

<b>NWS FORM E-5</b> (11-88) (PRES. by NWS Instruction 10-924)	<b>U.S. DEPARTMENT OF COMMERCE</b> NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	HYDROLOGIC SERVICE AREA (HSA) <b>Tulsa, Oklahoma (TSA)</b>	
		REPORT FOR: MONTH <b>March</b> YEAR <b>2020</b>	
<b>MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS</b>		SIGNATURE <b>Steven F. Piltz</b> (Meteorologist-in-Charge)	
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283		DATE <b>April 22, 2020</b>	

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

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

March 2020 was a wet and very warm month across eastern OK and northwest AR. Major flooding occurred along the Illinois River, with several rivers experiencing minor to moderate flooding. Normal precipitation for March ranges from 3.1 inches in Pawnee County to 4.3 inches in Le Flore County. In the Ozark region of northwest Arkansas, the normal precipitation for the month is 4.4 inches. This report, past E-5 reports, and monthly hydrology and climatology summaries can be found at <http://www.weather.gov/tsa/hydro-monthly-summary>.

### Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for March 2020 ranged from around 4" to around 10" across eastern OK and northwest AR, with most of the area receiving 5"-8". These rainfall totals correspond to around 125% to around 200% of the normal March rainfall across the area, with most of eastern OK and northwest Arkansas receiving 150-200% of normal (Fig. 1b).

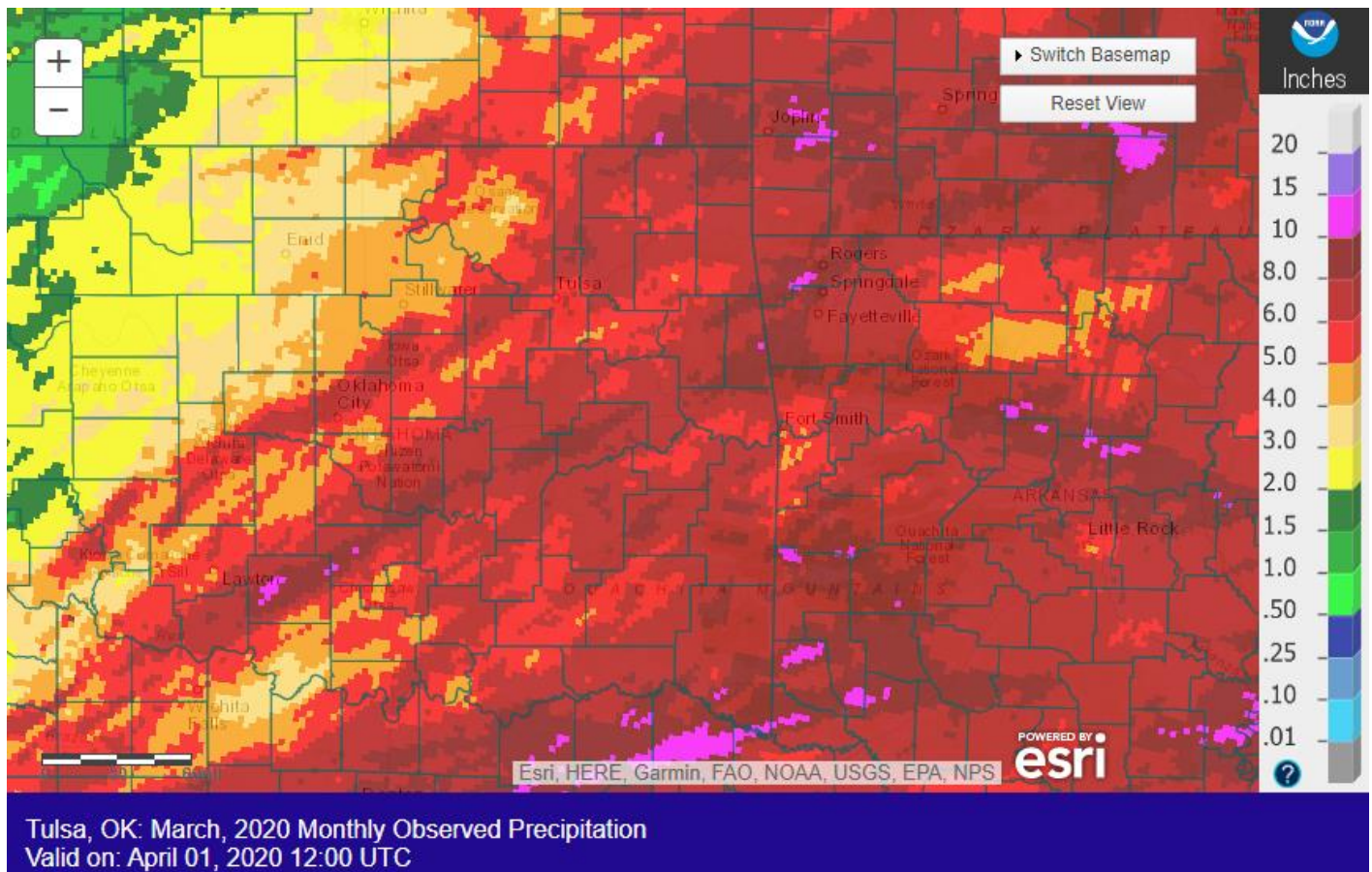


Fig. 1a. Estimated Observed Rainfall for March 2020

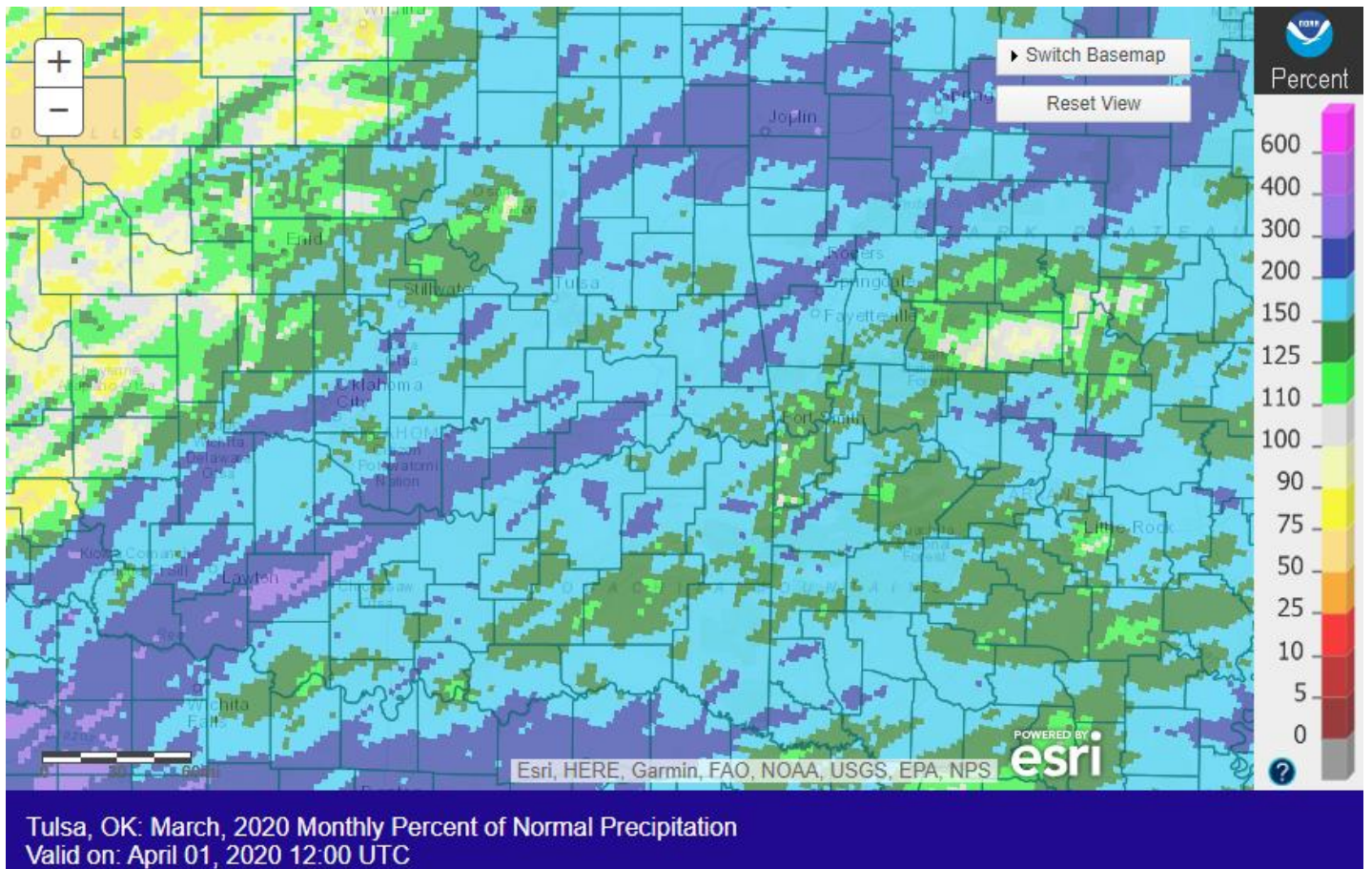


Fig. 1b. Estimated % of Normal Rainfall for March 2020

In Tulsa, OK, March 2020 ranked as the 9<sup>th</sup> warmest March (57.2°F; since records began in 1905) and the 15<sup>th</sup> wettest March (5.69"; since records began in 1888). Fort Smith, AR had the 9<sup>th</sup> warmest March (58.6°F; since records began in 1883) and the 17<sup>th</sup> wettest March (5.97"; since records began in 1883). Fayetteville, AR had the 3<sup>rd</sup> warmest (56.1°F) and the 5<sup>th</sup> wettest (7.19") March since records began in 1950.

Some of the larger precipitation reports (in inches) for March 2020 included:

Busch 0.4E, AR (coco)	11.22	Springdale 0.6E, AR (coco)	10.68	Rogers 2.4SSW, AR (coco)	10.44
Holiday Island 1.3SSW, AR (coco)	10.22	Garfield, 3.9E, AR (coco)	10.05	Vian 5.3ENE, OK (coco)	9.72
Eureka Springs 4.0NNW, AR (coco)	9.61	Pea Ridge 0.2WSW, AR (coco)	9.38	Bunch 0.8N, OK (coco)	9.19
				Miami, OK (meso)	9.19

Some of the lowest precipitation reports (in inches) for March 2020 included:

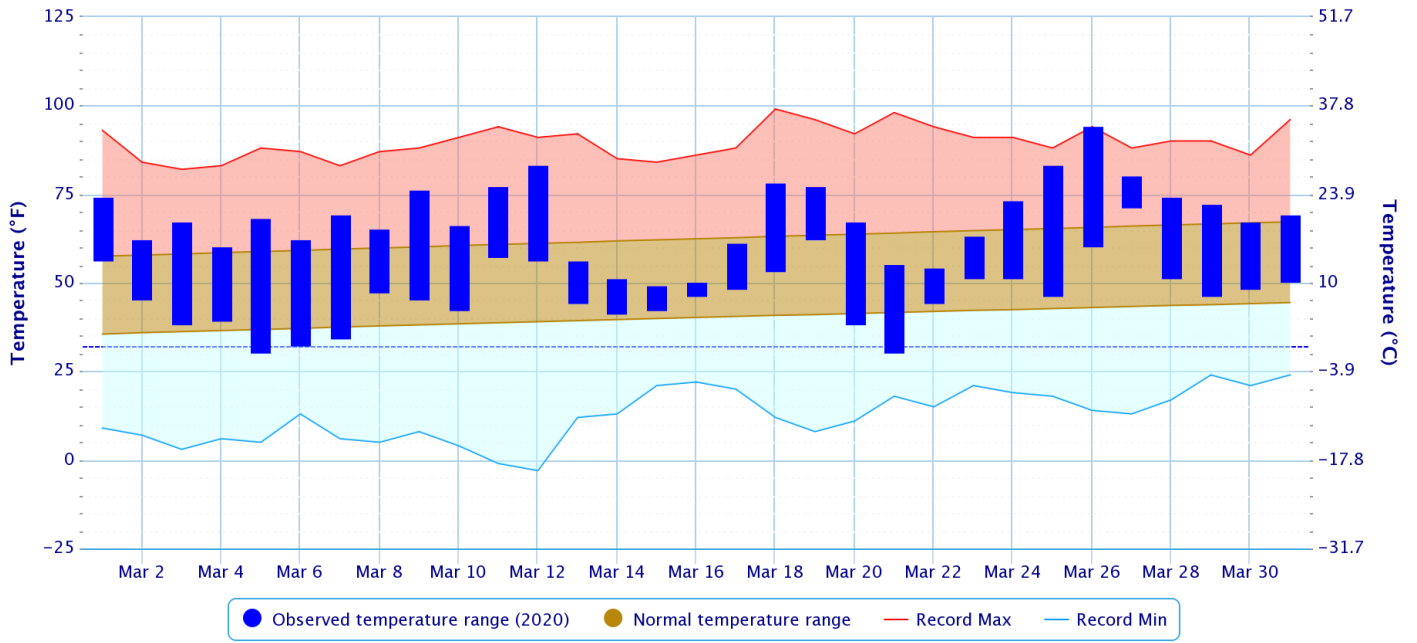
Pawnee, OK (meso)	4.75	Foraker, OK (meso)	4.99	Wynona, OK (meso)	5.15
Bristow, OK (meso)	5.18	Bartlesville, OK (ASOS)	5.29	Burbank, OK (meso)	5.32
Bixby, OK (meso)	5.45	Hectorville, OK (meso)	5.51	Broken Arrow 2.2SW, OK (coco)	5.59

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

Rank since 1921	March 2020	Last 60 Days (Feb 1 – Mar 31)	Year-to-Date (Jan 1 – Mar 31)	Last 120 Days (Dec 3 – Mar 31)	Water Year-to-Date (Oct 1 – Mar 31)	Last 365 Days (Apr 2, 2019 – Mar 31, 2020)
Northeast OK	9 <sup>th</sup> wettest	9 <sup>th</sup> wettest	4 <sup>th</sup> wettest	7 <sup>th</sup> wettest	4 <sup>th</sup> wettest	1 <sup>st</sup> wettest
East Central OK	7 <sup>th</sup> wettest	9 <sup>th</sup> wettest	4 <sup>th</sup> wettest	6 <sup>th</sup> wettest	2 <sup>nd</sup> wettest	2 <sup>nd</sup> wettest
Southeast OK	9 <sup>th</sup> wettest	11 <sup>th</sup> wettest	8 <sup>th</sup> wettest	18 <sup>th</sup> wettest	10 <sup>th</sup> wettest	2 <sup>nd</sup> wettest
Statewide	5 <sup>th</sup> wettest	9 <sup>th</sup> wettest	7 <sup>th</sup> wettest	8 <sup>th</sup> wettest	10 <sup>th</sup> wettest	2 <sup>nd</sup> wettest

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

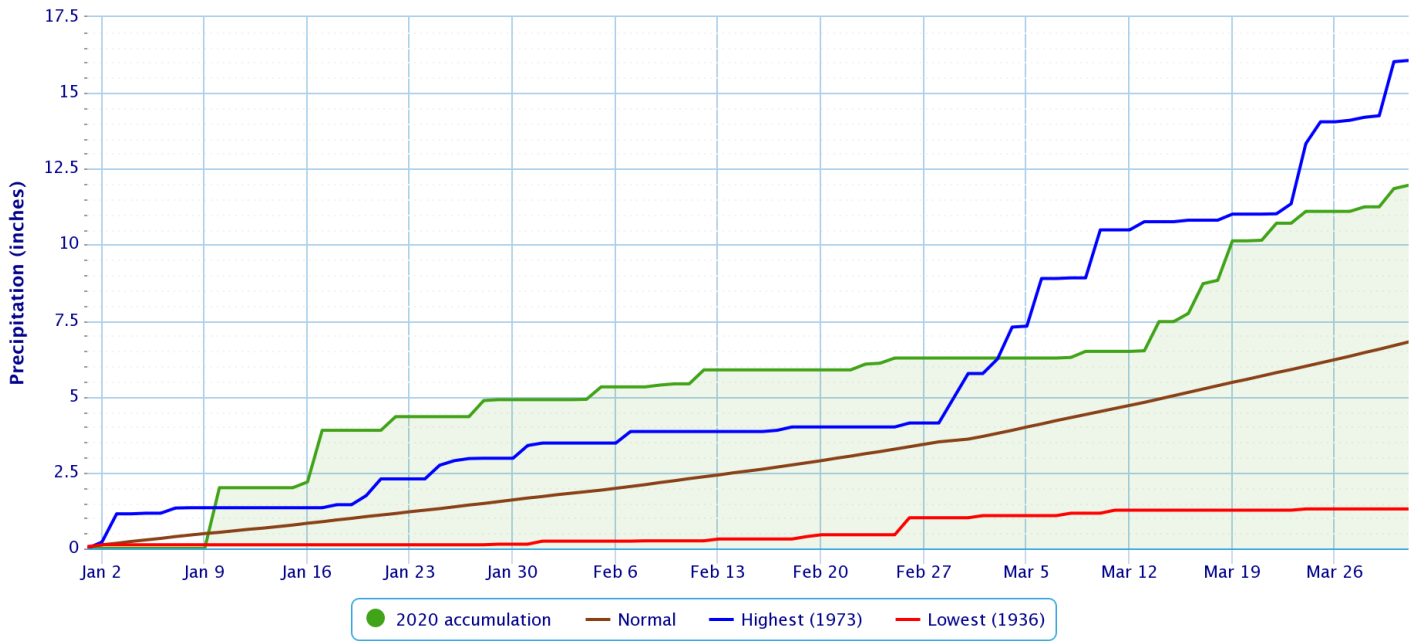
Period of Record – 1905-01-06 to 2020-04-01. Normals period: 1981-2010. Click and drag to zoom chart.



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

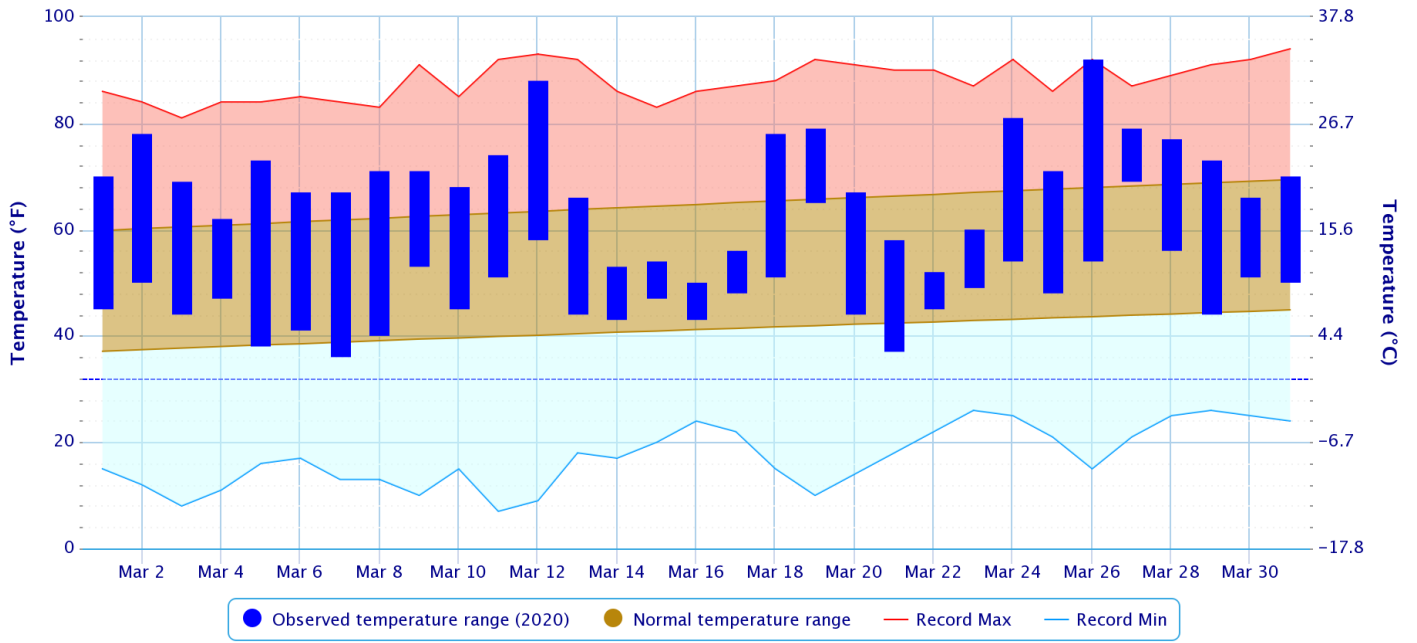
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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

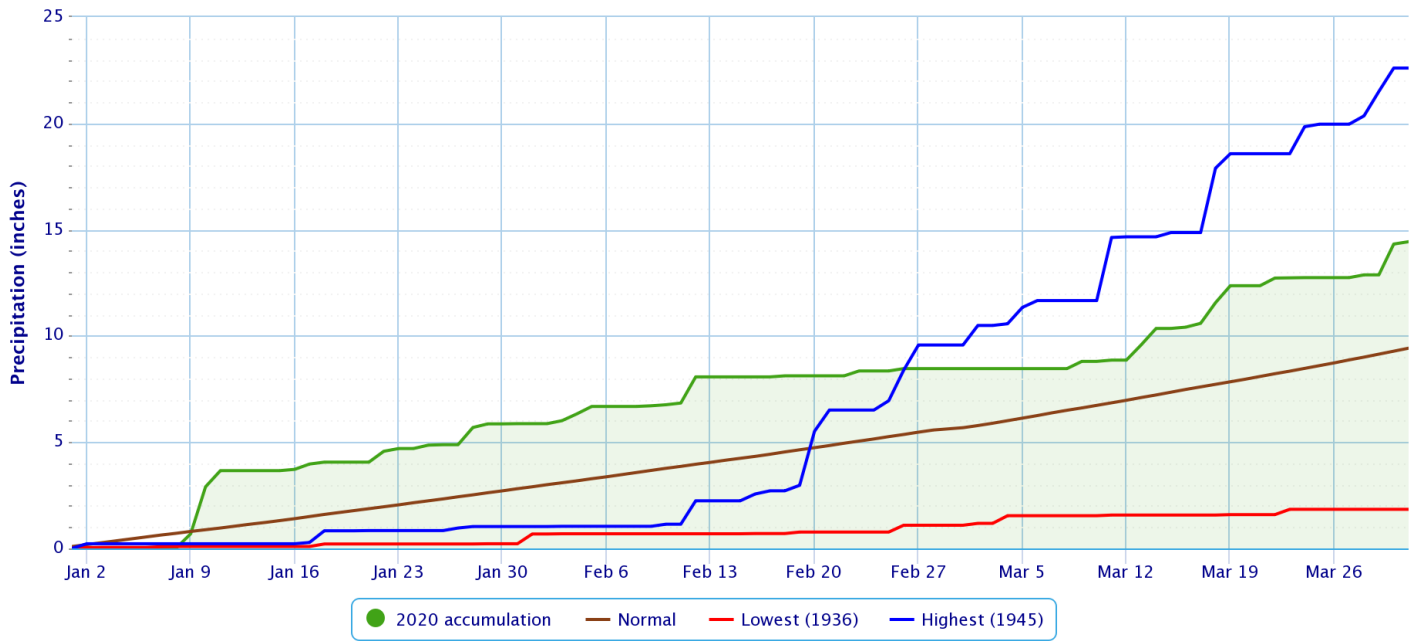
Period of Record – 1882-06-01 to 2020-04-01. Normals period: 1981-2010. Click and drag to zoom chart.



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

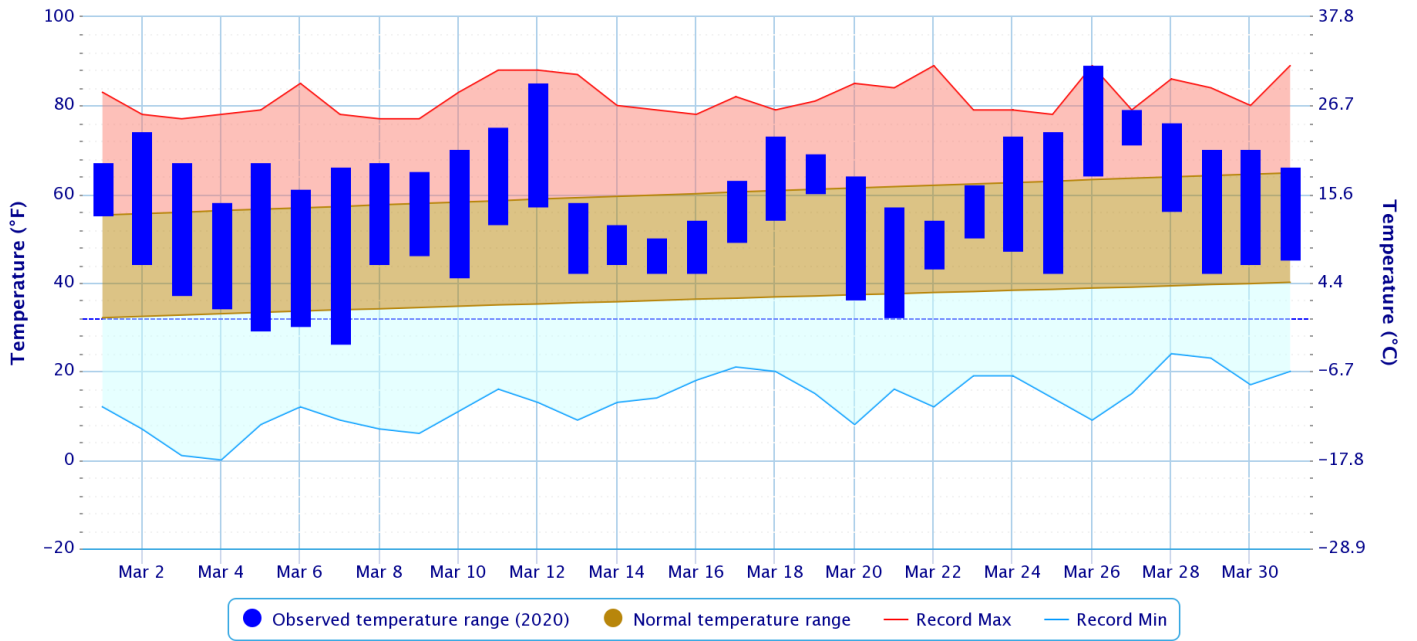
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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

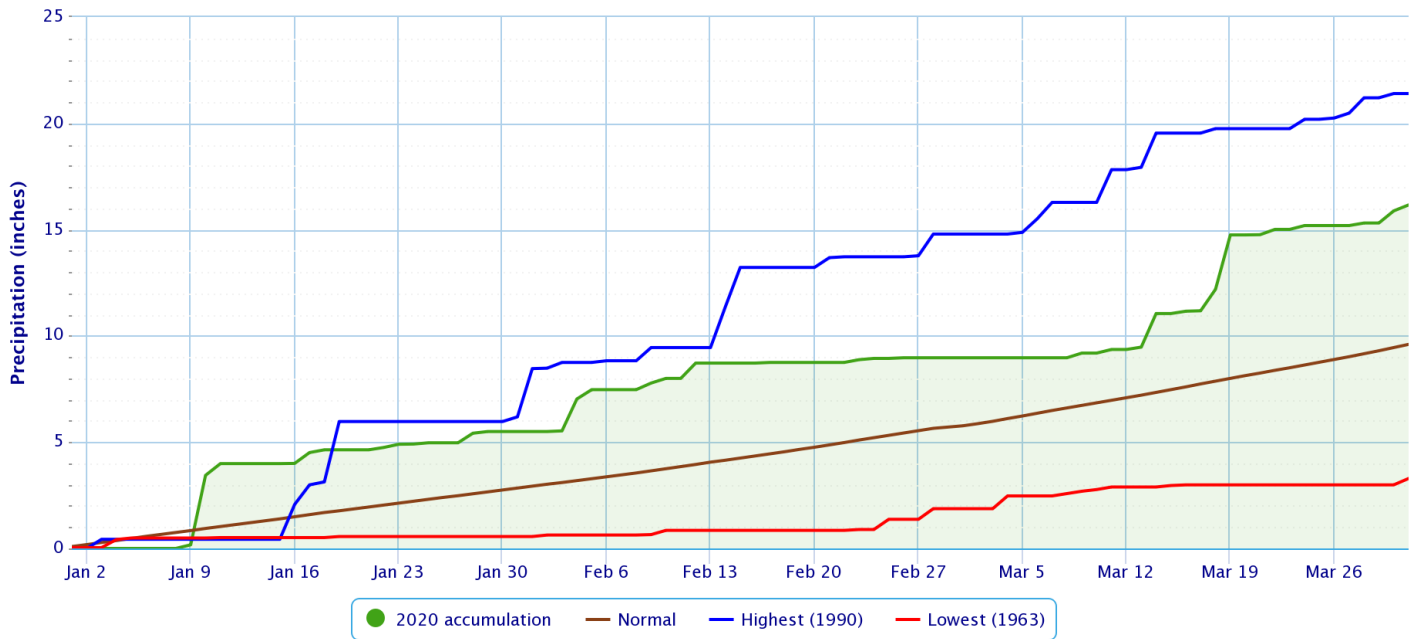
Period of Record – 1949-07-14 to 2020-04-01. Normals period: 1981-2010. Click and drag to zoom chart.



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### Accumulated Precipitation – FAYETTEVILLE DRAKE FIELD, AR

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

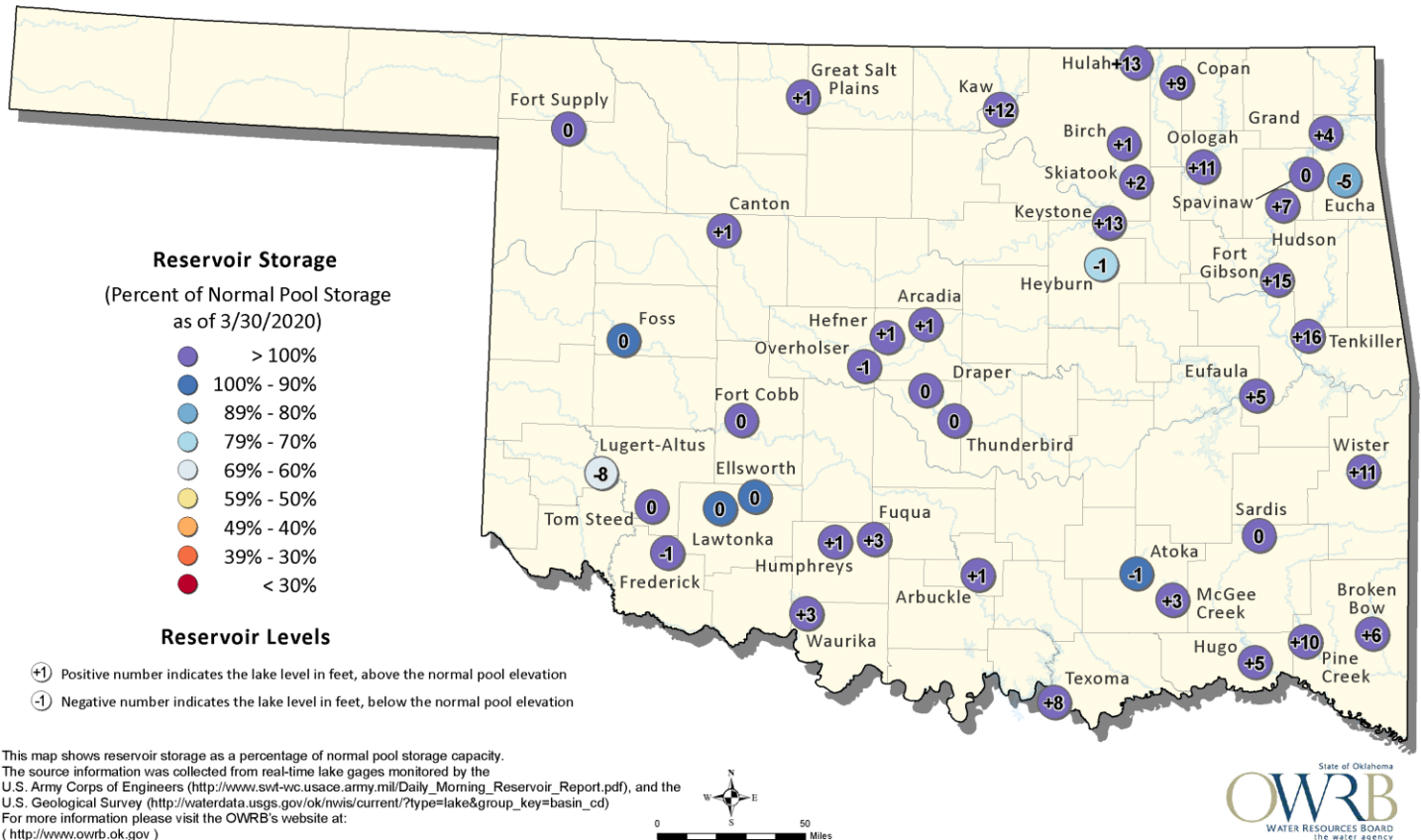


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**Reservoirs**

## Oklahoma Surface Water Resources

### Reservoir Levels and Storage as of 3/30/2020



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 ([http://www.svt-wc.usace.army.mil/Daily\\_Morning\\_Reservoir\\_Report.pdf](http://www.svt-wc.usace.army.mil/Daily_Morning_Reservoir_Report.pdf)), and the U.S. Geological Survey ([http://waterdata.usgs.gov/ok/nwis/current/?type=lake&group\\_key=basin\\_cd](http://waterdata.usgs.gov/ok/nwis/current/?type=lake&group_key=basin_cd)). For more information please visit the OWRB's website at: (<http://www.owrb.ok.gov>)



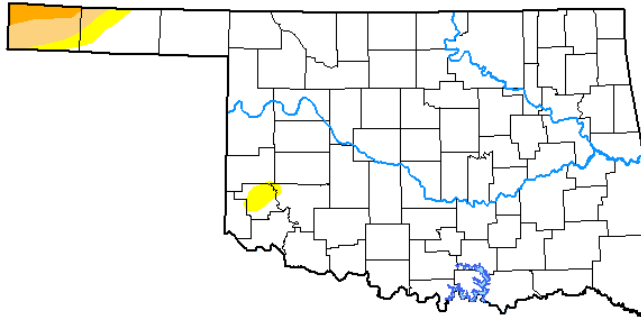
According to the USACE, all of the lakes in the HSA were utilizing more than 3% of their flood control pools as of 4/01/2020: Beaver Lake 84%, Tenkiller Lake 38%, Ft. Gibson Lake 38%, Hudson Lake 36%, Eufaula Lake 35%, Wister Lake 35%, Oologah Lake 33%, Copan Lake 29%, Kaw Lake 26%, Keystone Lake 25%, Hulah Lake 24%, Grand Lake 22%, Skiatook Lake 13%, Hugo Lake 6%, and Sardis Lake 5%.

**Drought**

According to the [U.S. Drought Monitor](#) (USDM) from March 31, 2020 (Figs. 2, 3), eastern OK and northwest AR were drought free.

**U.S. Drought Monitor  
Oklahoma**

**March 31, 2020**  
(Released Thursday, Apr. 2, 2020)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	95.89	4.11	2.52	0.84	0.00	0.00
<b>Last Week</b> 03-24-2020	93.64	6.36	3.11	0.84	0.00	0.00
<b>3 Months Ago</b> 12-31-2019	76.45	23.55	10.47	3.64	0.00	0.00
<b>Start of Calendar Year</b> 12-31-2019	76.45	23.55	10.47	3.64	0.00	0.00
<b>Start of Water Year</b> 10-01-2019	71.94	28.06	11.08	1.01	0.00	0.00
<b>One Year Ago</b> 04-02-2019	96.71	3.29	0.00	0.00	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

David Simeral  
Western Regional Climate Center

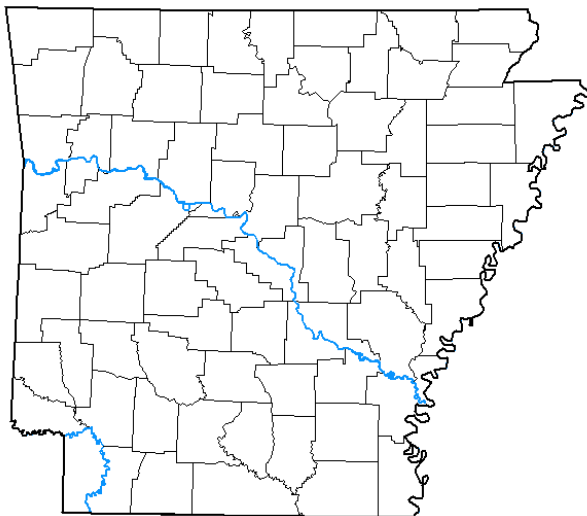


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Fig. 2. Drought Monitor for Oklahoma

**U.S. Drought Monitor  
Arkansas**

**March 31, 2020**  
(Released Thursday, Apr. 2, 2020)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	100.00	0.00	0.00	0.00	0.00	0.00
<b>Last Week</b> 03-24-2020	100.00	0.00	0.00	0.00	0.00	0.00
<b>3 Months Ago</b> 12-31-2019	86.68	13.32	4.35	0.31	0.00	0.00
<b>Start of Calendar Year</b> 12-31-2019	86.68	13.32	4.35	0.31	0.00	0.00
<b>Start of Water Year</b> 10-01-2019	54.35	45.65	11.77	5.79	0.00	0.00
<b>One Year Ago</b> 04-02-2019	100.00	0.00	0.00	0.00	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

David Simeral  
Western Regional Climate Center



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

Fig. 3. Drought Monitor for Arkansas

## Outlooks

The [Climate Prediction Center](#) (CPC) outlook for April 2020 (issued March 31, 2020) indicates an enhanced chance for above normal temperatures and above median precipitation across all of eastern OK and northwest AR. This outlook takes into account dynamical model guidance and the weeks 3-4 outlook. There is more uncertainty in the last half of the month.

For the 3-month period April-May-June 2020, CPC is forecasting an enhanced chance for above normal temperatures and equal chances for above, near, or below median precipitation across all of northeast OK and northwest AR, except the far northeast corner of OK and far northwest corner of AR where there is a slightly enhanced chance for above median precipitation (outlook issued March 19, 2020). This outlook is based on both statistical and dynamical forecast tools, soil moisture, and decadal timescale climate trends. According to CPC, ENSO-neutral conditions remain in place across the Pacific Ocean and ENSO-neutral conditions are favored to continue through summer 2020. Thereafter, there is considerable uncertainty for the phase of ENSO entering autumn into early winter 2020.

**Summary of Heavy Precipitation Events** Daily quality-controlled rainfall maps can be found at: [http://water.weather.gov/precip/index.php?location\\_type=wfo&location\\_name=tsa](http://water.weather.gov/precip/index.php?location_type=wfo&location_name=tsa)

During the early morning hours of the 11<sup>th</sup>, a thunderstorm complex moved southeast across southeast KS and far northeast OK, and then continued across northwest AR through the mid-morning hours. Some additional scattered showers and thunderstorms developed to the south of this complex over east central OK, which then moved east into west central AR. Rainfall totals ranged from around 0.25" to around 1", with isolated amounts to around 1.5" (Fig. 4). Most of the Neosho River basin received 0.50"-1.25" of rain, which led to a rise to just below flood stage along the Neosho River near Commerce (see preliminary hydrograph at the end of this report).

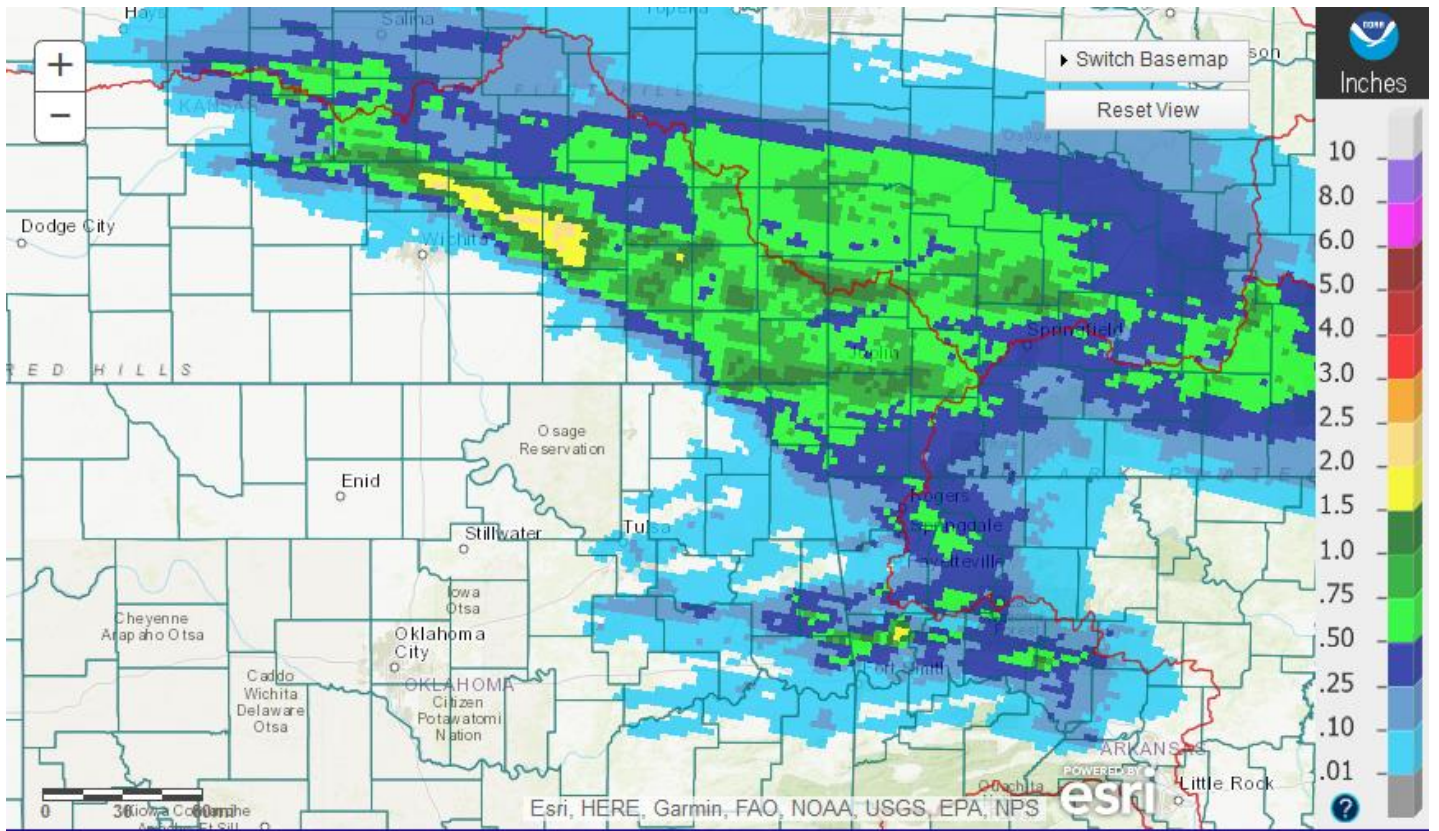
Enough instability developed across southeast OK and west central AR ahead of a cold front during the late afternoon of the 12<sup>th</sup> for thunderstorm development. These thunderstorms lasted for several hours before dissipating by late evening. Rainfall totals were generally around 0.50" to around 2.5" across southeast OK and southern Sebastian County in west central AR (Fig. 5). The bulk of this rain impacted Le Flore County.

An omega block over the eastern Pacific Ocean, with downstream split flow over the CONUS, persisted for about ten days starting on the 13<sup>th</sup>. This pattern is unsettled for this part of the world, with the northern stream sending fronts down, and the southern stream providing the lift and moisture to interact with the boundaries. While there were breaks in the action, there were several rounds of precipitation over the next week.

Just before sunrise on the 13<sup>th</sup>, showers and thunderstorms spread north out of TX and into eastern OK as warm air advection increased over a front that was stalled over north TX. Scattered showers and thunderstorms continued for much of the day, especially across southeast OK and west central AR. Most of this precipitation shifted east of the area by midnight, but then a short-wave approached the area and ignited additional showers and thunderstorms across northeast OK during the overnight hours. By early morning of the 14<sup>th</sup>, showers and thunderstorms were impacting northeast OK, and additional activity was spreading into east central OK and northwest AR. By 7 am CDT on the 14<sup>th</sup>, most of eastern OK and northwest AR had received 0.50"-2" of rain (Fig. 6).

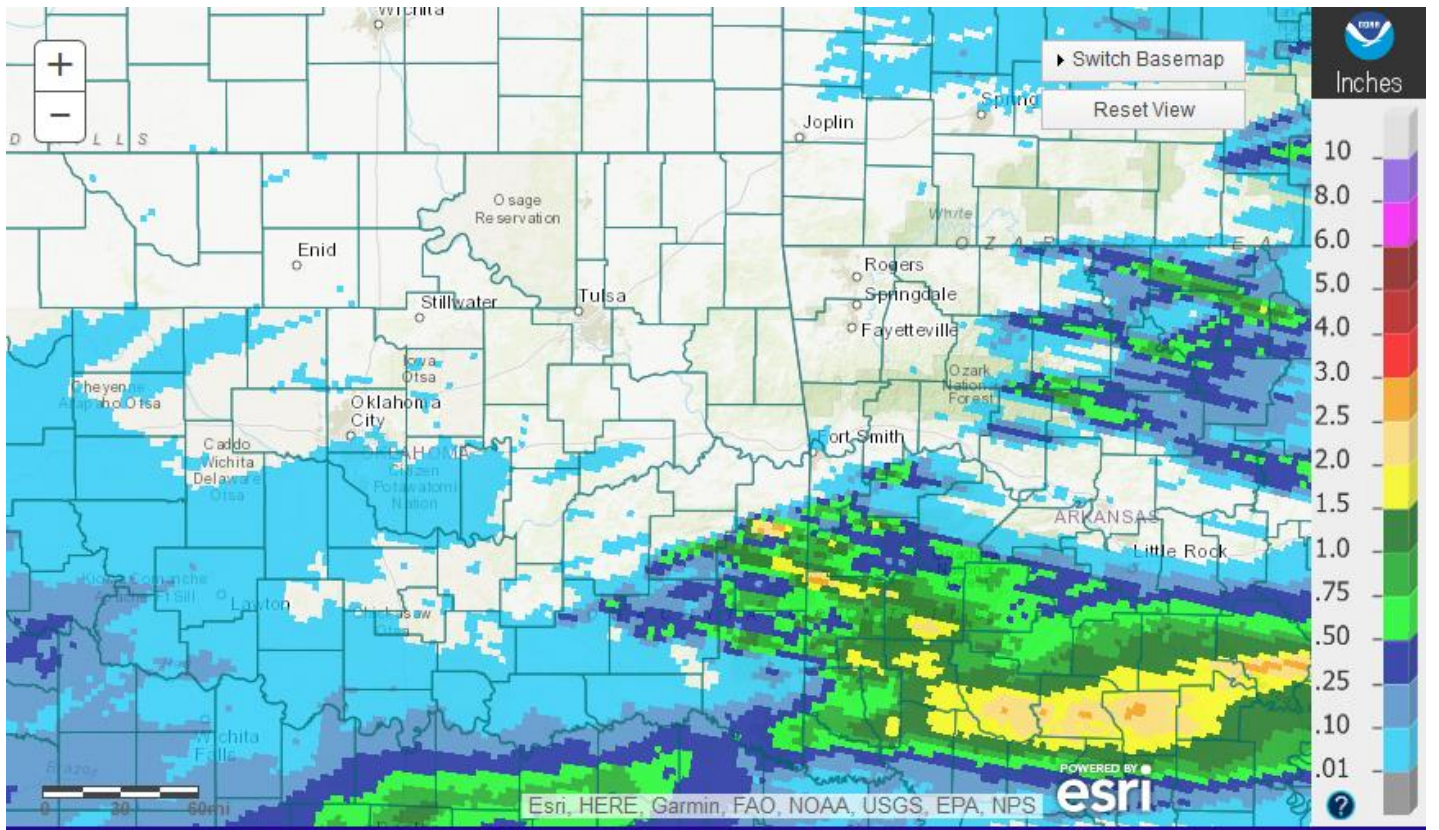
The closed low that had sitting over southern CA/northern Baja became an open wave and ejected toward the central Plains early on the 14<sup>th</sup>. In response to the approaching system, increasing warm air advection and elevated instability north of the stalled front across north TX generated a band of scattered convection from south central OK up into northeast OK during the mid-morning hours. This band gradually shifted south and east during the morning and afternoon hours as the wave moved across the central Plains. Some isolated thunderstorms developed near the front and moved north across Choctaw and Pushmataha Counties during the overnight hours, ending by sunrise on the 15<sup>th</sup>. 24-hour rainfall totals by 7 am CDT on the 15<sup>th</sup> ranged from 0.10" to near 2" (Fig. 7). The rainfall over the 2-day period resulted in minor flooding along the Illinois River near Watts and Tahlequah (see preliminary hydrographs at the end of this report; see E3 Report for details).





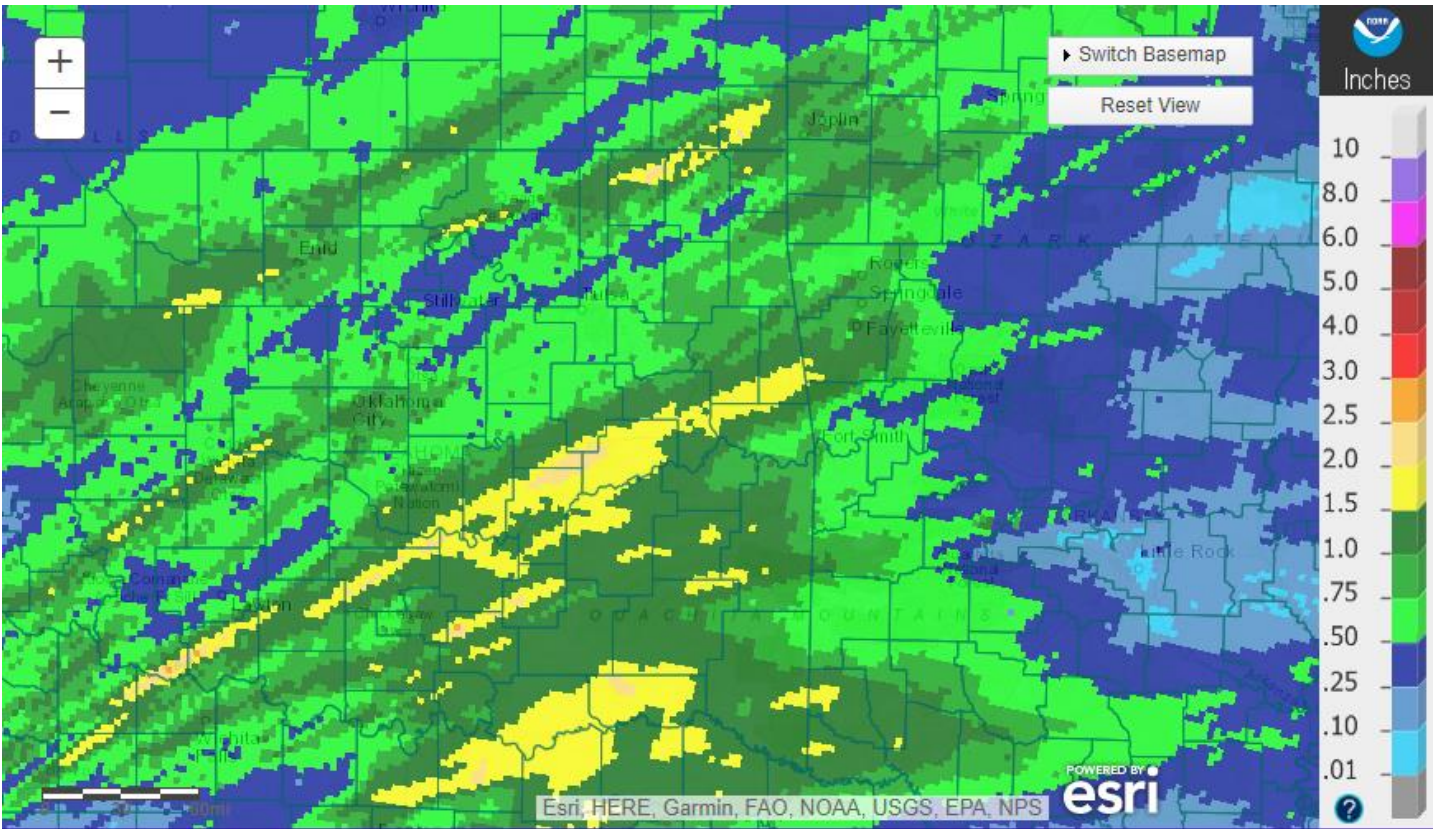
Tulsa, OK: March 11, 2020 1-Day Observed Precipitation  
Valid on: March 11, 2020 12:00 UTC

Fig. 4. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/11/2020.



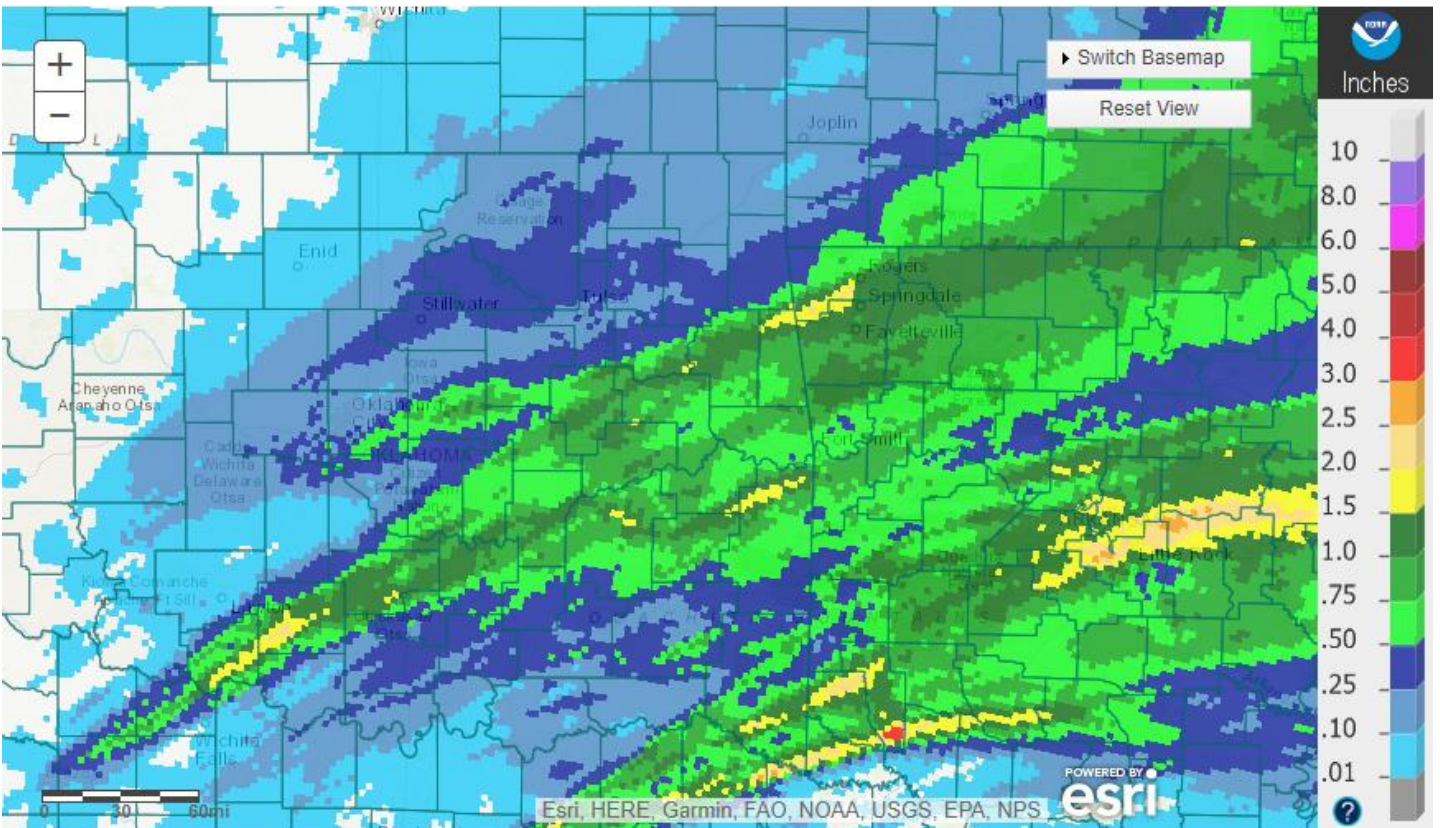
Tulsa, OK: March 13, 2020 1-Day Observed Precipitation  
Valid on: March 13, 2020 12:00 UTC

Fig. 5. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/13/2020.



Tulsa, OK: March 14, 2020 1-Day Observed Precipitation  
Valid on: March 14, 2020 12:00 UTC

Fig. 6. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/14/2020.



Tulsa, OK: March 15, 2020 1-Day Observed Precipitation  
Valid on: March 15, 2020 12:00 UTC

Fig. 7. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/15/2020.

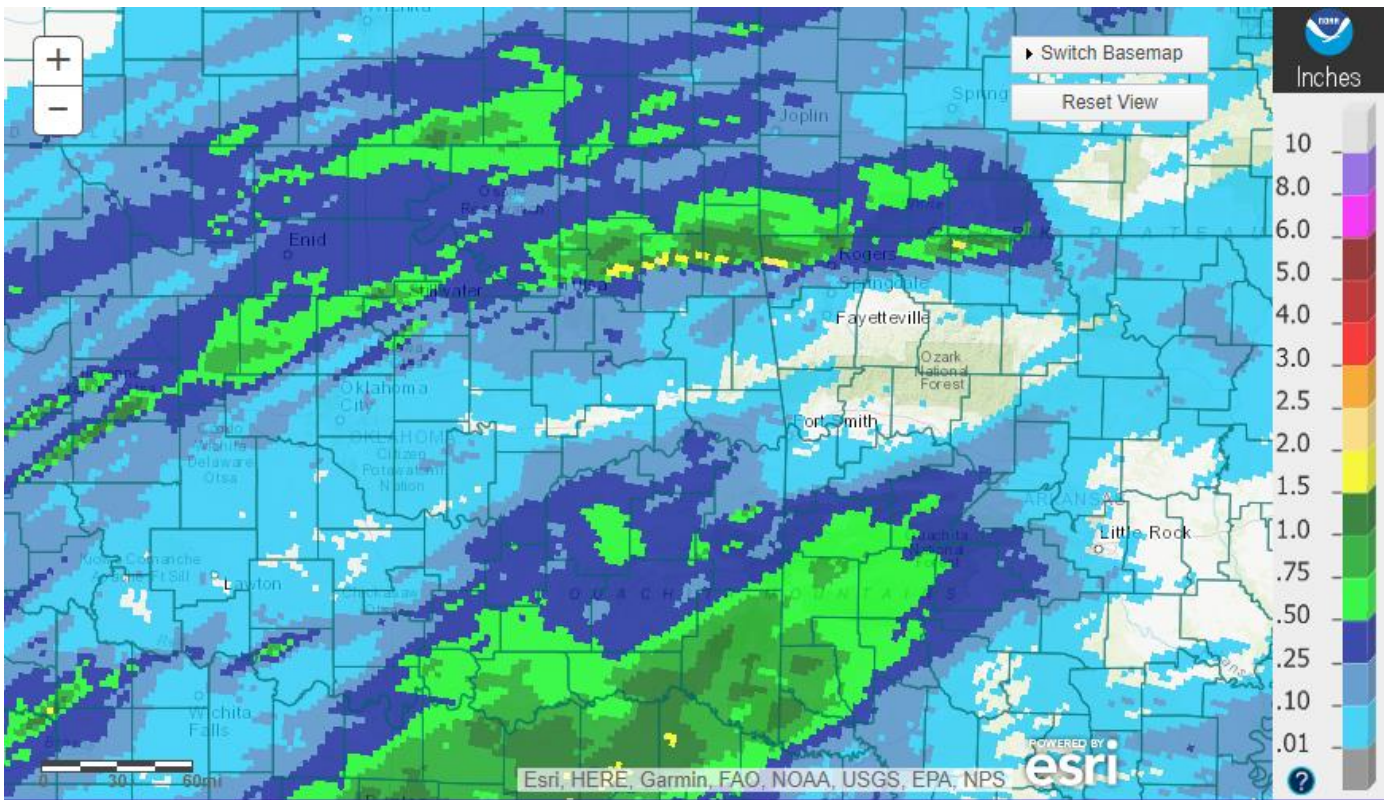
Another piece of energy ejected out of the eastern Pacific low, bringing showers and thunderstorms to northeast OK during the late evening and overnight hours of the 15<sup>th</sup> into the 16<sup>th</sup>. Additionally, after midnight, showers and thunderstorms over north TX moved north into southeast OK. Both areas of precipitation expanded in coverage while shifting east into western AR through the early morning hours. The rain ended from west to east, exiting the area by mid-morning on the 16<sup>th</sup>. Rainfall totals ranged from a few hundredths of an inch to around 1.5" (Fig. 8). For the 4-day rainfall total, most of eastern OK and northwest AR received 1"-3" of rain, with isolated areas receiving 3"-5" (Figs. 9, 10).

A wide line of showers and thunderstorms overspread the area from the west starting on the evening of the 17<sup>th</sup> and continuing eastward through the overnight hours as a warm front moved across the area. The rain finally pushed east of the region by mid-morning of the 18<sup>th</sup>. Rainfall totals ranged around 0.50" near the OK/KS state line to around 2" in southeast OK (Figs. 11, 12). This rain caused area rivers to rise, but no flooding occurred.

As the main upper-level storm system moved rapidly northeast out of the southwest U.S., an area of showers and thunderstorms from central OK moved into the region just before midnight of the 19<sup>th</sup>. This activity pushed east through the early morning hours. A second line of thunderstorms moved out of central OK into the area in the pre-dawn hours of the 19<sup>th</sup>, moving quickly to the east through mid-morning. A third and final line of storms moved in from the west around sunrise. This line was occurring along a dry line and was slower moving across eastern OK and western AR. The last line of storms finally exited the area during the late evening hours. Enough shear and instability were present for some of these storms to be strong to severe with each round. An EF-0 tornado occurred with the first round of storms and an EF-1 tornado occurred with the second round (see <https://arcg.is/WOfzCO> for details). Precipitable water values were 1"-1.6", resulting in locally heavy rainfall. Rainfall through 7 am 3/19/20 ranged from 0.25" to 1.5" for much of eastern OK and northwest AR, with a heavier axis of 1.5" to 3.5" just to the northwest of I-44 (Figs. 13, 14). An additional 0.25" to around 3" fell along and southeast of I-44 after 7 am, with the heaviest axis of 1.5"-3" falling from McIntosh County through far northwest AR (Fig. 15). This heavy rain, falling on previously saturated soils, resulted in mainstem river flooding. Major flooding occurred along the Illinois River near Chewey and near Tahlequah. Moderate flooding occurred along the Illinois River near Watts, the Caney River near Collinsville, and the Neosho River near Commerce. Minor flooding occurred along the Arkansas River at Van Buren and at Ozark L&D, Polecat Creek near Sapulpa, Bird Creek near Sperry and near Owasso-Mingo, the Caney River near Ramona, the Spring River near Quapaw, the Deep Fork River near Beggs, the Baron Fork at Eldon, Lee Creek near Van Buren, and the Poteau River near Panama. See preliminary hydrographs at the end of this report and the E3 Report for details.

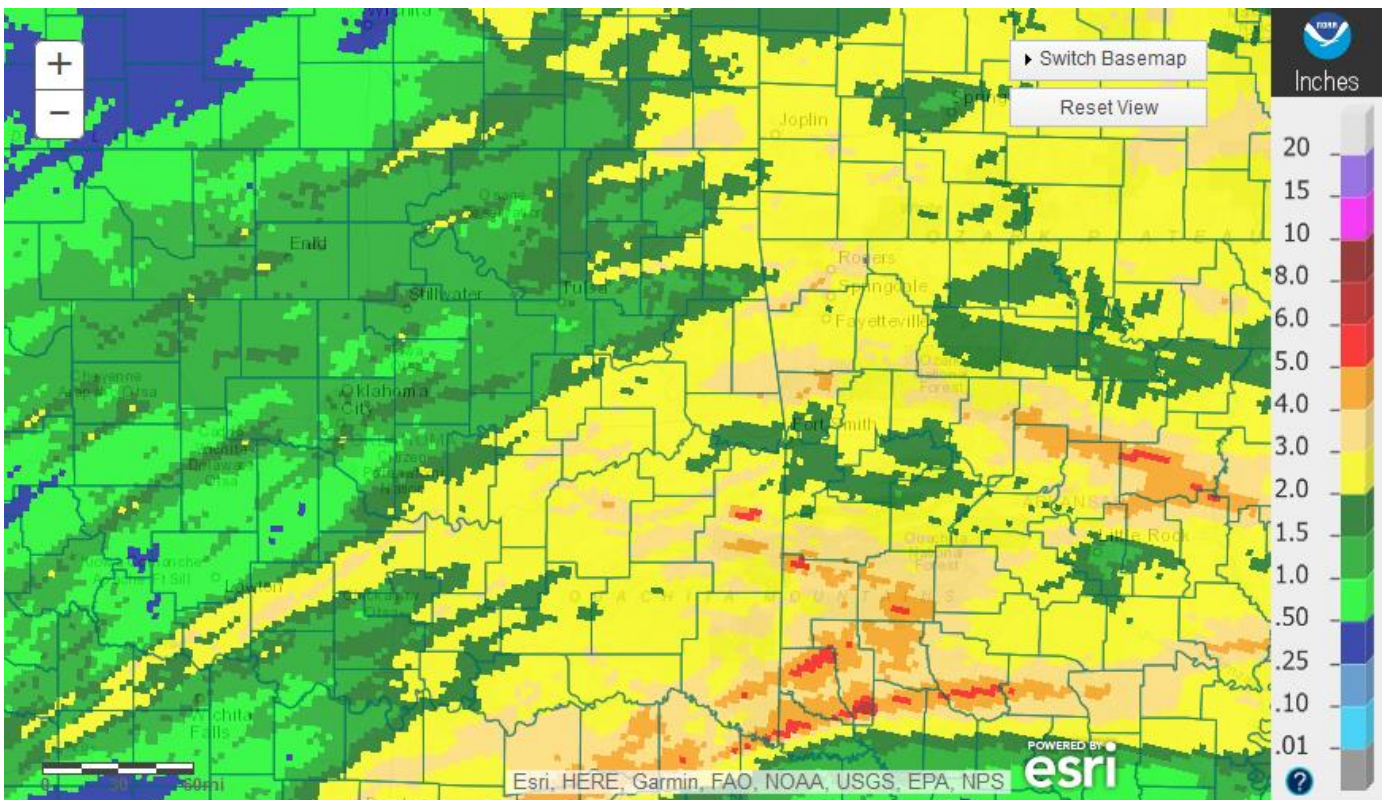
The next upper-level wave approached the region on the 21<sup>st</sup>. Rain increased during the evening hours, primarily across northeast OK and northwest AR. After midnight, showers also began to affect the remainder of eastern OK and west central AR, however the heaviest rain continued across northeast OK. This activity ended from west to east, finally exiting the area by mid-morning on the 22<sup>nd</sup>. Rainfall totals ranged from 0.10" to near 1" (Figs. 16, 17).

During the early morning hours of the 24<sup>th</sup>, a strong 50-60 knot low-level jet at 850mb was located from northwest TX into central OK, with a warm front extending from southeast OK to a surface low northwest of Oklahoma City. Upglide over the boundary forced scattered showers and thunderstorms across northwest AR and far northeast OK. However, a more significant line of convection occurred near the low-level jet axis over north central OK and southern KS. This line swept through northeast OK during the pre-dawn hours and then continued east into northwest AR after sunrise, weakening with the waning of the low-level jet as the associated upper-level wave moved off to the east. The storms came to an end by mid-morning. Rainfall totals across northeast OK and isolated portions of northwest AR were 0.25" to 1.5" (Fig. 18). The rain across the Neosho River basin resulted in minor flooding near Commerce (see preliminary hydrographs at the end of this report and the E3 Report for details).



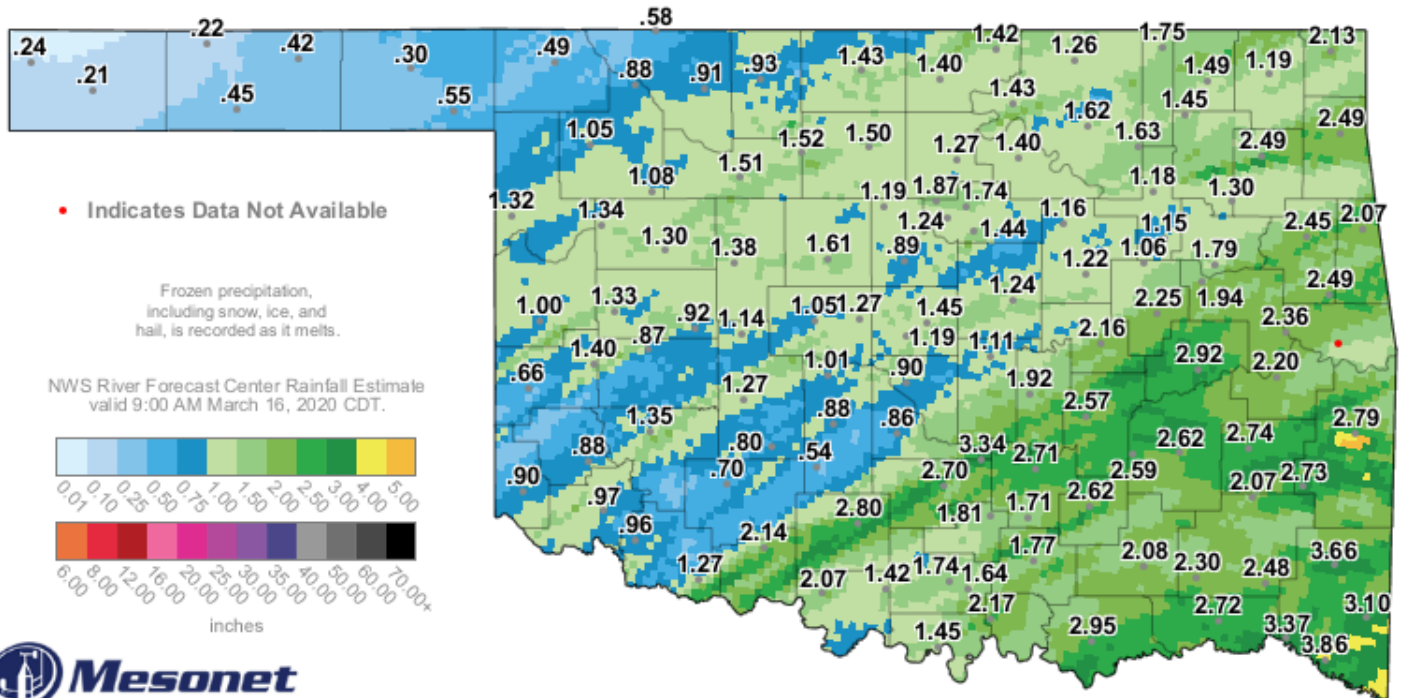
Tulsa, OK: March 16, 2020 1-Day Observed Precipitation  
Valid on: March 16, 2020 12:00 UTC

Fig. 8. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/16/2020.



Tulsa, OK: Last 7-Day Observed Precipitation  
Valid on: March 16, 2020 12:00 UTC

Fig. 9. 7-day Estimated Observed Rainfall ending at 6am CDT 3/16/2020.

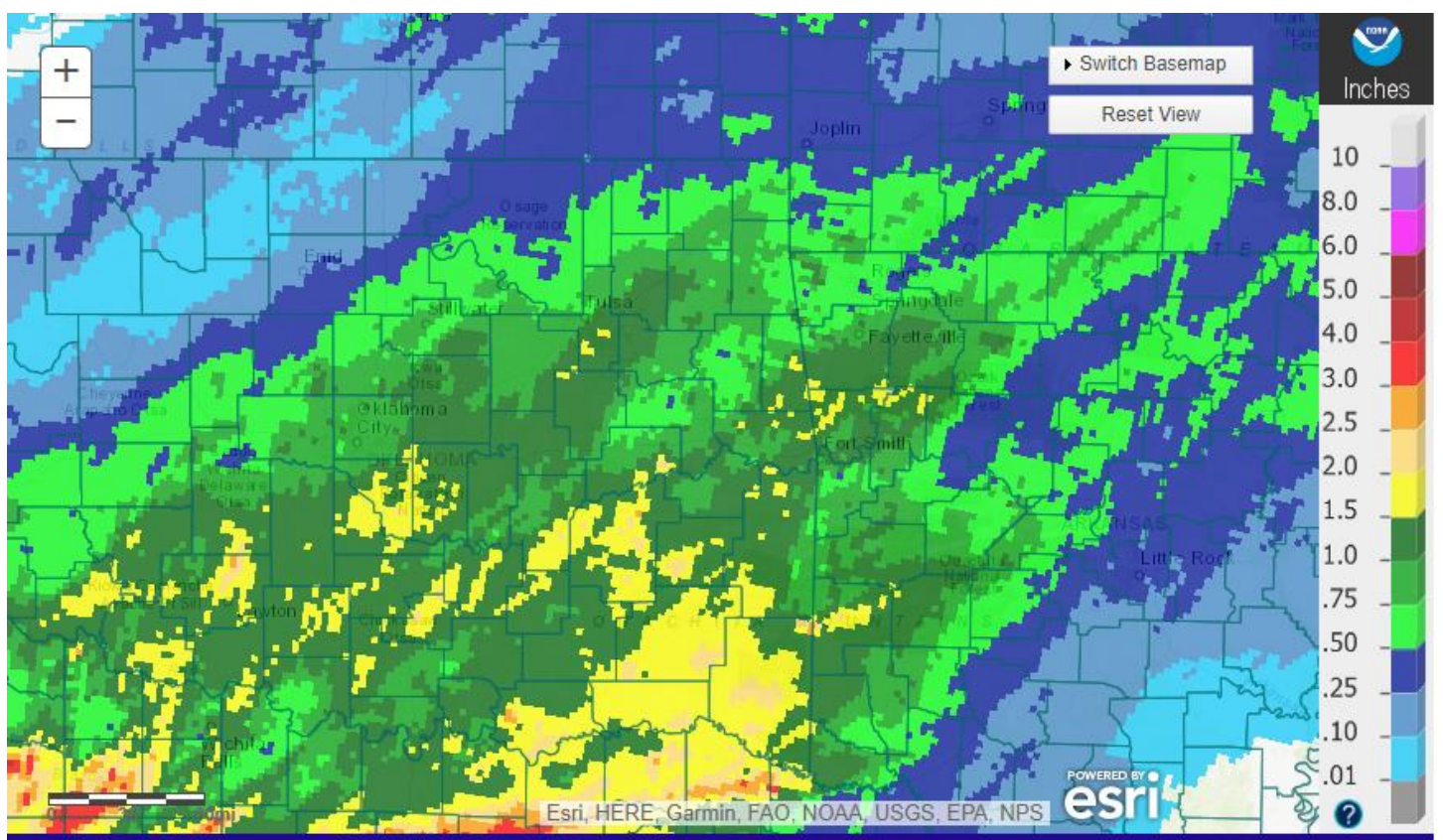


### 4-Day Rainfall Accumulation (inches)

10:40 AM March 16, 2020 CDT

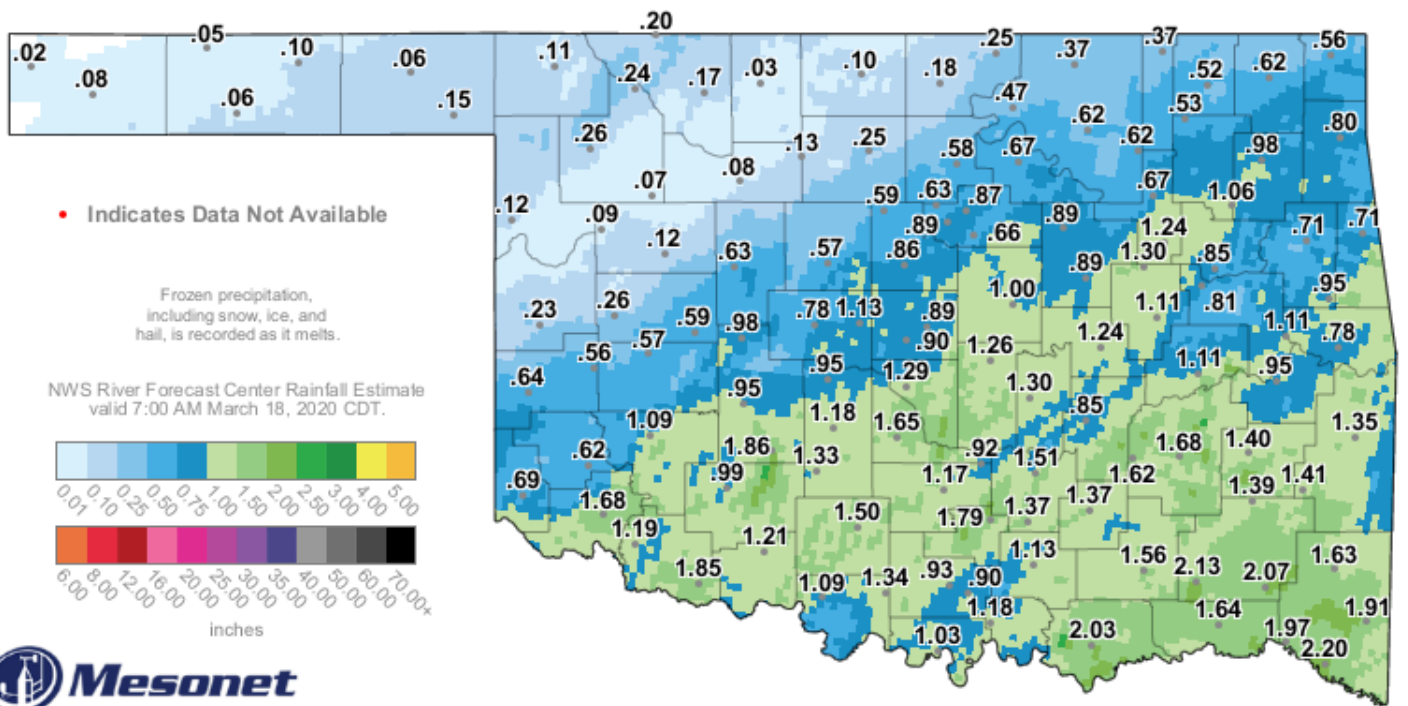
Created 10:45:58 AM March 16, 2020 CDT. © Copyright 2020

Fig. 10. OK Mesonet (values) and NWS RFC rainfall estimate (image) 4-day rainfall ending at 10:40 am CDT 3/16/2020.



Tulsa, OK: March 18, 2020 1-Day Observed Precipitation  
Valid on: March 18, 2020 12:00 UTC

Fig. 11. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/18/2020.

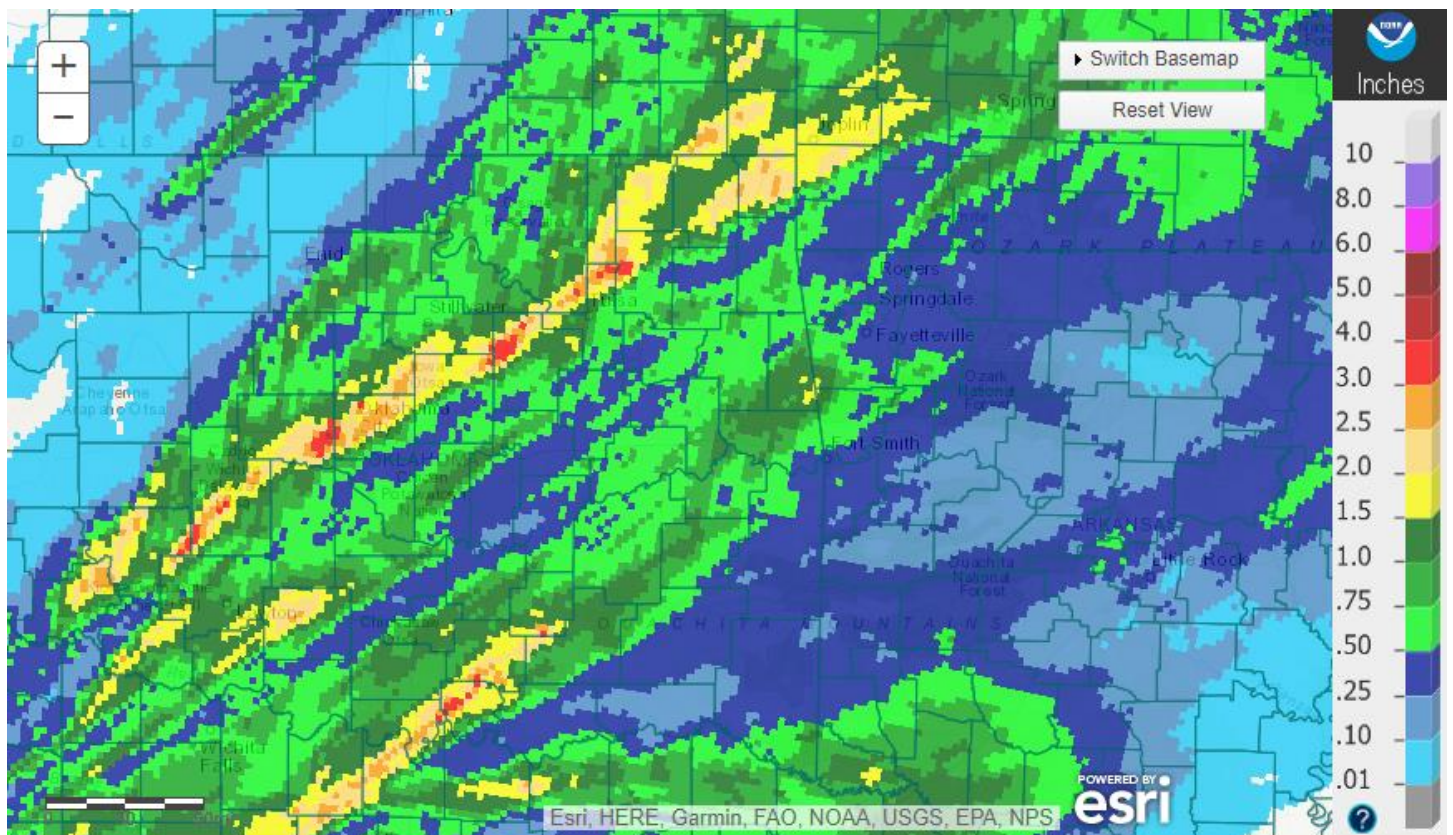


### 24-Hour Rainfall Accumulation (inches)

7:55 AM March 18, 2020 CDT

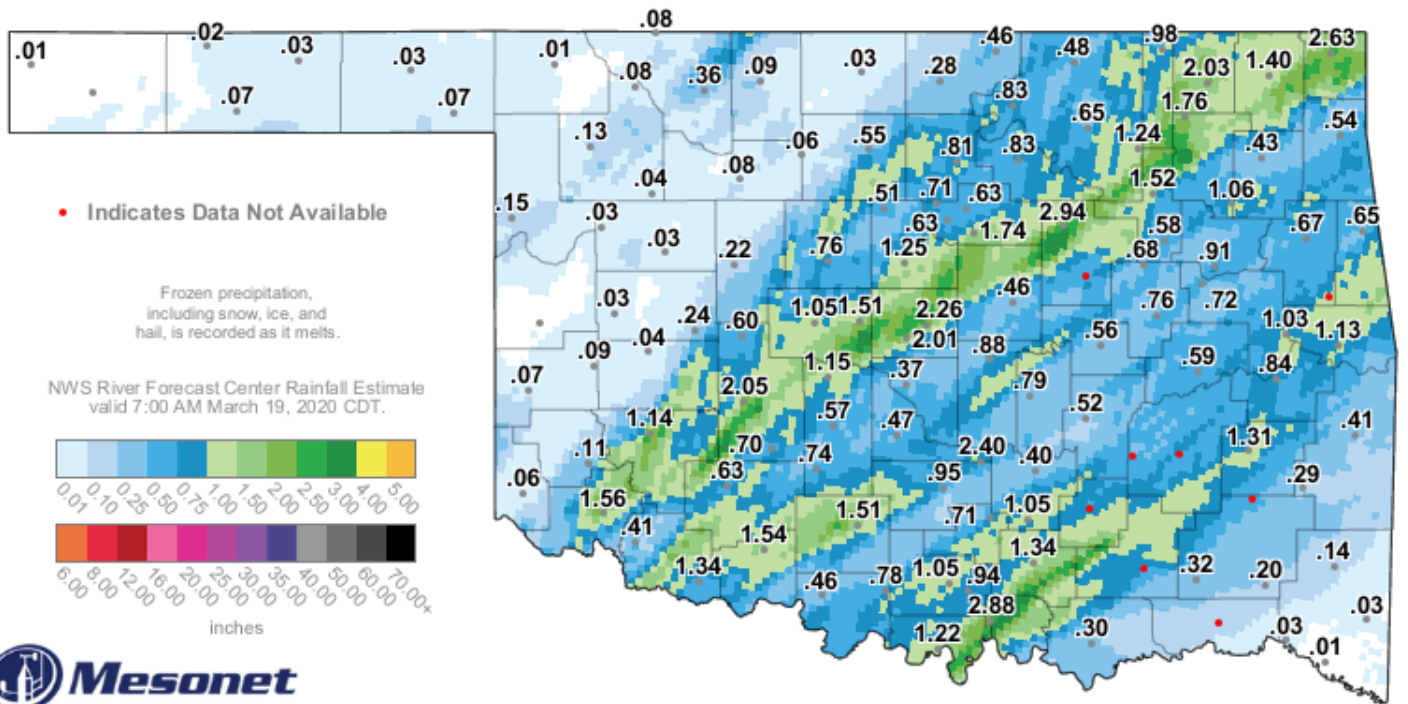
Created 8:00:51 AM March 18, 2020 CDT. © Copyright 2020

Fig. 12. OK Mesonet (values) and NWS RFC rainfall estimate (image) 24-hour rainfall ending at 7:55 am CDT 3/18/2020.



Tulsa, OK: March 19, 2020 1-Day Observed Precipitation  
Valid on: March 19, 2020 12:00 UTC

Fig. 13. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/19/2020.

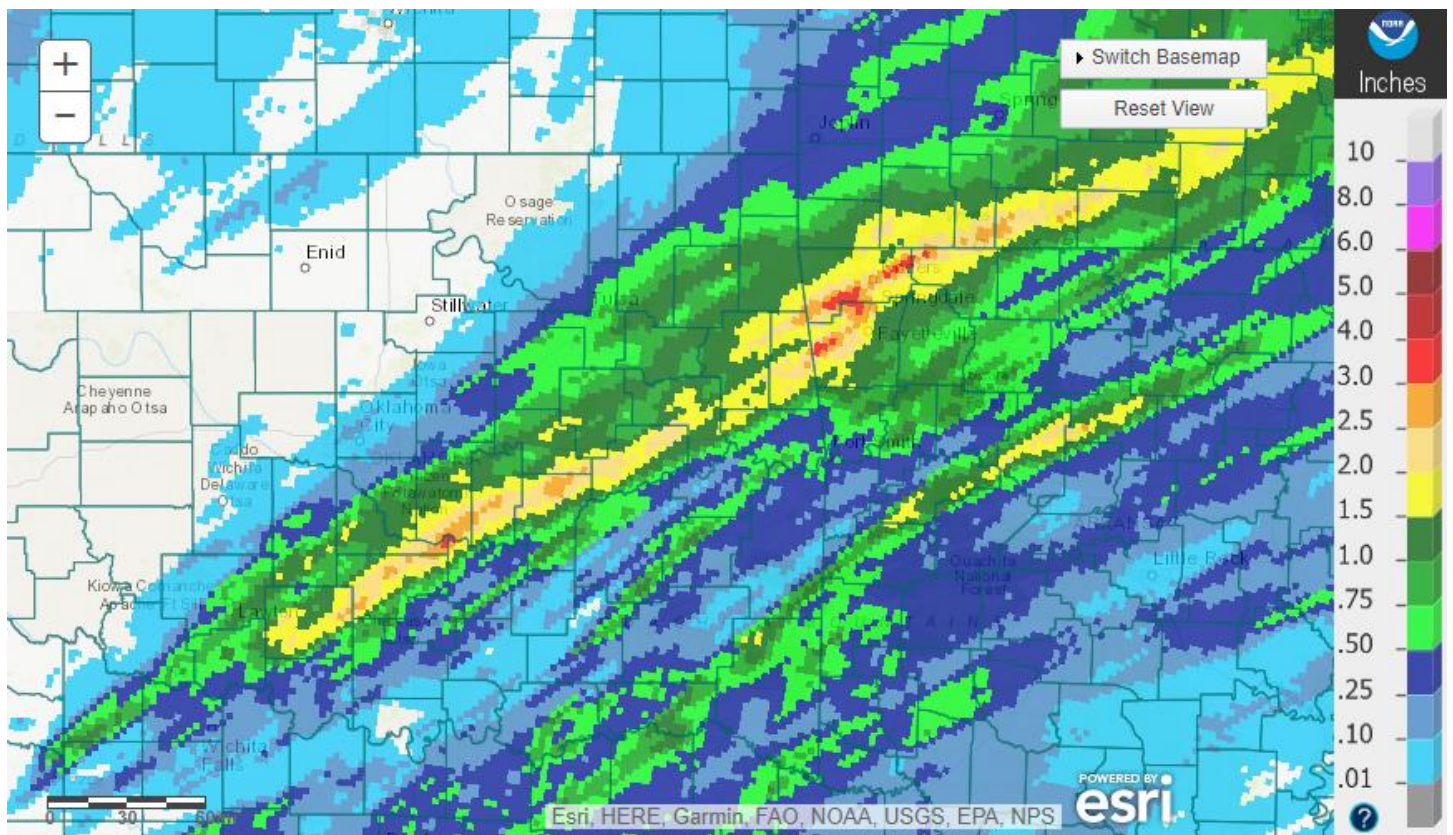


## 12-Hour Rainfall Accumulation (inches)

8:15 AM March 19, 2020 CDT

Created 8:20:57 AM March 19, 2020 CDT. © Copyright 2020

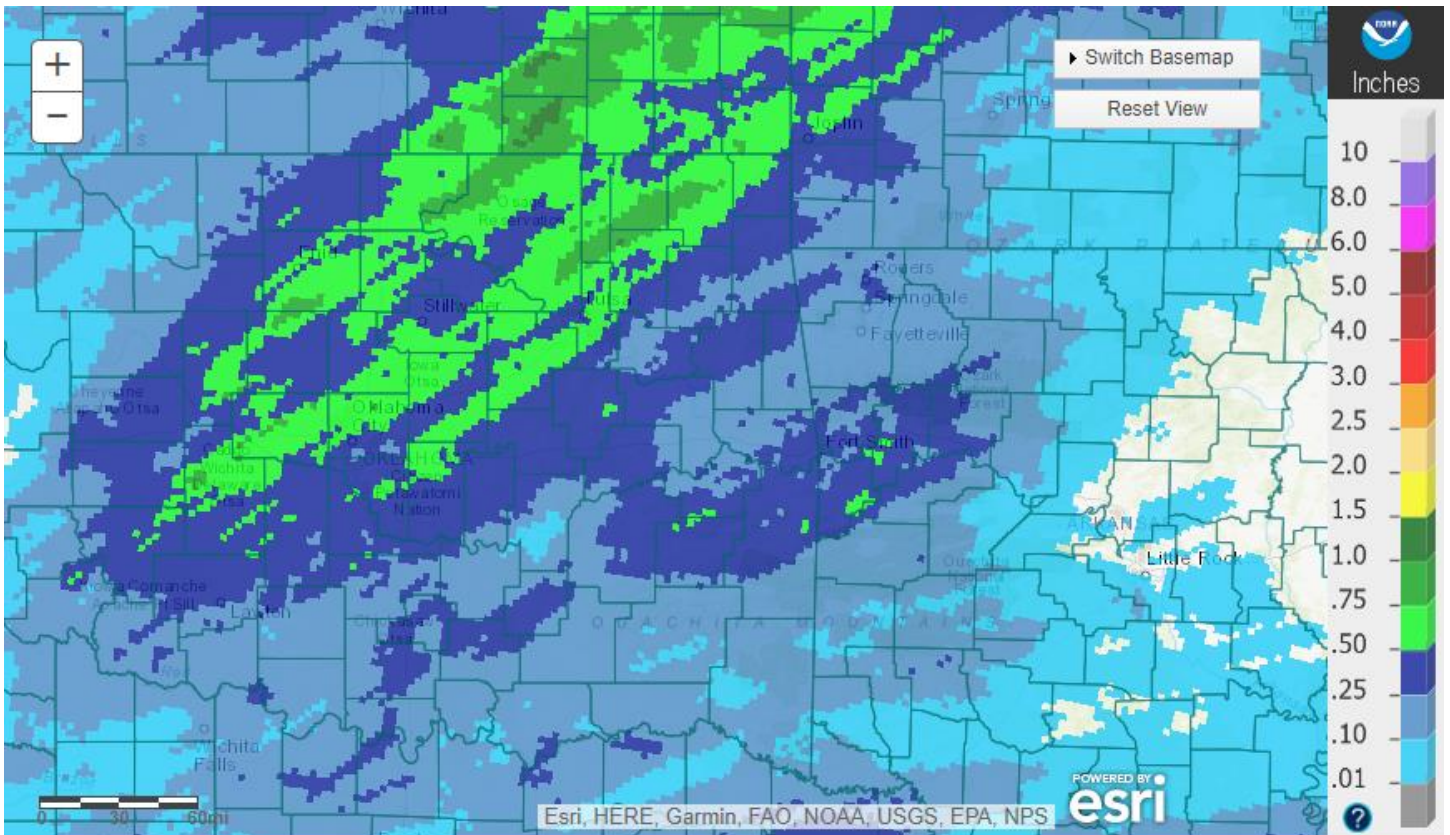
Fig. 14. OK Mesonet (values) and NWS RFC rainfall estimate (image) 12-hour rainfall ending at 8:15 am CDT 3/19/2020.



Tulsa, OK: March 20, 2020 1-Day Observed Precipitation

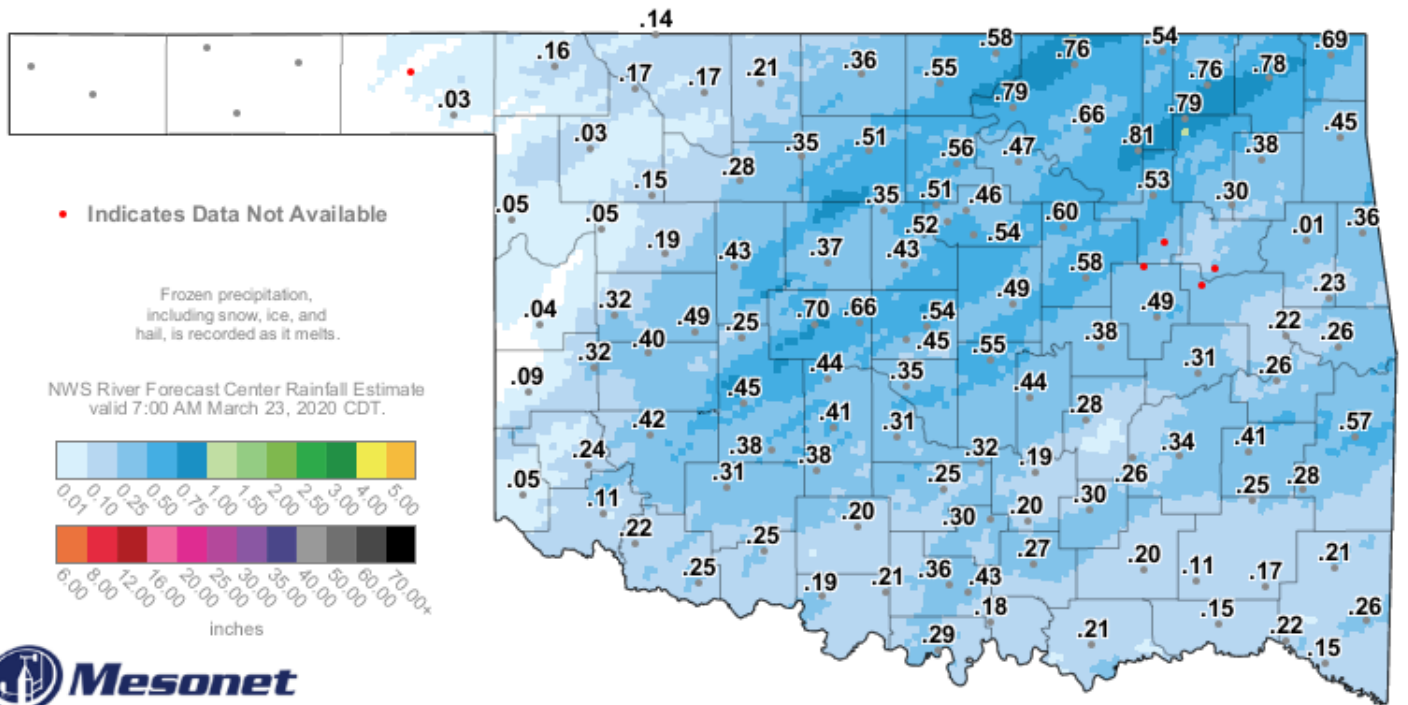
Valid on: March 20, 2020 12:00 UTC

Fig. 15. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/20/2020.



Tulsa, OK: March 22, 2020 1-Day Observed Precipitation  
Valid on: March 22, 2020 12:00 UTC

Fig. 16. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/22/2020.



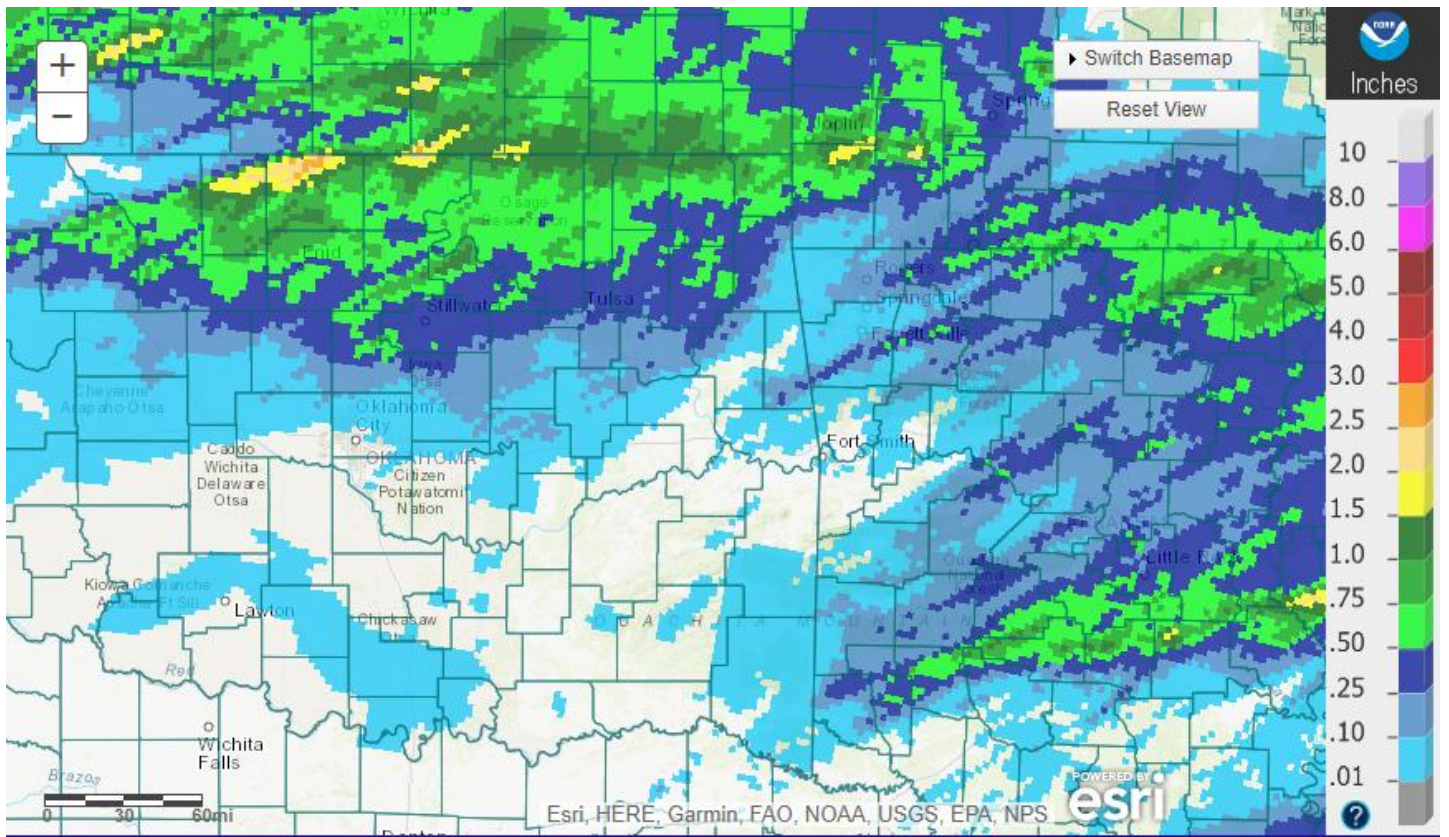
## 2-Day Rainfall Accumulation (inches)

8:10 AM March 23, 2020 CDT

Created 8:15:57 AM March 23, 2020 CDT. © Copyright 2020

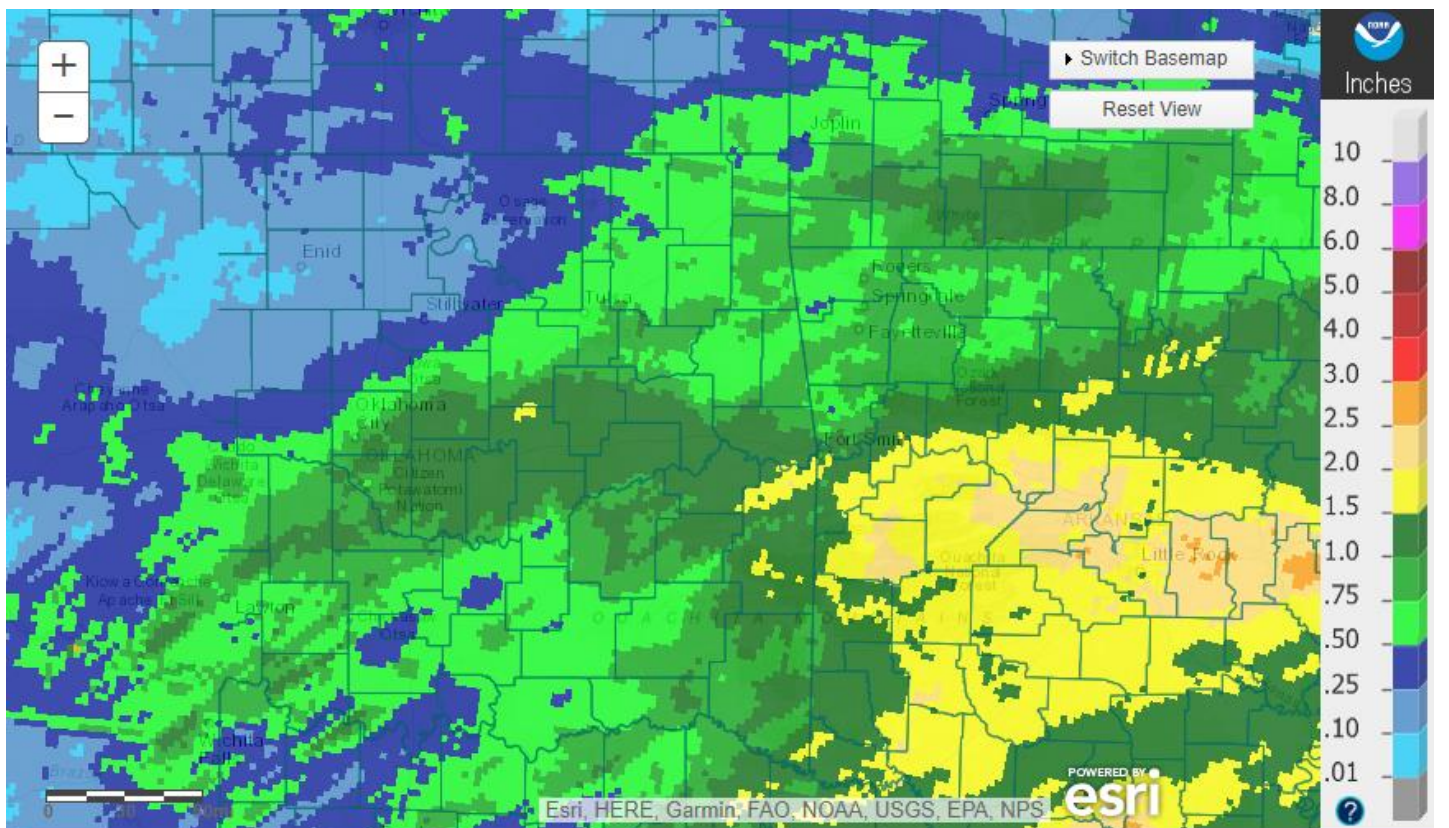
Fig. 17. OK Mesonet (values) and NWS RFC rainfall estimate (image) 2-day rainfall ending at 8:10 am CDT 3/23/2020.





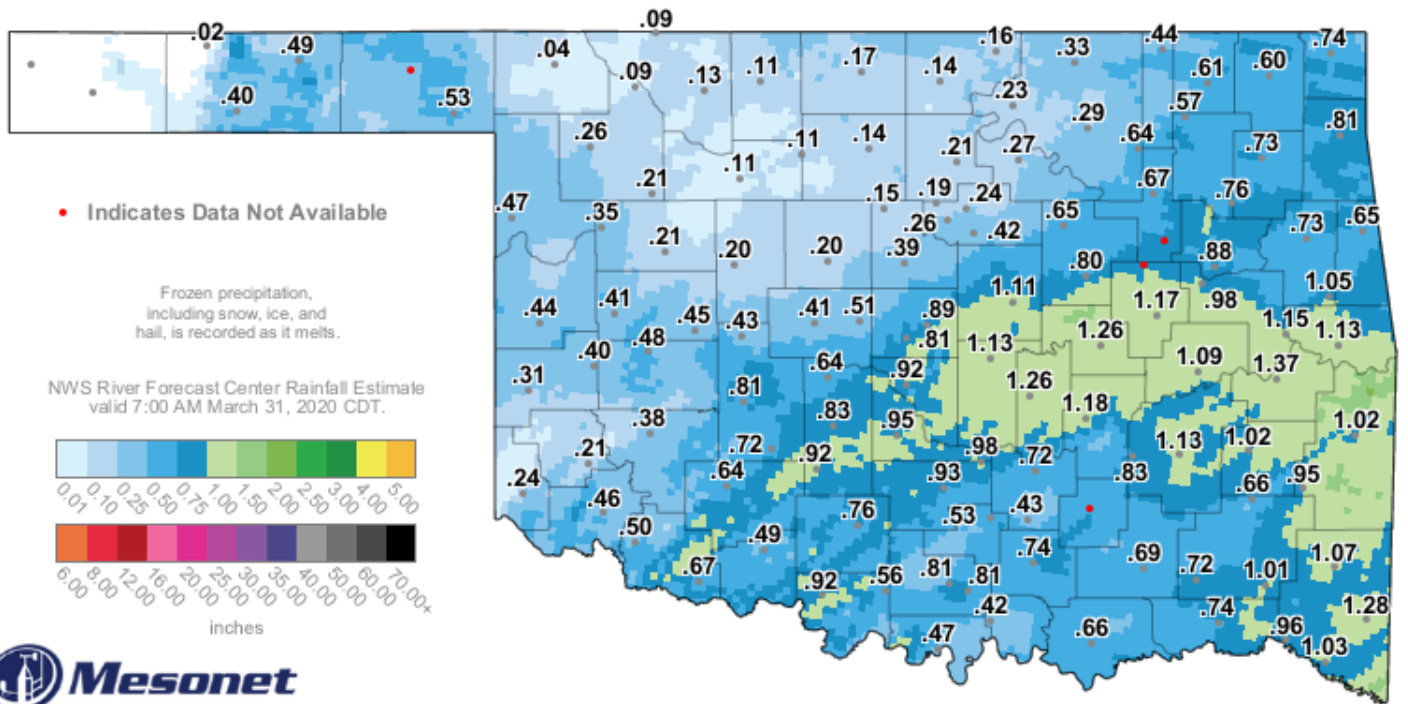
Tulsa, OK: March 24, 2020 1-Day Observed Precipitation  
Valid on: March 24, 2020 12:00 UTC

Fig. 18. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/24/2020.



Tulsa, OK: March 31, 2020 1-Day Observed Precipitation  
Valid on: March 31, 2020 12:00 UTC

Fig. 19. 24-hour Estimated Observed Rainfall ending at 7am CDT 3/31/2020.



## 24-Hour Rainfall Accumulation (inches)

7:45 AM March 31, 2020 CDT

Created 7:50:54 AM March 31, 2020 CDT. © Copyright 2020

Fig. 20. OK Mesonet (values) and NWS RFC rainfall estimate (image) 24-hour rainfall ending at 7:45 am CDT 3/31/2020.

Scattered showers developed over southeast OK during the morning of the 30<sup>th</sup>, lifting north through early afternoon. More widespread showers and isolated thunderstorms then expanded east into eastern OK after noon as a shortwave trough approached the Plains and interacted with a plume of Pacific moisture. This activity brought rain to all of eastern OK and western AR through the evening hours. An upper-level cyclone tracked near the OK/KS state line during the overnight hours, with moisture wrapping around the low and bringing additional scattered showers to northeast OK and northwest AR through sunrise on the 31<sup>st</sup>. Rainfall totals ranged from around 0.25" to around 1.5" (Figs. 19, 20). This rain caused the Arkansas River at Ozark L&D to rise to just above flood stage and the Poteau River near Panama to rise to just below flood stage (see preliminary hydrographs at the end of this report and the E3 Report for details).

Written by:

Nicole McGavock  
Service Hydrologist  
WFO Tulsa

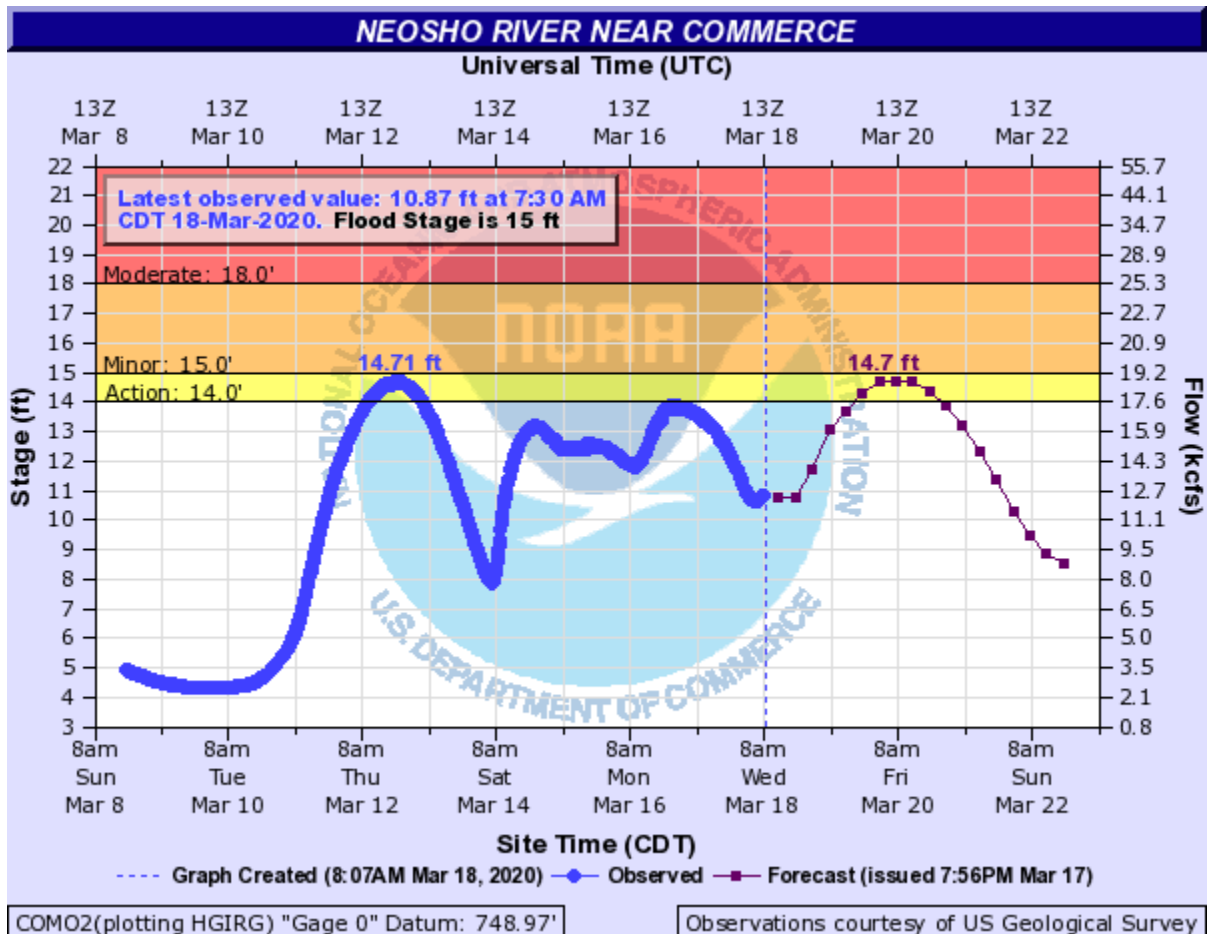
### **Products issued in March 2020:**

- \*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

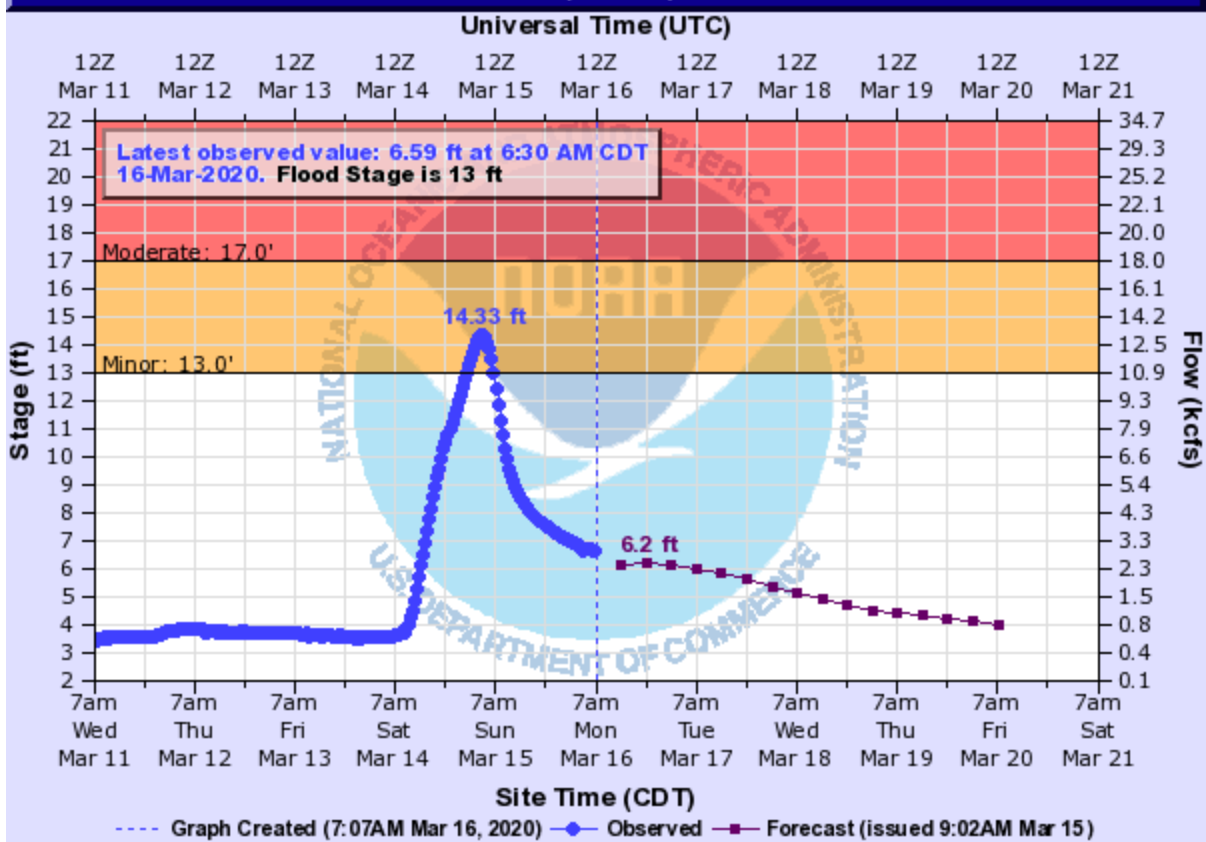
- 4 Flash Flood Warnings (FFW)
- 6 Flash Flood Statements (FFS)
- 1 Flash/Areal Flood Watches (FFA) (3 Watch FFA CON/EXT/EXA/EXB/CAN)
- 10 Urban and Small Stream Advisories (FLS)
- 3 Areal Flood Warnings (FLW)

- 1 Areal Flood Statements (FLS)
- 32 River Flood Warnings (FLW) (includes category increases)
- 262 River Flood Statements (FLS)
- 14 River Flood Advisories (FLS) (48 Advisory FLS CON/EXT/CAN)
- 0 River Flood Watches (FFA) (0 Watch FFA CON/EXT/CAN)
- 0 River Statements (RVS)
- 1 Hydrologic Outlooks (ESF)
- 0 Drought Information Statements (DGT)

**Preliminary Hydrographs:**



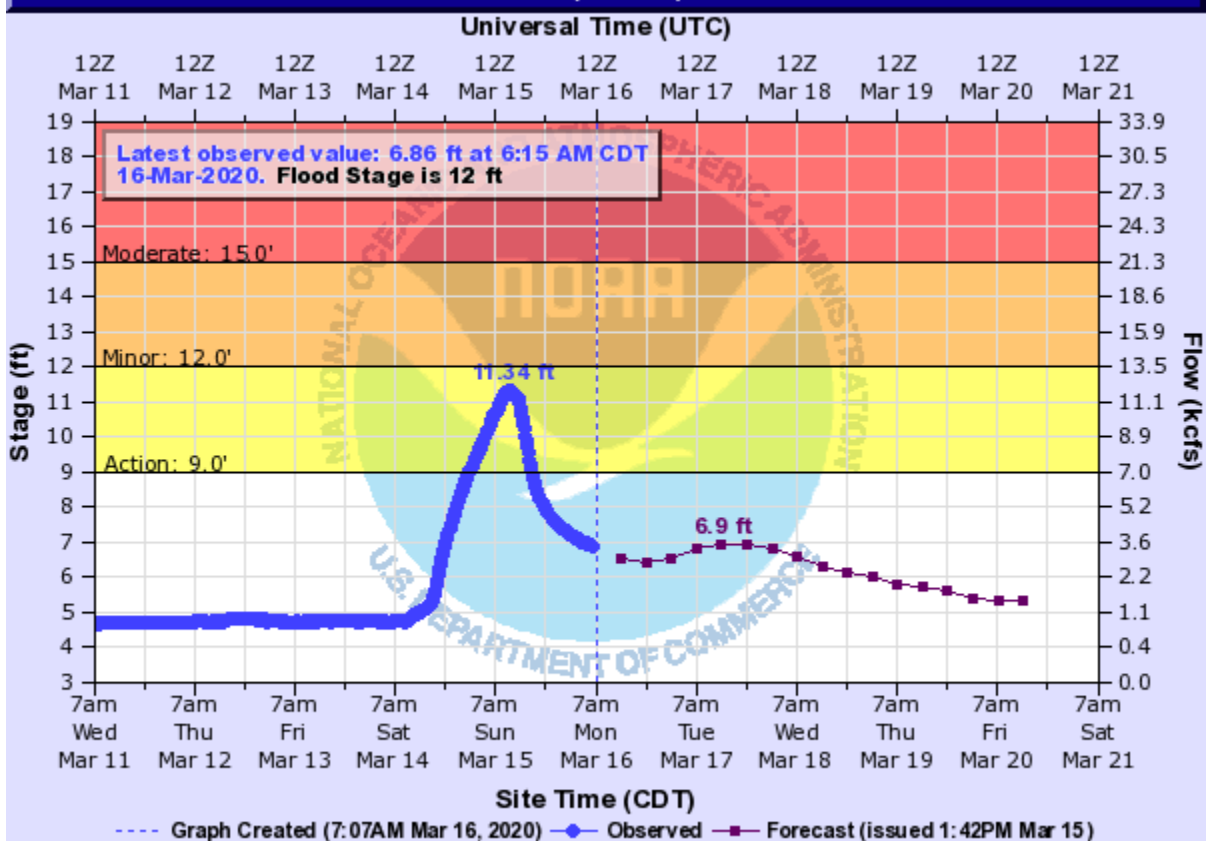
## ILLINOIS RIVER (AR OK) NEAR WATTS



WT02(plotting HGIRG) "Gage 0" Datum: 893.78'

Observations courtesy of US Geological Survey

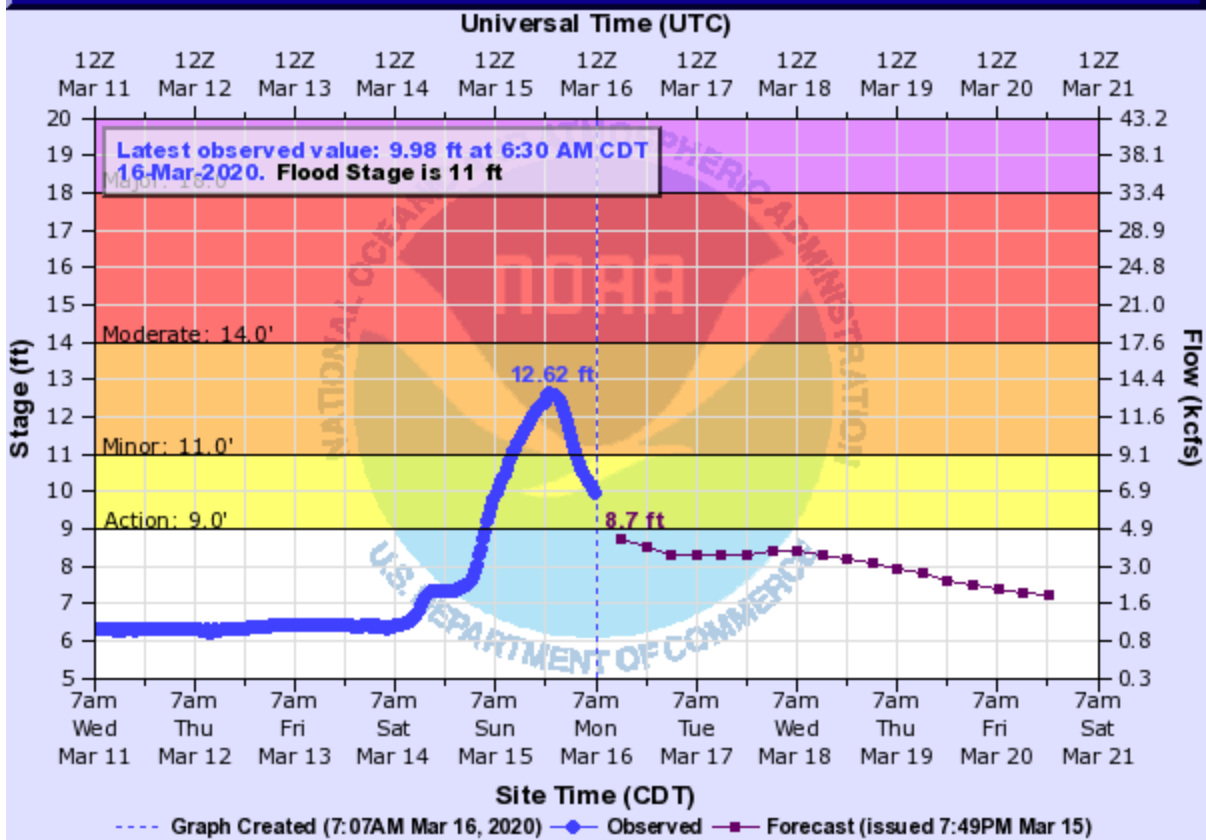
## ILLINOIS RIVER (AR OK) AT CHEWEY



CWYO2(plotting HGIRG) "Gage 0" Datum: 800.88'

Observations courtesy of US Geological Survey

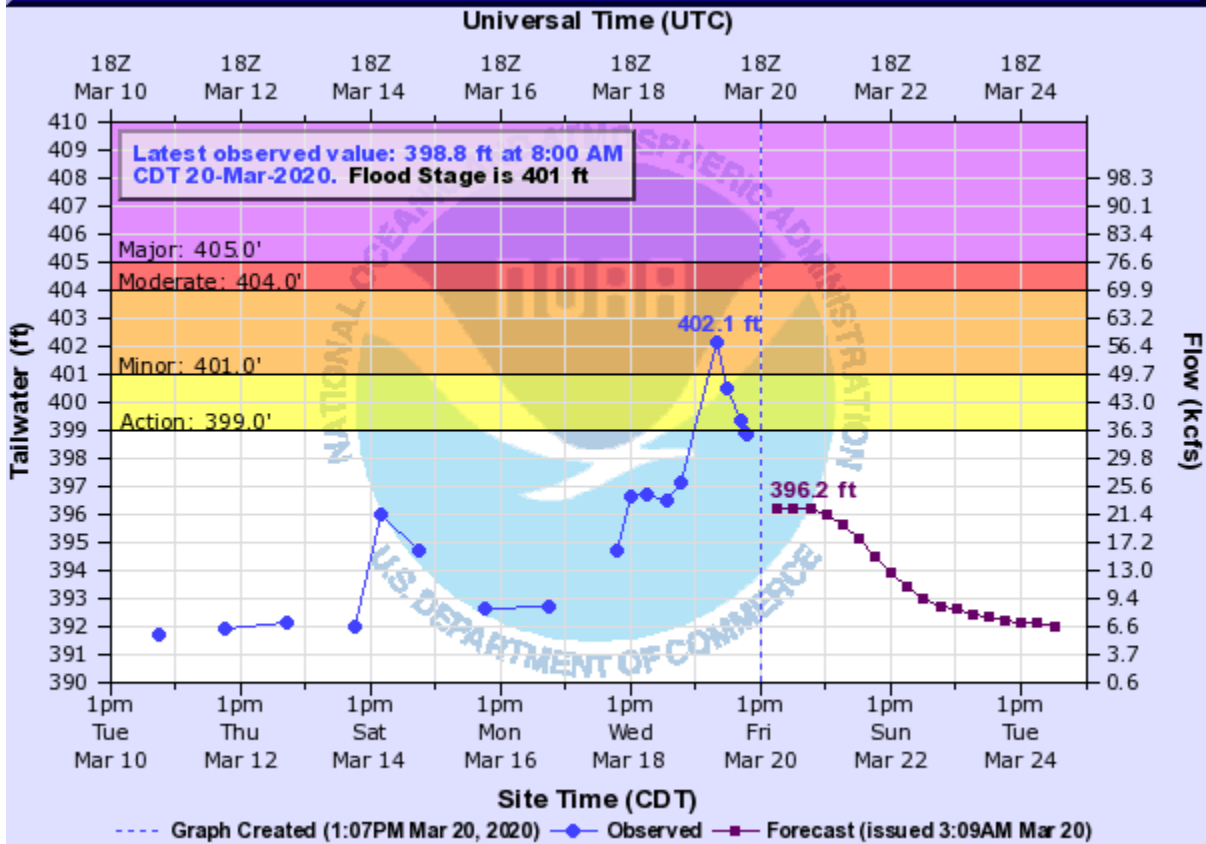
## ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH



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

Observations courtesy of US Geological Survey

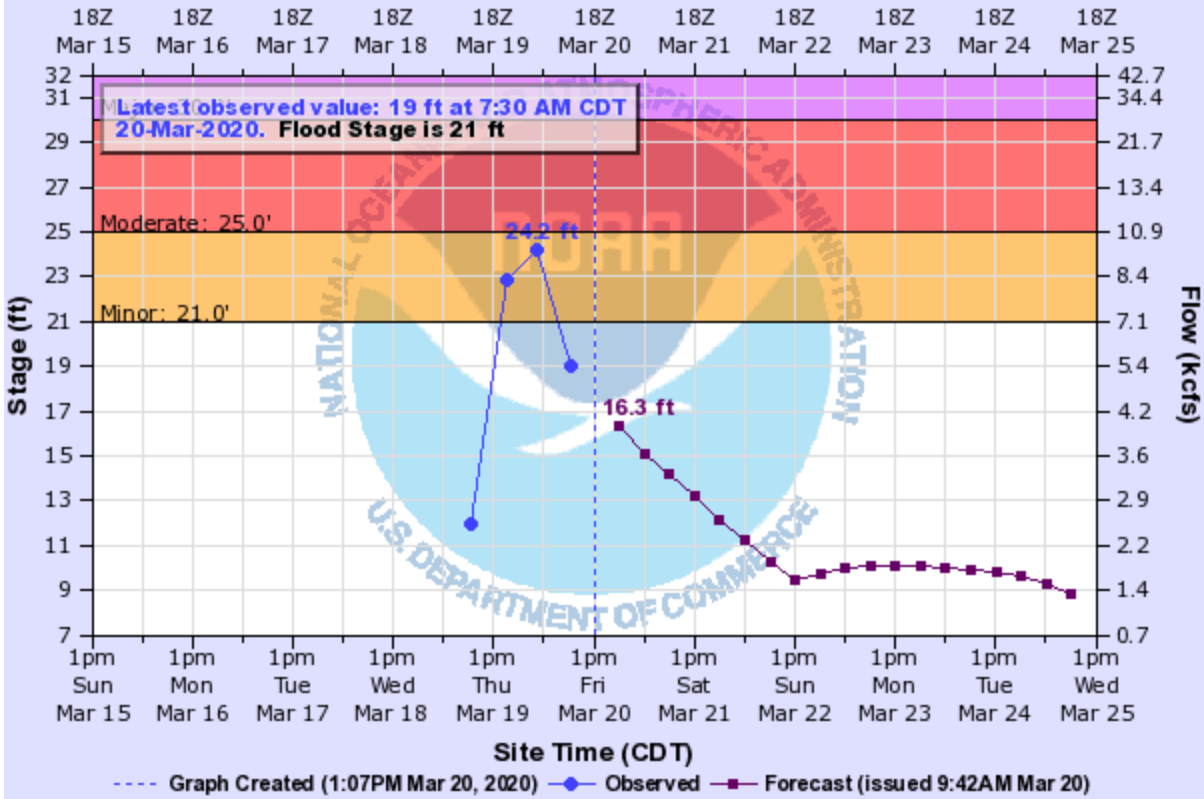
## LEE CREEK NEAR VAN BUREN LCR



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

## POLECAT CREEK NEAR SAPULPA

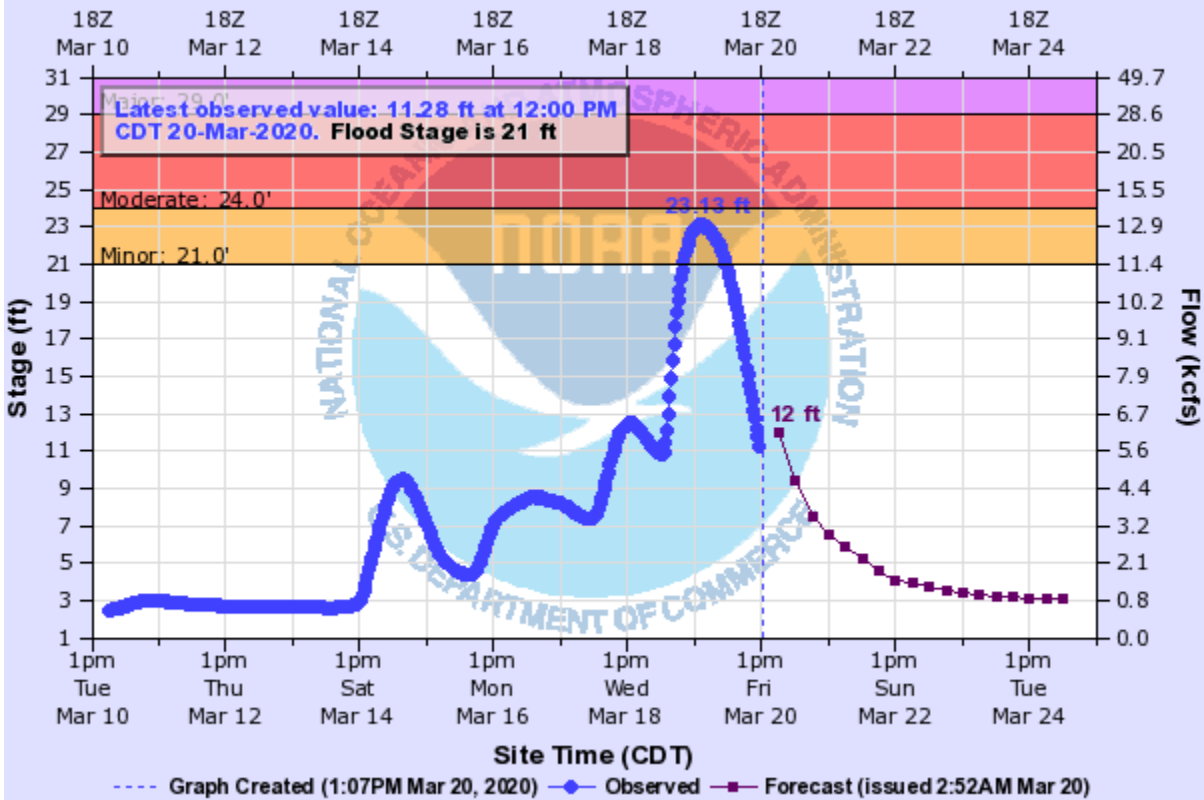
Universal Time (UTC)



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

## BIRD CREEK NEAR SPERRY

Universal Time (UTC)

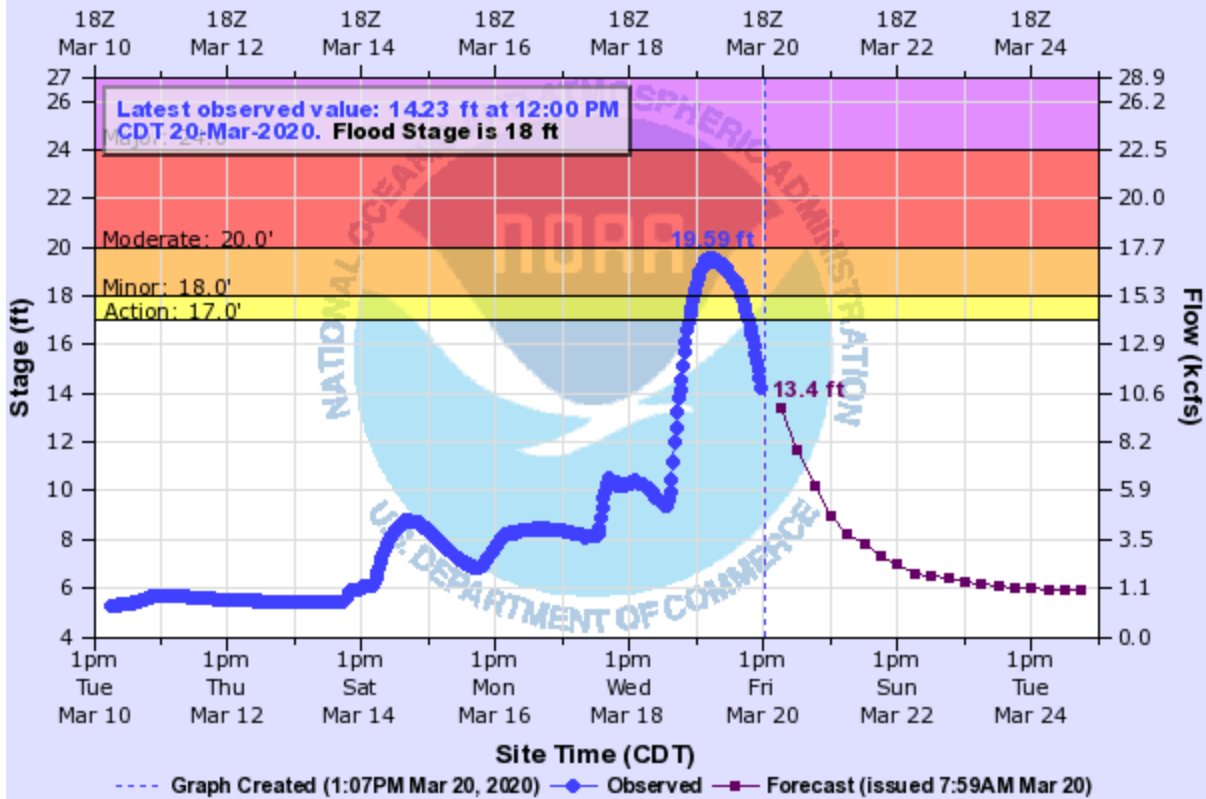


SPEO2(plotting HGIRG) "Gage 0" Datum: 579.43'

Observations courtesy of US Geological Survey

### BIRD CREEK NEAR OWASSO

Universal Time (UTC)

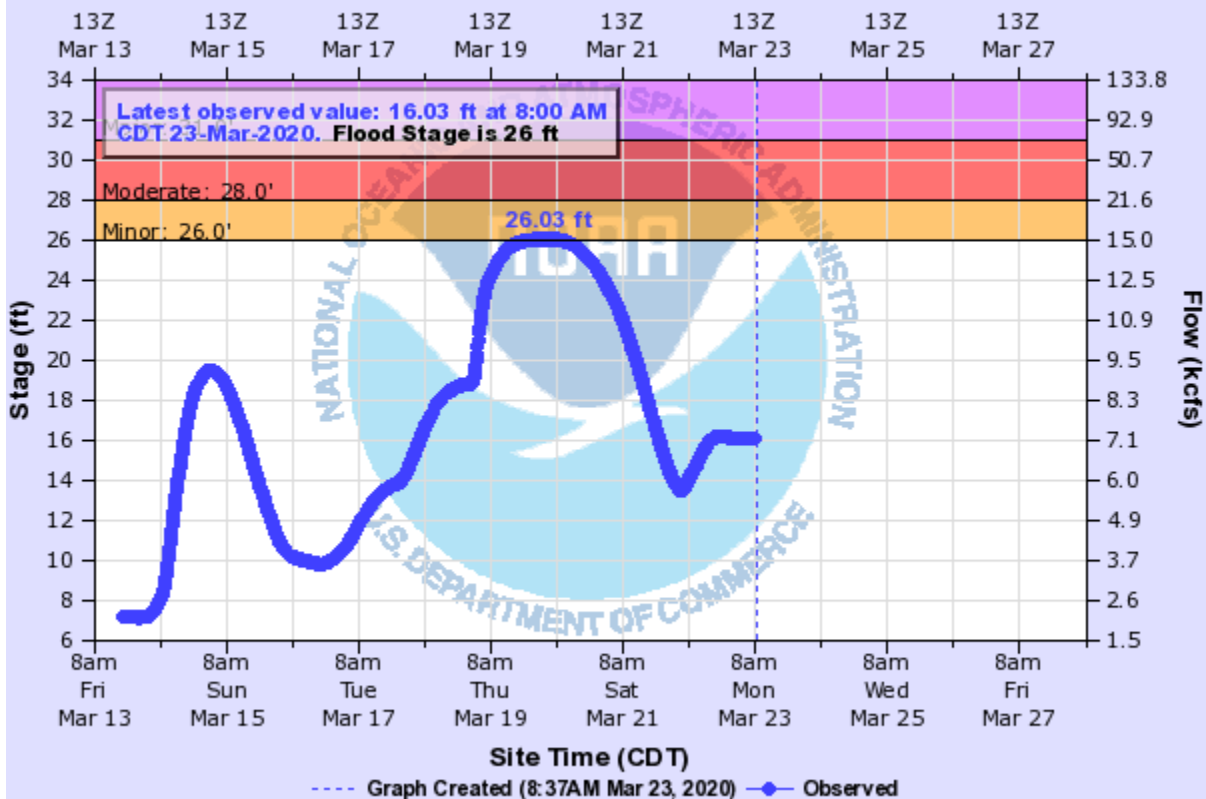


OWSO2(plotting HGIRG) "Gage 0" Datum: 560.17'

Observations courtesy of US Geological Survey

### CANEY RIVER NEAR RAMONA

Universal Time (UTC)

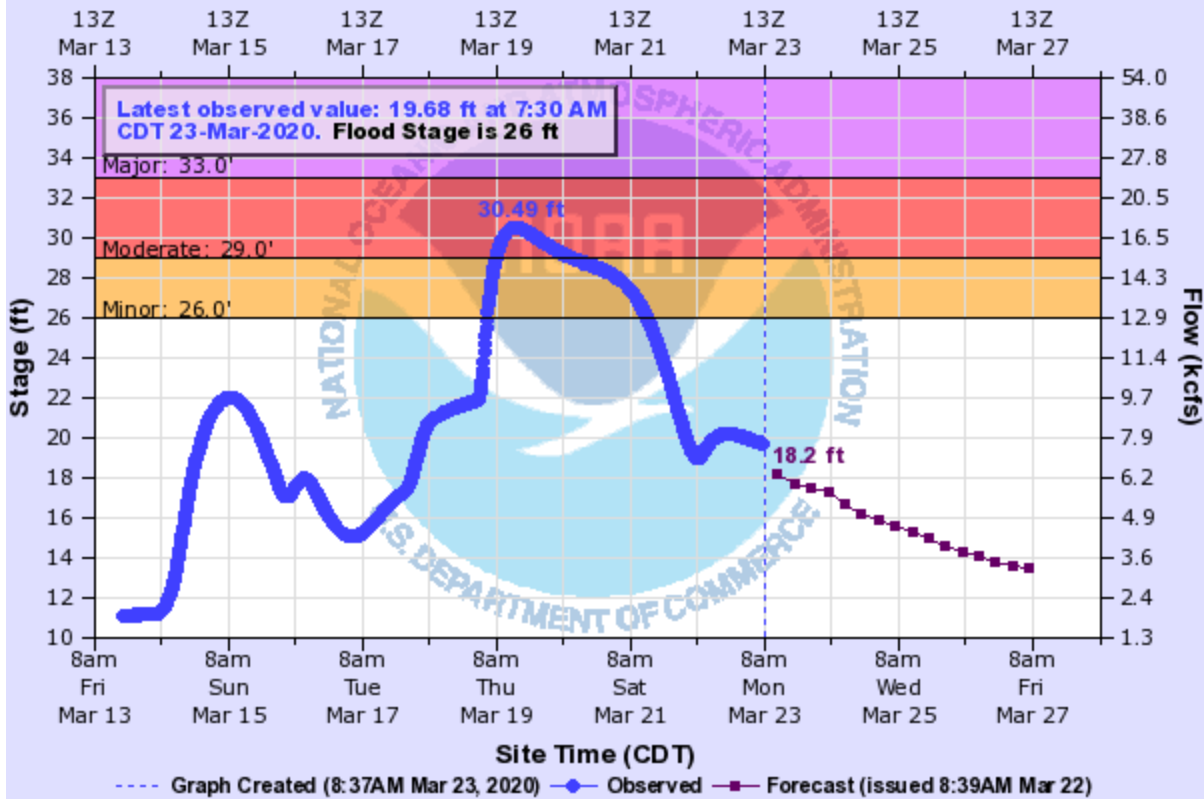


RAMO2(plotting HGIRG) "Gage 0" Datum: 586.43'

Observations courtesy of US Geological Survey

## CANEY RIVER NEAR COLLINSVILLE

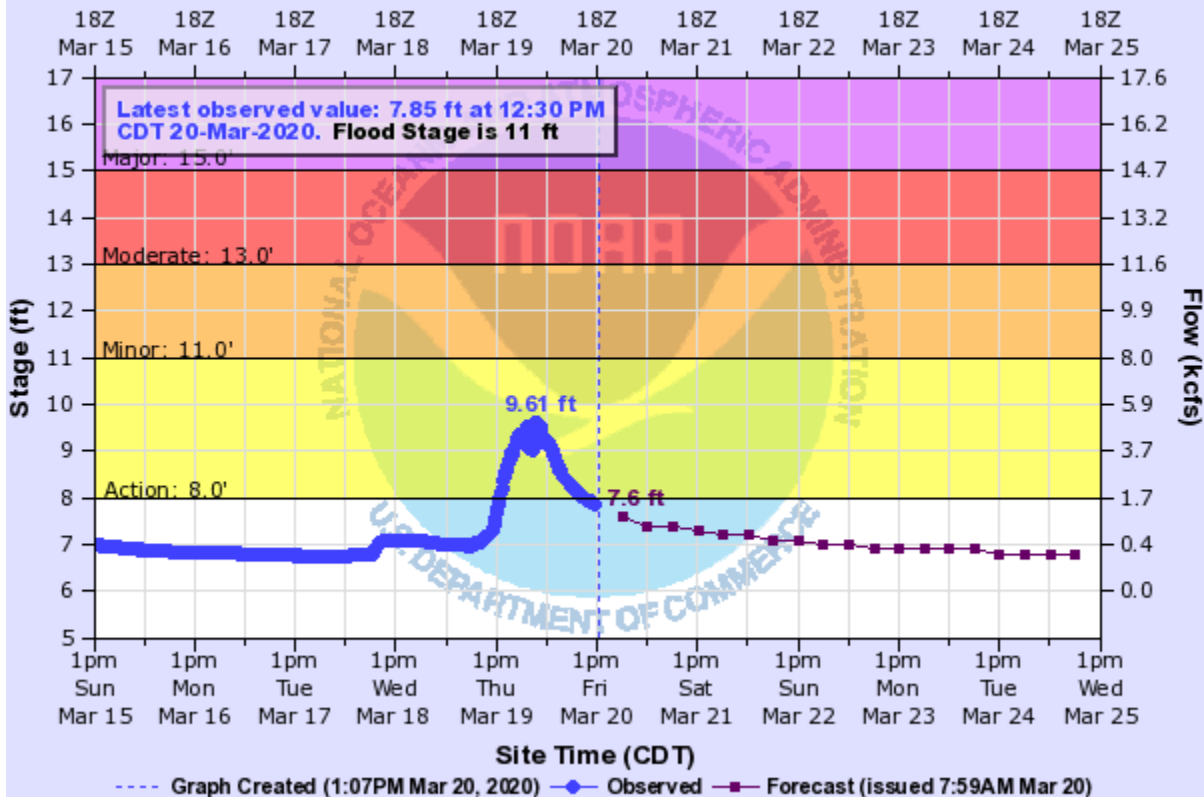
Universal Time (UTC)



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

## FLINT CREEK (OK) NEAR KANSAS

Universal Time (UTC)

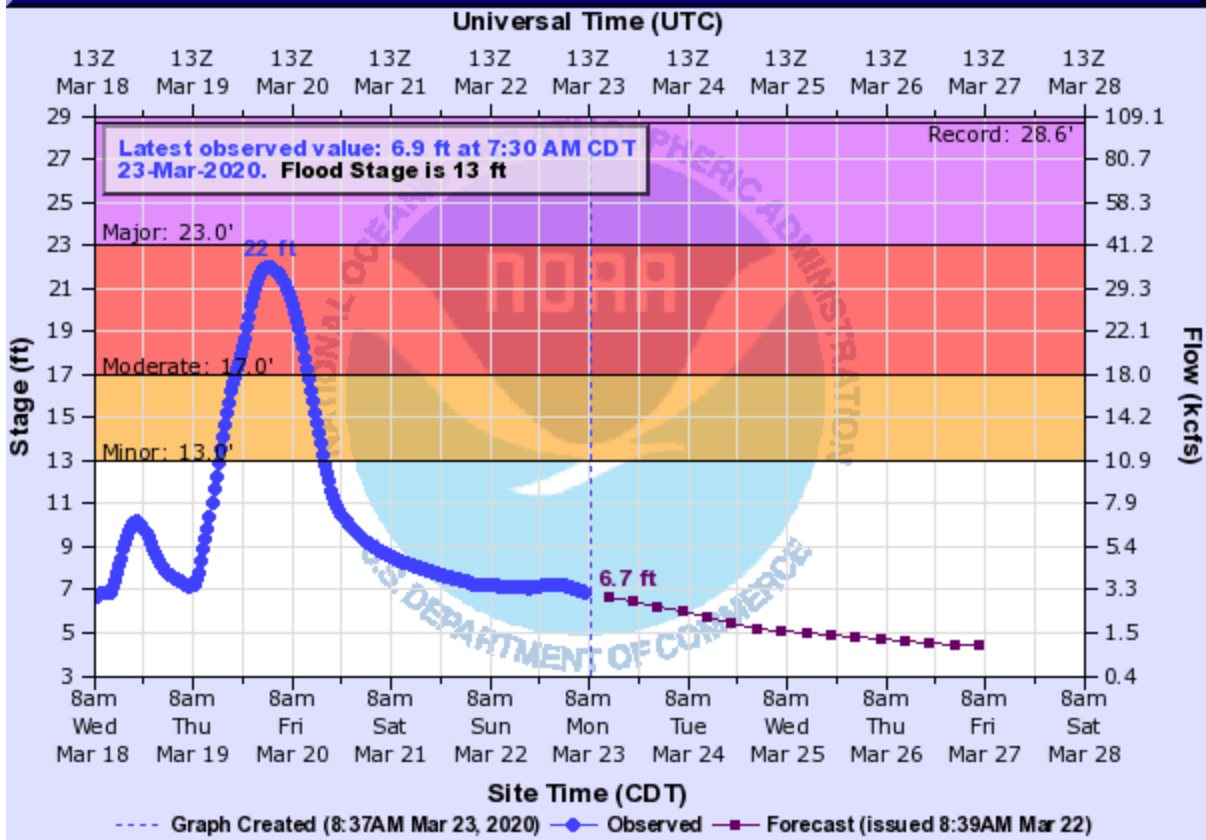


KNS02(plotting HGIRG) "Gage 0" Datum: 854.59'

Observations courtesy of US Geological Survey



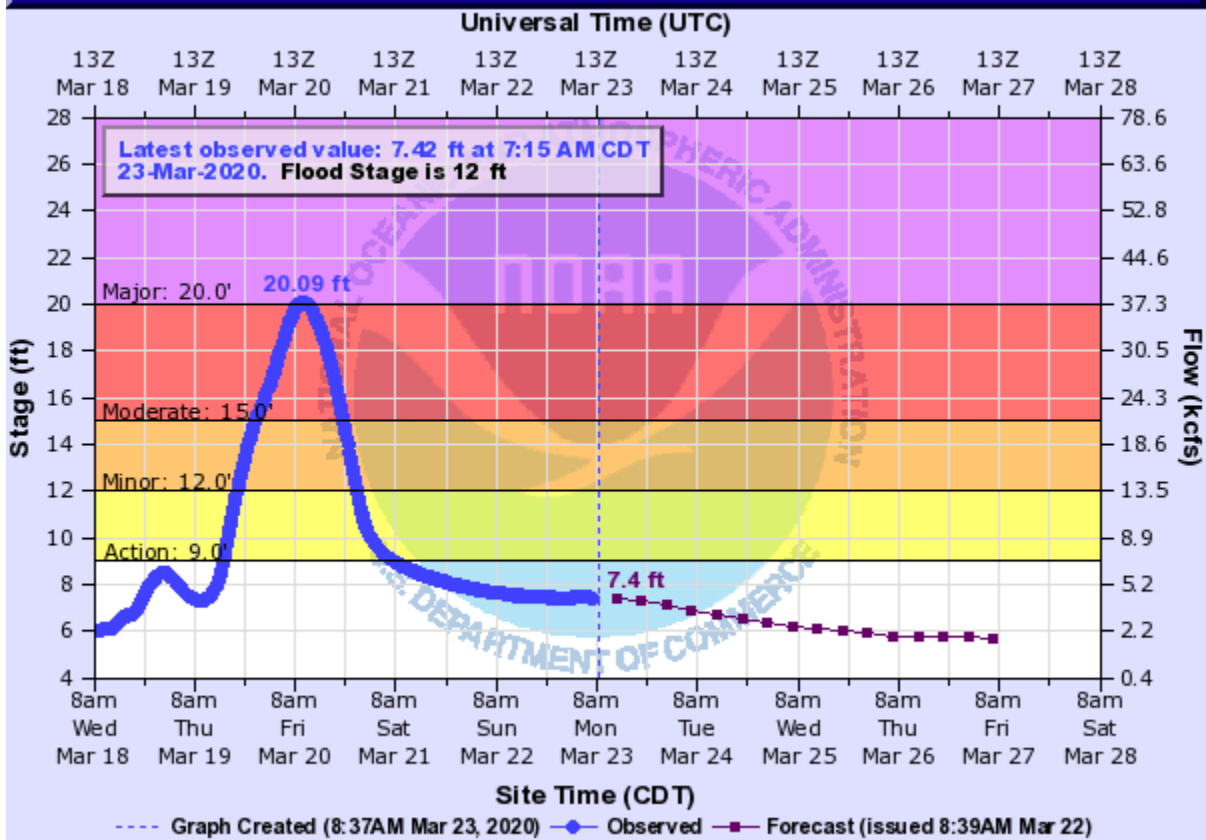
## ILLINOIS RIVER (AR OK) NEAR WATTS



WT02(plotting HGIRG) "Gage 0" Datum: 893.78'

Observations courtesy of US Geological Survey

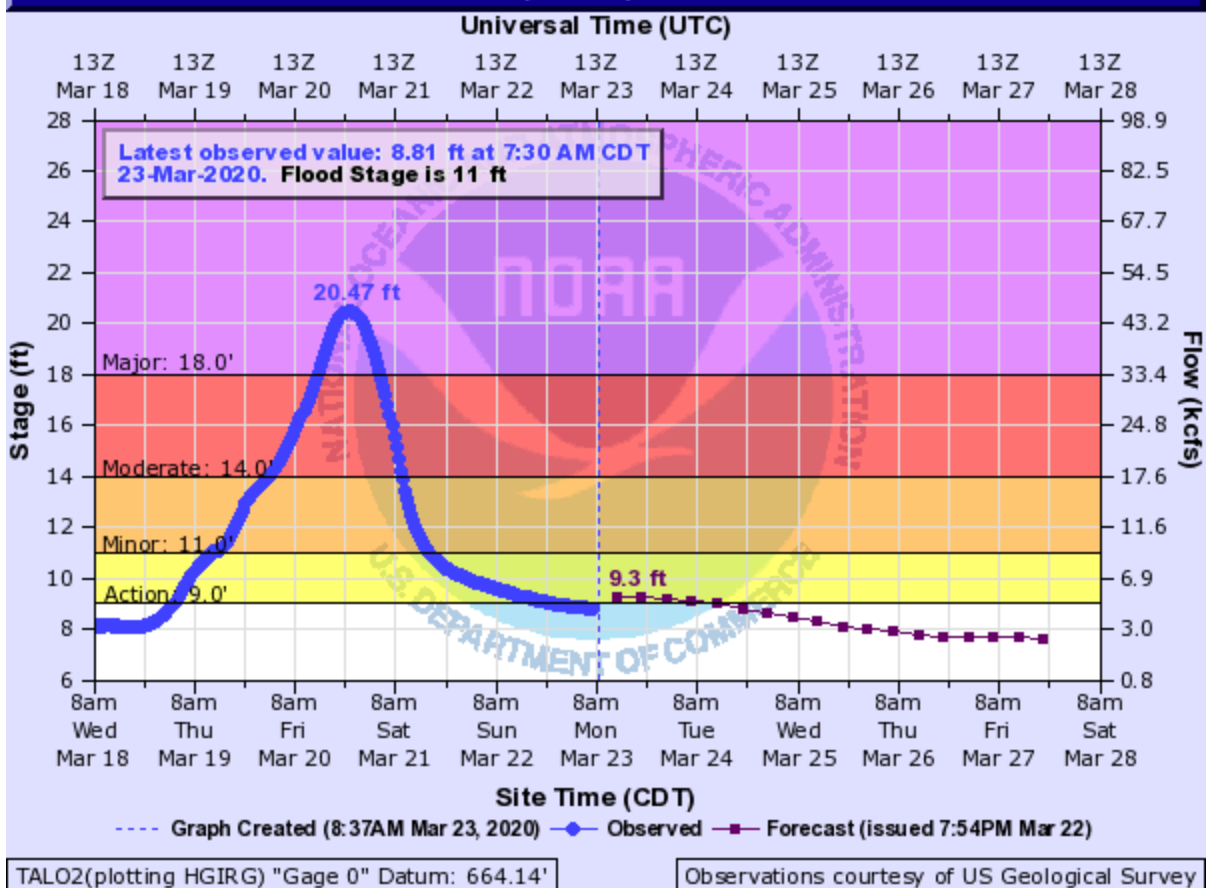
## ILLINOIS RIVER (AR OK) AT CHEWEY



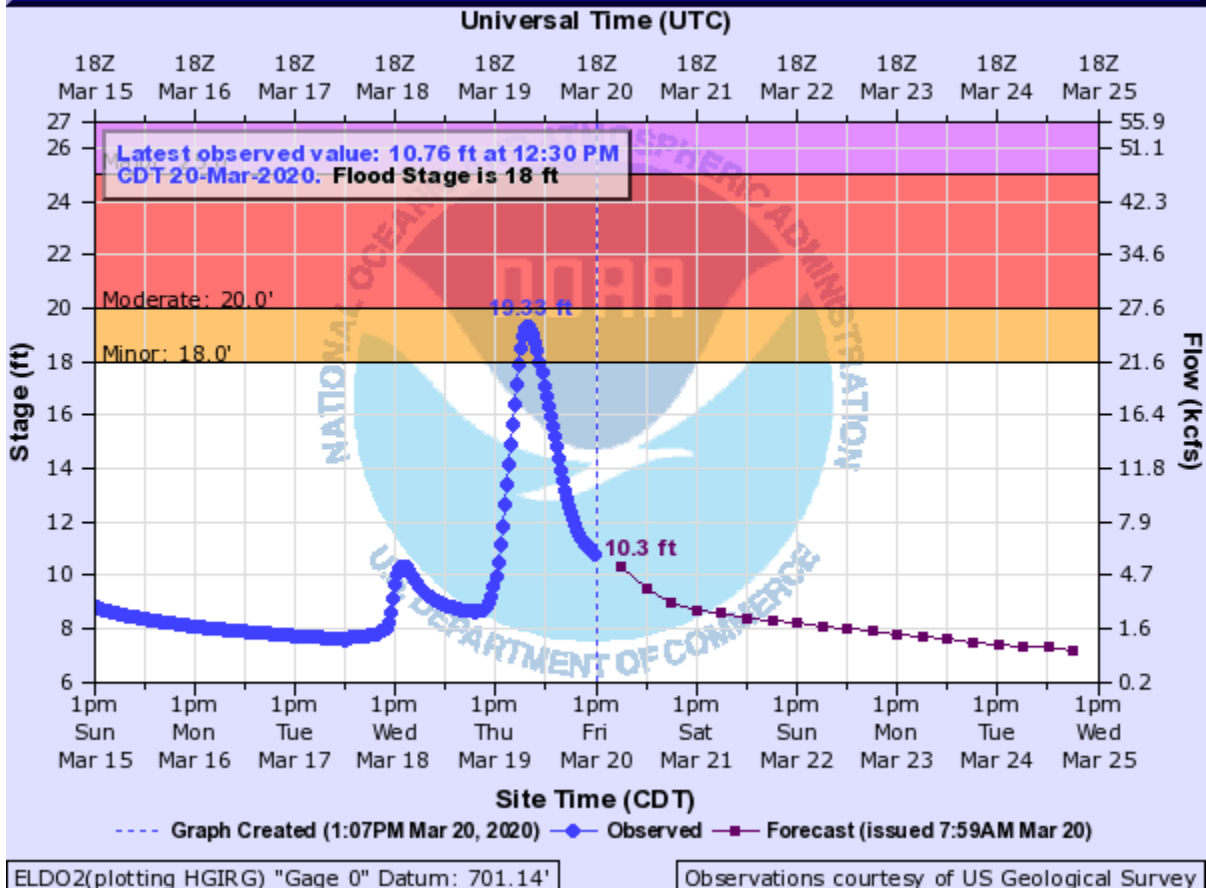
CWY02(plotting HGIRG) "Gage 0" Datum: 800.88'

Observations courtesy of US Geological Survey

## ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH

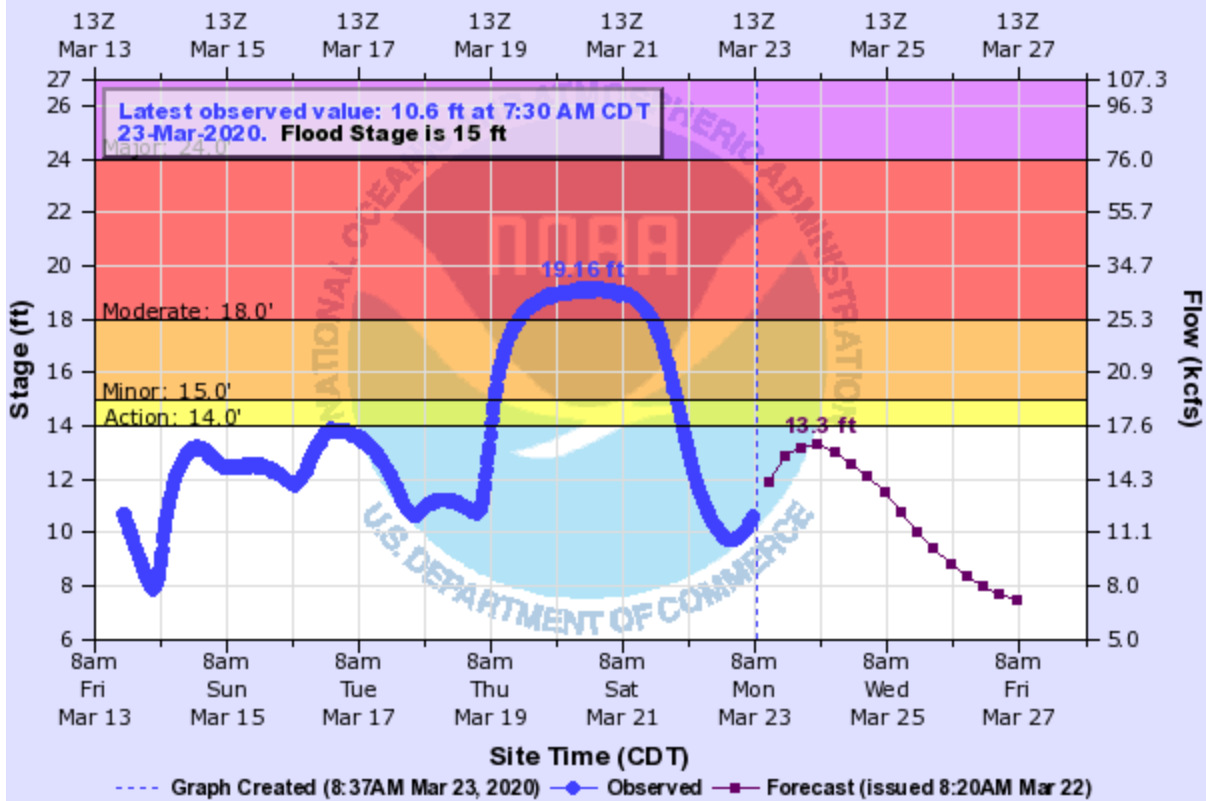


## BARON FORK AT ELDON



## NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

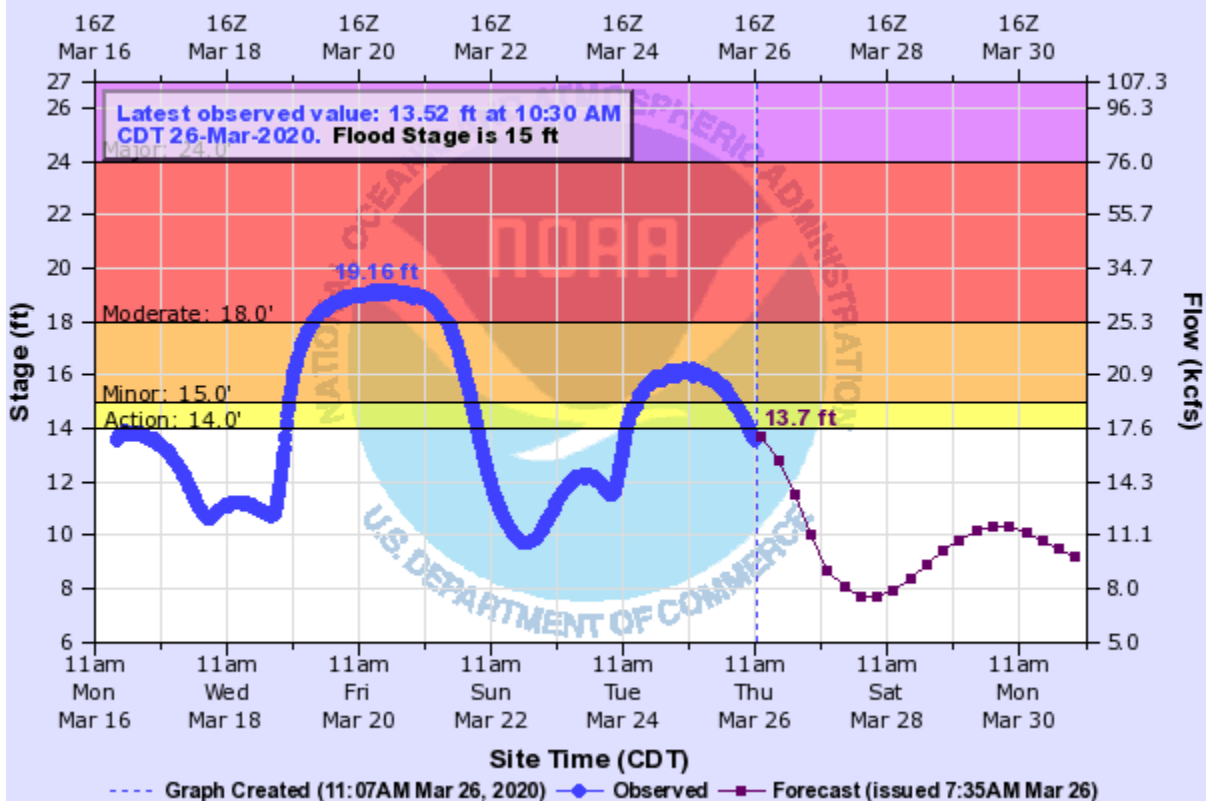


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

## NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

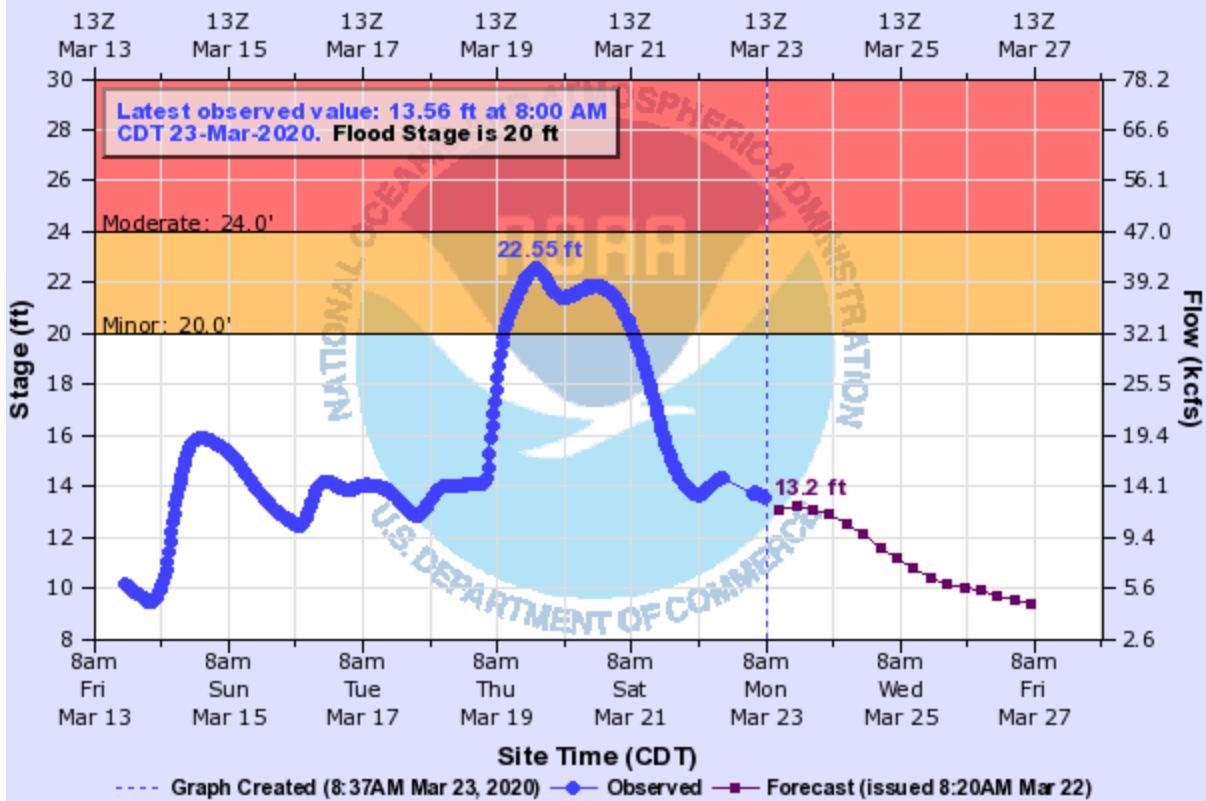


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

## SPRING RIVER NEAR QUAPAW

Universal Time (UTC)

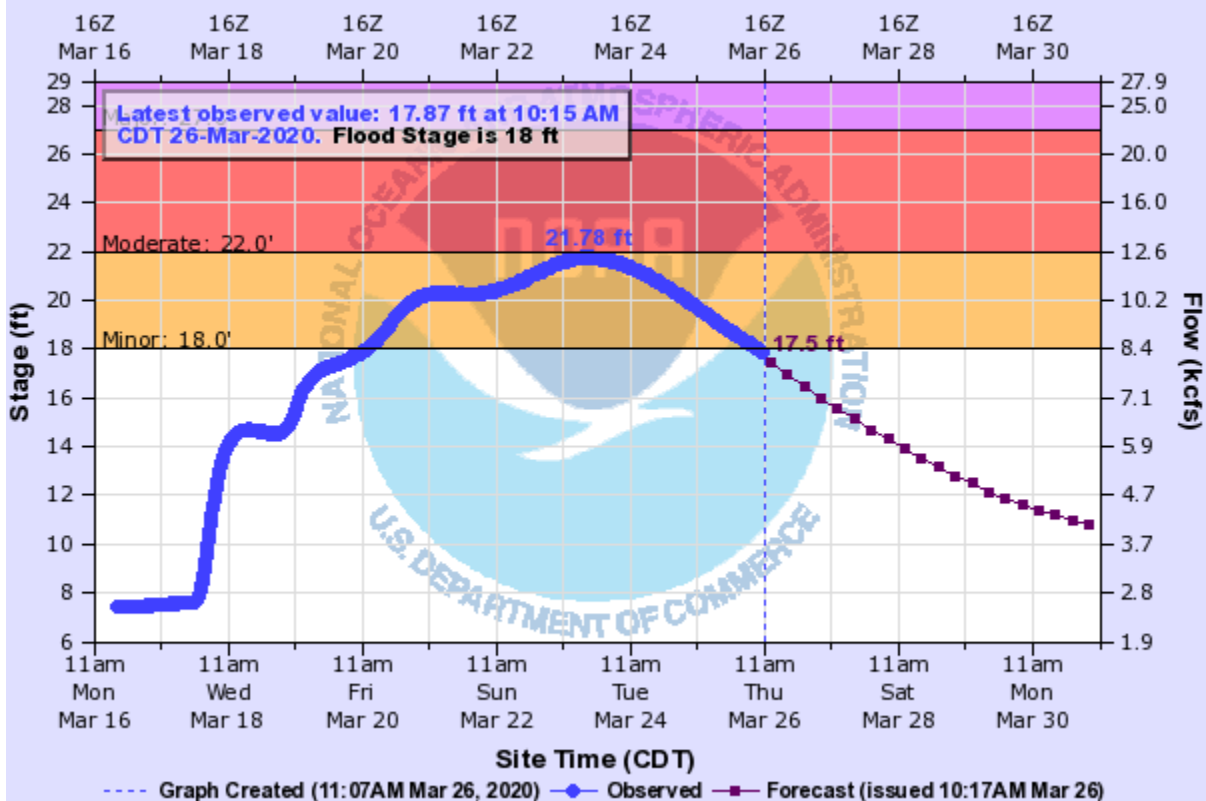


QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

Observations courtesy of US Geological Survey

## DEEP FORK RIVER NEAR BEGGS

Universal Time (UTC)

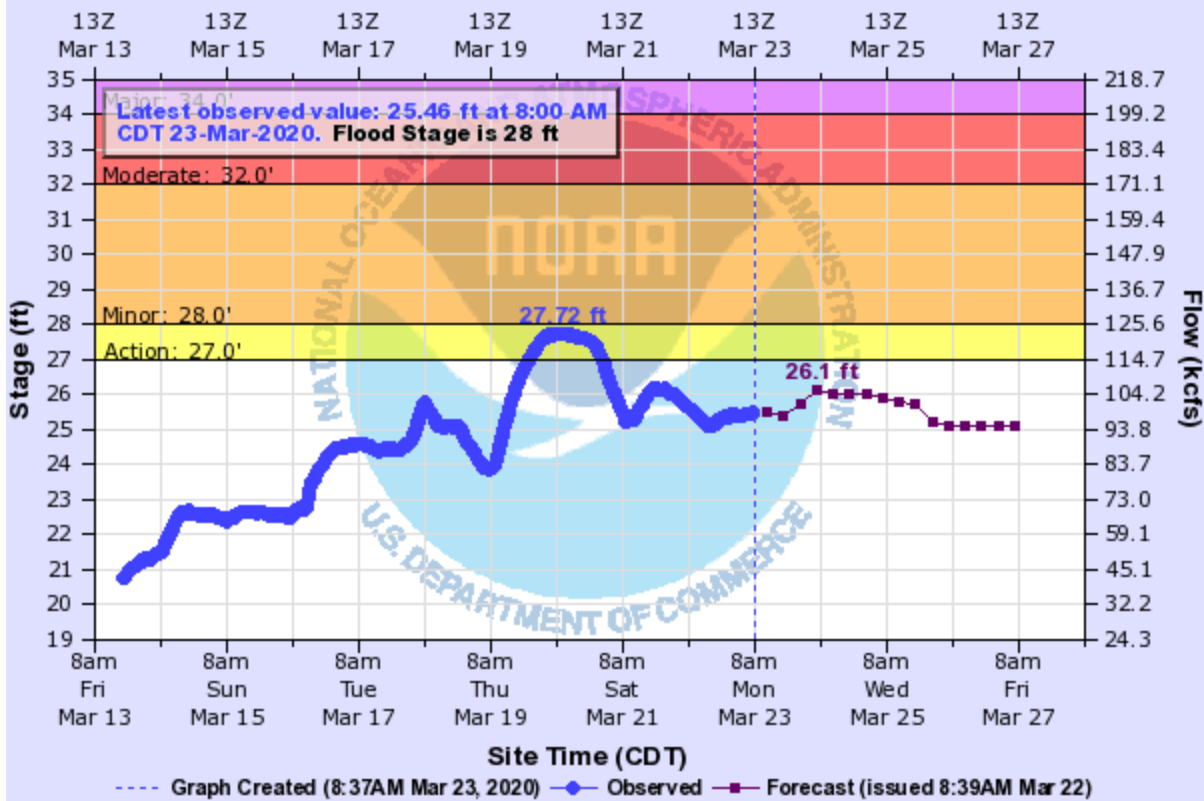


BGSO2(plotting HGIRG) "Gage 0" Datum: 632.55'

Observations courtesy of US Geological Survey

## ARKANSAS RIVER NEAR MUSKOGEE

Universal Time (UTC)

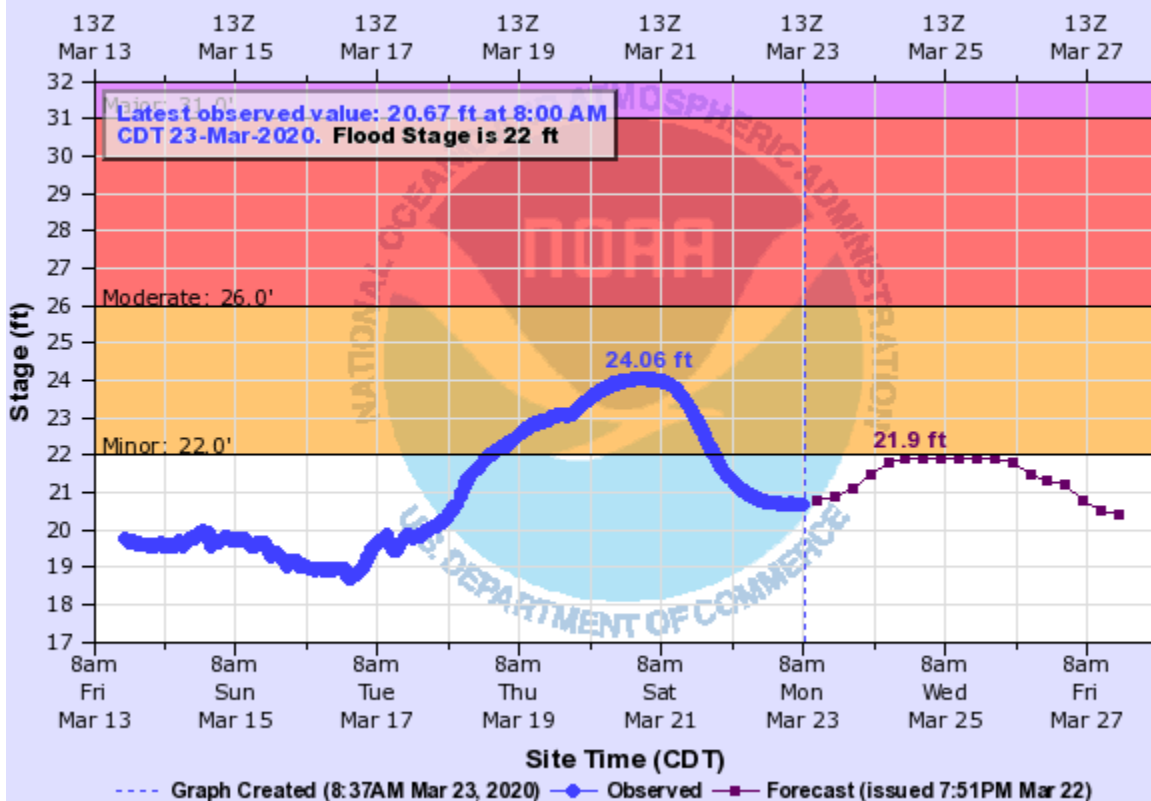


MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'

Observations courtesy of US Geological Survey

## ARKANSAS RIVER AT VAN BUREN

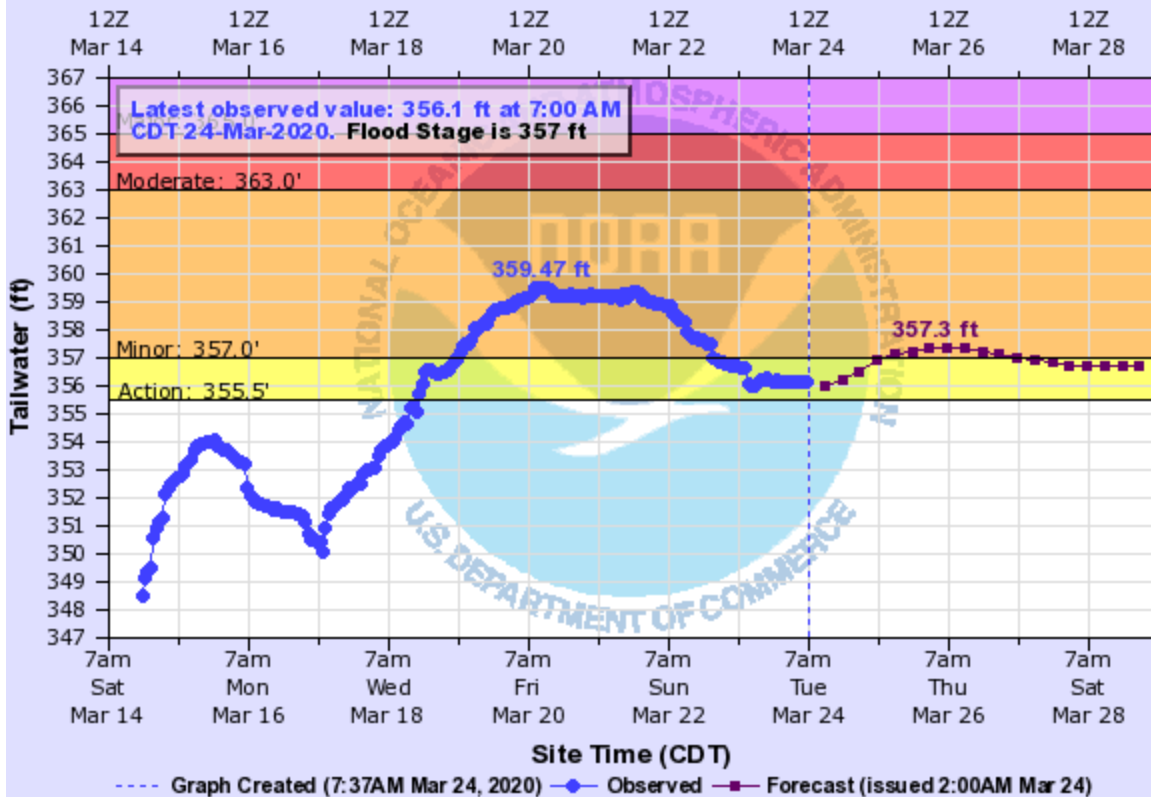
Universal Time (UTC)



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

## ARKANSAS RIVER AT OZARK L/D TAILWATER

Universal Time (UTC)

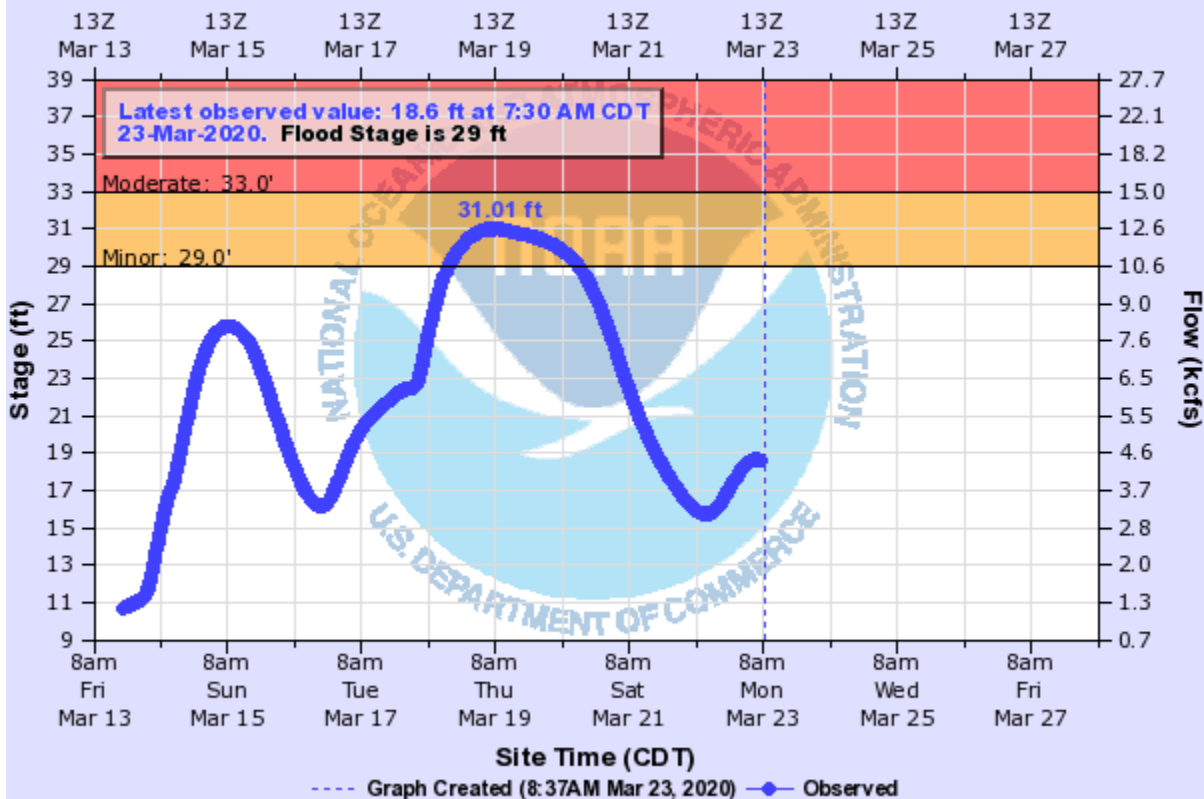


OZGA4(plotting HTIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers - LRD

## POTEAU RIVER NEAR PANAMA

Universal Time (UTC)

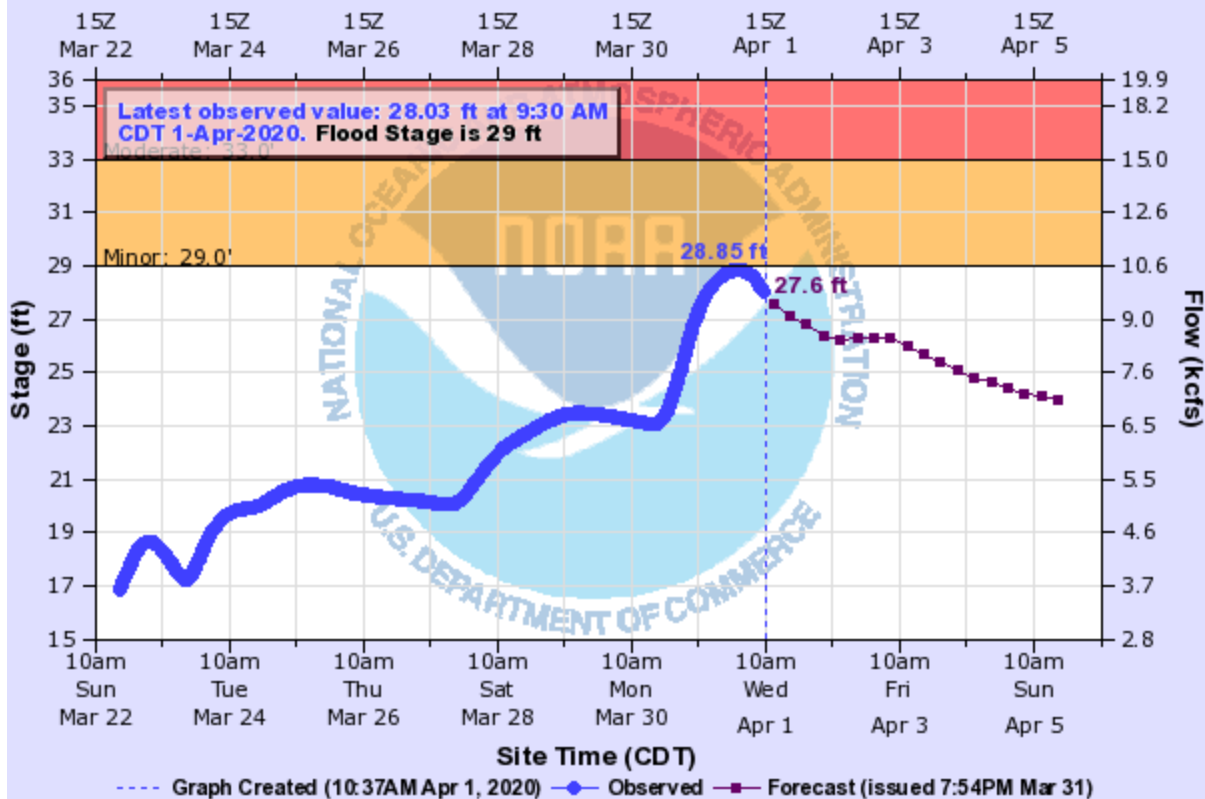


PANO2(plotting HGIRG) "Gage 0" Datum: 387.96'

Observations courtesy of US Geological Survey

## POTEAU RIVER NEAR PANAMA

Universal Time (UTC)

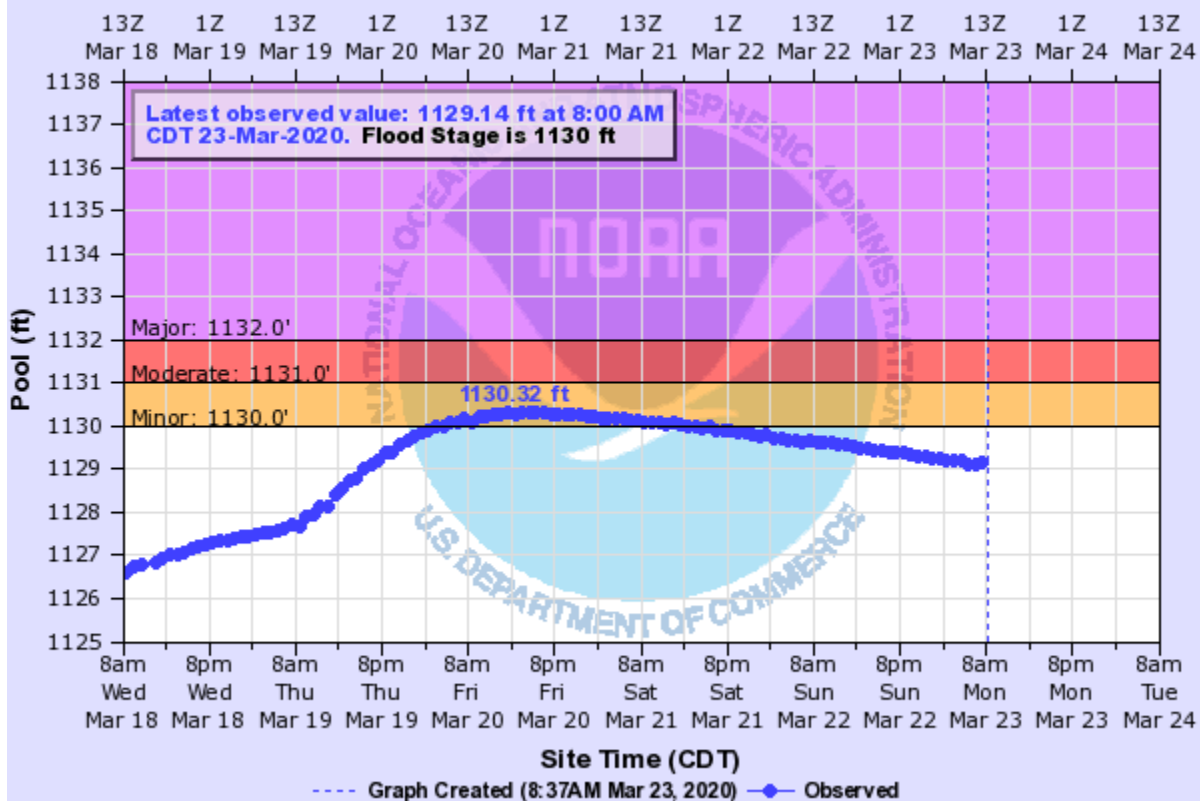


PANO2(plotting HGIRG) "Gage 0" Datum: 387.96'

Observations courtesy of US Geological Survey

## NORTHWEST ARKANSAS LAKES AT BEAVER LAKE

Universal Time (UTC)

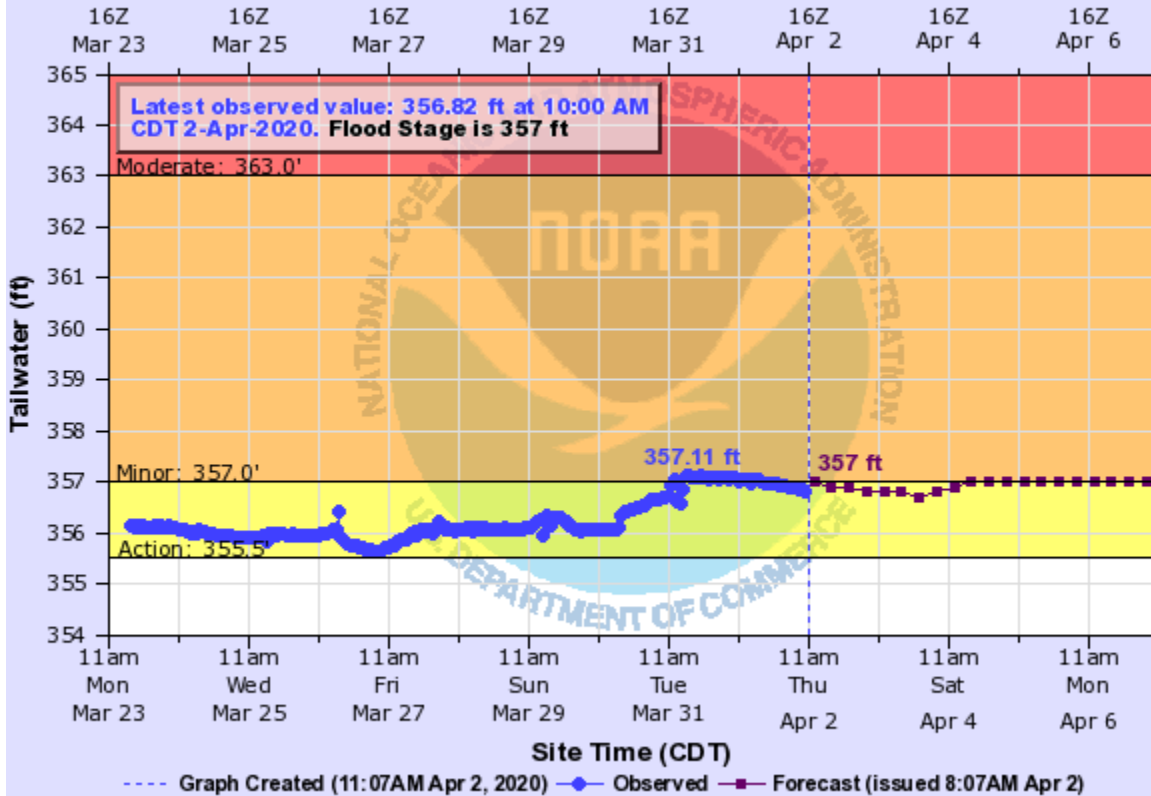


BVGA4(plotting HPIRG) "Gage 0" Datum: n/a

Observations courtesy of US Army Corps of Engineers

# 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