

<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>	
<b>MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS</b>		REPORT FOR:	
		MONTH <b>July</b>	YEAR <b>2015</b>
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283		SIGNATURE <b>Steven F. Piltz</b> (Meteorologist-in-Charge)	
		DATE <b>August 3, 2015</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.

Several rounds of heavy rain affected eastern Oklahoma and northwest Arkansas during July 2015, with the area between I-44 and I-40 receiving well above average rainfall this month. On the other hand, southeast OK ended the month with below normal July rain. Normal rainfall for the month of July ranges from 2.6 inches in McIntosh County to 3.4 inches in Ottawa County. The Ozark region of northwest Arkansas averages 3.1 inches for the month. This report, past E-5 reports, and monthly hydrology and climatology summaries can be found at <http://www.srh.noaa.gov/tsa/?n=hydro-monthly-summary>.

### Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for July 2015 ranged from around 1.5" in southeast OK to around 17" across east central OK. A large portion of eastern OK and northwest AR received 5"-8" of rain again this month. A large area of east central OK, including Okmulgee, McIntosh, Wagoner, Cherokee, and Adair Counties, as well as portions of eastern Creek, southern Tulsa, southeastern Mayes, Delaware, and western Washington (AR) Counties, had 10"-17" of rain in July 2015. This corresponds to at or above average rainfall generally along and north of I-40, and below normal rainfall south of I-40 (Fig. 1b). The area between Interstates 44 and 40, which had the highest rainfall totals, ended the month with 3 to 6 times of the normal July rain, while Le Flore, Latimer, Pushmataha, Choctaw and southern Sebastian Counties only received 25%-90% of the normal rainfall this month.

Tulsa, OK (TSA): July, 2015 Monthly Observed Precipitation  
 Valid at 8/1/2015 1200 UTC- Created 8/3/15 14:04 UTC

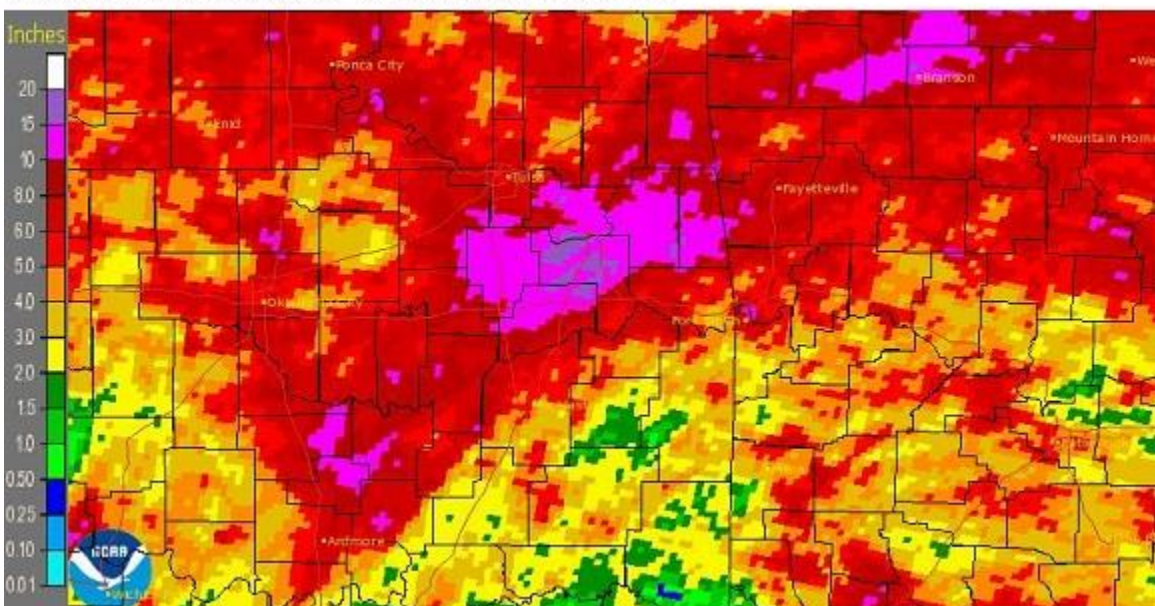


Fig. 1a. Estimated Observed Rainfall for July 2015

Tulsa, OK (TSA): July, 2015 Monthly Percent of Normal Precipitation  
 Valid at 8/1/2015 1200 UTC- Created 8/3/15 14:05 UTC

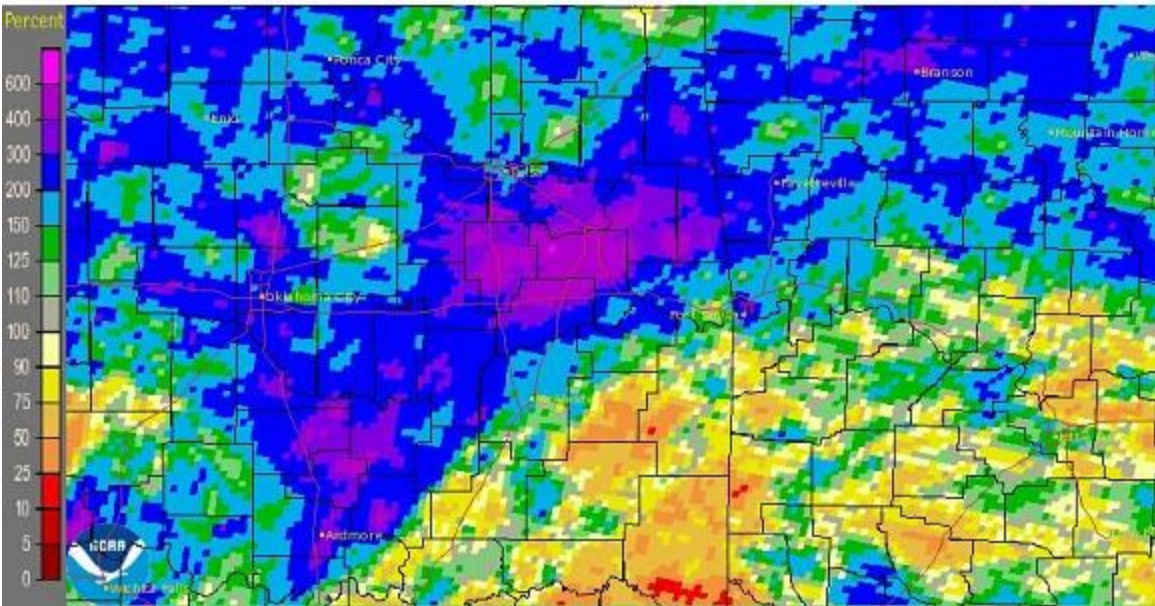


Fig. 1b. Estimated % of Normal Rainfall for July 2015

In Tulsa, OK, July 2015 ranked as the 35<sup>th</sup> warmest July (84.2°F; since records began in 1905) and the 13<sup>th</sup> wettest July (6.72"; since records began in 1888). Fort Smith, AR had the 21<sup>st</sup> warmest July (84.5°F; since records began in 1882) and the 6<sup>th</sup> wettest July (8.79"; since records began in 1882). Fayetteville, AR had the 30<sup>th</sup> warmest (78.6°F) and the 4<sup>th</sup> wettest (8.05") July since records began in 1950.

Some of the larger precipitation reports (in inches) for July 2015 included:

Haskell, OK (meso)	15.47	Muskogee, OK (coop)	15.05	Cookson, OK (meso)	14.66
Muskogee Davis Field, OK (ASOS)	13.58	Okmulgee, OK (meso)	13.45	Porter, OK (meso)	13.03
Tahlequah, OK (meso)	12.28	Oktaha 2N, OK (coop)	11.27	Ralston, OK (coop)	10.58

Some of the lowest precipitation reports (in inches) for July 2015 included:

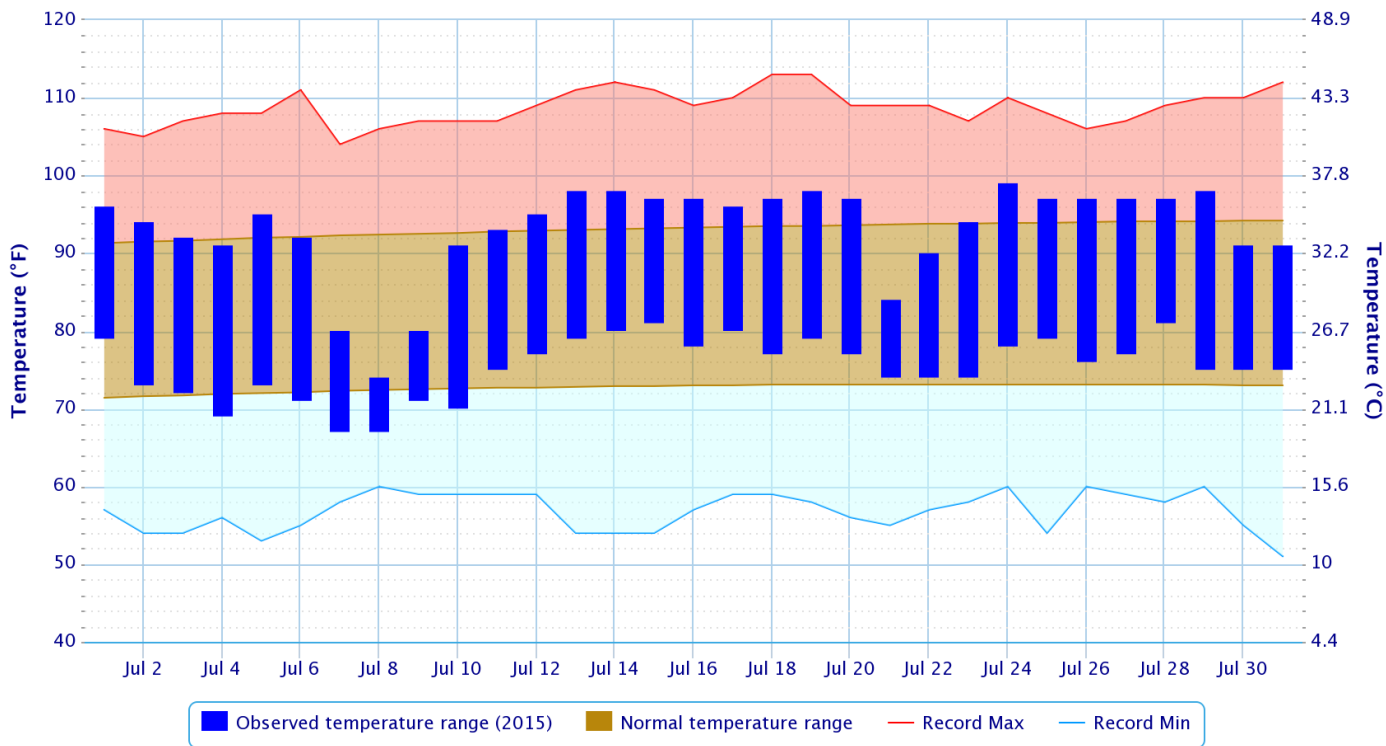
Talihina, OK (meso)	1.44	Clayton, OK (meso)	1.93	Wilburton, OK (meso)	2.46
Hugo, OK (meso)	2.68	Fanshawe, OK (coop)	2.94	Antlers, OK (coop)	2.98
Antlers, OK (meso)	3.17	Cloudy, OK (meso)	3.75	Copan, OK (meso)	4.15

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

Rank since 1921	Last 30 Days (Jul 2-31)	Last 60 Days (Jun 2 – Jul 31)	Last 90 Days (May 3 – Jul 31)	Warm Growing Season (Mar 1 – Jul 31)	Year-to-Date (Jan 1 – Jul 31)	Water Year-to-Date (Oct 1, 2014 – Jul 31, 2015)	Last 365 Days (Aug 1, 2014 – Jul 31, 2015)
Northeast OK	9 <sup>th</sup> wettest	15 <sup>th</sup> wettest	3 <sup>rd</sup> wettest	7 <sup>th</sup> wettest	11 <sup>th</sup> wettest	13 <sup>th</sup> wettest	18 <sup>th</sup> wettest
East Central OK	2 <sup>nd</sup> wettest	2 <sup>nd</sup> wettest	1 <sup>st</sup> wettest	1 <sup>st</sup> wettest	2 <sup>nd</sup> wettest	1 <sup>st</sup> wettest	2 <sup>nd</sup> wettest
Southeast OK	39 <sup>th</sup> driest	31 <sup>st</sup> driest	1 <sup>st</sup> wettest	3 <sup>rd</sup> wettest	4 <sup>th</sup> wettest	9 <sup>th</sup> wettest	12 <sup>th</sup> wettest
Statewide	6 <sup>th</sup> wettest	6 <sup>th</sup> wettest	1 <sup>st</sup> wettest	1 <sup>st</sup> wettest	1 <sup>st</sup> wettest	1 <sup>st</sup> wettest	4 <sup>th</sup> wettest

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

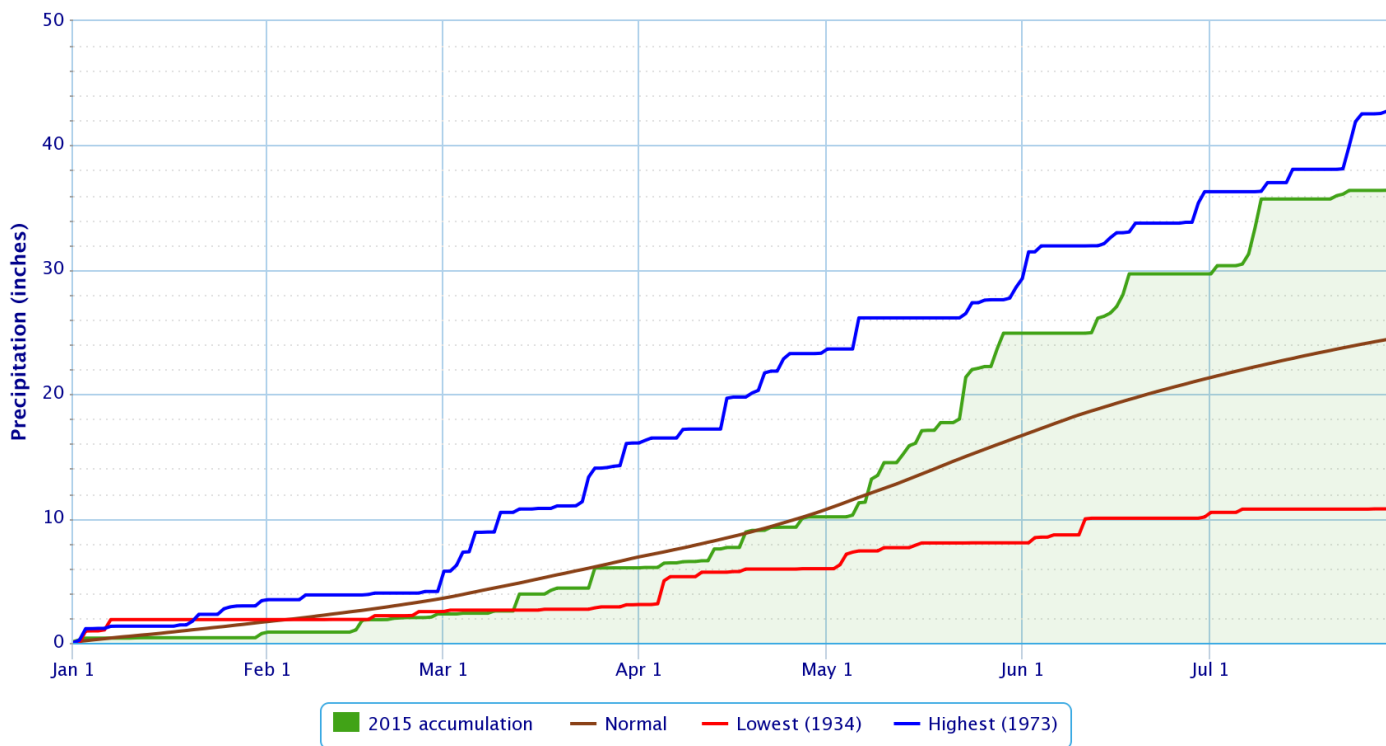
Period of Record – 1905-01-06 to 2015-08-02. Normals period: 1981-2010. Click and drag to zoom chart.



Powered by ACIS

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

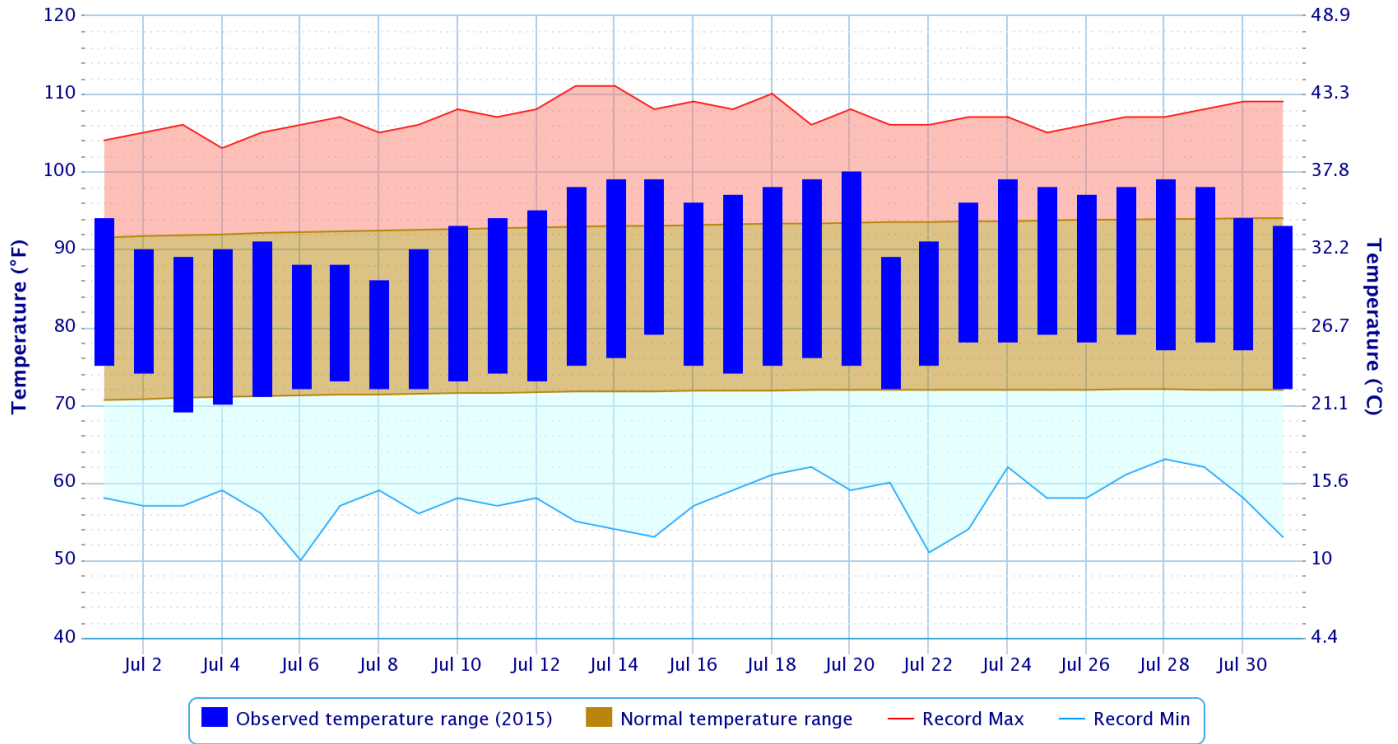
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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

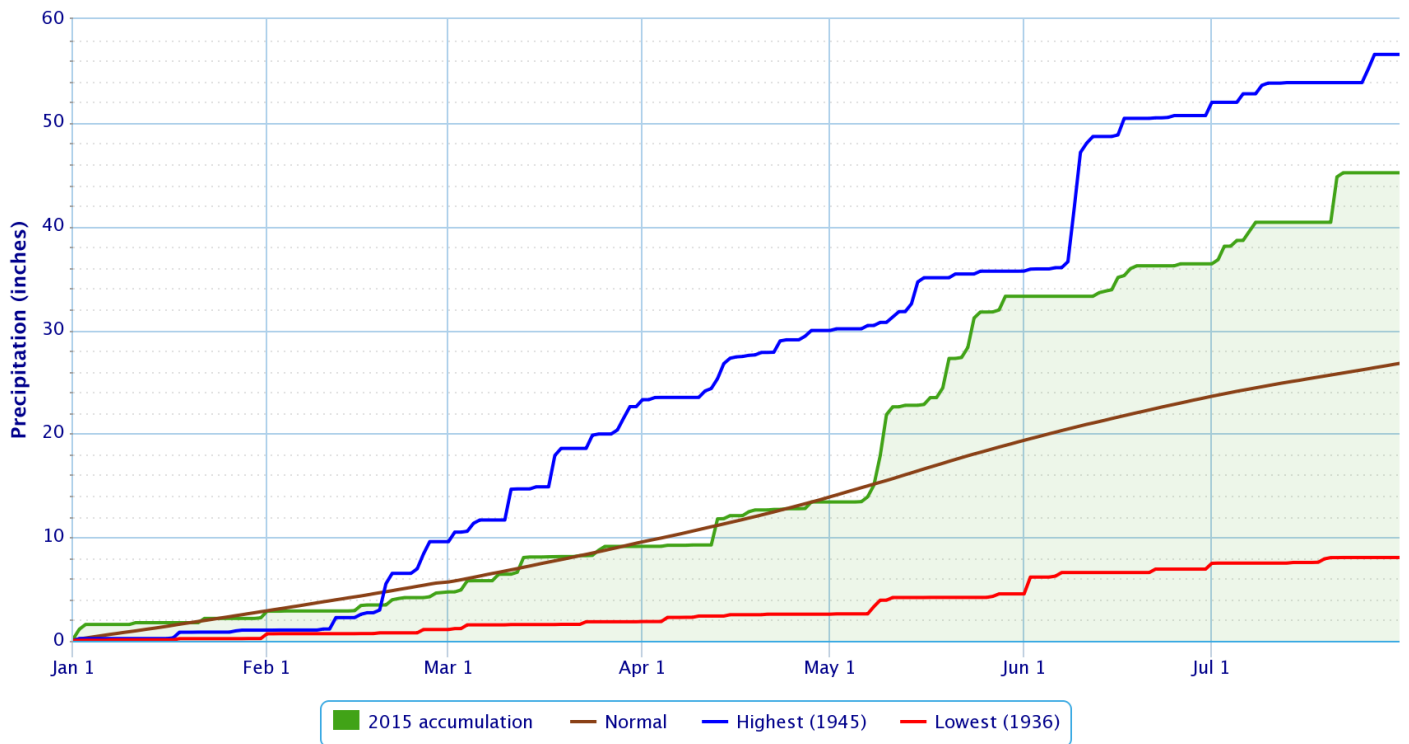
Period of Record – 1882-06-01 to 2015-08-02. Normals period: 1981-2010. Click and drag to zoom chart.



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

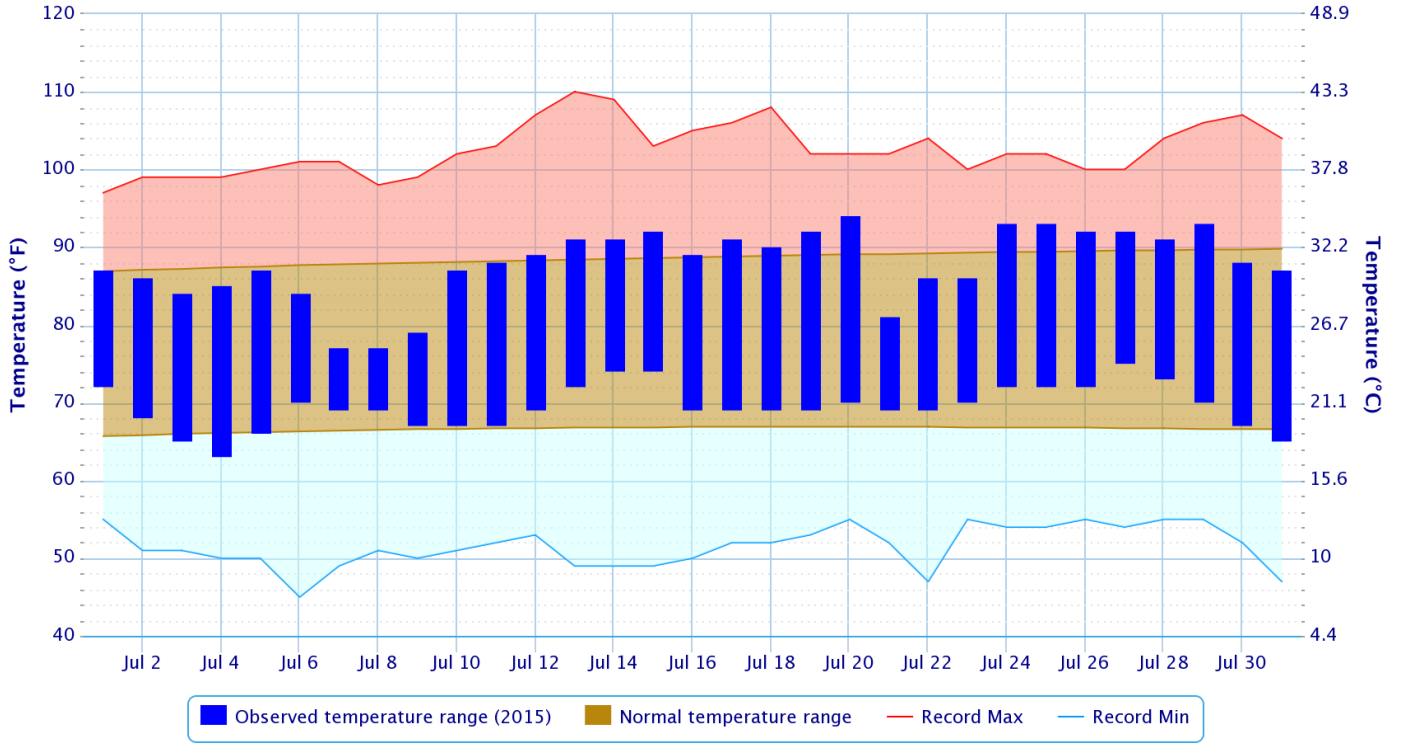
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

## Daily Temperature Data – FAYETTEVILLE DRAKE FLD, AR

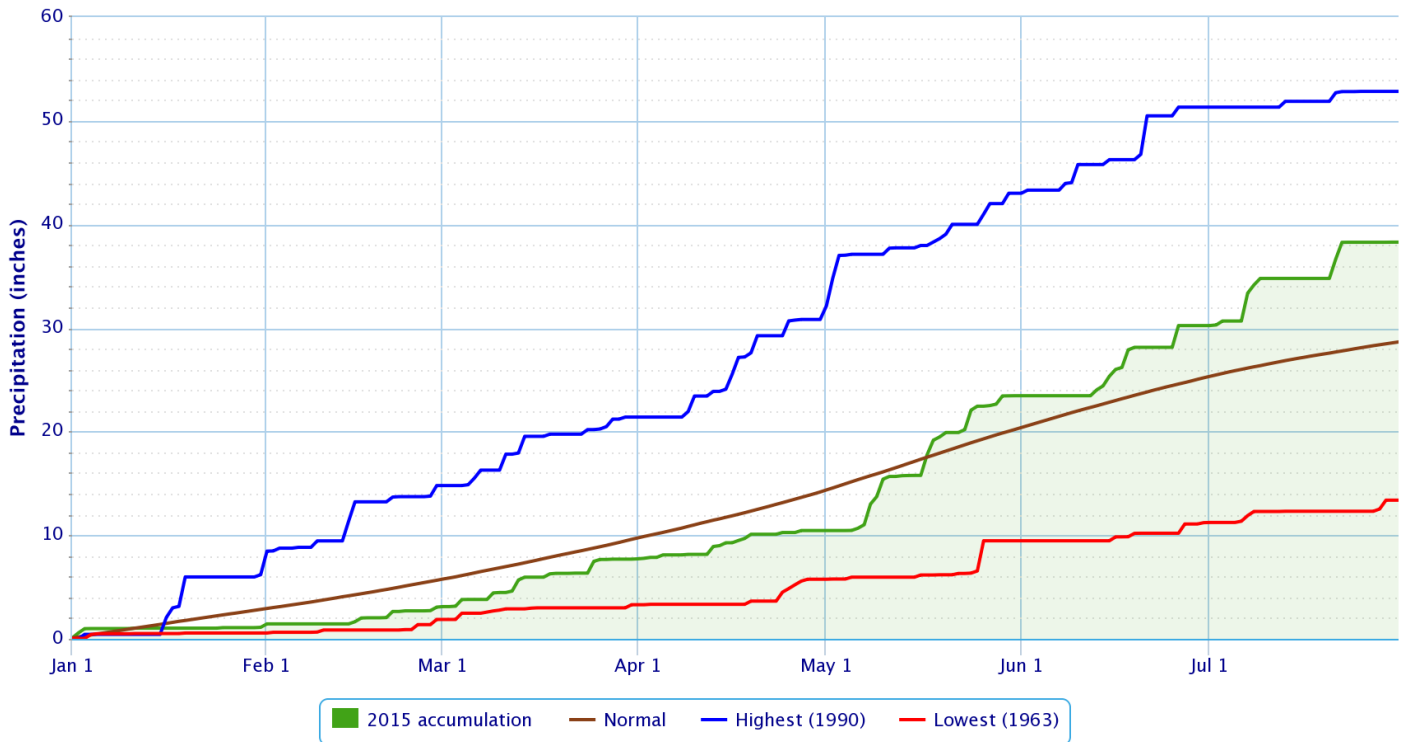
Period of Record – 1949-07-14 to 2015-08-02. Normals period: 1981-2010. Click and drag to zoom chart.



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## Accumulated Precipitation – FAYETTEVILLE DRAKE FLD, AR

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



Powered by ACIS

**Drought**

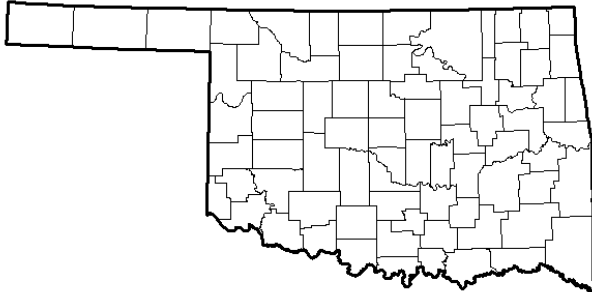
According to the [U.S. Drought Monitor](#) (USDM) from July 28, 2015 (Figs 2, 3), drought free conditions continued across eastern Oklahoma and northwest Arkansas.

**U.S. Drought Monitor  
Oklahoma**

**July 28, 2015**

(Released Thursday, Jul. 30, 2015)

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> <i>7/21/2015</i>	100.00	0.00	0.00	0.00	0.00	0.00
<b>3 Months Ago</b> <i>4/28/2015</i>	30.08	69.92	59.29	47.51	24.34	4.13
<b>Start of Calendar Year</b> <i>1/23/2014</i>	25.63	74.37	62.03	40.84	21.74	5.70
<b>Start of Water Year</b> <i>9/30/2014</i>	8.55	91.45	73.31	58.13	20.92	4.64
<b>One Year Ago</b> <i>7/29/2014</i>	12.06	87.94	76.16	60.09	23.36	4.48

*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:**  
Richard Heim  
NCEI/NOAA



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

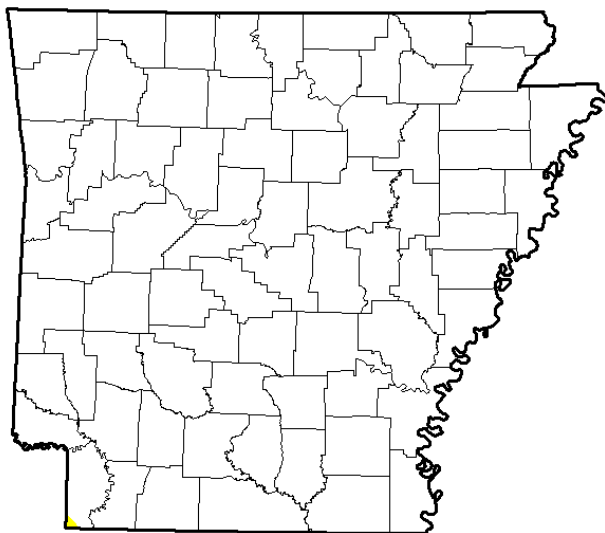
Fig. 2. Drought Monitor for Oklahoma

**U.S. Drought Monitor  
Arkansas**

**July 28, 2015**

(Released Thursday, Jul. 30, 2015)

Valid 8 a.m. EDT



*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	99.95	0.05	0.00	0.00	0.00	0.00
<b>Last Week</b> <i>7/21/2015</i>	100.00	0.00	0.00	0.00	0.00	0.00
<b>3 Months Ago</b> <i>4/28/2015</i>	96.02	3.98	0.00	0.00	0.00	0.00
<b>Start of Calendar Year</b> <i>1/23/2014</i>	36.88	63.12	14.40	0.00	0.00	0.00
<b>Start of Water Year</b> <i>9/30/2014</i>	54.54	45.46	9.13	0.00	0.00	0.00
<b>One Year Ago</b> <i>7/29/2014</i>	90.00	10.00	2.83	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:**  
Richard Heim  
NCEI/NOAA



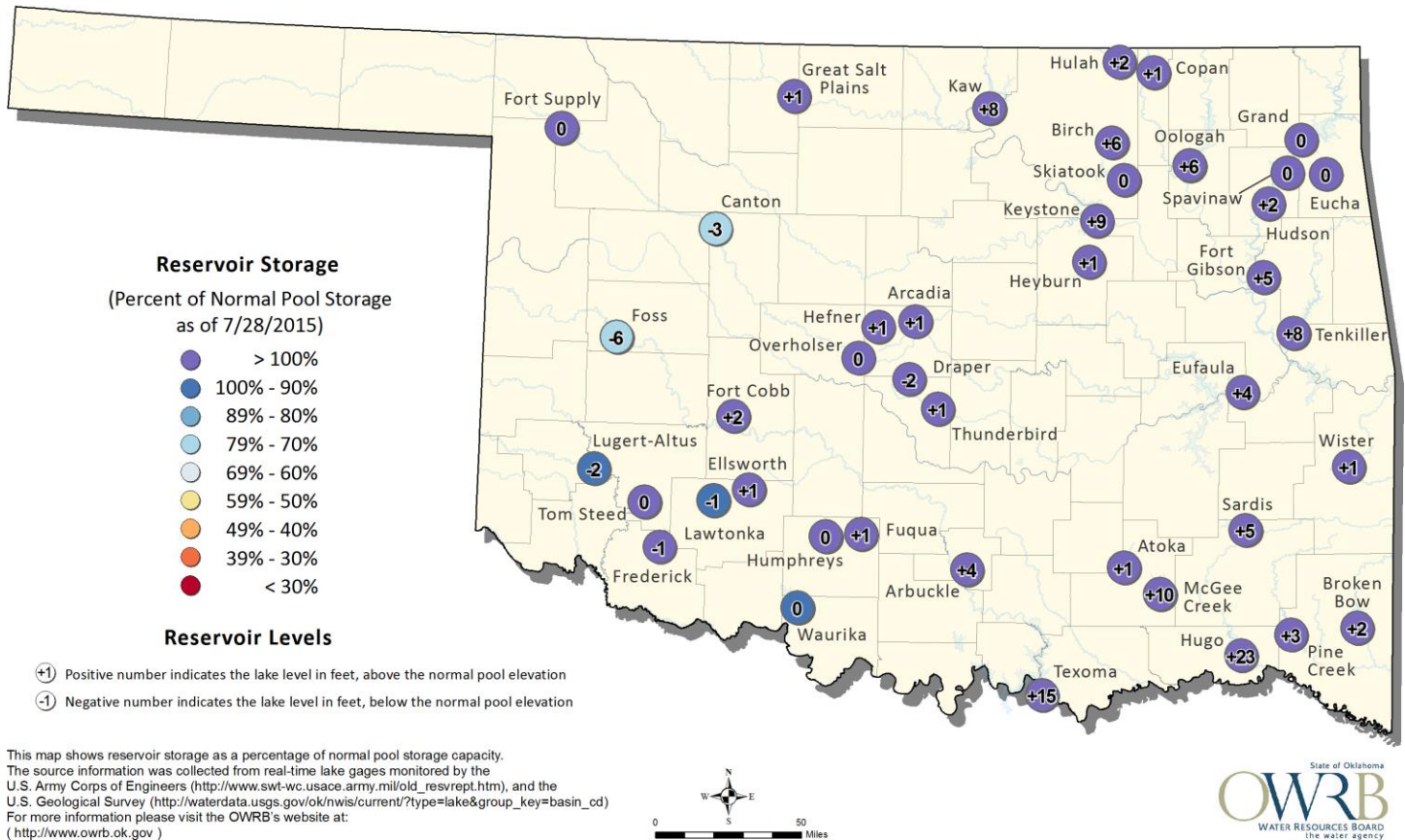
<http://droughtmonitor.unl.edu/>

Fig. 3. Drought Monitor for Arkansas

## Reservoirs

According to the USACE, all of the major reservoirs in the HSA were operating at 100% of their conservation pools, with many lakes still well into their flood pools as of 7/31/2015. Skiatook Lake reached normal elevation for the first time in almost 5 years on July 10, 2015. The following lakes were operating above 5% of their flood control pools (percentage of flood pool listed) as of 7/31/15: Beaver Lake 90%, Hugo Lake 55% (down from 93% at the end of June), Sardis Lake 53% (down from 92% at the end of June), Eufaula Lake 26% (down from 86% at the end of June), Oologah Lake 17%, Tenkiller Lake 16%, Kaw Lake 15%, Keystone Lake 15%, Birch Lake 15%, and Ft. Gibson Lake 11%.

## Oklahoma Surface Water Resources Reservoir Levels and Storage as of 7/28/2015



## Outlooks

The [Climate Prediction Center](#) (CPC) outlook for August 2015 (issued July 31, 2015) indicates a slightly enhanced chance for below normal temperatures across northeast OK and equal chances for above, near, or below normal temperatures elsewhere. The outlook also calls for a slightly enhanced chance for above median rainfall north of I-40 in northeast OK and northwest AR, and an equal chance of above, near, or below normal rainfall south of I-40. This outlook is based largely on dynamical models.

For the 3-month period August-September-October 2015, CPC is forecasting an enhanced chance for below normal temperatures and above median precipitation across all of eastern OK and northwest AR (outlook issued July 16, 2015). According to CPC, El Niño conditions are currently of moderate strength. The oceanic and atmospheric conditions indicate a strong ocean-atmosphere coping associated with El Niño. There is a 90% chance for El Niño to continue through the upcoming winter and an 80% for it to persist into early spring 2016. Forecasting tools indicate El Niño will peak with strong conditions during the late fall or early winter. However, El Niño impacts are generally most significant in the Southern Plains during the cold seasons. Therefore, this outlook is based primarily on both statistical and dynamical forecast tools, but does consider El Niño conditions and possible impacts.

**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](http://water.weather.gov/precip/index.php?location_type=wfo&location_name=tsa)

## **July 1-16**

A weak front moved into northeast OK and northwest AR during the afternoon of the 2<sup>nd</sup>, and scattered showers and thunderstorms developed near the boundary. Some of these storms produced very heavy rain, with totals of 1.5" to 4" occurring primarily between I-44 and I-40, as well as just south of I-40 in east central OK (Fig. 4). A secondary upper-level disturbance in the northwesterly flow brought storms to areas south of I-44 on the afternoon and evening of the 3<sup>rd</sup>. While most locations received around 0.50" or less, some areas south of I-40 got 1"-2.5" of rain.

A retreating surface boundary resulted in additional periods of showers and thunderstorms through the July 4<sup>th</sup> weekend. Scattered storms brought 0.25" to around 2.5" of rain to southeast OK on the 4<sup>th</sup>. More isolated storms brought a few pockets of heavy rain on the 5<sup>th</sup>. Very heavy rain fell in Van Buren, AR during the evening, where 6.87" of rain was measured (Fig. 5)! This resulted in severe street flooding in Van Buren and Fort Smith. Major flooding was reported in downtown Van Buren, with major roadways flooded and many stranded vehicles.

Tulsa, OK (TSA): 7/3/2015 1-Day Observed Precipitation  
Valid at 7/3/2015 1200 UTC- Created 7/5/15 23:33 UTC

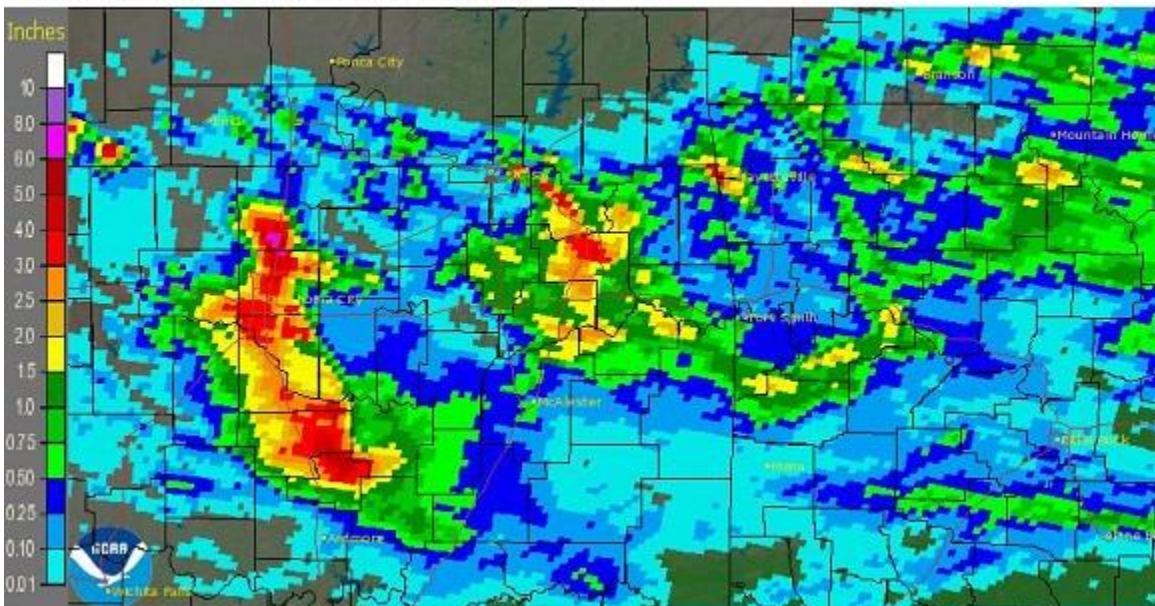


Fig. 4. 24-hr Estimated Observed Rainfall ending at 7am CDT 7/03/2015.

Scattered showers and thunderstorms developed across eastern OK and northwest AR ahead of a cold front during the afternoon of the 6<sup>th</sup>. By evening, a line of thunderstorms slowly pushed southeast into northeast OK. Despite a weakening trend, the storms produced heavy rain across western Osage, western Pawnee, and eastern Kay Counties. This area received 1.5" to around 4" of rain (Fig. 6). Kaw Lake measured 3.56" and Ralston measured 3.10".



Tulsa, OK (TSA): 7/6/2015 1-Day Observed Precipitation  
Valid at 7/6/2015 1200 UTC- Created 7/8/15 23:33 UTC

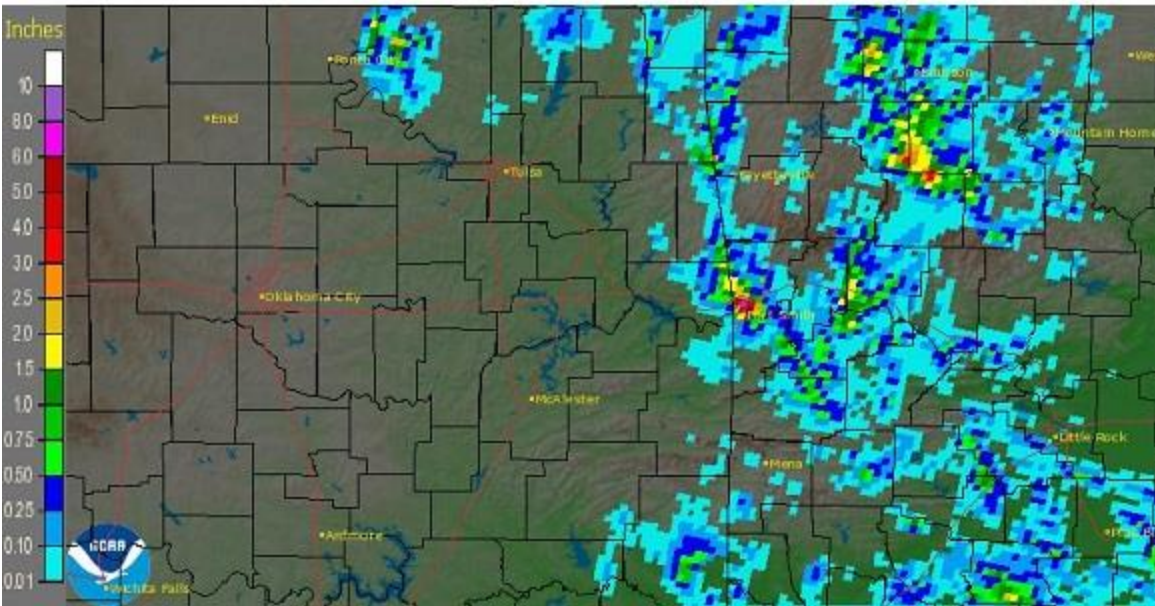


Fig. 5. 24-hr Estimated Observed Rainfall ending at 7am CDT 7/06/2015.

There were two areas of very heavy rain during the morning and afternoon hours of the 7<sup>th</sup> in the vicinity of a nearly stationary front and ahead of the decaying line of storms. The first area was across Delaware and Benton Counties, where 2"-3.5" of rain caused flash flooding. A second larger area of heavy rain occurred from McIntosh County, through southern Cherokee County, across Washington (AR) County and into northern Madison County. Here, widespread 2"-4" fell, with isolated totals of around 5" (Fig. 6). In fact, those 5 inches of rain fell in about 5 hours across portions of Cherokee, Adair, and Washington (AR) Counties. Flash flooding occurred in these areas as well, with numerous roads impassable. The heavy rain continued during the evening of the 7<sup>th</sup> through the early morning of the 8<sup>th</sup> as a mid-level shortwave moved out of northwest TX and across the HSA. The short-wave caused the front to lift back to the north, and with it, the heavy rain axis. Widespread 2"-4" and isolated 4"-6" fell southeast of a Bristow to Nowata line and northwest of a McAlester to Tahlequah to Joplin line (Fig. 7). Flash flooding was reported in several areas, with evacuations needed due to high water in the Meadows neighborhood in Muskogee, OK. 3SE Quapaw, OK measured 3.16" in the 24 hour period ending at 7am CDT 7/09/2015. 48-hour rainfall totals are shown in Fig. 8.

Rain then continued along and ahead of the front through the afternoon and evening hours on the 8<sup>th</sup> from southeast OK through northwest AR. The frontal boundary lifted back north late on the 8<sup>th</sup> and into the morning of the 9<sup>th</sup> as another upper-level disturbance approached from the west. This led to additional widespread showers and thunderstorms northwest of a McAlester to Muskogee to southern Madison County line for much of the 9<sup>th</sup>. A large part of the affected area received around 0.50" to around 1.5", with portions of northeast OK getting 2"-4" of rain (Fig. 9). The highest 24-hr rainfall measurements ending at 7am CDT 7/10/2015 were 3.88" 2NNW Locust Grove, OK; 3.56" 8.6 ESE Vinita, OK; and 3.45" 1ENE Ralston, OK. This heavy rain once again resulted in flash flooding. Three EF-1 tornadoes also occurred during the early evening of the 9<sup>th</sup>, near Tahlequah, OK, Proctor, OK, and Gentry, AR.

The grand total rainfall from the 6<sup>th</sup>-9<sup>th</sup> was 1"-8" across eastern OK and northwest AR, with the highest totals of around 5" to around 8" occurring in several areas north of a McAlester, OK to Huntsville, AR line (Figs. 10, 11). All of the rain from the 7<sup>th</sup>-9<sup>th</sup> also led to minor river flooding along the Baron Fork near Eldon, the Illinois River near Watts and Tahlequah, the Neosho River near Commerce, the Spring River near Quapaw, and the Arkansas River at Van Buren.

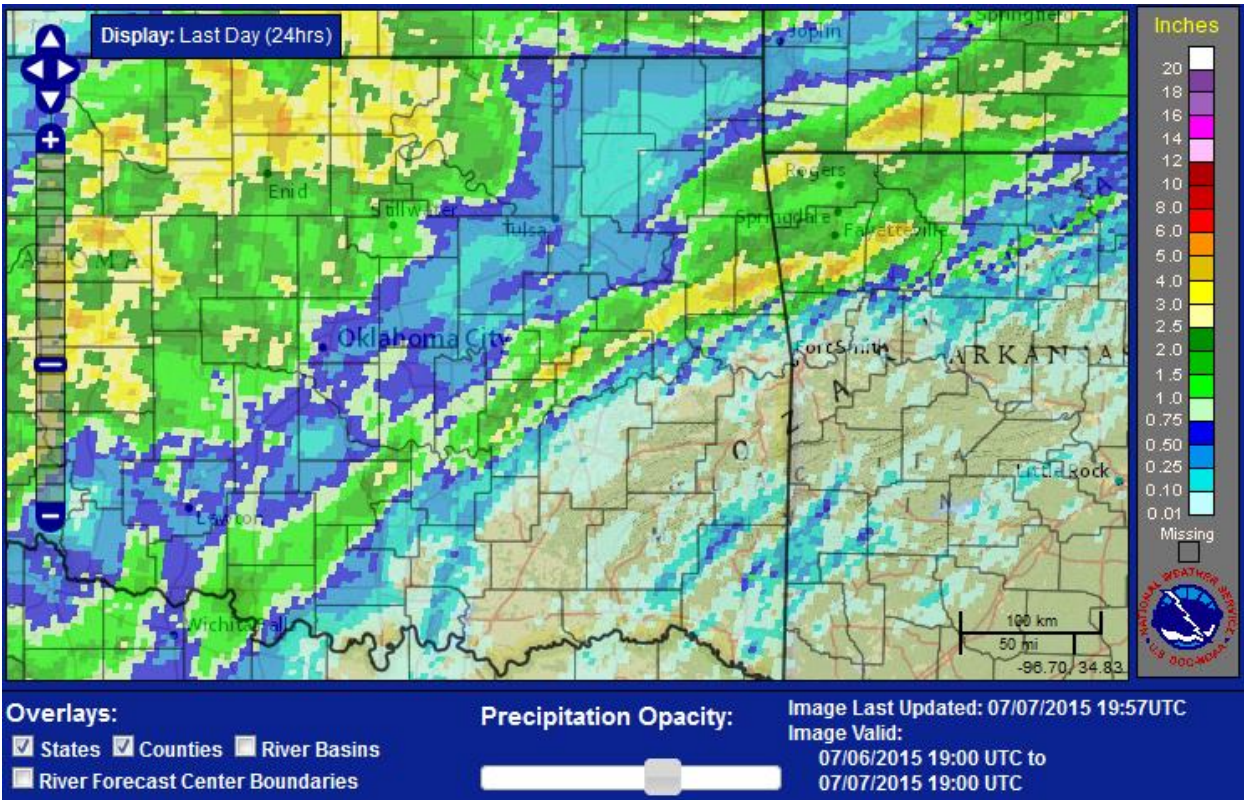


Fig. 6. 24-hr Estimated Observed Rainfall ending at 2pm CDT 7/07/2015.

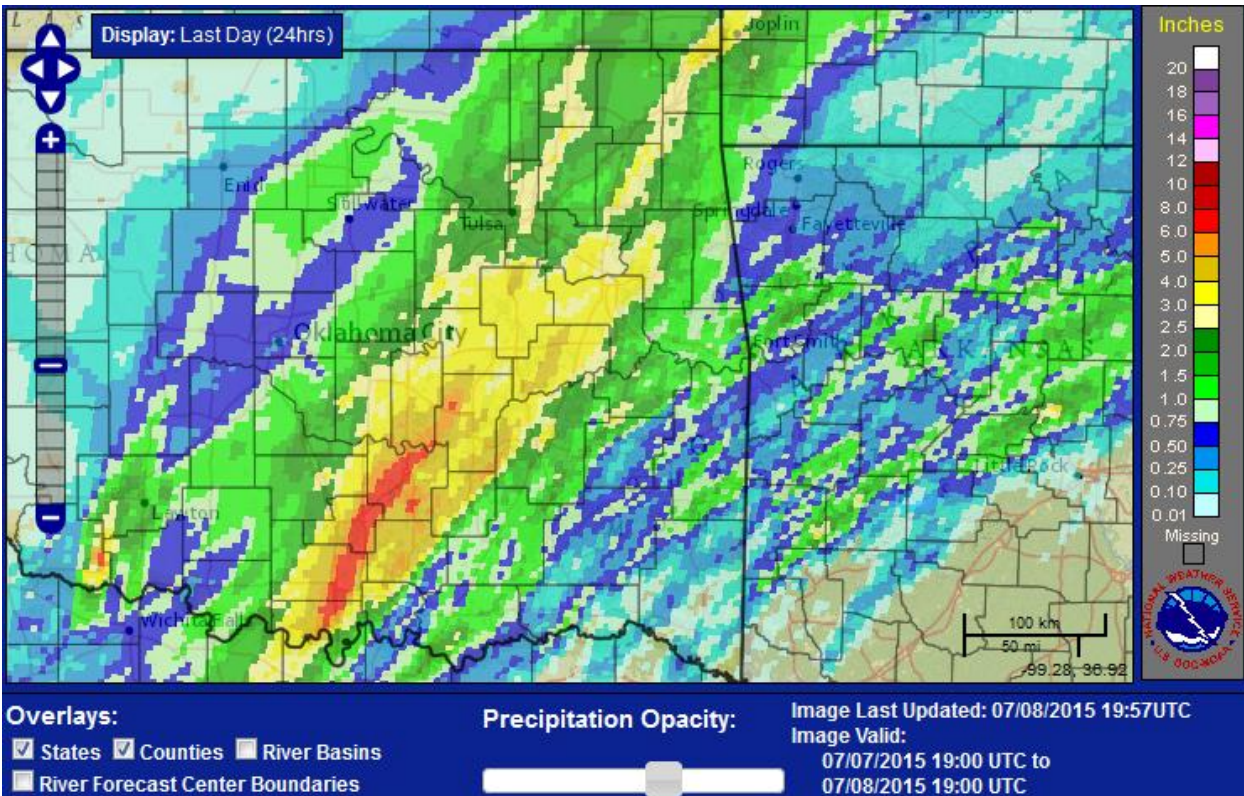


Fig. 7. 24-hr Estimated Observed Rainfall ending at 2pm CDT 7/08/2015.

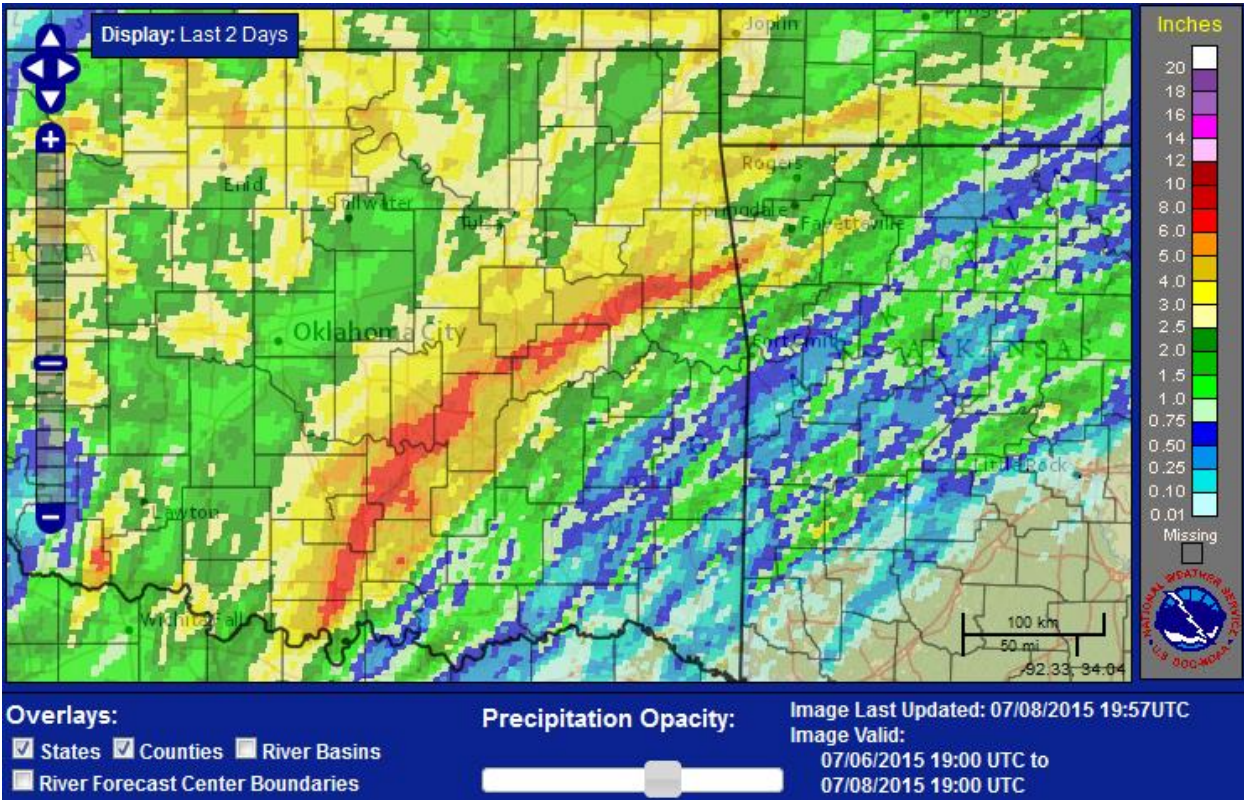


Fig. 8. 48-hr Estimated Observed Rainfall ending at 2pm CDT 7/08/2015.

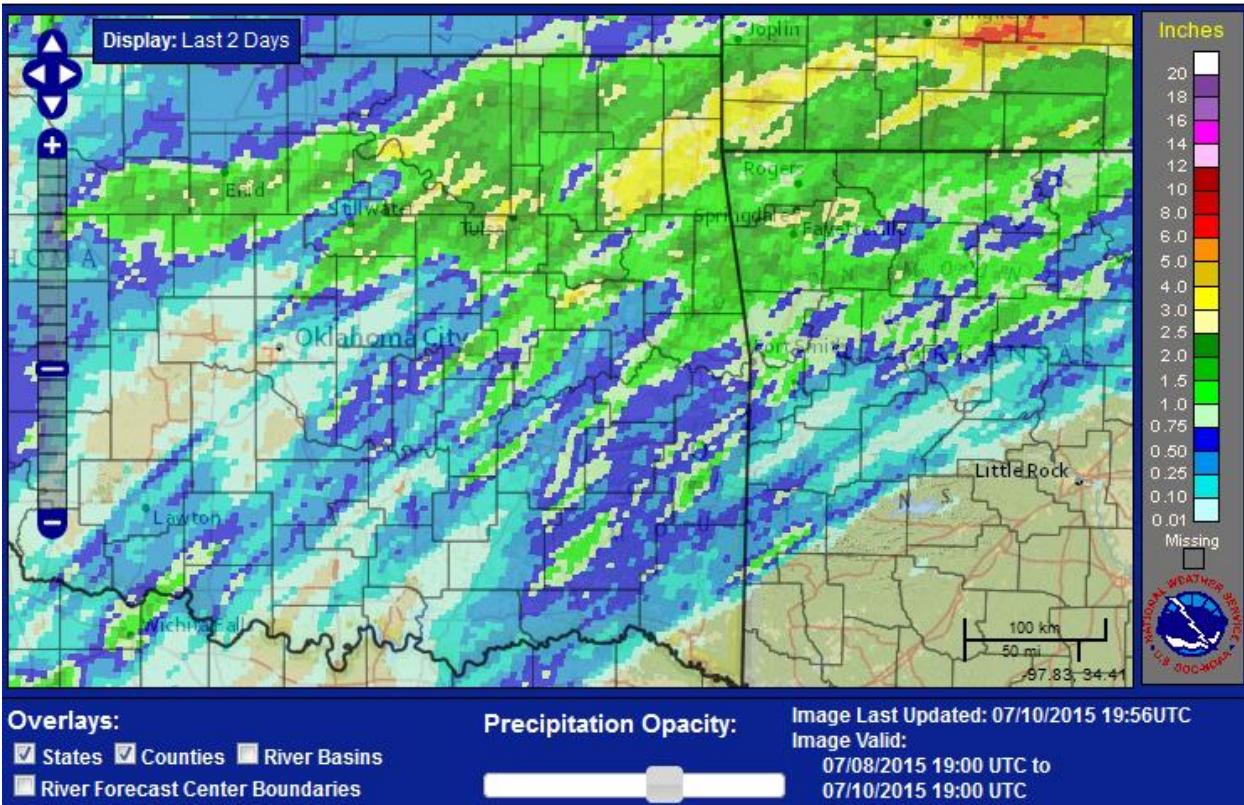


Fig. 9. 48-hr Estimated Observed Rainfall ending at 2pm CDT 7/10/2015.

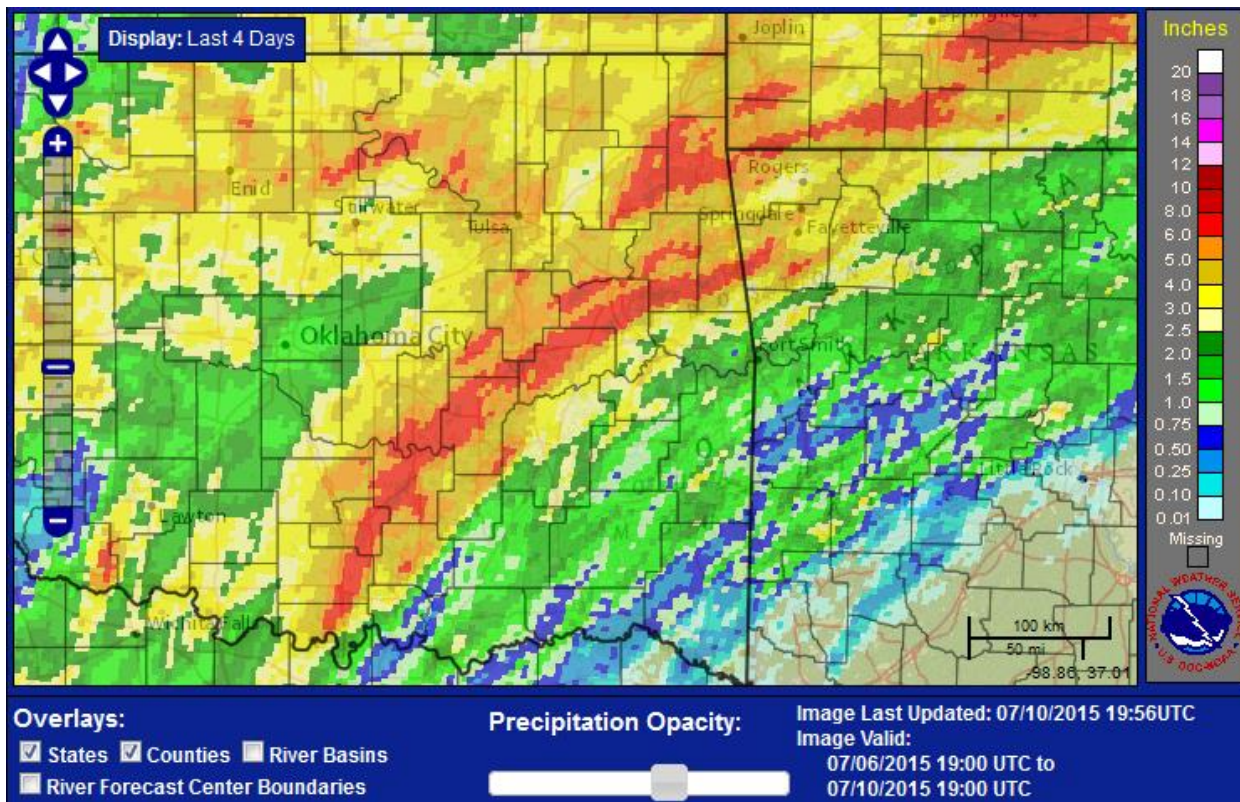


Fig. 10. 4-day Estimated Observed Rainfall ending at 2pm CDT 7/10/2015.

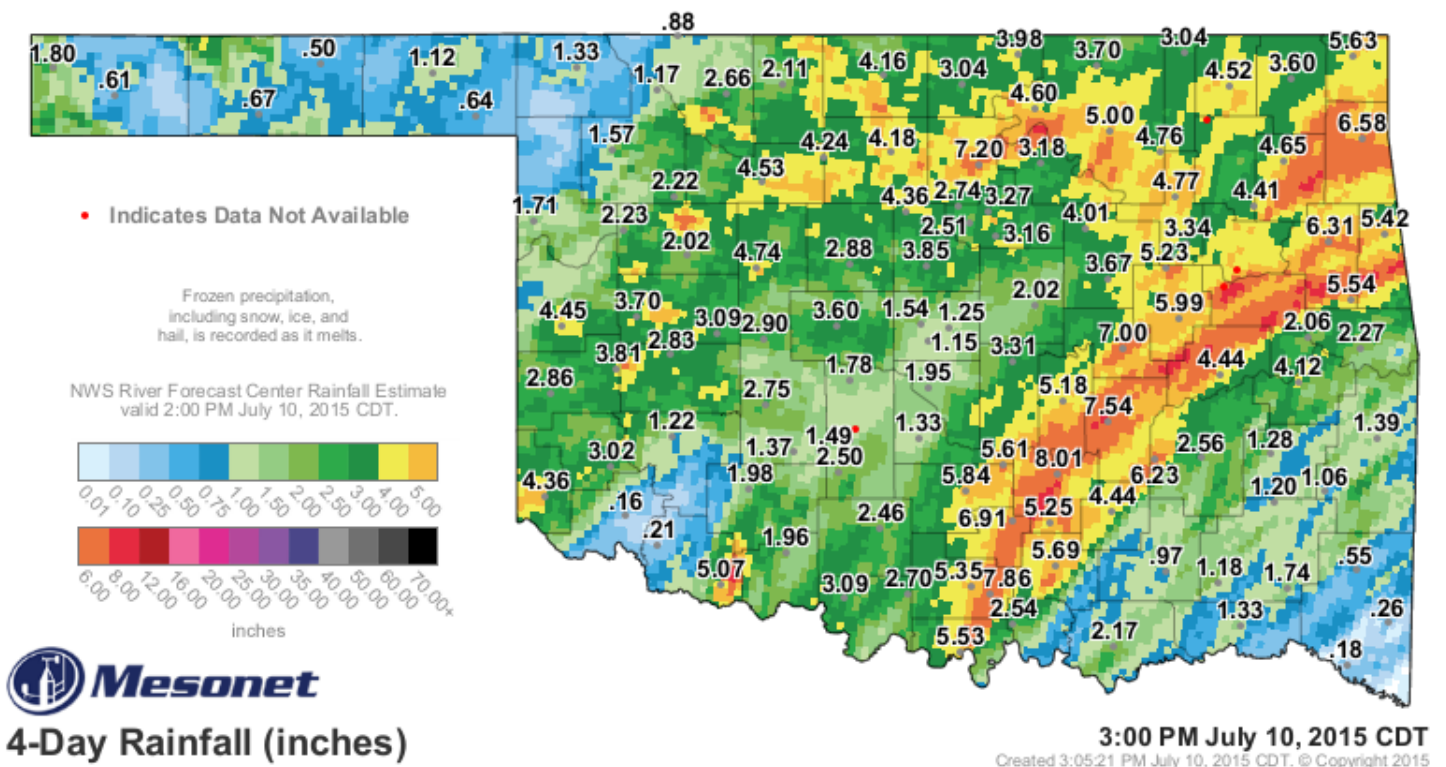


Fig. 11. 4-day Estimated Observed Rainfall and OK Mesonet measurements ending at 3pm CDT 7/10/2015.

### July 17-31

A weak front boundary moved south into the HSA on the 20<sup>th</sup>, and convection developed near the front. The boundary remained across the region for several days and provided a focus for periodic thunderstorm activity. High precipitable water values, near 2", yielded areas of heavy rain on the 20<sup>th</sup> and 21<sup>st</sup>. The storms on the 20<sup>th</sup> began during the afternoon hours and continued into the early evening before dissipated with the loss of

daytime heating. Additional storms moved in from the north and west during the overnight hours. Early on the 21<sup>st</sup>, the front was near I-40, with most of the rain occurring along and north of the front. Rainfall rates near the boundary were >2"/hour at times. By 7am CDT 7/21/15, locations along and north of I-40 in eastern OK and west central AR had received 0.50" to around 6" of rain (Fig. 12). The heaviest rain axis was from Bristow, to Tahlequah, to Ozark, where many areas got 1.5" to 6". The highest totals around 6" occurred in far southern Tulsa County. The highest gage measurements were: 4.41" Glenpool 0.6S, OK; 3.58" Bristow 4SSE, OK; and 3.52" Fort Smith, AR.

A few isolated showers and thunderstorms continued during the day on the 21<sup>st</sup>, but renewed convection occurred along the front after sunset and continued through the night. This activity primarily affected the area between I-44 and I-40, bringing 0.50" to around 5.5" (Fig. 13). The repeated heavy rainfall over the lower Illinois River basin led to rises at the Tahlequah gage; however, the river only reached action stage and remained within its banks. The Deep Fork River near Beggs also saw a decent rise, but the river crested just below flood stage.

Some of the larger 24-hr precipitation reports (in inches) ending 7am CDT 7/22/15 included:

Haskell 6SSE, OK	4.64	Morris 2.4SW, OK	4.21	Okmulgee 5SE, OK	3.83
Farmington 0.6WSW, AR	3.65	Muskogee 6S, OK	3.61	Tahlequah 2ENE, OK	3.52

Storms lingered through the morning hours on the 22<sup>nd</sup> near I-40 and north over eastern OK and northwest AR. Scattered thunderstorms also developed over northeast OK during the evening hours and continued overnight as the front lifted back north. A few showers lingered through the morning hours of the 23<sup>rd</sup>. Rainfall was more scattered compared to the previous days, with totals generally around 0.10" to around 0.75". Isolated locations received 0.75" to around 2".

Tulsa, OK (TSA): 7/21/2015 1-Day Observed Precipitation  
Valid at 7/21/2015 1200 UTC- Created 7/27/15 21:08 UTC

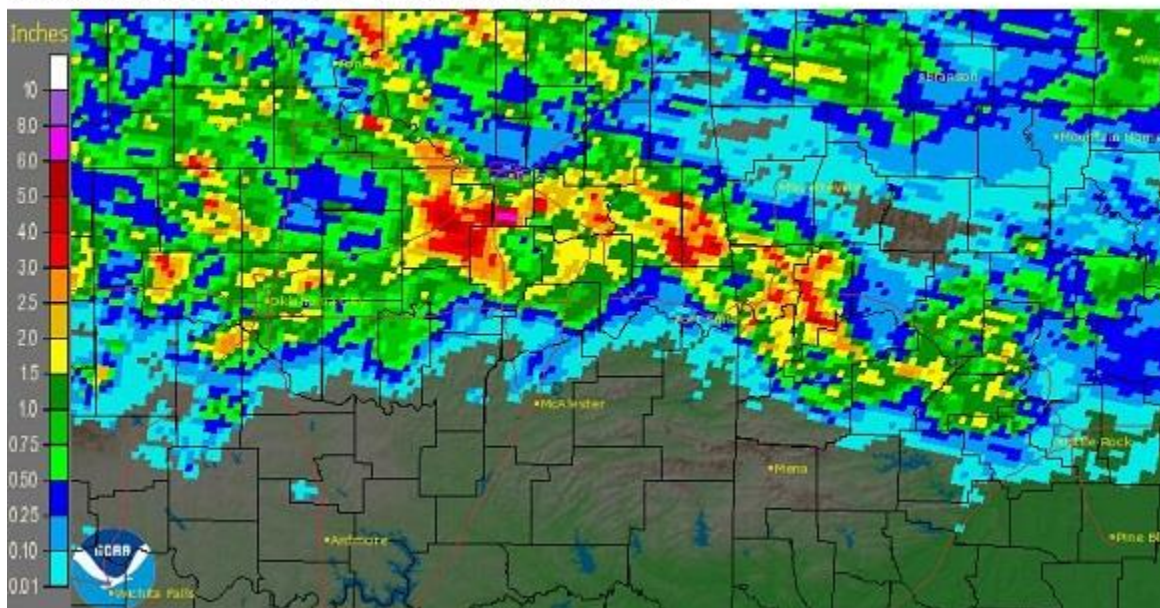


Fig. 12. 24-hr Estimated Observed Rainfall ending at 7am CDT 7/21/2015.

Tulsa, OK (TSA): 7/22/2015 1-Day Observed Precipitation  
Valid at 7/22/2015 1200 UTC- Created 7/27/15 23:35 UTC



Fig. 13. 24-hr Estimated Observed Rainfall ending at 7am CDT 7/22/2015.

An upper-level ridge brought hot and humid conditions to the region at the end of the month. The ridge began to break down at the very end of the month, and a weak cold front moved into the area on the 29<sup>th</sup> and 30<sup>th</sup>. Storms developed over KS during the early morning hours of the 30<sup>th</sup> and congealed into a slow moving complex. This complex was dissipating as it reached the HSA (though 0.25"-0.75" fell in eastern Kay Co.), but storms developed at noon along its outflow. These storms brought 0.25" to around 3" (Fig. 14) to a portion of northeast and east central OK. Additional scattered storms developed north of the weak cold front in the higher terrain areas of southeast OK and northwest AR. Rainfall totals in this area were 0.25" to 2.5" (Fig. 14).

Showers developed across far northeast OK around sunrise on the 31<sup>st</sup>, affecting mainly Delaware Co., northern Cherokee Co., northern Adair Co., and small portions of the surrounding OK counties. Rainfall ranged from around 0.10" to near 3" in Delaware County. A few afternoon storms developed over Osage and Pawnee Counties, bringing 0.25"-1.5" of rain.

Tulsa, OK (TSA): 7/31/2015 1-Day Observed Precipitation  
Valid at 7/31/2015 1200 UTC- Created 8/2/15 21:41 UTC

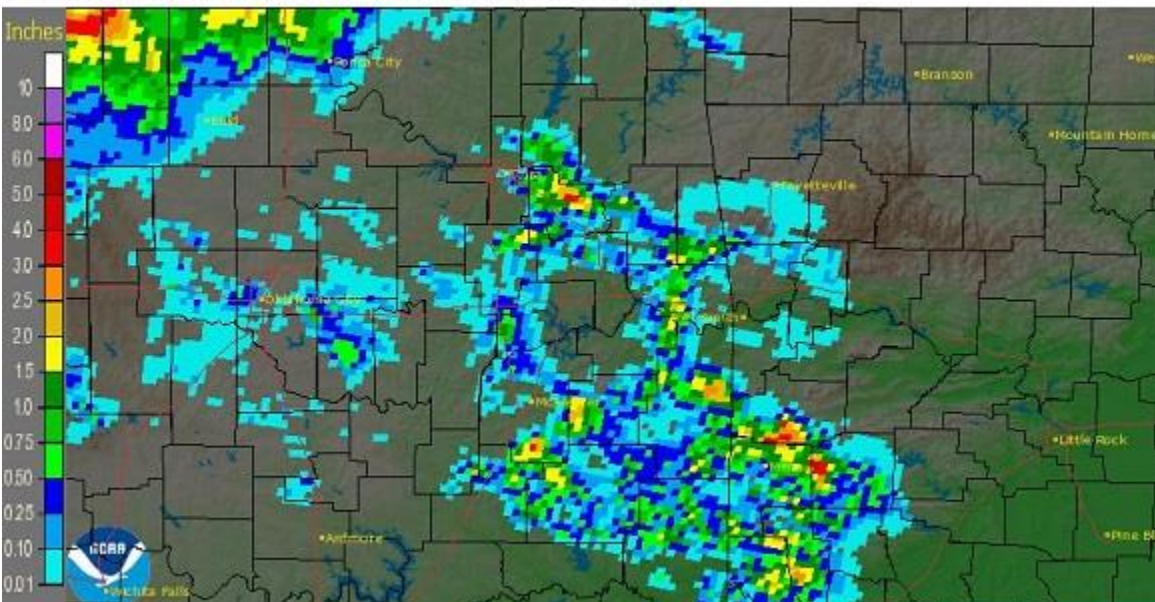


Fig. 14. 24-hr Estimated Observed Rainfall ending at 7am CDT 7/31/2015.

Written by:

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Service Hydrologist  
WFO Tulsa

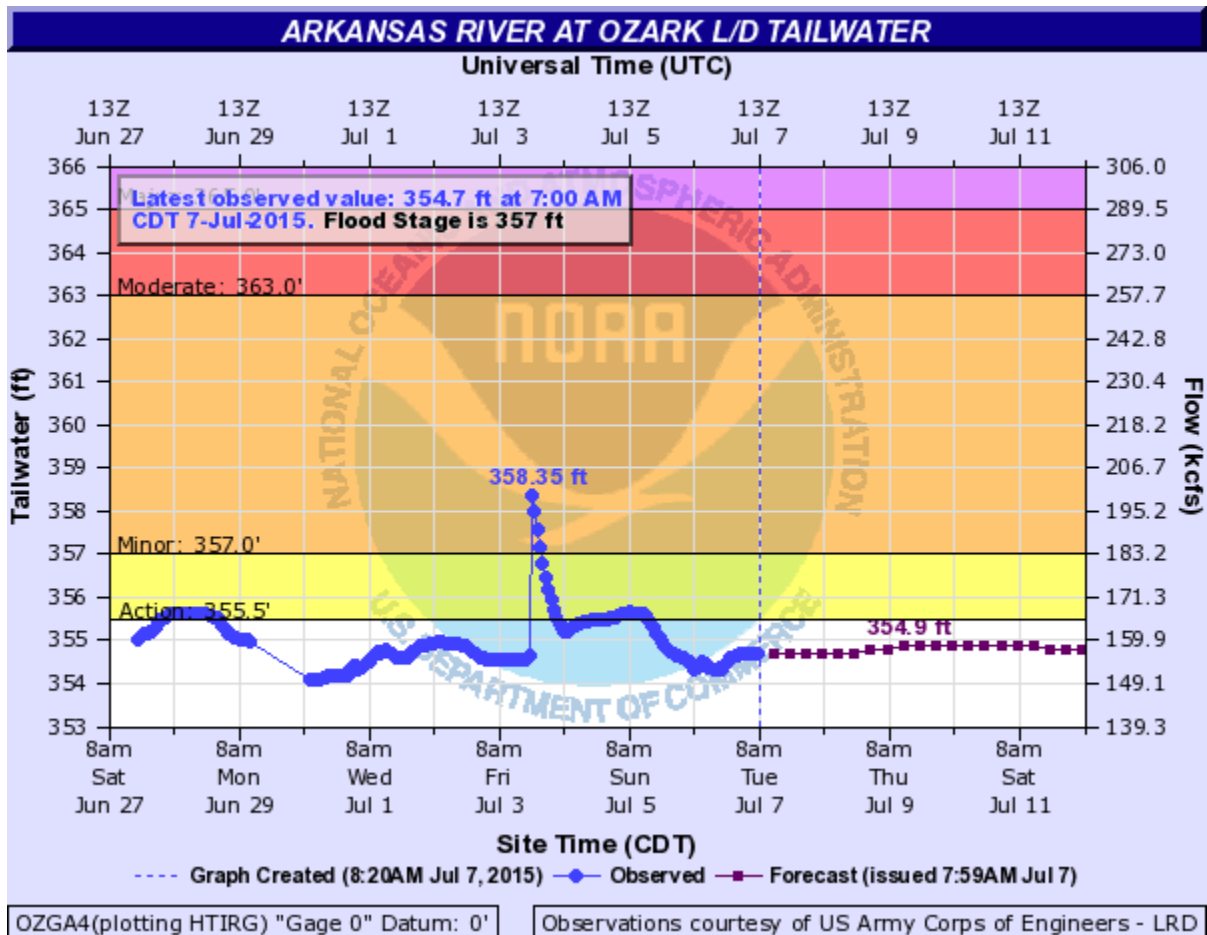
### Products issued in June 2015:

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

\*Mixed case River Flood products began July 31, 2013

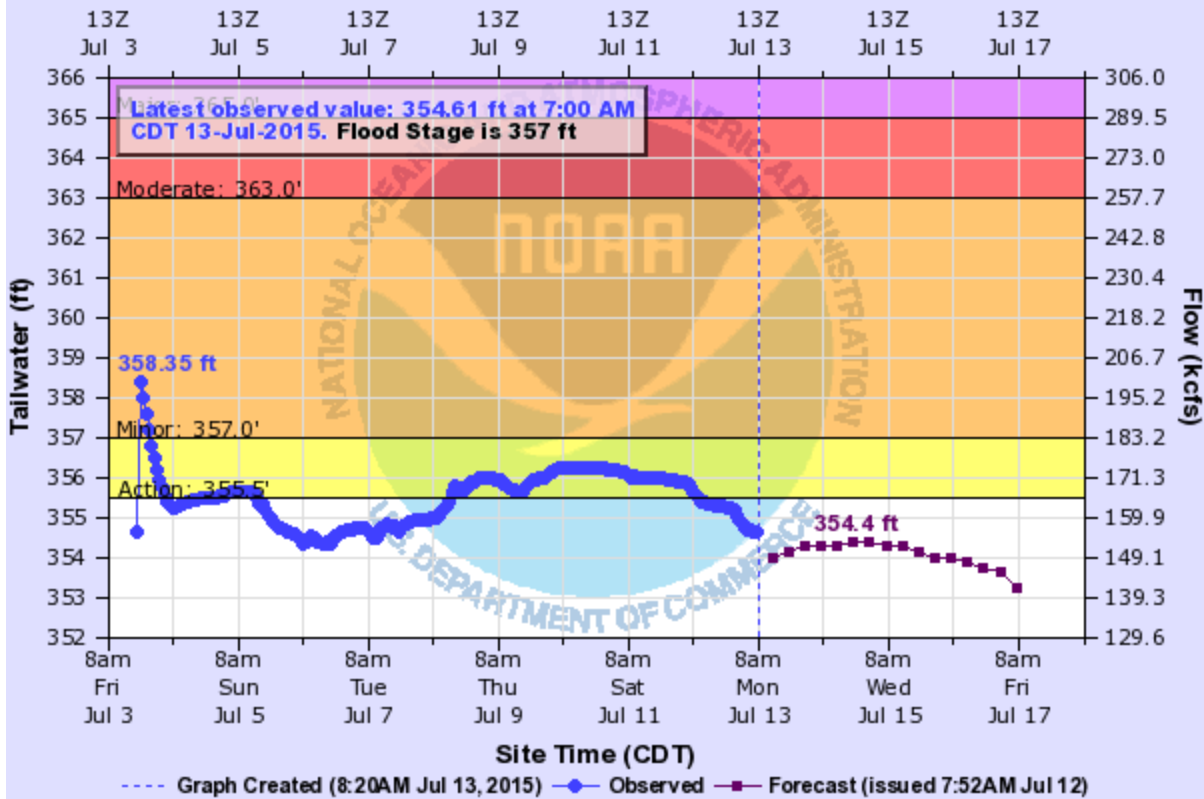
- 19 Flash Flood Warnings (FFW)
- 16 Flash Flood Statements (FFS)
- 2 Flash/Areal Flood Watches (FFA) (10 Watch FFA CON/EXT/EXA/EXB/CAN)
- 42 Urban and Small Stream Advisories (FLS)
- 10 Areal Flood Warnings (FLW)
- 0 Areal Flood Statements (FLS)
- 15 River Flood Warnings (FLW)
- 72 River Flood Statements (FLS)
- 8 River Flood Advisories (FLS) (35 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:



## ARKANSAS RIVER AT OZARK L/D TAILWATER

Universal Time (UTC)

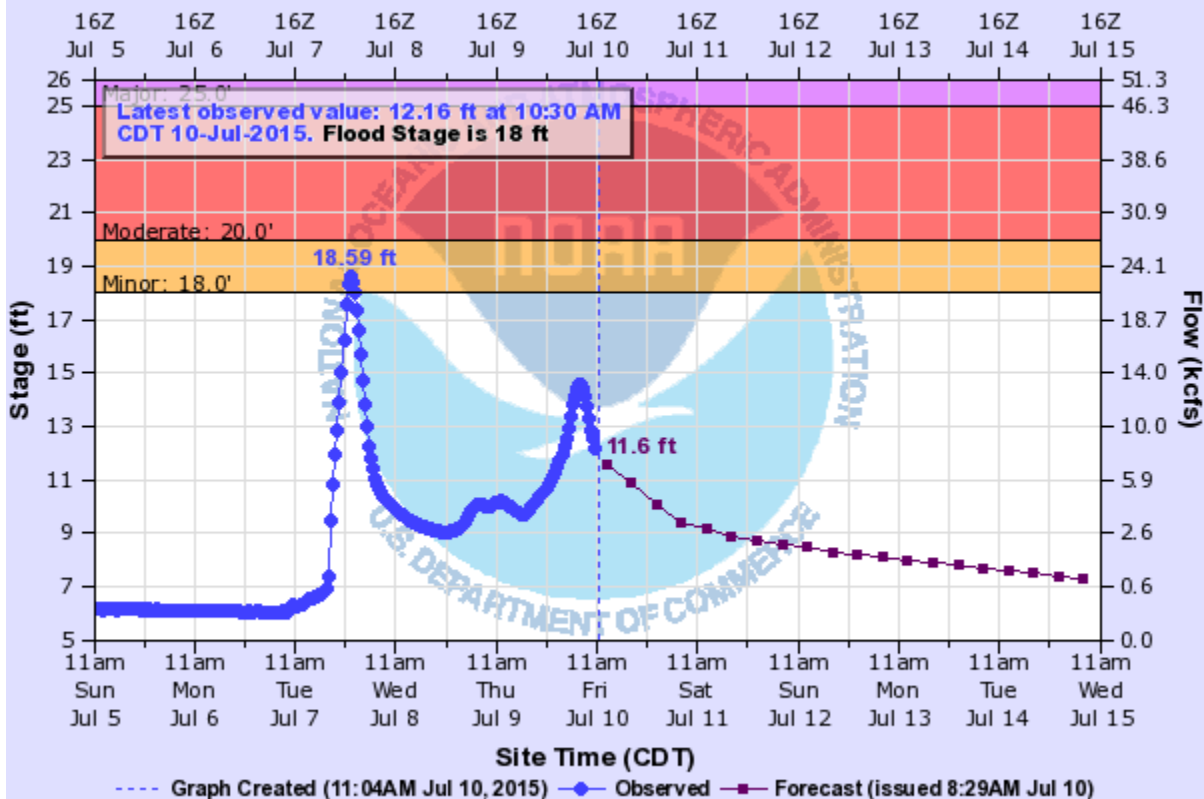


OZGA4(plotting HTIRG) "Gage 0" Datum: 0'

Observations courtesy of US Army Corps of Engineers - LRD

## BARON FORK AT ELDON

Universal Time (UTC)

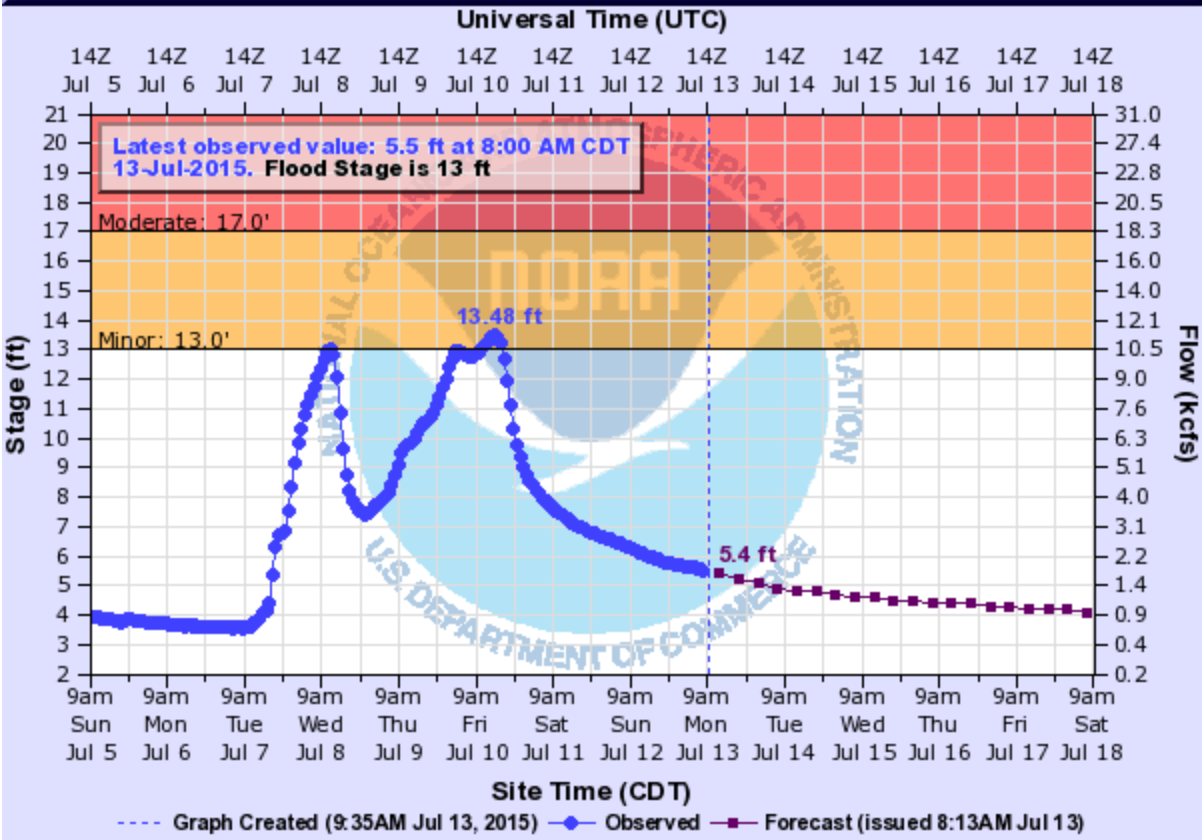


ELDO2(plotting HGIRG) "Gage 0" Datum: 701.14'

Observations courtesy of US Geological Survey



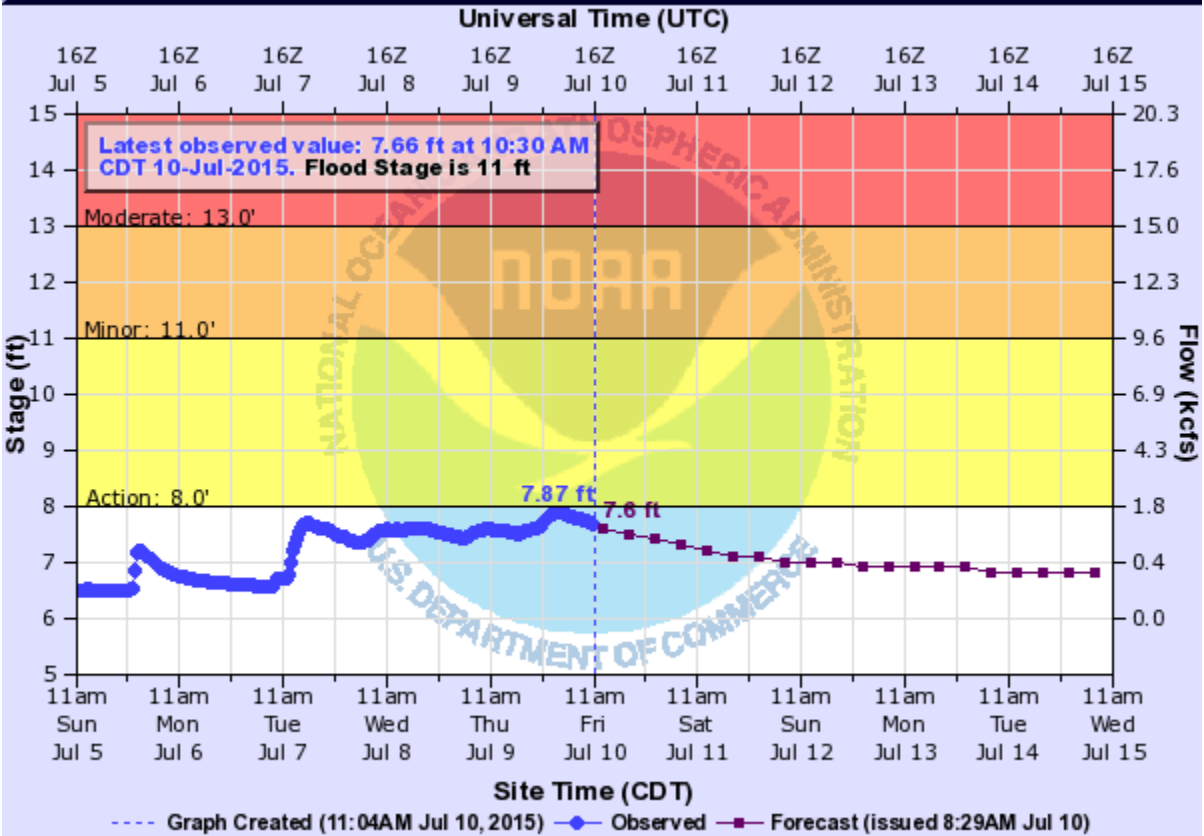
## ILLINOIS RIVER (AR OK) NEAR WATTS



WTT02(plotting HGIRG) "Gage 0" Datum: 893.77'

Observations courtesy of US Geological Survey

## FLINT CREEK (OK) NEAR KANSAS

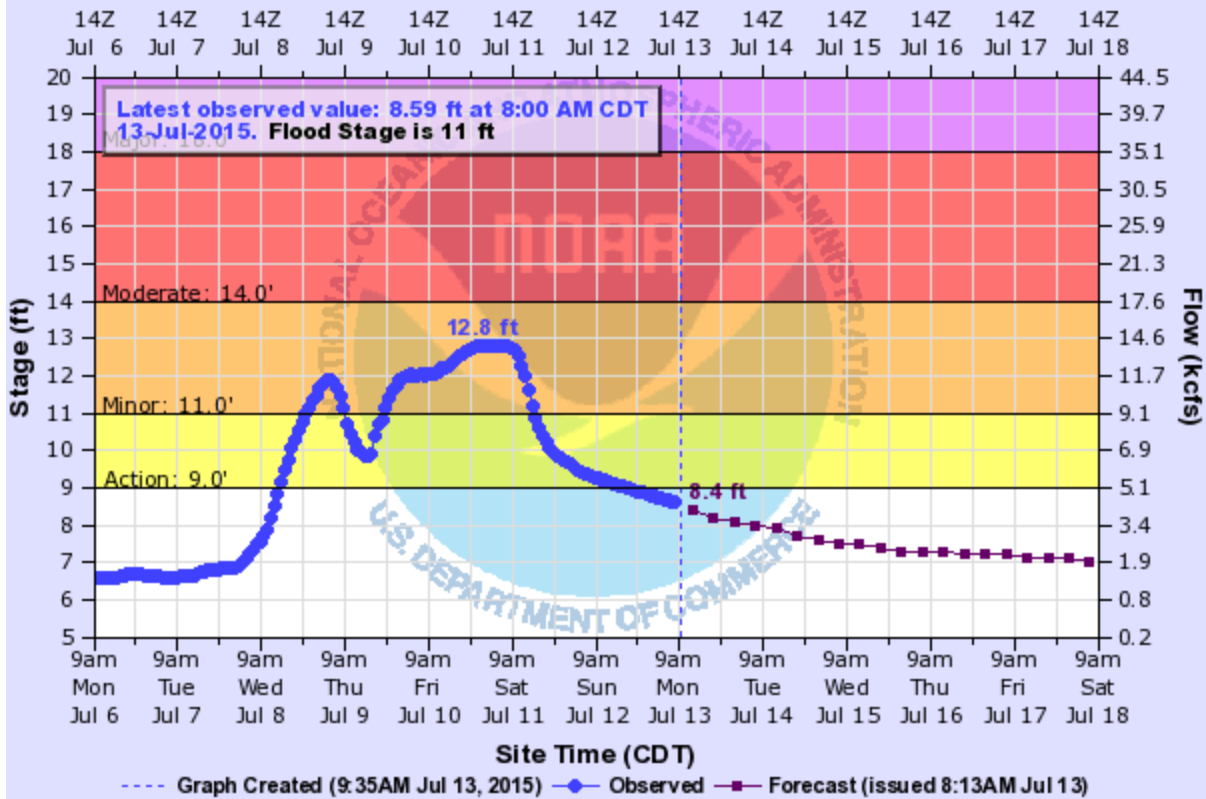


KNS02(plotting HGIRG) "Gage 0" Datum: 854.59'

Observations courtesy of US Geological Survey

## ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH

Universal Time (UTC)

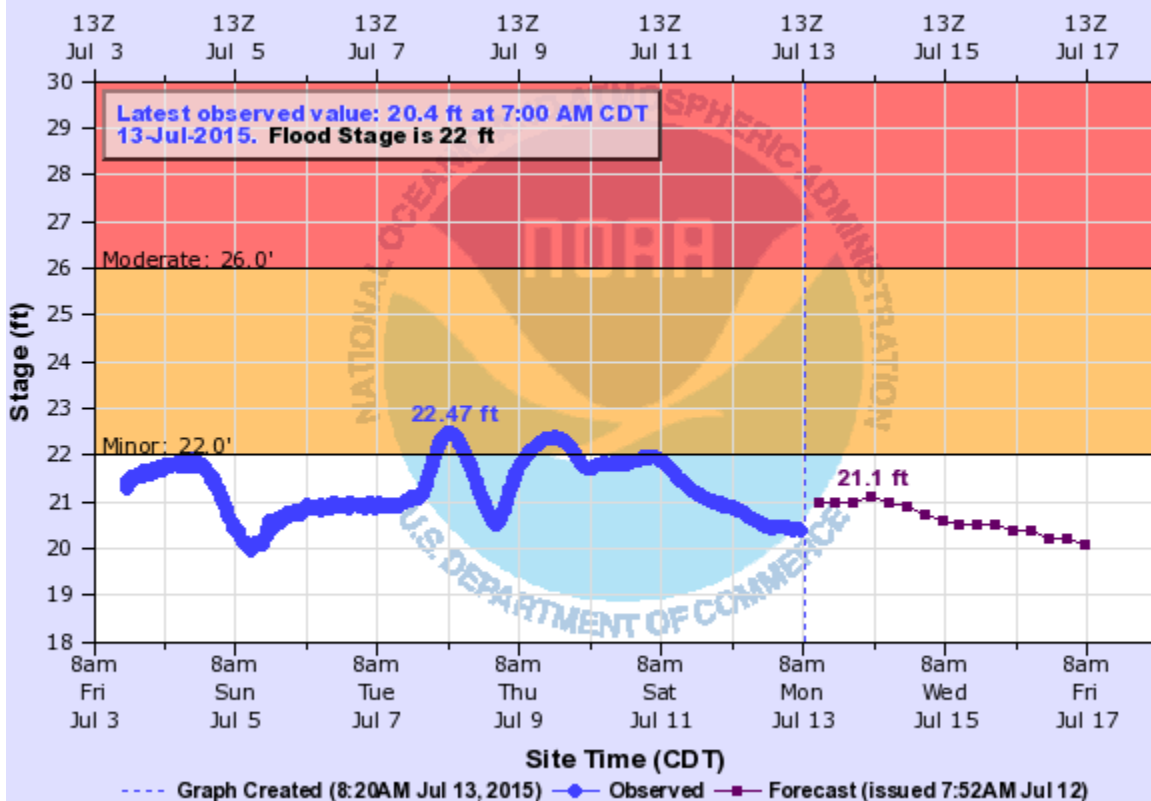


TALO2(plotting HGIRG) "Gage 0" Datum: 664.14'

Observations courtesy of US Geological Survey

## ARKANSAS RIVER AT VAN BUREN

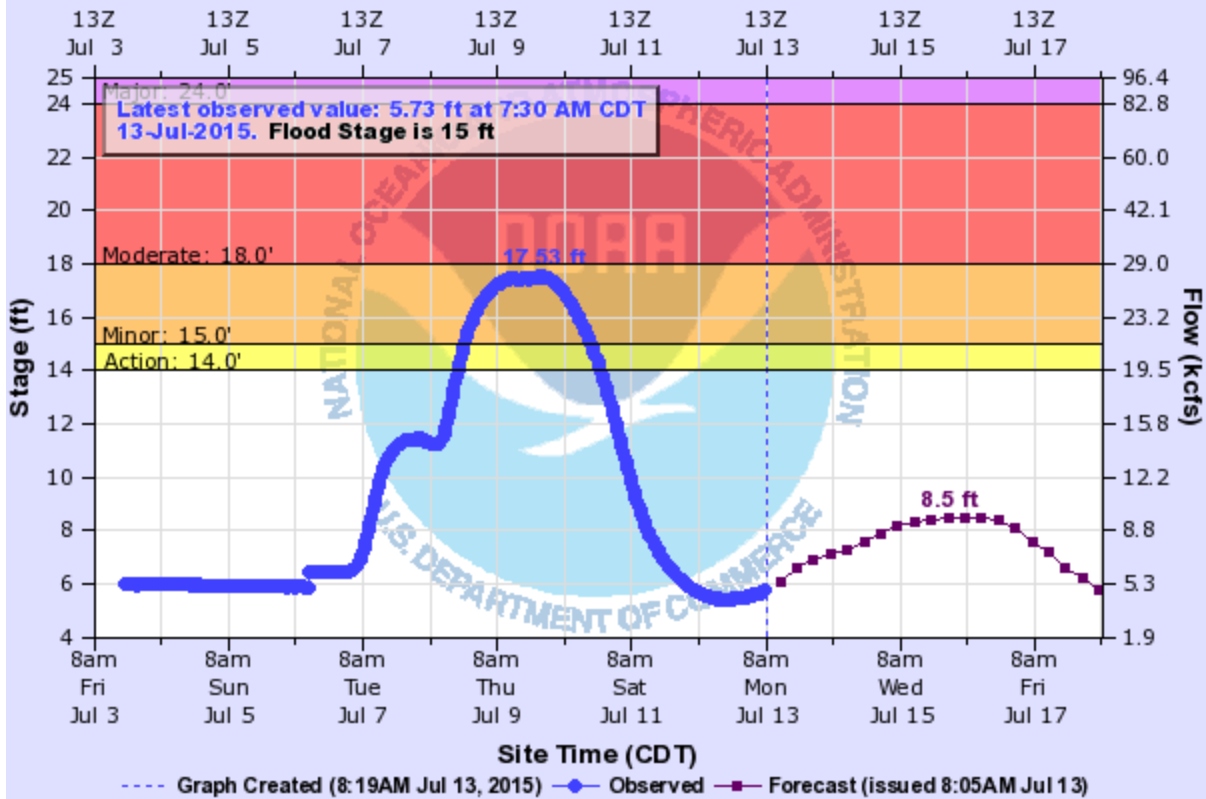
Universal Time (UTC)



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

## NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

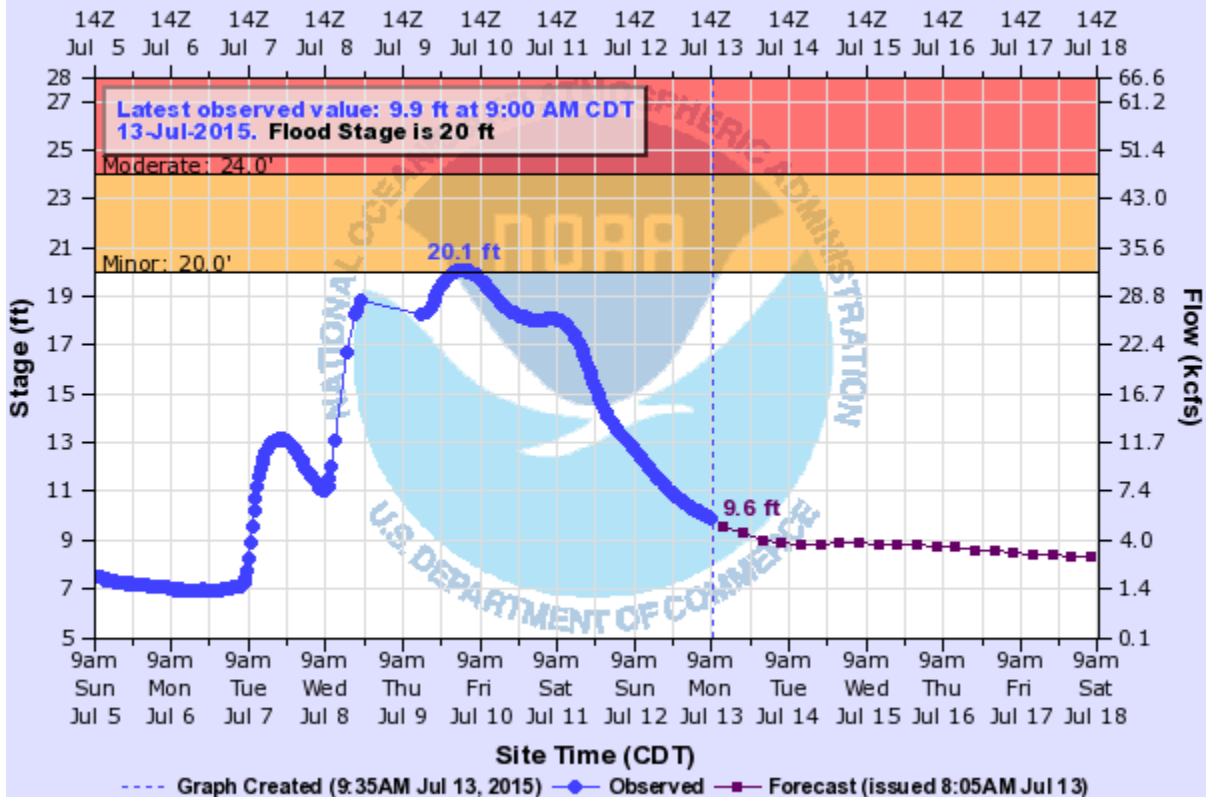


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

## SPRING RIVER NEAR QUAPAW

Universal Time (UTC)

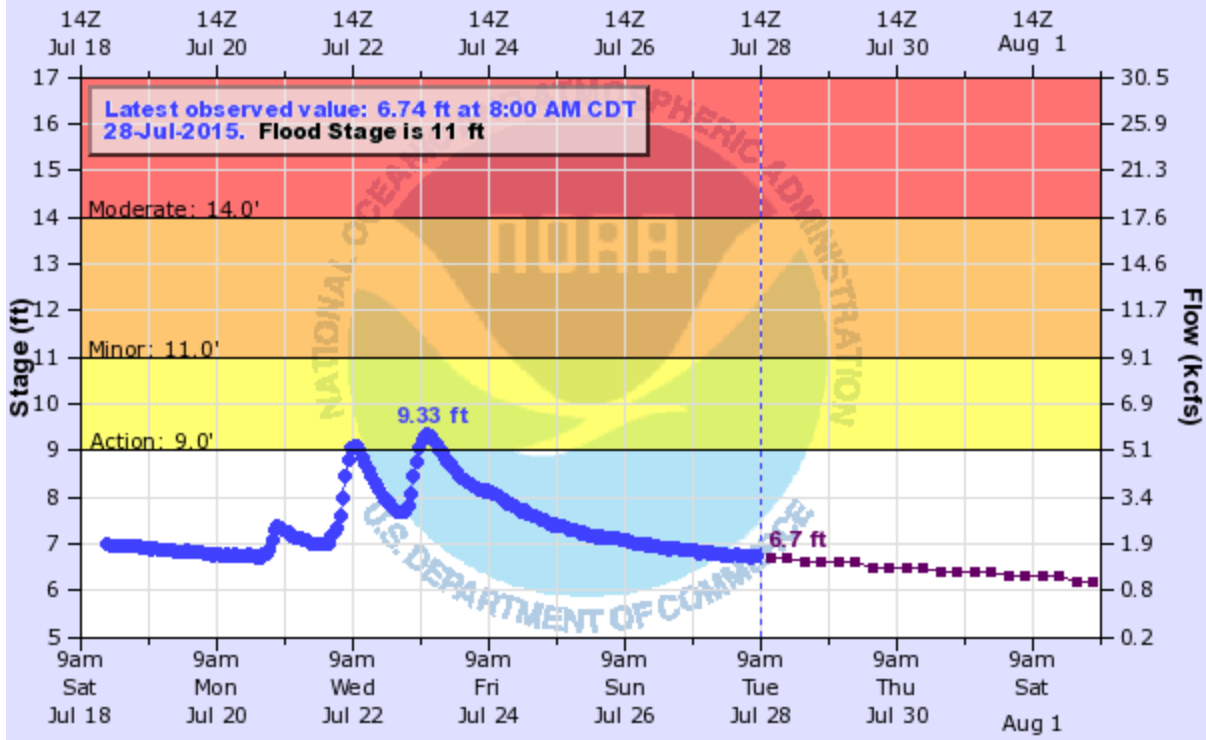


QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

Observations courtesy of US Geological Survey

# ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH

Universal Time (UTC)



Site Time (CDT)

--- Graph Created (9:35AM Jul 28, 2015) ● Observed — Forecast (issued 9:19AM Jul 28)

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

Observations courtesy of US Geological Survey