

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 2017
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 22, 2017

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

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

Widespread heavy rain and flooding continued through May 2017, with several storm systems affecting eastern OK and northwest AR this month. 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 <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 May 2017 ranged from around 0.50" to 2" for much of Choctaw and Pushmataha Counties, and 3"-15" elsewhere across eastern OK and northwest AR. The highest totals were from Okfuskee County northeast to Ottawa County. This corresponds to 10% to near 200% of the normal May rainfall across the region (Fig. 1b).

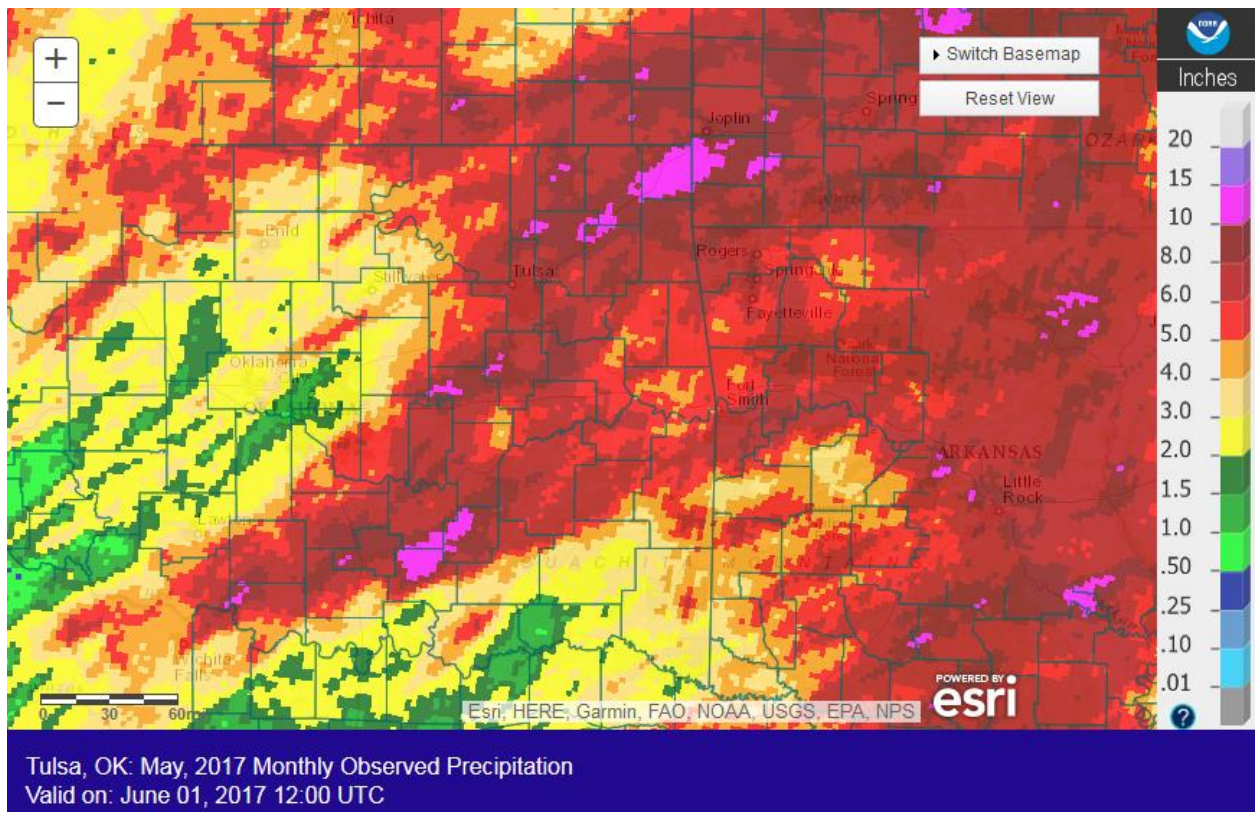


Fig. 1a. Estimated Observed Rainfall for May 2017

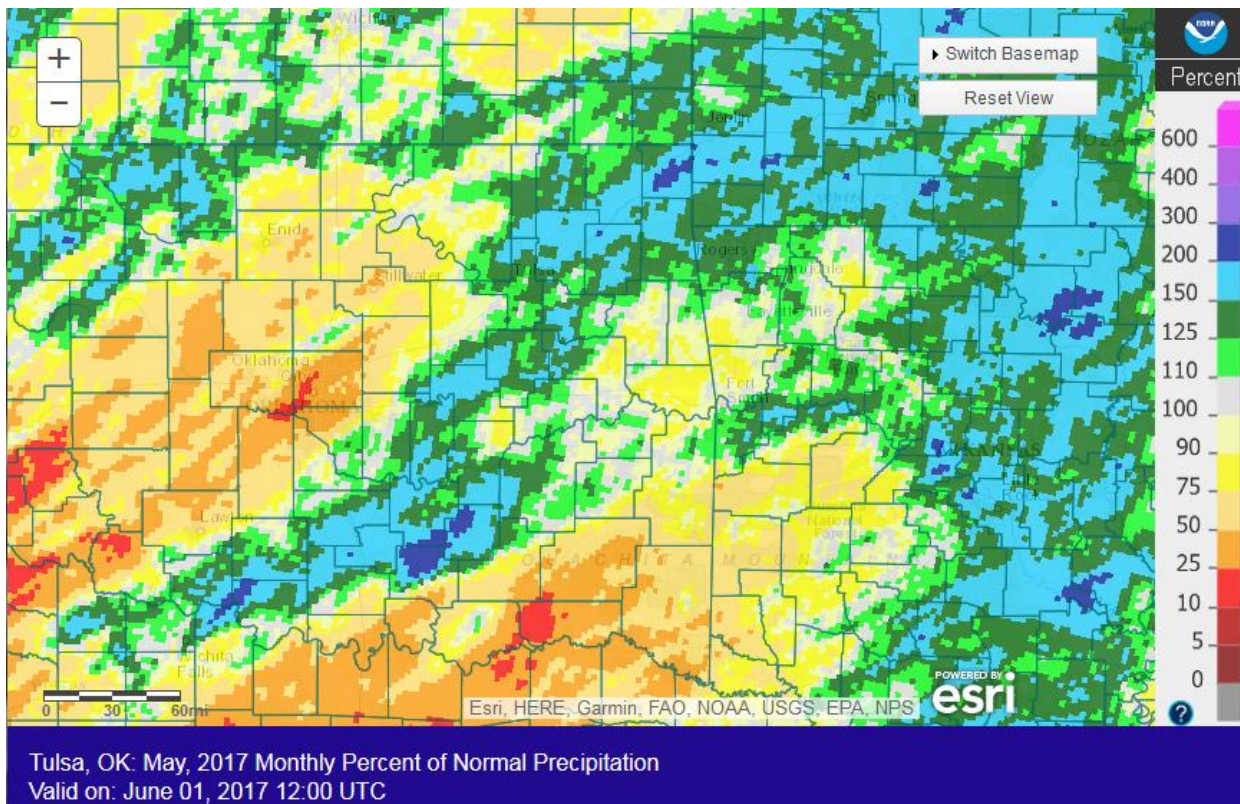


Fig. 1b. Estimated % of Normal Rainfall for May 2017

In Tulsa, OK, May 2017 ranked as the 54th coldest May (68.9°F, tied 1951, 1948; since records began in 1905) and the 32nd wettest May (7.12"; since records began in 1888). Fort Smith, AR had the 62nd warmest May (70.0°F, tied 2008; since records began in 1883) and the 33rd wettest May (6.45", tied 1950; since records began in 1883). Fayetteville, AR had the 22nd coldest (63.9°F, tied 2002) and the 27th wettest (6.24") May since records began in 1950.

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

Pryor 6.9ESE, OK (coco)	10.80	Talala 0.5W, OK (coco)	10.57	Upper Spavinaw Port, OK (coop)	10.37
Claremore 2ENE, OK (coop)	10.11	Jay 3.3NNE, OK (coco)	9.65	Nowata, OK (meso)	9.13
Vinita, OK (meso)	8.96	Jay, OK (meso)	8.65	Winslow 7NE, AR (coop)	8.59

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

Antlers, OK (meso)	2.41	Cloudy, OK (meso)	3.28	Pawnee, OK (meso)	3.74
Talihina, OK (meso)	3.78	Burbank, OK (meso)	4.46	Berryville 0.8SSW, AR (coco)	4.55
Oilton, OK (meso)	4.63	Clayton, OK (meso)	4.86	Sallisaw, OK (meso)	5.13

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

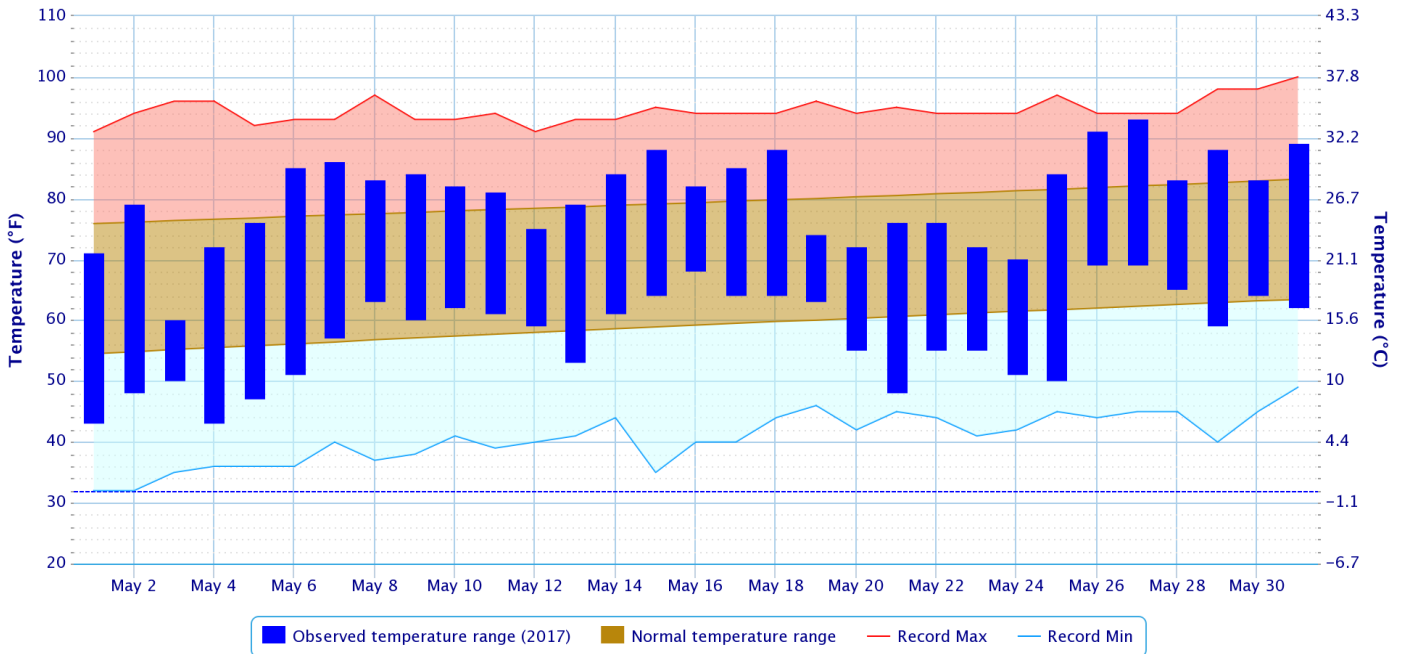
Rank since 1921	Last 30 Days (May 2 – May 31)	Last 60 Days (Apr 2 – May 31)	Spring 2017 (Mar 1 – May 31)	Last 120 Days (Feb 1 – May 31)	Year-to-Date (Jan 1 – May 31)	Last 180 Days (Dec 3 – May 31)	Water Year-to-Date (Oct 1 – May 31)	Last 365 Days (Jun 1, 2016–May 31, 2017)
Northeast OK	19 th wettest	3rd wettest	4th wettest	6th wettest	4th wettest	8th wettest	13 th wettest	26 th wettest
East Central OK	32 nd wettest	5th wettest	9th wettest	9th wettest	11 th wettest	21 st wettest	46 th wettest	39 th driest
Southeast OK	26 th driest	44 th wettest	43 rd driest	38 th driest	42 nd driest	26 th driest	15 th driest	12 th driest
Statewide	46 th wettest	11 th wettest	15 th wettest	11 th wettest	10th wettest	17 th wettest	37 th wettest	40 th wettest

Spring (March-April-May) 2017

In Tulsa, OK, Spring 2017 ranked as the 14th warmest Spring (62.7°F; since records began in 1905) and the 11th wettest Spring (17.26"; since records began in 1888). The 2016-17 cold season snowfall ranked as the 6th least snowy with 0.7" (since records began in 1900-01). Fort Smith, AR had the 4th warmest Spring (64.3°F; since records began in 1883) and the 24th wettest Spring (17.26"; since records began in 1883). The 2016-17 cold season snowfall ranked as the 90th snowy with 2.0" (tied 1887-88, 1995-96, 2006-07, 2011-12; since records began in 1883-84). Fayetteville, AR had the 12th warmest (58.9°F) and the 4th wettest (25.05) Spring since records began in 1950. The 2016-17 cold season snowfall ranked as the 9th least snowy with 1.0" (tied 1956-57, 2008-09; since records began in 1949-50).

Daily Temperature Data – Tulsa Area, OK (ThreadEx)

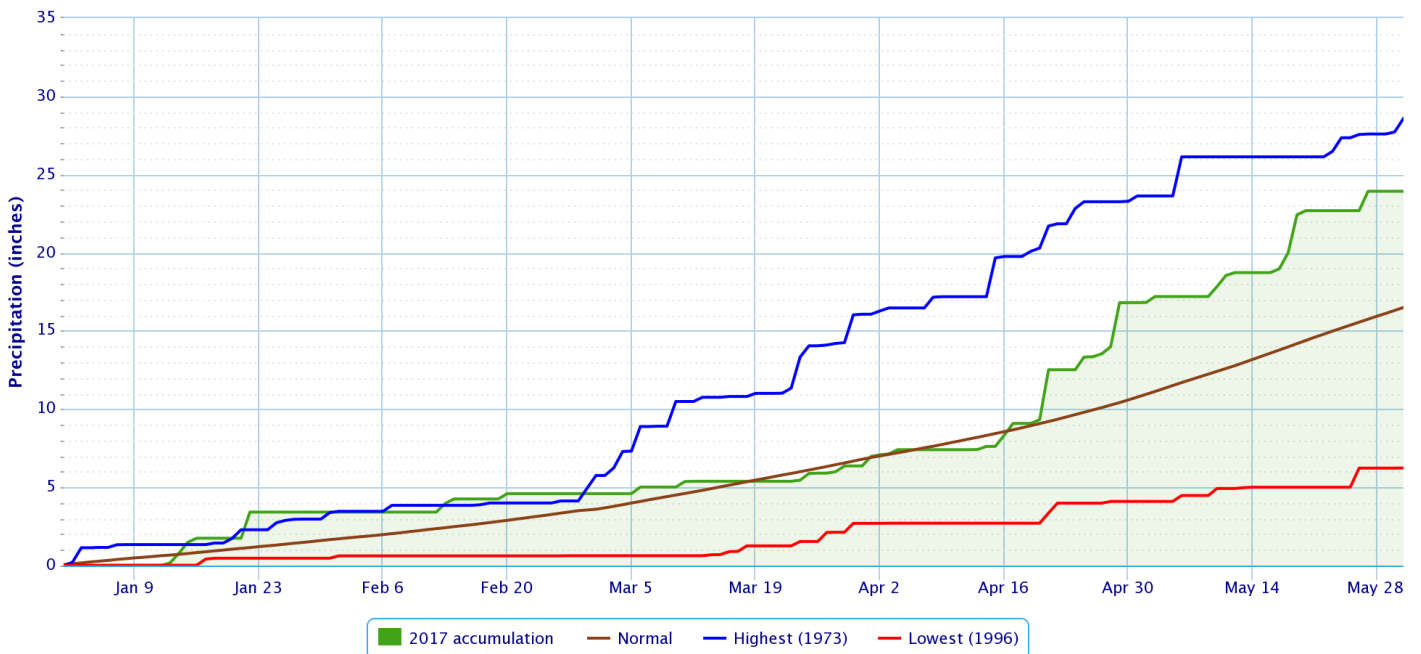
Period of Record – 1905-01-06 to 2017-05-31. Normals period: 1981-2010. Click and drag to zoom chart.



Powered by ACIS

Accumulated Precipitation – Tulsa Area, OK (ThreadEx)

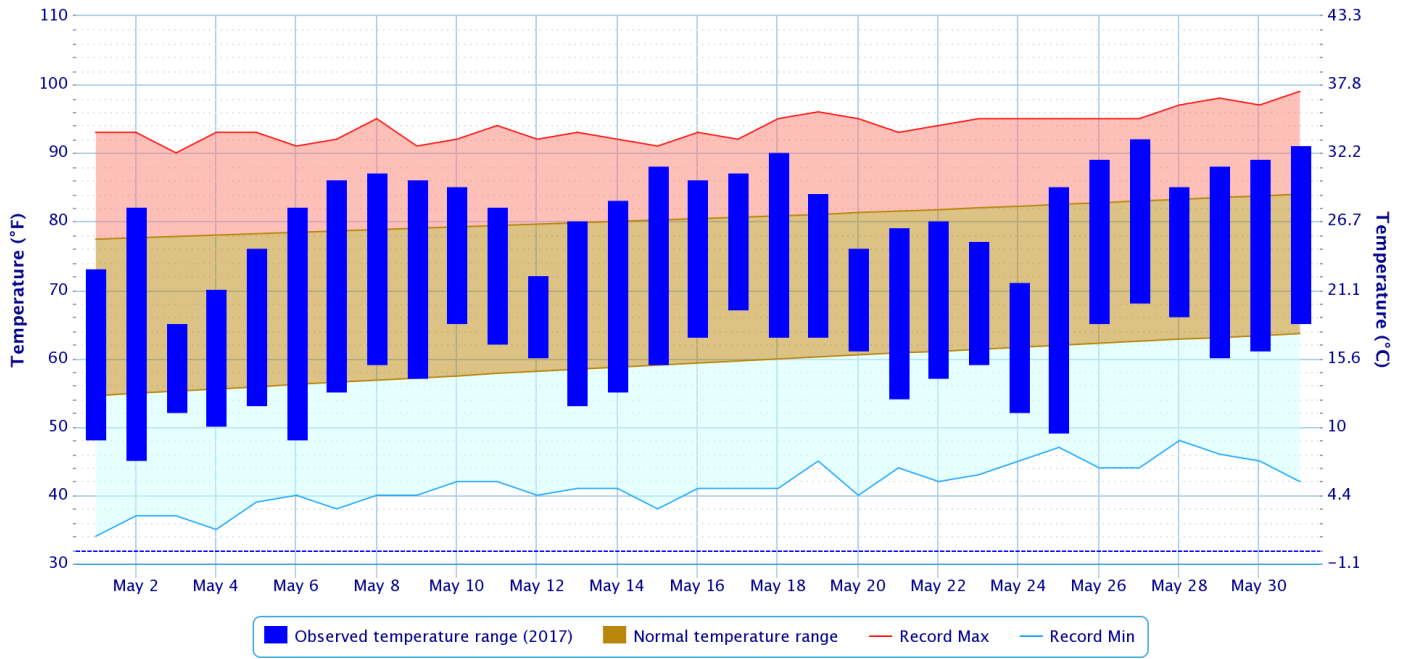
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

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

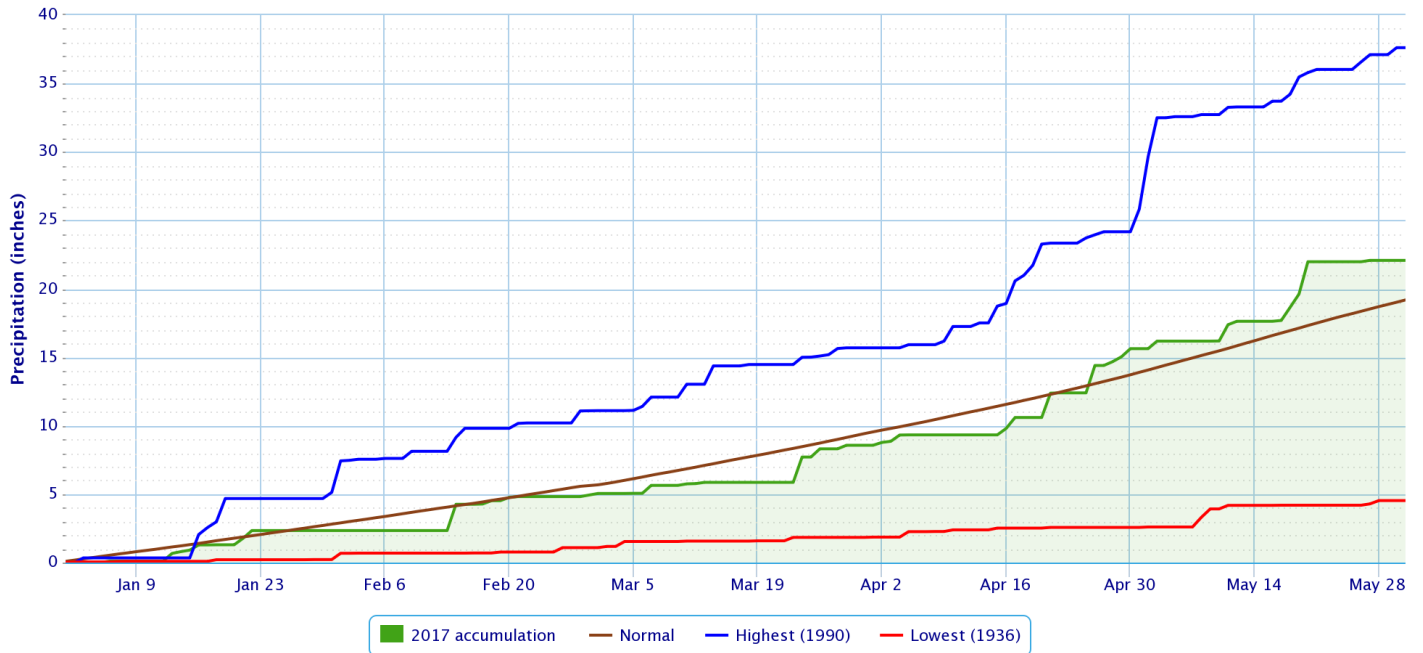
Period of Record – 1882-06-01 to 2017-05-31. Normals period: 1981-2010. Click and drag to zoom chart.



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Accumulated Precipitation – Fort Smith Area, AR (ThreadEx)

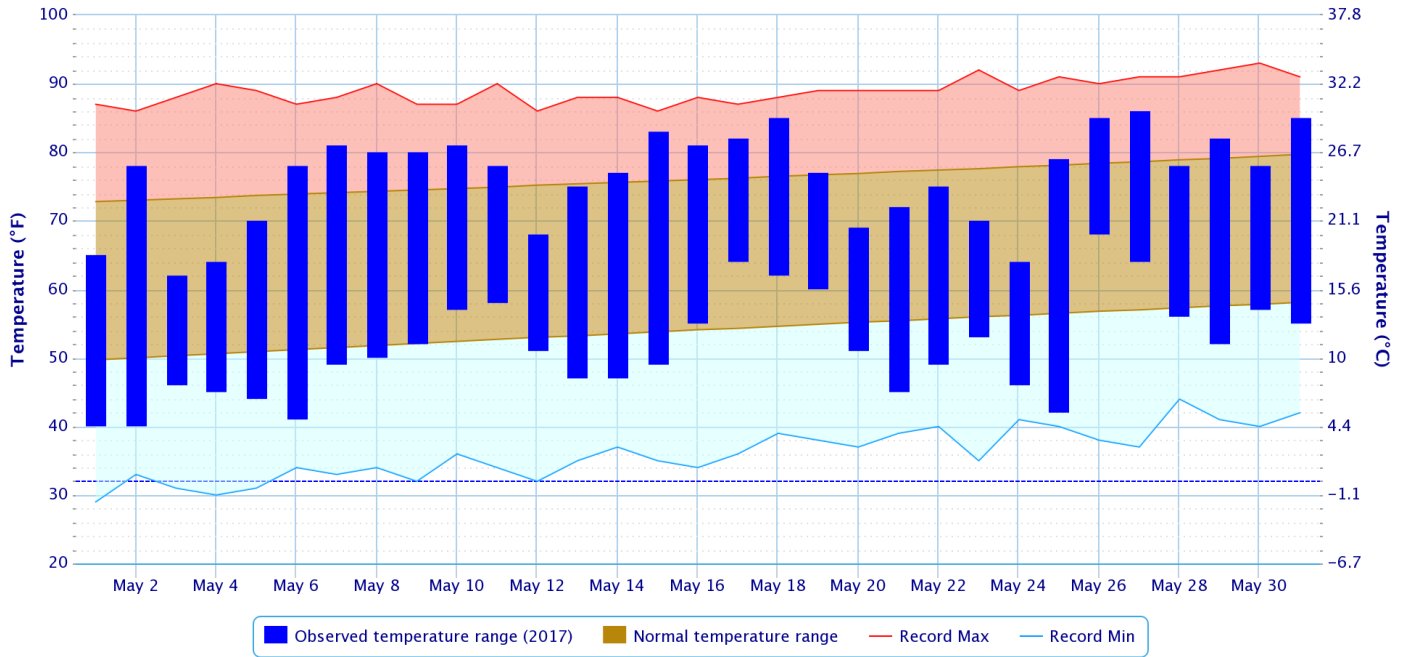
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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Daily Temperature Data – FAYETTEVILLE DRAKE FLD, AR

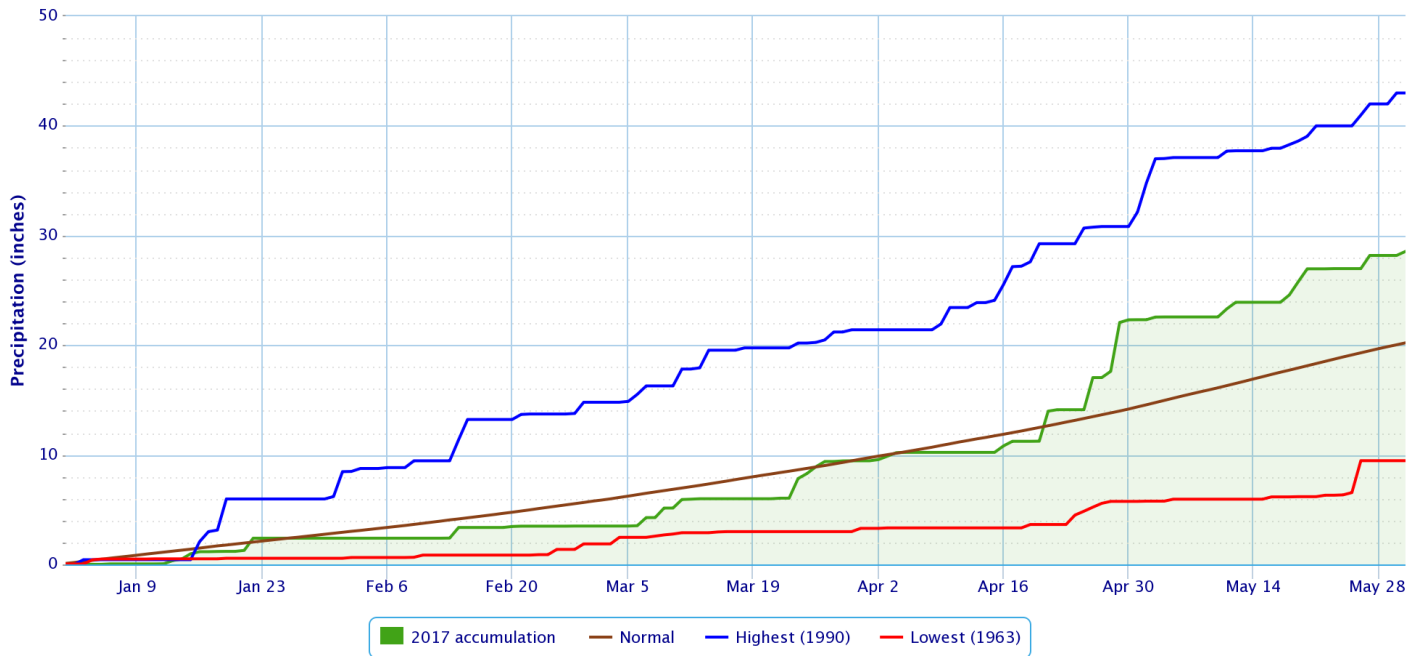
Period of Record – 1949-07-14 to 2017-05-31. Normals period: 1981–2010. Click and drag to zoom chart.



Powered by ACIS

Accumulated Precipitation – FAYETTEVILLE DRAKE FLD, AR

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

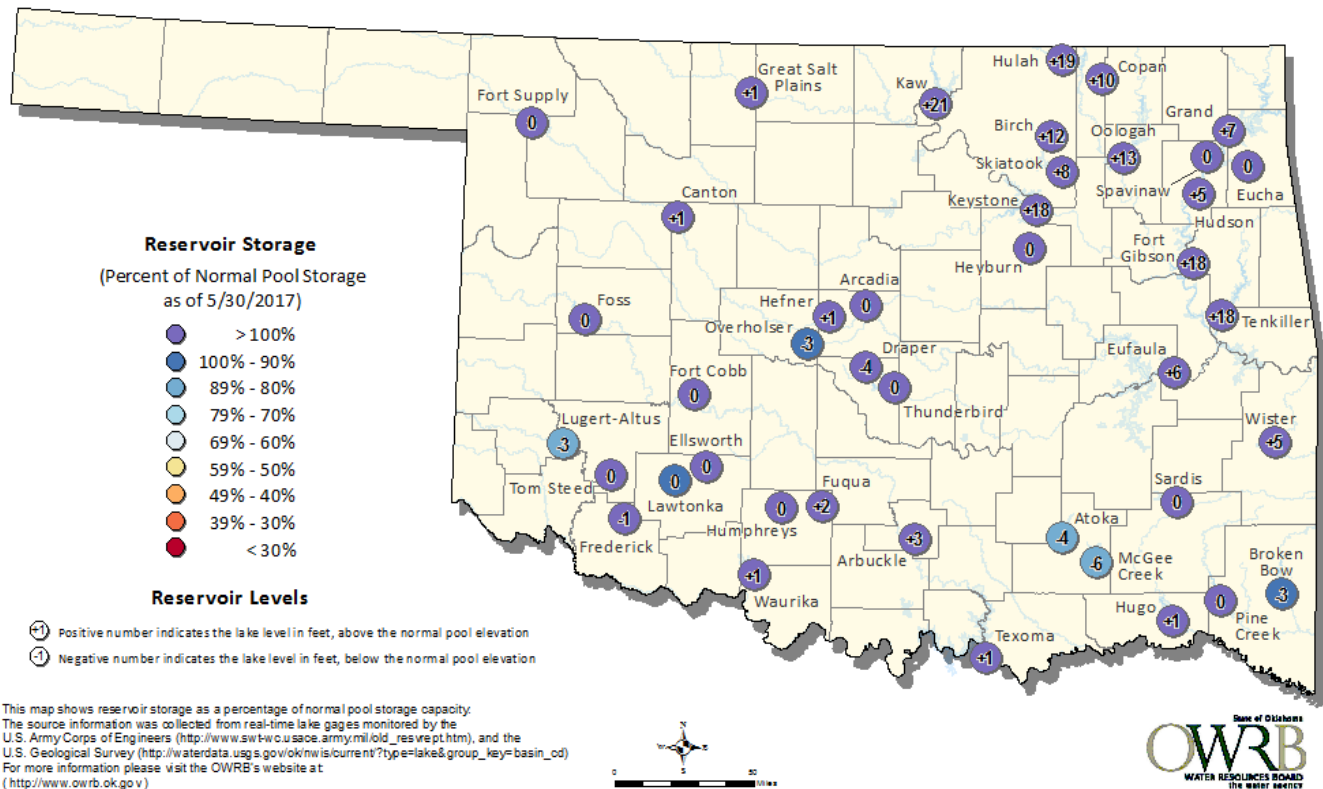


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Reservoirs

Oklahoma Surface Water Resources

Reservoir Levels and Storage as of 5/30/2017



According to the USACE, the most of the lakes in the HSA were well above 5% of the top of their conservation pool levels as of 5/31/2017. Reservoirs operating more than 5% above the top of their conservation level include: Beaver Lake 184%, Grand Lake 152%, Fort Gibson Lake 150%, Tenkiller Lake 146%, Eufaula Lake 144%, Kaw Lake 144%, Keystone Lake 144%, Oologah Lake 144%, Skiatook Lake 144%, Hulah Lake 141%, Birch Lake 138%, Copan Lake 132%, Hudson Lake 125%, and Wister Lake 112%.

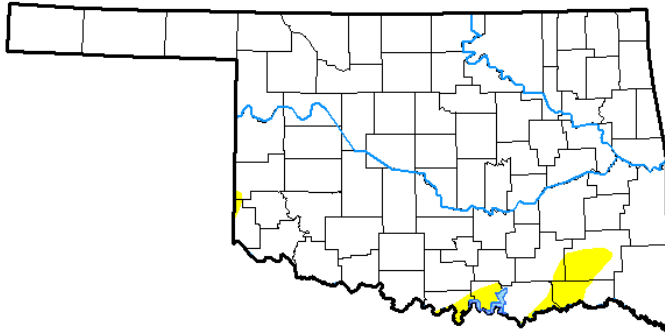
At the end of April, high releases were required out of Grand Lake/Pensacola Dam, Hudson Lake/Dam, and Beaver Lake/Dam due to pool levels nearing the top of the flood control pools. These releases continued into May. Flash Flood Warnings for Dam Floodgate Release continued until the morning of May 1 downstream of Beaver Dam, until the evening of May 4 downstream of Pensacola Dam, and until the afternoon of May 5 downstream of Hudson Dam. However, releases continued near regulating stage, and it took until June 10, 2017 for the releases out of Pensacola and Hudson Dams to be scaled back significantly. This greatly impacted commerce along the McClellan-Kerr Arkansas River Navigation System since river flows during and following the floods were too high for barge operations.

Drought

The continued rain through May eradicated the drought across eastern OK and northwest AR. According to the [U.S. Drought Monitor](#) (USDM) from May 30, 2017 (Figs. 2, 3), drought conditions were no longer occurring in eastern OK and northwest AR. D0 (abnormally dry conditions but not in drought) were present across portions of Pushmataha and Choctaw Counties in eastern OK.

U.S. Drought Monitor Oklahoma

May 30, 2017
(Released Thursday, Jun. 1, 2017)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	97.17	2.83	0.00	0.00	0.00	0.00
Last Week 05-23-2017	97.17	2.83	0.00	0.00	0.00	0.00
3 Months Ago 02-28-2017	12.64	87.36	73.14	28.77	0.18	0.00
Start of Calendar Year 01-03-2017	5.61	94.39	83.21	55.75	5.55	0.00
Start of Water Year 09-27-2016	57.82	42.18	19.04	3.05	0.00	0.00
One Year Ago 05-31-2016	97.18	2.82	0.00	0.00	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Chris Fenimore
NCEI/NESDIS/NOAA

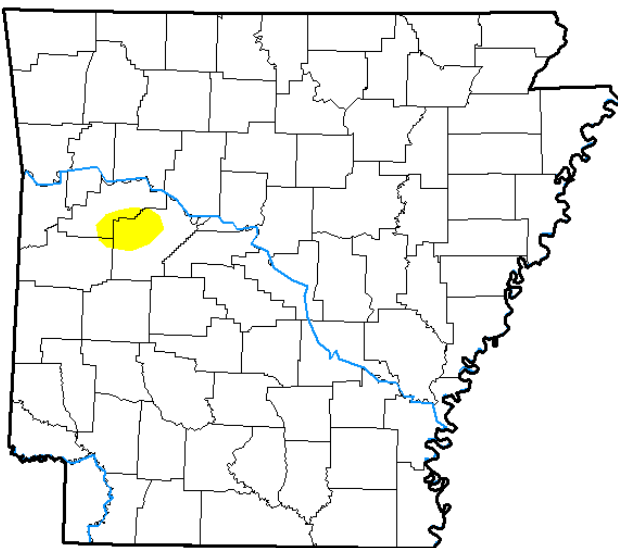


<http://droughtmonitor.unl.edu/>

Fig. 2. Drought Monitor for Oklahoma

U.S. Drought Monitor Arkansas

May 30, 2017
(Released Thursday, Jun. 1, 2017)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	99.14	0.86	0.00	0.00	0.00	0.00
Last Week 05-23-2017	99.14	0.86	0.00	0.00	0.00	0.00
3 Months Ago 02-28-2017	23.31	76.69	34.06	18.29	2.00	0.00
Start of Calendar Year 01-03-2017	27.05	72.95	39.03	7.99	2.02	0.00
Start of Water Year 09-27-2016	71.02	28.98	0.00	0.00	0.00	0.00
One Year Ago 05-31-2016	94.01	5.99	0.00	0.00	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Chris Fenimore
NCEI/NESDIS/NOAA



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

Fig. 3. Drought Monitor for Arkansas

Outlooks

The [Climate Prediction Center](#) (CPC) outlook for June 2017 (issued May 31, 2017) indicates an enhanced chance for below normal temperatures and above median precipitation across all of eastern OK and northwest AR. This outlook takes into account weather conditions forecast over the next 1-2 weeks, sub-seasonal climate signals in the weeks 3-4 time frame, and soil moisture considerations.

For the 3-month period June-July-August 2017, CPC is forecasting a slightly enhanced chance for above normal temperatures across all of eastern OK and northwest AR. This outlook also calls for a slightly enhanced chance for above median precipitation across eastern OK and an equal chance for above, near, and below median rainfall across northwest AR (outlook issued May 18, 2017). This outlook is based on both statistical and dynamical forecast tools and decadal timescale climate trends. According to CPC, Pacific sea surface temperatures along the equator continue to indicate ENSO-neutral conditions, which are favored to persist through the spring. ENSO-neutral conditions are favored (~50%-55% chance) from the summer through the end of the year, with a ~30%-35% chance for El Niño and only a ~10%-15% chance of La Niña conditions redeveloping.

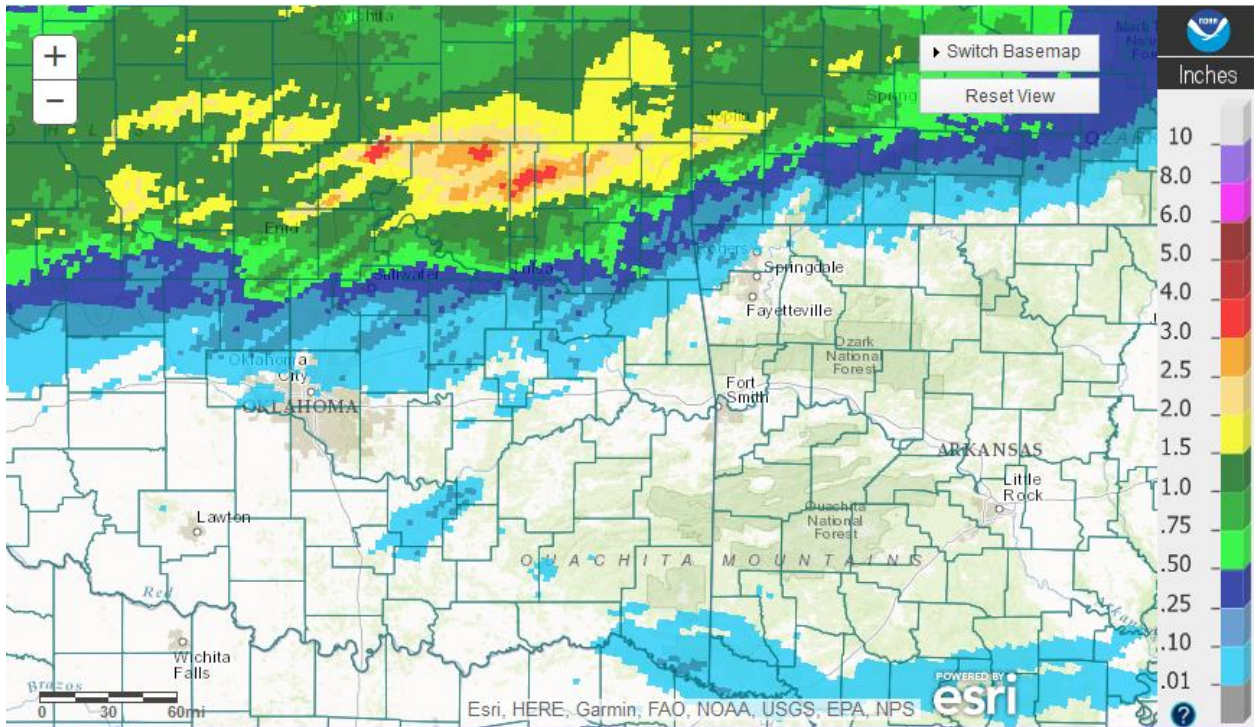
Summary of Precipitation Events Daily quality controlled rainfall maps can be found at: http://water.weather.gov/precip/index.php?location_type=wfo&location_name=tsa

May 1-15

A significant rainfall event at the end of April 2017 resulted in widespread river flooding, which continued into May. Refer to the April 2017 E5 Report for details.

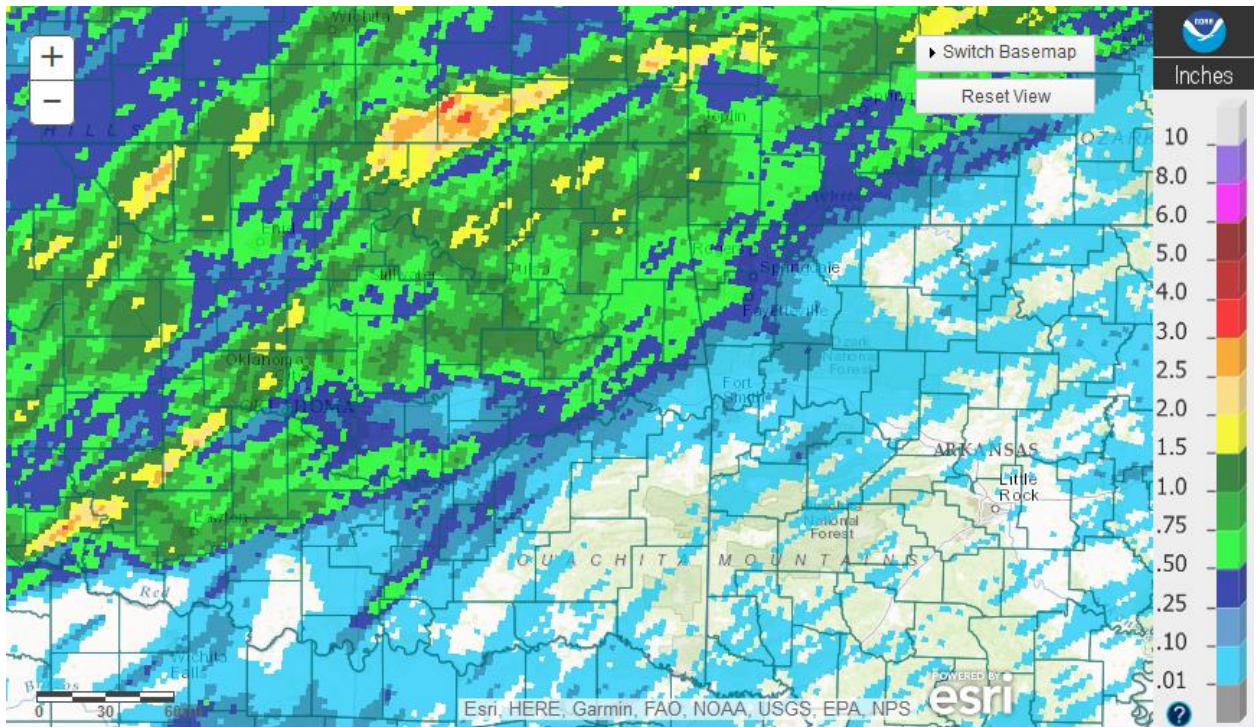
During the late evening of the 2nd, showers and thunderstorms developed over northeast OK in an area of low-level warm air advection and frontogenesis. Storm coverage increased through the overnight hours, with storms training over the same area of northeast OK, along and north of Highway 412. This area received 0.50" to around 3" of rain by sunrise on the 3rd (Fig. 4). This additional heavy rain resulted in minor river flooding along portions of the Caney River, Bird Creek, Spring River, and Deep Fork River. The Neosho River near Commerce was still experiencing minor flooding from the end of April, and this early May rainfall resulted in the river levels remaining high for a longer period of time. This rain also caused an increase in the flow along the Arkansas River near Muskogee, with minor flooding occurring there as well. Please refer to the E3 Report for details. Preliminary hydrographs are available at the end of this report. Flooded roads were also reported in Dewey (Washington Co. OK). As the northern storms were dissipated shortly after sunrise, new convection was developing further south along the low-level cold frontogenetic zone across east central and southeast OK and west central AR. These storms quickly shifted east of the area by early afternoon. Mid/upper-level cyclogenesis occurred over the Ozarks during the evening as potential vorticity was advected poleward on the nose of a strong upper jet. Wrap-around showers brought some additional light rain to the Ozarks during the evening and overnight hours. Rainfall totals ranged from around 0.25" to 1" along and southeast of a McAlester, OK to Springdale, AR line.

Scattered convection spread into eastern OK and northwest AR from the west and south during the afternoon of the 10th as a small upper-level disturbance moved into the area. A line of thunderstorms then developed over southwest OK during the evening and moved into northeast OK during the late evening hours. This line affected northeast OK and northwest AR, primarily along and north of I-40, through the early morning hours of the 11th before weakening and shifting east. Rainfall totals were 0.50" to around 1.5" generally northwest of a McAlester, OK to Fayetteville, AR line. Higher totals of 1.5" to 2.5" affected eastern Kay and northwestern Osage Counties (Fig. 5).



Tulsa, OK: May 03, 2017 1-Day Observed Precipitation
Valid on: May 03, 2017 12:00 UTC

Fig. 4. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/03/2017.



Tulsa, OK: May 11, 2017 1-Day Observed Precipitation
Valid on: May 11, 2017 12:00 UTC

Fig. 5. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/11/2017.

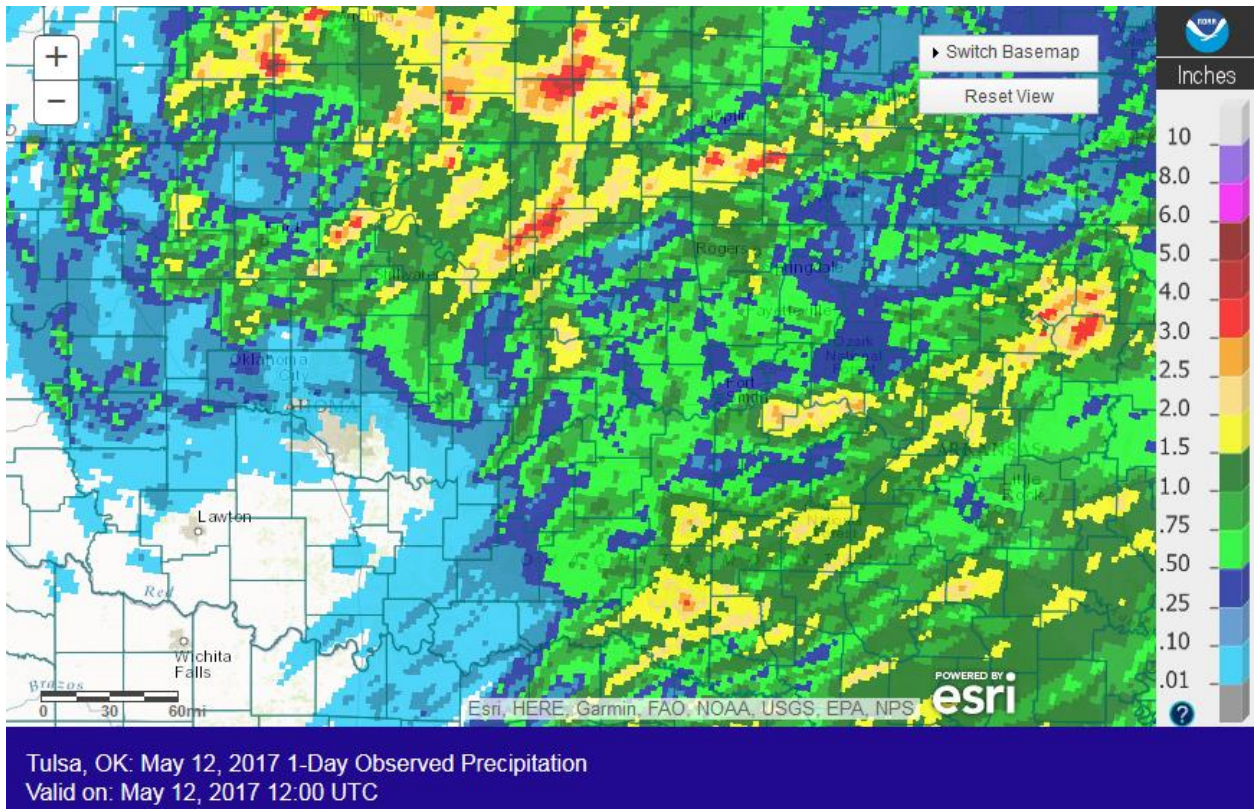


Fig. 6. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/12/2017.

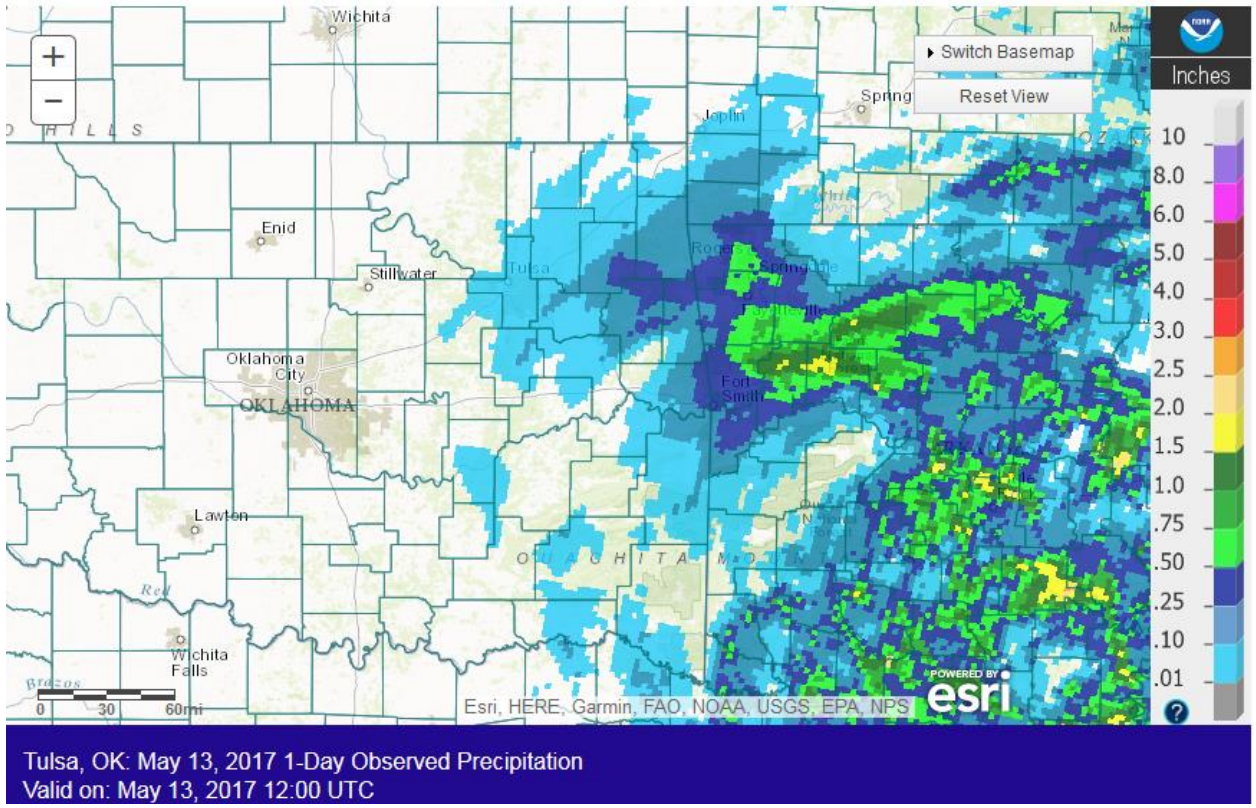


Fig. 7. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/13/2017.

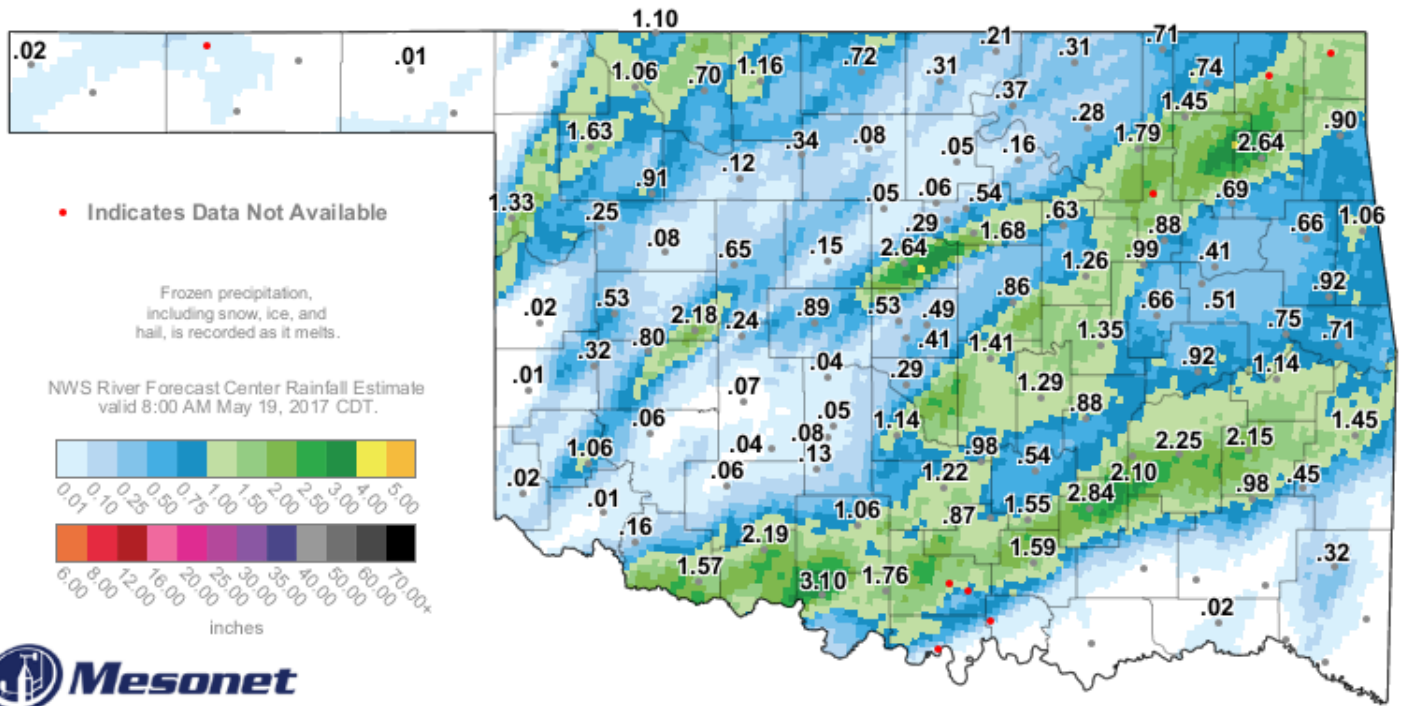
Isolated thunderstorms moved across northeast OK and far northwest AR during the mid-morning hours of the 11th. By noon, showers and thunderstorms began to develop and increase in coverage across southeast OK and west central AR, and continued to spread northward during the afternoon. At mid-evening, a line of storms developed over northeast OK along an advancing cold front and moved southeast into east central and southeast OK and northwest and west central AR. After the line of storms had exited the region, wrap around showers and thunderstorms moved into northeast OK during the early morning hours of the 12th, and translated east into northwest AR after sunrise. The rain finally came to an end by early afternoon. Most of eastern OK and northwest AR received 0.25" to 1" of rain, though several areas received 1.5"-4" of rain (Figs. 6, 7). Once again, river flooding ensued after this rainfall. Moderate flooding occurred along portions of Bird Creek, the Caney River, and the Neosho River, with minor flooding along the Arkansas River near Muskogee (during regulation operations). Please refer to the E3 Report for details. Preliminary hydrographs are available at the end of this report. Three tornadoes occurred during the afternoon and evening hours of the 11th, an EF-1 in Owasso, an EF-1 near Oologah Lake, and an EF-0 near Ramona. The severe thunderstorms also produced hail, with several reports of golf ball sized hail. More information about this event can be found at <http://arcg.is/2sttYk1>

May 16-31

A couple of hours after midnight on the 17th, a line of showers and isolated thunderstorms swept east across eastern OK and dissipated as it moved into western AR during the mid-morning hours. Rainfall totals ranged from a few hundredths to around 0.75."

A line of severe thunderstorms developed over western OK and moved through eastern OK and northwest AR during the evening hours of the 18th and the early morning hours of the 19th. Strong instability and very strong low-level wind shear was present across the area as the storms moved through the region, supporting the development of persistent and strong low-level circulations along the leading edge of the line of thunderstorms. These circulations resulted in the development of at least 16 tornadoes. More information can be found at <http://arcg.is/2stiwop>. A second round of thunderstorms developed under the influence of a strong low-level jet and moved through northeast OK and far northwest AR during the pre-dawn hours of the 19th. Rainfall totals ranged from 0.25" to 4". The heaviest rainfall occurred in two bands, one from Okfuskee County to Ottawa County and the other across Pittsburg County to Le Flore County (Figs. 8, 9).

By mid-morning, a third round of convection moved northeast out of south central OK and through northeast and east central OK. These storms continued into far northwest AR during the afternoon. Meanwhile, more convection developed along a boundary just south of I-44 from Okfuskee County to Delaware County. Storms trained along this area while also expanding northwest for several hours. By mid- to late-evening, this line of thunderstorms began to push eastward, developing into an MCS and forming a line echo wave pattern (LEWP) along the leading edge. Strong to severe wind gusts were reported within the bowing segments of the LEWP. Rainfall rates of 3"/hour were also observed. Behind the leading edge of the storms, widespread showers and thunderstorms continued as well. It took until after sunrise on the 20th for this MCS to move east out of the area. Most of eastern OK and northwest AR received 0.50" to 3" of rain, but locations along and southeast of I-44 and north of a northern Latimer to southern Le Flore County line received 2"-6" of rain (Fig. 10). This resulted in widespread flash flooding due to the antecedent saturated soil moisture conditions from the heavy rains just prior to this event (Figs. 11, 12). Pittsburg County Emergency Management reported significant flood damage with many county roads washed out or closed. A train derailed due to a washed-out rail bridge, and one home had flood damage. Numerous other county roads and state highways were also closed or damaged throughout the heavy rain area. In addition to the flash flooding, minor to moderate river flooding occurred along the lower Arkansas River, Lee Creek, Polecat Creek, the Neosho River, the Illinois River, the Poteau River, and the Deep Fork River. Please refer to the E3 Report for details. Preliminary hydrographs are available at the end of this report.



24-Hour Rainfall Accumulation (inches)

9:10 AM May 19, 2017 CDT

Created 9:15:59 AM May 19, 2017 CDT. © Copyright 2017

Fig. 8. 24-hour Estimated Observed Rainfall (image) and OK Mesonet measurements ending at 9:10 am CDT 05/19/2017.

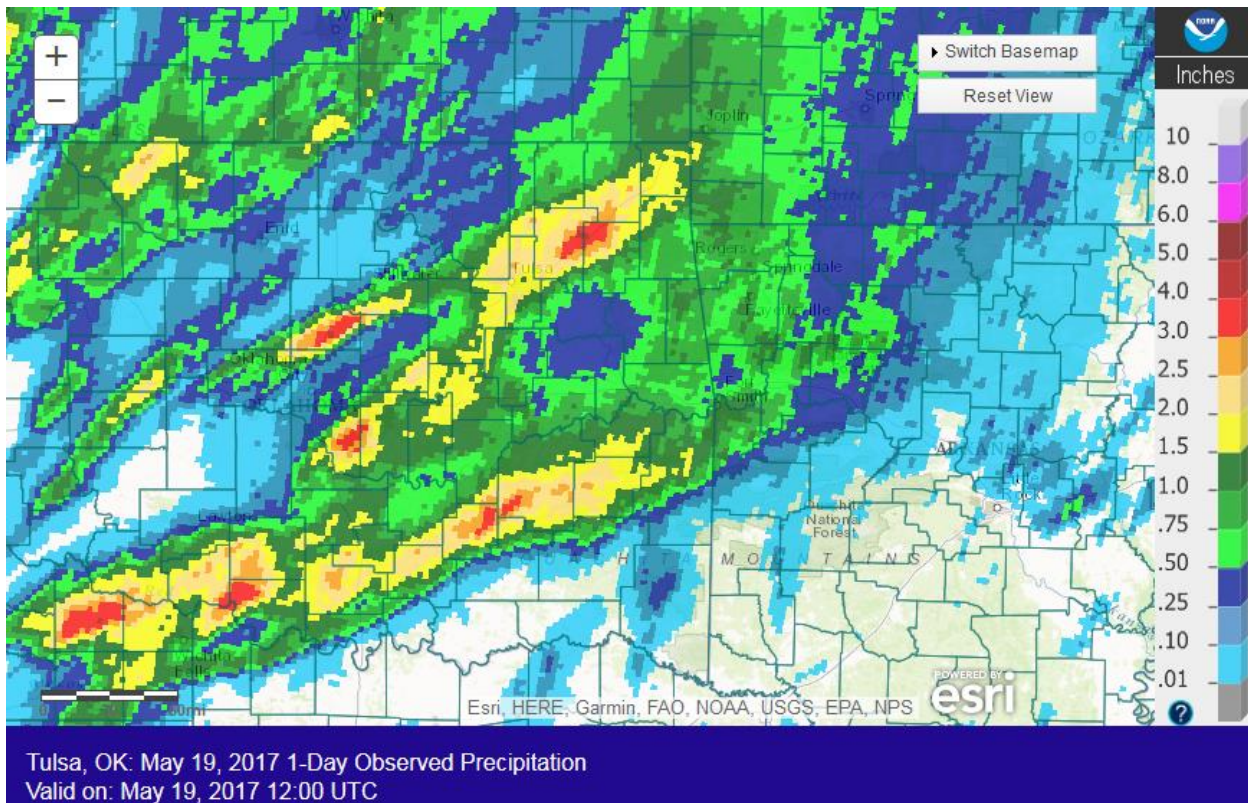


Fig. 9. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/19/2017.

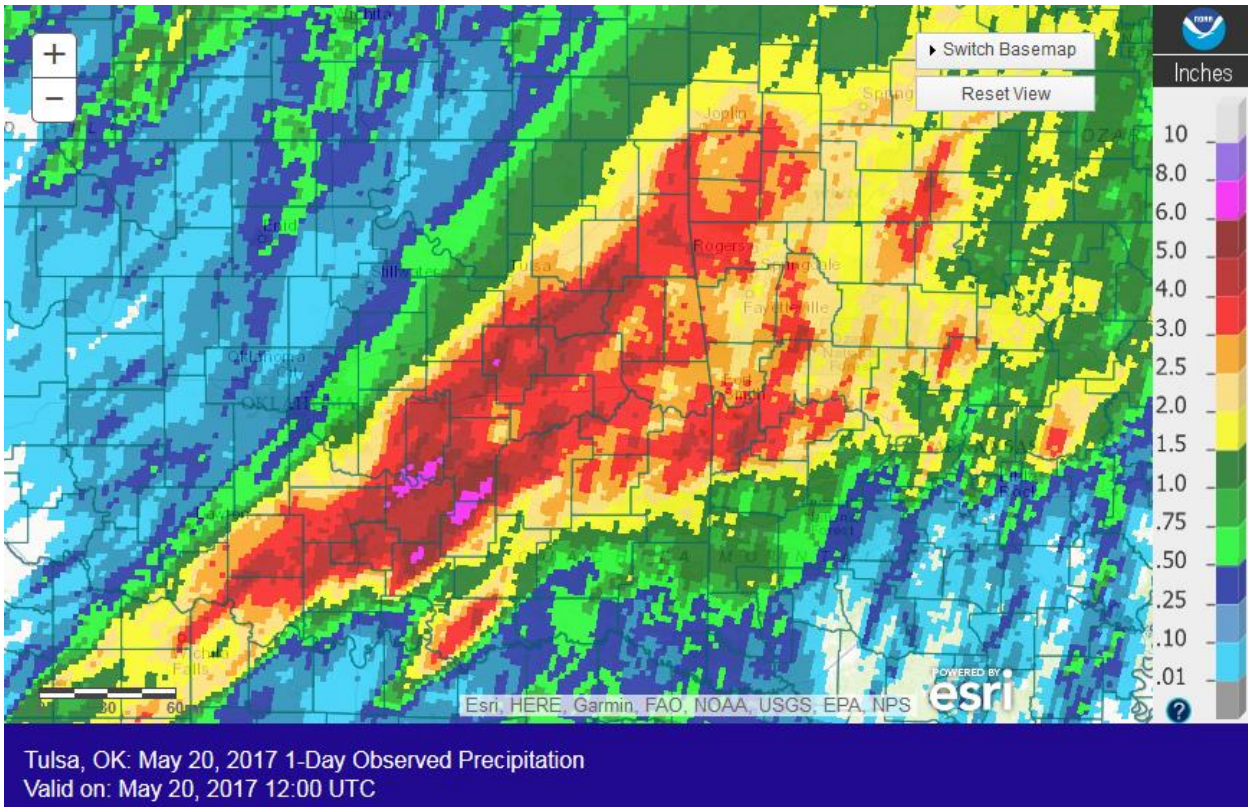


Fig. 10. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/20/2017.

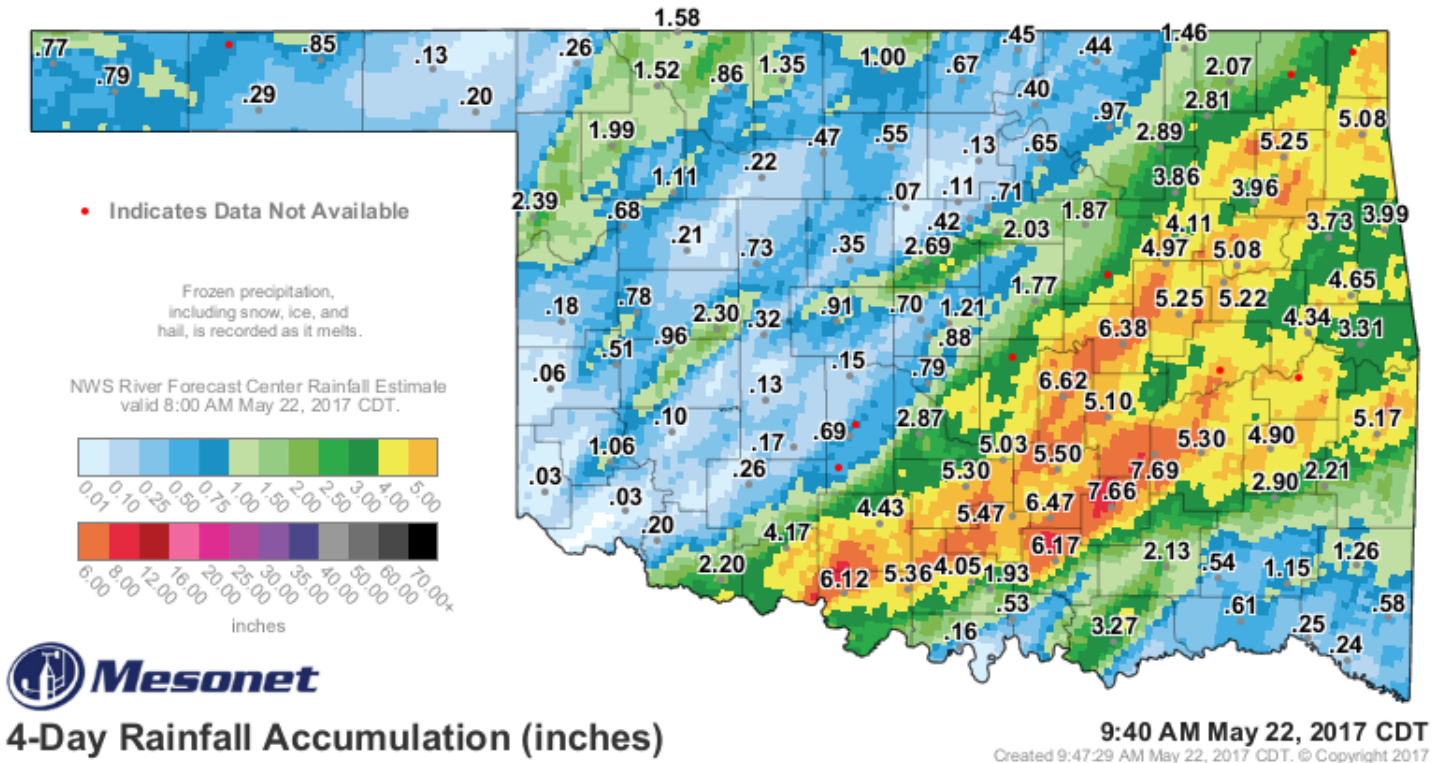


Fig. 11. 4-day Estimated Observed Rainfall (image) and OK Mesonet measurements ending at 9:40 am CDT 05/22/2017.

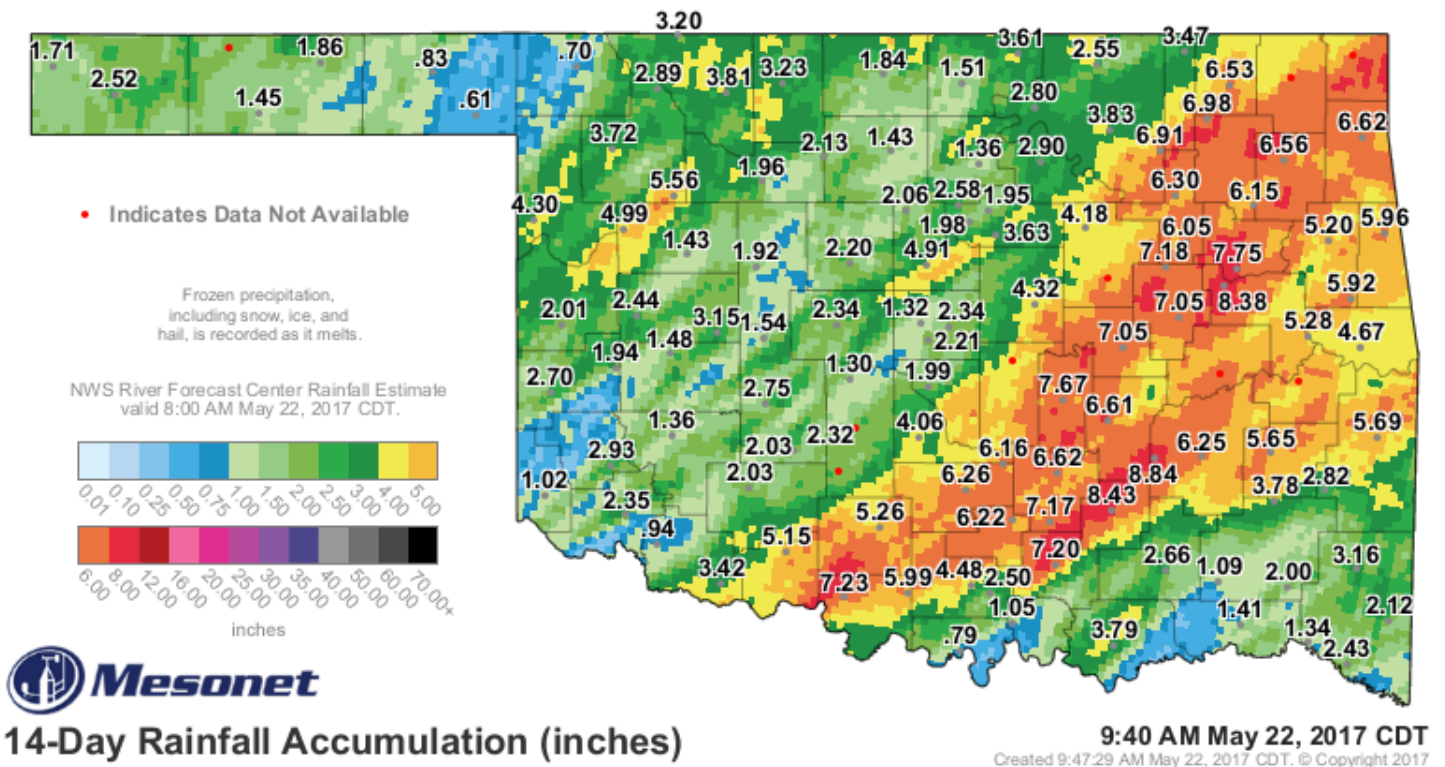
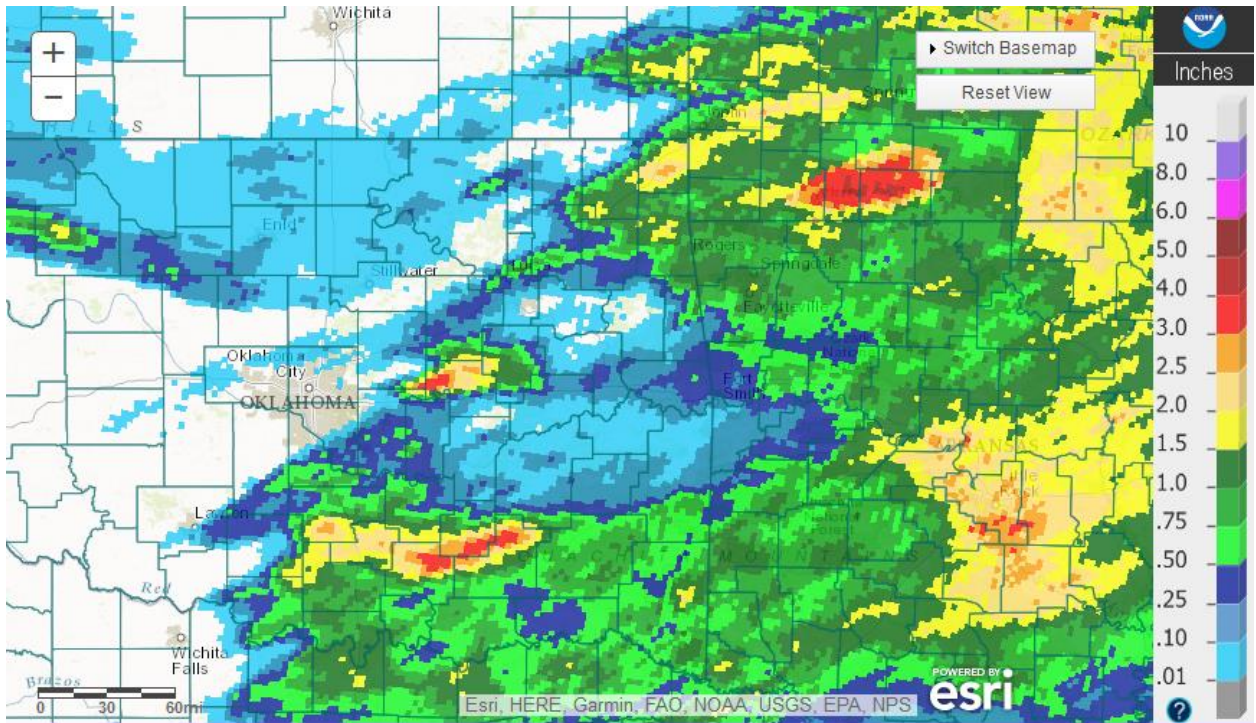


Fig. 12. 14-day Estimated Observed Rainfall (image) and OK Mesonet measurements ending at 9:40 am CDT 05/22/2017.

During the late afternoon of the 22nd, rain moved into northeast OK out of north central OK as a cold front and upper-level shortwave moved across the area. This activity spread east and south through the evening, coming to an end a little after midnight. Isolated showers and thunderstorms remained over southeast OK and northwest AR through the overnight hours. Rainfall totals were generally light, ranging from a few hundredths to around half an inch. Additional isolated to widely scattered showers and thunderstorms moved quickly across the region during the afternoon and evening of the 23rd as a more pronounced upper-level trough traversed the Plains. This activity only produced around 0.10" or less of rain.

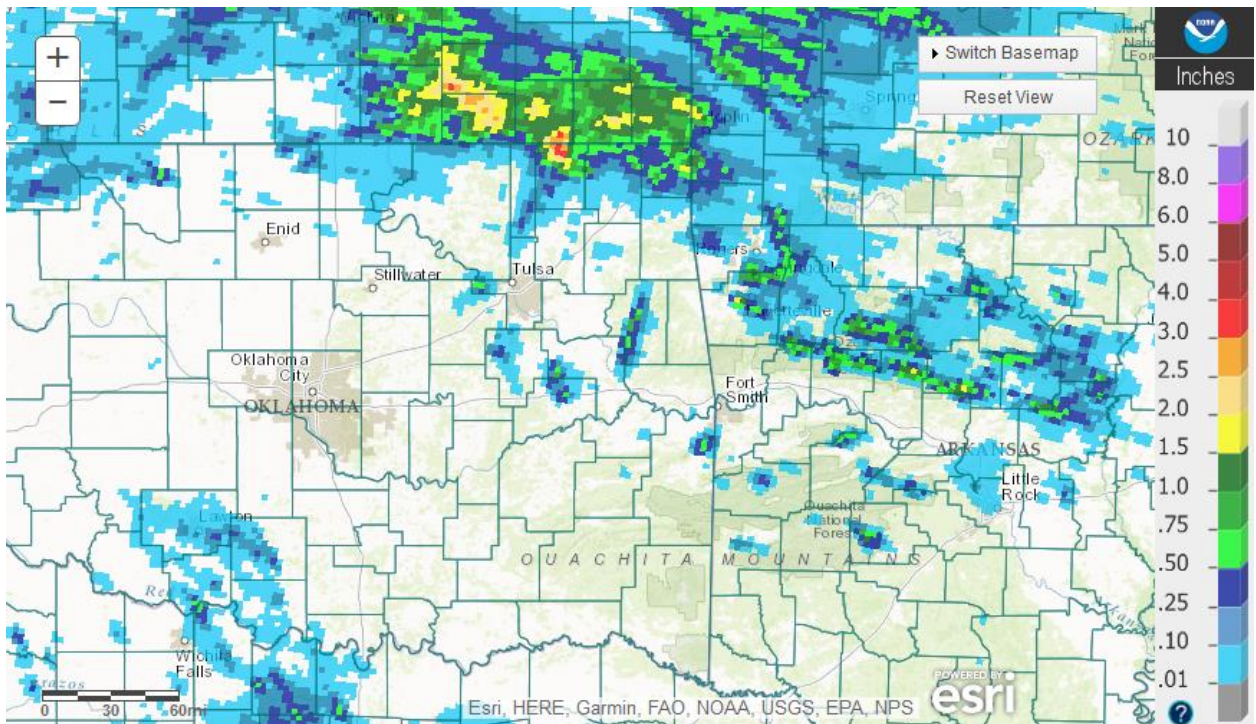
During the late evening of the 26th, a few storms were able to overcome the cap near a weak boundary just south of the I-44 corridor. These storms affected portions of McIntosh, Okmulgee, Muskogee, Mayes, and Delaware Counties, as well as locations near the AR/MO state line, and produced around 0.25" to around 1" of rain in the affected areas.

On the 27th, extreme instability was in place over eastern OK and northwest AR. Supercells initially developed along a boundary across northeast OK into far northwest AR during the late afternoon hours. Then during the evening hours, additional supercells developed near the dry line over south central Oklahoma. The storms then moved east, affecting eastern OK and western AR. Very large hail, winds of 60-80 mph, and tornadoes all occurred. A supercell produced two tornadoes in Okfuskee County, OK during the evening. These storms eventually transitioned into a line of storms. A bowing line segment developed a strong cyclonic circulation just north of its apex as it moved into eastern Sequoyah County, OK and produced an EF-1 tornado. Additionally, some of these storms produced very large and damaging hail, including several reports of hail stones of 2.5" in diameter (tennis ball size). One report included a hail stone that measured about 4.5" across (grapefruit-softball size) about 2 miles south southeast of Welty, OK! More information on this event can be found at <http://arcg.is/2oNIC7q>. These storms continued to move southeast through the early morning hours of the 28th, finally dissipating/exiting the area around sunrise. The highest rainfall totals of 0.50" to around 3" occurred across Okfuskee County, far northeast OK, northwest AR, and southeast OK (Fig. 13). County roads were washed out in Okfuskee County.



Tulsa, OK: May 28, 2017 1-Day Observed Precipitation
 Valid on: May 28, 2017 12:00 UTC

Fig. 13. 24-hour Estimated Observed Rainfall ending at 7am CDT 5/28/2017.



Tulsa, OK: June 01, 2017 1-Day Observed Precipitation
 Valid on: June 01, 2017 12:00 UTC

Fig. 14. 24-hour Estimated Observed Rainfall ending at 7am CDT 6/01/2017.

A few widely scattered showers brought light rain to some locations across northeast OK during the early evening hours of the 29th along a weak cold front during the peak heating of the day. An area of showers and isolated thunderstorms translated east along the KS/OK state line during the morning hours of the 30th. A mesoscale convective vortex (MCV) associated with this activity allowed for some increase in coverage through the morning across northeast OK and northwest AR before shifting east of the area in the early afternoon. Rainfall totals were 0.25" or less.

Thunderstorms developed along a frontal boundary across eastern KS and western MO on the 31st and shifted south into northeast OK and northwest AR through the evening hours. Additional isolated thunderstorms developed a little further south along the outflow boundary from the border storms. All of this activity dissipated soon after midnight. Rainfall totals ranged from 0.25" to around 3" (Fig. 14).

Written by:

Nicole McGavock
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WFO Tulsa

Products issued in May 2017:

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

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

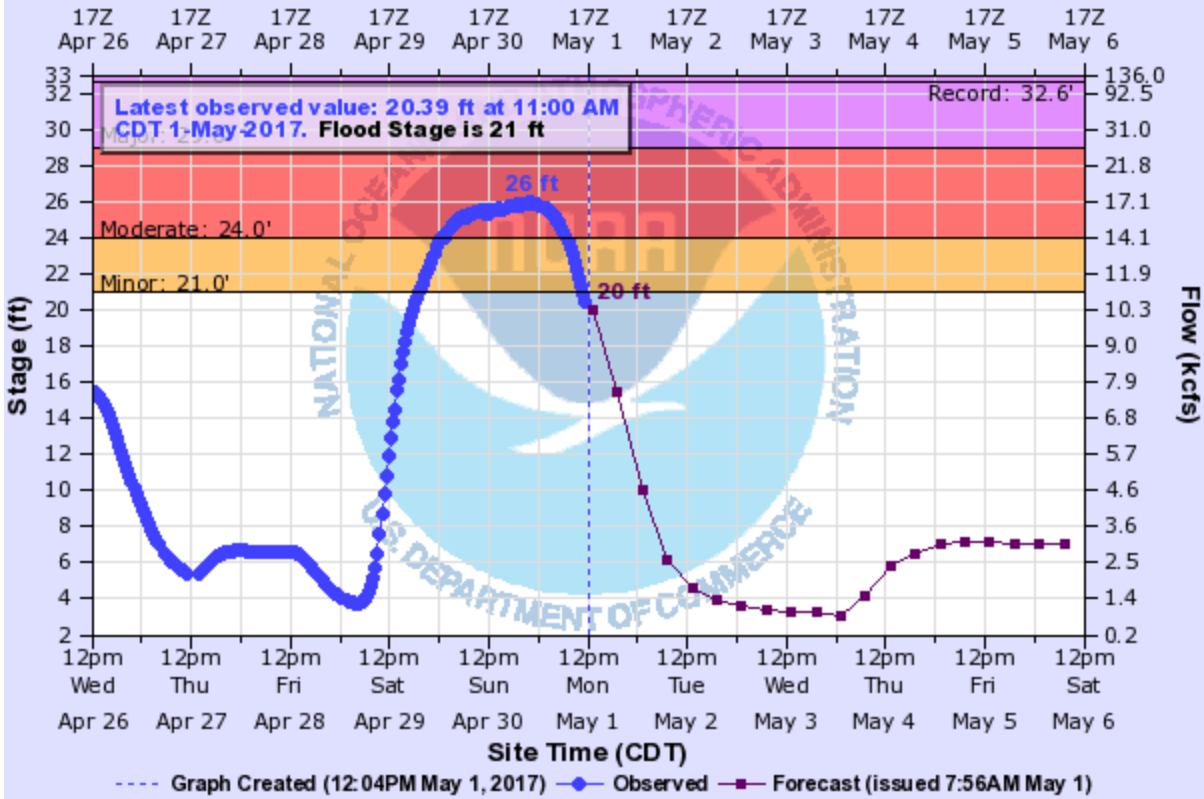
*Mixed case River Flood products began July 31, 2013

- 13 Flash Flood Warnings (FFW) (9 FFW EXT)
- 8 Flash Flood Statements (FFS)
- 4 Flash/Areal Flood Watches (FFA) (13 Watch FFA CON/EXT/EXA/EXB/CAN)
- 14 Urban and Small Stream Advisories (FLS)
- 11 Areal Flood Warnings (FLW)
- 5 Areal Flood Statements (FLS)
- 39 River Flood Warnings (FLW) (includes category increases)
- 324 River Flood Statements (FLS)
- 10 River Flood Advisories (FLS) (61 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:

BIRD CREEK NEAR SPERRY

Universal Time (UTC)

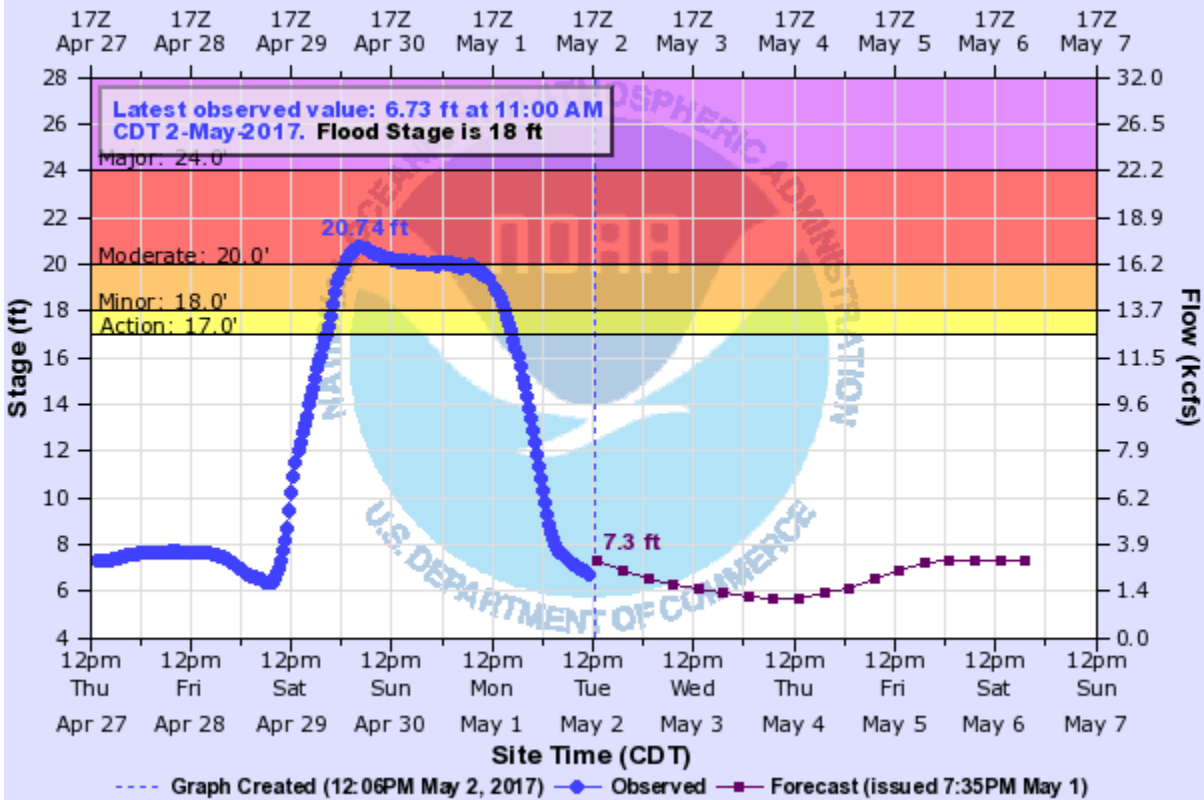


SPEO2(plotting HGIRG) "Gage 0" Datum: 579.43'

Observations courtesy of US Geological Survey

BIRD CREEK NEAR OWASSO

Universal Time (UTC)

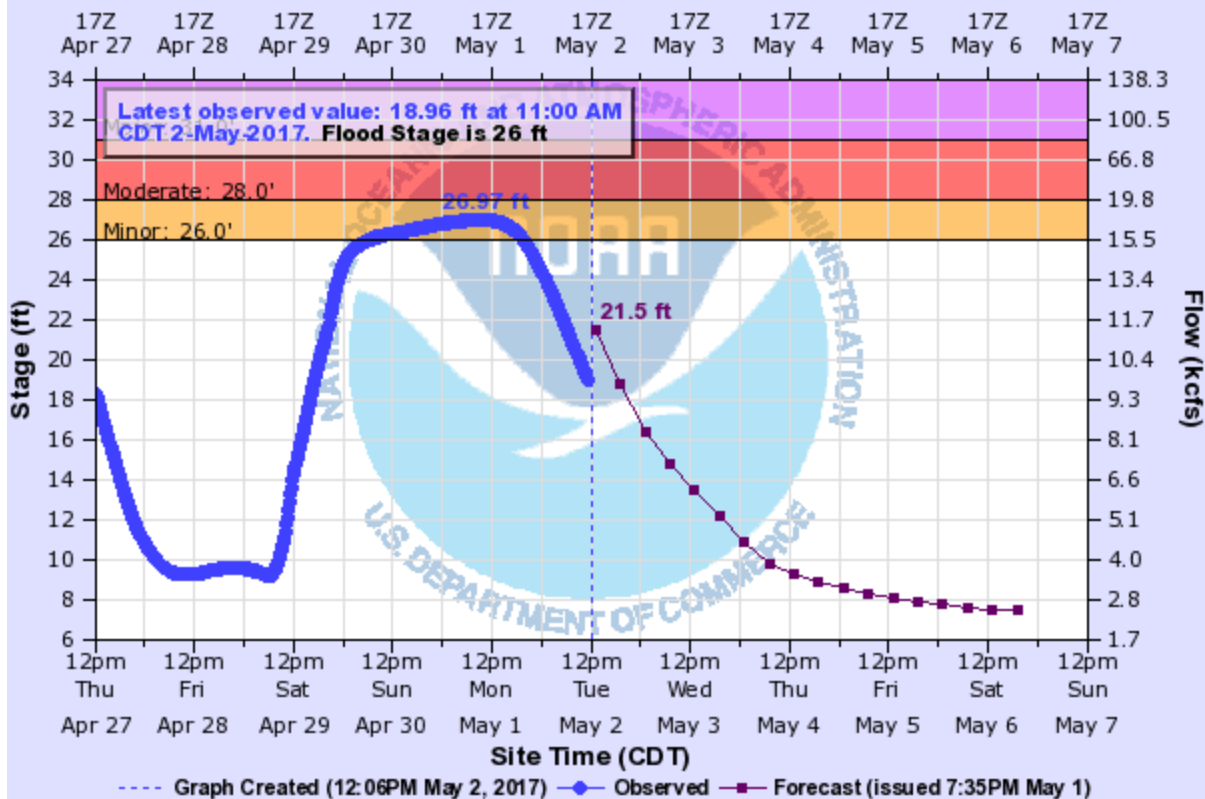


OWSO2(plotting HGIRG) "Gage 0" Datum: 560.17'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR RAMONA

Universal Time (UTC)

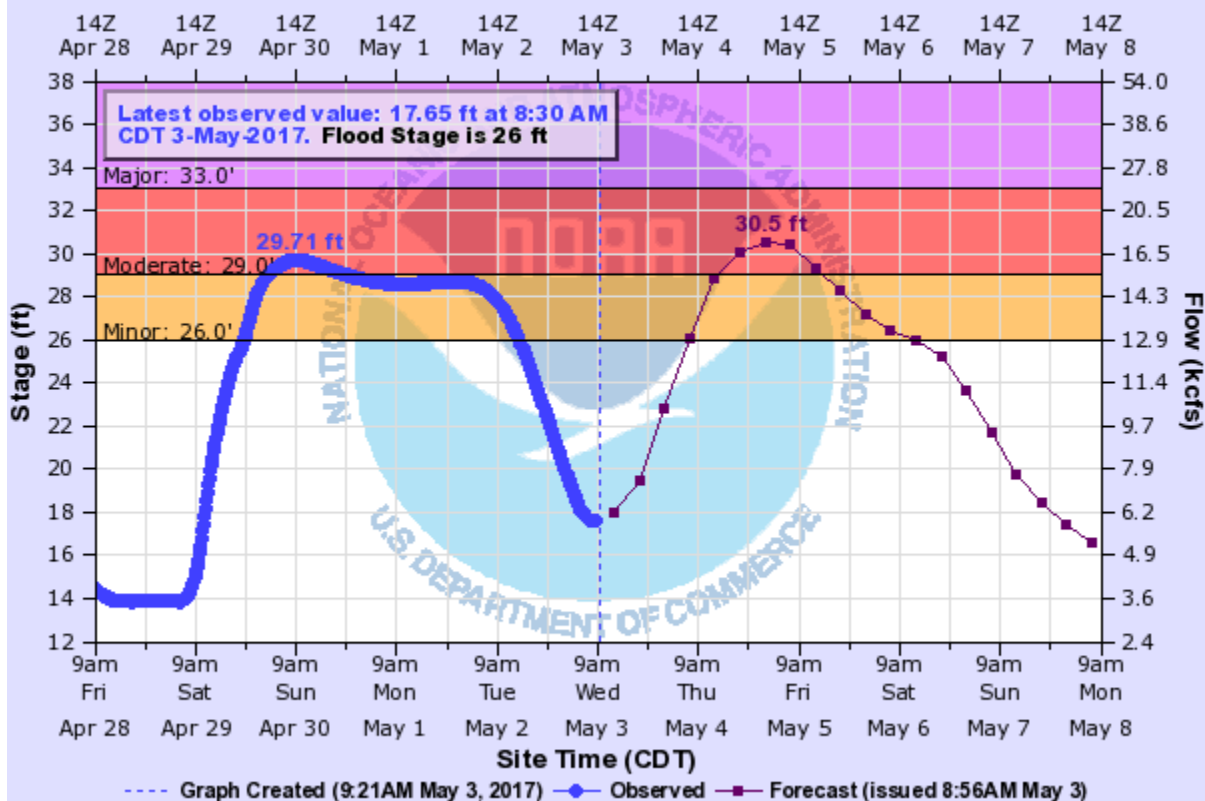


RAMO2(plotting HGIRG) "Gage 0" Datum: 586.43'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR COLLINSVILLE

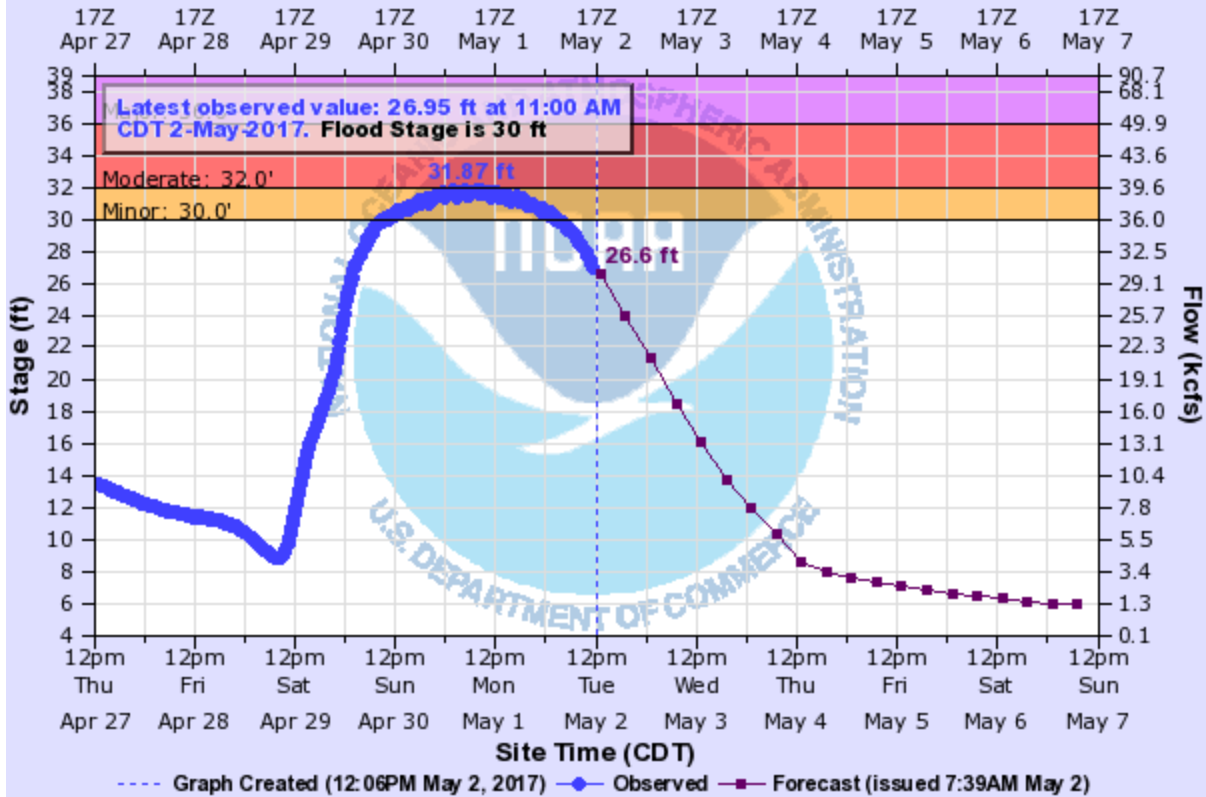
Universal Time (UTC)



CVLO2(plotting HGIRG) "Gage 0" Datum: 565.72'

VERDIGRIS RIVER NEAR LENAPAH

Universal Time (UTC)

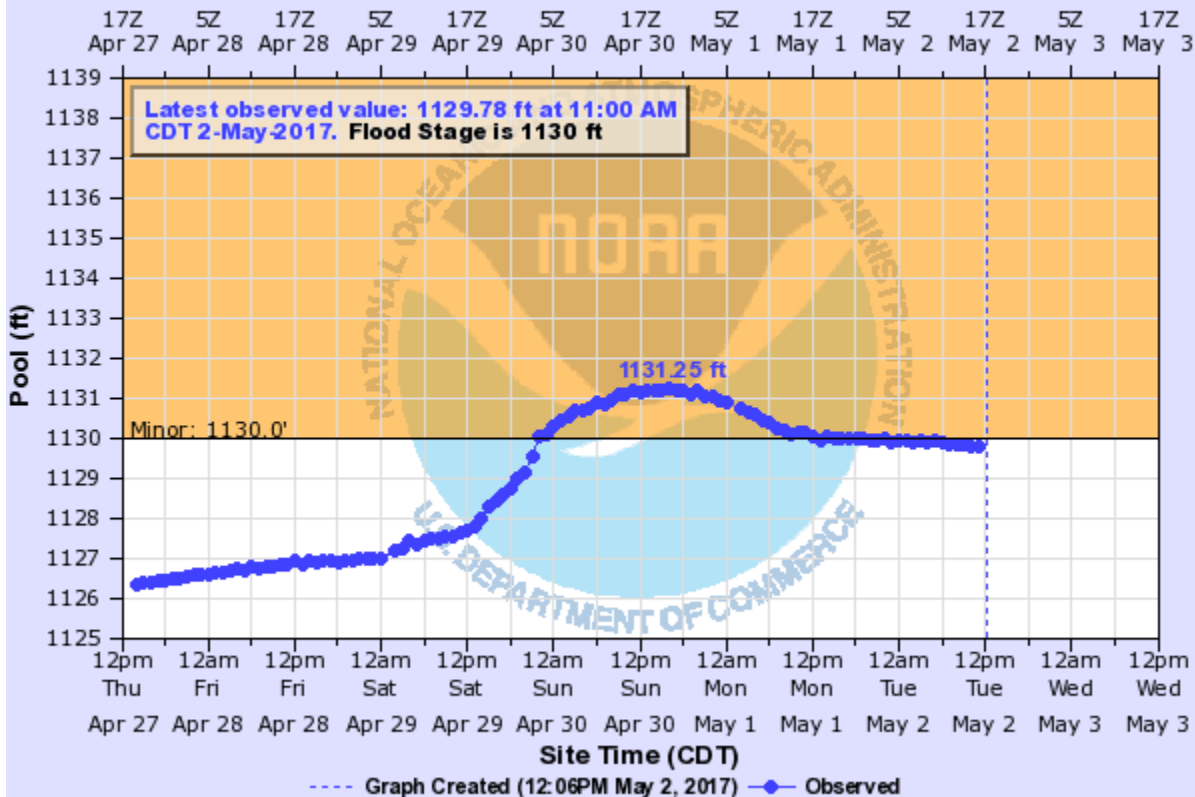


LEPO2(plotting HGIRG) "Gage 0" Datum: 644.9'

Observations courtesy of US Geological Survey

NORTHWEST ARKANSAS LAKES AT BEAVER LAKE

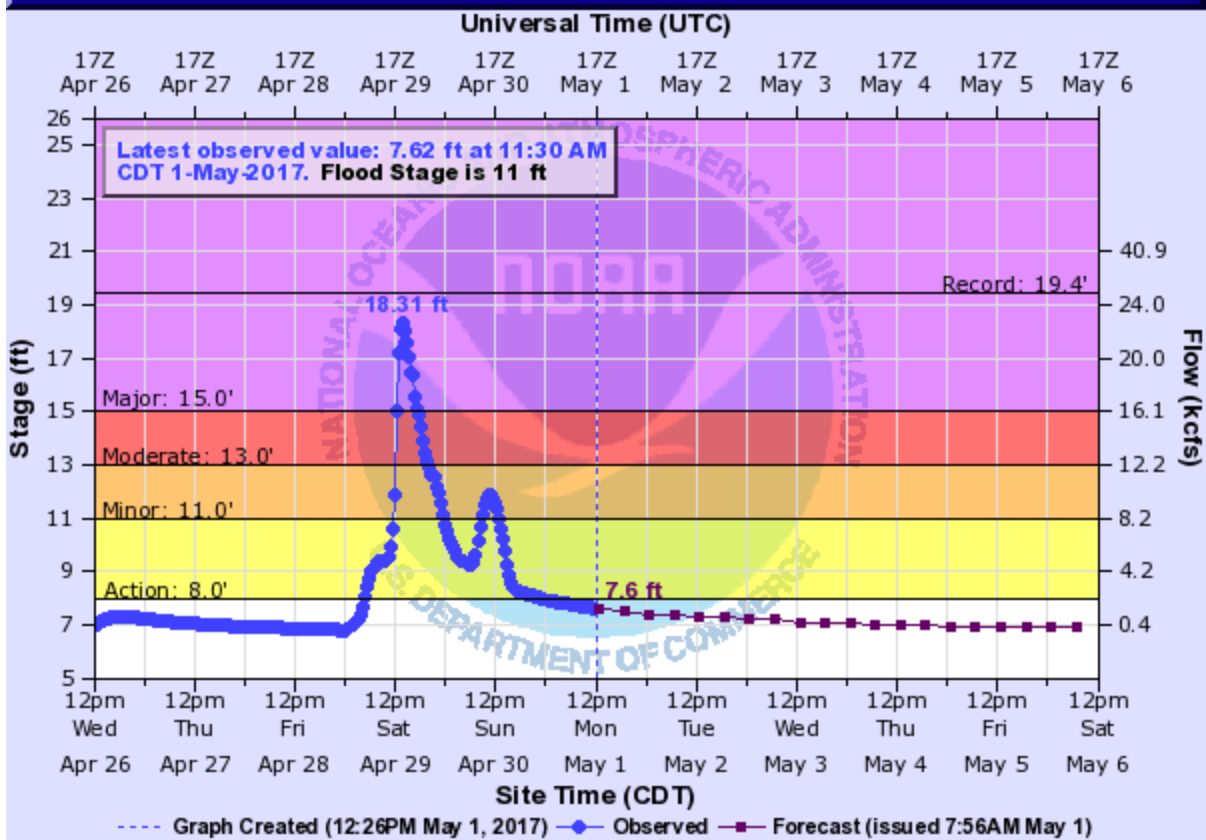
Universal Time (UTC)



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

Observations courtesy of US Army Corps of Engineers

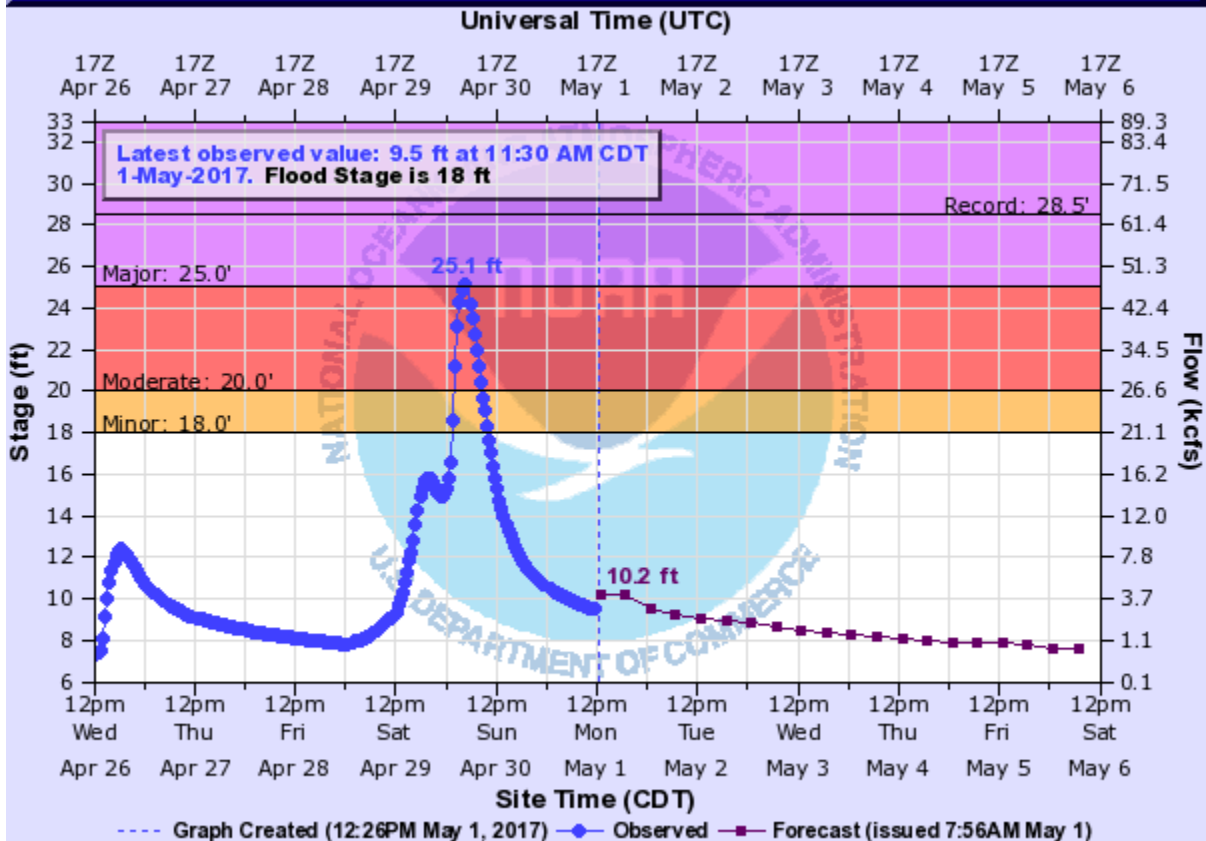
FLINT CREEK (OK) NEAR KANSAS



KNSO2(plotting HGIRG) "Gage 0" Datum: 854.59'

Observations courtesy of US Geological Survey

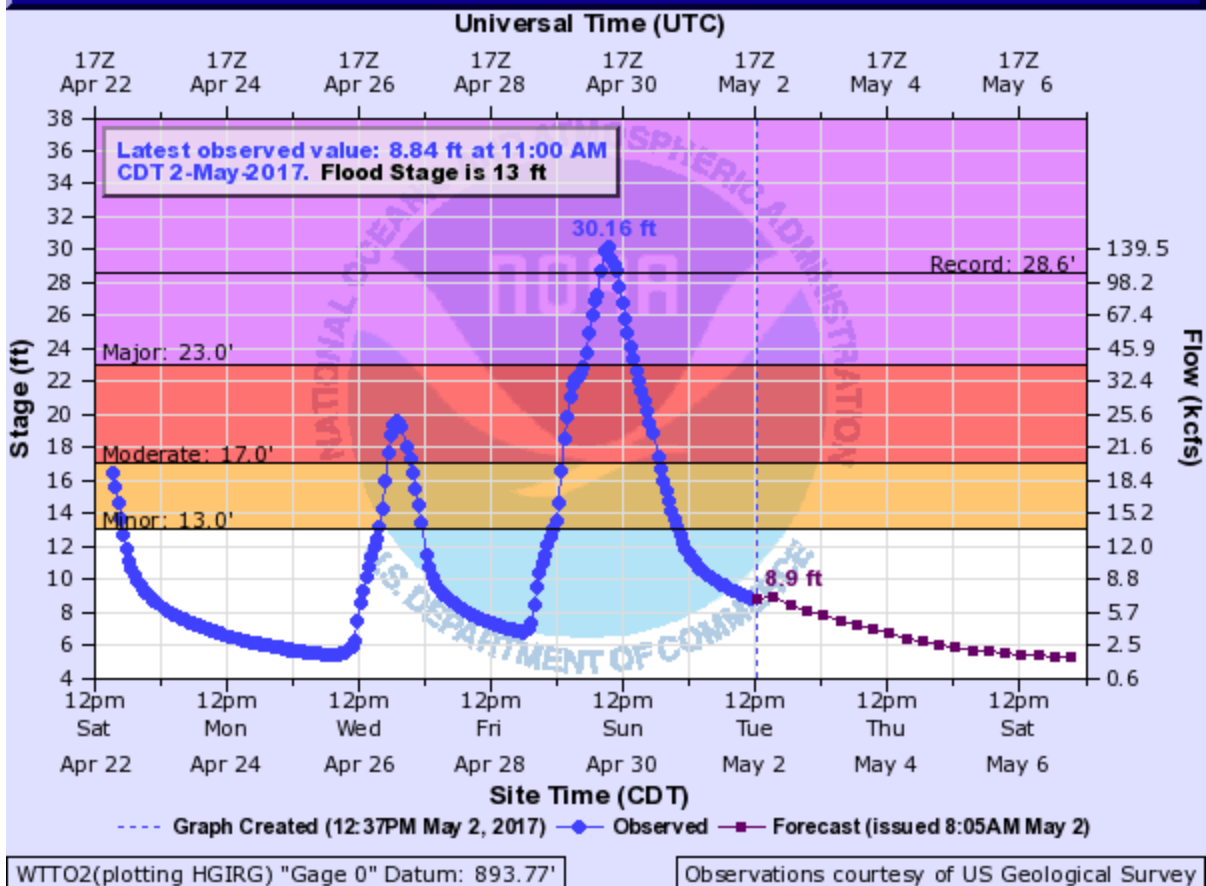
BARON FORK AT ELDON



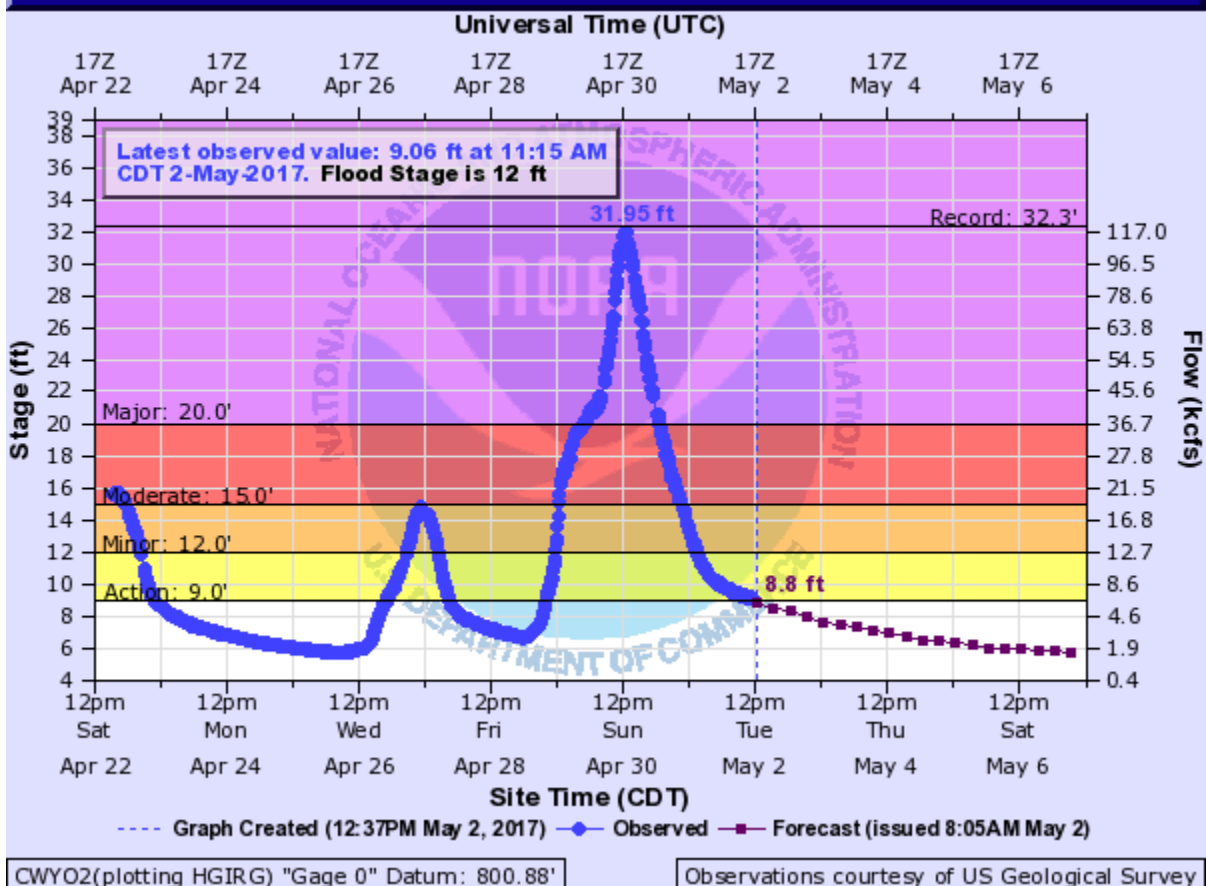
ELDO2(plotting HGIRG) "Gage 0" Datum: 701.14'

Observations courtesy of US Geological Survey

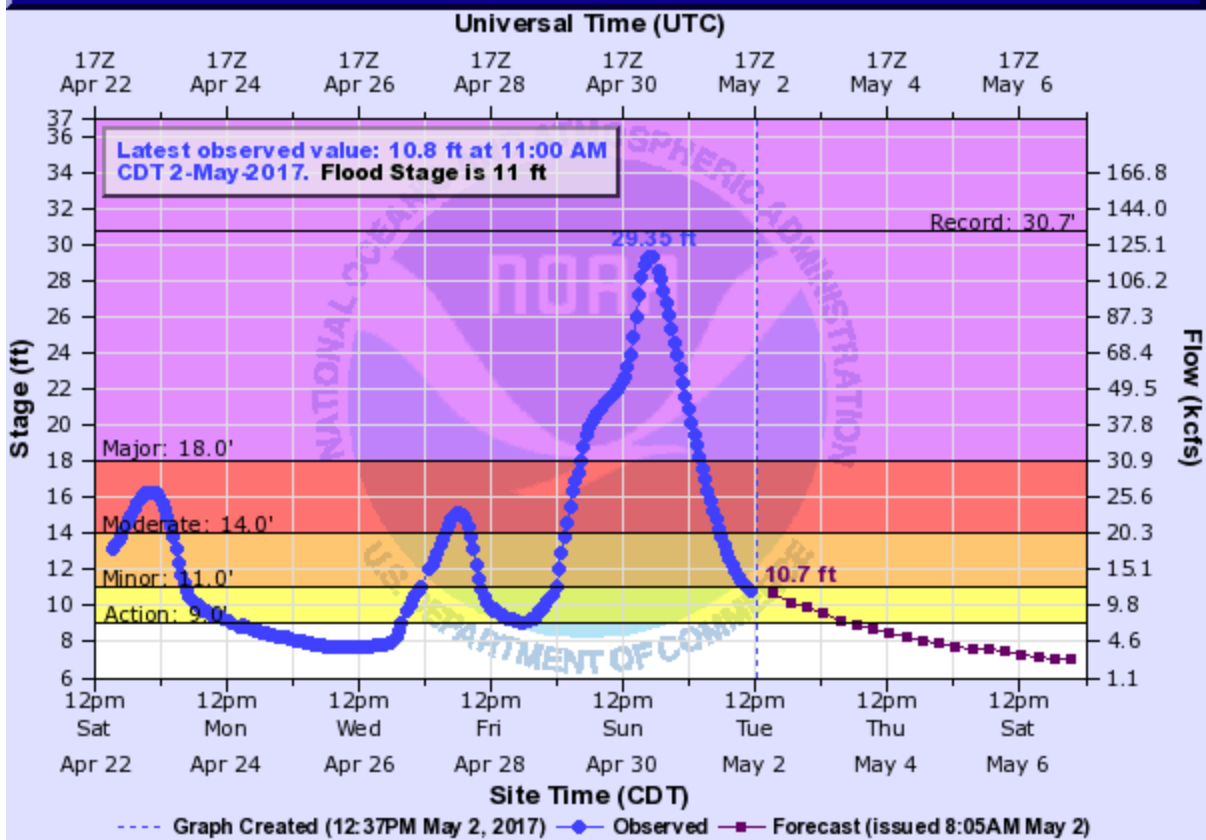
ILLINOIS RIVER (AR OK) NEAR WATTS



ILLINOIS RIVER (AR OK) AT CHEWEY



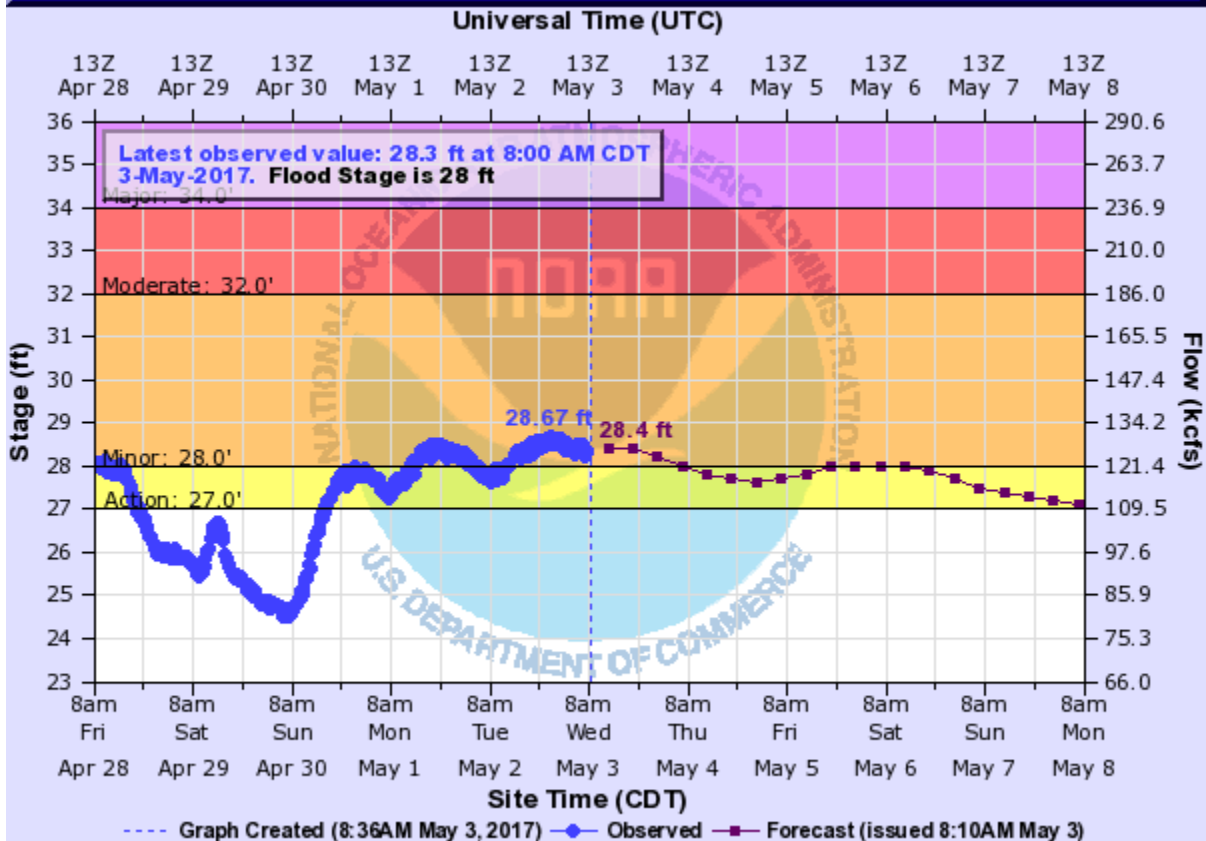
ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH



TALO2(plotting HGIRG) "Gage 0" Datum: 664.14'

Observations courtesy of US Geological Survey

ARKANSAS RIVER NEAR MUSKOGEE

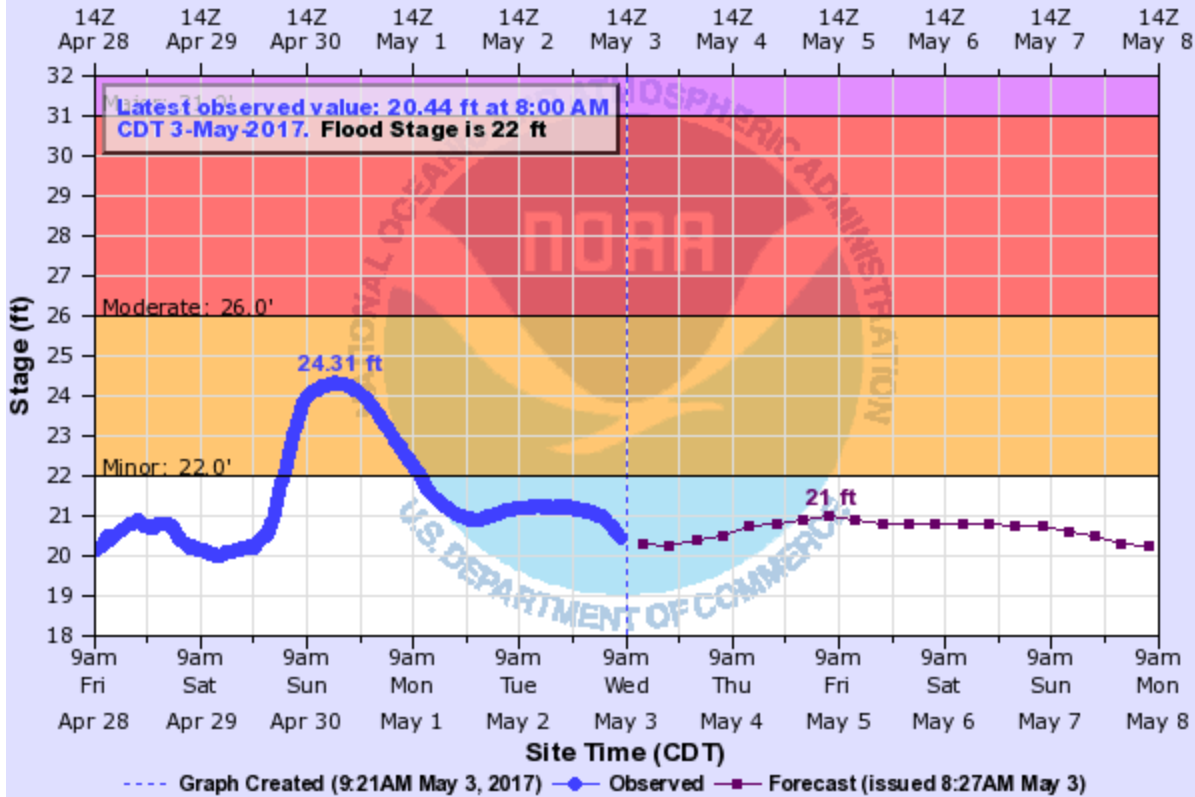


MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'

Observations courtesy of US Geological Survey

ARKANSAS RIVER AT VAN BUREN

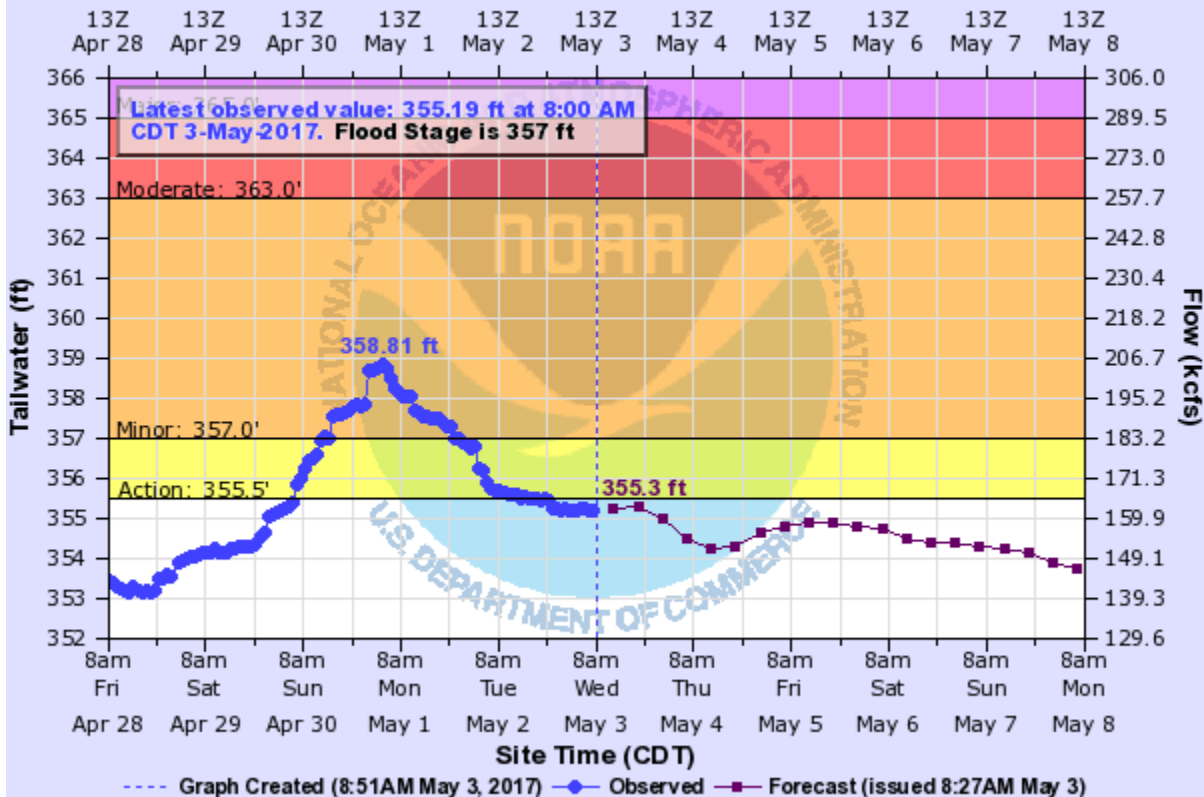
Universal Time (UTC)



VBUA4(plotting HGIRG) "Gage 0" Datum: 372.36'

ARKANSAS RIVER AT OZARK L/D TAILWATER

Universal Time (UTC)

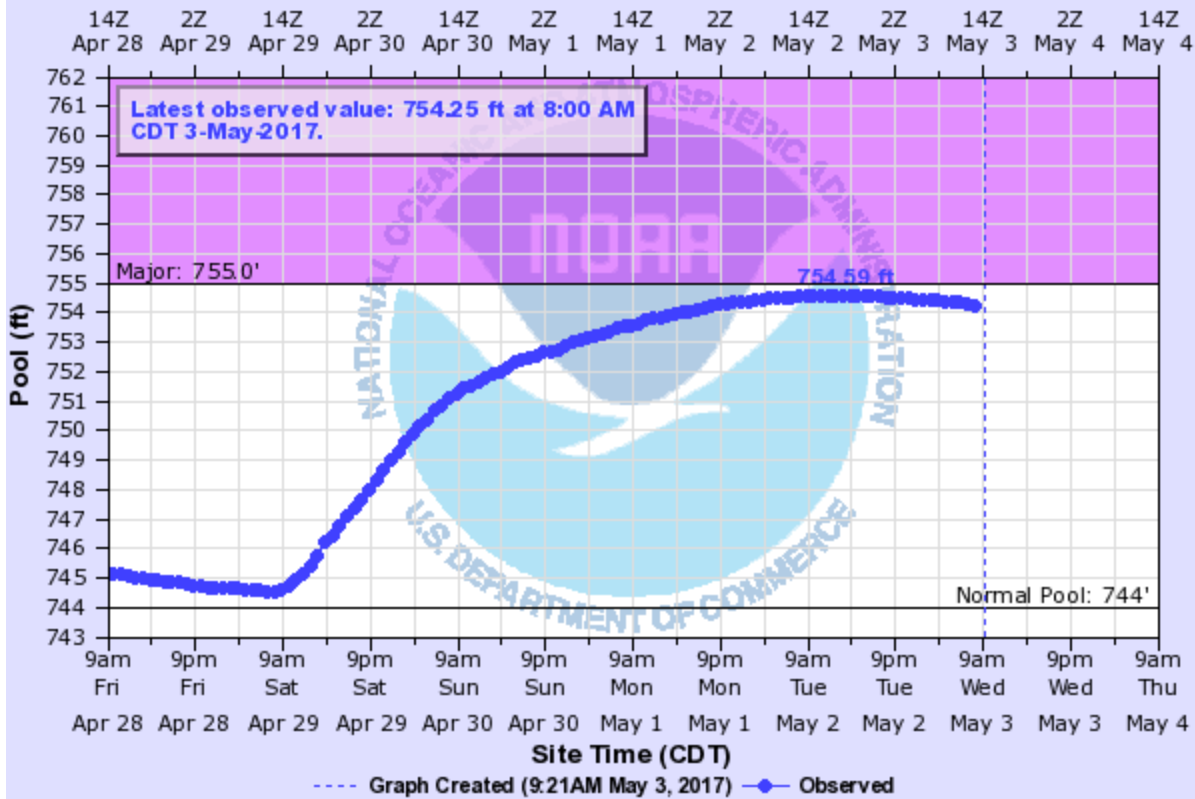


OZGA4(plotting HTIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers - LRD

EASTERN OKLAHOMA LAKES AT GRAND LAKE

Universal Time (UTC)

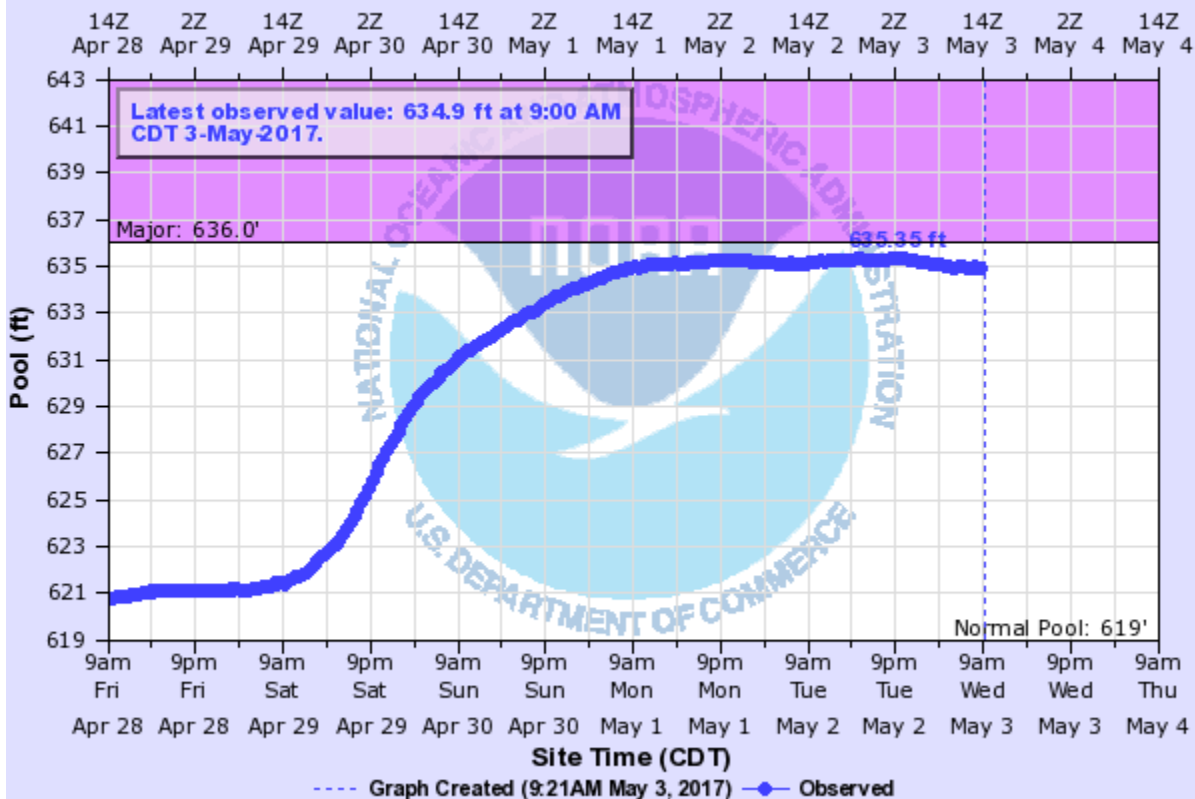


PEN02(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT HUDSON LAKE

Universal Time (UTC)

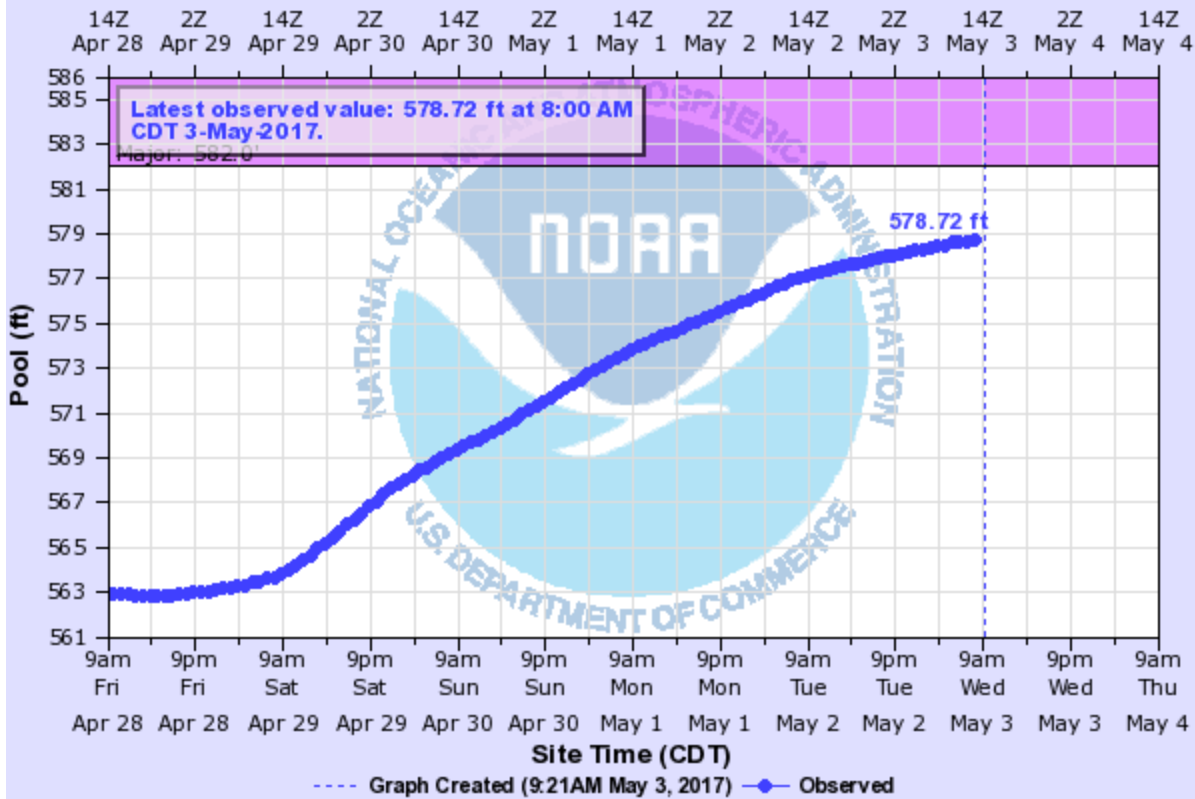


MFDO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT FT. GIBSON LAKE

Universal Time (UTC)

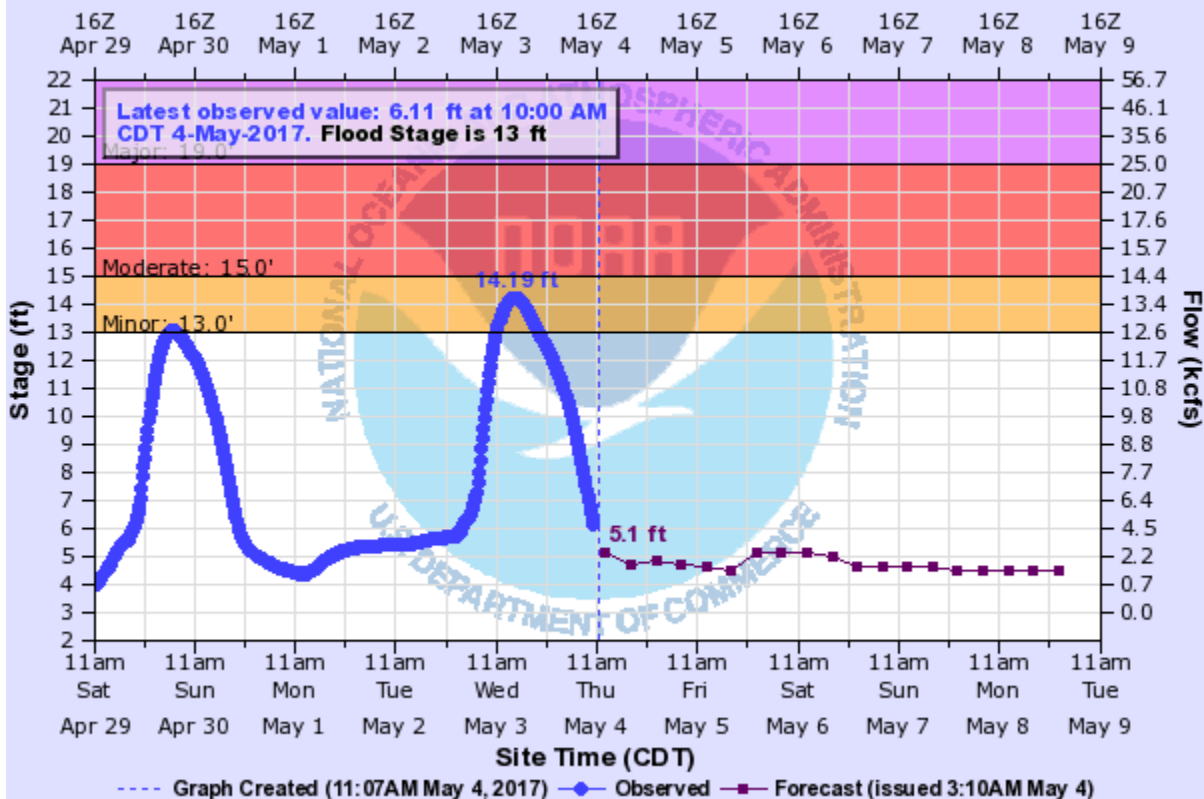


GIBO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

CANEY RIVER AT BARTLESVILLE

Universal Time (UTC)

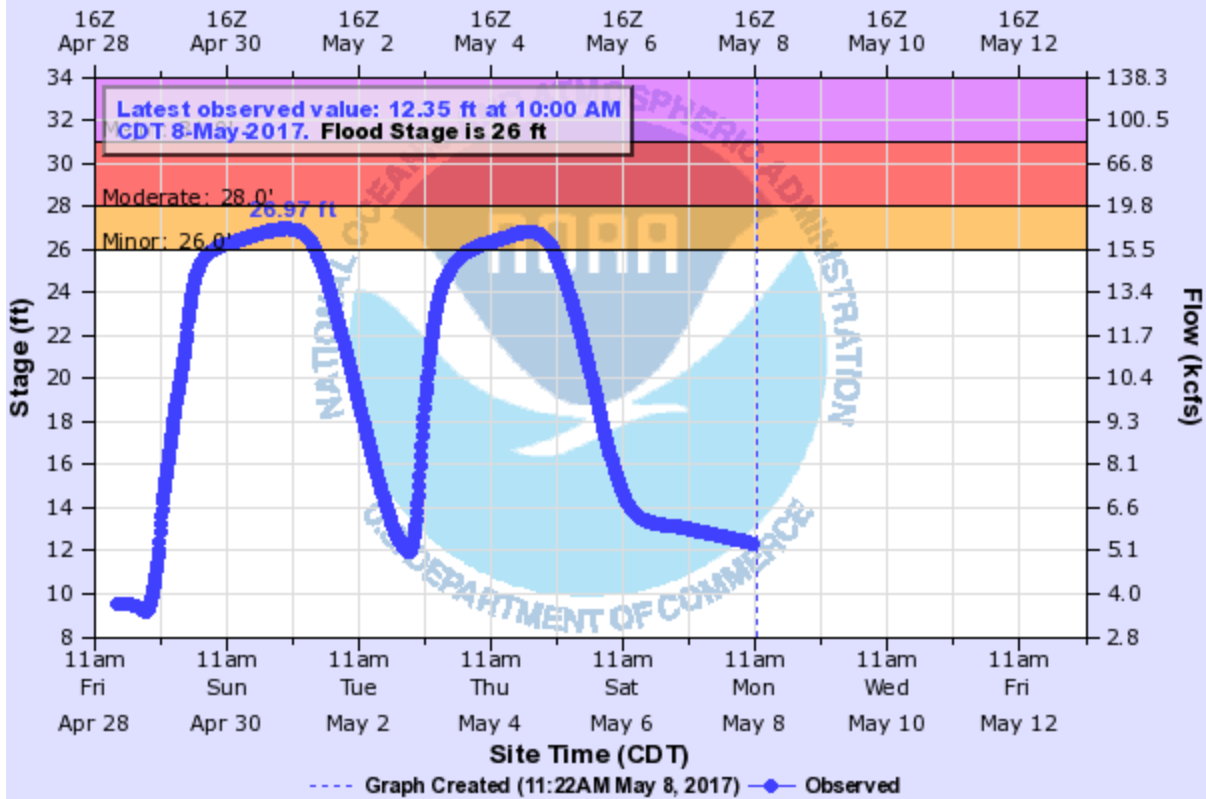


BVLO2(plotting HGIRG) "Gage 0" Datum: 653.33'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR RAMONA

Universal Time (UTC)

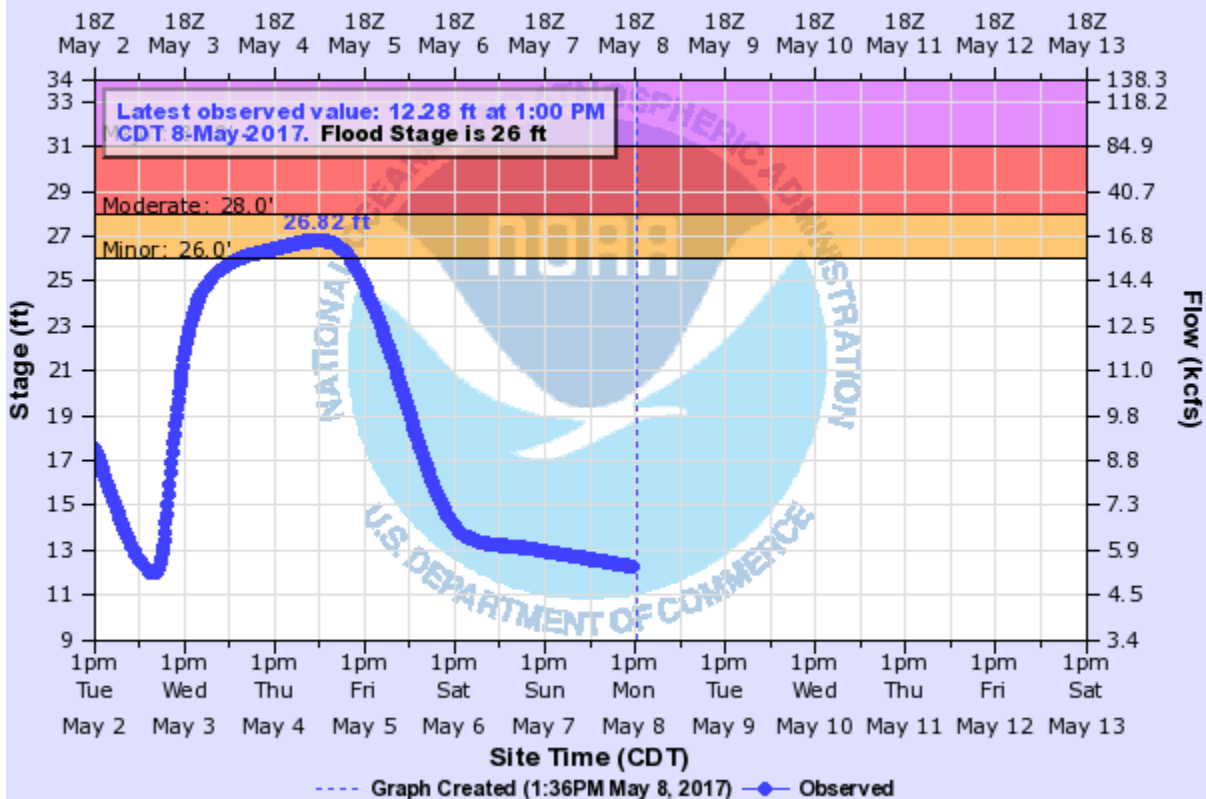


RAMO2(plotting HGIRG) "Gage 0" Datum: 586.43'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR RAMONA

Universal Time (UTC)

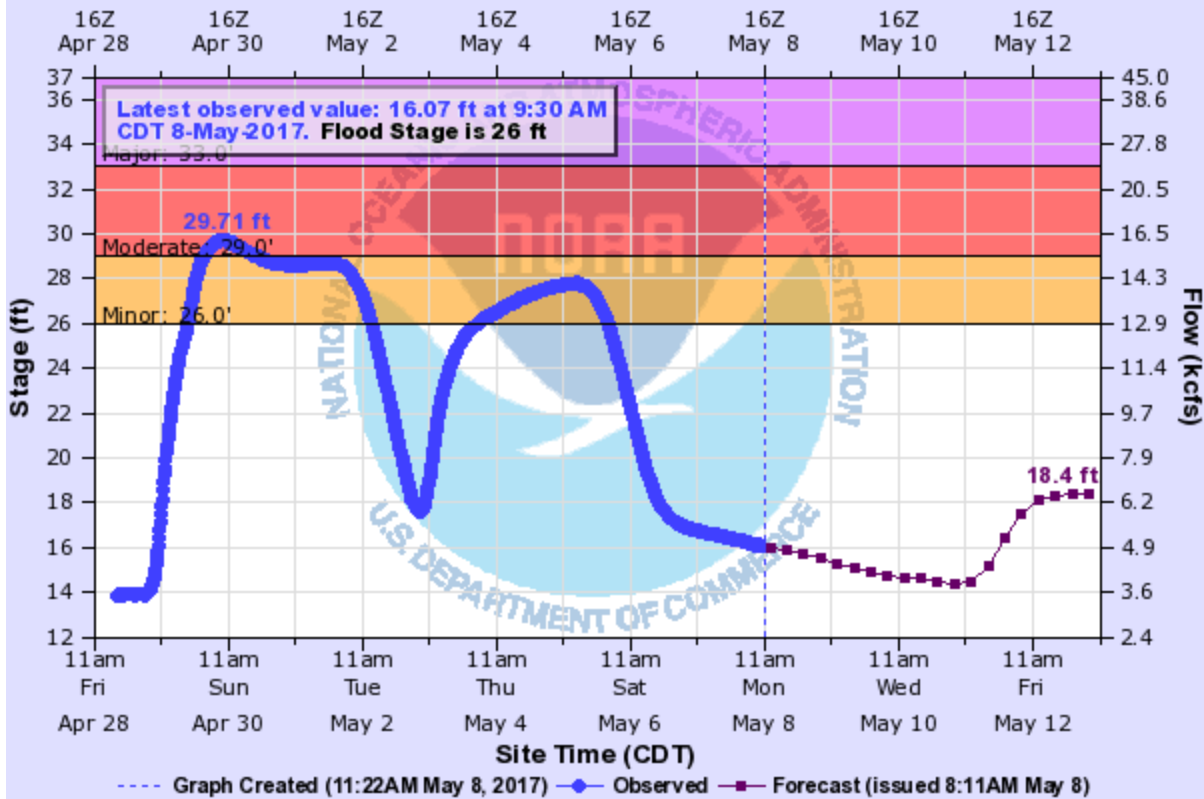


RAMO2(plotting HGIRG) "Gage 0" Datum: 586.43'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR COLLINSVILLE

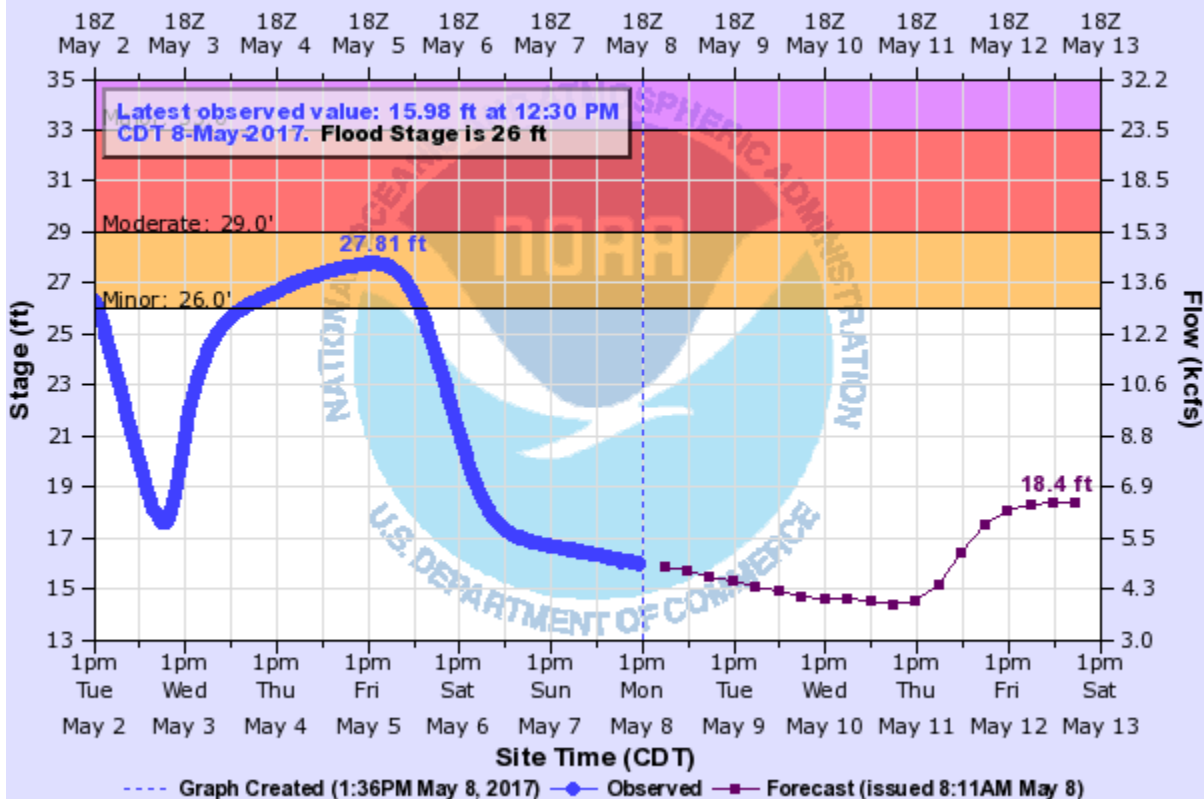
Universal Time (UTC)



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

CANEY RIVER NEAR COLLINSVILLE

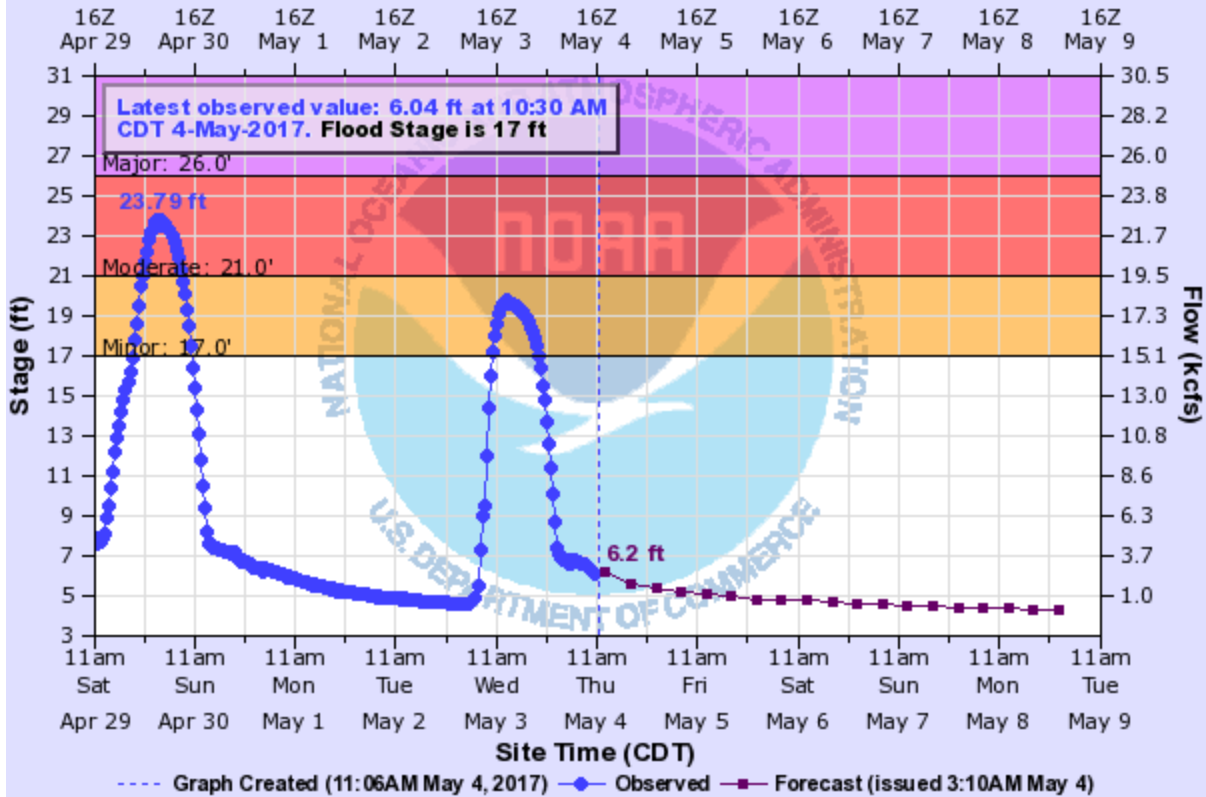
Universal Time (UTC)



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

BIRD CREEK AT AVANT

Universal Time (UTC)

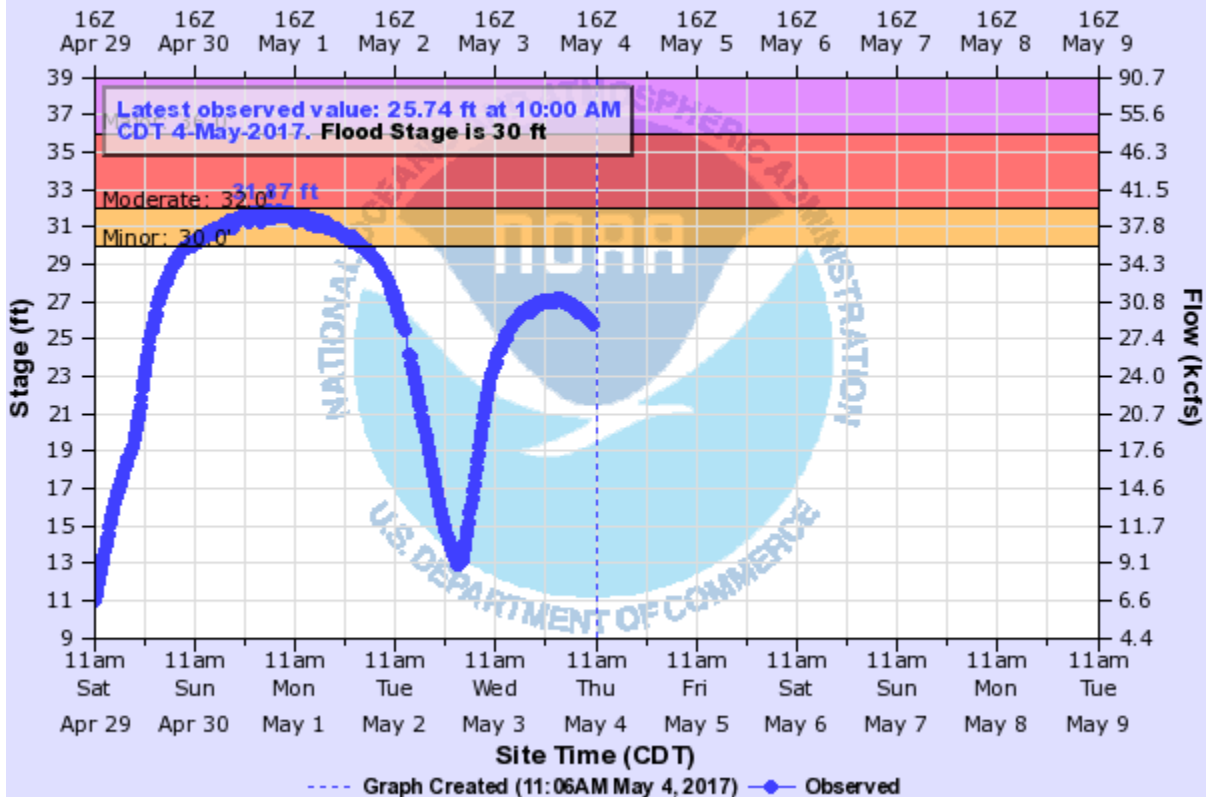


AVT02(plotting HGIRG) "Gage 0" Datum: 646.28'

Observations courtesy of US Geological Survey

VERDIGRIS RIVER NEAR LENAPAH

Universal Time (UTC)

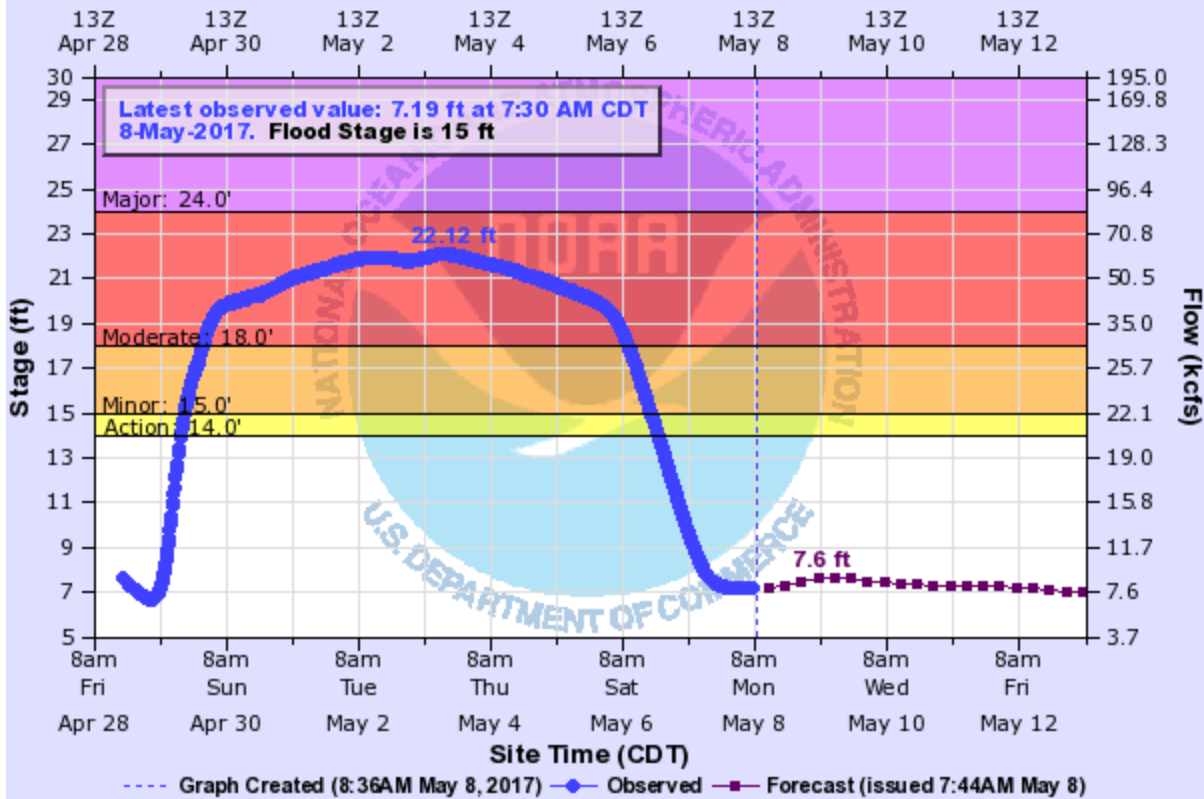


LEPO2(plotting HGIRG) "Gage 0" Datum: 644.9'

Observations courtesy of US Geological Survey

NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

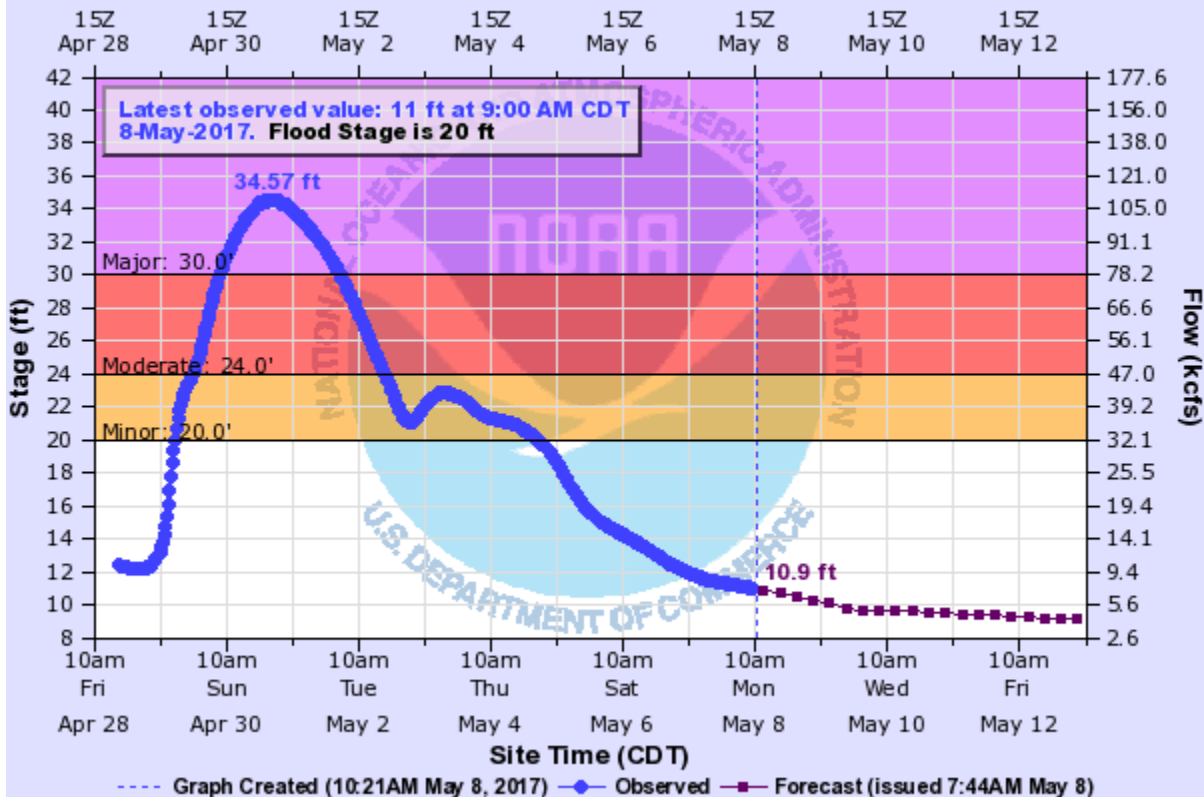


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

SPRING RIVER NEAR QUAPAW

Universal Time (UTC)

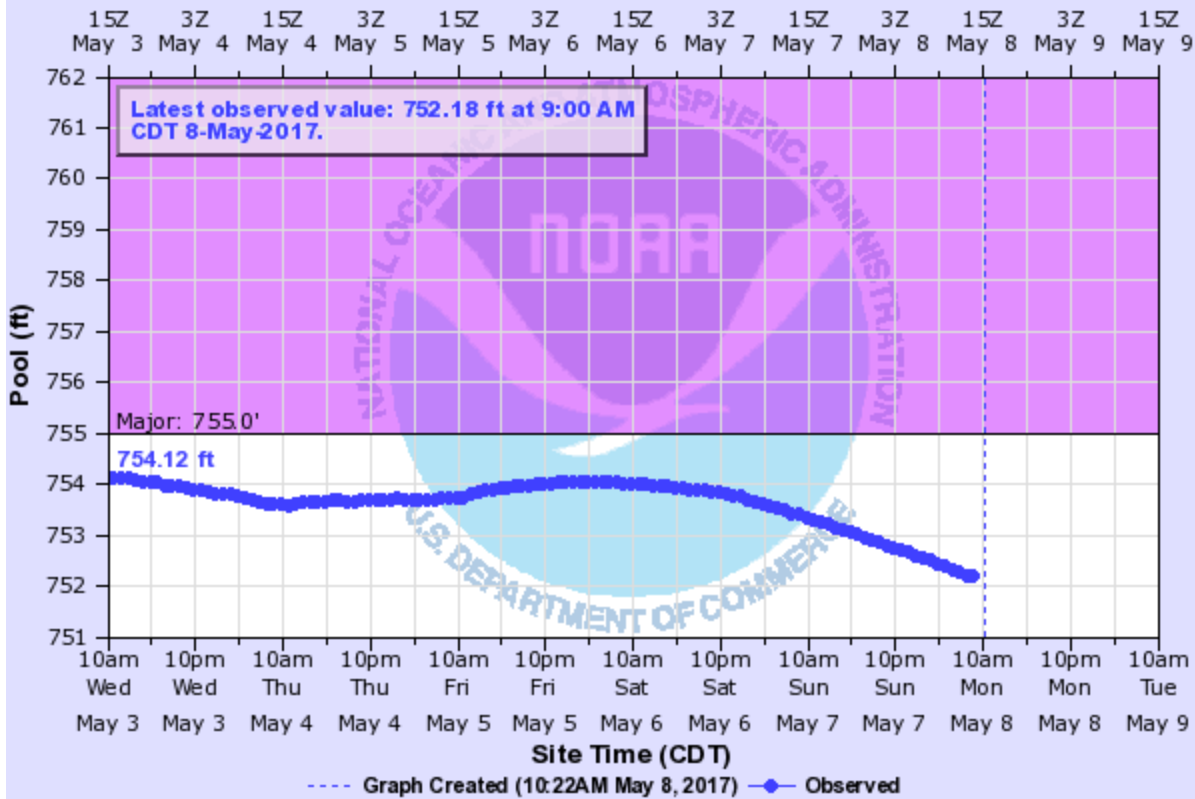


QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

Observations courtesy of US Geological Survey

EASTERN OKLAHOMA LAKES AT GRAND LAKE

Universal Time (UTC)

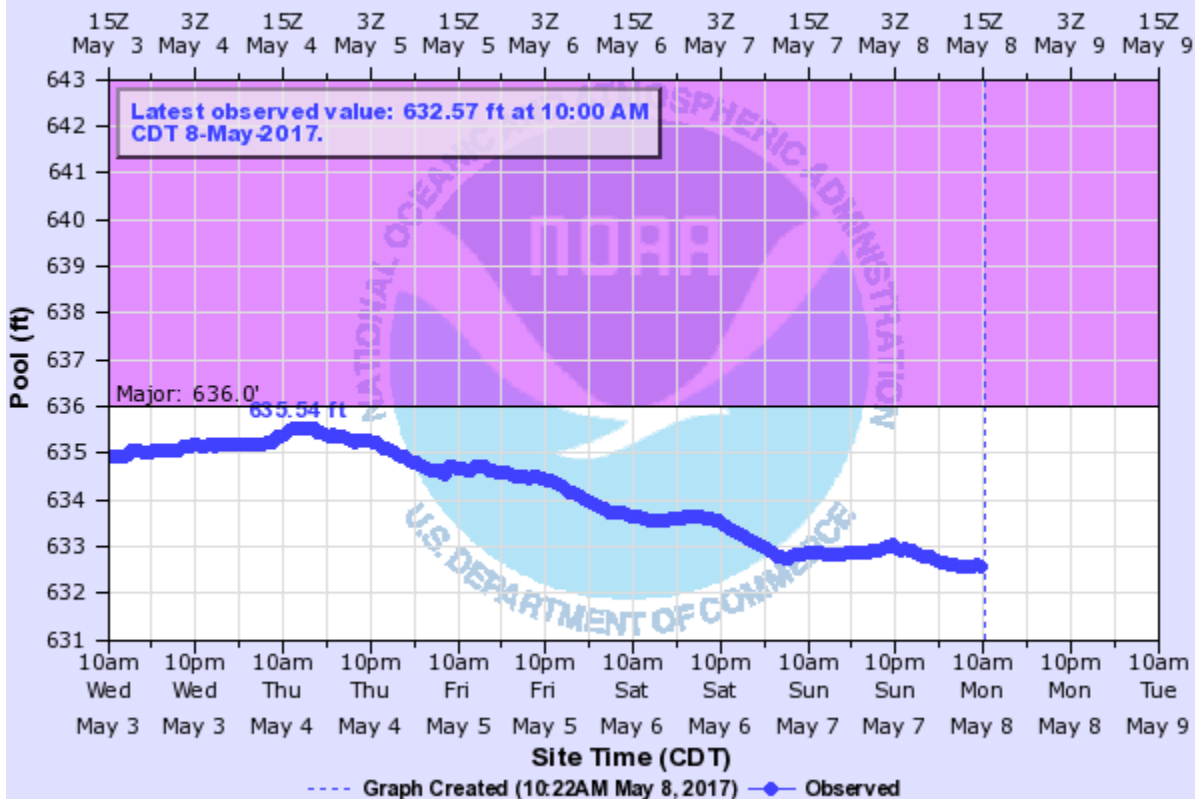


PENO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT HUDSON LAKE

Universal Time (UTC)

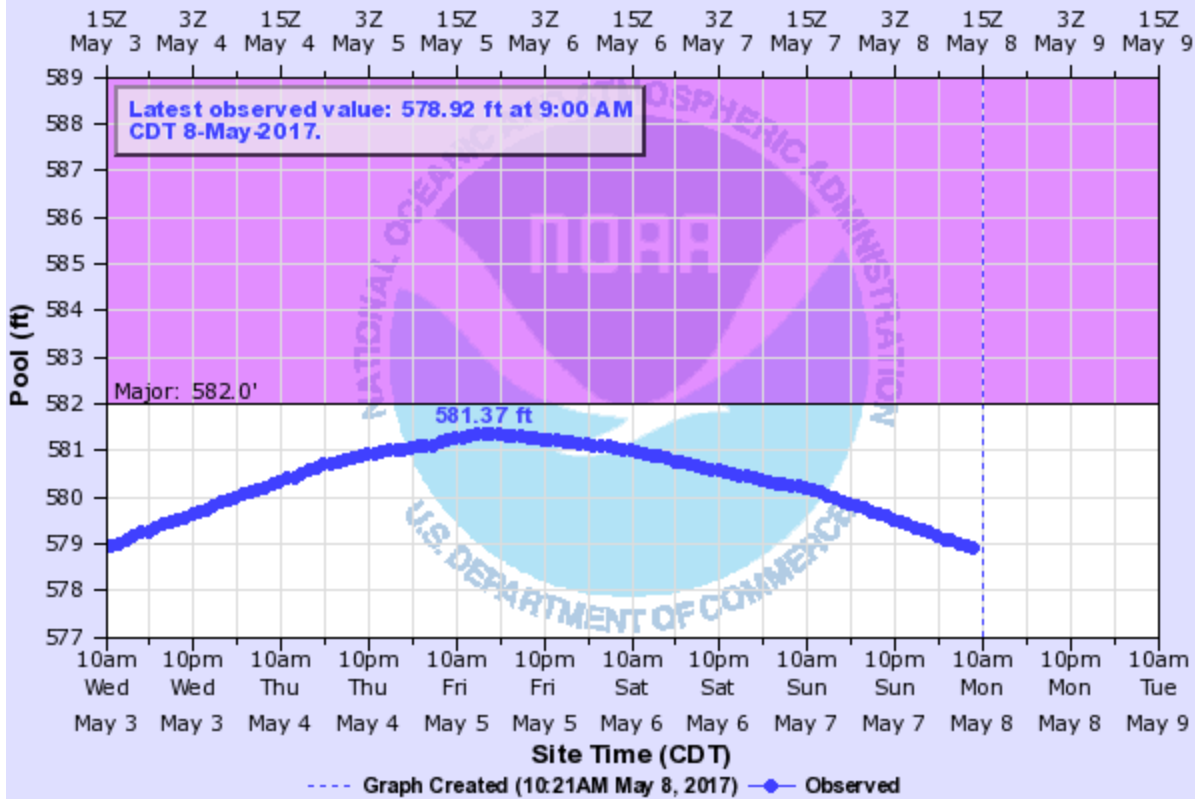


MFDO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT FT. GIBSON LAKE

Universal Time (UTC)

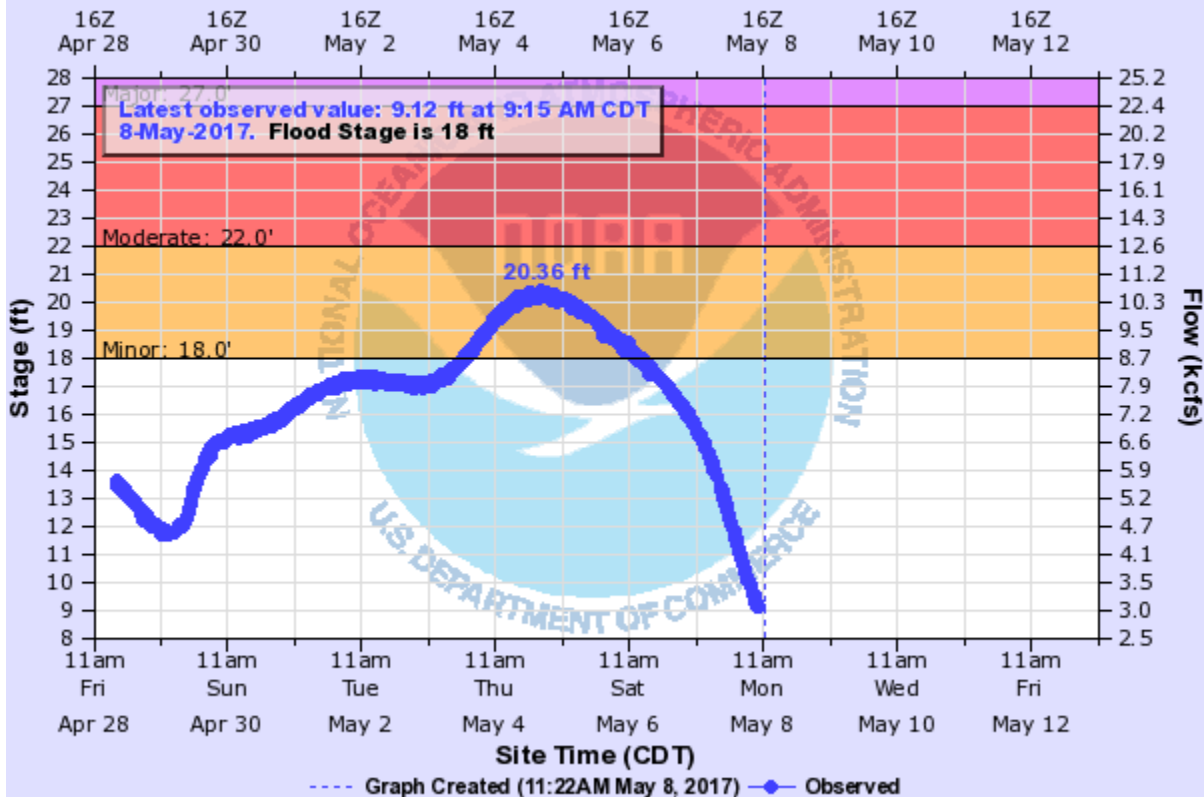


GIBO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

DEEP FORK RIVER NEAR BEGGS

Universal Time (UTC)

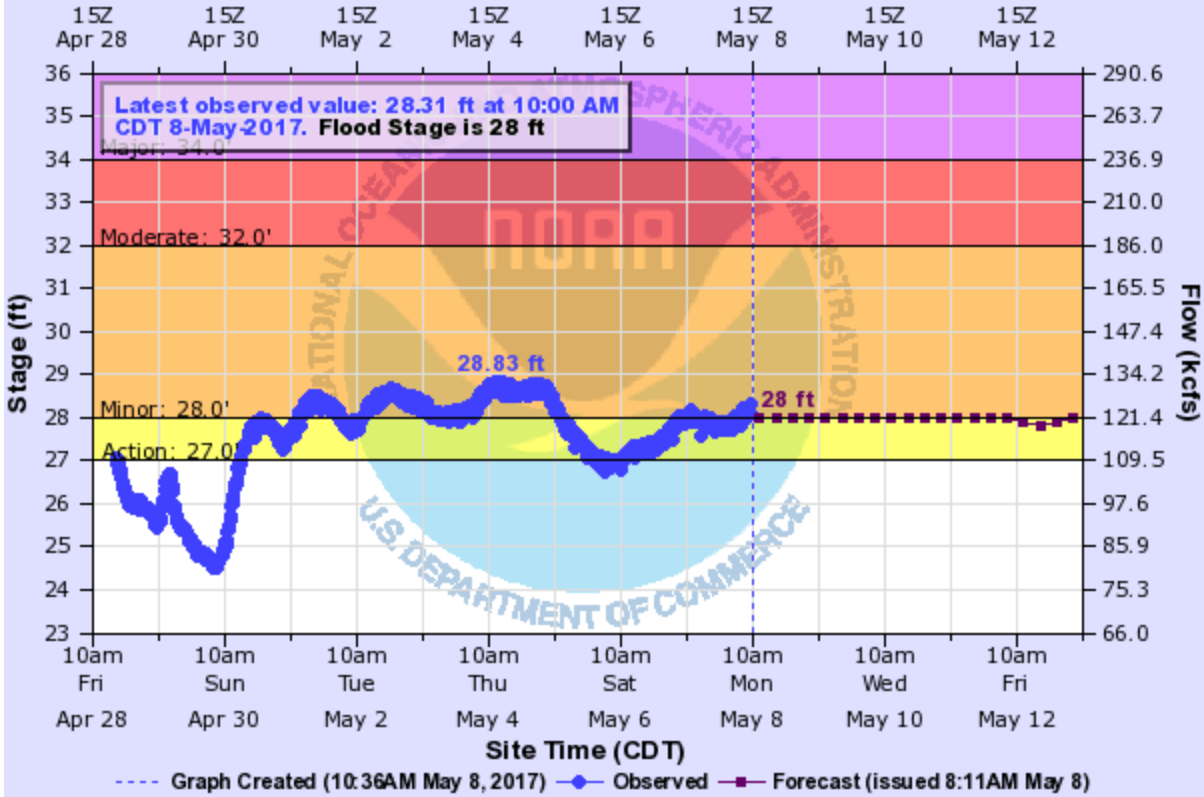


BGSO2(plotting HGIRG) "Gage 0" Datum: 632.55'

Observations courtesy of US Geological Survey

ARKANSAS RIVER NEAR MUSKOGEE

Universal Time (UTC)

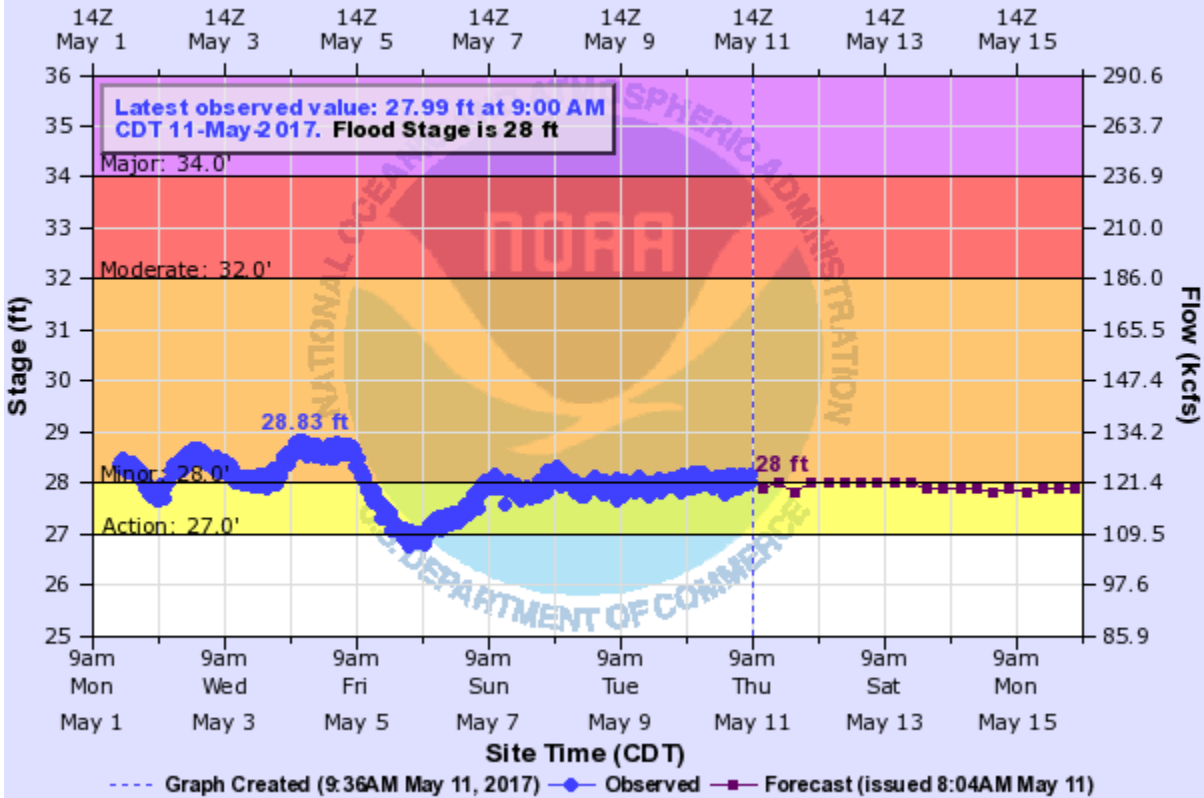


MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'

Observations courtesy of US Geological Survey

ARKANSAS RIVER NEAR MUSKOGEE

Universal Time (UTC)

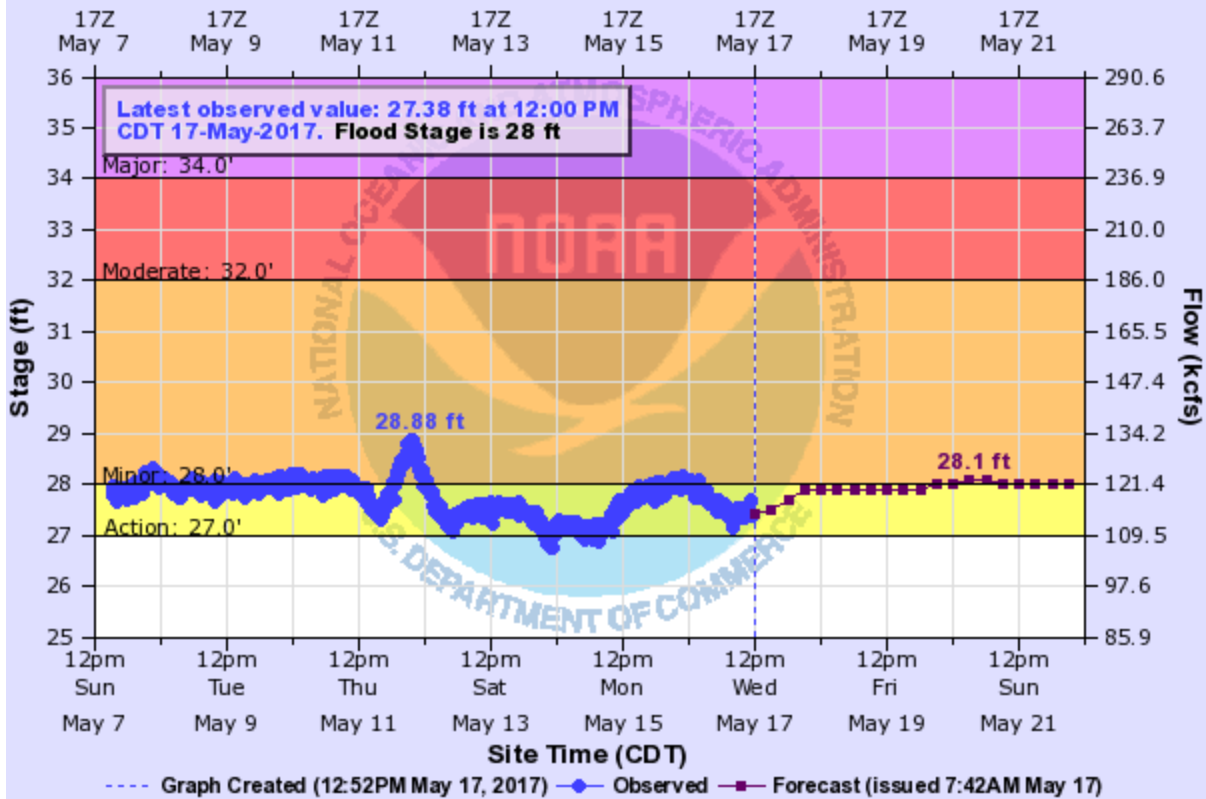


MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'

Observations courtesy of US Geological Survey

ARKANSAS RIVER NEAR MUSKOGEE

Universal Time (UTC)

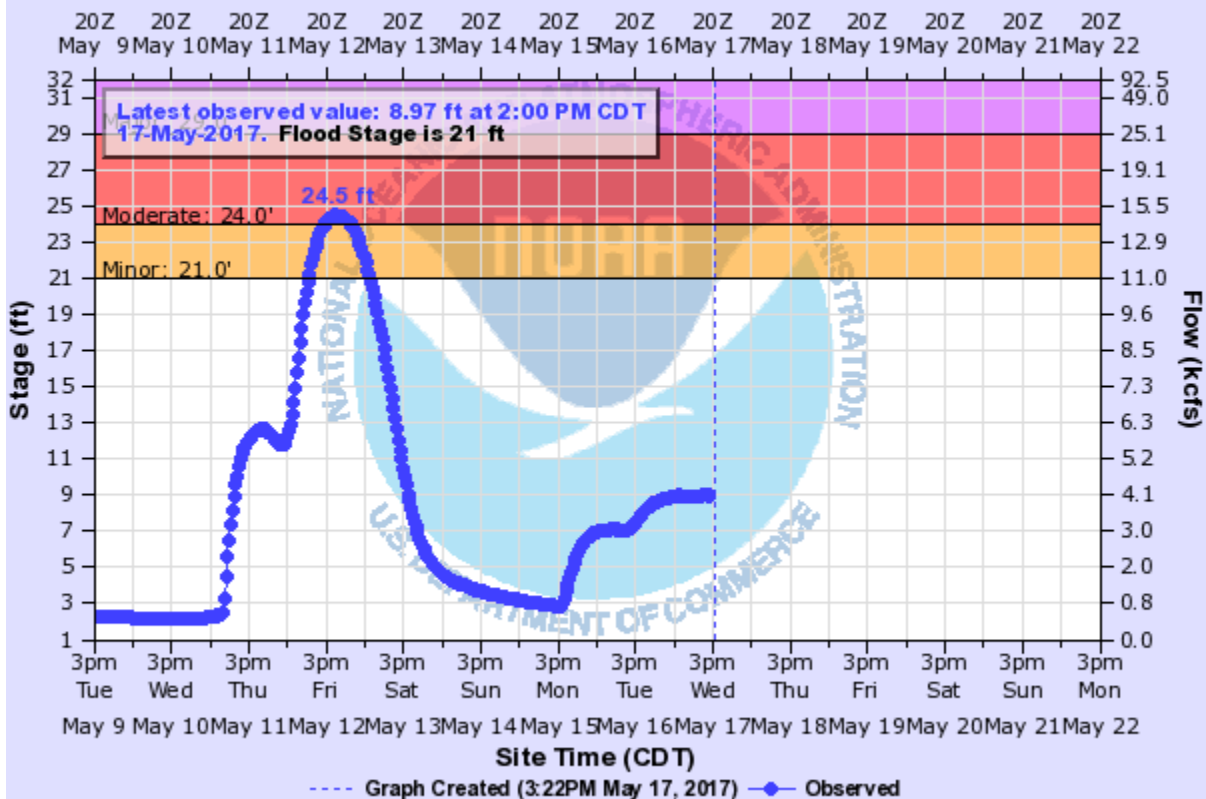


MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'

Observations courtesy of US Geological Survey

BIRD CREEK NEAR SPERRY

Universal Time (UTC)

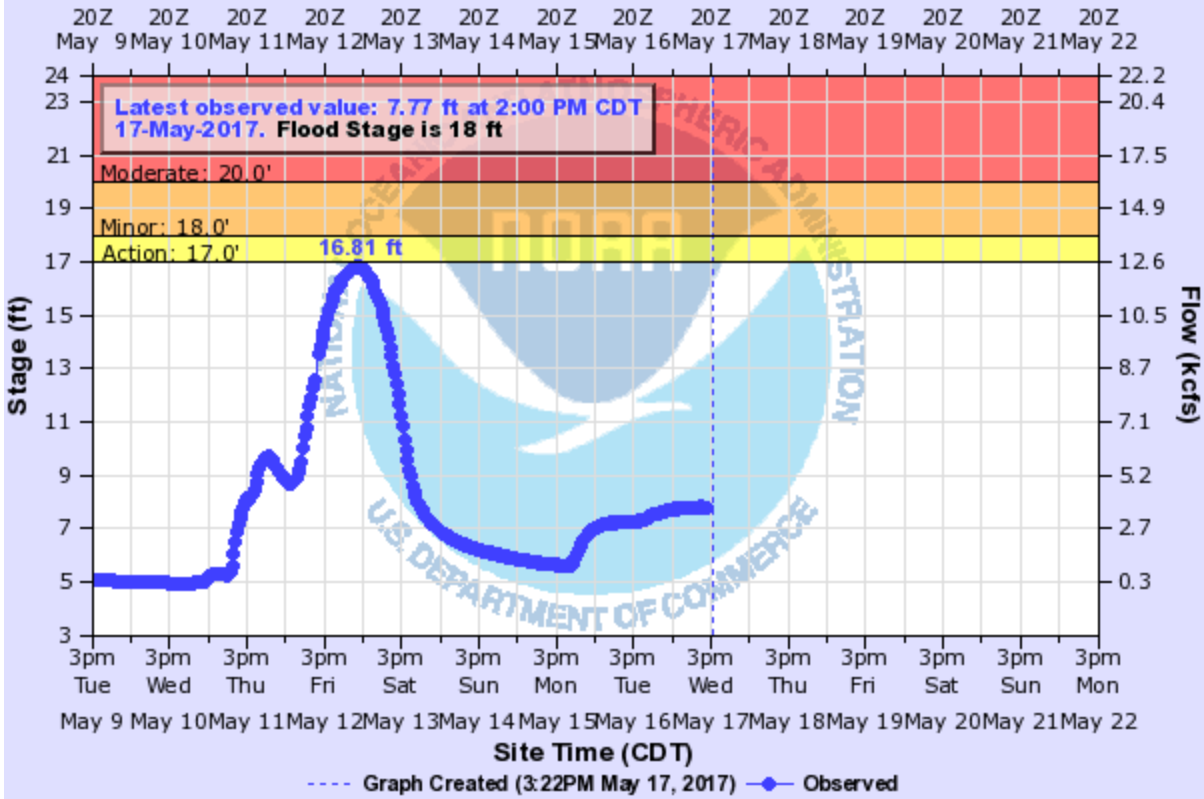


SPEO2(plotting HGIRG) "Gage 0" Datum: 579.43'

Observations courtesy of US Geological Survey

BIRD CREEK NEAR OWASSO

Universal Time (UTC)

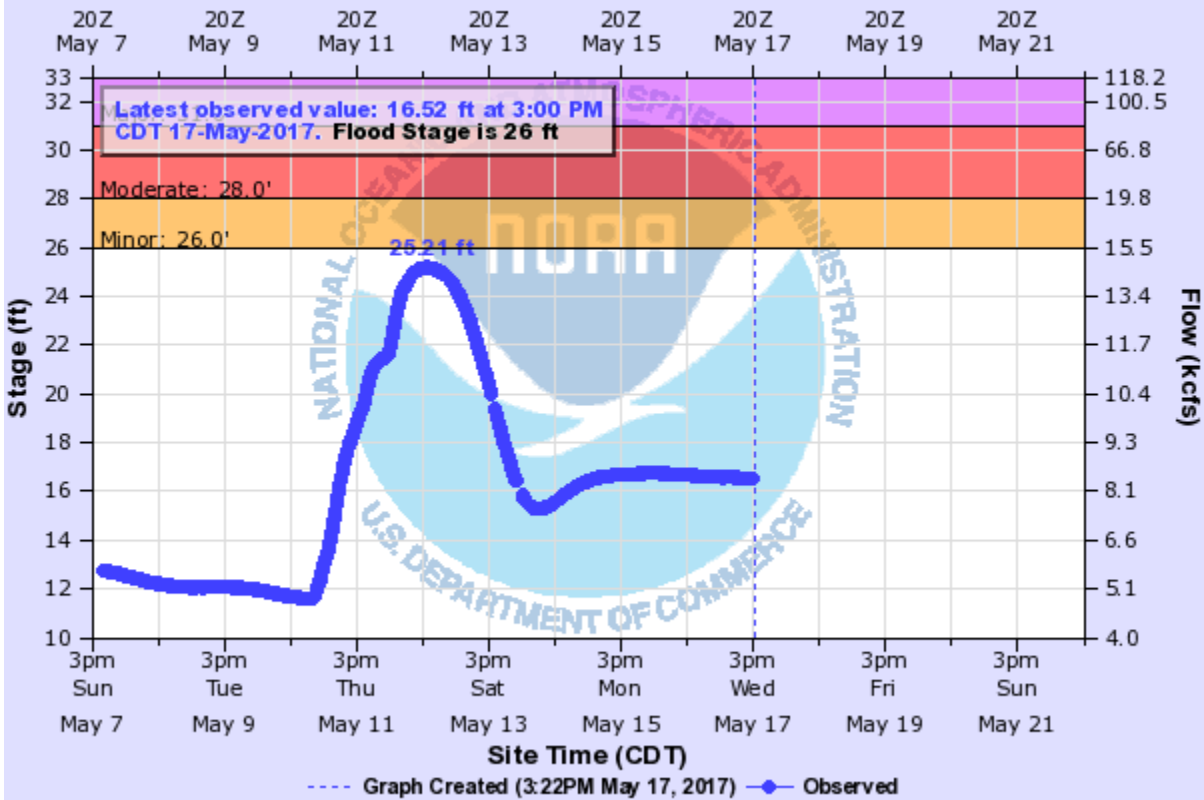


OWSO2(plotting HGIRG) "Gage 0" Datum: 560.17'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR RAMONA

Universal Time (UTC)

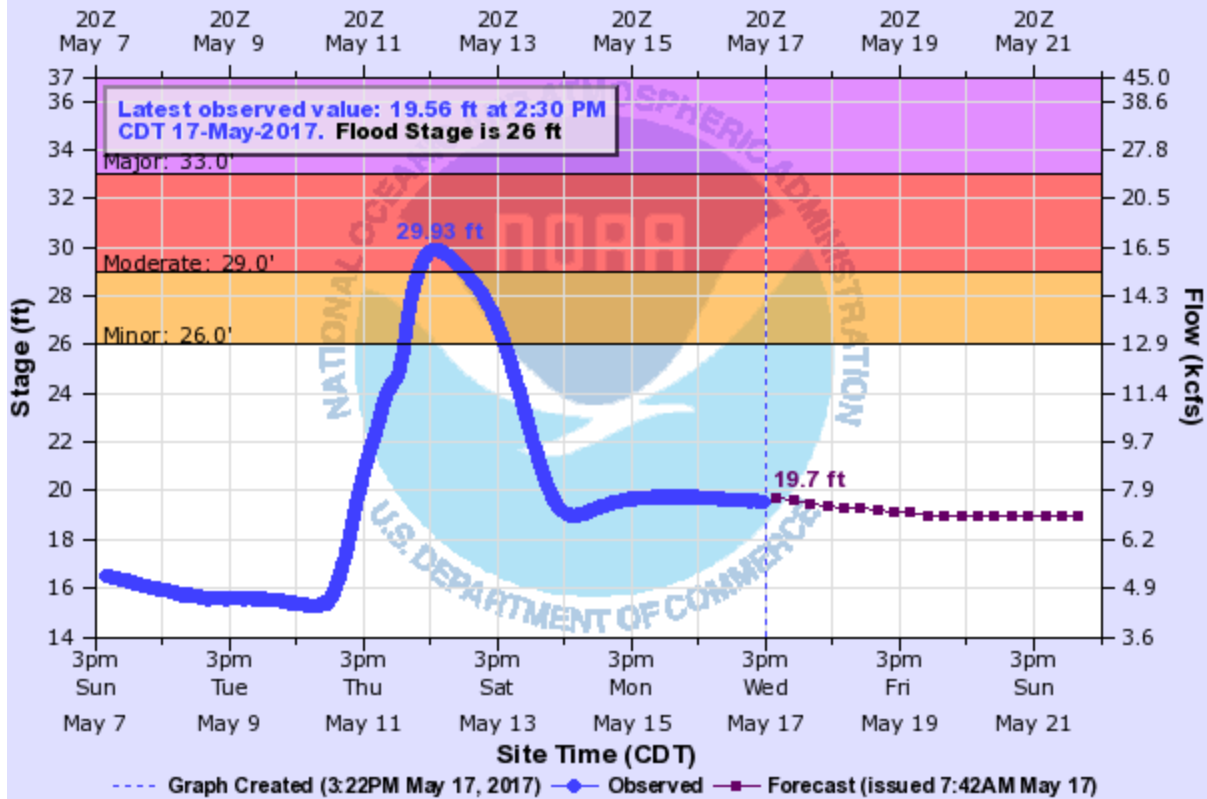


RAMO2(plotting HGIRG) "Gage 0" Datum: 586.43'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR COLLINSVILLE

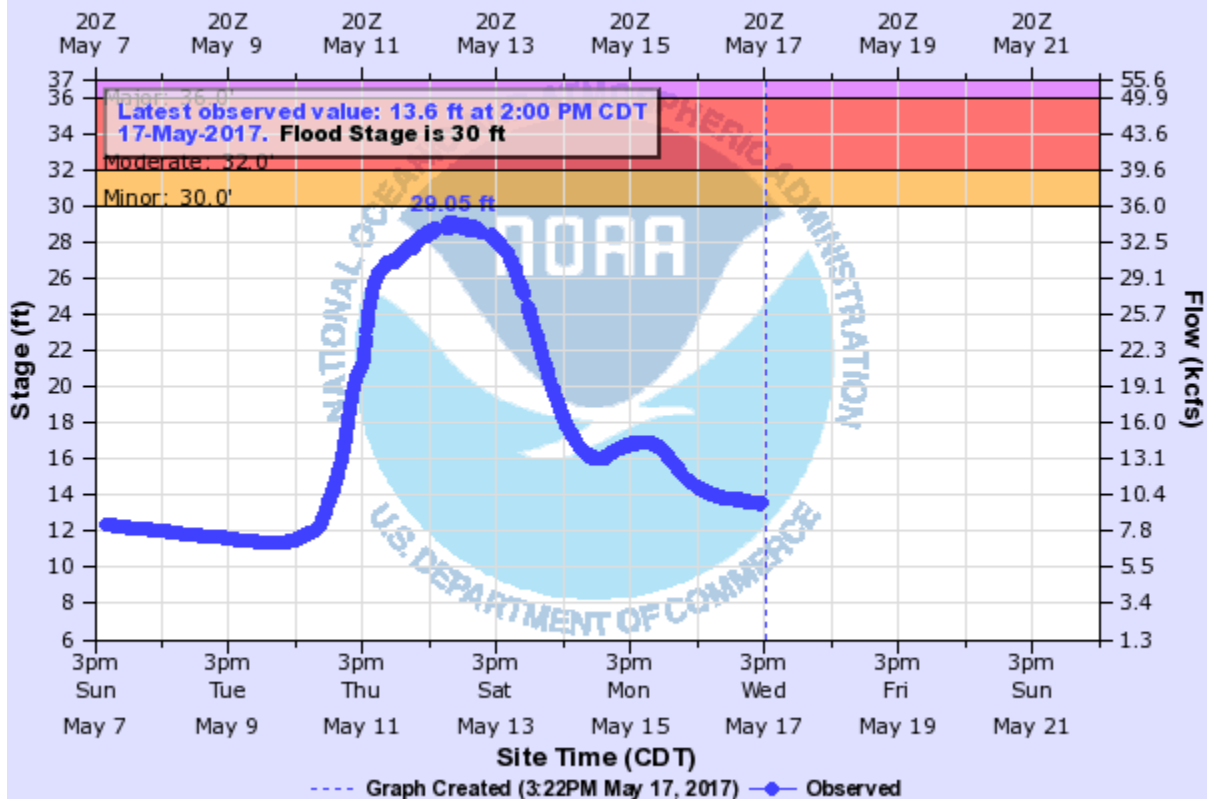
Universal Time (UTC)



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

VERDIGRIS RIVER NEAR LENAPAH

Universal Time (UTC)

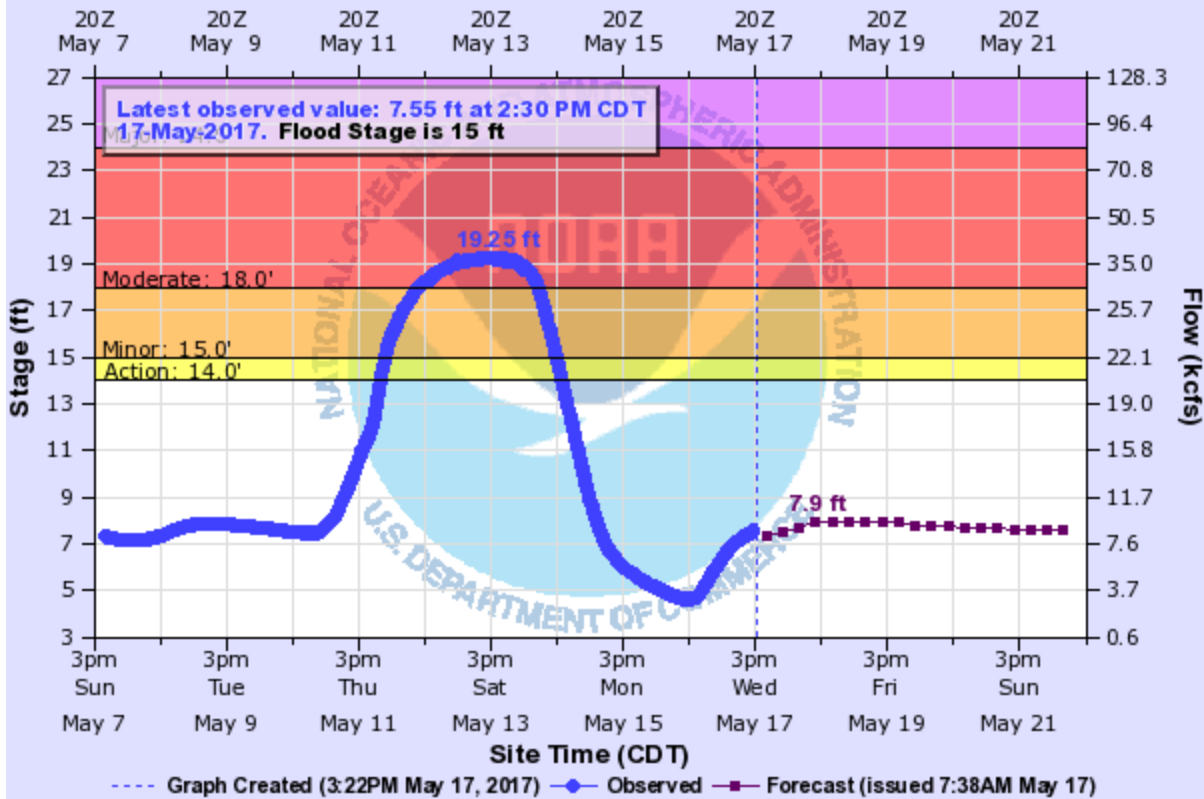


LEPO2(plotting HGIRG) "Gage 0" Datum: 644.9'

Observations courtesy of US Geological Survey

NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

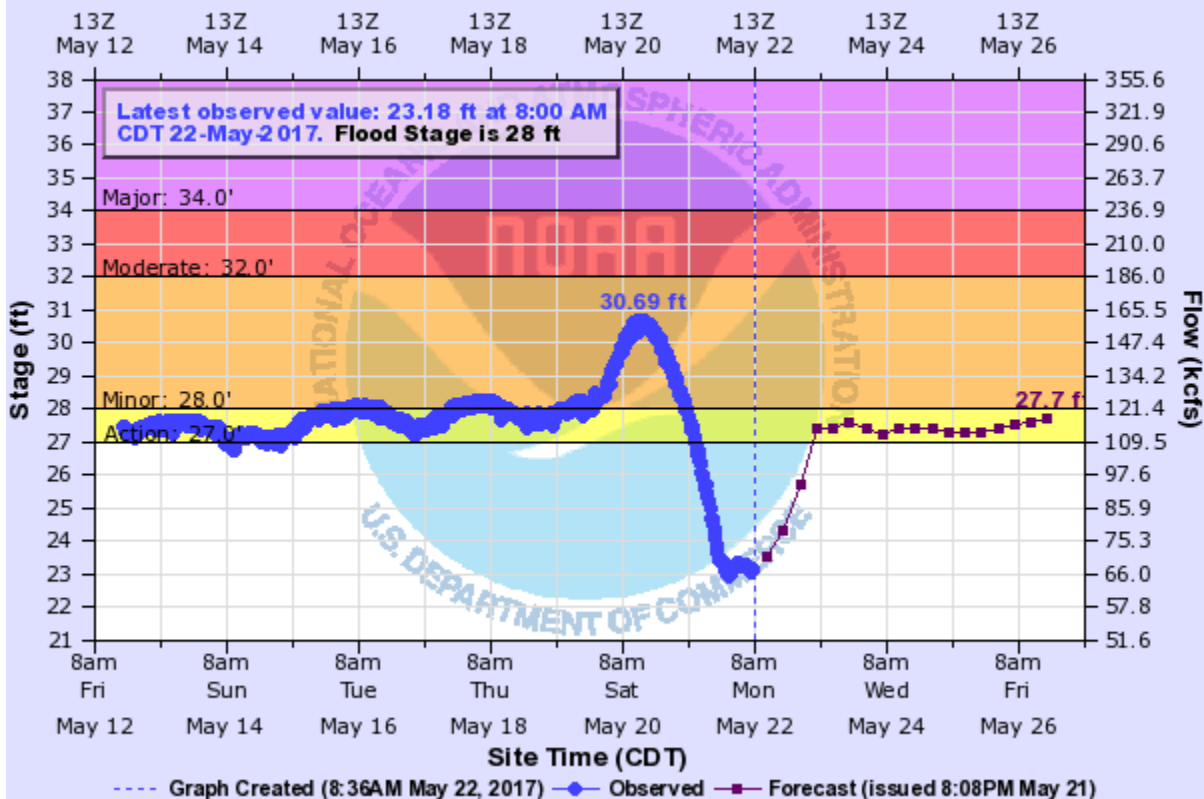


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

ARKANSAS RIVER NEAR MUSKOGEE

Universal Time (UTC)

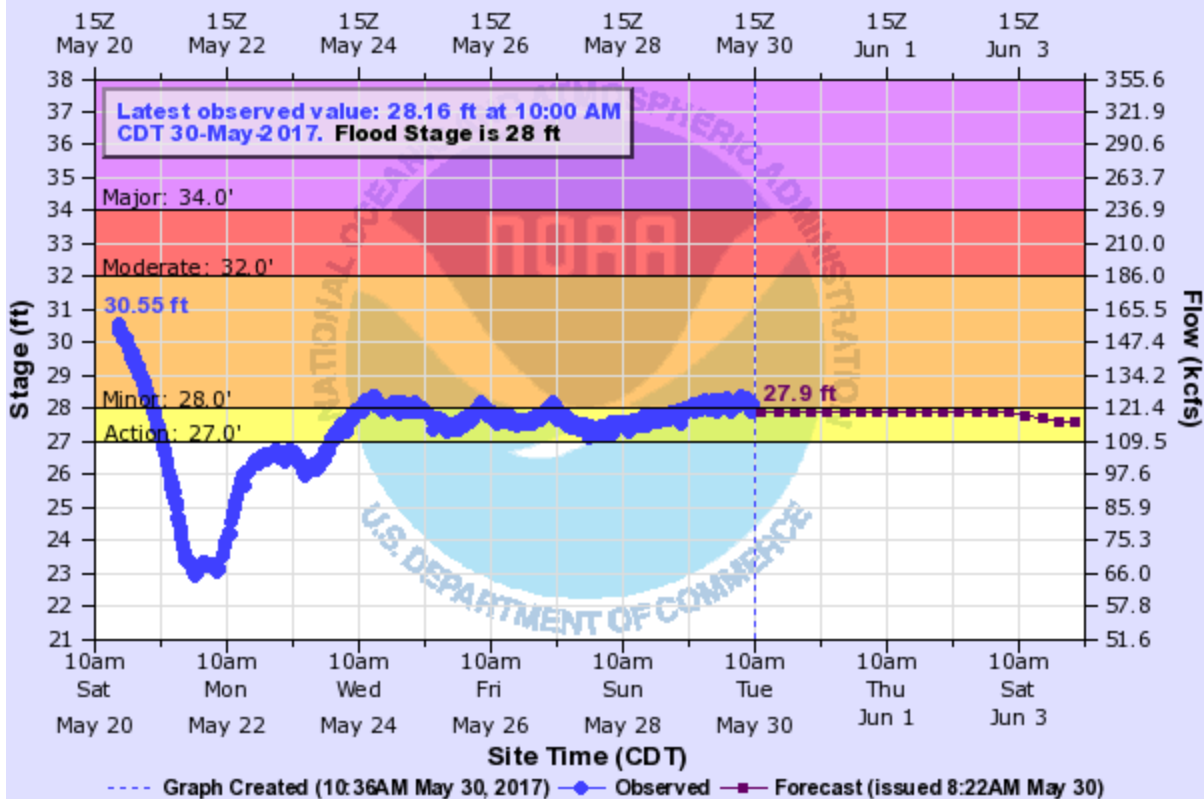


MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'

Observations courtesy of US Geological Survey

ARKANSAS RIVER NEAR MUSKOGEE

Universal Time (UTC)

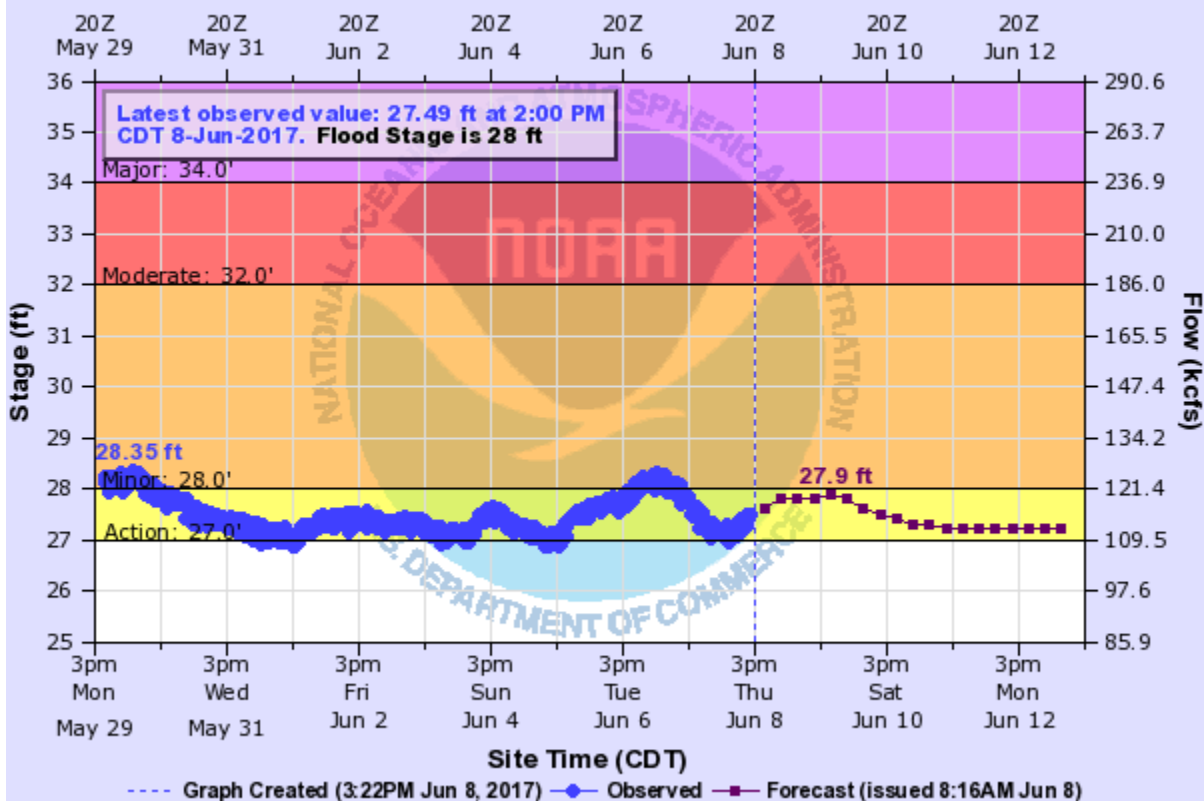


MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'

Observations courtesy of US Geological Survey

ARKANSAS RIVER NEAR MUSKOGEE

Universal Time (UTC)

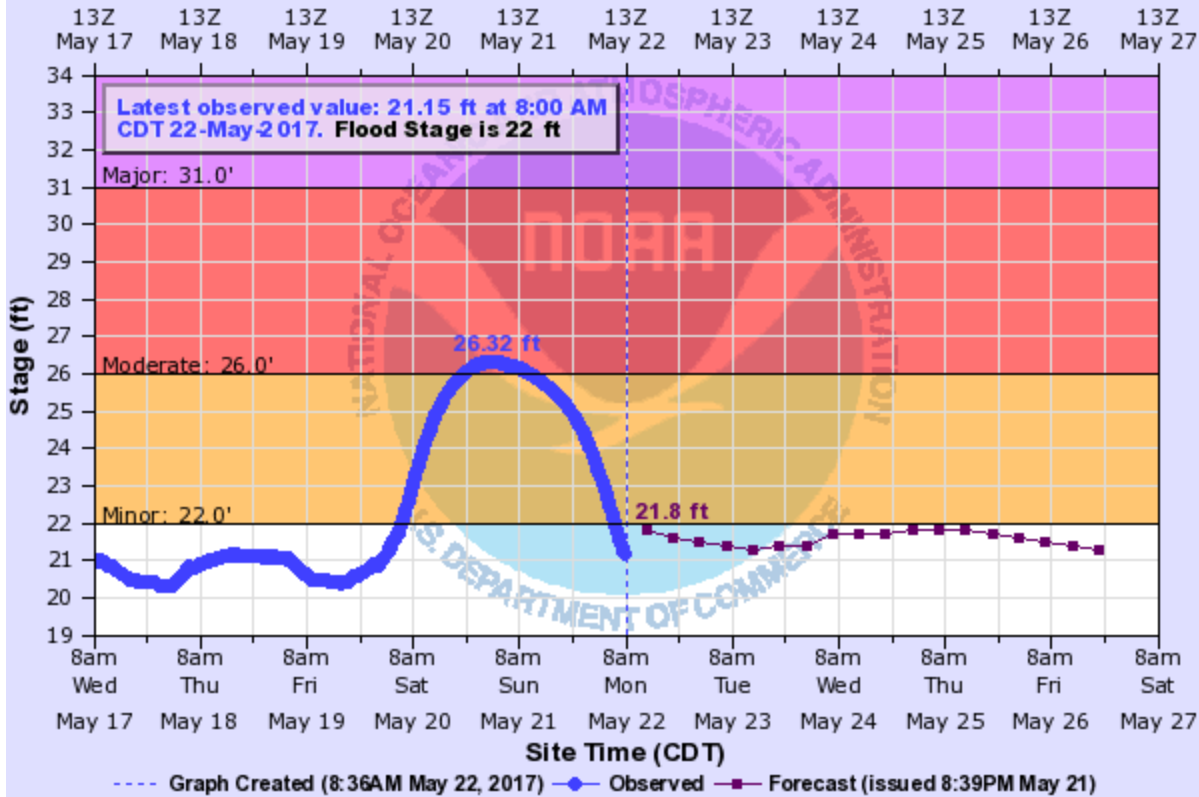


MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'

Observations courtesy of US Geological Survey

ARKANSAS RIVER AT VAN BUREN

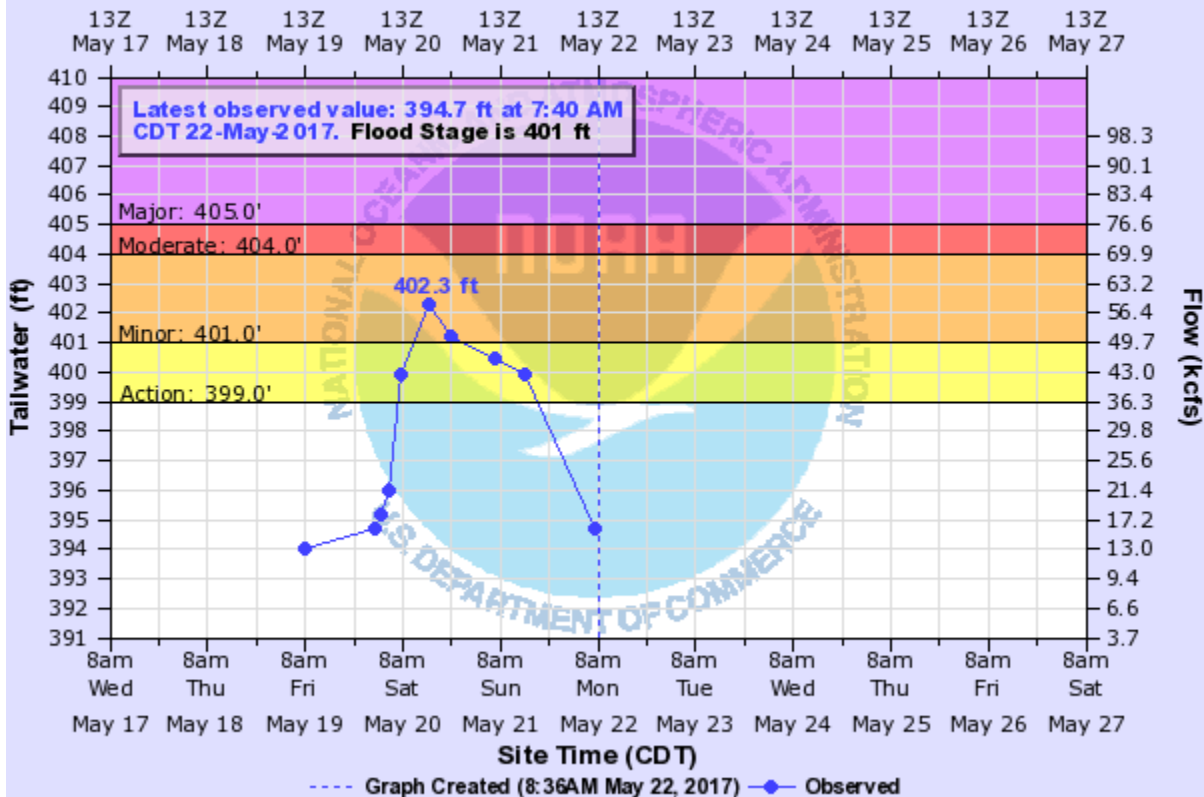
Universal Time (UTC)



VBUA4(plotting HGIRG) "Gage 0" Datum: 372.36'

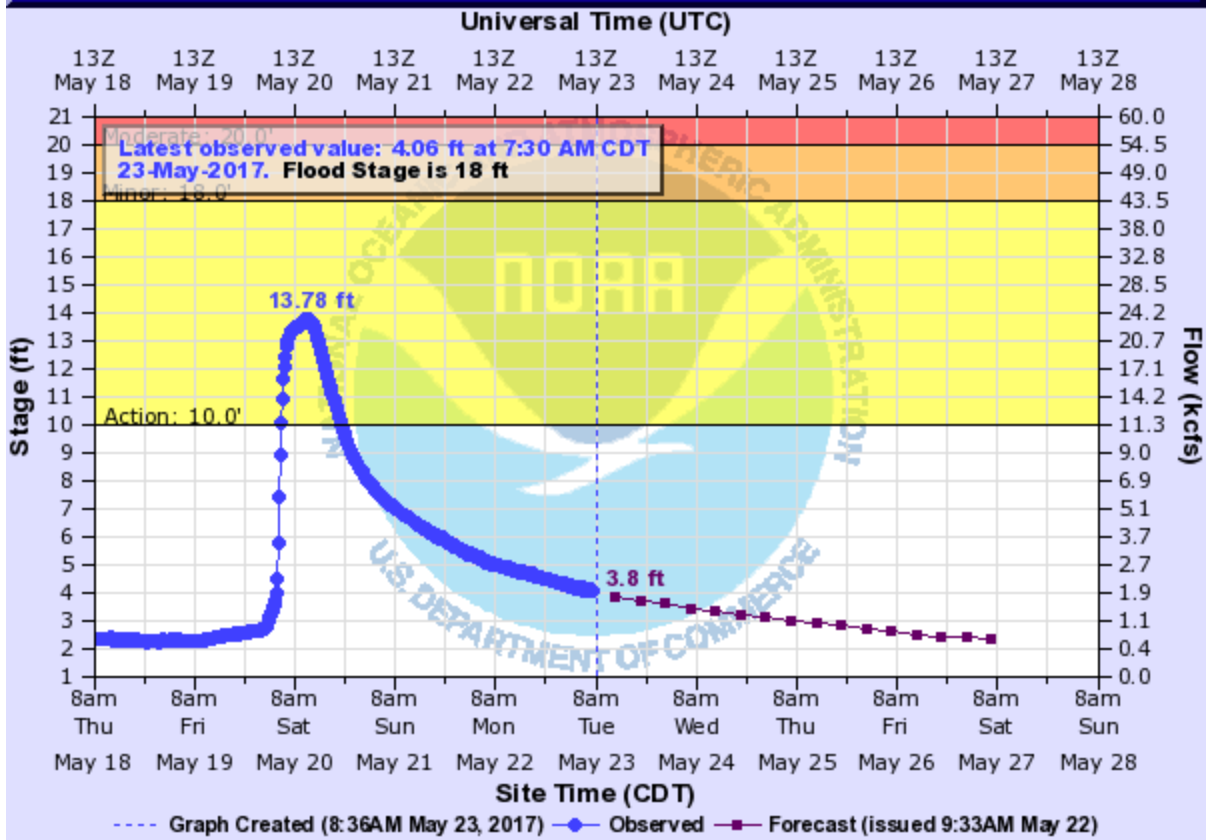
LEE CREEK NEAR VAN BUREN LCR

Universal Time (UTC)



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

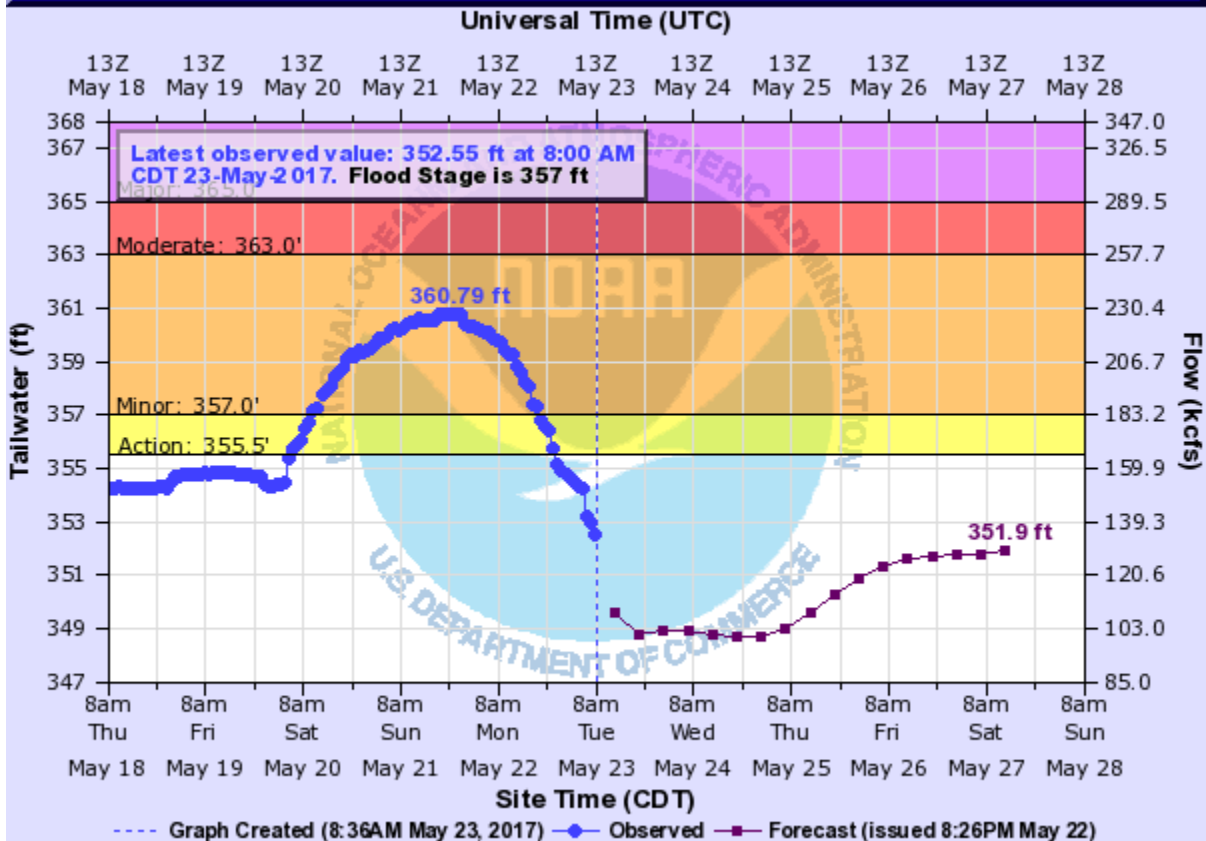
MULBERRY RIVER (AR) NEAR MULBERRY



MLBA4(plotting HGIRG) "Gage 0" Datum: 432.75'

Observations courtesy of USGS/USACE/ADEQ

ARKANSAS RIVER AT OZARK L/D TAILWATER

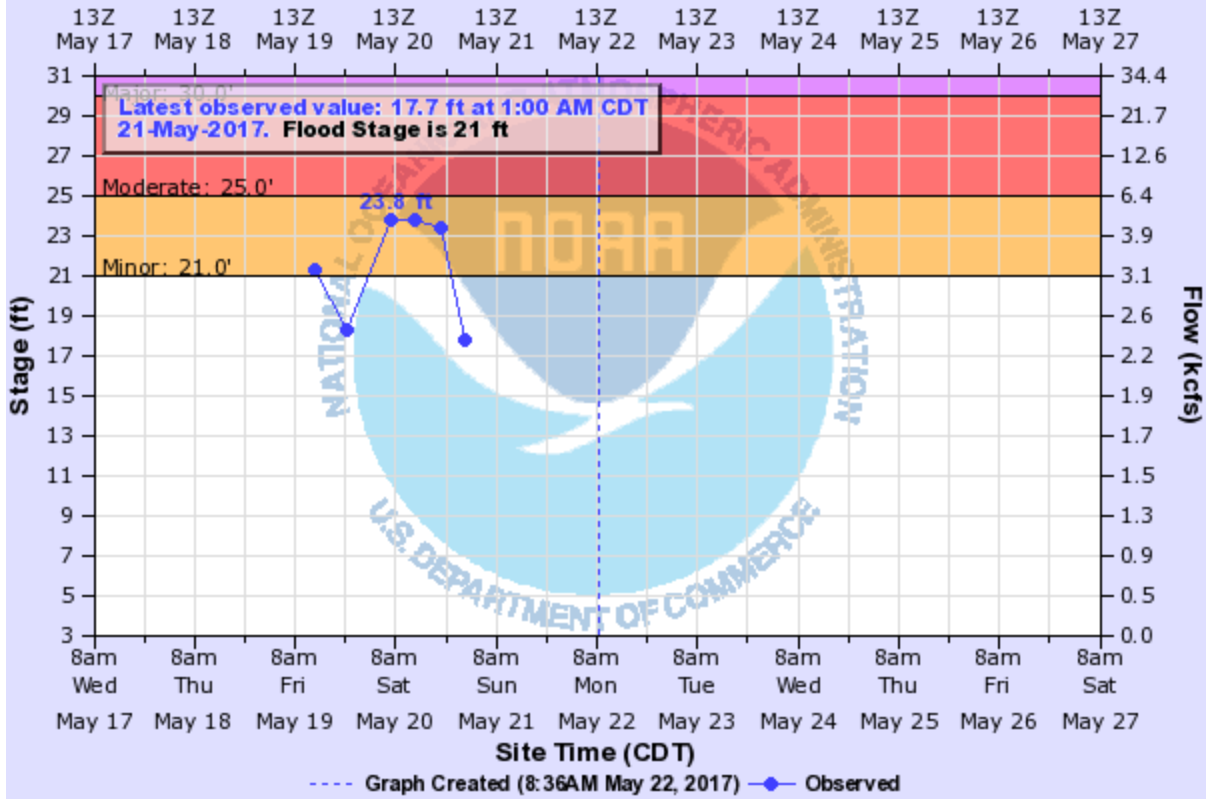


OZGA4(plotting HTIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers - LRD

POLECAT CREEK NEAR SAPULPA

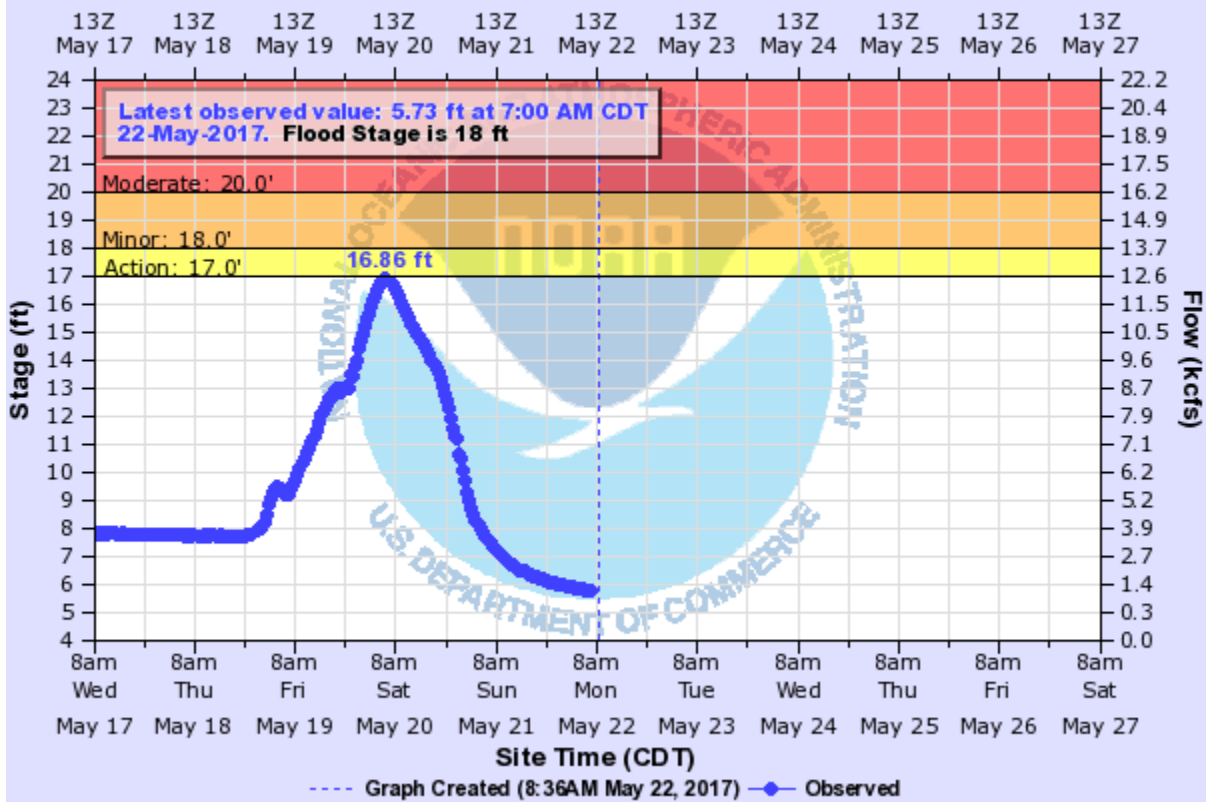
Universal Time (UTC)



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

BIRD CREEK NEAR OWASSO

Universal Time (UTC)

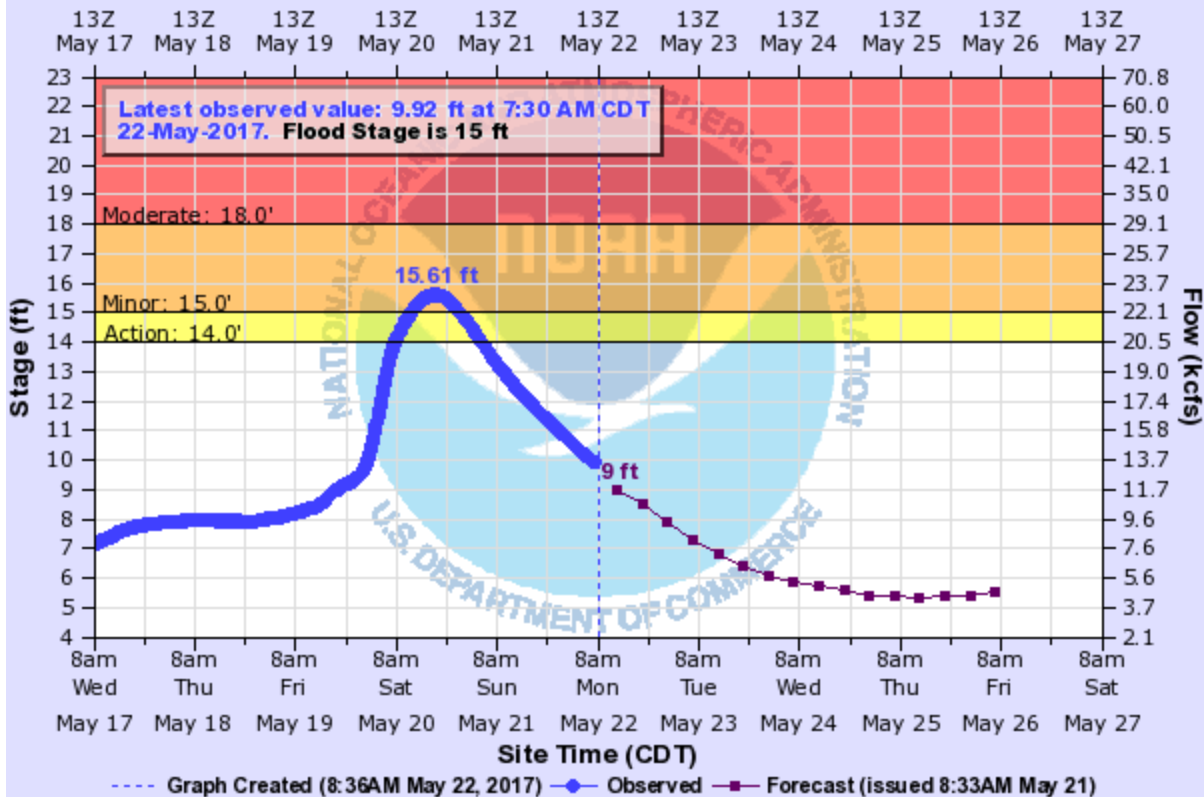


OWSO2(plotting HGIRG) "Gage 0" Datum: 560.17'

Observations courtesy of US Geological Survey

NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

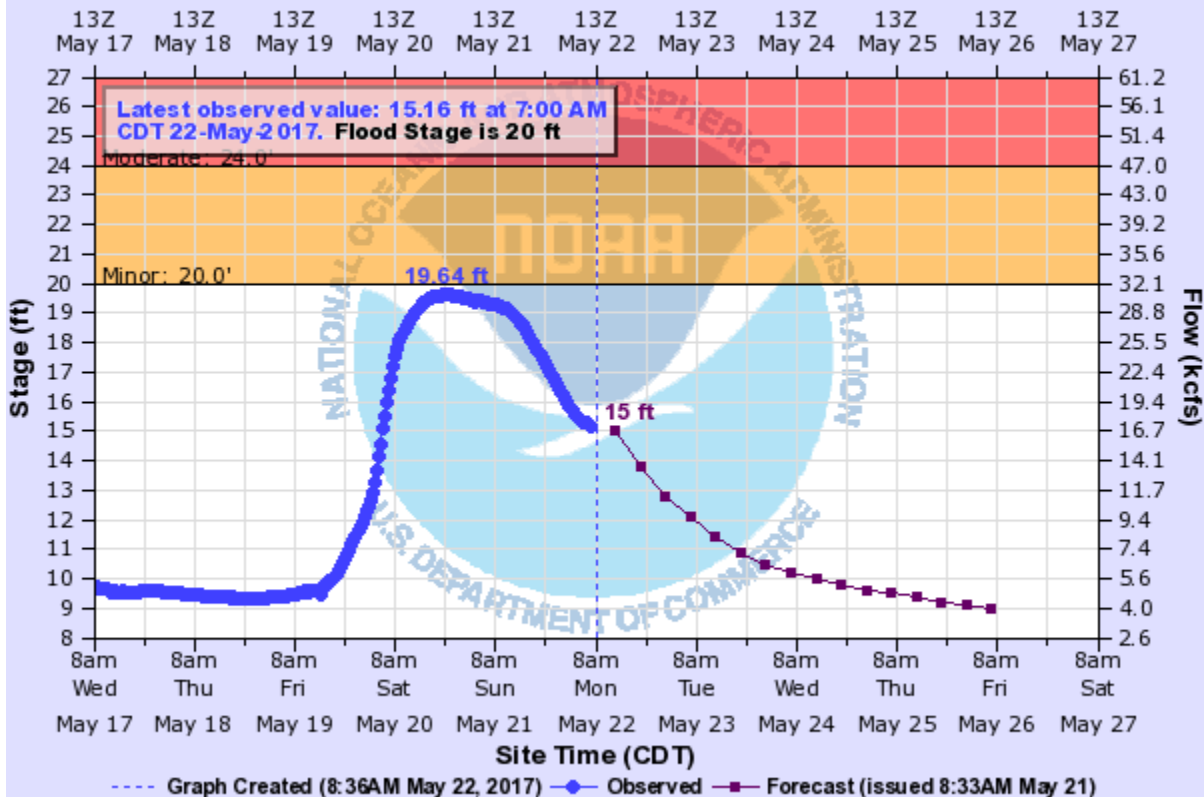


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

SPRING RIVER NEAR QUAPAW

Universal Time (UTC)

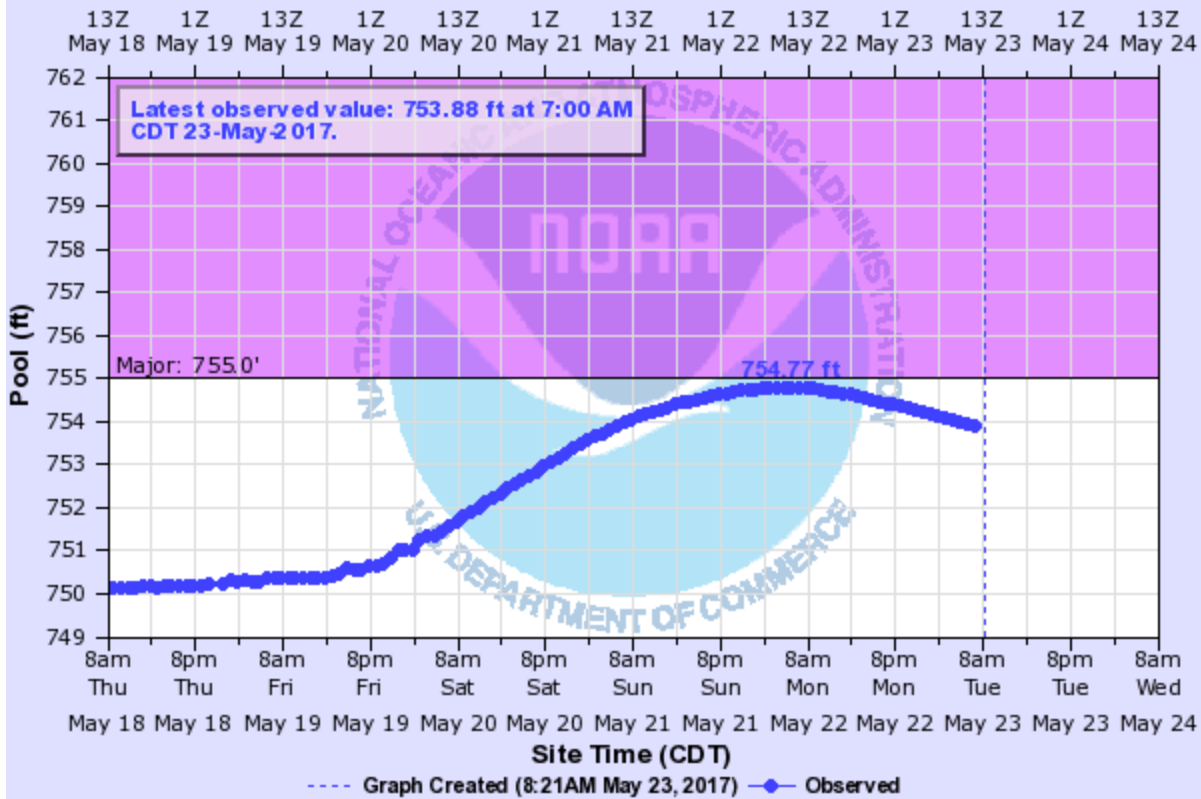


QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

Observations courtesy of US Geological Survey

EASTERN OKLAHOMA LAKES AT GRAND LAKE

Universal Time (UTC)

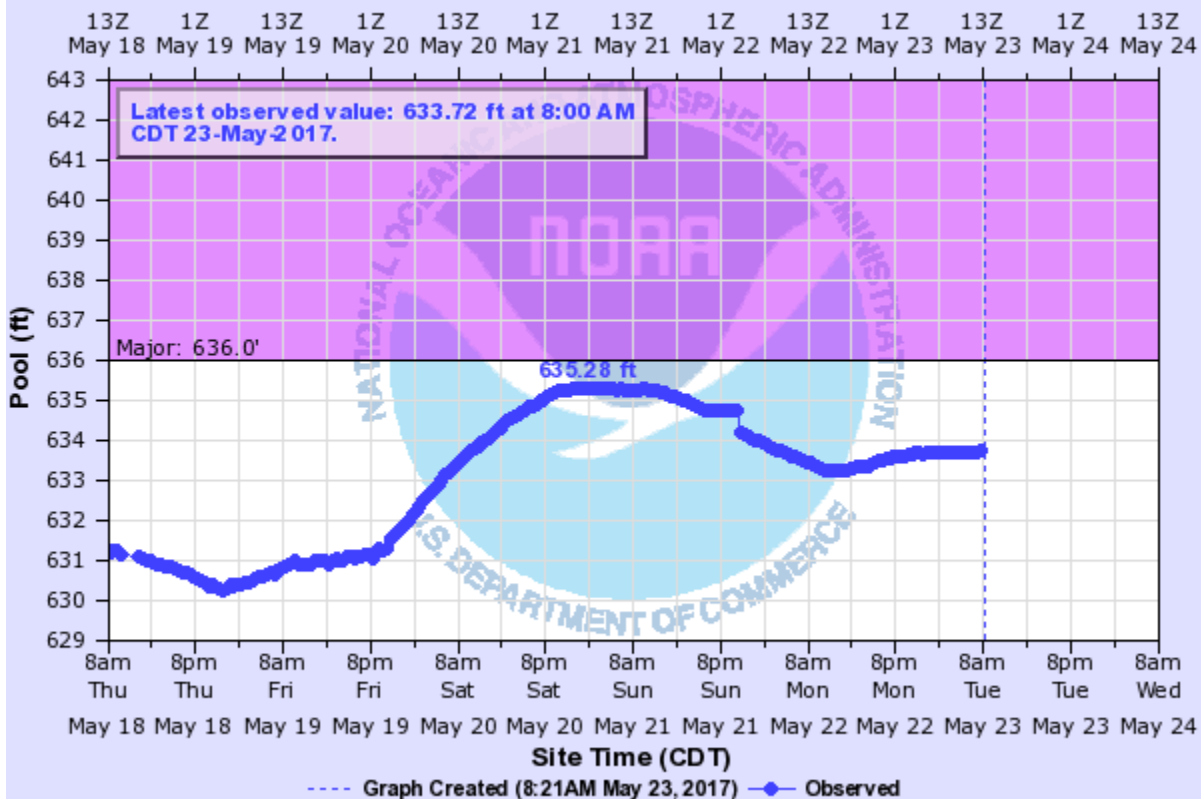


PENO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT HUDSON LAKE

Universal Time (UTC)

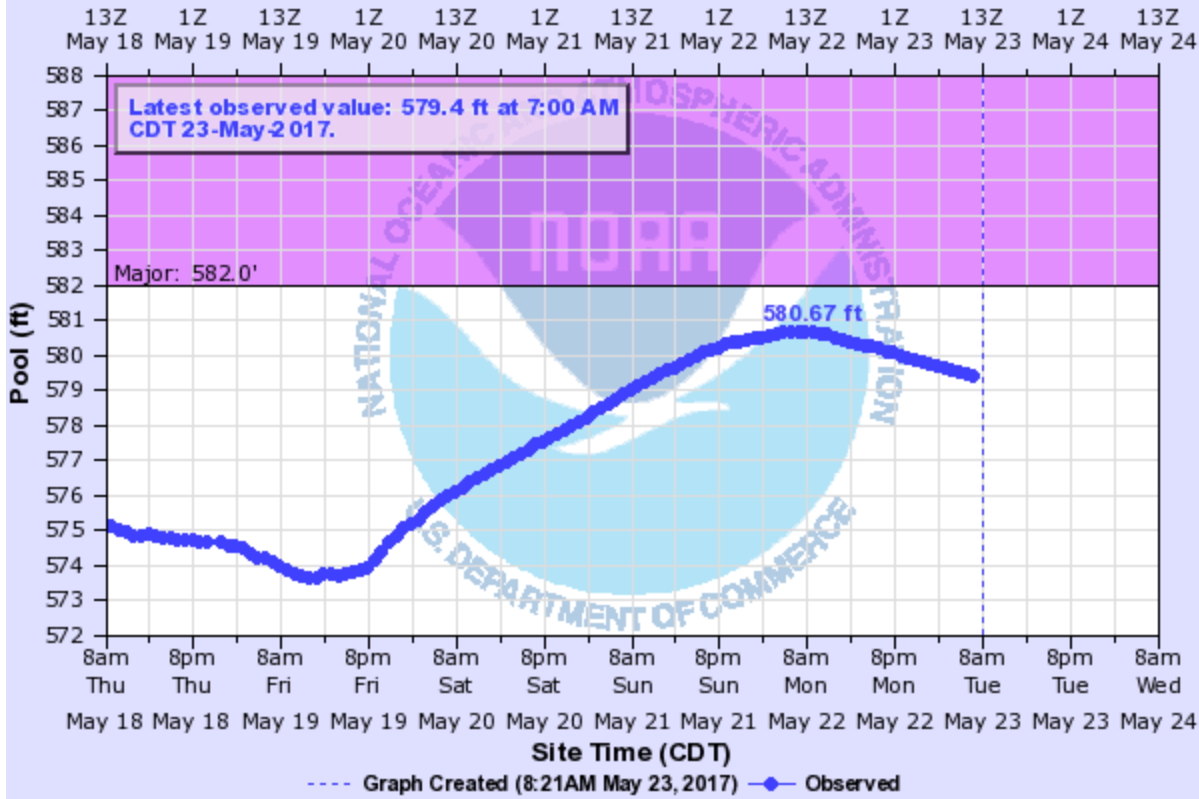


MFDO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

EASTERN OKLAHOMA LAKES AT FT. GIBSON LAKE

Universal Time (UTC)

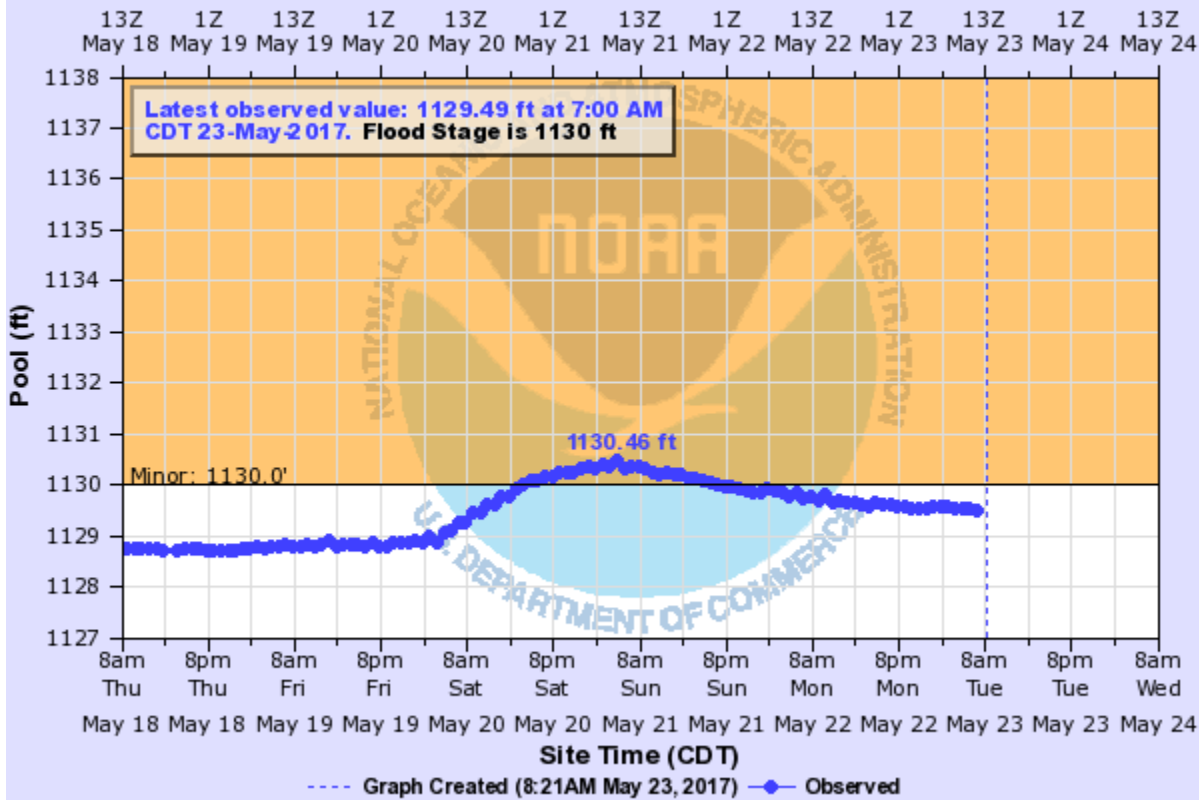


GIBO2(plotting HPIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers

NORTHWEST ARKANSAS LAKES AT BEAVER LAKE

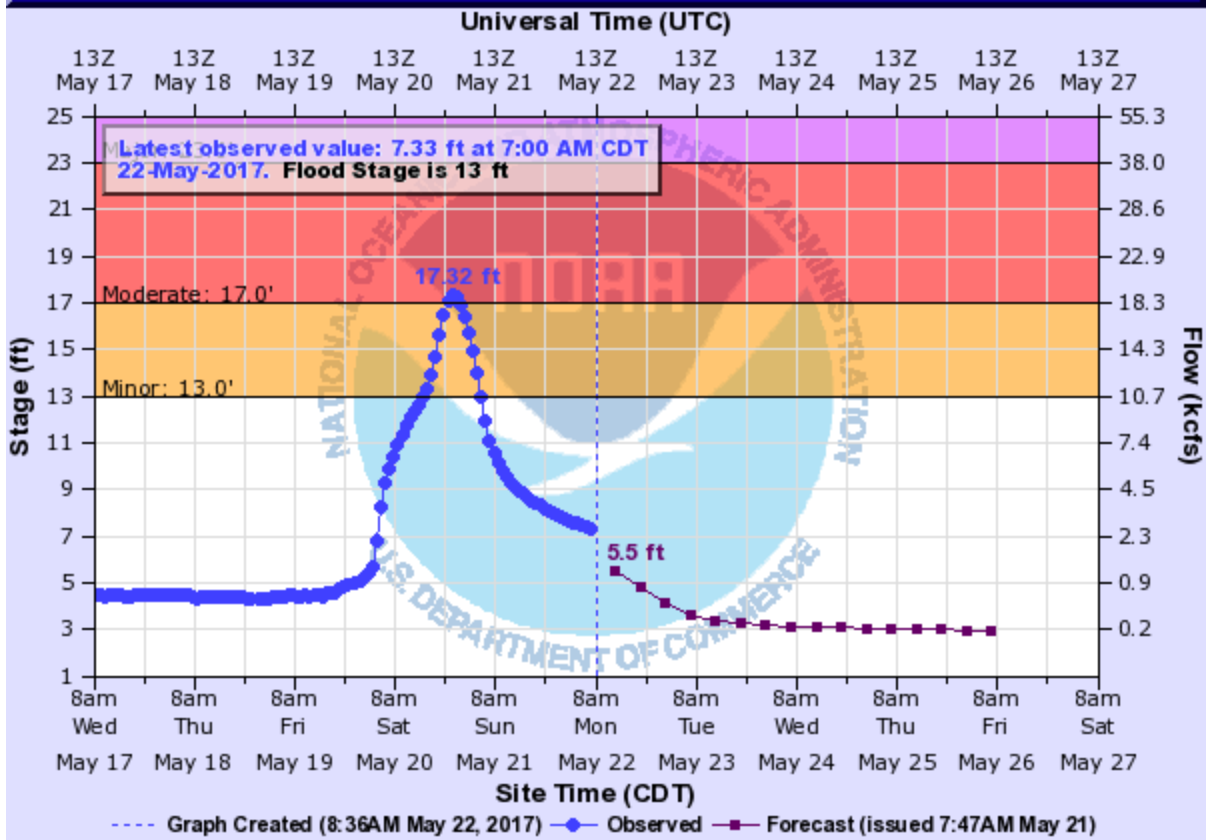
Universal Time (UTC)



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

Observations courtesy of US Army Corps of Engineers

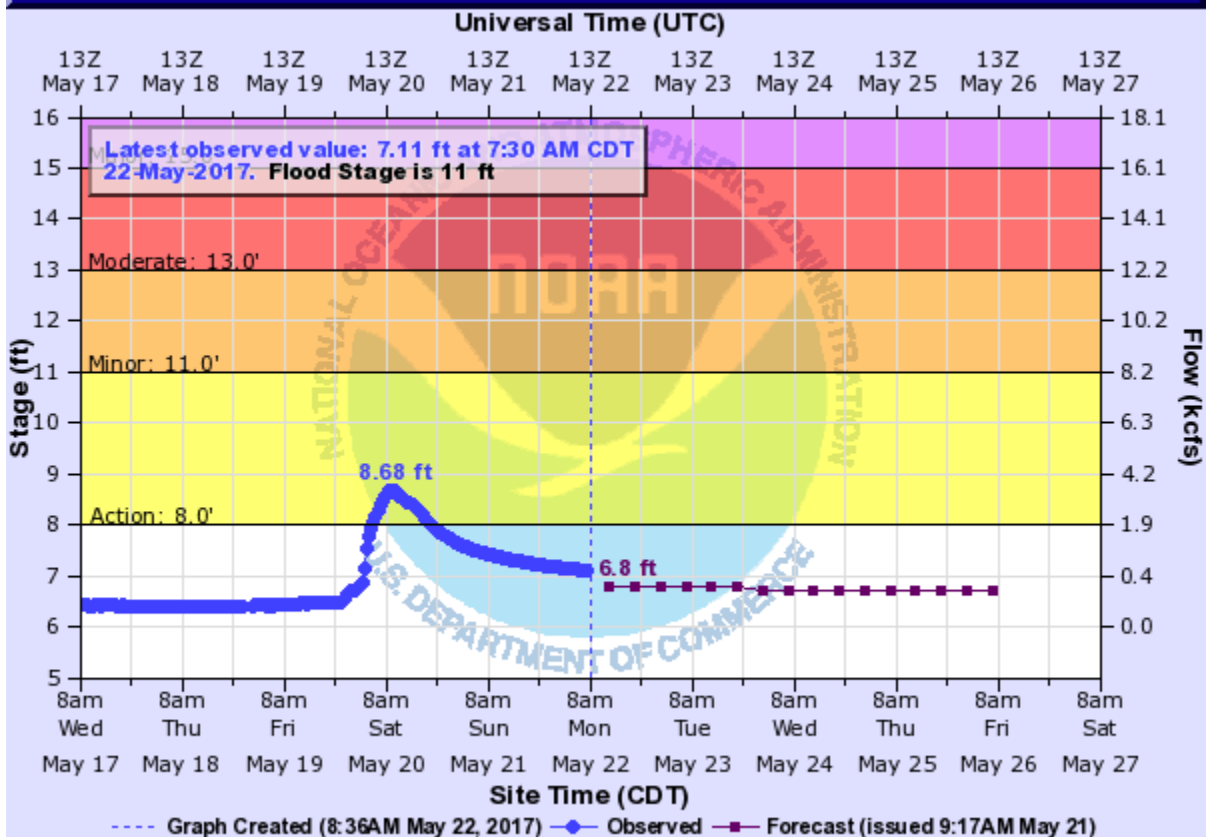
ILLINOIS RIVER (AR OK) NEAR WATTS



WT02(plotting HGIRG) "Gage 0" Datum: 893.77'

Observations courtesy of US Geological Survey

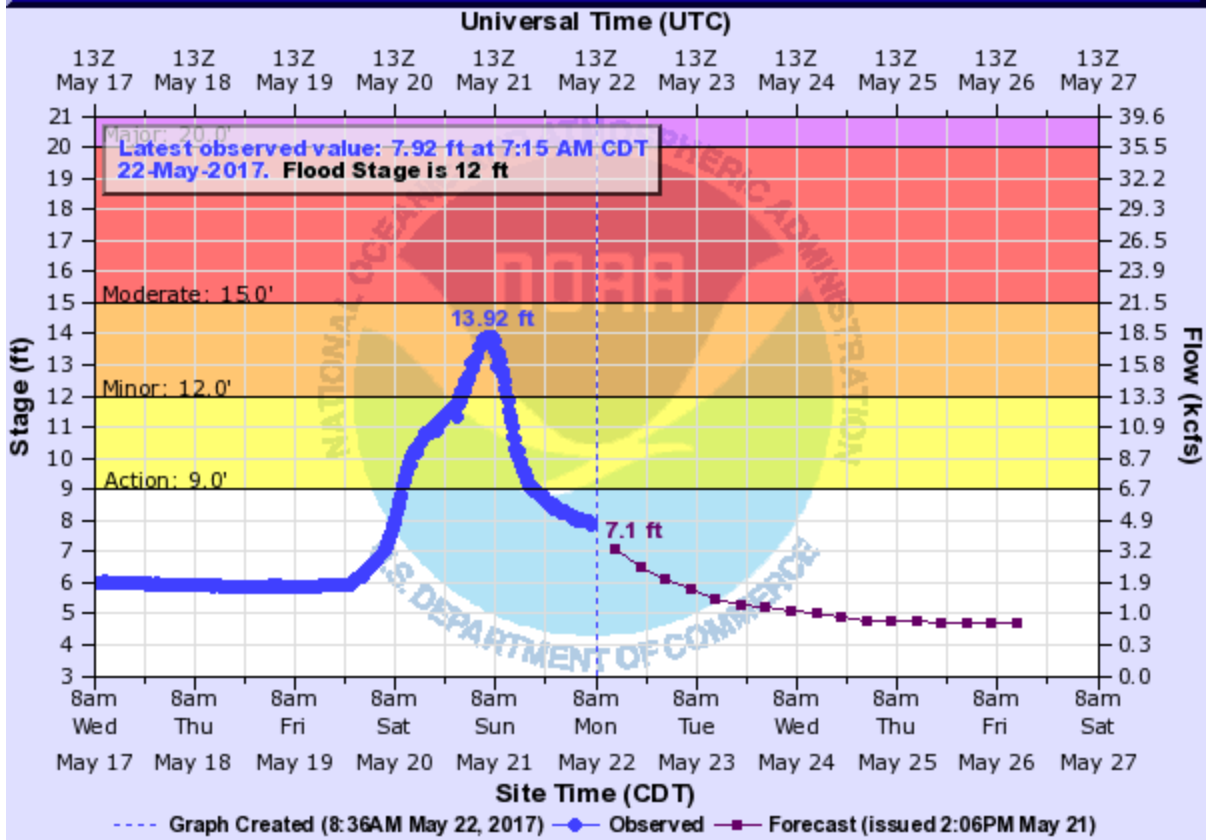
FLINT CREEK (OK) NEAR KANSAS



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

Observations courtesy of US Geological Survey

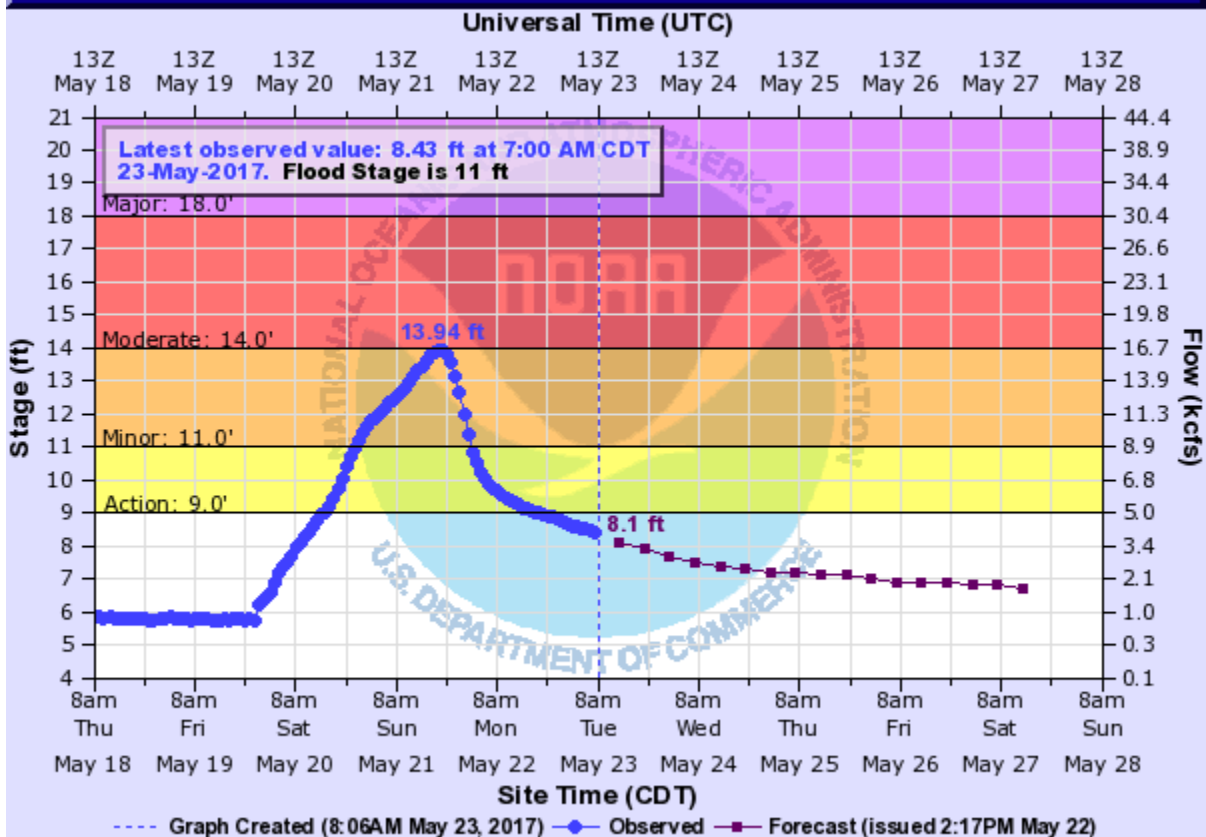
ILLINOIS RIVER (AR OK) AT CHEWEY



CWY02(plotting HGIRG) "Gage 0" Datum: 800.88'

Observations courtesy of US Geological Survey

ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH

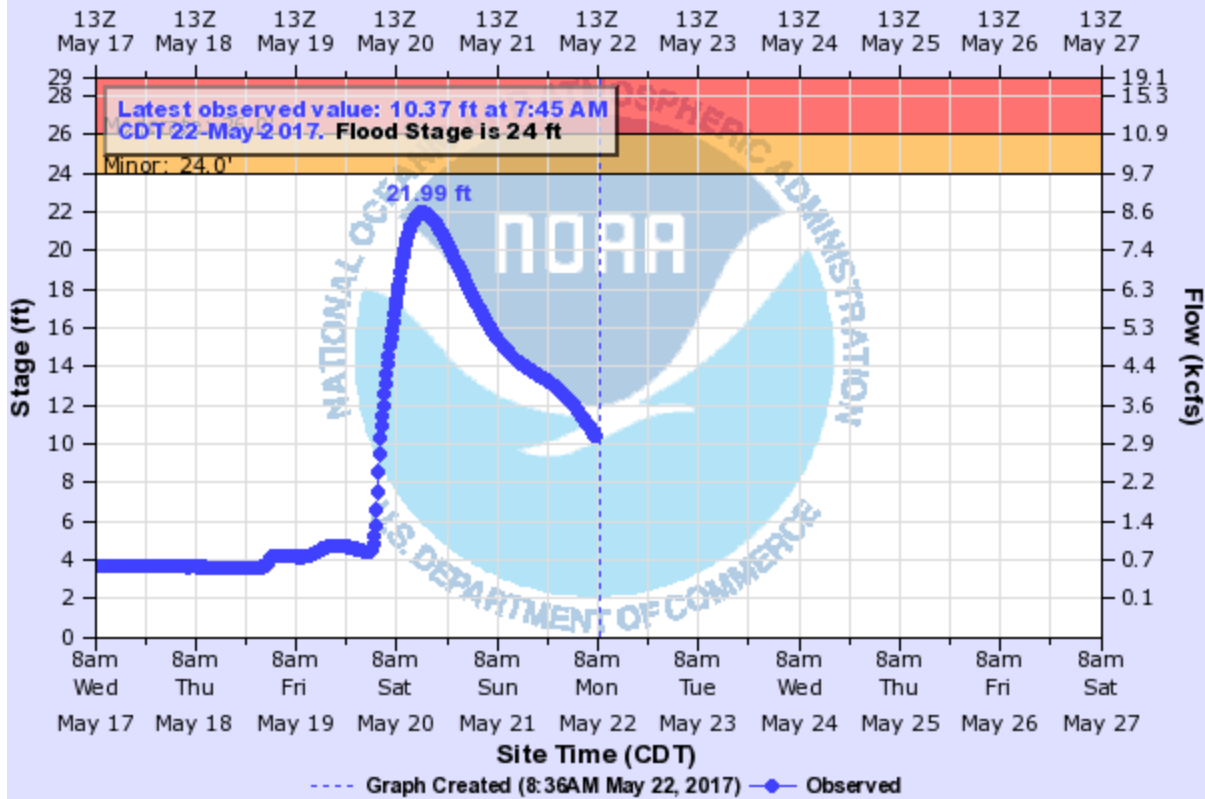


TAL02(plotting HGIRG) "Gage 0" Datum: 664.14'

Observations courtesy of US Geological Survey

POTEAU RIVER NEAR POTEAU

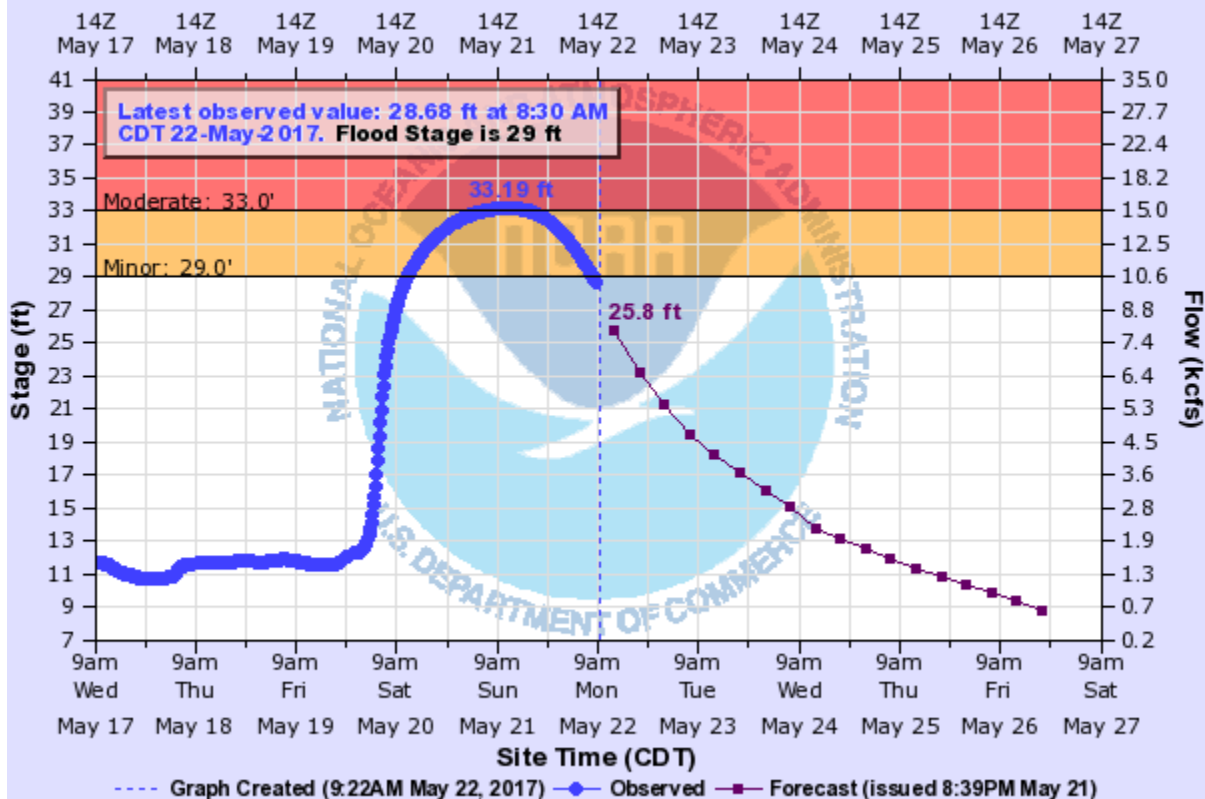
Universal Time (UTC)



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

POTEAU RIVER NEAR PANAMA

Universal Time (UTC)

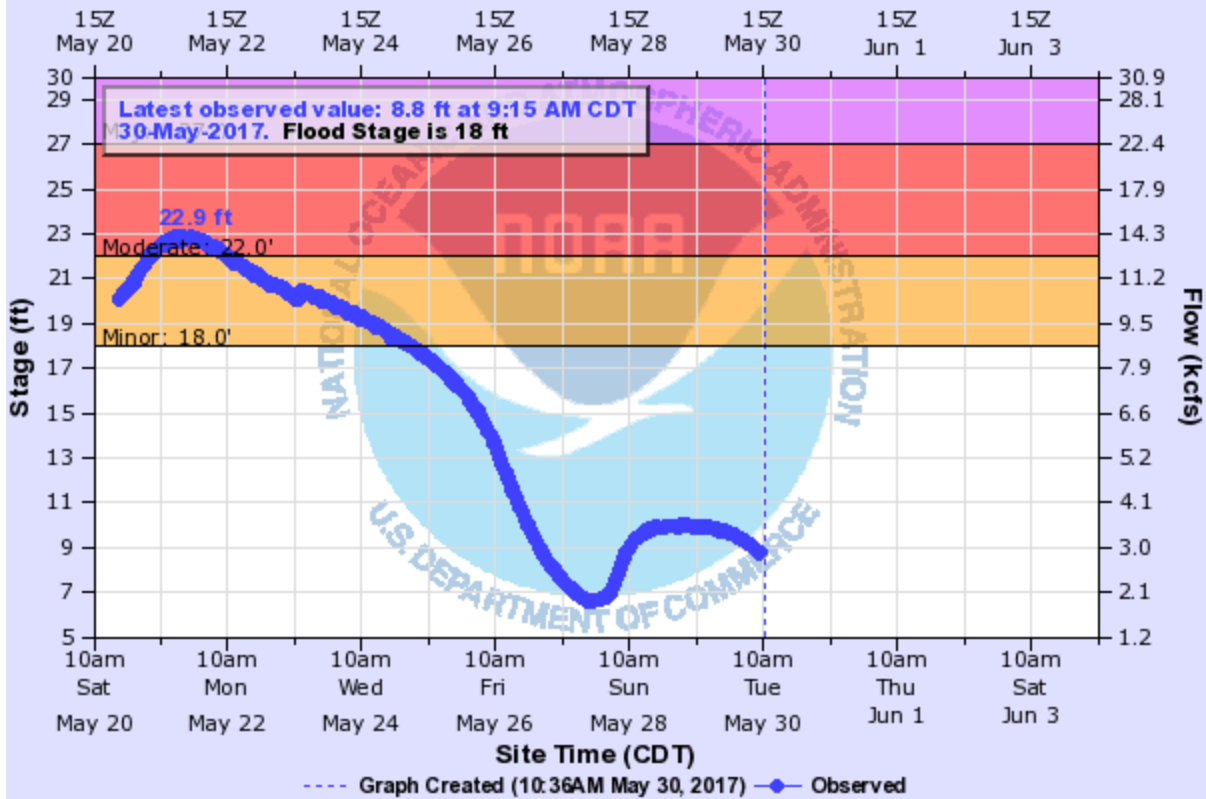


PANO2(plotting HGIRG) "Gage 0" Datum: 387.96'

Observations courtesy of US Geological Survey

DEEP FORK RIVER NEAR BEGGS

Universal Time (UTC)



BGS02(plotting HGIRG) "Gage 0" Datum: 632.55'

Observations courtesy of US Geological Survey