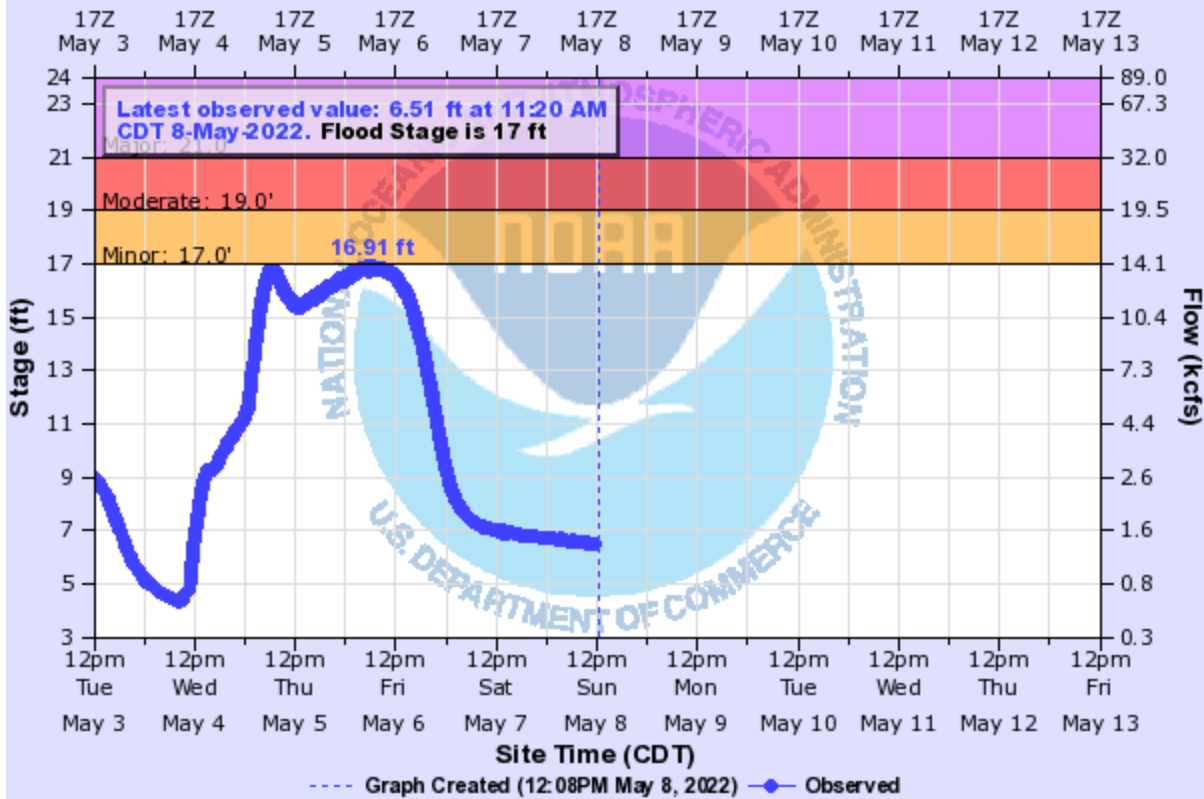
Universal Time (UTC)



SPCO2(plotting HGIRZ) "Gage 0" Datum: 626.2'

POLECAT CREEK NEAR JENKS

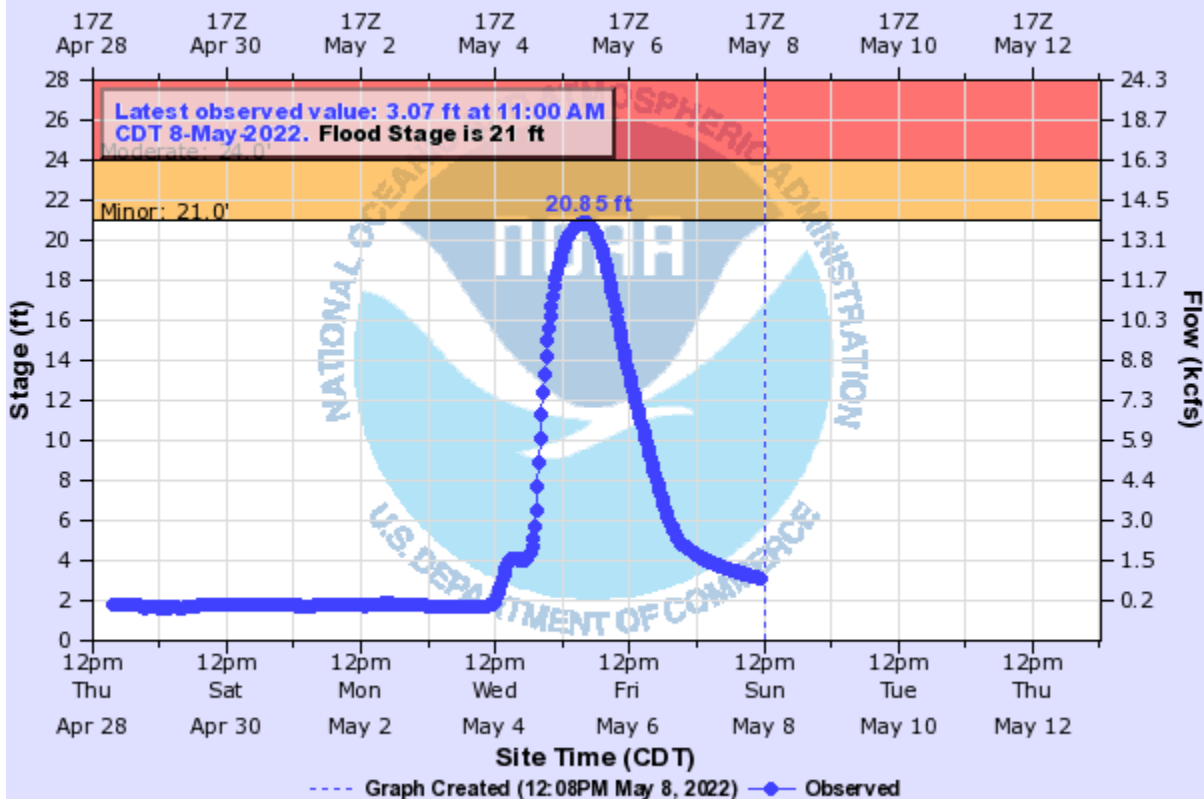
Universal Time (UTC)



JNK02(plotting HGIRR) "Gage 0" Datum: 599'

BIRD CREEK NEAR SPERRY

Universal Time (UTC)

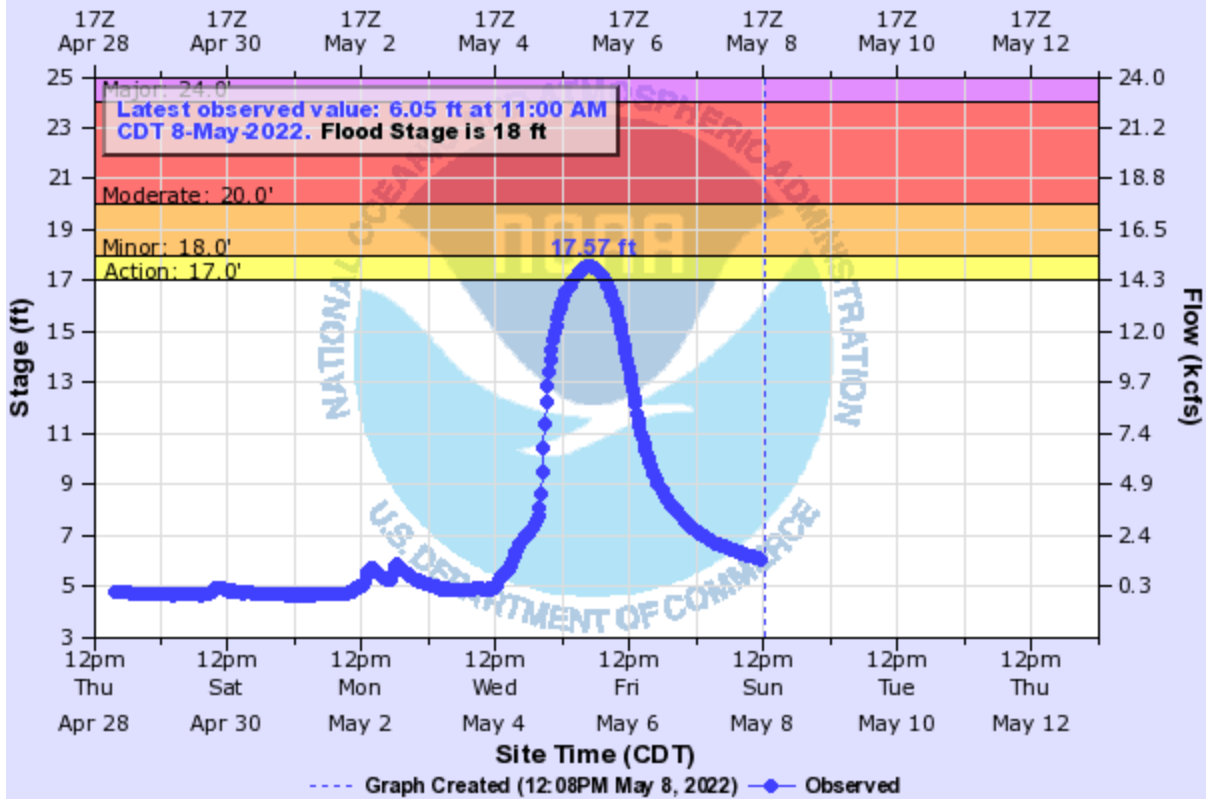


SPE02(plotting HGIRG) "Gage 0" Datum: 579.43'

Observations courtesy of US Geological Survey

BIRD CREEK NEAR OWASSO

Universal Time (UTC)

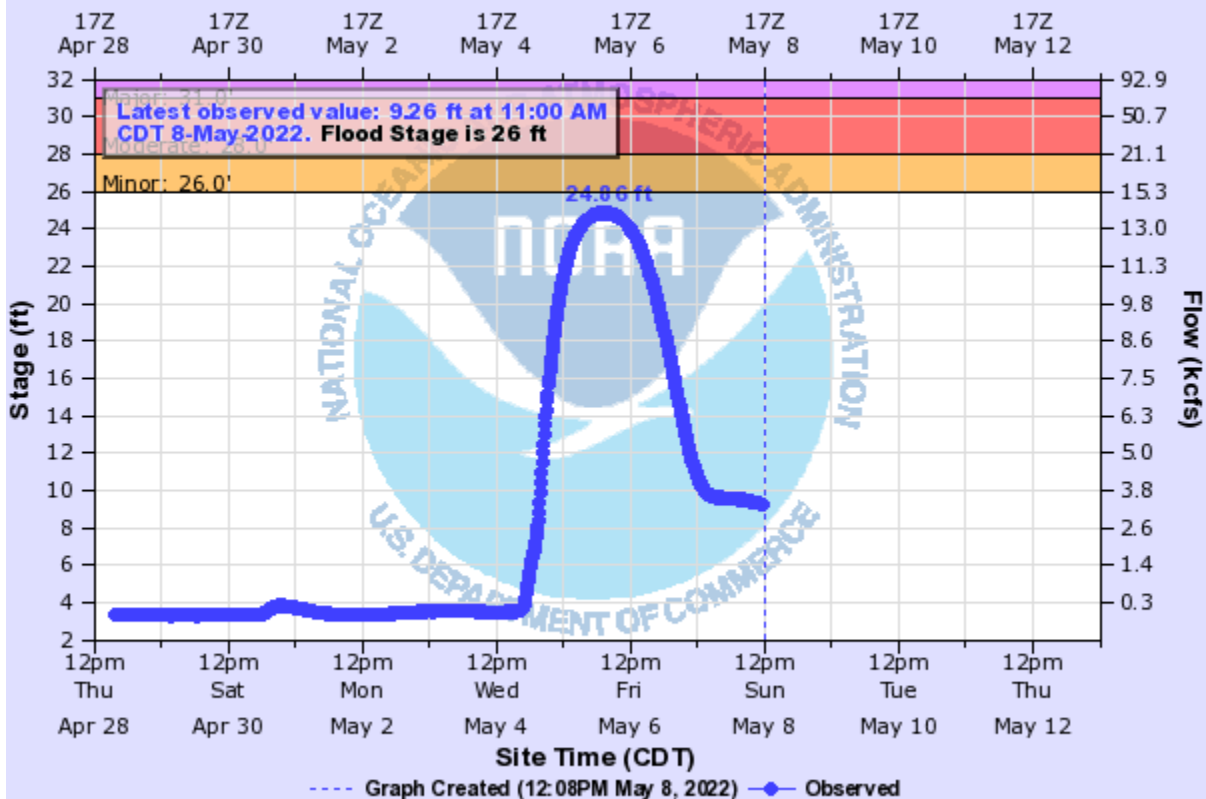


OWSO2(plotting HGIRG) "Gage 0" Datum: 560.17'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR RAMONA

Universal Time (UTC)

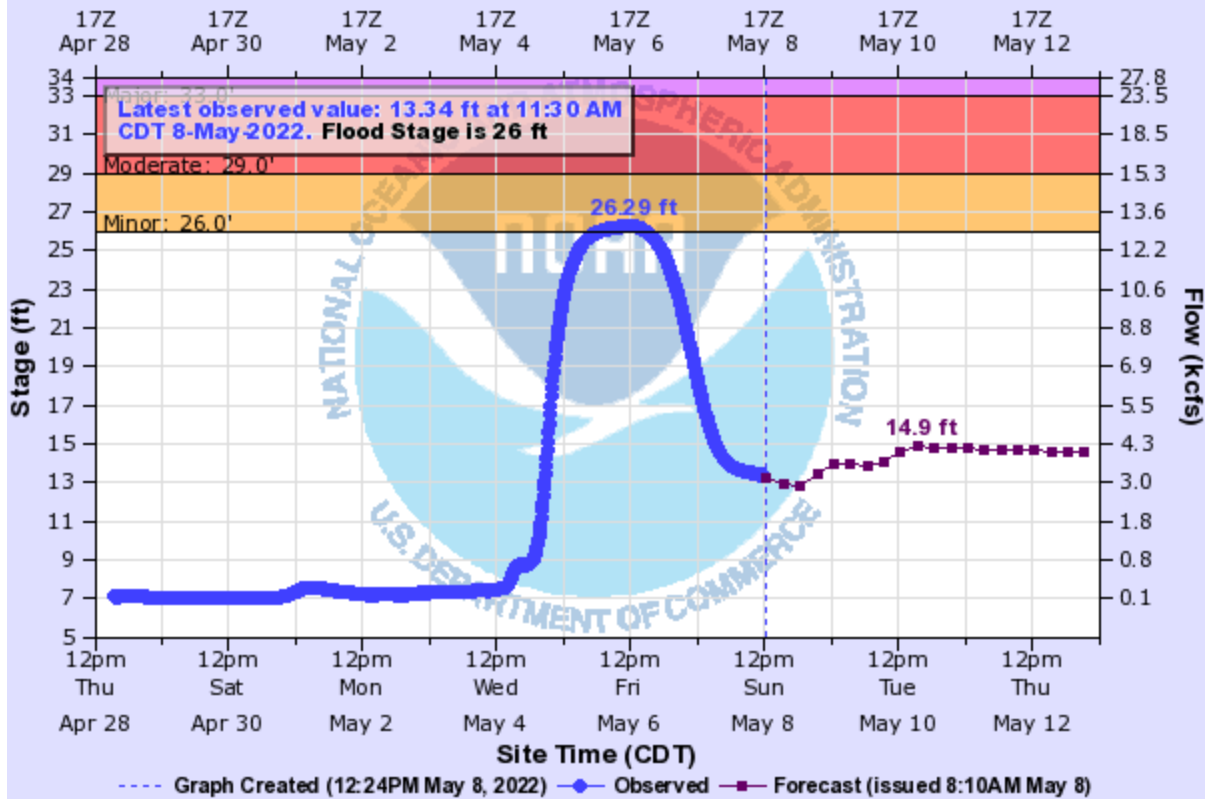


RAMO2(plotting HGIRG) "Gage 0" Datum: 586.43'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR COLLINSVILLE

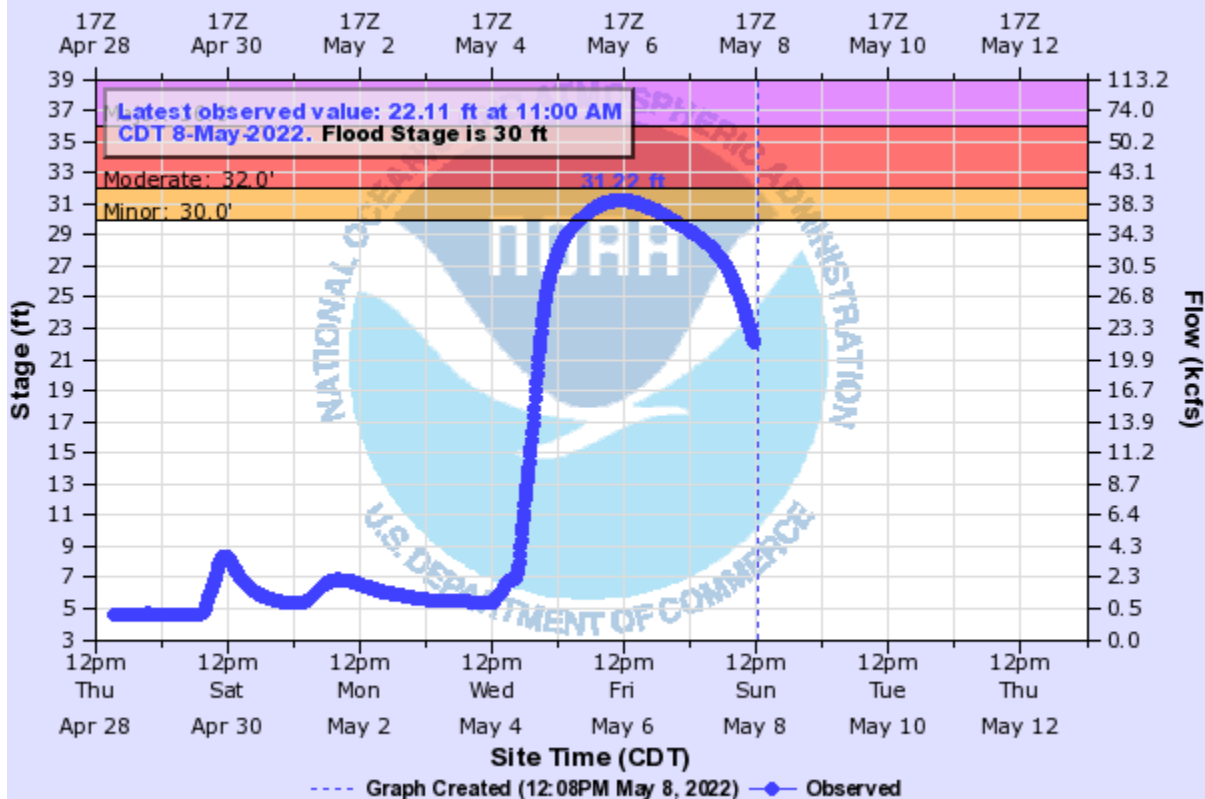
Universal Time (UTC)



CVL02(plotting HGIRG) "Gage 0" Datum: 565.72'

VERDIGRIS RIVER NEAR LENAPAH

Universal Time (UTC)

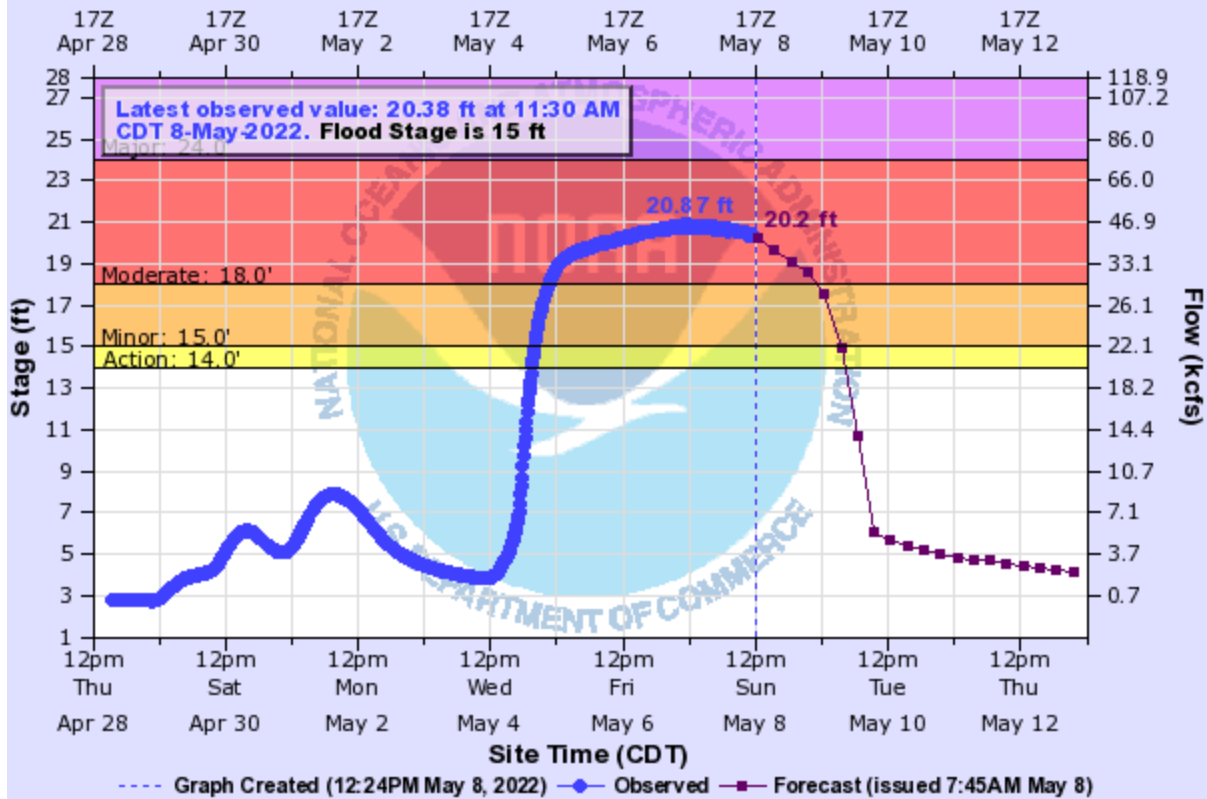


LEPO2(plotting HGIRG) "Gage 0" Datum: 644.9'

Observations courtesy of US Geological Survey

NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

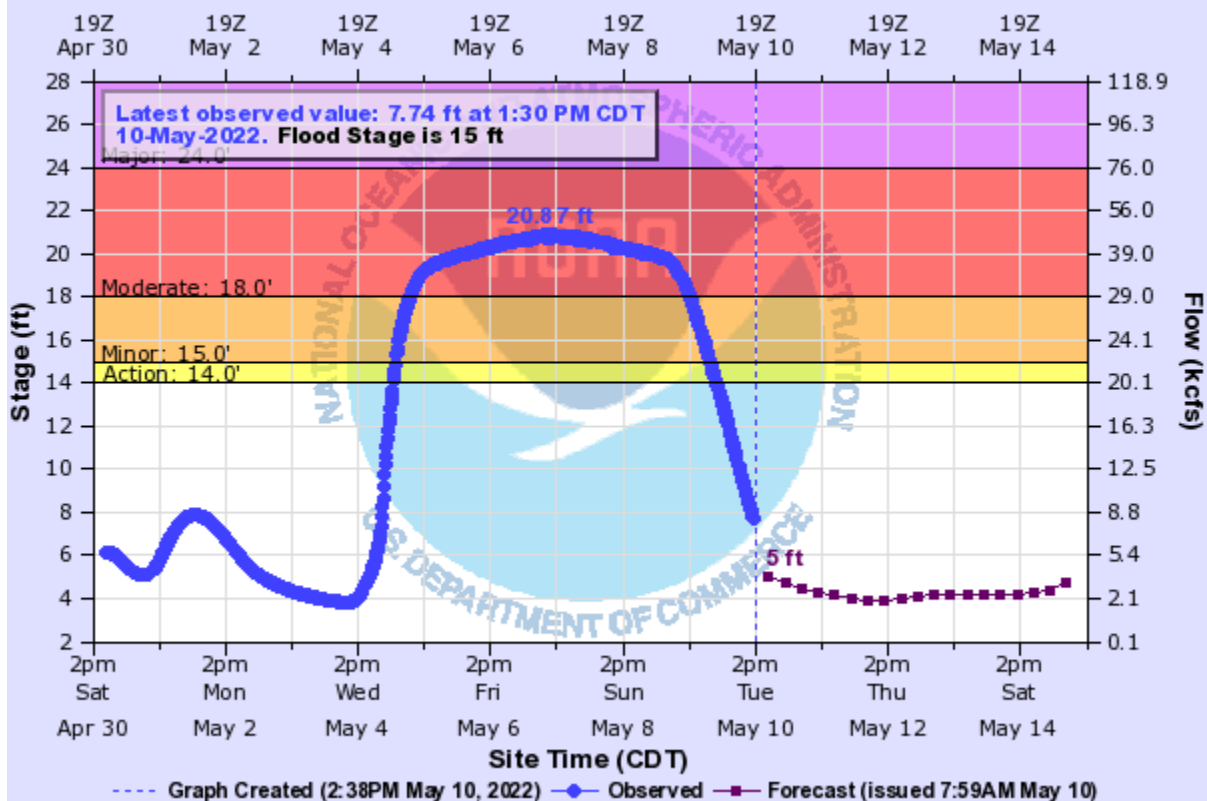


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

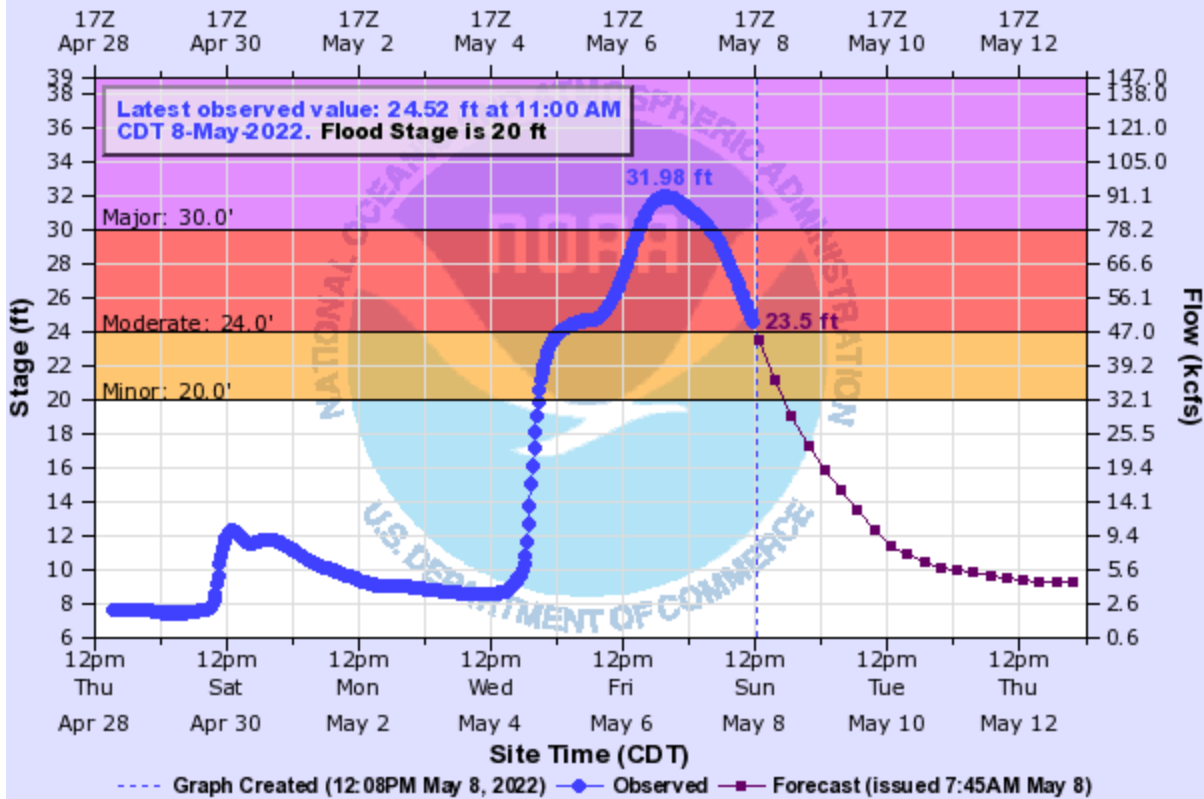


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

SPRING RIVER NEAR QUAPAW

Universal Time (UTC)

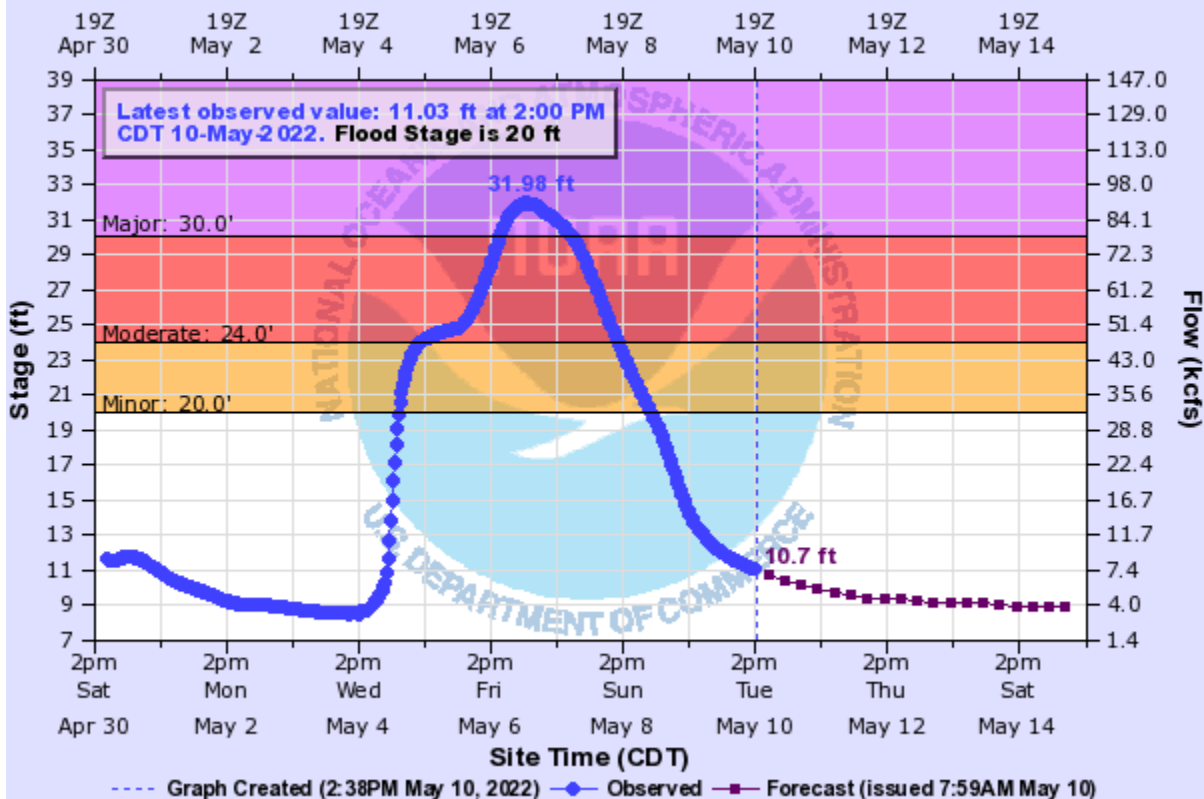


QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

Observations courtesy of US Geological Survey

SPRING RIVER NEAR QUAPAW

Universal Time (UTC)

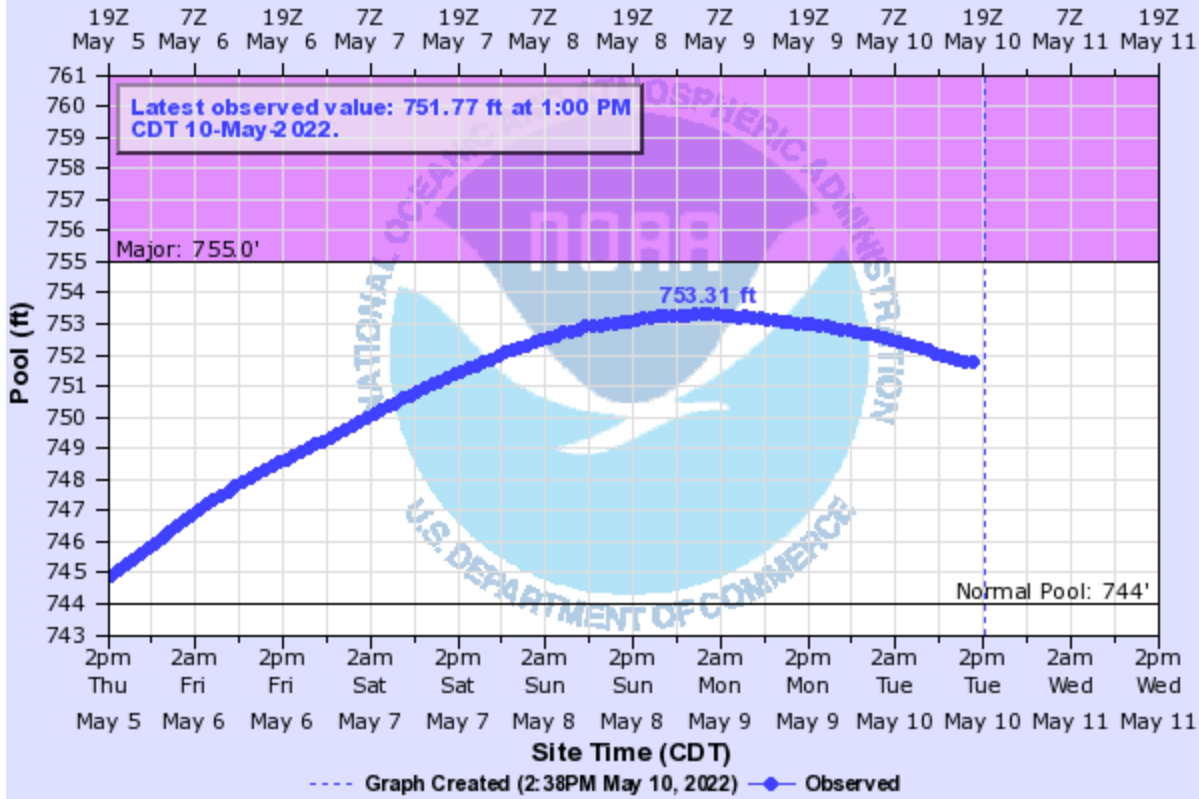


QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

Observations courtesy of US Geological Survey

EASTERN OKLAHOMA LAKES AT GRAND LAKE

Universal Time (UTC)

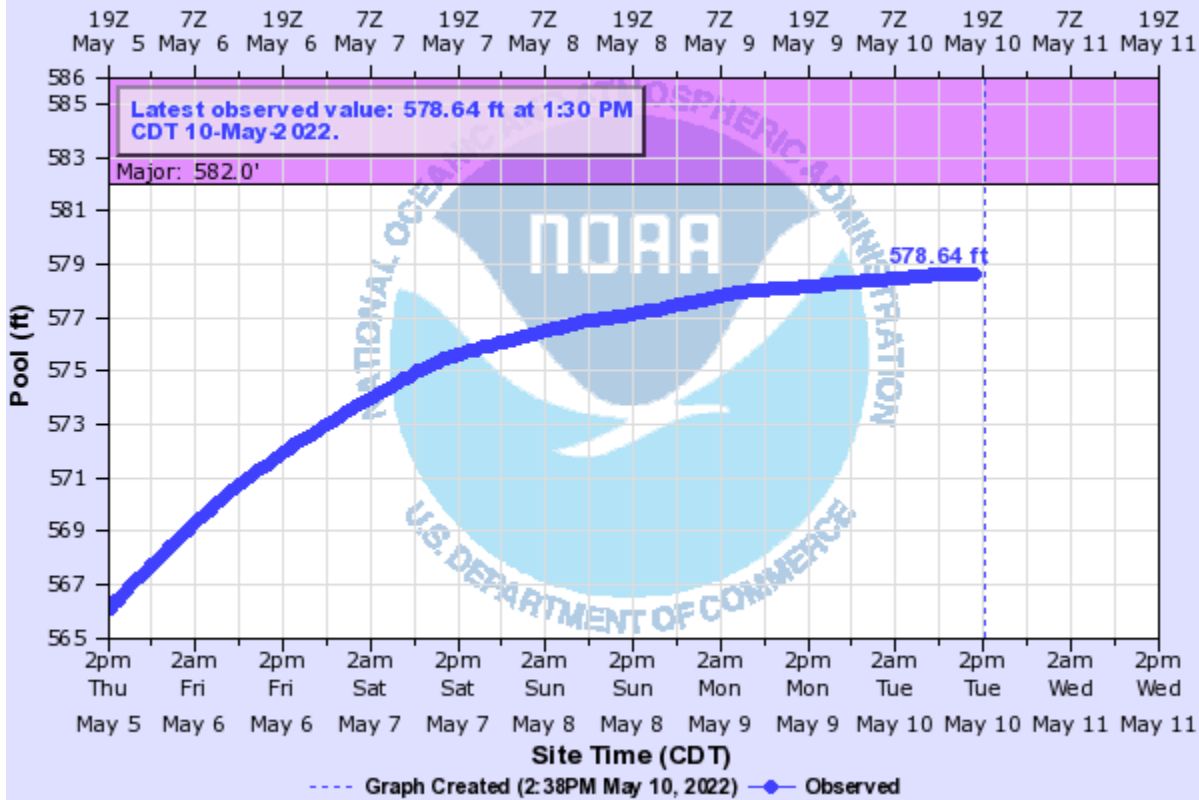


PENO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT FT. GIBSON LAKE

Universal Time (UTC)

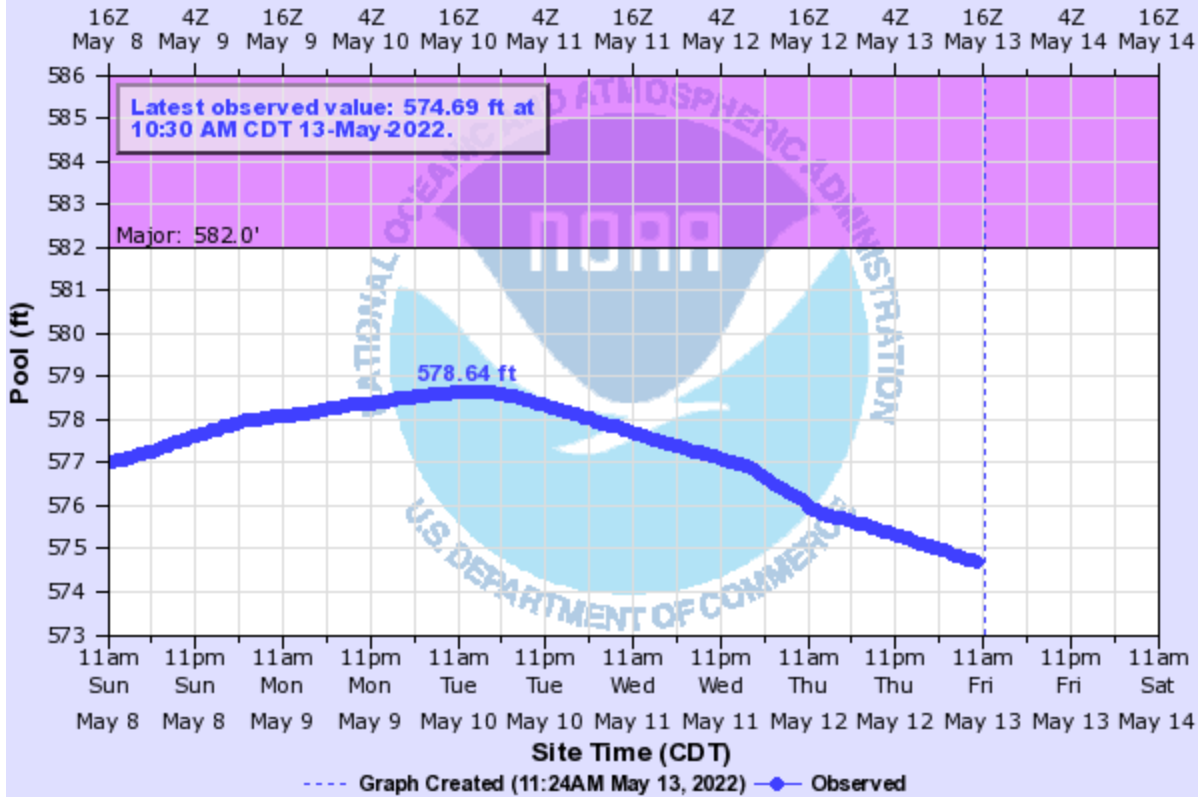


GIBO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT FT. GIBSON LAKE

Universal Time (UTC)

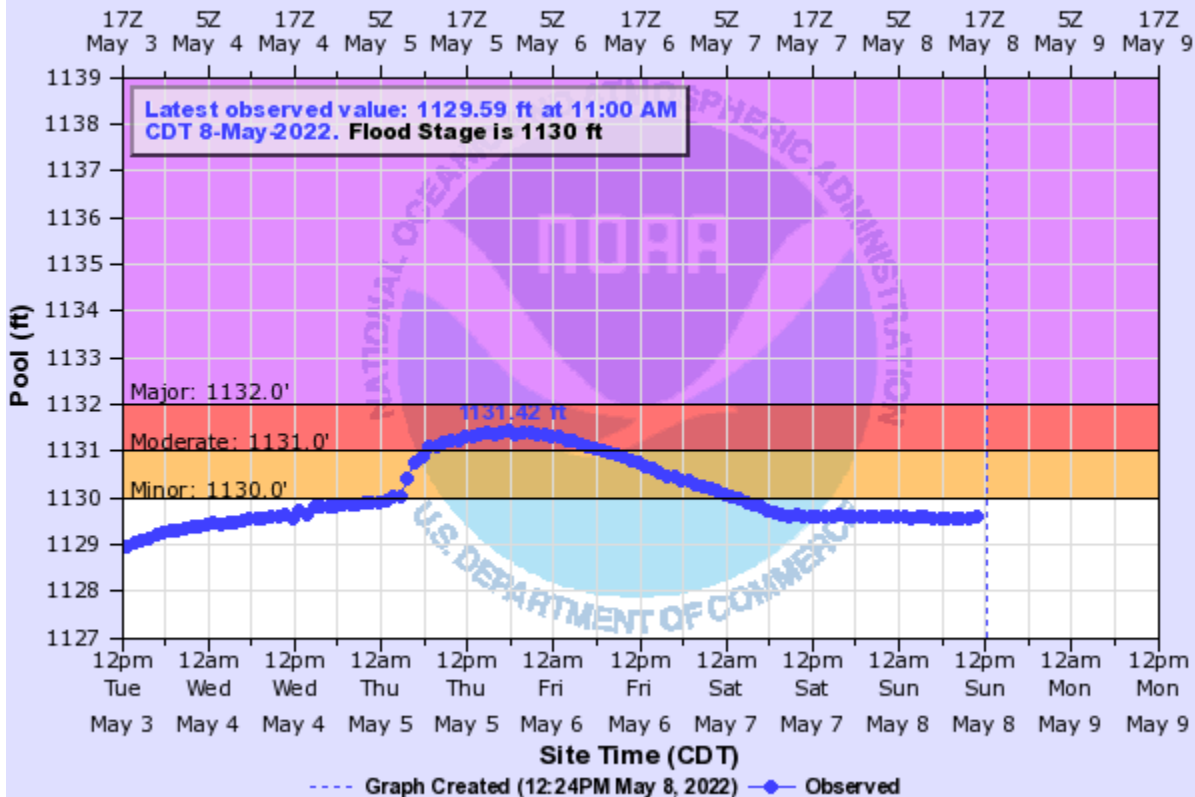


GIBO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

NORTHWEST ARKANSAS LAKES AT BEAVER LAKE

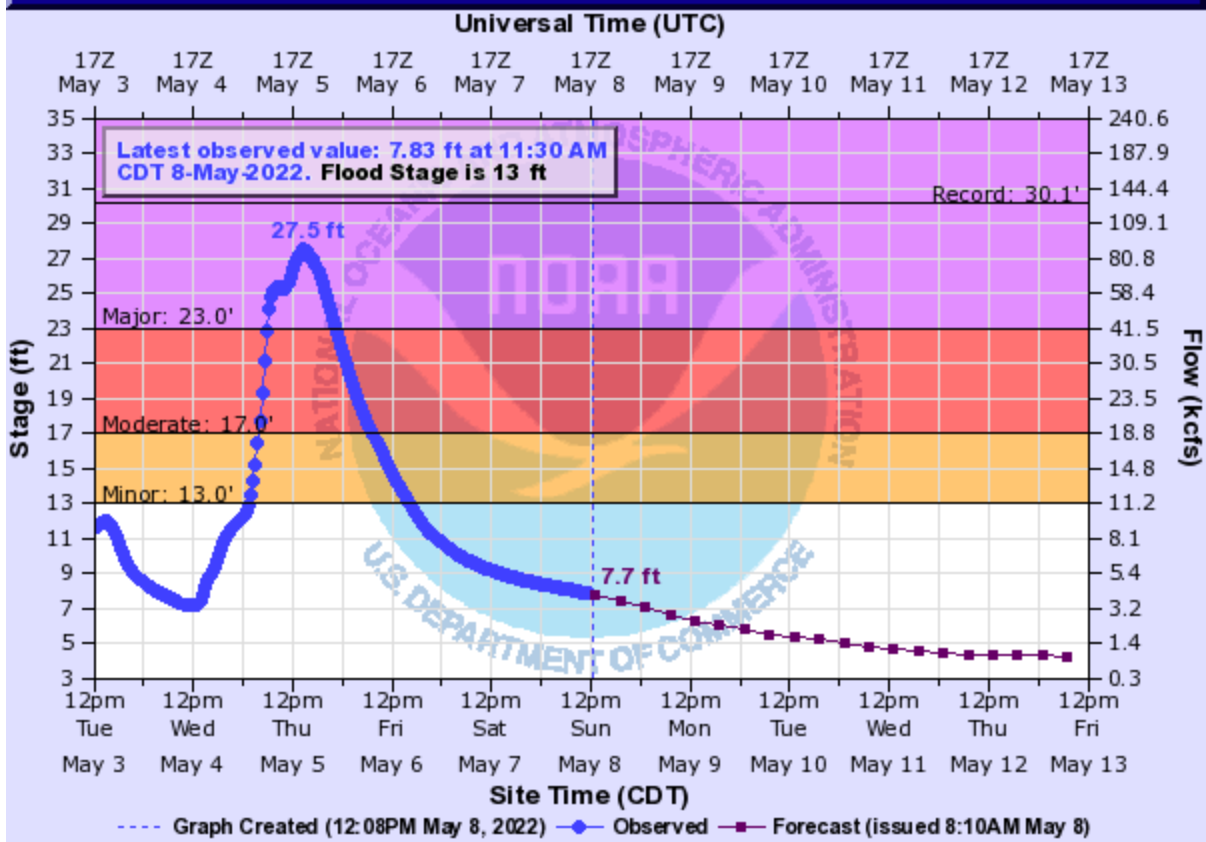
Universal Time (UTC)



BVGA4(plotting HPIRG) "Gage 0" Datum: n/a

Observations courtesy of US Army Corps of Engineers

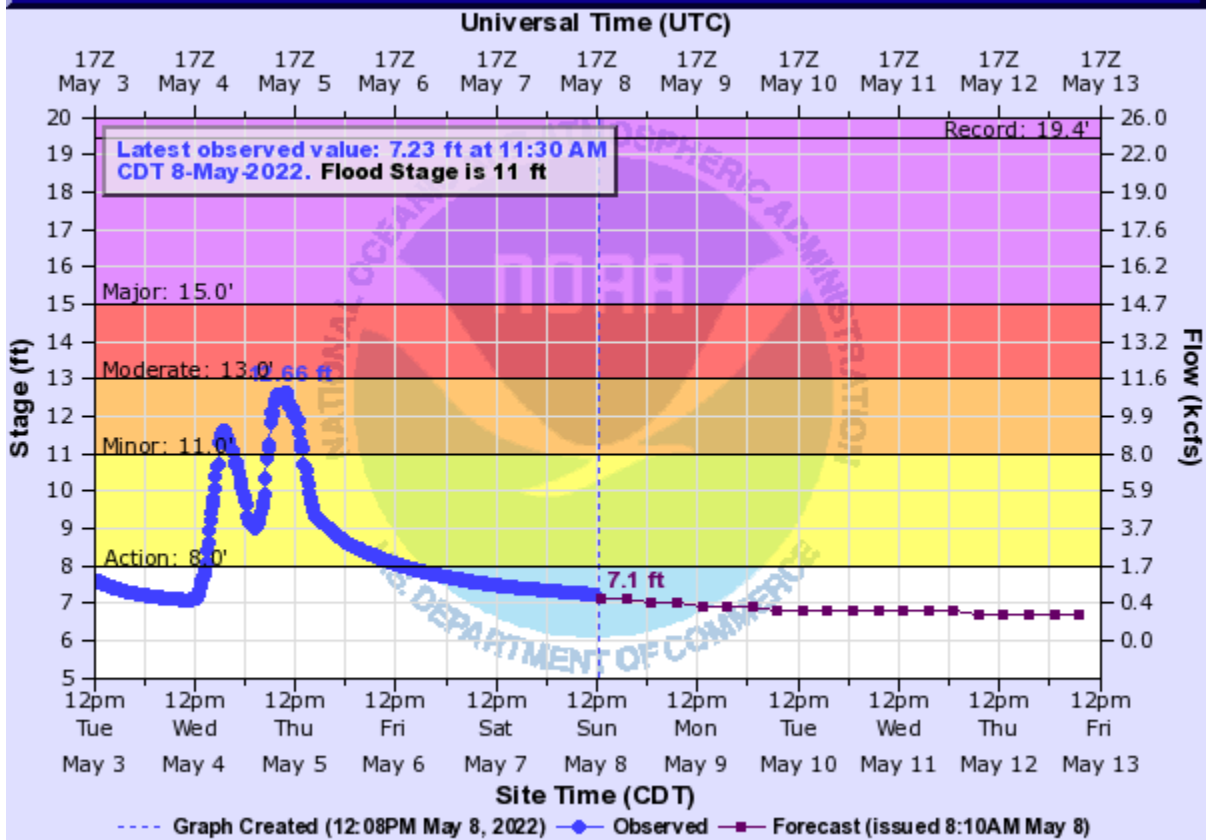
ILLINOIS RIVER (AR OK) NEAR WATTS



WTT02(plotting HGIRG) "Gage 0" Datum: 893.78'

Observations courtesy of US Geological Survey

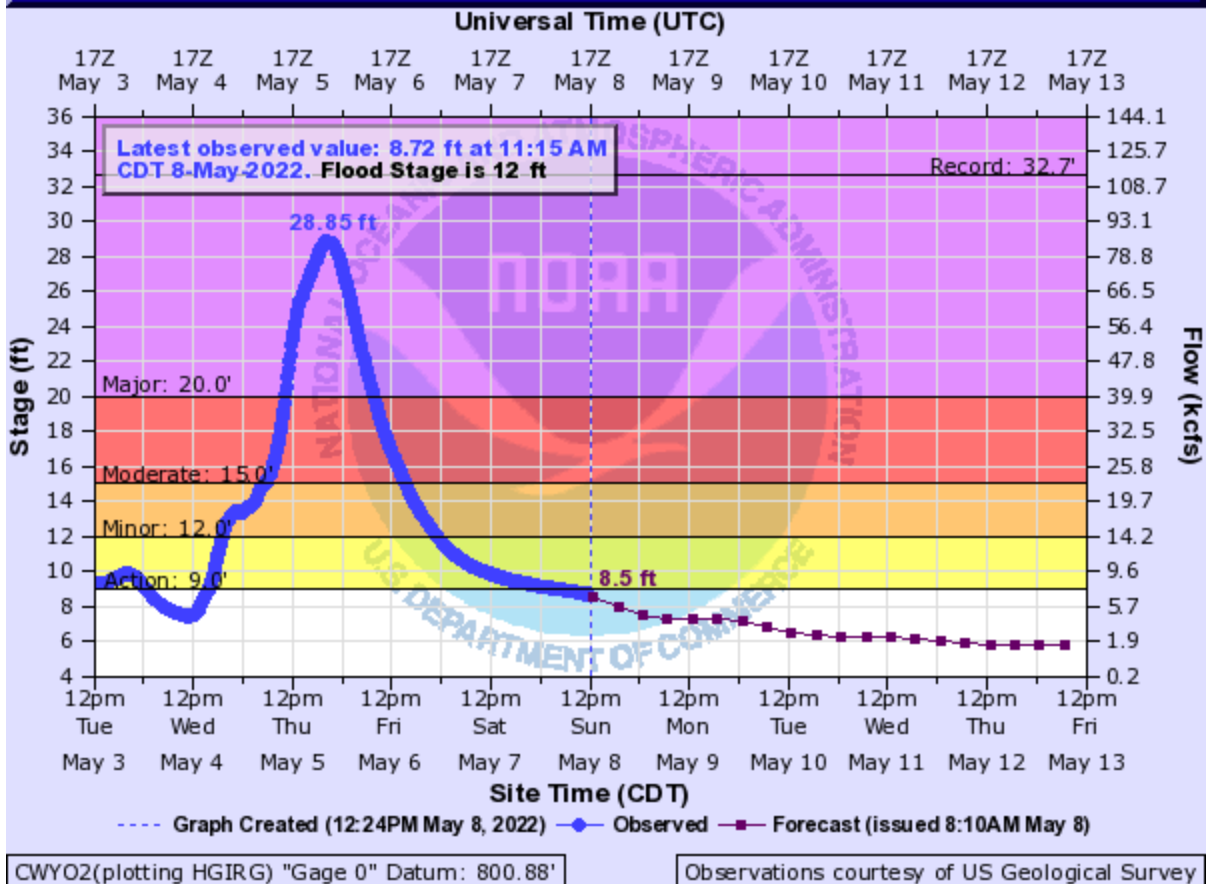
FLINT CREEK (OK) NEAR KANSAS



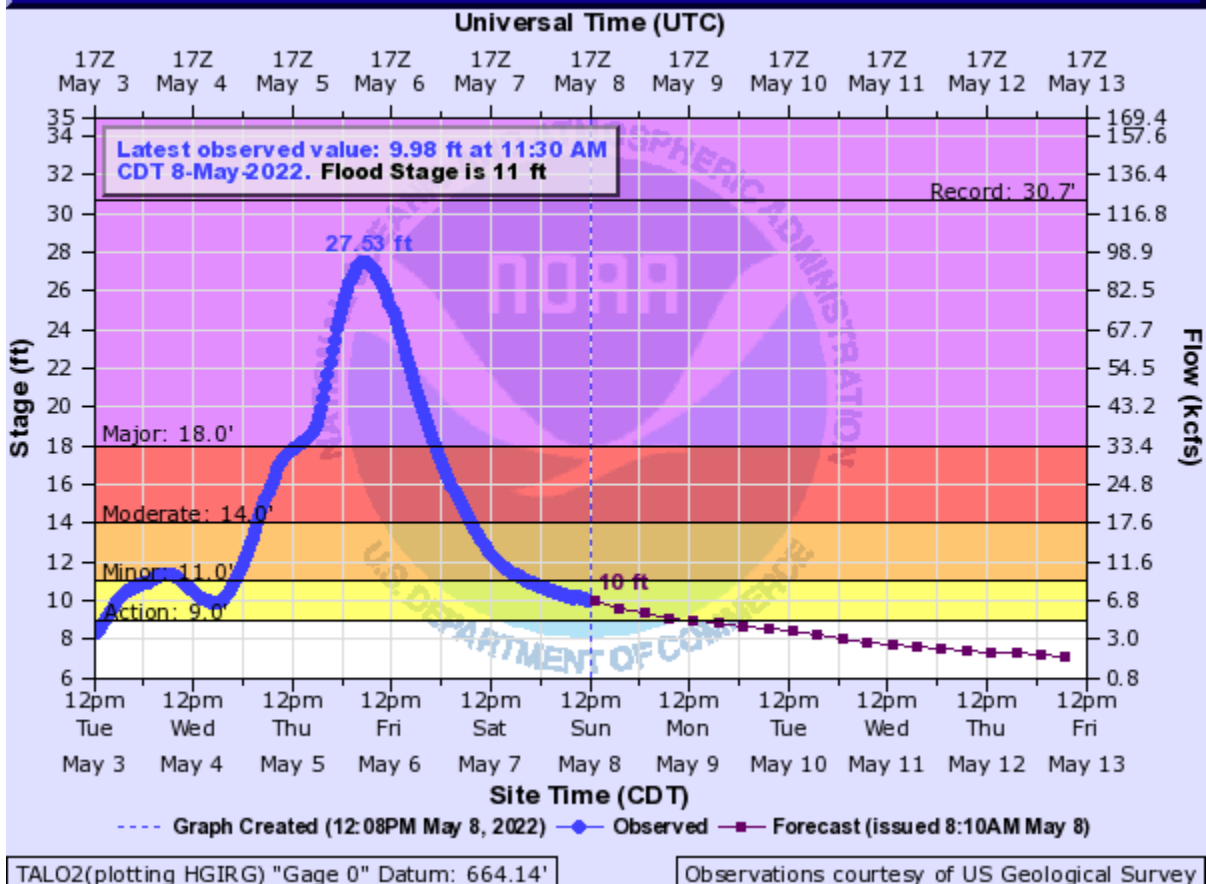
KNS02(plotting HGIRG) "Gage 0" Datum: 854.59'

Observations courtesy of US Geological Survey

ILLINOIS RIVER (AR OK) AT CHEWEY

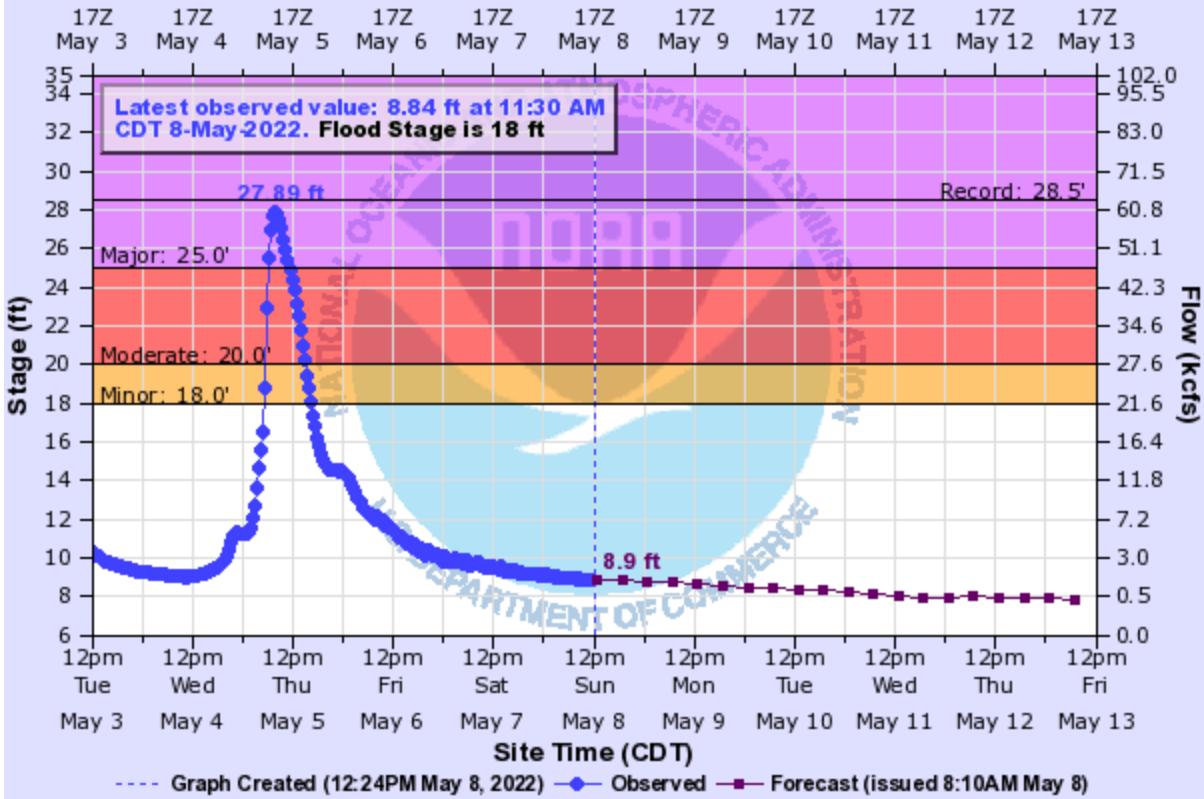


ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH



BARON FORK AT ELDON

Universal Time (UTC)

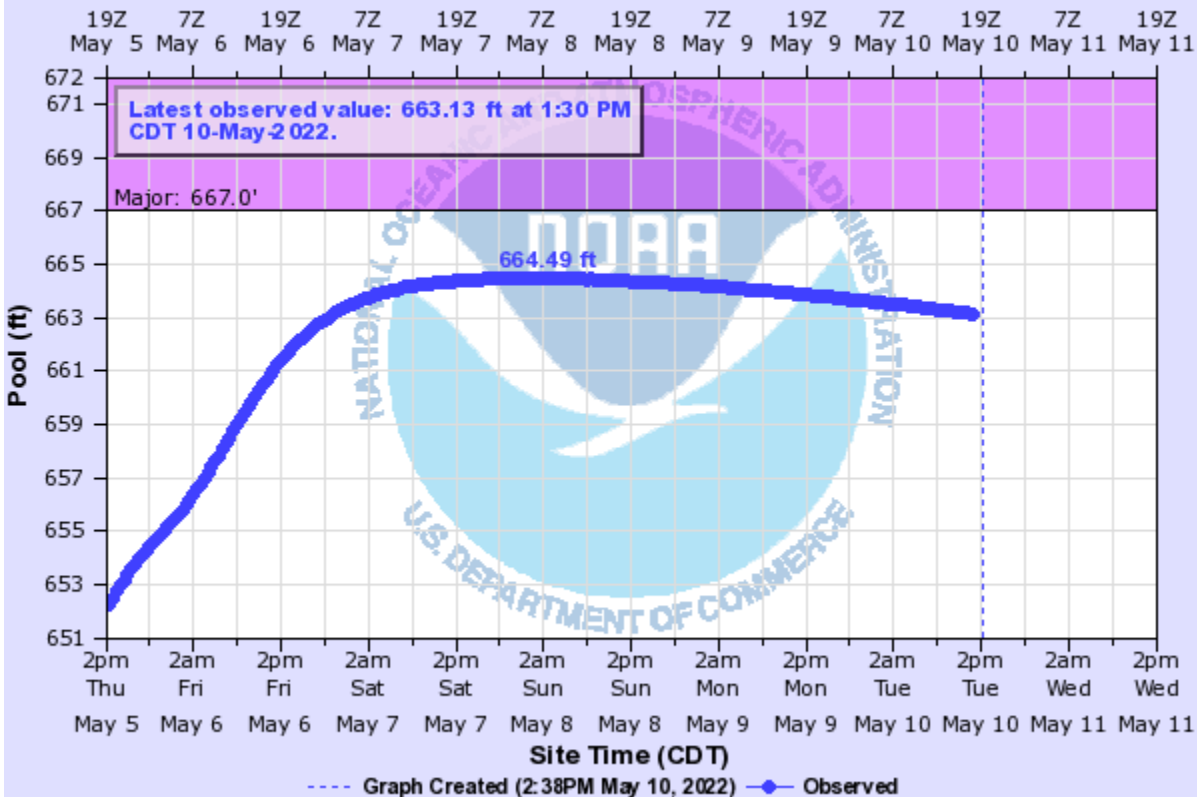


ELDO2(plotting HGIRG) "Gage 0" Datum: 701.14'

Observations courtesy of US Geological Survey

EASTERN OKLAHOMA LAKES AT TENKILLER LAKE

Universal Time (UTC)

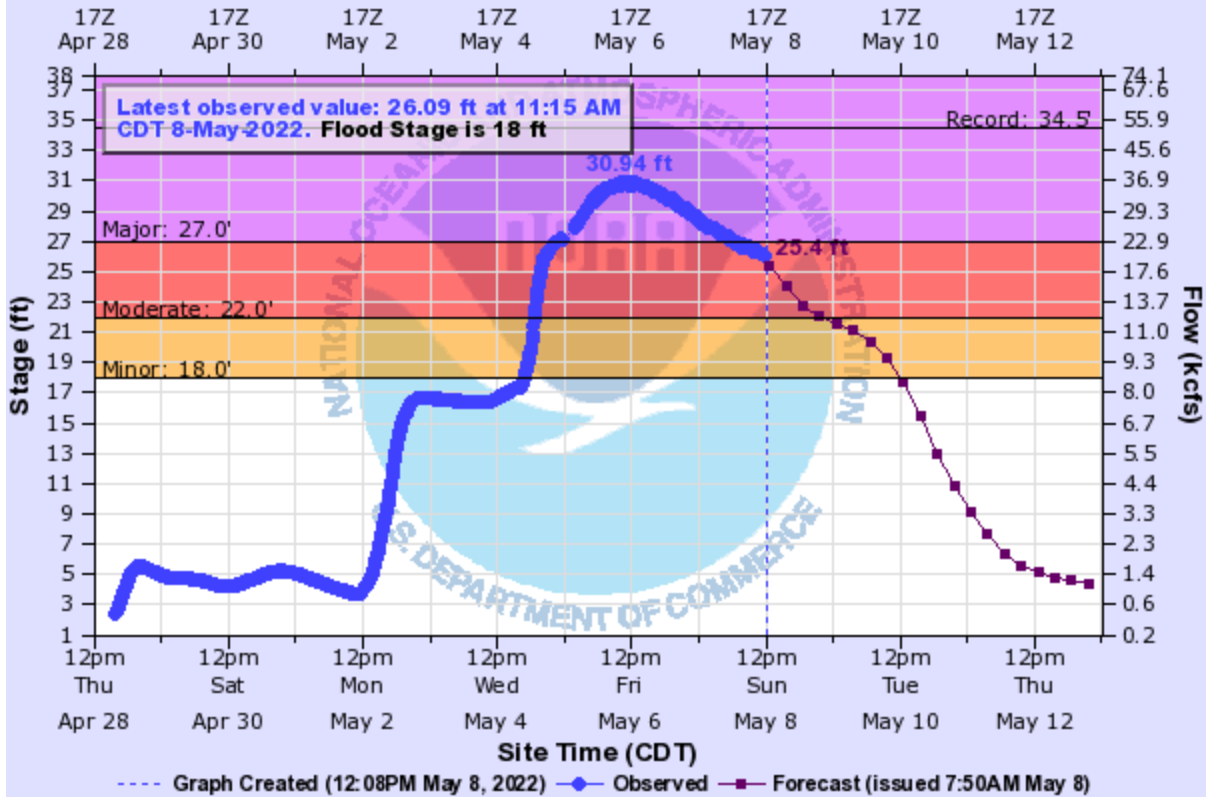


TENO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

DEEP FORK RIVER NEAR BEGGS

Universal Time (UTC)

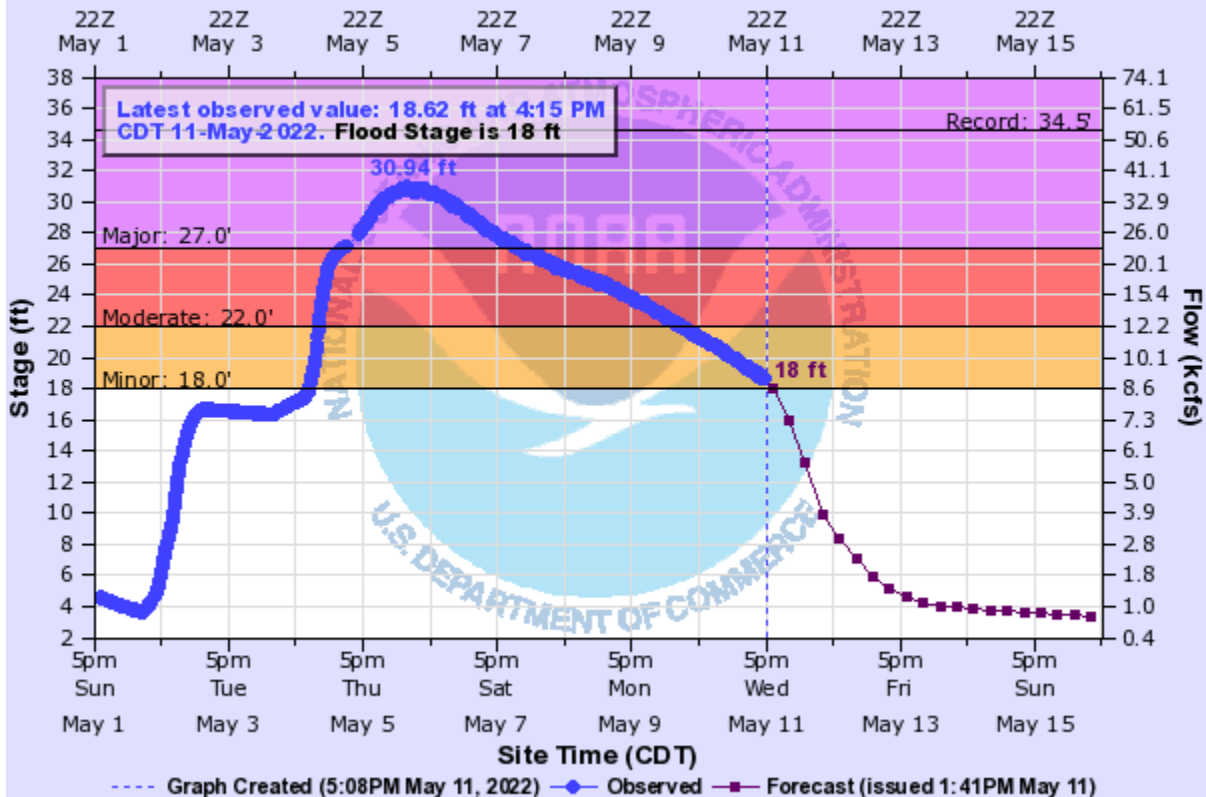


BGSO2(plotting HGIRG) "Gage 0" Datum: 632.55'

Observations courtesy of US Geological Survey

DEEP FORK RIVER NEAR BEGGS

Universal Time (UTC)

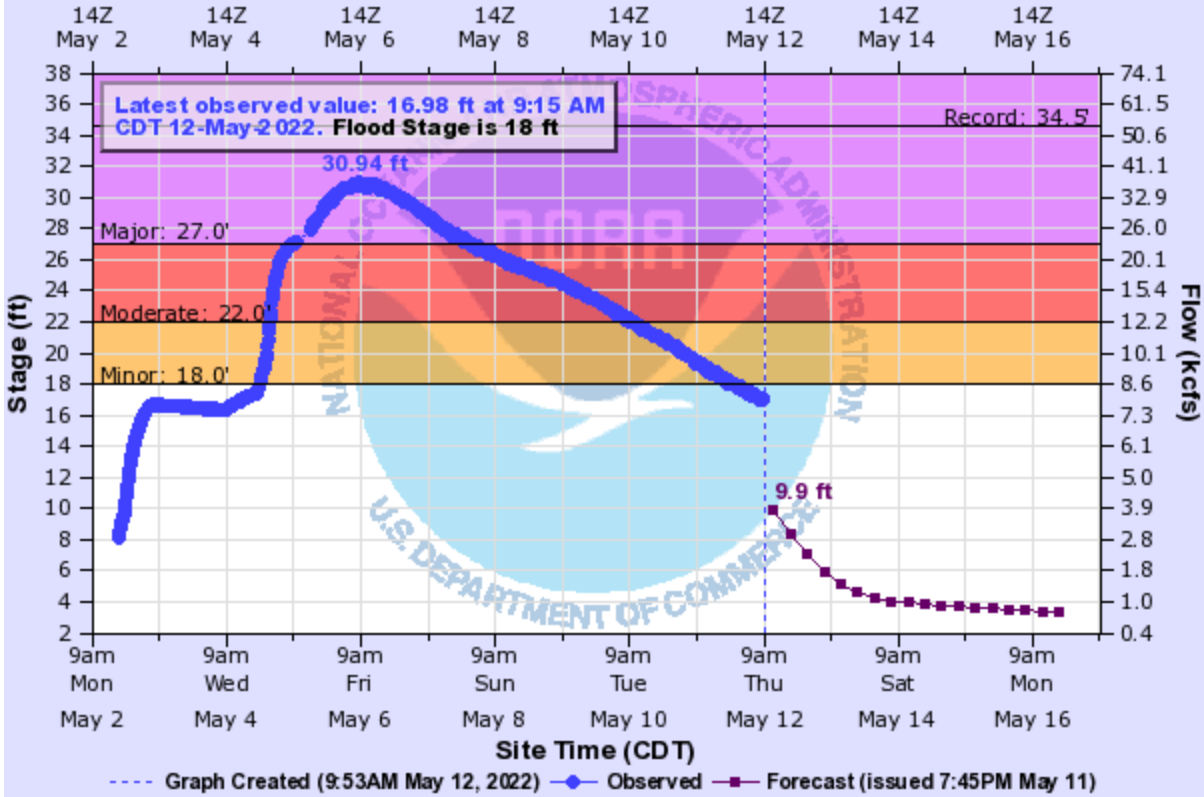


BGSO2(plotting HGIRG) "Gage 0" Datum: 632.55'

Observations courtesy of US Geological Survey

DEEP FORK RIVER NEAR BEGGS

Universal Time (UTC)

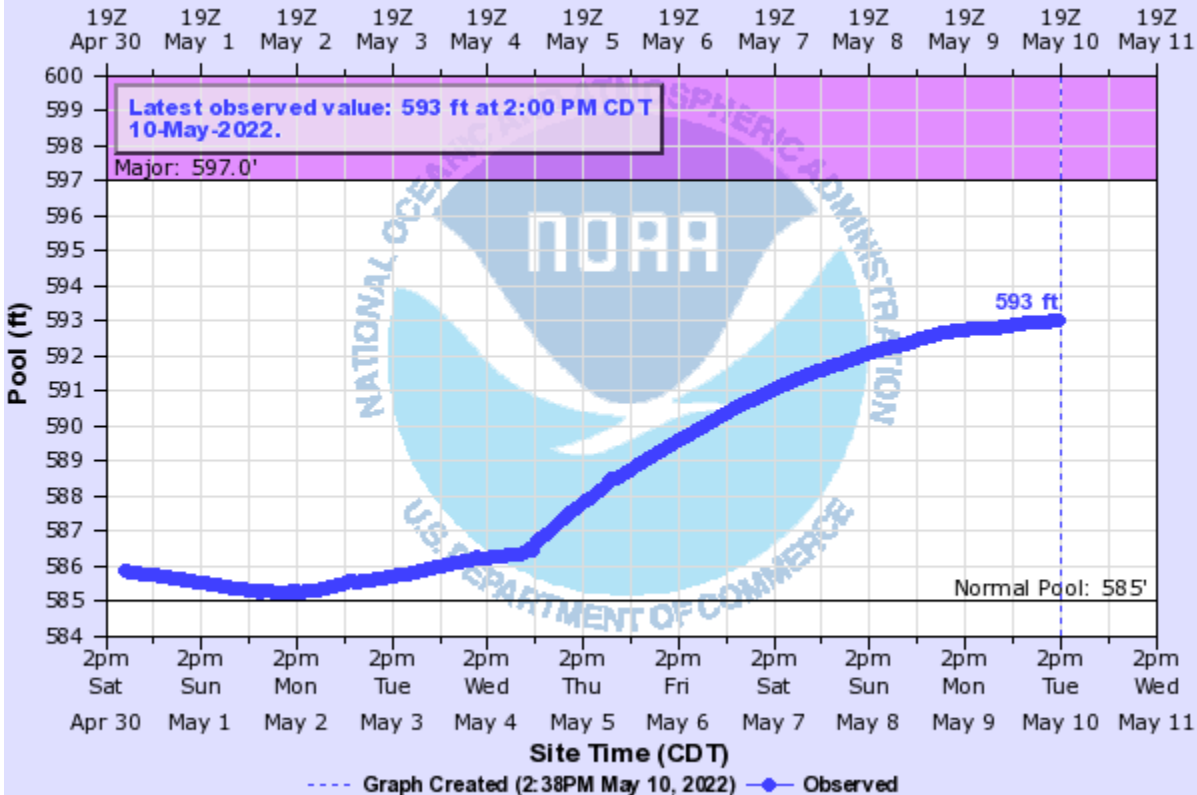


BGSO2(plotting HGIRG) "Gage 0" Datum: 632.55'

Observations courtesy of US Geological Survey

EASTERN OKLAHOMA LAKES AT EUFALA LAKE

Universal Time (UTC)

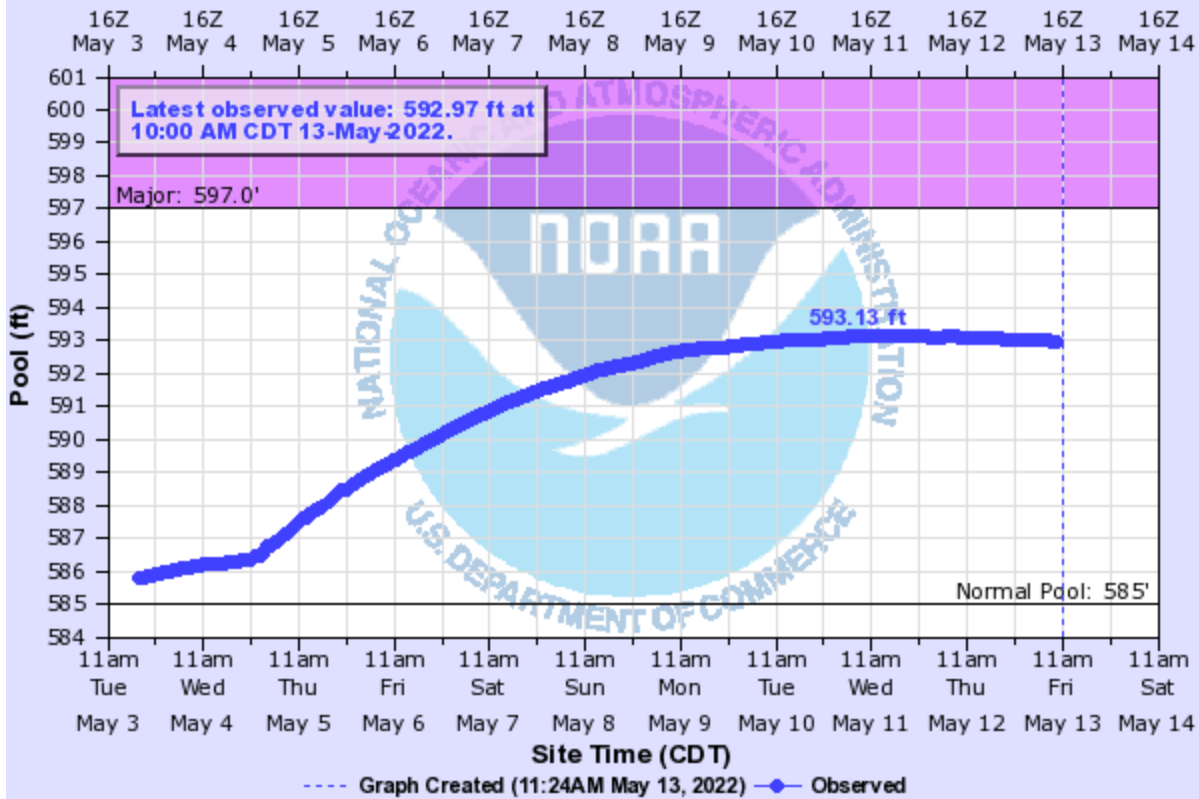


EUFO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT EUFALA LAKE

Universal Time (UTC)

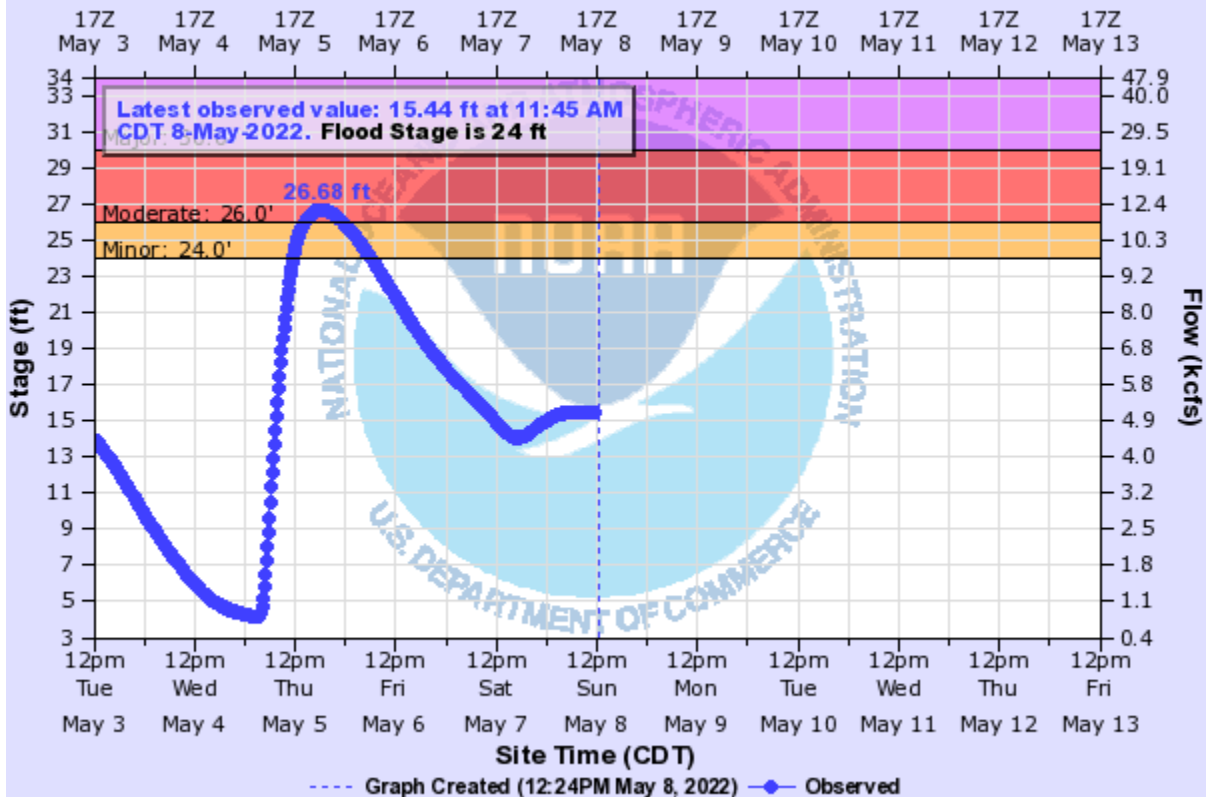


EUF02(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

POTEAU RIVER NEAR POTEAU

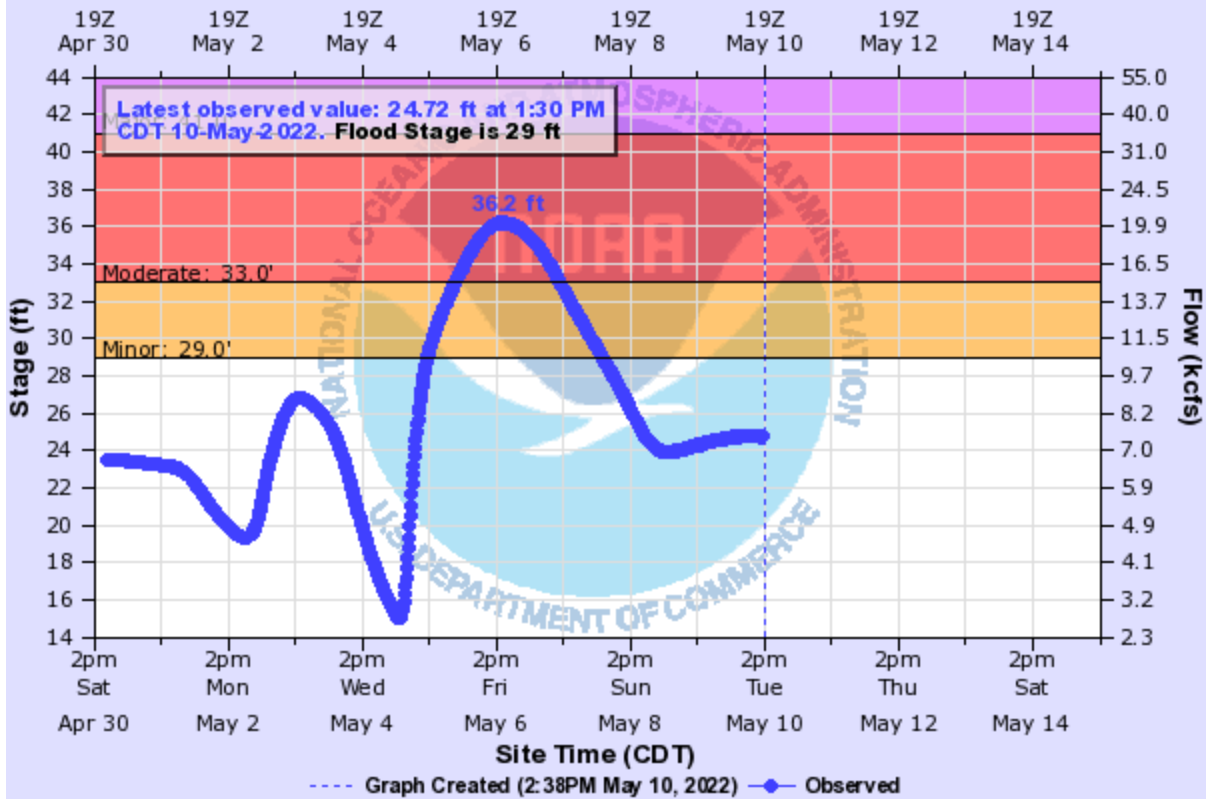
Universal Time (UTC)



PTAO2(plotting HGIRG) "Gage 0" Datum: 409.4'

POTEAU RIVER NEAR PANAMA

Universal Time (UTC)

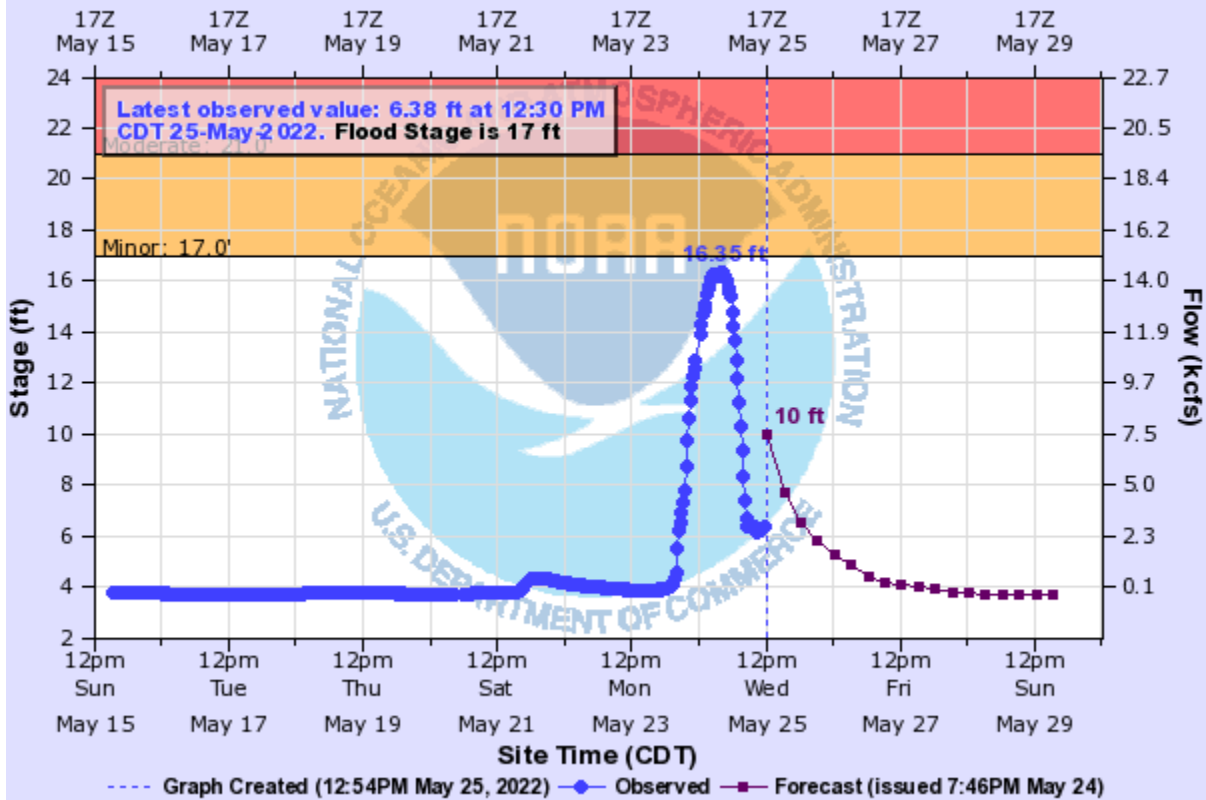


PANO2(plotting HGIRG) "Gage 0" Datum: 387.96'

Observations courtesy of US Geological Survey

BIRD CREEK AT AVANT

Universal Time (UTC)

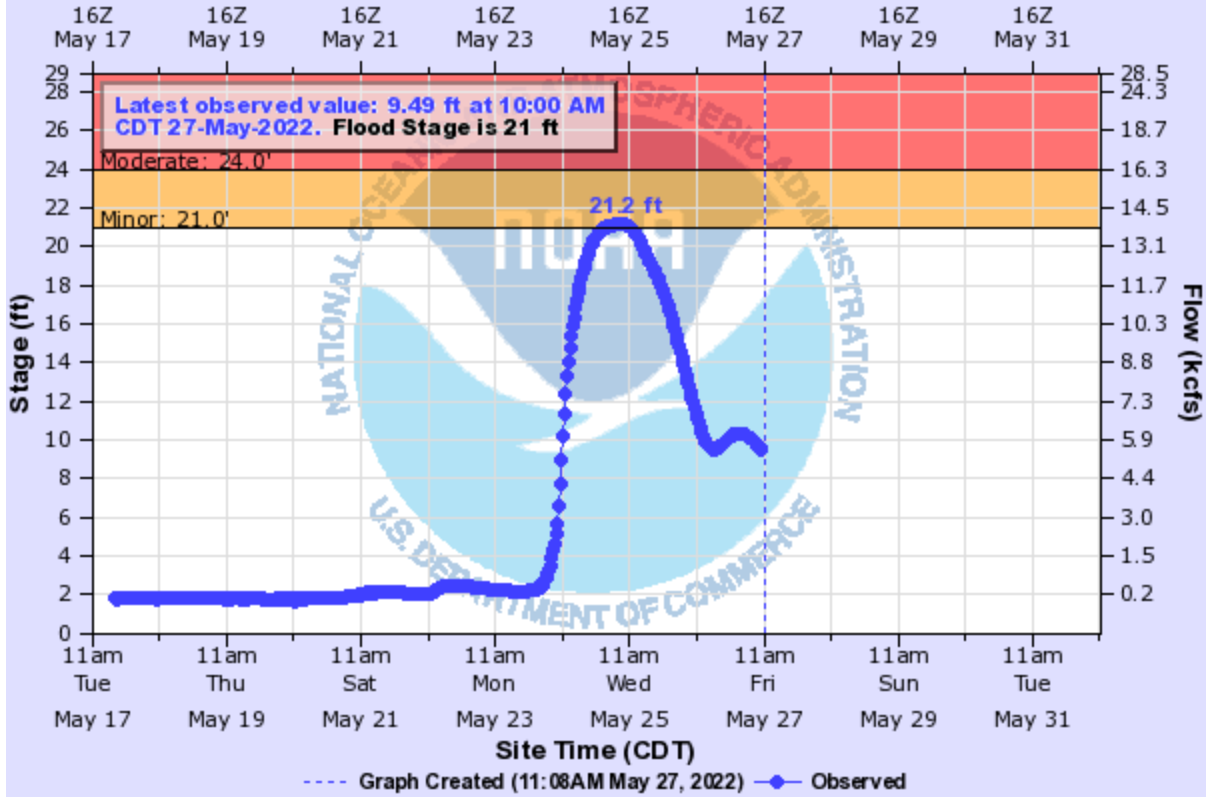


AVT02(plotting HGIRG) "Gage 0" Datum: 646.28'

Observations courtesy of US Geological Survey

BIRD CREEK NEAR SPERRY

Universal Time (UTC)

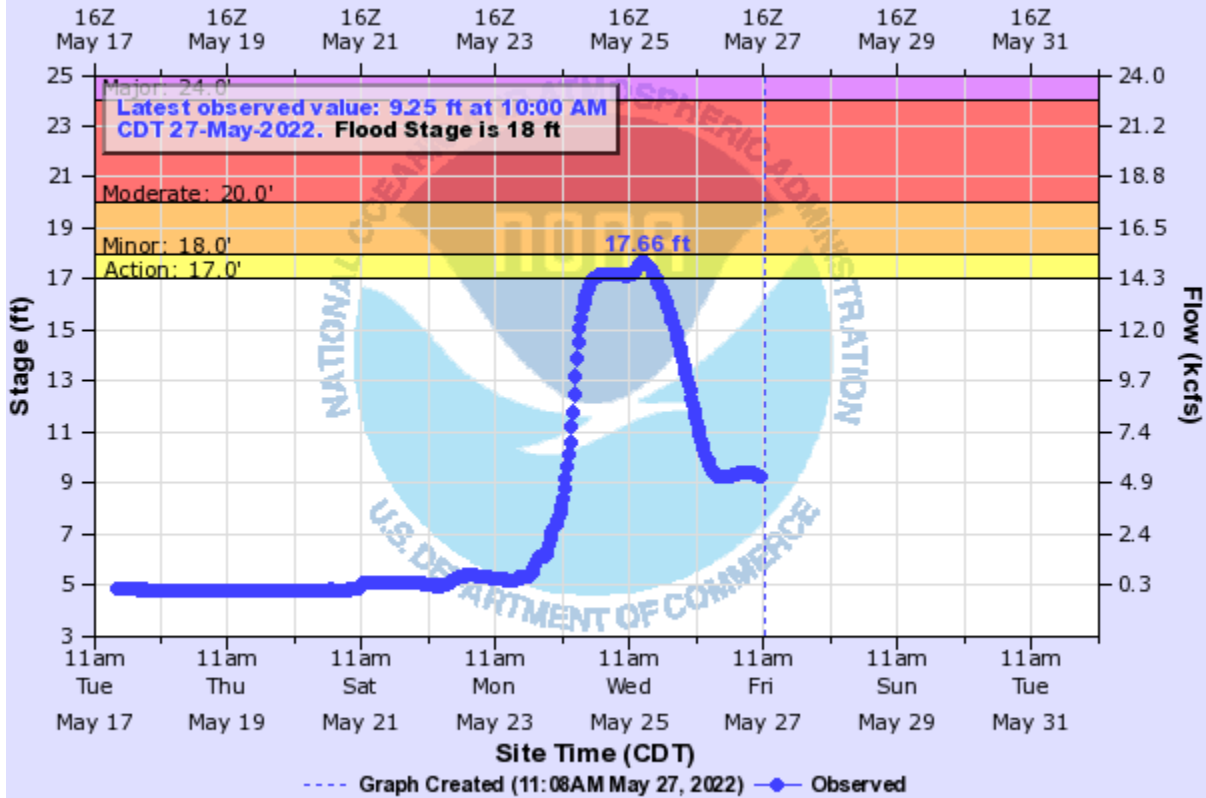


SPEO2(plotting HGIRG) "Gage 0" Datum: 579.43'

Observations courtesy of US Geological Survey

BIRD CREEK NEAR OWASSO

Universal Time (UTC)

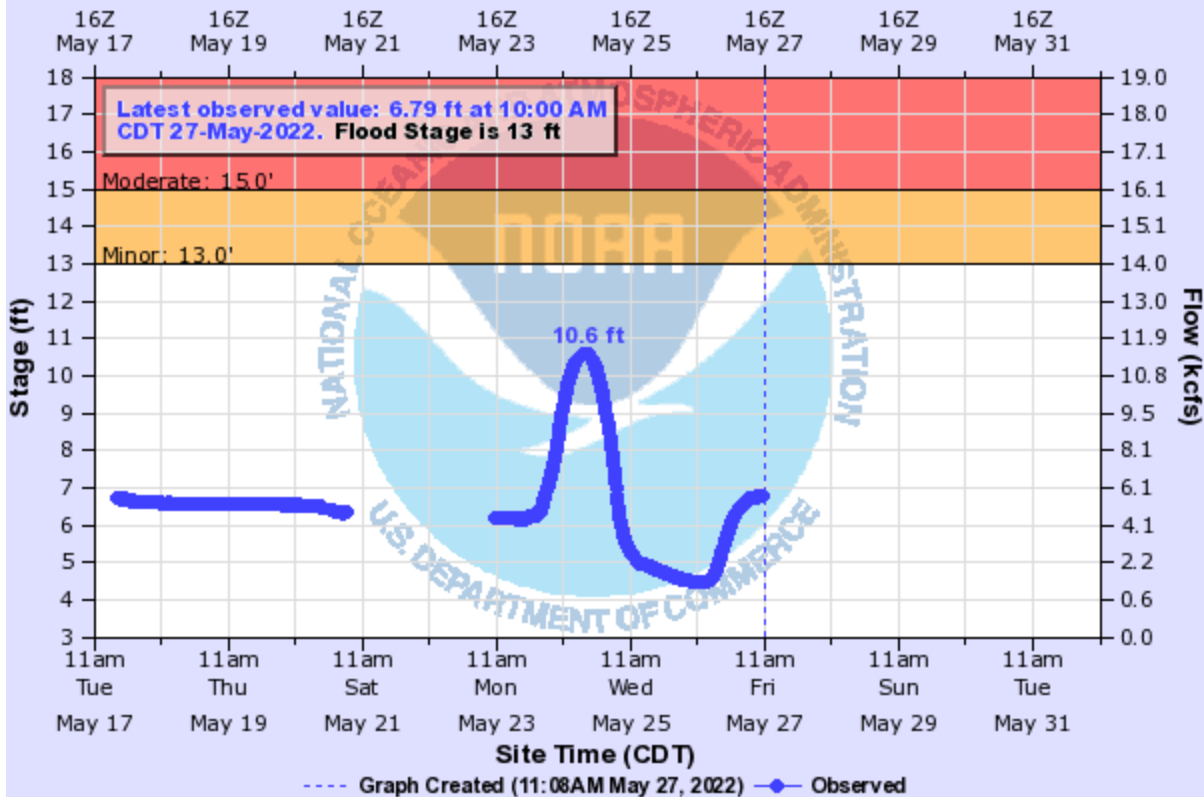


OWSO2(plotting HGIRG) "Gage 0" Datum: 560.17'

Observations courtesy of US Geological Survey

CANEY RIVER AT BARTLESVILLE

Universal Time (UTC)

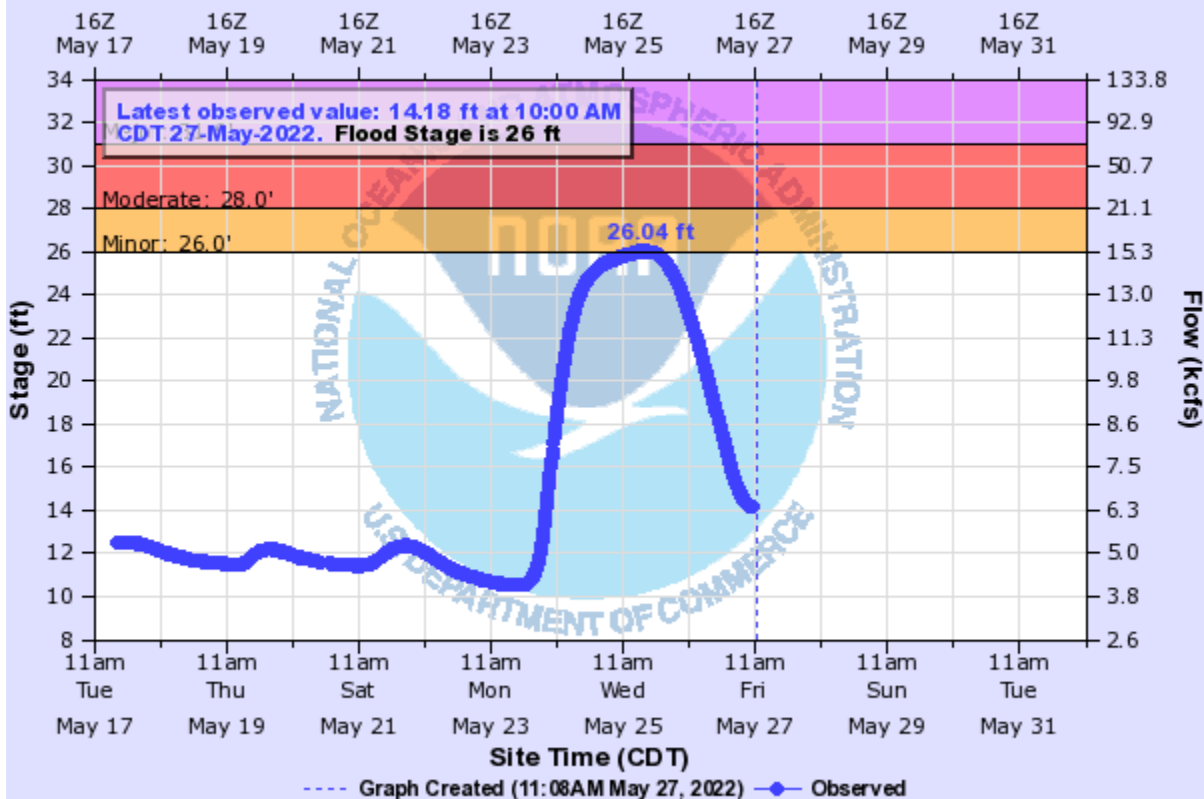


BVLO2(plotting HGIRG) "Gage 0" Datum: 653.33'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR RAMONA

Universal Time (UTC)

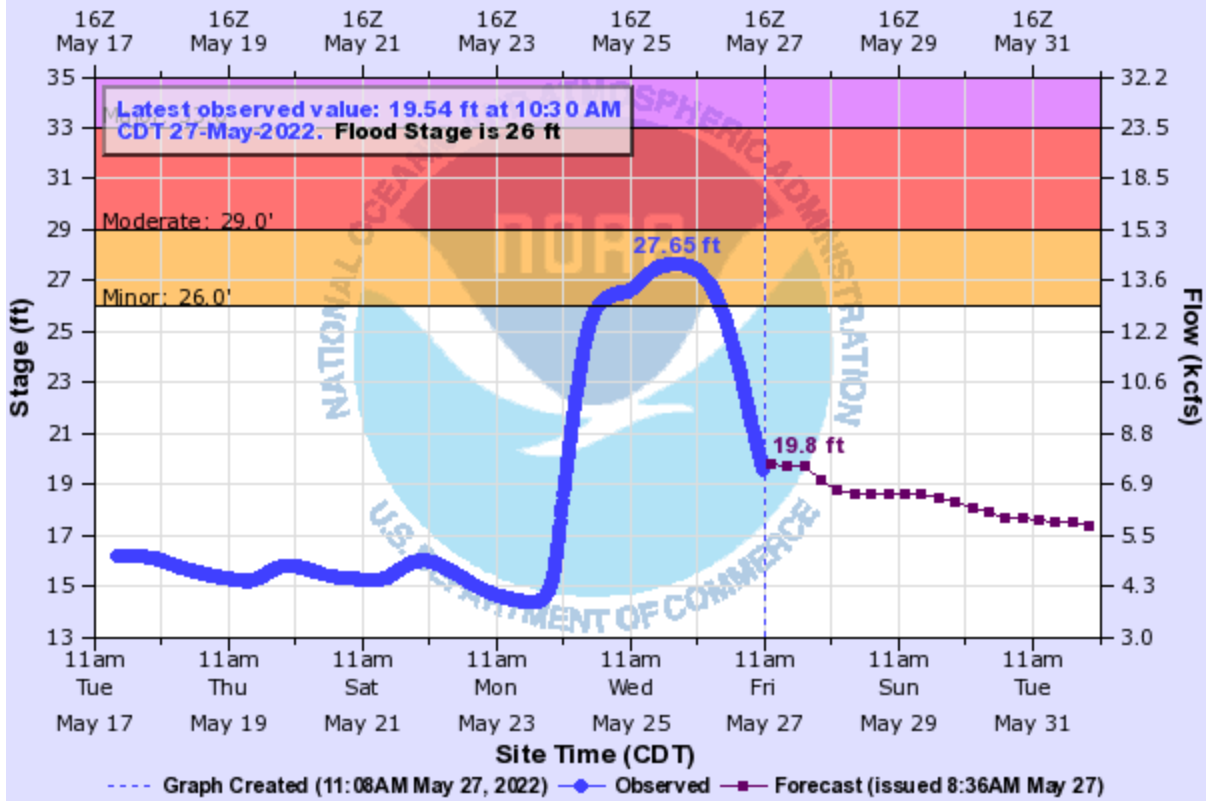


RAMO2(plotting HGIRG) "Gage 0" Datum: 586.43'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR COLLINSVILLE

Universal Time (UTC)



CVL02(plotting HGIRG) "Gage 0" Datum: 565.72'