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)**
MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS		REPORT FOR: MONTH **December** YEAR **2015**
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283		SIGNATURE **Steven F. Piltz** (Meteorologist-in-Charge) DATE **January 29, 2015**

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.**

Record rainfall, record flooding, and widespread major flooding devastated a large portion of eastern OK and northwest AR this month. December 2015 was the wettest on record for both Fort Smith and Fayetteville, AR. Much of the area received 3 to 5 times the normal December rainfall. Normal precipitation for December ranges from 1.5 inches in Pawnee County to 3.2 inches in Haskell County. Normal precipitation for the Ozark region of northwest Arkansas averages 3.2 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 December 2015 ranged from around 3" to 16". Most of the HSA received 6"-12" of rain this month (similar totals also occurred in Nov. 2015). This corresponds to 150% to around 500% of the normal December rain across eastern OK and northwest AR (Fig. 1b).

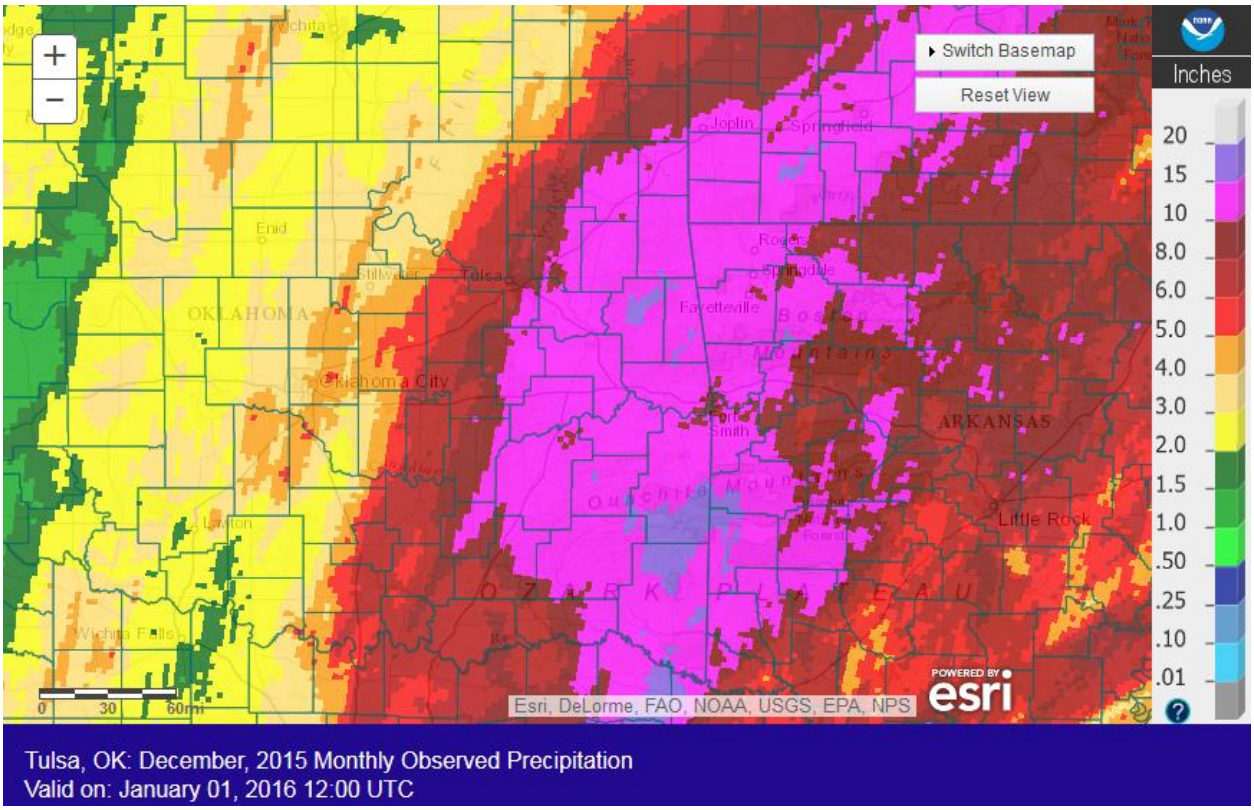


Fig. 1a. Estimated Observed Rainfall for December 2015

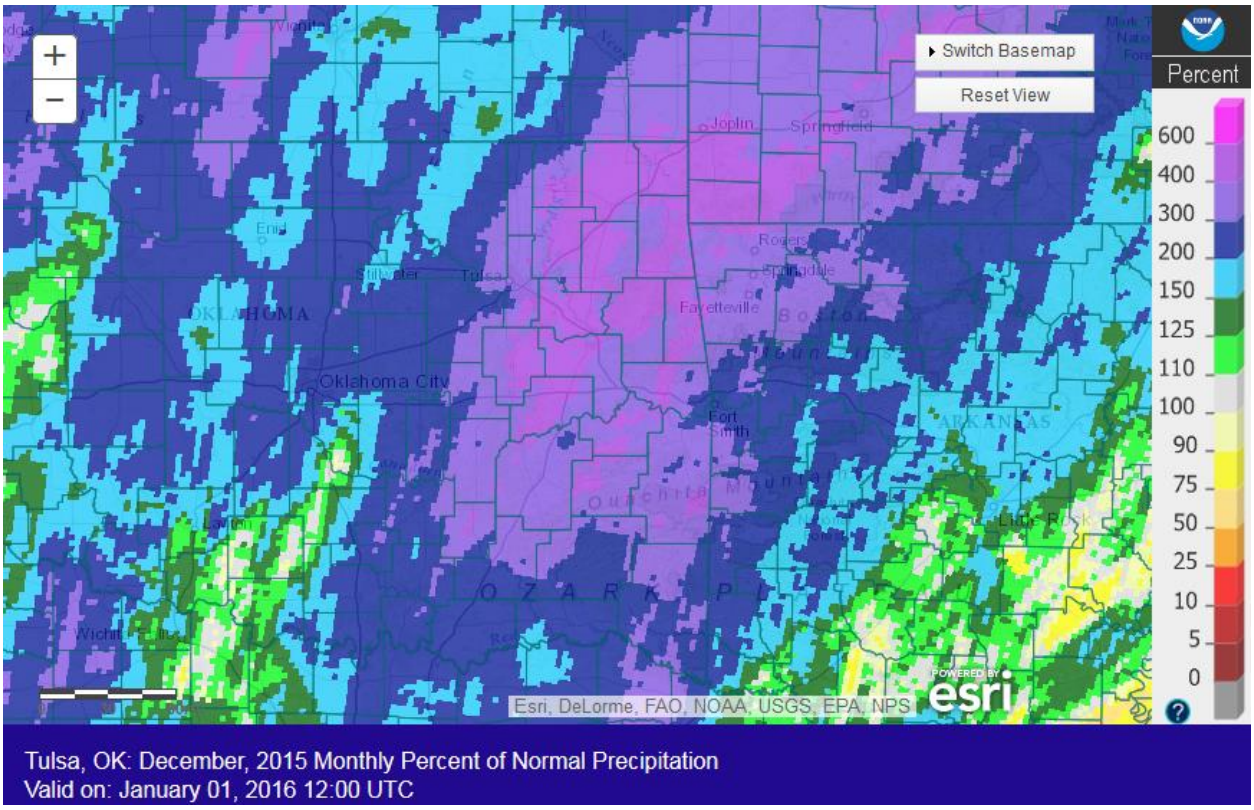


Fig. 1b. Estimated % of Normal Rainfall for December 2015

In Tulsa, OK, December 2015 ranked as the 3rd warmest December (46.7°F; since records began in 1905), the 2nd wettest December (8.60"; since records began in 1888), and the 49th least snowy December (0.5", tied 2007, 1918, 1912; since records began in 1900). Fort Smith, AR had the 2nd warmest December (49.3°F; since records began in 1882) and the **Record** wettest December (10.81"; since records began in 1882). The previous record December rainfall was 10.09" in 1971. Fayetteville, AR had the 3rd warmest (44.2°F) and the **Record** wettest (10.95") December since records began in 1949. The previous record December rainfall was 8.54" in 1982. For McAlester, OK (rainfall records began in 1953 though missing data from Aug. 1996-Dec. 1997), the **Record** highest rainfall for any day in December was set on 12/27/2015 with 4.68" (previous record 2.65" 12/27/1968) and the **Record** wettest December was reached in Dec. 2015 with 10.50" (previous record 8.34" 1987; 1981-2010 Normal December rainfall is 2.98"). Muskogee, OK (rainfall records began in 1905 though missing data from Oct. 1908-Dec. 1913) also measured its **Record** wettest December in 2015 with 13.40" (previous record 9.27" 1987; 1981-2010 Normal December rainfall is 3.04").

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

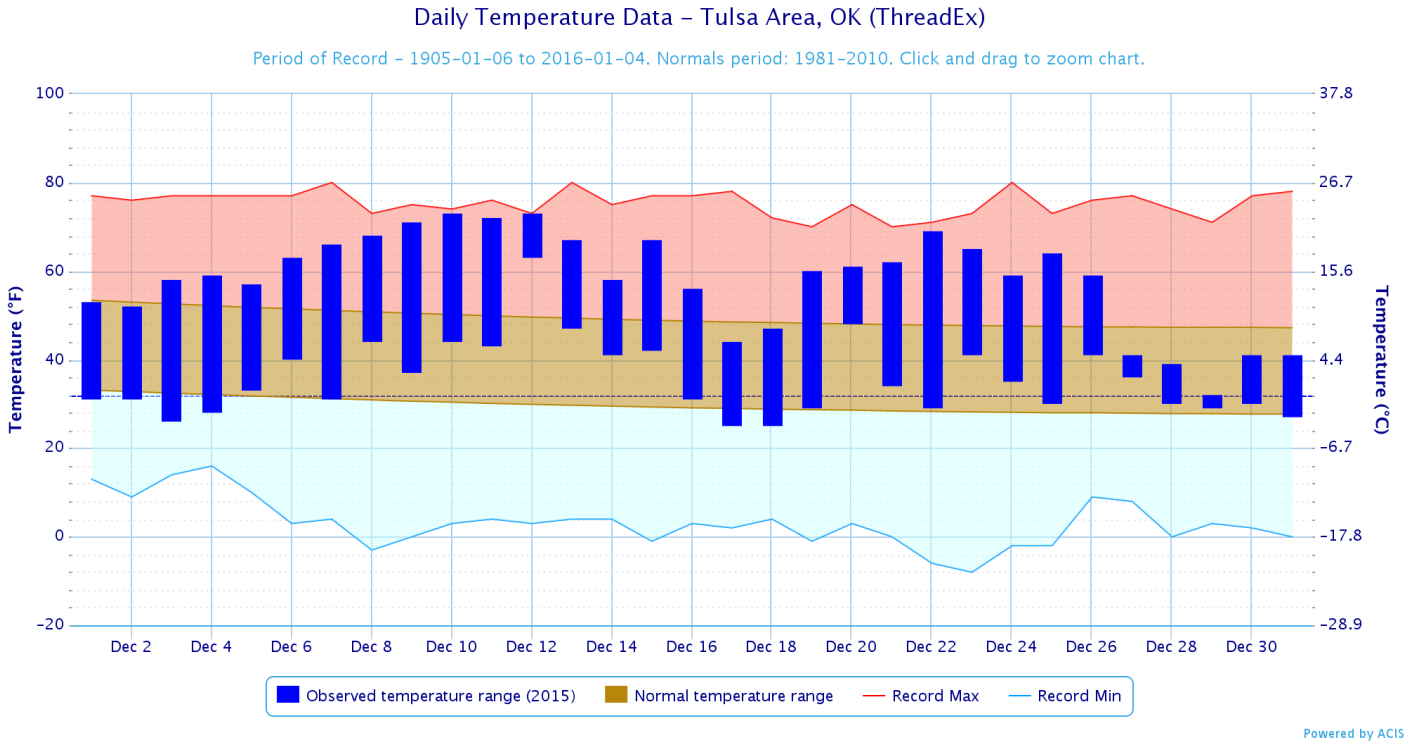
Rank since 1921	December 2015	Last 60 Days (Nov 2 – Dec 31)	Water Year-to-Date (Oct 1 – Dec 31)	Cool Growing Season (Sep 1 – Dec 31)	Last 180 Days (Jul 5 – Dec 31)	Year 2015
Northeast OK	1st wettest	1st wettest	2nd wettest	7th wettest	2nd wettest	4th wettest
East Central OK	1st wettest	1st wettest	1st wettest	1st wettest	1st wettest	1st wettest
Southeast OK	1st wettest	1st wettest	1st wettest	1st wettest	3rd wettest	1st wettest
Statewide	1st wettest	1st wettest	1st wettest	4th wettest	2nd wettest	1st wettest

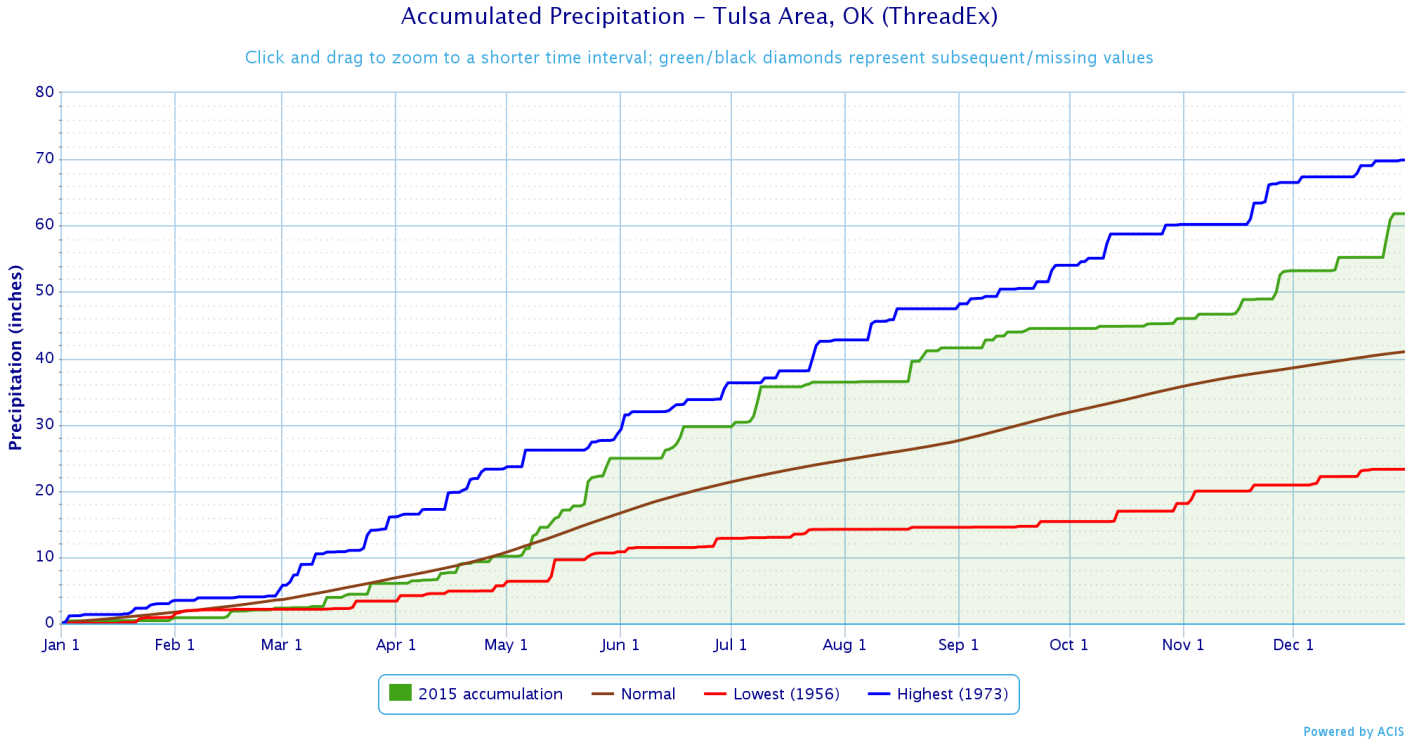
Some of the larger precipitation reports (in inches) for December 2015 included:

Tahlequah, OK (meso)	15.73	Wilburton 9.4N, OK (coco)	15.67	Elkins 10.6SSE, AR (coco)	15.64
Talihina, OK (meso)	15.16	Decatur 2.6ESE, AR (coco)	15.09	Wilburton, OK (meso)	14.98
Viney Grove 2.4NW, AR (coco)	14.89	Bunch 0.8N, OK (coco)	14.78	Winslow 7NE, AR (coop)	14.67

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

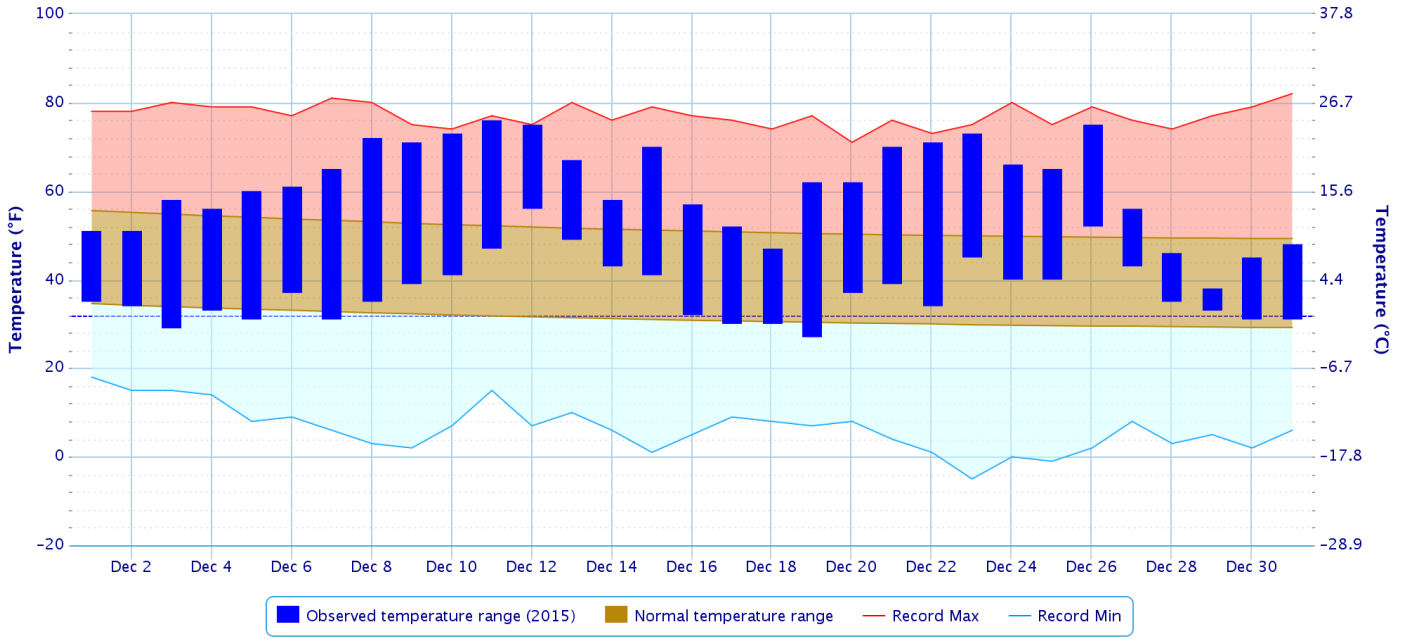
Burbank, OK (meso)	3.73	Pawnee, OK (meso)	3.94	Copan, OK (meso)	4.82
Wynona, OK (meso)	5.44	Oilton, OK (meso)	5.44	Bartlesville, OK (ASOS)	5.65
Bartlesville, OK (coop)	5.93	Ochelata 5.6N, OK (coco)	7.21	Bristow, OK (meso)	7.64





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

Period of Record – 1882-06-01 to 2016-01-04. Normals period: 1981-2010. Click and drag to zoom chart.



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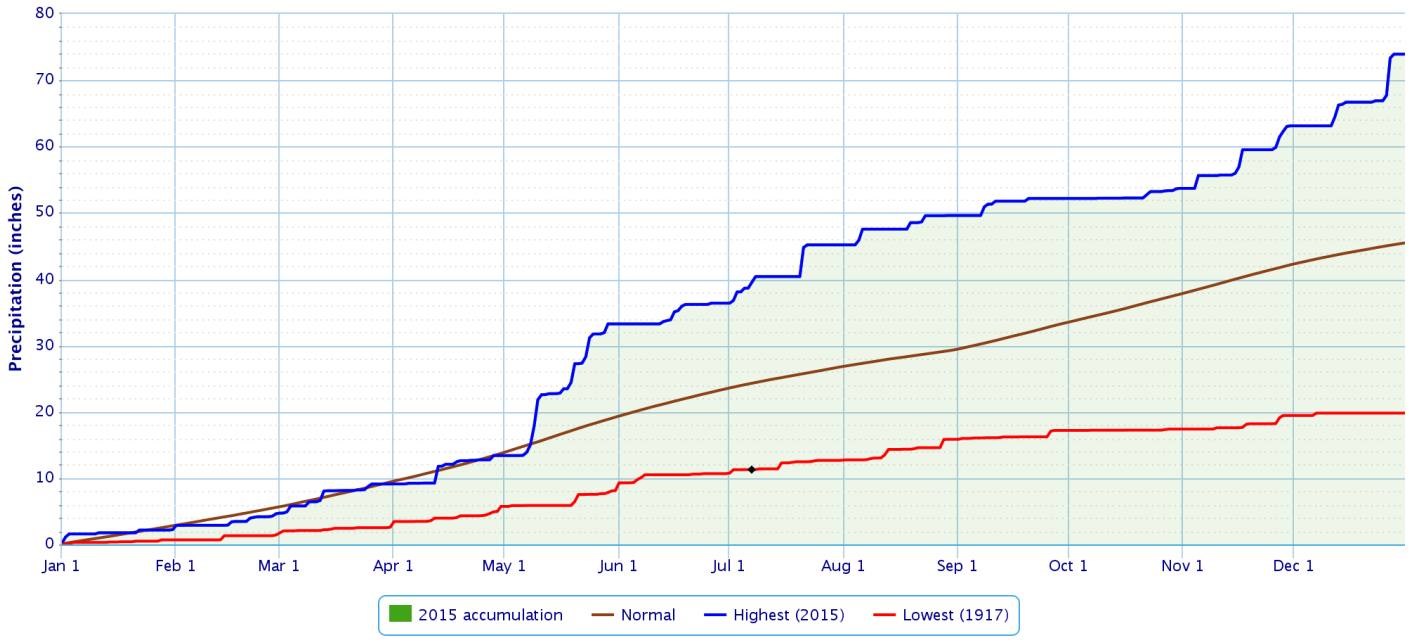
Accumulated Precipitation – Fort Smith Area, AR (ThreadEx)

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



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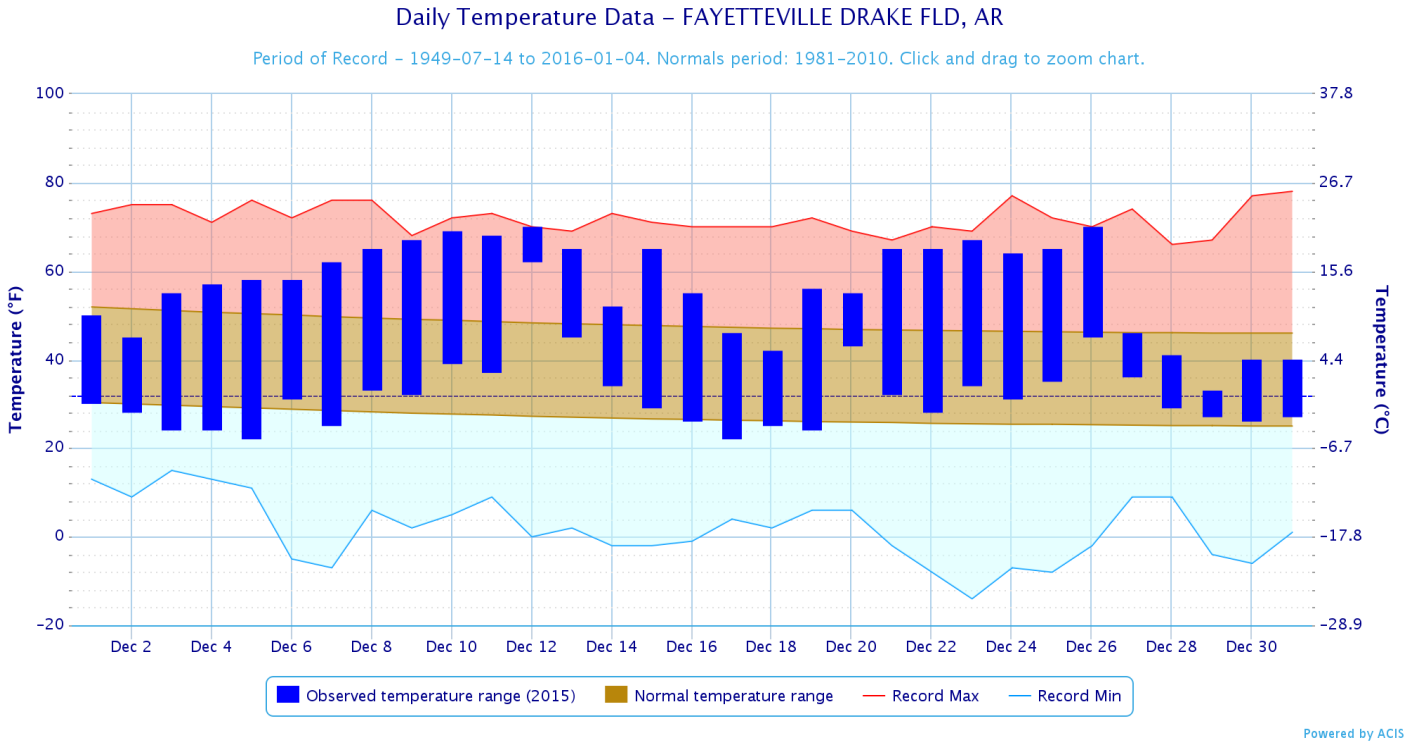
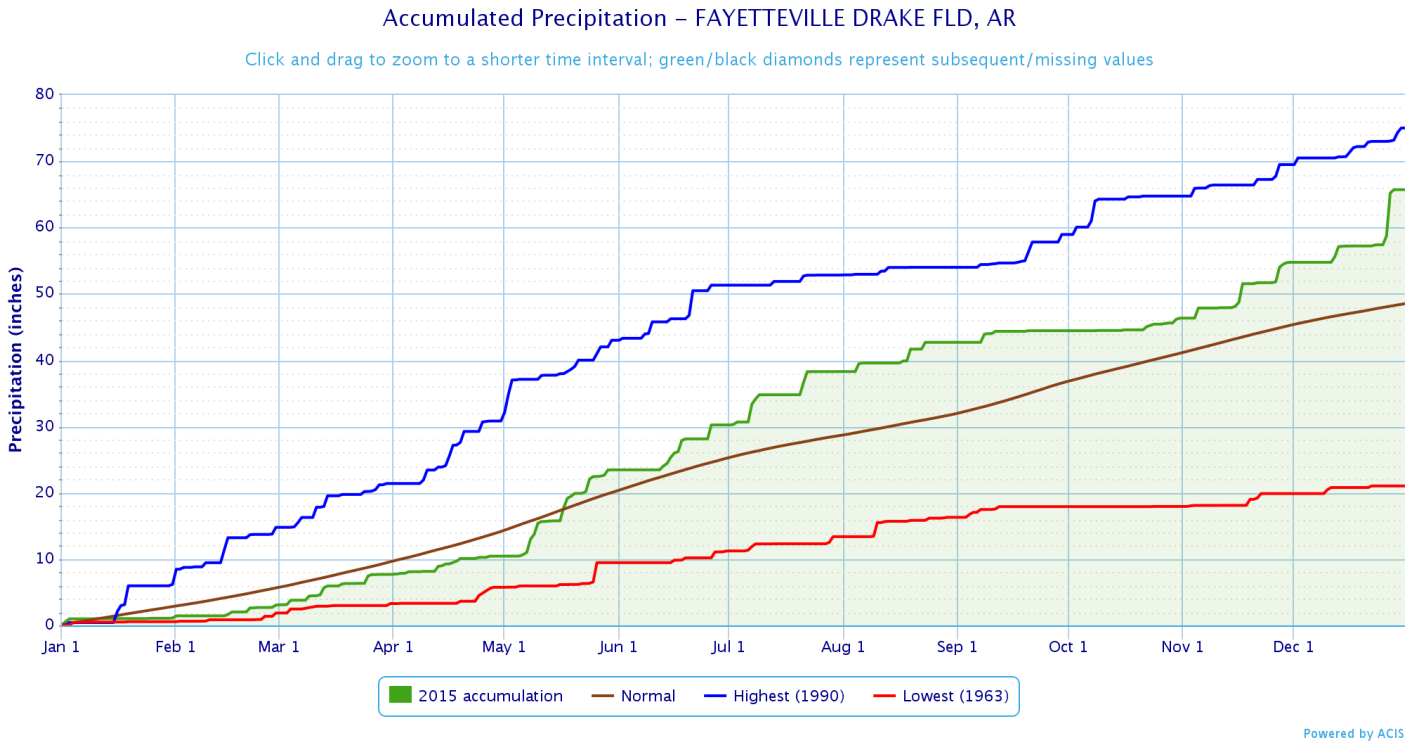




Drought

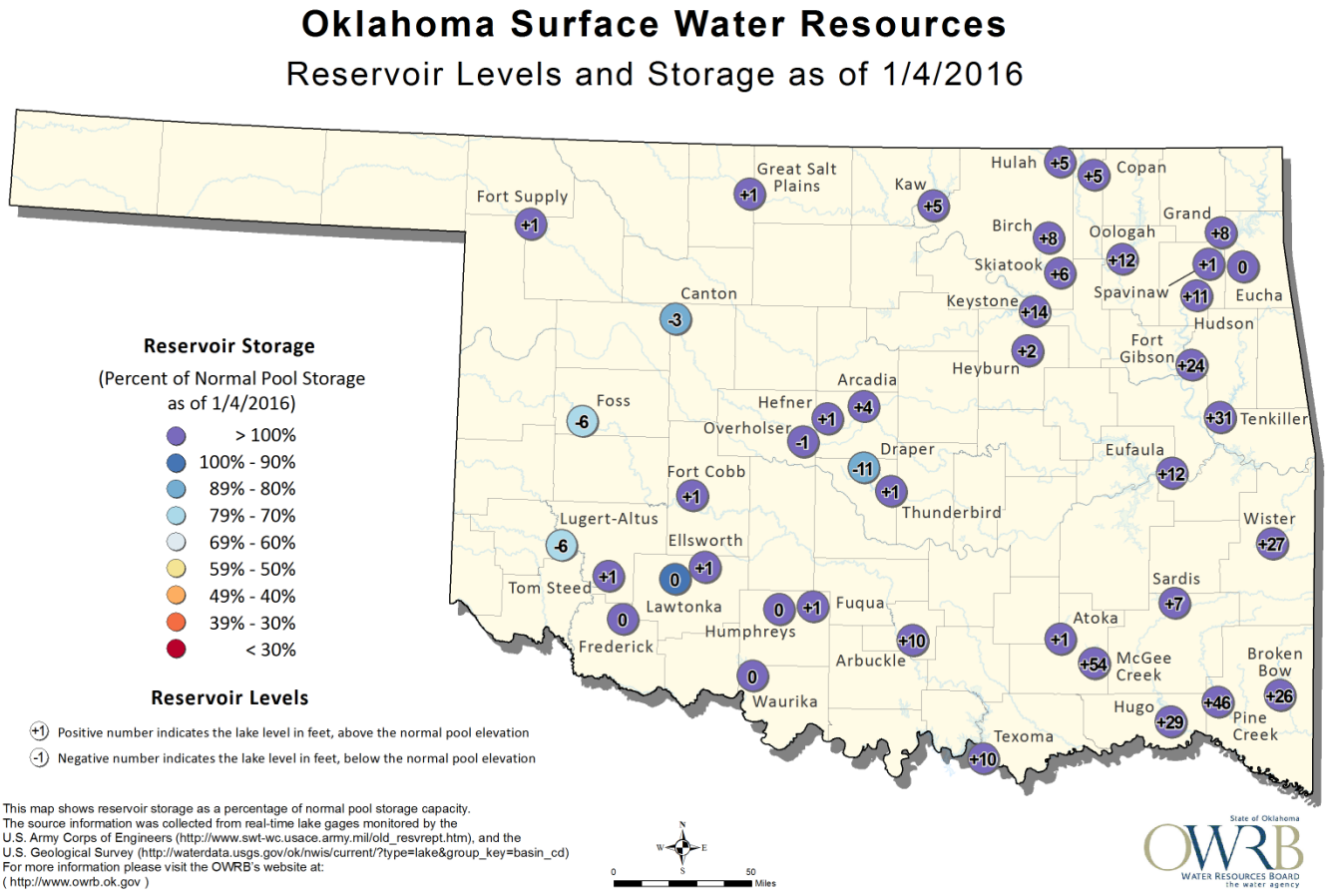
According to the U.S. Drought Monitor (USDM) from December 29, 2015, there were not drought or abnormally dry conditions present in eastern OK and northwest AR.

Reservoirs

According to the USACE, all of the major reservoirs in the HSA were operating within their flood control pools due to the heavy rain at the end of the month. As of 12/31/2015, the percentage of the flood control pool used was: Wister Lake 125% (above top of flood control pool), Eufaula Lake 114% (above top of flood control pool), Sardis Lake 105% (above top of flood control pool), Ft. Gibson Lake 99%, Tenkiller Lake 96%, Grand Lake 92%, Hudson Lake 86%, Hugo Lake 80%, Oologah Lake 40%, Skiatook Lake 35%, Keystone Lake 28%, and Birch Lake 25%. As if 01/04/2016, Beaver Lake 90%. As of 01/07/2016, Copan Lake 15%, Kaw Lake 10%, and Hulah Lake 7%.

The USACE provided information on the following reservoir records set in December 2015:

Grand Lake/Pensacola Dam	record peak inflow 295,400 cfs Dec. 2015 (precious record 178,000 cfs Oct. 1986) record release 236,000 cfs Dec. 2015 (previous record 129,700 cfs Oct. 1986)
Hudson Reservoir	record peak inflow 247,900 cfs Dec. 2015 (precious record 140,000 cfs Oct. 1986) record release 241,500 cfs Dec. 2015 (previous record 135,300 cfs Oct. 1986)
Fort Gibson Reservoir	record release 183,000 cfs Dec. 2015 (previous record 137,000 cfs Oct. 1986)
Tenkiller Reservoir	record peak inflow 149,200 cfs Dec. 2015 (precious record 145,100 cfs Apr. 2011) record release 35,800 cfs Dec. 2015 (previous record 15,500 cfs May 2011)
Wister Reservoir	record peak inflow 144,200 cfs Dec. 2015 (previous record 103,000 cfs May 1990)
Beaver Reservoir	pool of record 1132.2' April 2008 (1132.0' Dec. 2015) record release 92,400 cfs April 2008 (92,300 cfs Dec. 2015)



Outlooks

The Climate Prediction Center (CPC) outlook for January 2016 (issued December 31, 2015) indicates equal chances for above, near, and below normal temperatures and precipitation across eastern OK and northwest AR. This outlook is based on both short- and extended-range weather forecasts as well as strong El Niño influences. The Madden-Julian Oscillation (MJO) effect on the tropical convection implies a transition to a colder pattern over the CONUS. Shorter term outlooks also indicate an active southern stream, which is consistent with El Niño and MJO conditions.

For the 3-month period January-February-March 2016, CPC is forecasting an equal chance for above, near, and below normal temperatures across all of eastern OK and northwest. This outlook also indicates an enhanced chance for above median precipitation across central into southeast OK, with equal chances for above, near, and below median rainfall elsewhere (outlook issued December 17, 2015). According to CPC, strong El Niño conditions persist, and El Niño is likely at its peak. The ongoing El Niño is among the strongest on record and has tied the 1997-98 event as the strongest El Niño on record (using the Oceanic-Niño Index, ONI). This event is likely to transition to neutral conditions during the late spring or early summer 2016. Therefore, this outlook is based primarily on both statistical and dynamical forecast tools, as well as typical impacts resulting from El Niño conditions.

Year 2015

Rainfall totals for the year 2015 ranged from 33” in northern Osage Co. to 88” in southeast and east central OK (Fig. 2a). Most locations along and south of I-44 in eastern OK and western AR had 20”-40” above the normal (1981-2010) annual rainfall amount (Fig. 2c). In fact, a large area received 1.5 to 2 times the normal annual rainfall in 2015 (Fig. 2b). Only northern Osage County ended the year with below normal rainfall, receiving 75%-90% of the normal annual rainfall, or 4”-8” below normal (Figs. 2b, c). Fort Smith, AR set a new annual record rainfall in 2015 with 73.93” of rain (records began in 1882). This exceeded the previous record of 71.81” set in 1945, and is 28.47” above the normal (163% of the normal) annual Fort Smith rainfall of 45.46”. McAlester, OK also set a new annual record rainfall in 2015 with 78.65” (records began in 1954; data missing in 1996-98, 1953, 1955). The previous record was 66.40” in 1973 and the normal annual rainfall is 42.04”. The 2015 rainfall was 36.61” above normal or 187% of normal annual rainfall in McAlester.

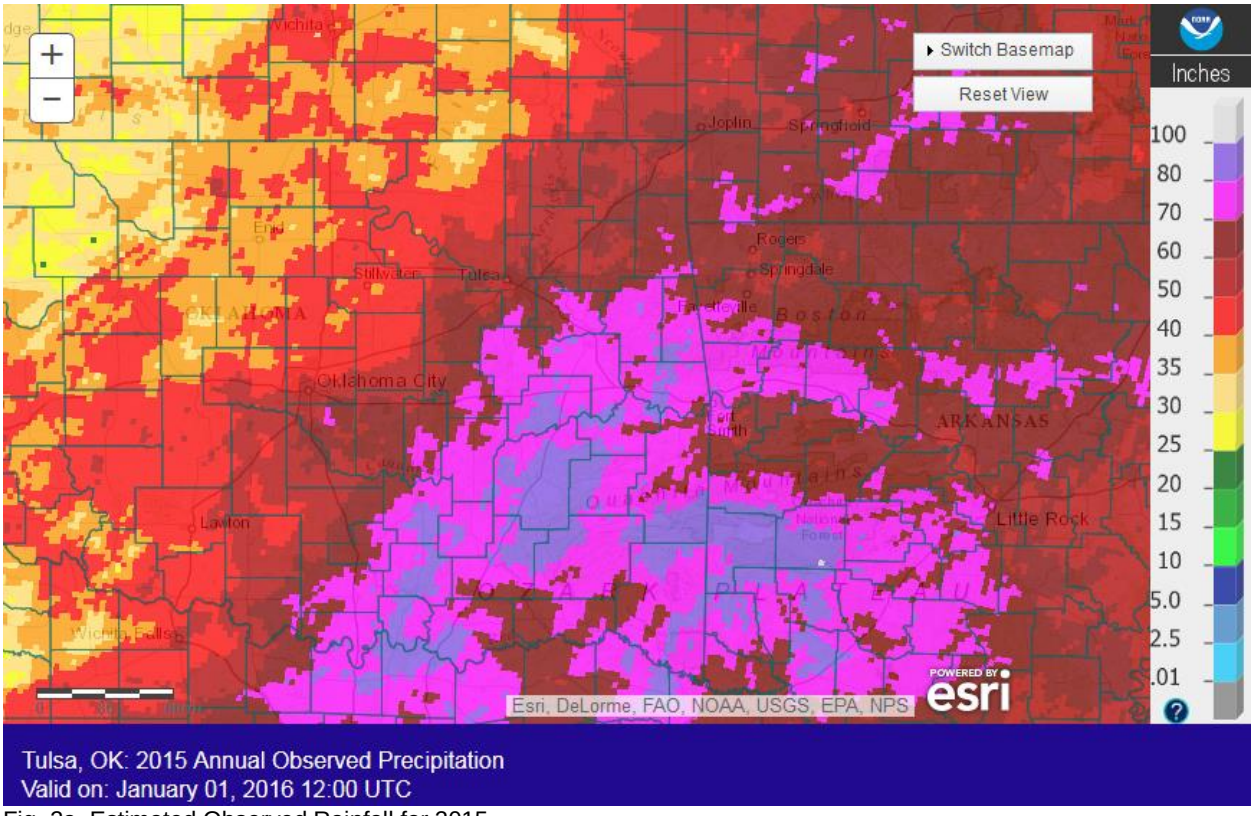


Fig. 2a. Estimated Observed Rainfall for 2015

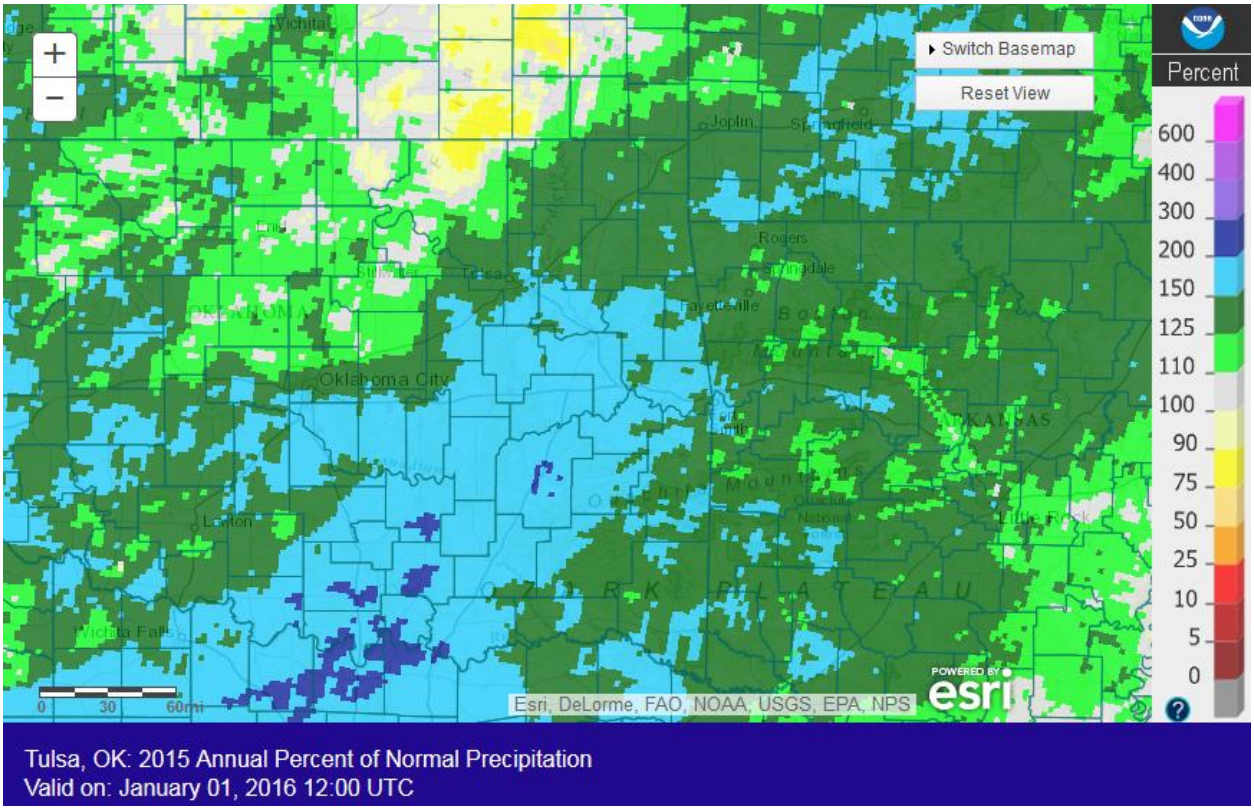


Fig. 2b. Estimated % of Normal Rainfall for 2015

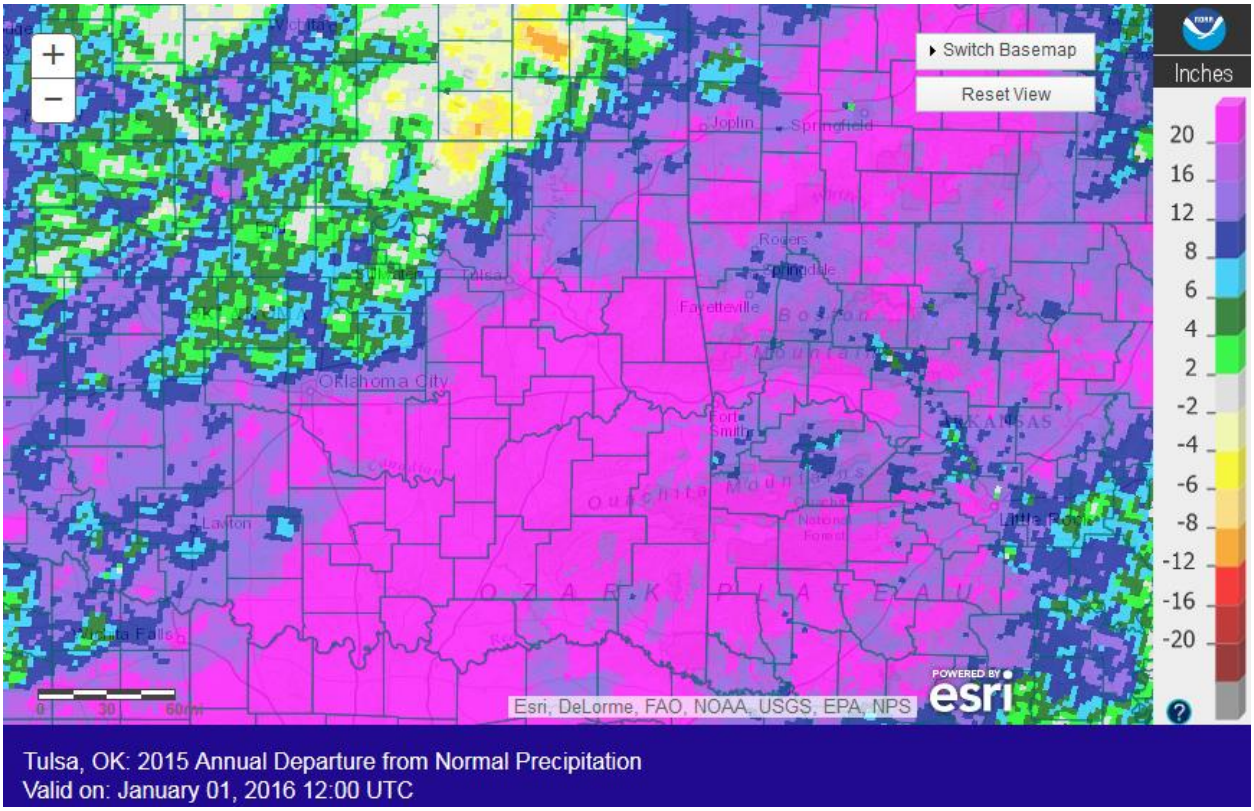


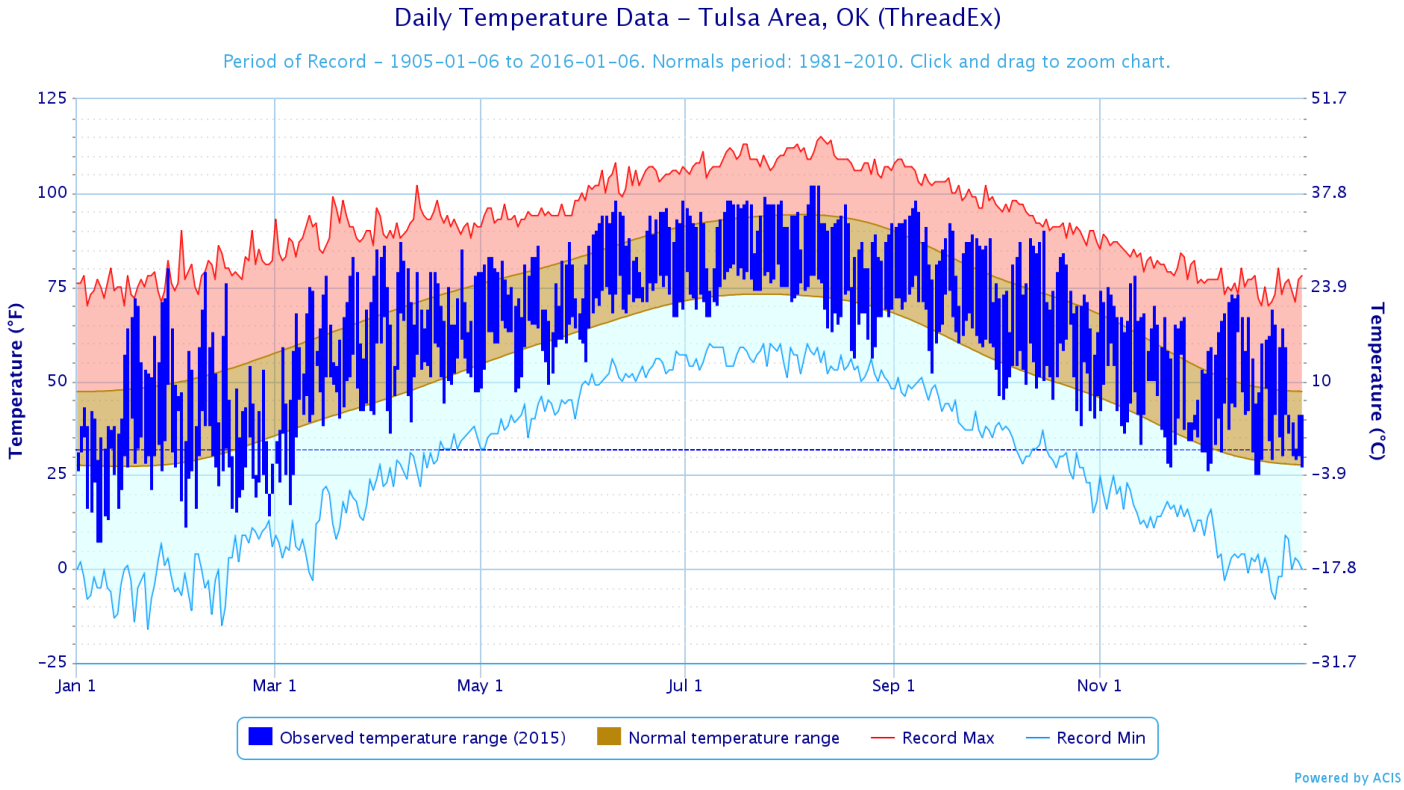
Fig. 2c. Departure from Normal Rainfall for 2015

The 2015 statewide average rainfall total for Oklahoma is 52.96” (from the National Centers for Environmental Information (NCEI) formerly NCDC). This sets a new annual rainfall record for the state of Oklahoma, besting the previous record of 47.88” in 1957. The majority of this rain fell in 6 of the 12 months in 2015, resulting is widespread flooding, especially in May and December. According to the OK Climatological Survey, this equates to 64.3 trillion gallons of water. Oklahoma Mesonet rainfall animation from 2015 as a series of 8,760 year-to-date rainfall maps: https://www.youtube.com/watch?v=NtsfyNF2MwI&feature=youtu.be

In Tulsa, OK, 2015 ranked as the 26th warmest year (61.8°F; since records began in 1905), the 3rd wettest year (61.79"; since records began in 1888), and the 53rd least snowy year (6.6", tied 1997; since records began in 1900). Fort Smith, AR had the 17th warmest year (63.1°F, tied 1936; since records began in 1883), the **Record** wettest year (73.93"; since records began in 1882), and the 41st snowiest year (6.6"; since records began in 1884). The previous record annual rainfall was 71.81" in 1945; normal annual rainfall is 45.46". Fayetteville, AR had the 28th warmest (57.6°F, tied 1982, 1992), the 4th wettest (65.71"), and 32nd least snowy year since records began in 1949.

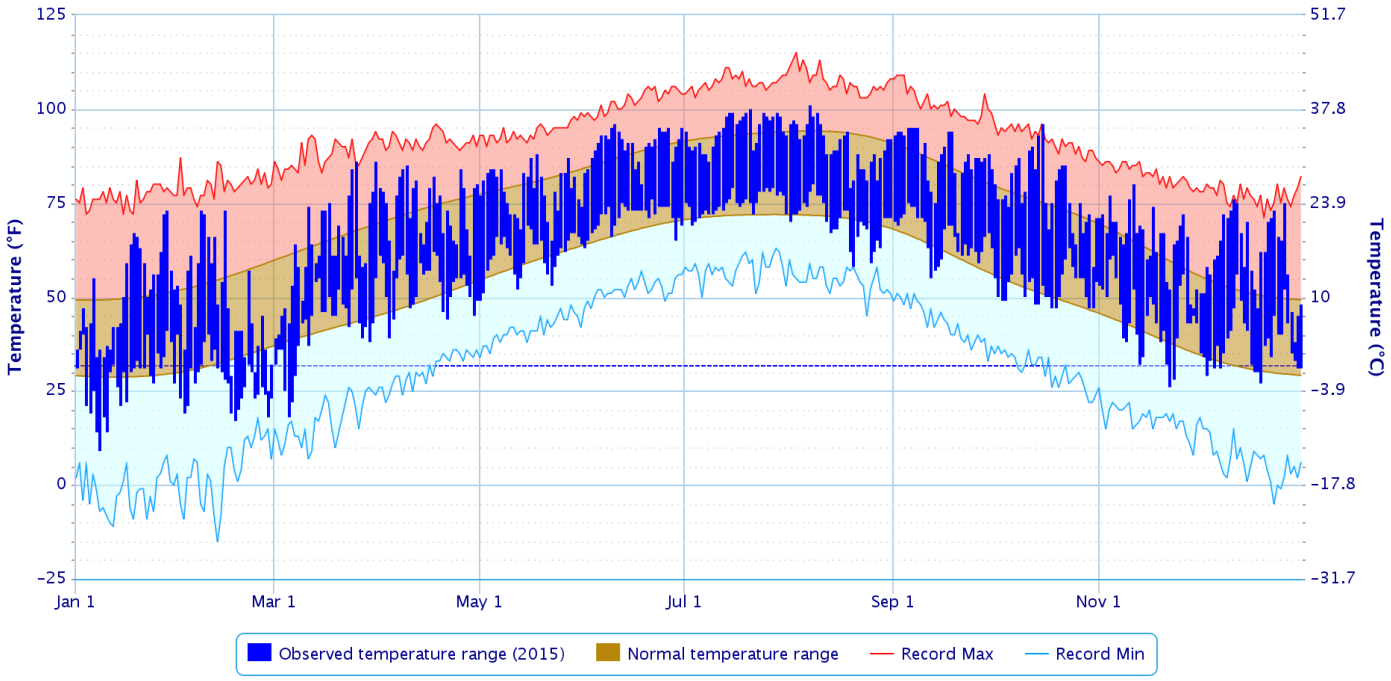
Some of the larger precipitation reports (in inches) for 2015 included:

Stigler, OK (meso)	88.27	McAlester, OK (meso)	87.03	Cookson, OK (meso)	85.66
Eufaula, OK (meso)	85.26	Winslow 7NE, AR (coop)	84.81	Bunch 0.8N, OK (coco)	84.77
Wilburton, OK (meso)	84.39	Wilburton9.4N, OK (coco)	83.85	Sallisaw 1.0SE, OK (coco)	83.37



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

Period of Record – 1882-06-01 to 2016-01-06. Normals period: 1981-2010. Click and drag to zoom chart.



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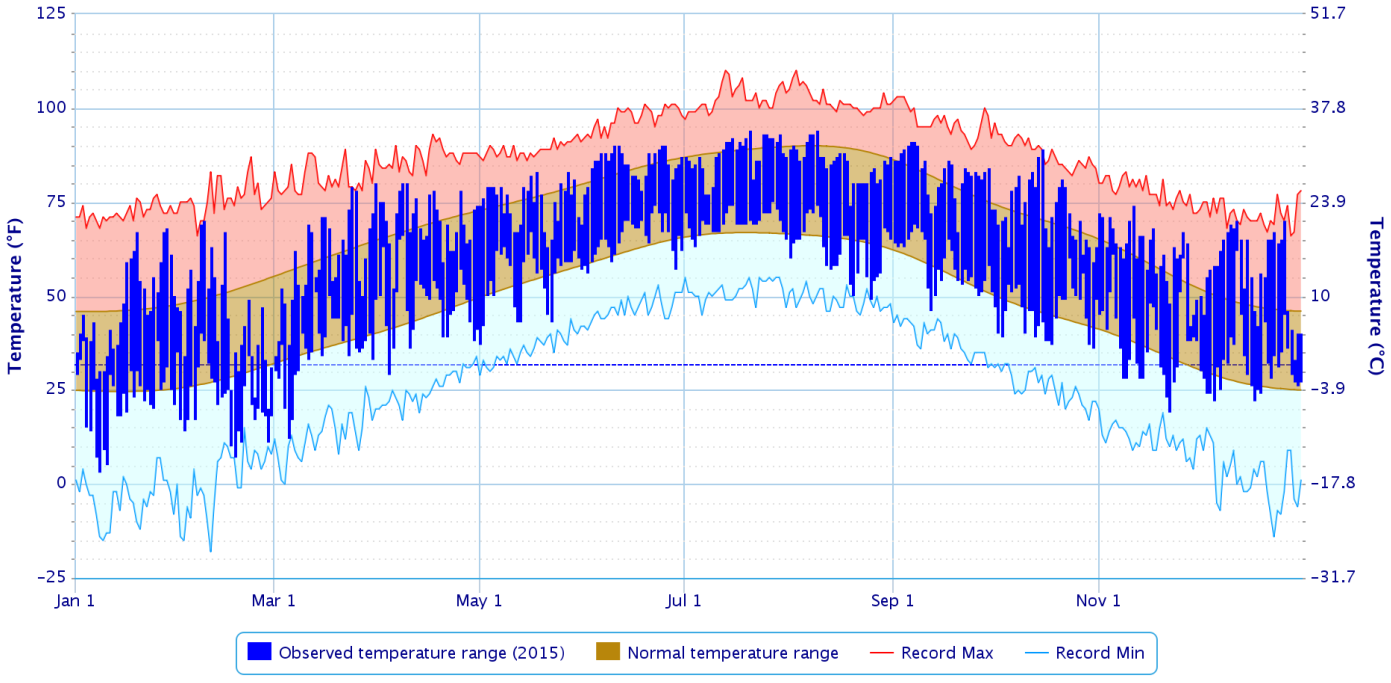
Daily Temperature Data – FAYETTEVILLE DRAKE FLD, AR

Period of Record – 1949-07-14 to 2016-01-06. Normals period: 1981-2010. Click and drag to zoom chart.



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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

December 1-15

An unseasonably warm and moist airmass covered most of the HSA by early morning of the 12th. Widespread showers lifted north northeast across eastern OK and northwest AR during the evening hours in response to a wave moving through New Mexico and a cold front located over western OK. Widespread showers and isolated thunderstorms continued through the night due to the strong forcing from an upper-level low near the TX panhandle. Moderate to heavy rain continued into the morning of the 13th before the bulk of the rain pushed east with the cold front. Some light wrap-around rain fell later on the 13th as the upper-low passed. Due to the abnormally moist atmosphere, the 2-day rainfall total was high (Figs. 6, 7), ranging from around 1" to around 4" for much of eastern OK and northwest AR. Higher totals of 4" to around 6" occurred over southern Le Flore County in southeast OK. The majority of the rain fell prior to 6am CST on the 13th, with 1.5"-6" reported over far eastern OK and far western AR (Figs. 3-5). This rainfall, on top of the heavy rain over the same area at the end of November, resulted in both flash flooding and river flooding. Moderate river flooding occurred along the Neosho River near Commerce, Lee Creek near Van Buren, and the Poteau River near Panama. Minor river flooding affected the Arkansas River at Van Buren and at Ozark Lock and Dam, the Illinois River near Watts and Tahlequah, the Poteau River near Poteau, and the Kiamichi River near Antlers (preliminary hydrographs available at the end of this report). In addition to the flooding, some wind damage was reported and an EF-1 tornado occurred in Raymond Gary State Park near Fort Towson in Choctaw Co. on the evening of the 12th.

Some of the highest 24-hr rainfall totals (inches) ending at 6am CST December 13, 2015:

Big Cedar 2E, OK	3.34	Wilburton 9.4N, OK	3.25	Daisy 4ENE, OK	3.00
West Siloam Springs, OK	2.95	Westville 3SSW, OK	2.86	Antlers 2NE, OK	2.82
Cloudy 6SSE, OK	2.78	Westville 0.2ENE, OK	2.75	Gentry 7NW, AR	2.58

Some of the highest 24-hr rainfall totals ending 6am December 14, 2015:

Talihina 3ENE, OK	2.10	Cloudy 5ENE, OK	2.04	Sallisaw 8S/L&D 15, OK	1.97
Poteau 1ENE, OK	1.93	Cloudy 6SSE, OK	1.87	Wilburton 2SW, OK	1.87

Some of the highest 2-day rainfall totals >4" ending 6am December 14, 2015:

Big Cedar 2E, OK	5.08	Cloudy 6SSE, OK	4.65	Poteau 1ENE, OK	4.30
Cloudy 5ENE, OK	4.29	West Siloam Springs, OK	4.24	Wilburton 2SW, OK	4.12
Westville 3SSW, OK	4.09	Clayton 4NNE, OK	4.04	Clayton 1SE, OK	4.03
Sallisaw 8S/L&D 15, OK	4.03	Sallisaw 0.3SE, OK	4.00		

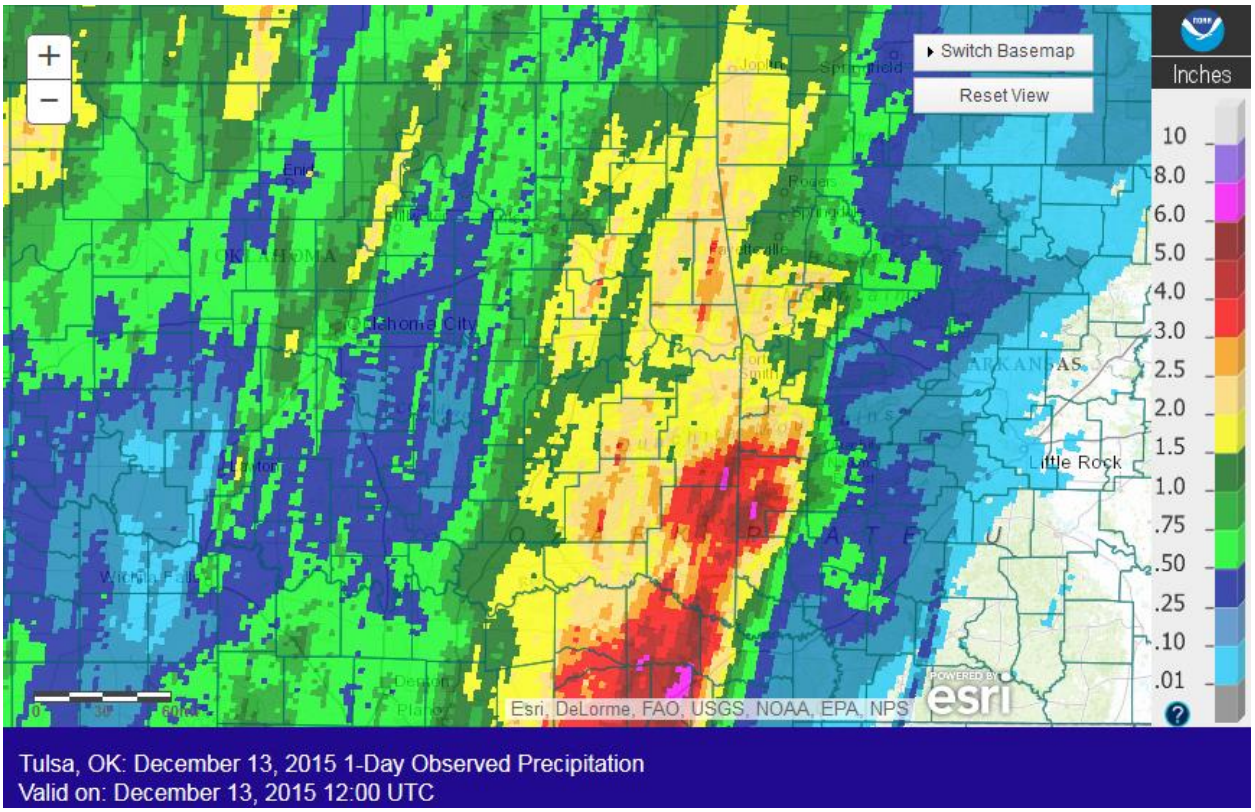


Fig. 3. 24-hour Estimated Observed Rainfall ending at 6am CST 12/13/2015.

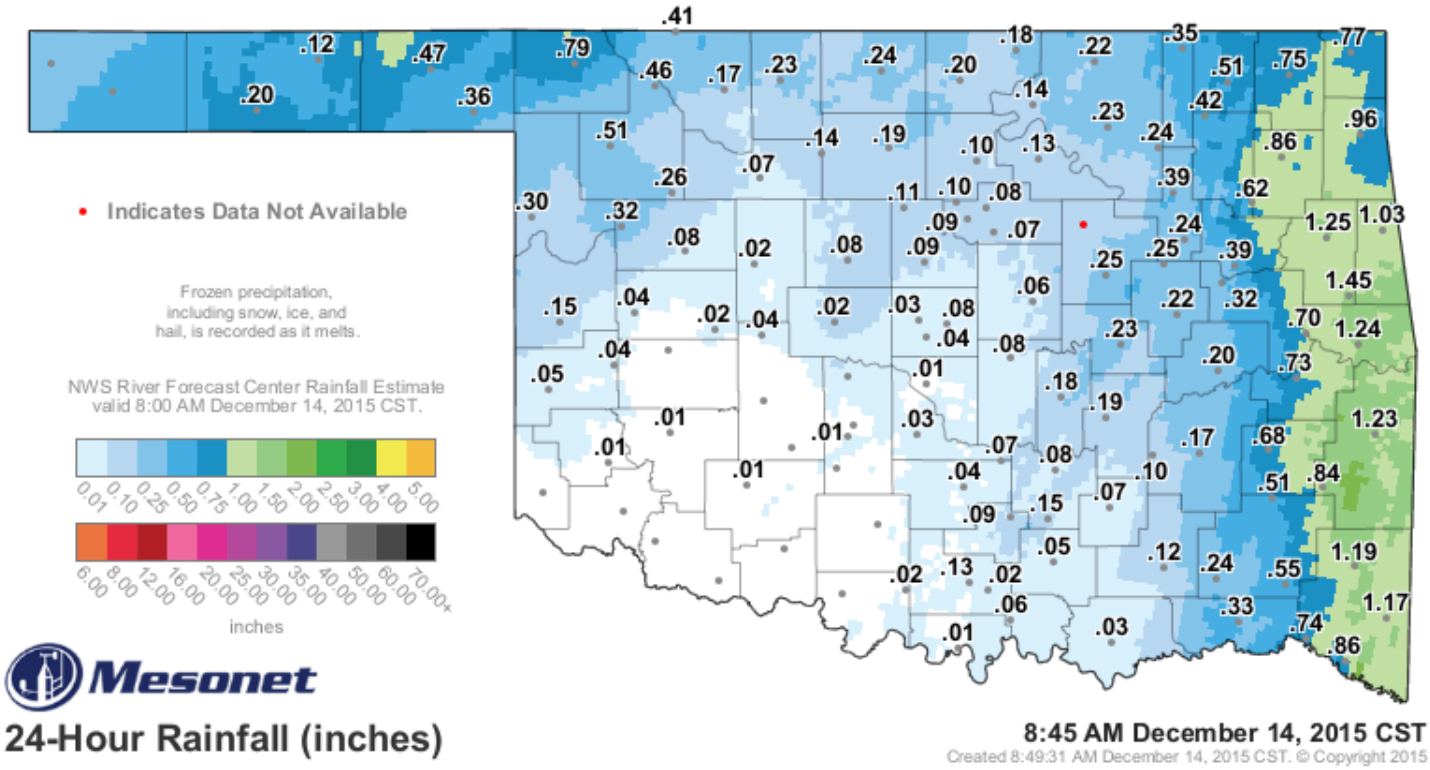


Fig. 4. 24-hour Estimated Observed Rainfall (image) and OK Mesonet measurements ending at 8:45am CST 11/14/2015.

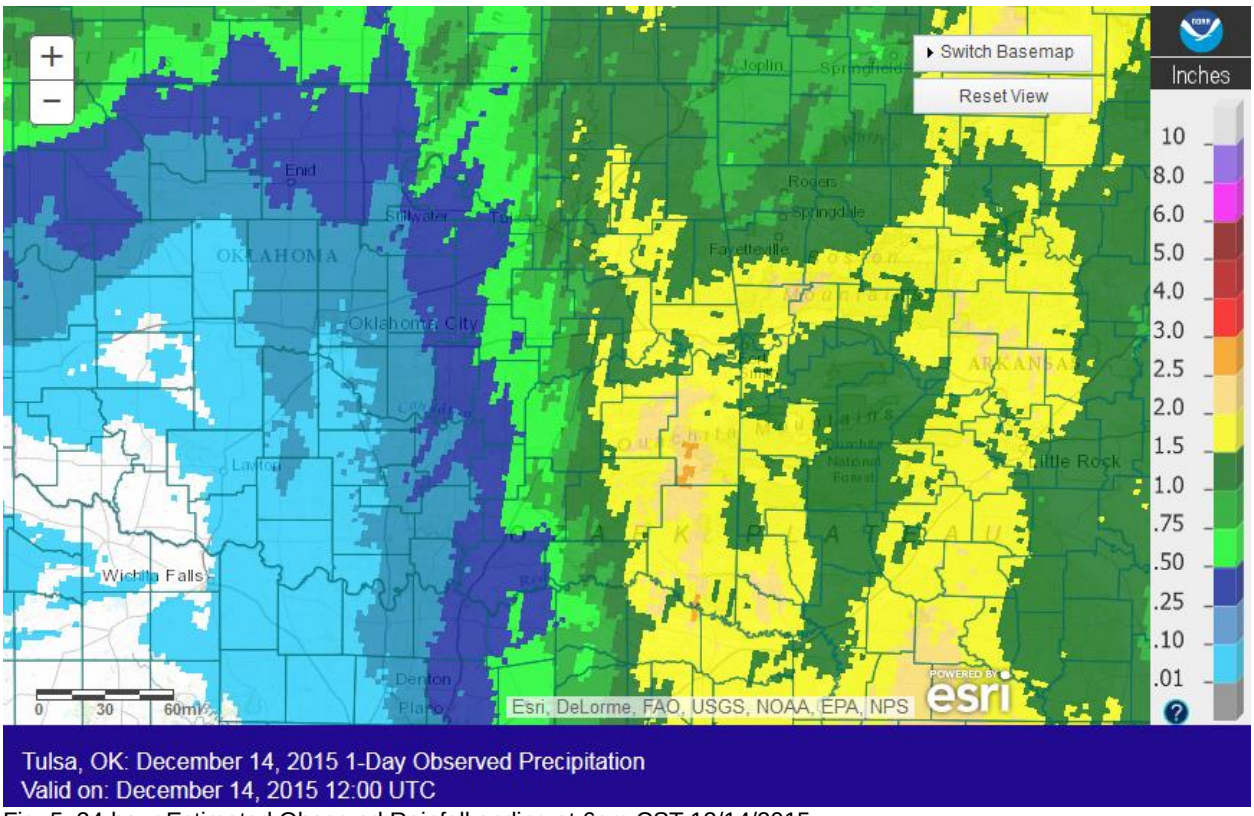


Fig. 5. 24-hour Estimated Observed Rainfall ending at 6am CST 12/14/2015.

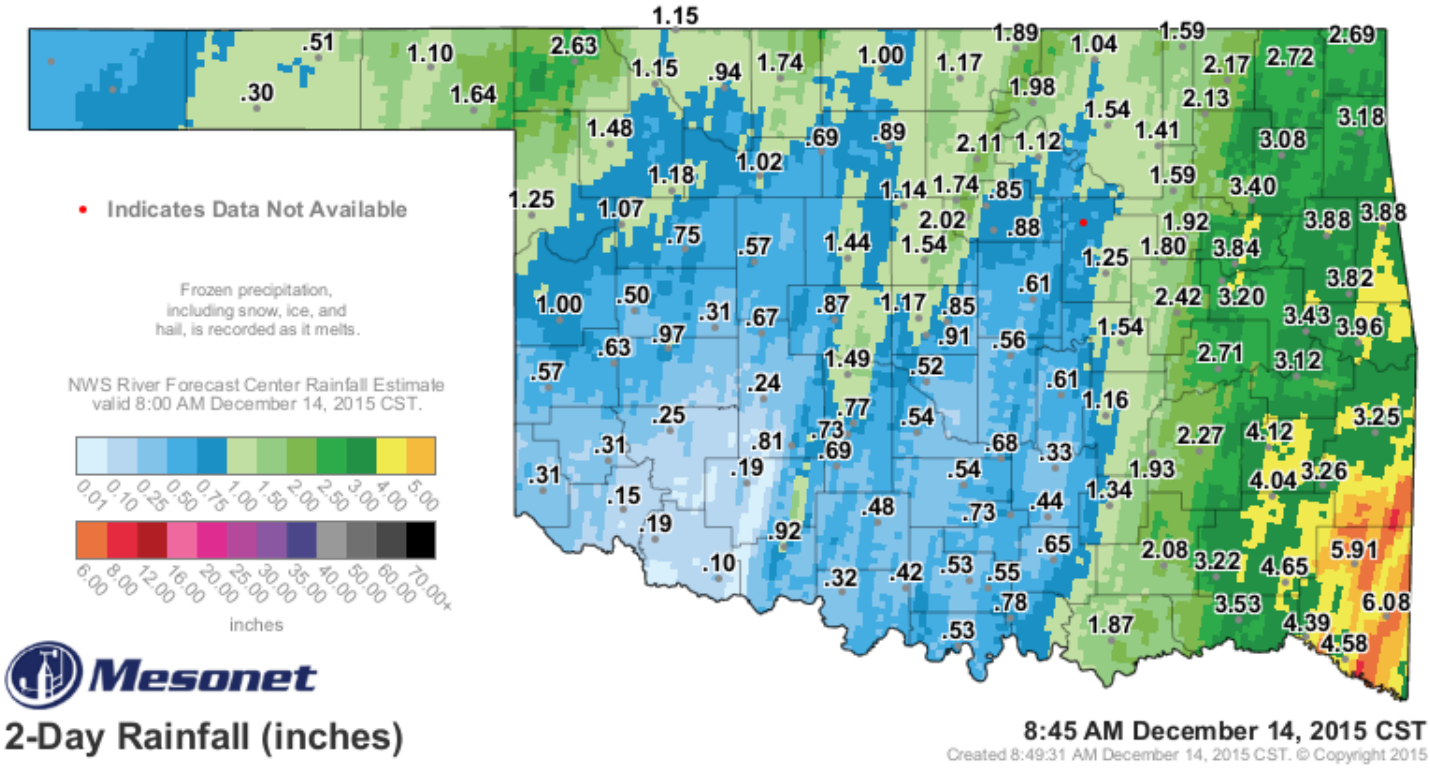


Fig. 6. 48-hour Estimated Observed Rainfall (image) and OK Mesonet measurements ending at 8:45am CST 12/14/2015.

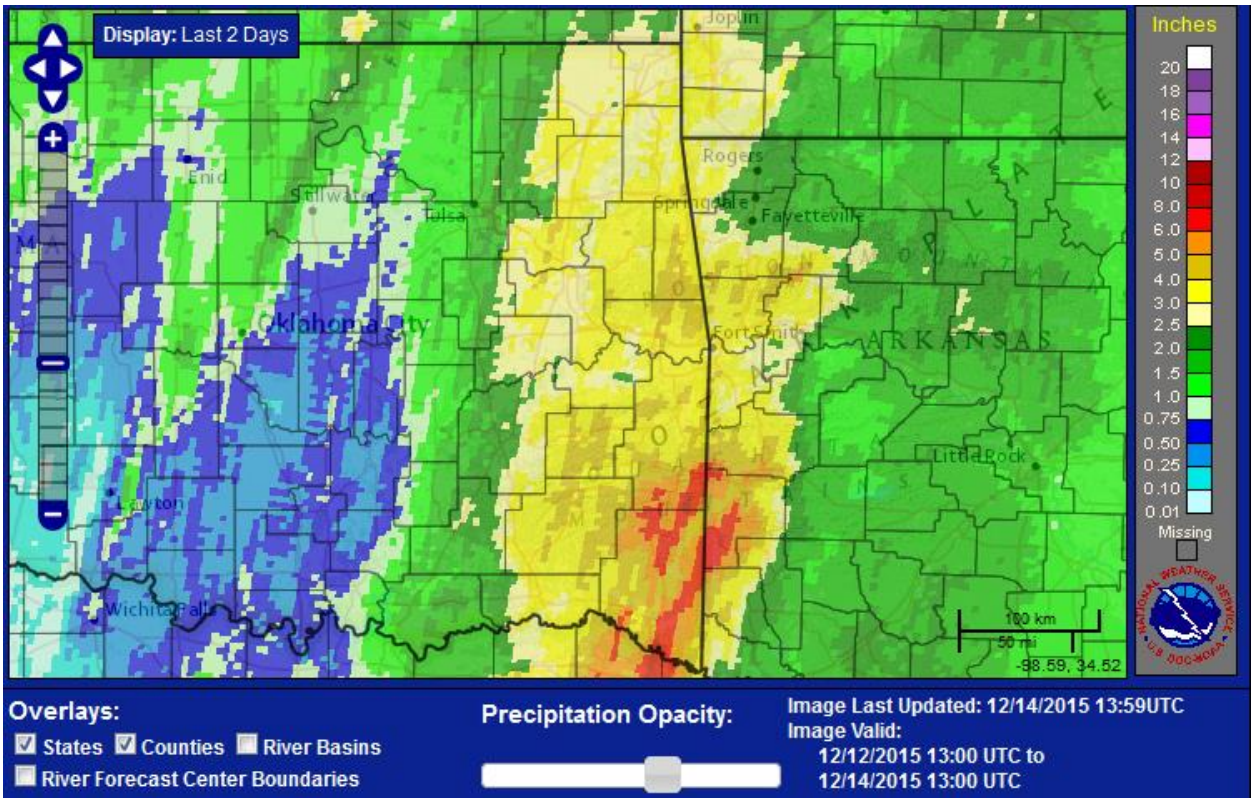


Fig. 7. 48-hour Estimated Observed Rainfall ending at 7am CST 12/14/2015.

December 16-31

A weak disturbance brought some very light rain and snow flurries to northeast OK and northwest AR on the evening of the 17th. Little to no accumulation occurred. A few isolated showers also occurred on the 20th as a fast moving wave traversed the region. Rainfall totals in far northeast OK, far southeast OK, and northwest AR were less than 0.10".

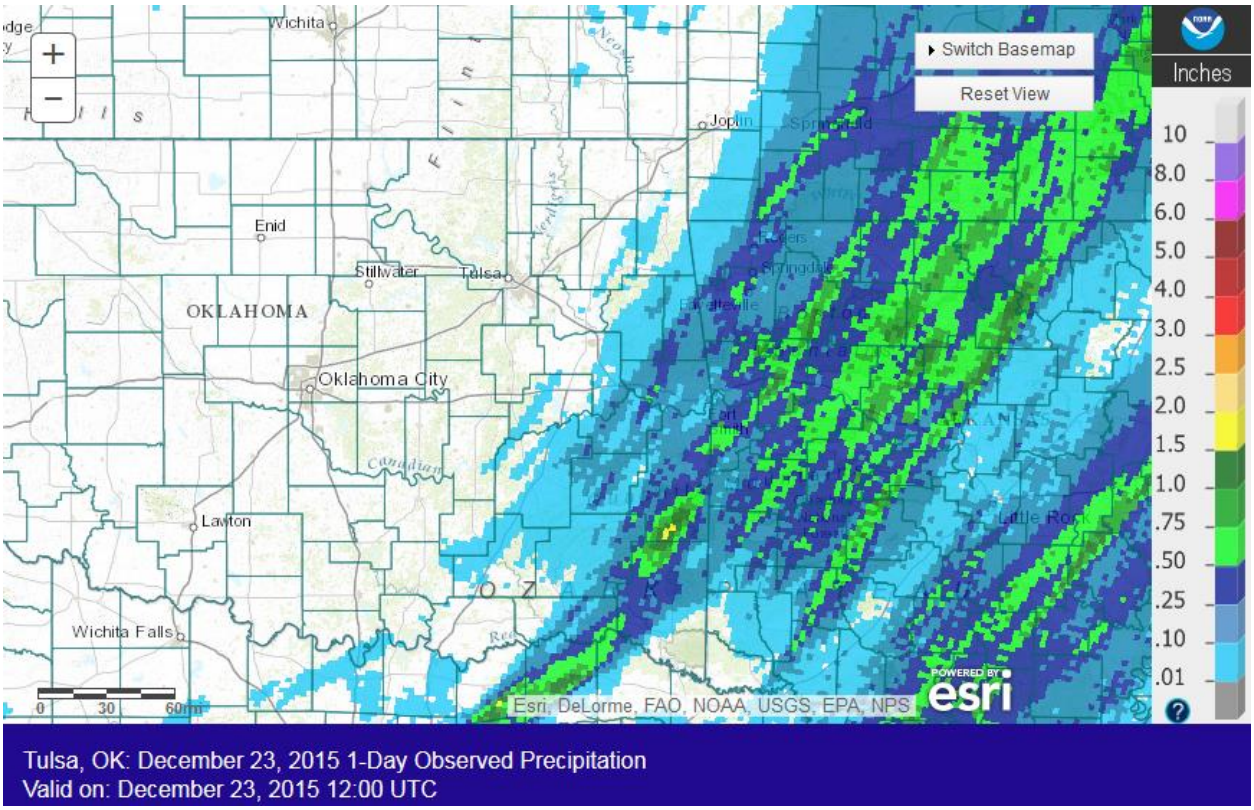


Fig. 8. 24-hour Estimated Observed Rainfall ending at 6am CST 12/23/2015.

A broad long-wave trough shifted out of the Intermountain West during the late afternoon and evening hours on the 22nd. In response, low-level moisture surged north as southerly winds increased. Elevated showers and thunderstorms developed across portions of southeast OK around midnight on the 23rd and spread into northwest AR through the pre-dawn hours. Rainfall totals ranged from around 0.10" to around 1" (Fig. 8).

Christmas 2015 Flood

A devastating flash flood and river flood event occurred over the Christmas 2015 weekend as a strong upper-level low lifted northeast across western TX and approached eastern OK and western AR from the southwest. Tremendous lift in the diffluent region of the approaching low, along with precipitable water values near 1.5" (near record values for the end of December), resulted in an extended period of heavy rain. Bands of rain with embedded thunderstorms developed across northeast OK and northwest AR during the early morning hours of the 26th as a warm front lifted north. This activity increased across southeast OK and west central AR through the morning hours. By midday on the 26th, widespread showers and thunderstorms were affecting much of eastern OK northwest of a McAlester to Grove line. Moderate to heavy rain continued over this area through the afternoon and evening, while also spreading southeast (Fig. 9). By midnight on the 27th, the entire HSA was enveloped in rain. Primarily moderate rain then continued for the next 14 hours over all of eastern OK and northwest AR as the frontal boundary remained in the area (Fig. 10). Colder air began to filter into the back side of the system, bringing some reports of freezing rain and a quarter inch of ice accumulation to trees in northwest Osage County at noon on the 27th. Moderate to heavy rain continued generally across locations southeast of I-44, with the precipitation coming to an end during the evening hours northwest of I-44. The rain pushed east, finally coming to an end in eastern OK by midnight on the 28th, but continued across northwest and west central AR. However, additional bands of rain began to move north across eastern OK and northwest AR from midnight on the 28th through 1:30pm CST as the closed low moved east across central TX and then northeast along the OK/AR state line. Snow and sleet occurred across northeast OK and northwest AR during the morning hours of the 28th within this wrap around precipitation as the bands interacted with the colder airmass. Reports of 0.20"-1" of sleet accumulation were reported, along with a dusting to 1.5" of snow accumulation. All of the precipitation finally exited the HSA by 1pm on the 28th.

Widespread 5"-12" of rain fell over most of eastern OK and northwest AR from the 26th through the 29th, with the majority of the rain occurring over the 2-day period from the 26th-27th (Figs. 11-16). This amount of rain is

2-4 times the normal amount received during the entire month of December. According to NOAA Atlas 14 Point Precipitation Frequency Estimates, 11.9" of rain in a 2-day period for Tahlequah, OK is approximately a 0.5% annual chance of occurrence event (also referred to as a 200-year event). This means that every year there is a 0.5% chance of receiving 11.9" of rain in 48 hours in Tahlequah. 6.82" of rain fell in a 24-hr period 12/26-12/27 at Fayetteville, AR, which is between a 4% and 2% annual chance of occurrence (or between a 25- and 50-year event). All of this rain resulted in Record and Major river flooding for several river basins in the NWS Tulsa HSA, flash flooding. Two fatalities occurred during this event.

Widespread flooding affected most of the eastern third of OK and northwest AR, causing numerous road closures, including state highways, throughout the area. Roadways were damaged from the high, fast-moving water. Swift water rescues were necessary throughout the affected area. High river levels and very fast flows along the Arkansas River halted barge traffic on the McCellan-Kerr Arkansas River Navigation System, causing significant financial impact to related commerce activities. This 445-mile navigation channel allows for commerce from the Mississippi River to eastern Oklahoma. Several reservoirs neared or exceeded the top of their flood control pools. Record reservoir releases may have resulted in damage downstream of Grand Lake and Hudson Lake. The Grand River Dam Authority notified residents of possible evacuation in these areas. Record releases from Tenkiller Reservoir on the Illinois River required evacuations of the campgrounds and resorts in the Gore, OK area (Sequoyah County). High river levels throughout eastern OK and northwest AR, as well as high releases from other reservoirs, impacted thousands of acres of agricultural lands.

Rainfall Records (set at the end of December):
Tulsa, OK (rainfall records began in 1888)
Daily Record: 12/26/2015 2.92" (previous record 0.97" 1987)
Daily Record: 12/27/2015 2.76" (previous record 1.62" 1943)
Record 24-hour Rainfall: 3pm 12/26/2015 – 3pm 12/27/2015 4.98" (previous record 3.27")
2nd wettest December on record with 8.60" (Record wettest December is 8.70" 1984; 1981-2010 Normal December rainfall is 2.49")

McAlester, OK (rainfall records began in 1953 though missing data from Aug. 1996-Dec. 1997)
Daily Record: 12/26/2015 2.98" (previous record 0.95" 1987)
Daily Record: 12/27/2015 4.68" (previous record 2.65" 1968)
Record highest rainfall for any day in December: 4.68" 12/27/2015 (previous record 2.65" 12/27/1968)
Record wettest December with 10.50" (previous record 8.34" 1987; 1981-2010 Normal December rainfall is 2.98")

Muskogee, OK (rainfall records began in 1905 though missing data from Oct. 1908-Dec. 1913; daily rainfall records unavailable)
Record wettest December with 13.40" (previous record 9.27" 1987; 1981-2010 Normal December rainfall is 3.04")

Fort Smith, AR (rainfall records began in 1882)
Daily Record: 12/27/2015 5.63" (previous record 2.55" 1968)
Record highest rainfall for any day in December: 5.63" 12/27/2015 (previous record 5.02" 12/13/1927)
Record wettest December with 10.81" (previous record 10.09" 1971; 1981-2010 Normal December rainfall is 3.29")

Fayetteville, AR (rainfall records began in 1949)
Daily Record: 12/26/2015 1.33" (previous record 0.99" 1987)
Daily Record: 12/27/2015 6.49" (previous record 3.14" 1954)
Record highest rainfall for any day in December: 6.49" 12/27/2015 (previous record 2.99" 12/16/2001)
Record wettest December with 10.95" (previous record 8.54" 1982; 1981-2010 Normal December rainfall is 3.24")

Record and Major Flooding in the NWS Tulsa HSA (River crests are preliminary pending USGS official numbers):

Illinois River

Record flooding occurred along the Illinois River. The Oklahoma Scenic Rivers Commission reports water inundated numerous homes and businesses along the Illinois River (Delaware, Adair, and Cherokee Counties), and all secondary county roads in the immediate river area were damaged. State Highway 10 north of Tahlequah was closed during the flooding. Many cabin parks and permanent campgrounds were severely flooded or overtopped. River conditions were extremely dangerous for any recreational activities, affecting local commerce. See Figs. 18-21, 30-33.

Illinois River near Watts, OK (WTTO2) **Record Crest**: 28.64 feet 12/28/2015 2:00am CST
Flood Stage 13' Major Flood Stage 23' Previous Record 28.60' 04/26/2011

Illinois River near Tahlequah, OK (TALO2) **Record Crest**: 30.69 feet 12/28/2015 1:00pm CST
Flood Stage 11'' Major Flood Stage 18' Previous Record 27.94' 05/10/1950

Baron Fork

Major flooding occurred along the Baron Fork, impacting a large portion of the Camp Egan campgrounds and cabins.
Baron Fork near Eldon, OK (ELDO2) Major Crest 25.44' 12/27/2015 9:30pm CST

Flint Creek

Major flooding occurred along Flint Creek, affecting campgrounds and recreation in that area.
Flint Creek near Kansas, OK (KNSO2) Major Crest 16.04' 12/27/2015 10:30pm CST (3rd highest crest on record)

Lee Creek

Record flooding occurred along Lee Creek. The RV trailer park was inundated. Most residents evacuated their RVs, but two people remained and had to be rescued. Three residences were inundated by several feet of water. Two individuals remained in a 2-story residence while the first floor was inundated. After the crest, the river fell to near 411' and remained there for 4 days. This was due to back water from the major flooding along the Arkansas River. See Figs. 22, 23, 24.
Lee Creek near Van Buren, AR Tailwater (VBRA4) **Record Crest**: 417.5 feet 12/28/2015 1:45am CST
Flood Stage 401' Major Flood Stage 405' Previous Record 408.2' 04/24/2004

Poteau River

Major flooding occurred along the Poteau River (Le Flore County). Major flooding along the Arkansas River lead to additional backwater flooding along the Poteau River in northern Le Flore County, including the Arkoma area. Very severe flooding affected pasture lands and croplands and made county roads impassible. A water treatment plant near Panama was surrounded by water, and the berms around the treatment ponds were overtopped. An apartment complex in the Panama area was evacuated due to high water.
Poteau River near Poteau, OK (PTAO2) Major Crest 31.44' 12/28/2015 6:15am CST (3rd highest crest since completion of Wister Lake reservoir in Dec. 1949)
Poteau River near Panama, OK (PANO2) Major Crest 44.97'(estimated) 12/28/2015 12:15am CST (3rd highest crest since completion of Wister Lake reservoir in Dec. 1949; 5th highest on record)

Arkansas River

Major flooding occurred along the Arkansas River (Muskogee, Haskell, Sequoyah, Le Flore Counties). Significant impacts occurred to navigation channel commerce along the McCellan-Kerr Arkansas River Navigation System. An exit ramp between I-40 and the Muskogee Turnpike was threatened by high water (NWS Tulsa unsure if water eventually reached this junction). Significant flooding occurred in and around Webbers Falls, OK (Muskogee County). Many areas on the grounds of the OG&E power plant near Muskogee were flooded. Damaging flooding occurred along the Arkansas River floodplain, affecting agricultural land. Flooding likely occurred in Moffett, OK (Sequoyah Co.). Several suburban homes near the river were flooded in Fort Smith, and two other residences were flooded due to the Vache Grasse Creek backing up near the Arkansas River in Sebastian Co. See Figs. 25, 26, 27, 28. One home was flooded from the Arkansas River near Kibler in Crawford Co. A marina was washed out at the location of the VBUA4 river gage. The Arkansas-Red Basin River Forecast Center (ABRFC) ran their river computer models to simulate

what would have happened along the Arkansas River at Van Buren had none of the upstream USACE reservoirs been in place. They estimated the crest at VBUA4 would have been around 40' (about 5' higher than the actual crest) and the flow would have been near 1.1 million cfs (nearly three times the actual flow during the flood) (Fig. 17).
Arkansas River near Muskogee, OK (MKGO2) Major Crest 35.41' 12/29/2015 5:45pm CST
Arkansas River at Van Buren, AR (VBUA4) Major Crest 34.63' 12/30/2015 4:45pm CST
Arkansas River at Ozark L&D Tailwater (OZGA4) Major Crest 369.07' 12/29/2015 5:00pm CST (second highest crest since navigation channel was completed)

Spring River
Major flooding occurred along the Spring River (Ottawa County). Homes near the river were isolated by high water and may have been flooded. Agricultural lands and county roads were flooded to a depth of several feet.
Spring River near Quapaw, OK (QUAO2) Major Crest 39.77' 12/29/2015 1:00am CST (4th highest crest on record)

Deep Fork River
Major flooding occurred along the Deep Fork River (Okmulgee County). Severe agricultural flooding occurred. Local roads west and northwest of Okmulgee were closed and suburban homes were isolated by high water. Dentonville Road southwest of Beggs was closed due to high water.
Deep Fork River near Beggs, OK (BGSO2) Major Crest 27.46' 12/29/2015 5:00am CST

Kiamichi River
Major flooding occurred along the Kiamichi River (Pushmataha County). Numerous permanent structures on the campgrounds along the west bank of the Kiamichi River near Moyers were flooded. The City of Antlers may have had backwater flooding that could close Ethel Road near Beaver Creek. Further upstream, flooding may have impacted roads near the Clayton area.
Kiamichi River near Antlers, OK (ANTO2) Major Crest 37.39' 12/28/2015 12:00pm CST (3rd highest crest on record)

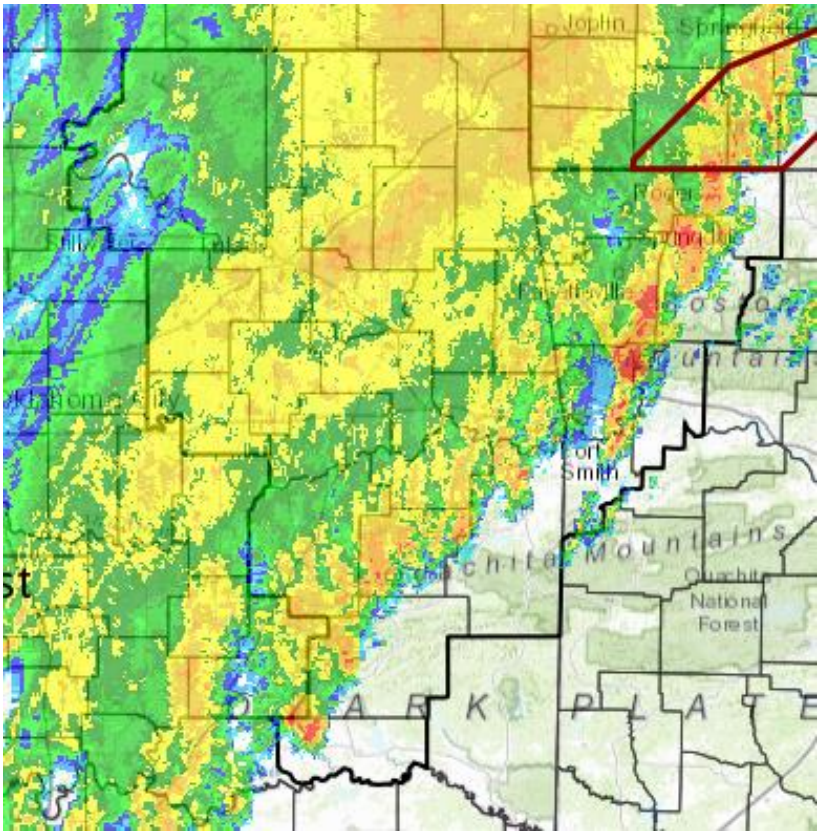


Fig. 9. Radar image at 10:00 pm CST 12/26/2015.

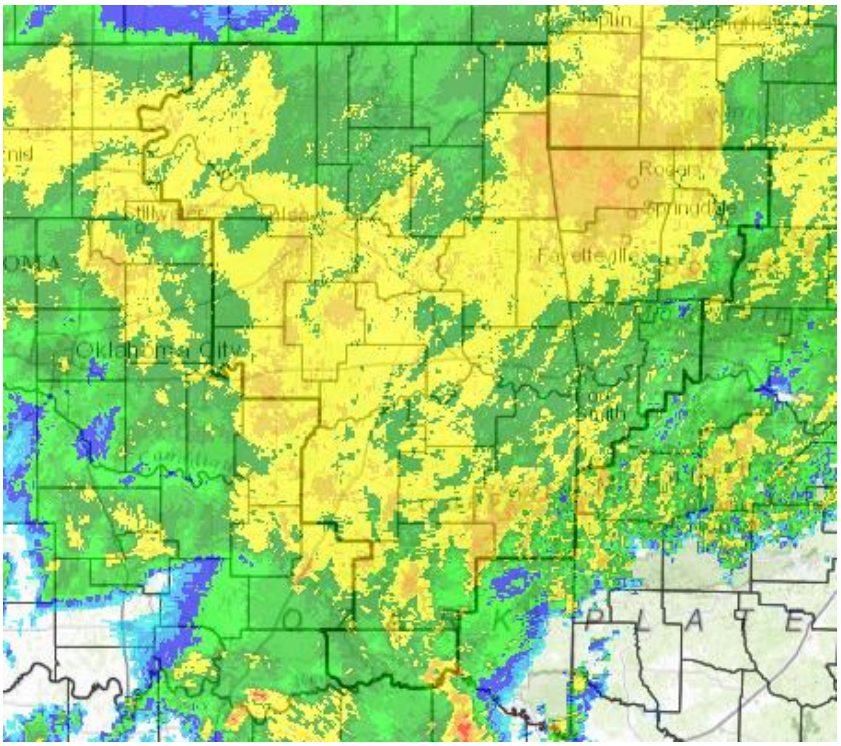


Fig. 10. Radar image at 10:10 am CST 12/27/2015.

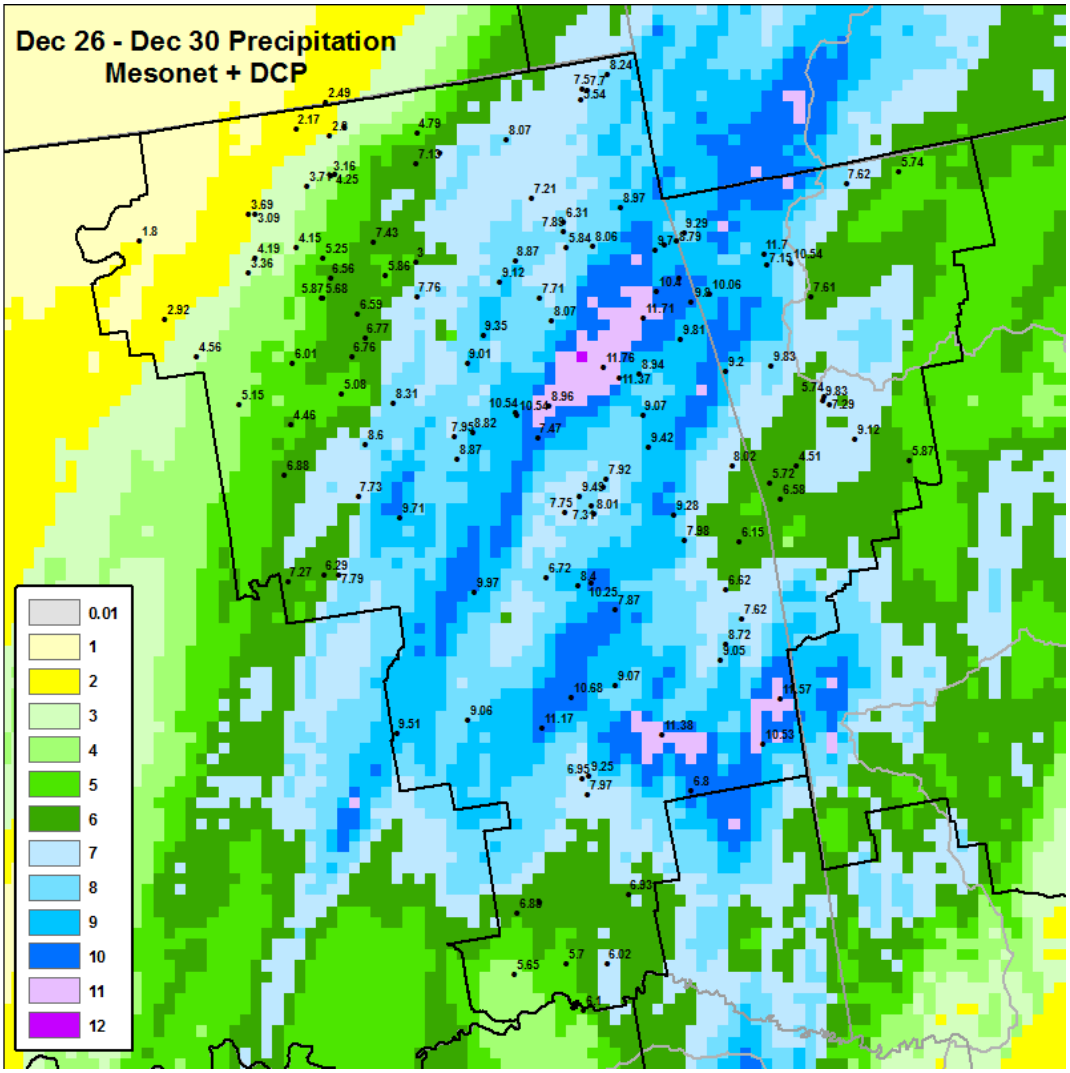


Fig. 11. Dec. 26-30, 2015 Estimated Observed Rainfall (image) and rainfall measurements from the OK Mesonet and automated (DCP) river gages.

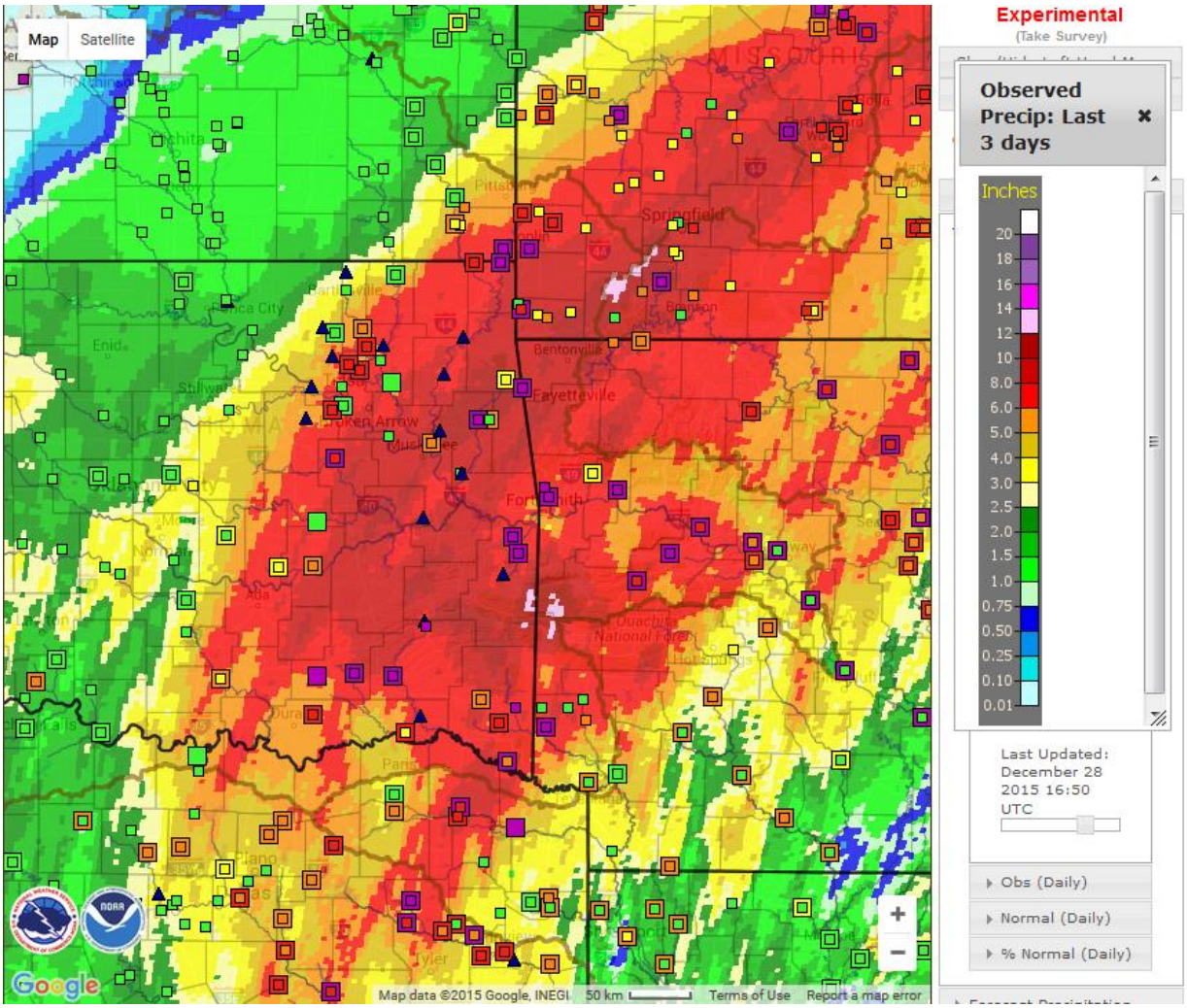


Fig. 12. 3-day Estimated Observed Rainfall and river stage levels (squares) ending at 4:50pm CST 12/28/2015.

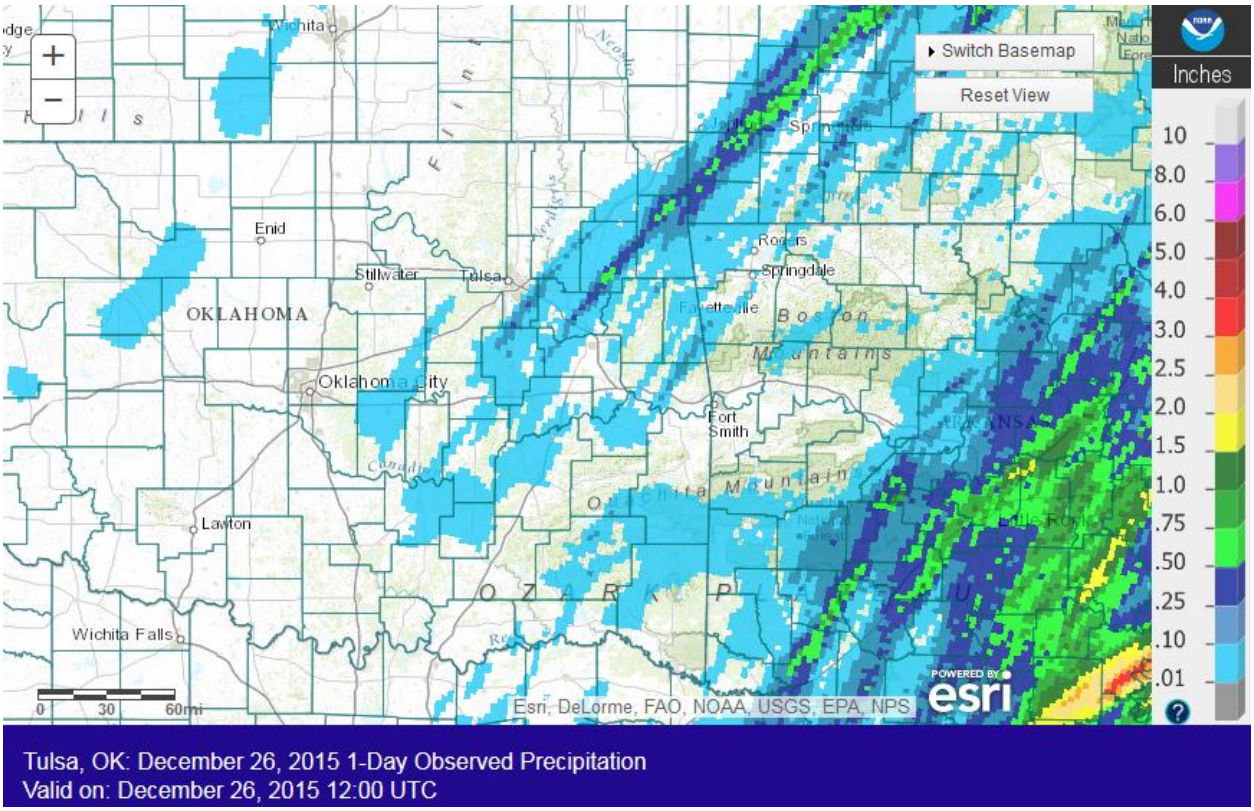


Fig. 13. 24-hour Estimated Observed Rainfall ending at 6am CST 12/26/2015.

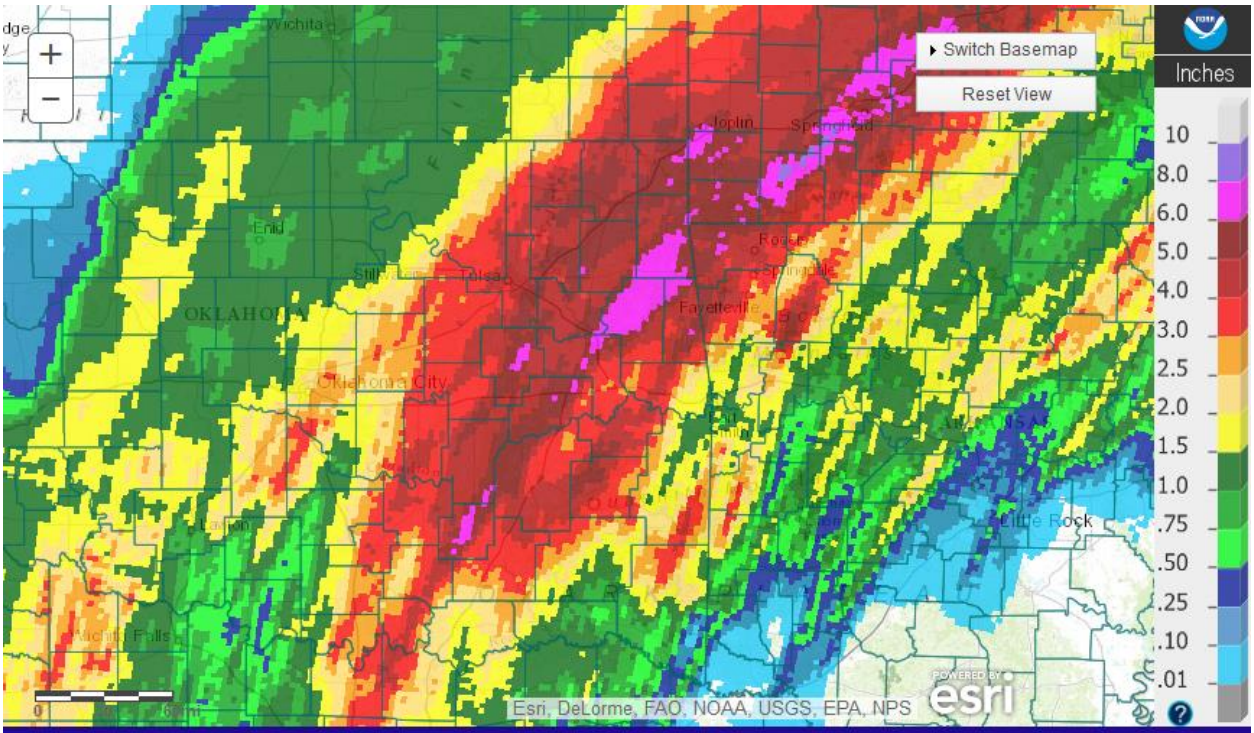


Fig. 14. 24-hour Estimated Observed Rainfall ending at 6am CST 12/27/2015.

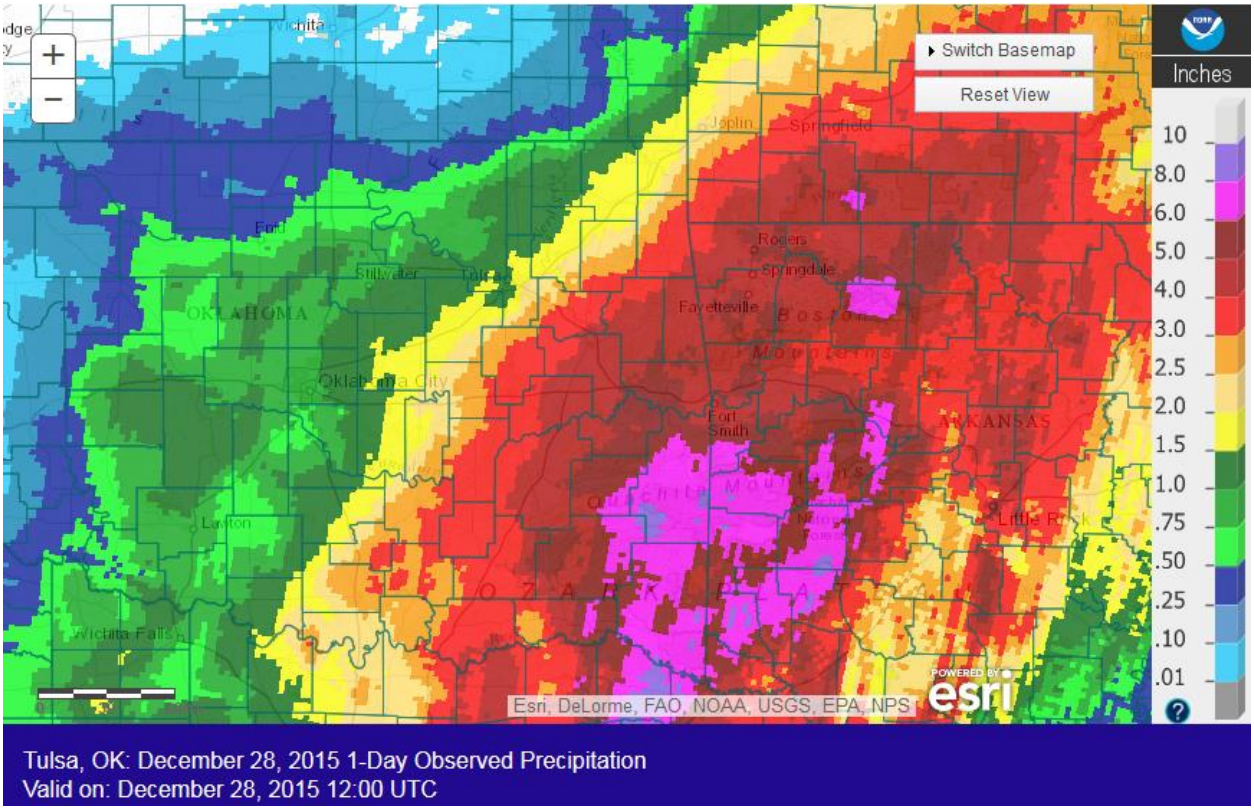


Fig. 15. 24-hour Estimated Observed Rainfall ending at 6am CST 12/28/2015.

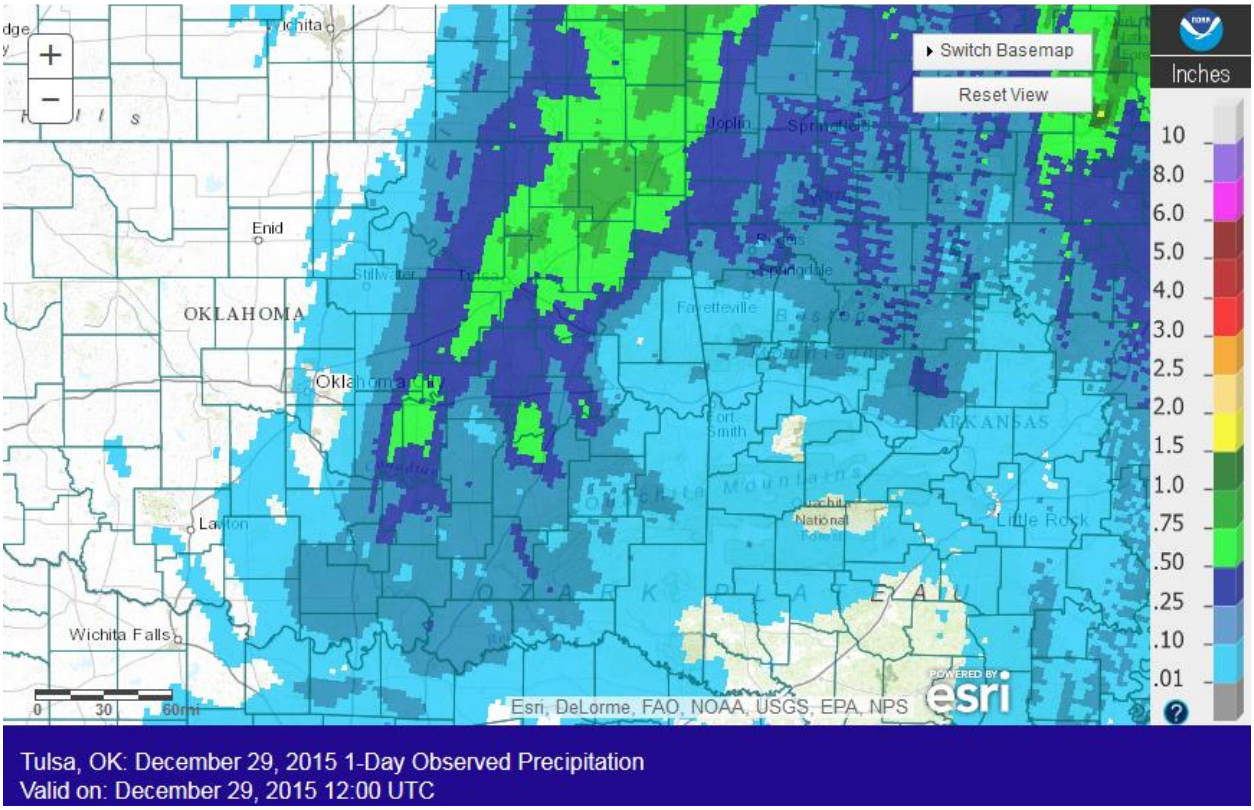


Fig. 16. 24-hour Estimated Observed Rainfall ending at 6am CST 12/29/2015.

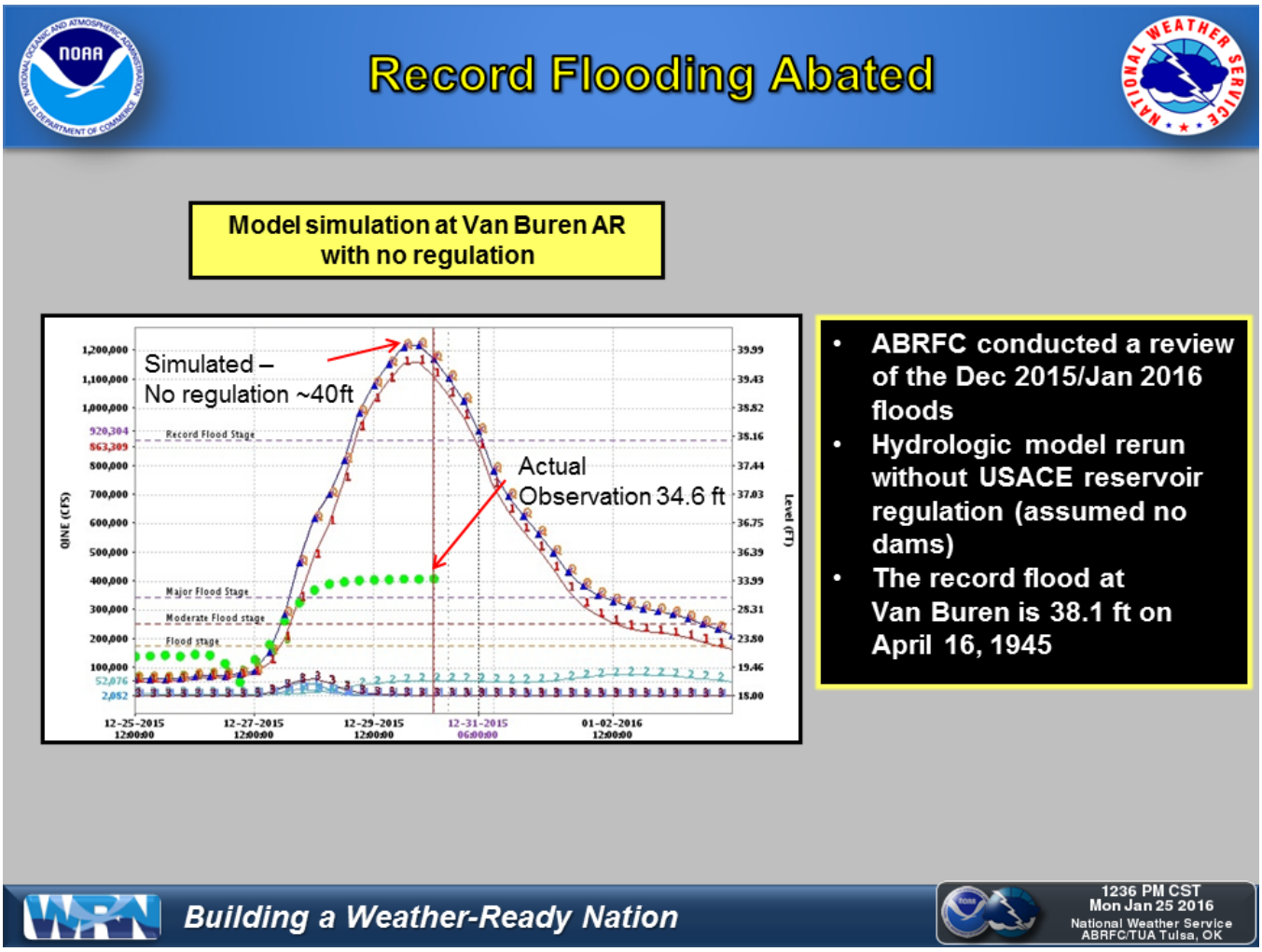


Fig. 17. ABRFC comparison of the actual (green circles) flood crest/flow and simulated crest/flow without USACE reservoir regulation (blue triangles) for the Arkansas River at Van Buren river gage.

Fig. 18. Illinois River flooding at Falcon Floats (image courtesy Ed Fite, OK Scenic Rivers Commission) (top 2 images) and location of inundated area (bottom, GoogleMap). Yellow X indicates where images were taken; yellow circle are the buildings in flood image.


Fig. 19. Illinois River flooding (image courtesy Ed Fite, OK Scenic Rivers Commission)

Fig. 20. Illinois River flood damage. Lower canoe ~9' above ground level; higher canoe and hay bale 19'-20' above ground. Illinois River in background of each image (image: Nicole McGavock, NWS Tulsa; Ed Fite, Scenic Rivers Commission pictured).

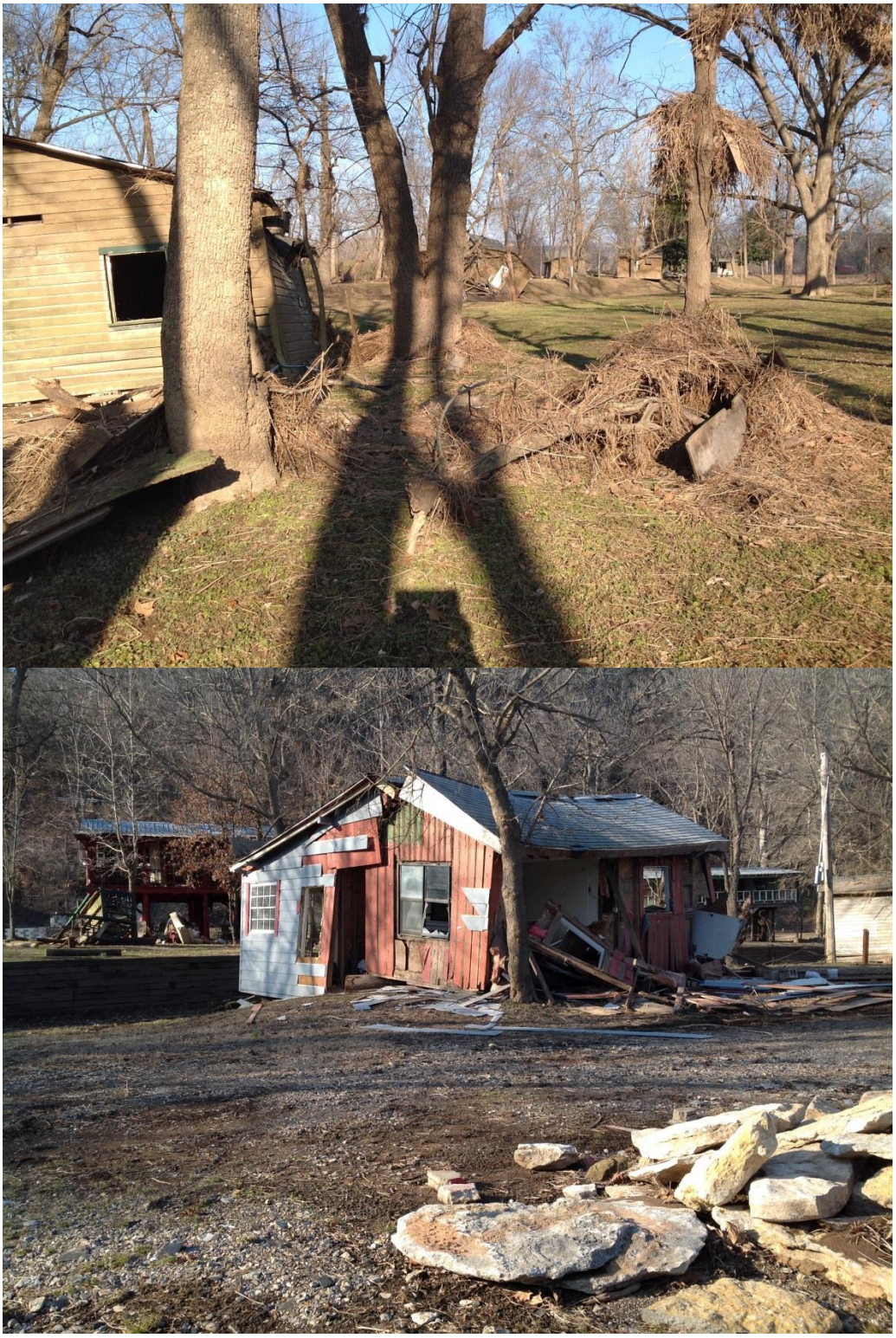


Fig. 21. Illinois River flood damage at Spencer Ridge/Fidlers Bend area. Displaced cabins. (image: Nicole McGavock, NWS Tulsa)

Fig. 22. Debris 12'-13' in the trees just west of the river gage PANO2 on the Poteau River. (Image: Nicole McGavock, NWS Tulsa; Jeff McMurphy pictured)

Fig. 23. Lee Creek high water mark inside the Field of Dreams baseball complex indoor batting practice facility in Van Buren. (Image: Nicole McGavock, NWS Tulsa; Michael Lacy pictured)

Fig. 24. Lee Creek flooding. Old bridge immediately north of Rena Rd. was under water, but the river remained below the Rena Rd. bridge. (Image: Nicole McGavock, NWS Tulsa)

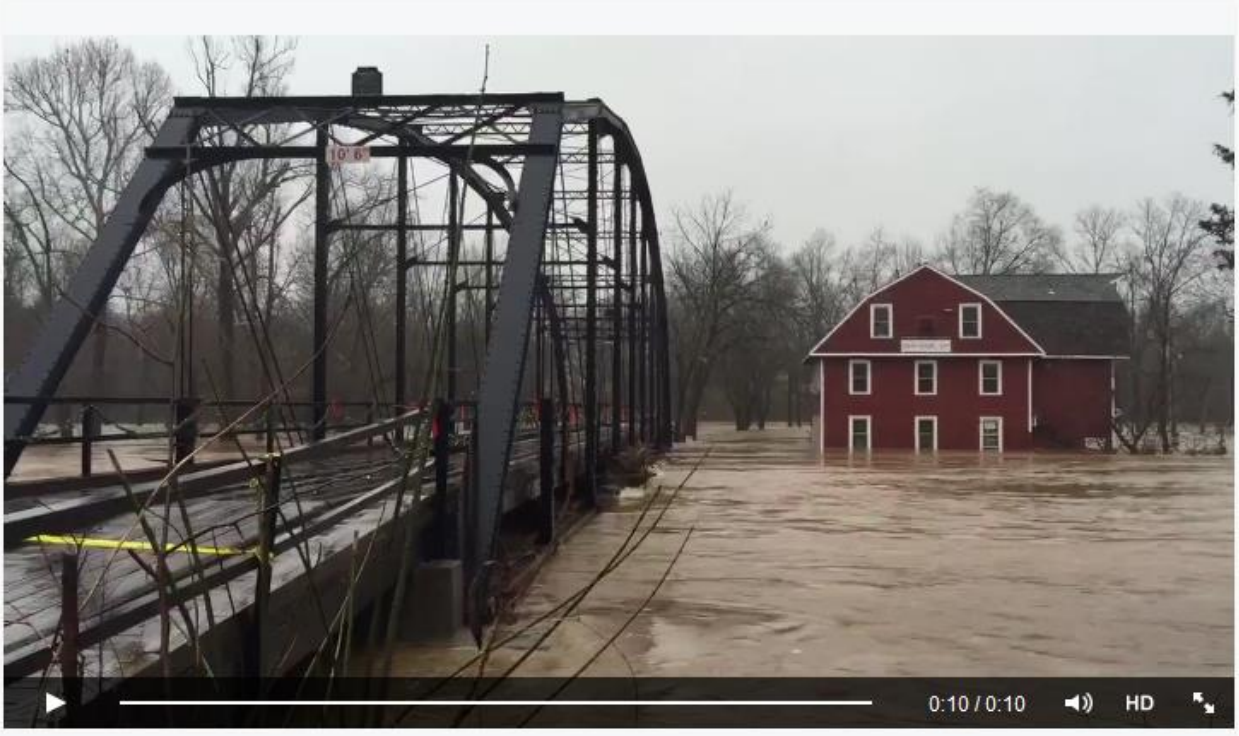
Fig. 25. Arkansas River high water marks at a Fort Smith residence. (Image: Nicole McGavock, NWS Tulsa; Michael Lacy pictured)

Fig. 26. Arkansas River flooding in Fort Smith residential neighborhood. Image from Facebook posted Dec. 28, 2015 when river was approximately 34’ (above) Image appears to have been taken from neighbor across the street (see Fig. 27). View of the home from GoogleMaps during non-flood time (below).

Fig. 27. Arkansas River flooding in Fort Smith residential neighborhood taken Jan. 1, 2016. VBUA4 is approximately 32' at this time, about 2.5' below the crest. High water mark (based on discoloration on grass) indicated by yellow line. Circle indicates location of home from Fig. 26 as likely taken from yellow X location. Home in Fig. 25 is located to the left just outside of this image. Image courtesy Civil Air Patrol.

Fig. 28. Marina destroyed along the Arkansas River at Van Buren (location of VBUA4). (Image: Nicole McGavock, NWS Tulsa)

Other Images from the Dec. 26-28, 2015 flooding:



NWADG
War Eagle Mill this morning. Video from Jason Ivester, NWADG photographer.

Shared with: Public
68,526 Views

Fig. 29. Aerial view from 5News KFSM of War Eagle Mill showing flooding along War Eagle Creek (upstream of Beaver Lake) (top); video (posted on Facebook 8:14am CST 12/28/2015) by Jason Ivester, NWADG photographer (middle); and non-flood image from Tripadvisor.com taken March 2013 (bottom). A river gage on War Eagle Creek near Hindsville (about 5 miles upstream as the bird flies) rose approximately 24 feet in 26 hours, cresting at 9pm CST 12/27/2015. According to KFSM, "while the flood waters dumped debris in the area, they didn't damage the structure of the more-than-100-year-old bridge, Benton County Road Department Director Jeff Clark said. The water that surrounded War Eagle Bridge also surrounded nearby War Eagle Mill. The flooding overtook the water wheel, basement, first floor and nearly reached the windows on the second floor."

Fig. 30. Aerial view of the Illinois River courtesy Fox23.

Fig. 31. Illinois River flooding over Hwy 10 near US 62. Image: Tulsa World


Fig. 32. Illinois River flooding. Image: Tulsa World

Fig. 33. Illinois River flooding. Image: Tulsa World

Fig. 34. James Fork Creek water rescue (Le Flore Co.) on Dec. 29, 2015. Image: KFSM

Fig. 35. Lake Hudson on Dec. 28, 2015. Image: @yondib on Twitter


Fig. 36. Fort Gibson Dam. Image: Channel 6

Fig. 37. Van Buren train bridge posted by Jamie Lopez on Facebook Dec. 29, 2015 (top image is not hers).

Fig. 38. Muskogee County flooding on Dec. 29, 2015. Image: Von Castor

Fig. 39. 33rd W. Ave. south of 97th St. in Tulsa, OK Dec. 28, 2015. Image: Tulsa World

Fig. 40. 76th St. N. looking south at Mingo Rd. in Owasso, OK Dec. 28, 2015.

Written by:

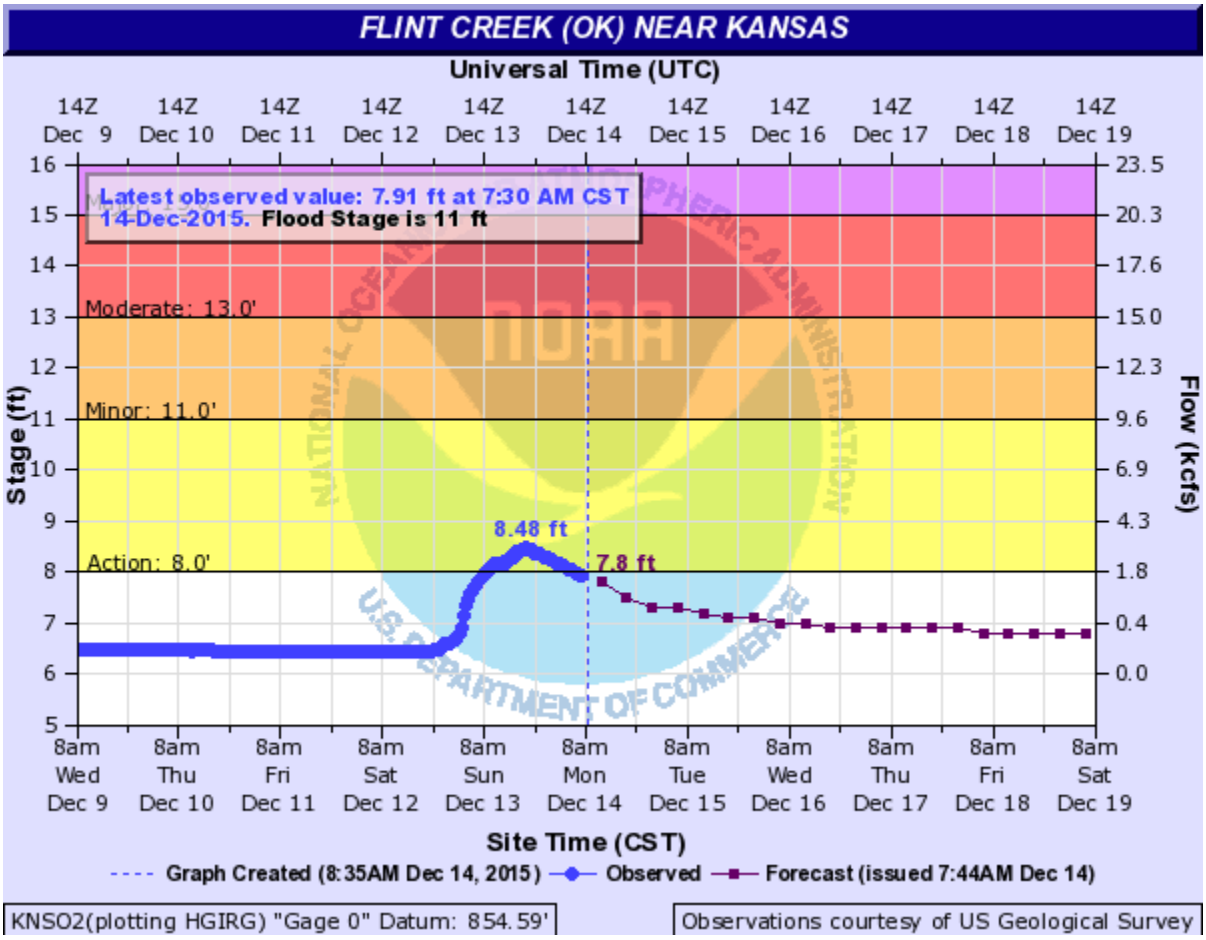
Nicole McGavock
Service Hydrologist
WFO Tulsa

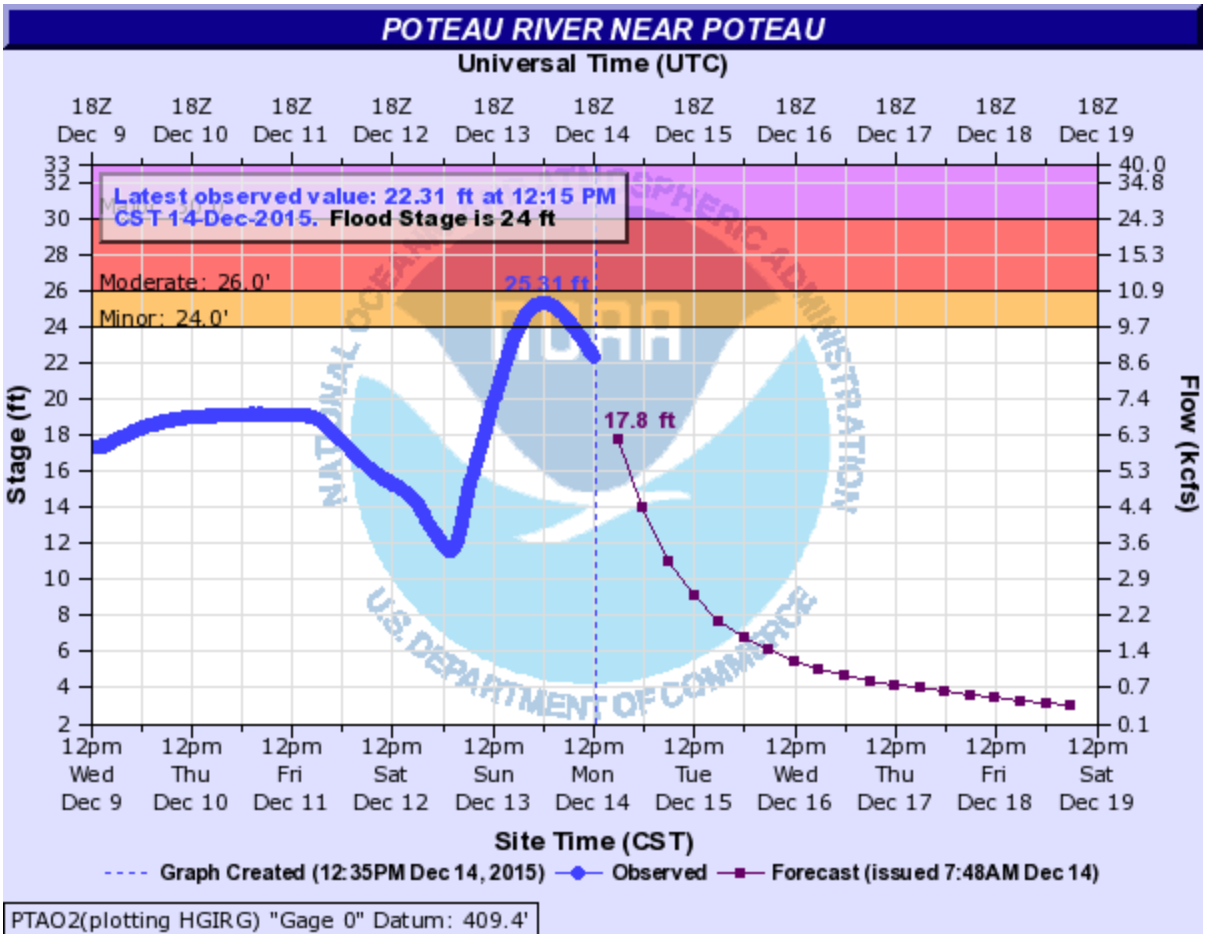
Products issued in December 2015:

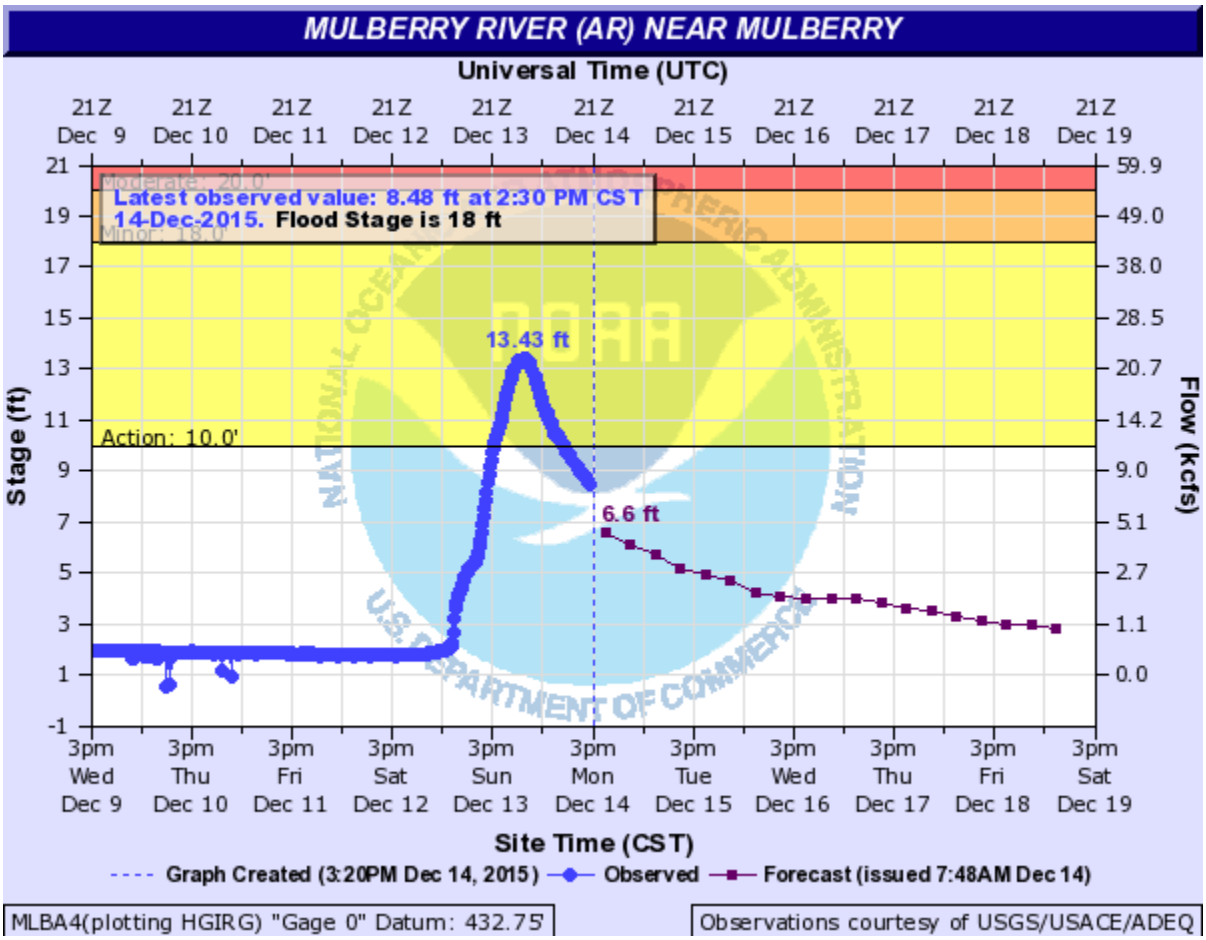
*MLBA4 and OZGA4 transferred to NWS Tulsa HSA February 5, 2014
*Mixed case River Flood products began July 31, 2013

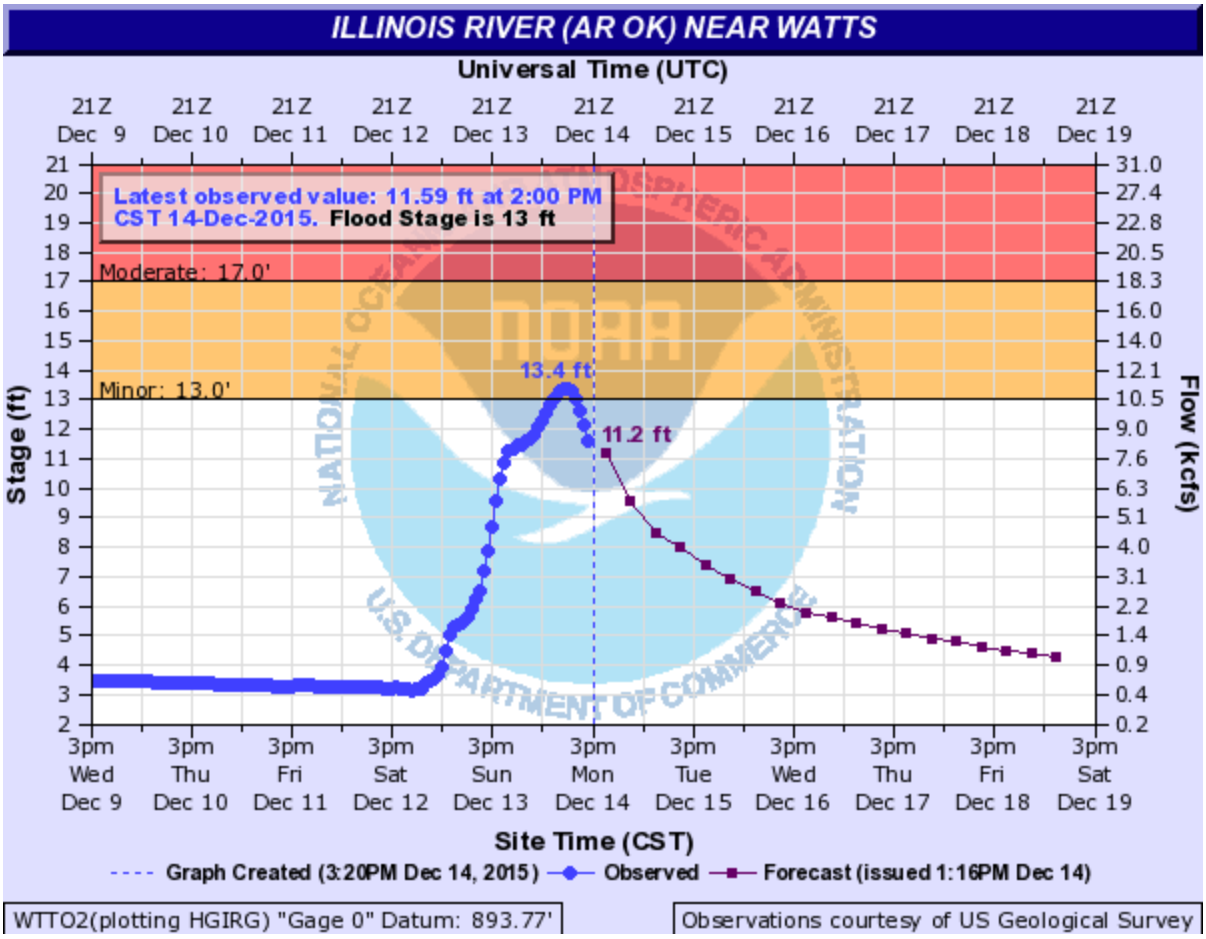
15 Flash Flood Warnings (FFW) (7 for Dam releases)
3 Flash Flood Statements (FFS)
2 Flash/Areal Flood Watches (FFA) (11 Watch FFA CON/EXT/EXA/EXB/CAN)
6 Urban and Small Stream Advisories (FLS)
16 Areal Flood Warnings (FLW)
3 Areal Flood Statements (FLS)
57 River Flood Warnings (FLW)
186 River Flood Statements (FLS)
3 River Flood Advisories (FLS) (12 Advisory FLS CON/EXT/CAN)
16 River Flood Watches (FFA) (16 Watch FFA CON/EXT/CAN)
0 River Statements (RVS) (some ROU segments were incl. with River Flood FLSs)
1 Hydrologic Outlooks (ESF)
0 Drought Information Statements (DGT)

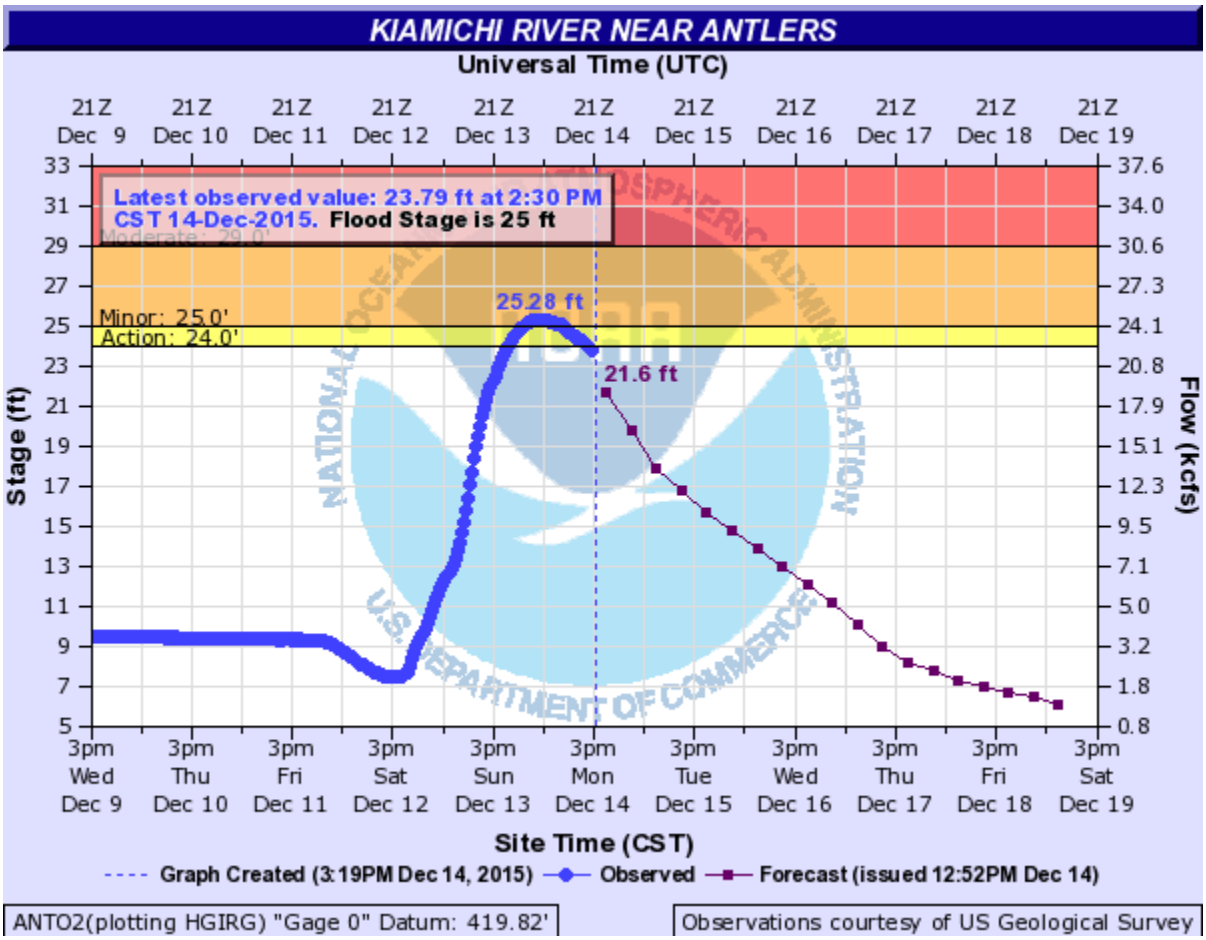
Preliminary Hydrographs:

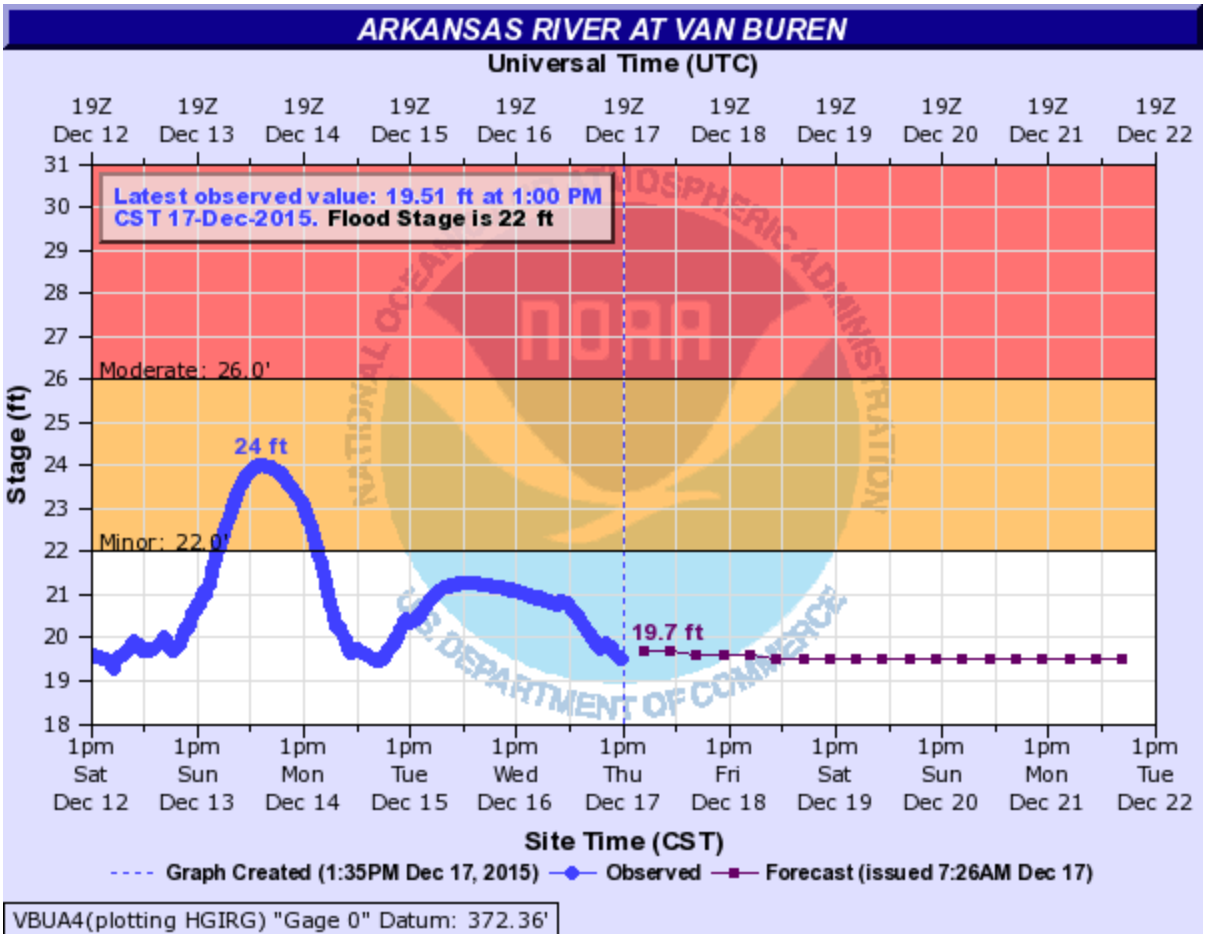


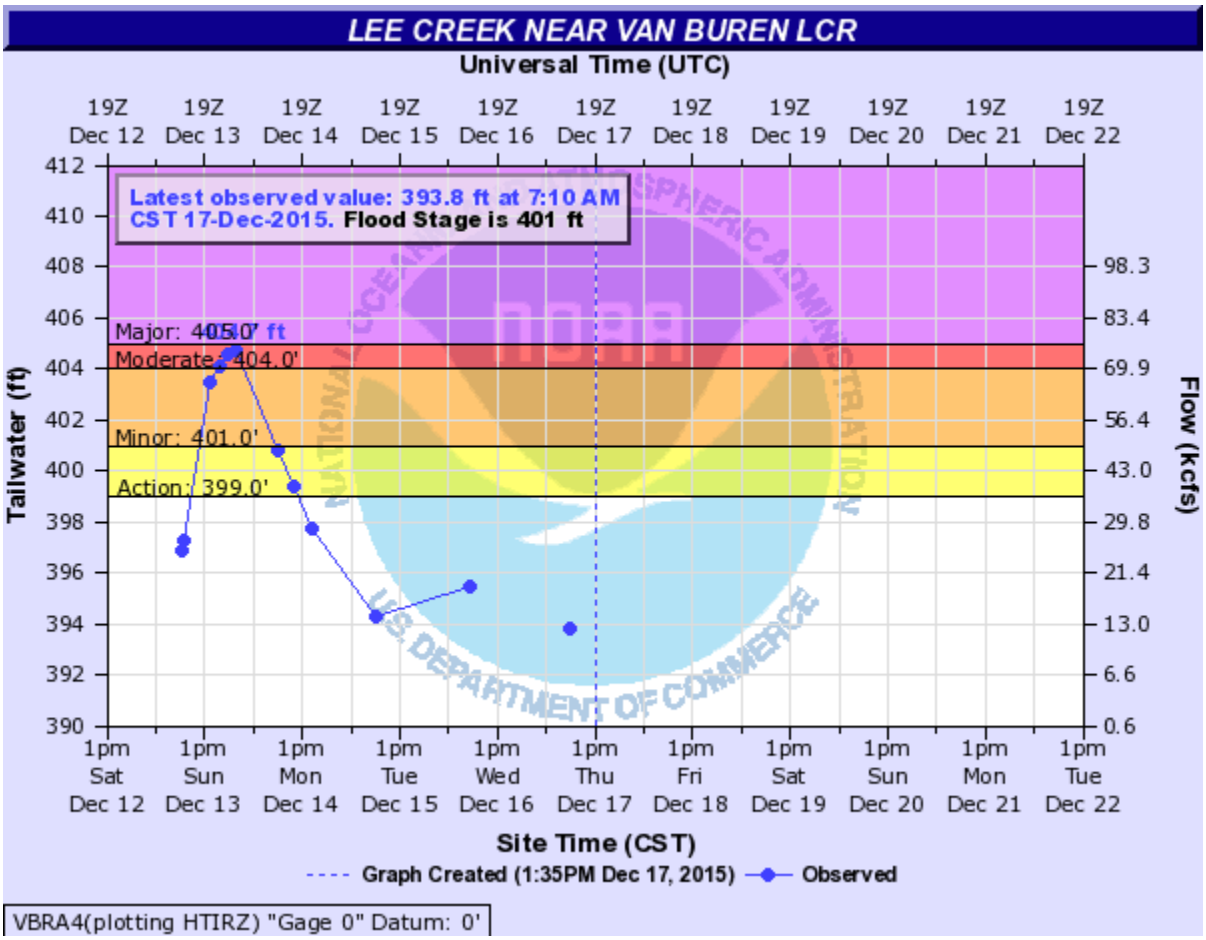

POTEAU RIVER NEAR POTEAU
Universal Time (UTC)
18Z Dec 9
18Z Dec 10
18Z Dec 11
18Z Dec 12
18Z Dec 13
18Z Dec 14
18Z Dec 15
18Z Dec 16
18Z Dec 17
18Z Dec 18
18Z Dec 19
Latest observed value: 22.31 ft at 12:15 PM CST 14-Dec-2015. Flood Stage is 24 ft
Moderate: 26.0'
Minor: 24.0'
25.31 ft
17.8 ft
Stage (ft)
Flow (kcfs)
12pm Wed Dec 9
12pm Thu Dec 10
12pm Fri Dec 11
12pm Sat Dec 12
12pm Sun Dec 13
12pm Mon Dec 14
12pm Tue Dec 15
12pm Wed Dec 16
12pm Thu Dec 17
12pm Fri Dec 18
12pm Sat Dec 19
Site Time (CST)
Graph Created (12:35PM Dec 14, 2015)
Observed
Forecast (issued 7:48AM Dec 14)
PTAO2(plotting HGIRG) "Gage 0" Datum: 409.4'

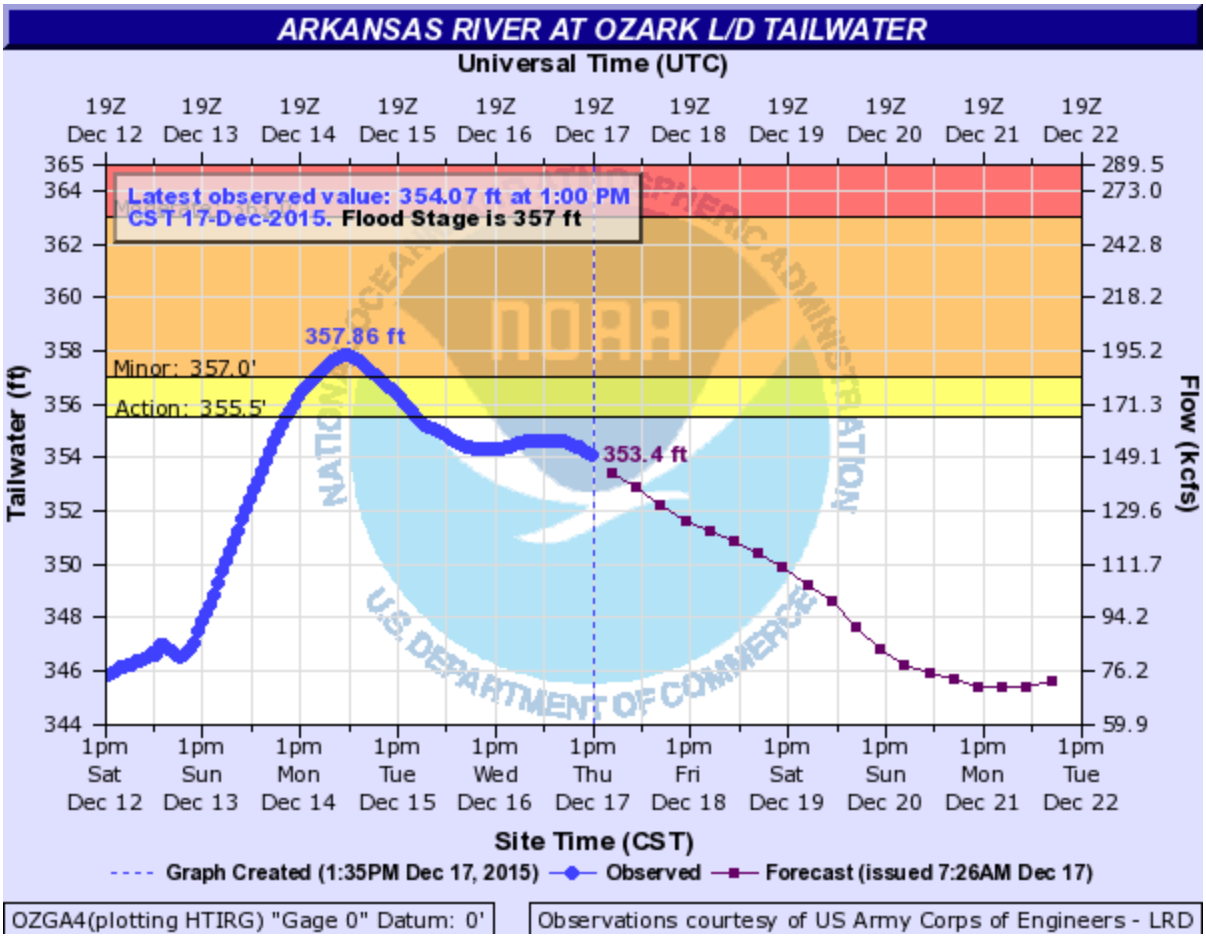

MULBERRY RIVER (AR) NEAR MULBERRY
Universal Time (UTC)
21Z Dec 9
21Z Dec 10
21Z Dec 11
21Z Dec 12
21Z Dec 13
21Z Dec 14
21Z Dec 15
21Z Dec 16
21Z Dec 17
21Z Dec 18
21Z Dec 19
Latest observed value: 8.48 ft at 2:30 PM CST 14-Dec-2015. Flood Stage is 18 ft
Action: 10.0'
13.43 ft
6.6 ft
Stage (ft)
Flow (kcfs)
3pm Wed Dec 9
3pm Thu Dec 10
3pm Fri Dec 11
3pm Sat Dec 12
3pm Sun Dec 13
3pm Mon Dec 14
3pm Tue Dec 15
3pm Wed Dec 16
3pm Thu Dec 17
3pm Fri Dec 18
3pm Sat Dec 19
Site Time (CST)
Graph Created (3:20PM Dec 14, 2015)
Observed
Forecast (issued 7:48AM Dec 14)
MLBA4(plotting HGIRG) "Gage 0" Datum: 432.75'
Observations courtesy of USGS/USACE/ADEQ

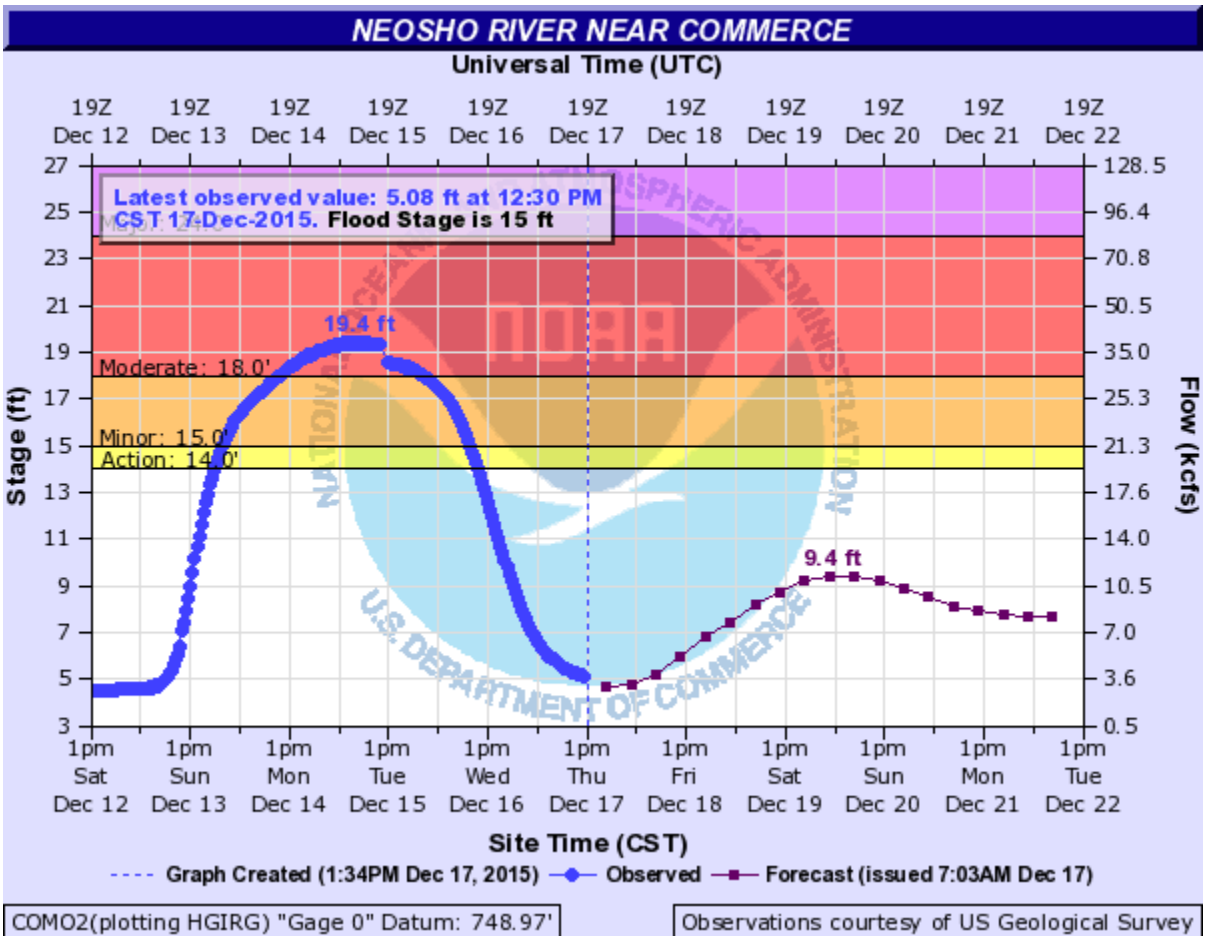

ILLINOIS RIVER (AR OK) NEAR WATTS
Universal Time (UTC)
21Z Dec 9
21Z Dec 10
21Z Dec 11
21Z Dec 12
21Z Dec 13
21Z Dec 14
21Z Dec 15
21Z Dec 16
21Z Dec 17
21Z Dec 18
21Z Dec 19
Latest observed value: 11.59 ft at 2:00 PM CST 14-Dec-2015. Flood Stage is 13 ft
Moderate: 17.0'
Minor: 13.0'
13.4 ft
11.2 ft
Stage (ft)
Flow (kcfs)
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2
31.0 27.4 22.8 20.5 18.3 16.0 14.0 12.1 10.5 9.0 7.6 6.3 5.1 4.0 3.1 2.2 1.4 0.9 0.4 0.2
3pm Wed Dec 9
3pm Thu Dec 10
3pm Fri Dec 11
3pm Sat Dec 12
3pm Sun Dec 13
3pm Mon Dec 14
3pm Tue Dec 15
3pm Wed Dec 16
3pm Thu Dec 17
3pm Fri Dec 18
3pm Sat Dec 19
Site Time (CST)
Graph Created (3:20PM Dec 14, 2015)
Observed
Forecast (issued 1:16PM Dec 14)
WTTO2(plotting HGIRG) "Gage 0" Datum: 893.77'
Observations courtesy of US Geological Survey

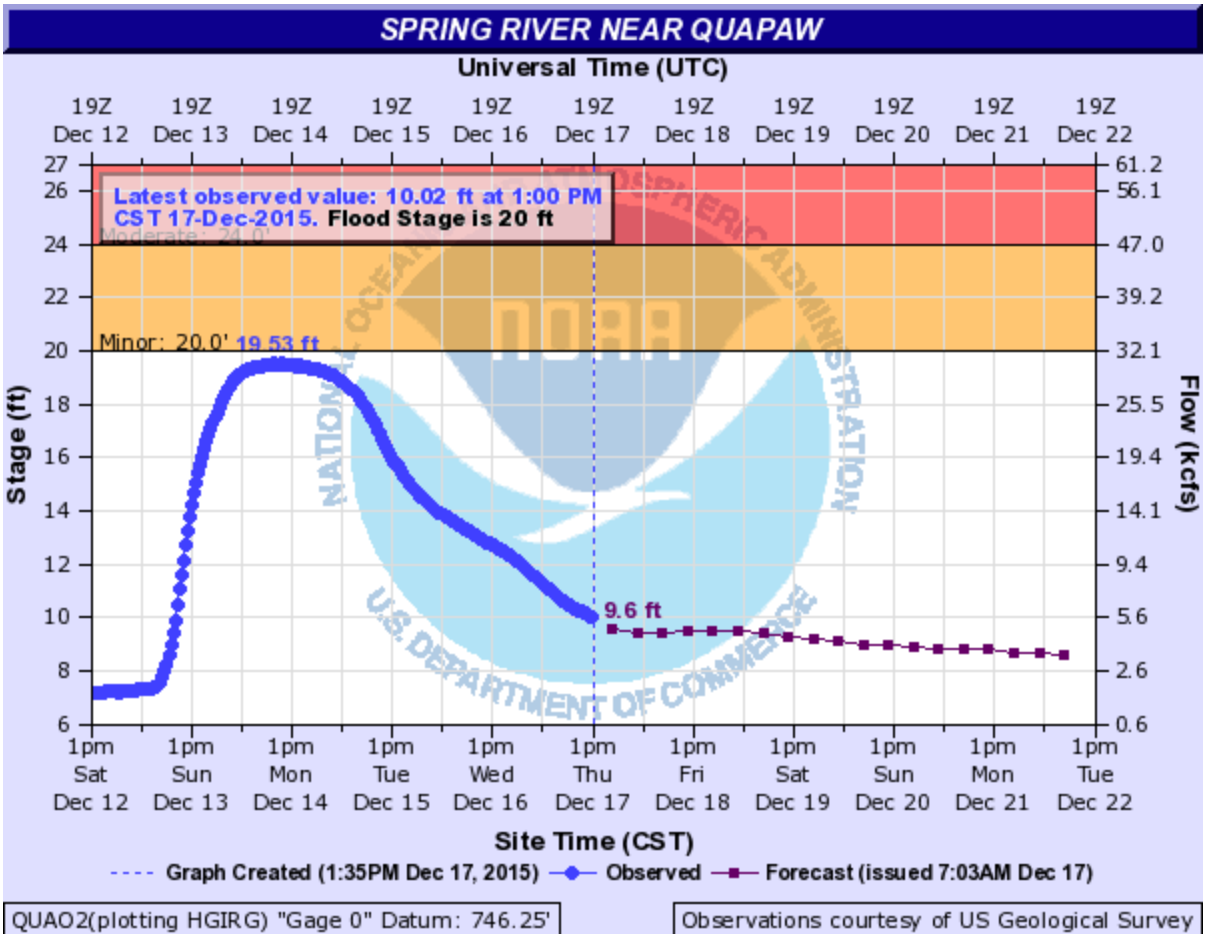

KIAMICHI RIVER NEAR ANTLERS
Universal Time (UTC)
21Z Dec 9
21Z Dec 10
21Z Dec 11
21Z Dec 12
21Z Dec 13
21Z Dec 14
21Z Dec 15
21Z Dec 16
21Z Dec 17
21Z Dec 18
21Z Dec 19
Latest observed value: 23.79 ft at 2:30 PM CST 14-Dec-2015. Flood Stage is 25 ft
Moderate: 29.0'
Minor: 25.0'
Action: 24.0'
25.28 ft
21.6 ft
Stage (ft)
Flow (kcfs)
33 31 29 27 25 23 21 19 17 15 13 11 9 7 5
37.6 34.0 30.6 27.3 24.1 20.8 17.9 15.1 12.3 9.5 7.1 5.0 3.2 1.8 0.8
3pm Wed Dec 9
3pm Thu Dec 10
3pm Fri Dec 11
3pm Sat Dec 12
3pm Sun Dec 13
3pm Mon Dec 14
3pm Tue Dec 15
3pm Wed Dec 16
3pm Thu Dec 17
3pm Fri Dec 18
3pm Sat Dec 19
Site Time (CST)
Graph Created (3:19PM Dec 14, 2015)
Observed
Forecast (issued 12:52PM Dec 14)
ANTO2(plotting HGIRG) "Gage 0" Datum: 419.82'
Observations courtesy of US Geological Survey


ARKANSAS RIVER AT VAN BUREN
Universal Time (UTC)
19Z Dec 12
19Z Dec 13
19Z Dec 14
19Z Dec 15
19Z Dec 16
19Z Dec 17
19Z Dec 18
19Z Dec 19
19Z Dec 20
19Z Dec 21
19Z Dec 22
Latest observed value: 19.51 ft at 1:00 PM CST 17-Dec-2015. Flood Stage is 22 ft
Moderate: 26.0'
Minor: 22.0'
24 ft
19.7 ft
Stage (ft)
31
30
29
28
27
26
25
24
23
22
21
20
19
18
1pm Sat Dec 12
1pm Sun Dec 13
1pm Mon Dec 14
1pm Tue Dec 15
1pm Wed Dec 16
1pm Thu Dec 17
1pm Fri Dec 18
1pm Sat Dec 19
1pm Sun Dec 20
1pm Mon Dec 21
1pm Tue Dec 22
Site Time (CST)
Graph Created (1:35PM Dec 17, 2015)
Observed
Forecast (issued 7:26AM Dec 17)
VBUA4(plotting HGIRG) "Gage 0" Datum: 372.36'


LEE CREEK NEAR VAN BUREN LCR
Universal Time (UTC)
19Z Dec 12
19Z Dec 13
19Z Dec 14
19Z Dec 15
19Z Dec 16
19Z Dec 17
19Z Dec 18
19Z Dec 19
19Z Dec 20
19Z Dec 21
19Z Dec 22
Latest observed value: 393.8 ft at 7:10 AM CST 17-Dec-2015. Flood Stage is 401 ft
Major: 405.0' ft
Moderate: 404.0'
Minor: 401.0'
Action: 399.0'
Tailwater (ft)
412
410
408
406
404
402
400
398
396
394
392
390
Flow (kcfs)
98.3
83.4
69.9
56.4
43.0
29.8
21.4
13.0
6.6
0.6
1pm Sat Dec 12
1pm Sun Dec 13
1pm Mon Dec 14
1pm Tue Dec 15
1pm Wed Dec 16
1pm Thu Dec 17
1pm Fri Dec 18
1pm Sat Dec 19
1pm Sun Dec 20
1pm Mon Dec 21
1pm Tue Dec 22
Site Time (CST)
Graph Created (1:35PM Dec 17, 2015)
Observed
VBRA4(plotting HTIRZ) "Gage 0" Datum: 0'

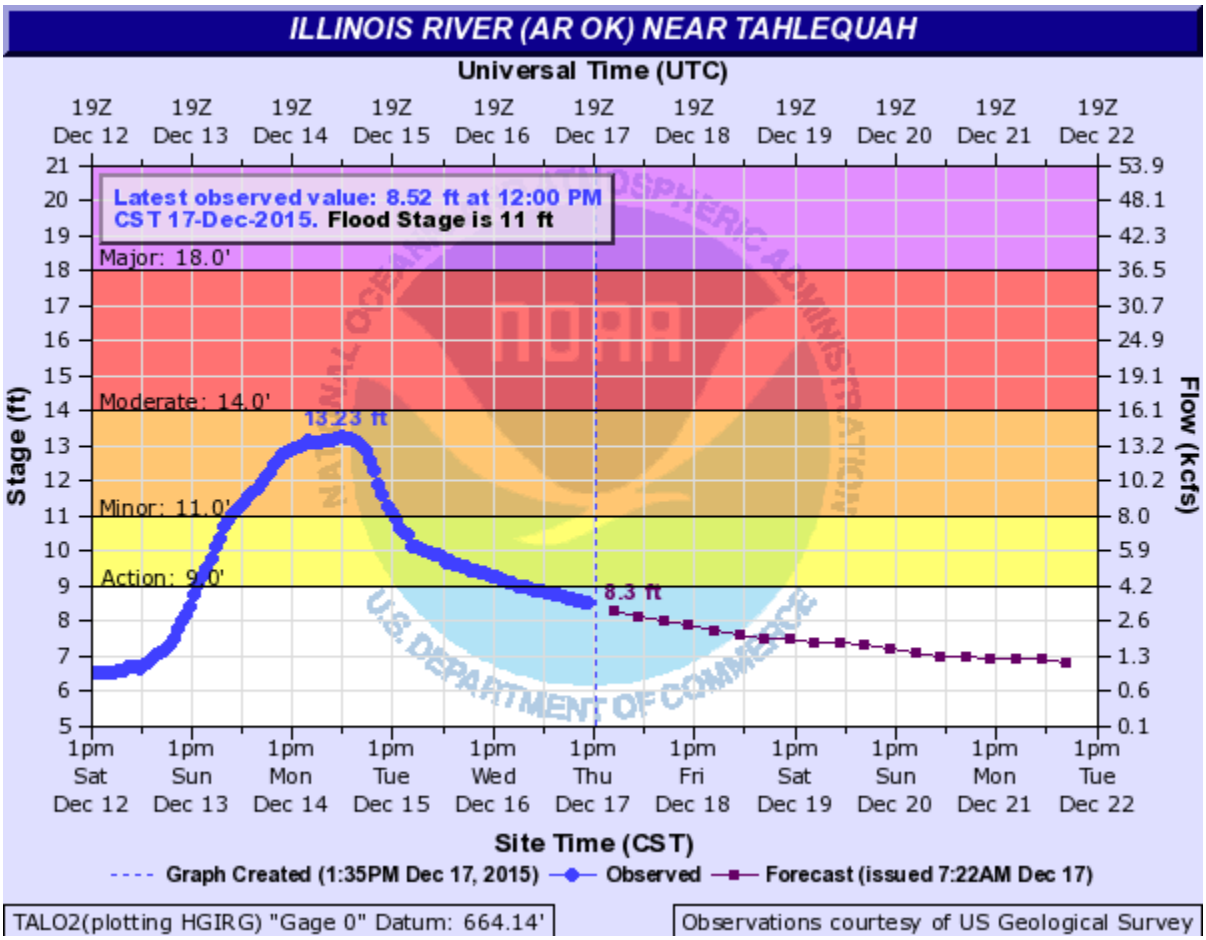

ARKANSAS RIVER AT OZARK L/D TAILWATER
Universal Time (UTC)
19Z Dec 12
19Z Dec 13
19Z Dec 14
19Z Dec 15
19Z Dec 16
19Z Dec 17
19Z Dec 18
19Z Dec 19
19Z Dec 20
19Z Dec 21
19Z Dec 22
Latest observed value: 354.07 ft at 1:00 PM CST 17-Dec-2015. Flood Stage is 357 ft
357.86 ft
353.4 ft
Minor: 357.0'
Action: 355.5'
Tailwater (ft)
Flow (kcfs)
365
364
362
360
358
356
354
352
350
348
346
344
289.5
273.0
242.8
218.2
195.2
171.3
149.1
129.6
111.7
94.2
76.2
59.9
1pm Sat Dec 12
1pm Sun Dec 13
1pm Mon Dec 14
1pm Tue Dec 15
1pm Wed Dec 16
1pm Thu Dec 17
1pm Fri Dec 18
1pm Sat Dec 19
1pm Sun Dec 20
1pm Mon Dec 21
1pm Tue Dec 22
Site Time (CST)
Graph Created (1:35PM Dec 17, 2015)
Observed
Forecast (issued 7:26AM Dec 17)
OZGA4(plotting HTIRG) "Gage 0" Datum: 0'
Observations courtesy of US Army Corps of Engineers - LRD


NEOSHO RIVER NEAR COMMERCE
Universal Time (UTC)
19Z Dec 12
19Z Dec 13
19Z Dec 14
19Z Dec 15
19Z Dec 16
19Z Dec 17
19Z Dec 18
19Z Dec 19
19Z Dec 20
19Z Dec 21
19Z Dec 22
Latest observed value: 5.08 ft at 12:30 PM CST 17-Dec-2015. Flood Stage is 15 ft
19.4 ft
9.4 ft
Moderate: 18.0'
Minor: 15.0'
Action: 14.0'
Stage (ft)
Flow (kcfs)
27
25
23
21
19
17
15
13
11
9
7
5
3
128.5
96.4
70.8
50.5
35.0
25.3
21.3
17.6
14.0
10.5
7.0
3.6
0.5
1pm Sat Dec 12
1pm Sun Dec 13
1pm Mon Dec 14
1pm Tue Dec 15
1pm Wed Dec 16
1pm Thu Dec 17
1pm Fri Dec 18
1pm Sat Dec 19
1pm Sun Dec 20
1pm Mon Dec 21
1pm Tue Dec 22
Site Time (CST)
Graph Created (1:34PM Dec 17, 2015)
Observed
Forecast (issued 7:03AM Dec 17)
COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'
Observations courtesy of US Geological Survey



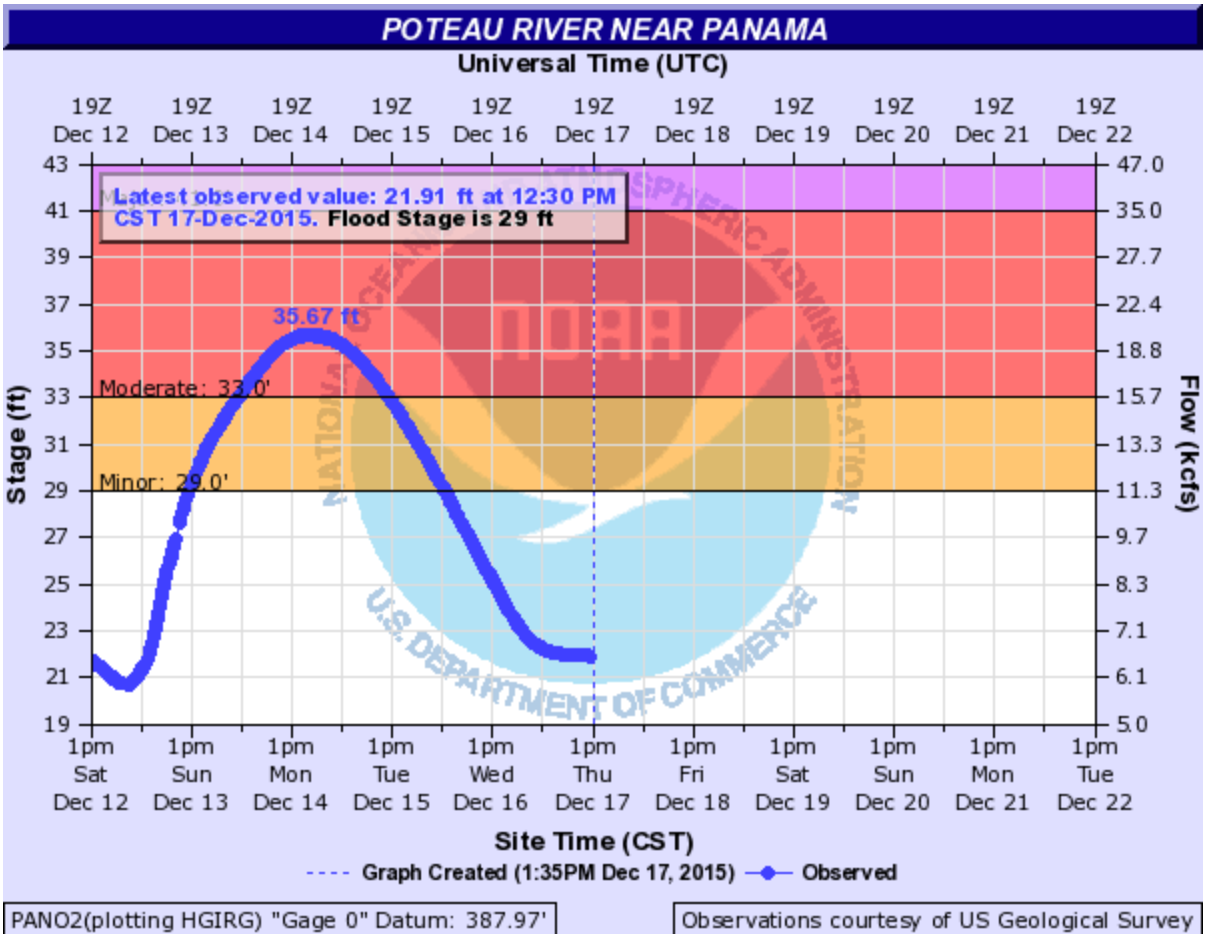
QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

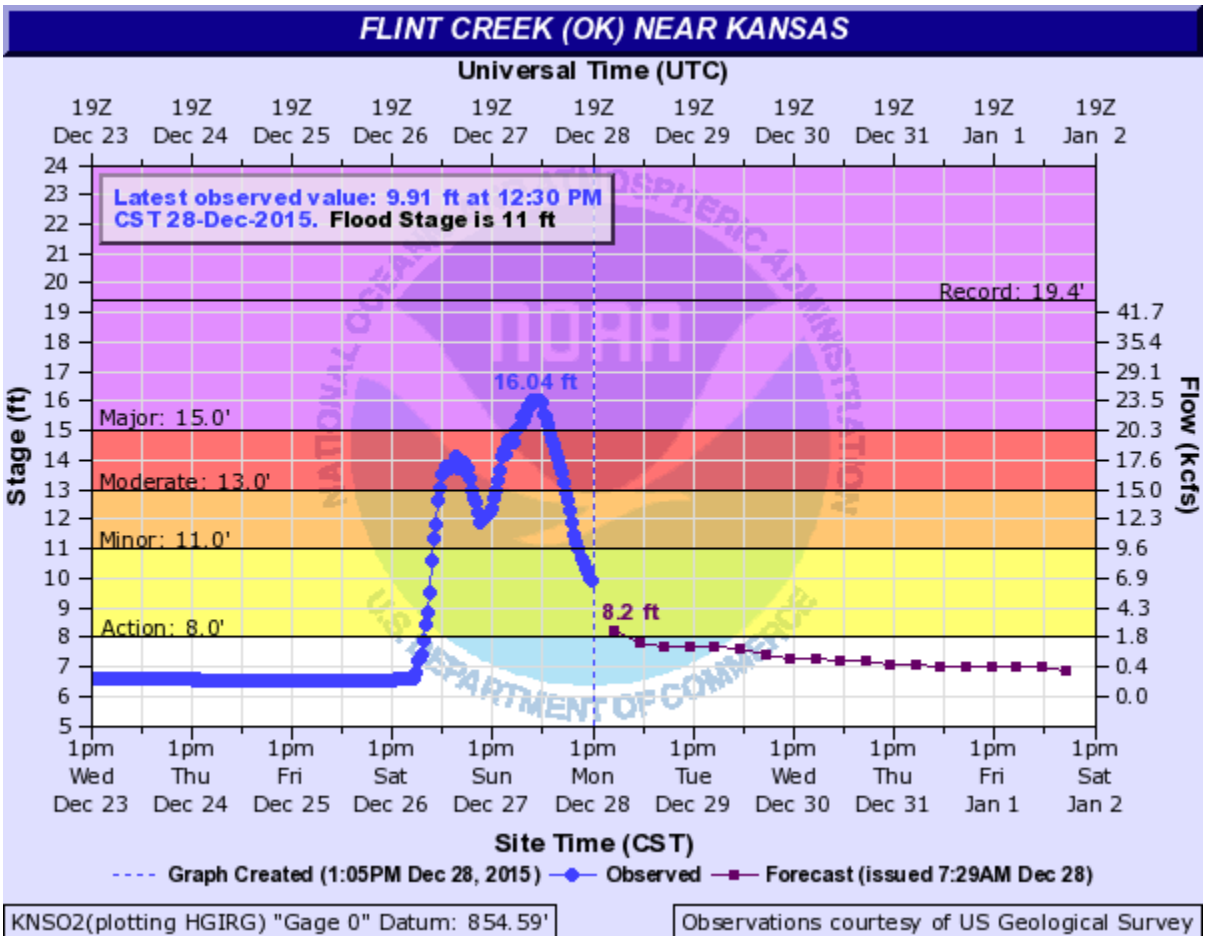
Observations courtesy of US Geological Survey

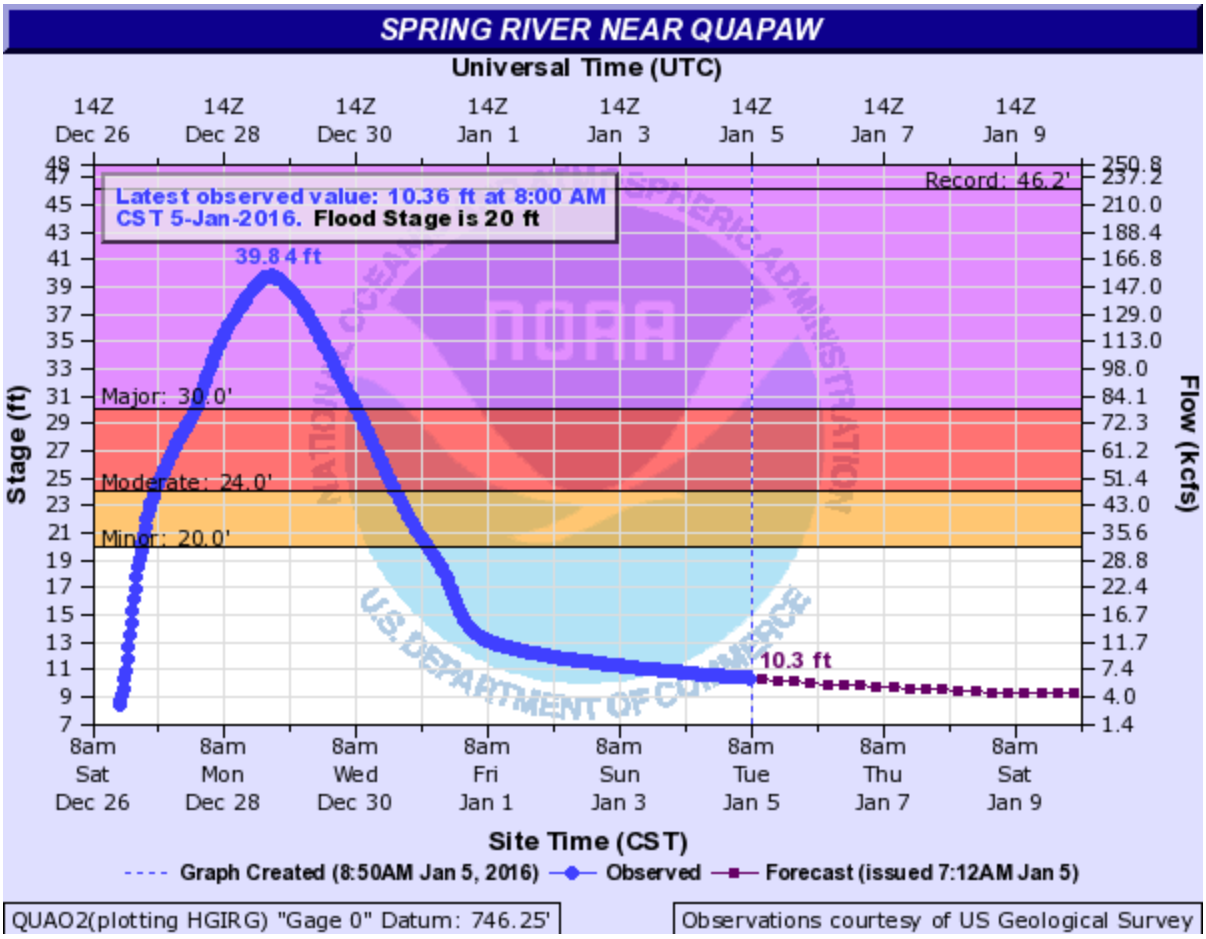


TALO2(plotting HGIRG) "Gage 0" Datum: 664.14'

Observations courtesy of US Geological Survey

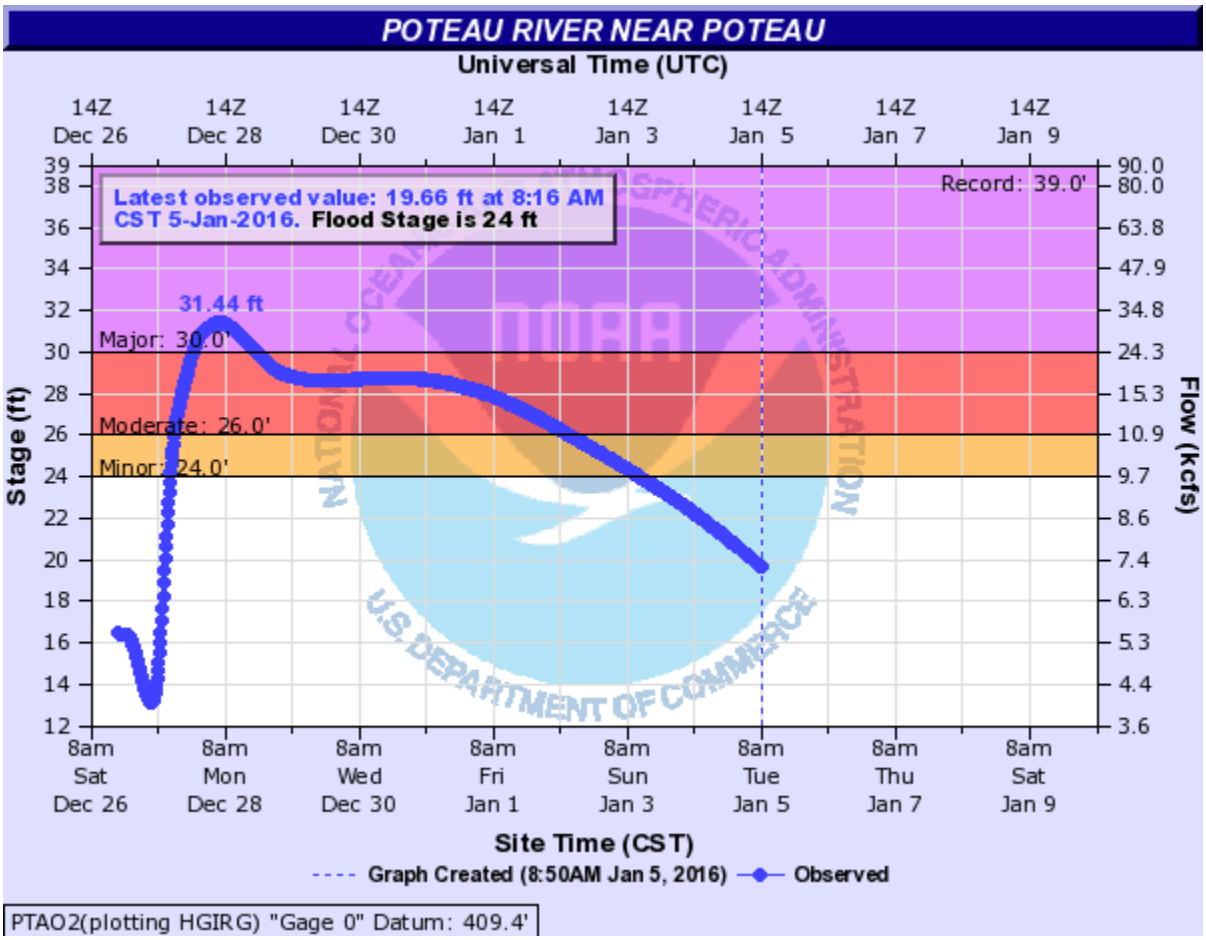

POTEAU RIVER NEAR PANAMA
Universal Time (UTC)
19Z Dec 12
19Z Dec 13
19Z Dec 14
19Z Dec 15
19Z Dec 16
19Z Dec 17
19Z Dec 18
19Z Dec 19
19Z Dec 20
19Z Dec 21
19Z Dec 22
Latest observed value: 21.91 ft at 12:30 PM CST 17-Dec-2015. Flood Stage is 29 ft
35.67 ft
Moderate: 33.0'
Minor: 29.0'
Stage (ft)
Flow (kcfs)
43
41
39
37
35
33
31
29
27
25
23
21
19
47.0
35.0
27.7
22.4
18.8
15.7
13.3
11.3
9.7
8.3
7.1
6.1
5.0
1pm Sat Dec 12
1pm Sun Dec 13
1pm Mon Dec 14
1pm Tue Dec 15
1pm Wed Dec 16
1pm Thu Dec 17
1pm Fri Dec 18
1pm Sat Dec 19
1pm Sun Dec 20
1pm Mon Dec 21
1pm Tue Dec 22
Site Time (CST)
Graph Created (1:35PM Dec 17, 2015)
Observed
PANO2(plotting HGIRG) "Gage 0" Datum: 387.97'
Observations courtesy of US Geological Survey


FLINT CREEK (OK) NEAR KANSAS
Universal Time (UTC)
19Z Dec 23
19Z Dec 24
19Z Dec 25
19Z Dec 26
19Z Dec 27
19Z Dec 28
19Z Dec 29
19Z Dec 30
19Z Dec 31
19Z Jan 1
19Z Jan 2
Latest observed value: 9.91 ft at 12:30 PM CST 28-Dec-2015. Flood Stage is 11 ft
Record: 19.4'
16.04 ft
8.2 ft
Major: 15.0'
Moderate: 13.0'
Minor: 11.0'
Action: 8.0'
Stage (ft)
Flow (kcfs)
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
41.7
35.4
29.1
23.5
20.3
17.6
15.0
12.3
9.6
6.9
4.3
1.8
0.4
0.0
1pm Wed Dec 23
1pm Thu Dec 24
1pm Fri Dec 25
1pm Sat Dec 26
1pm Sun Dec 27
1pm Mon Dec 28
1pm Tue Dec 29
1pm Wed Dec 30
1pm Thu Dec 31
1pm Fri Jan 1
1pm Sat Jan 2
Site Time (CST)
Graph Created (1:05PM Dec 28, 2015)
Observed
Forecast (issued 7:29AM Dec 28)
KNSO2(plotting HGIRG) "Gage 0" Datum: 854.59'
Observations courtesy of US Geological Survey

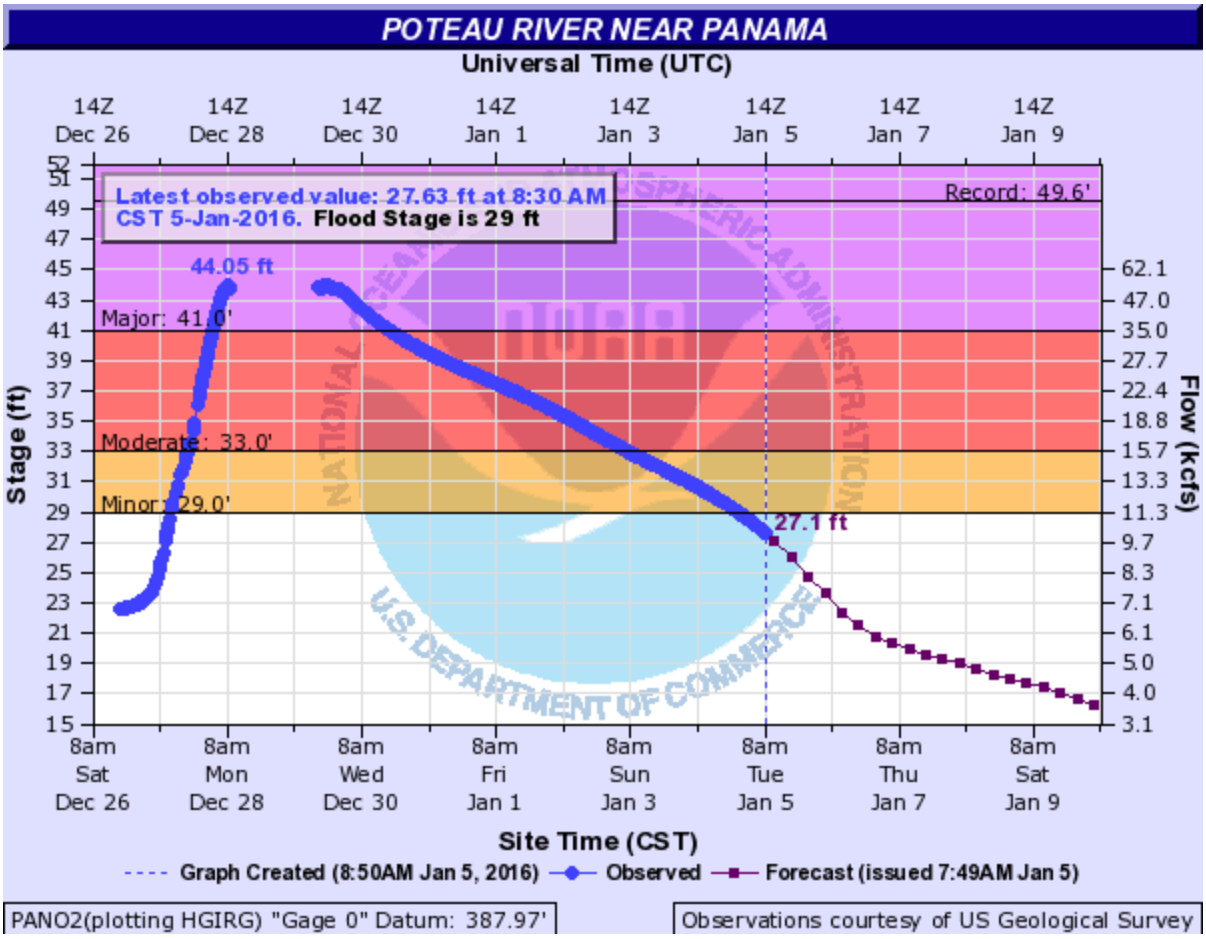


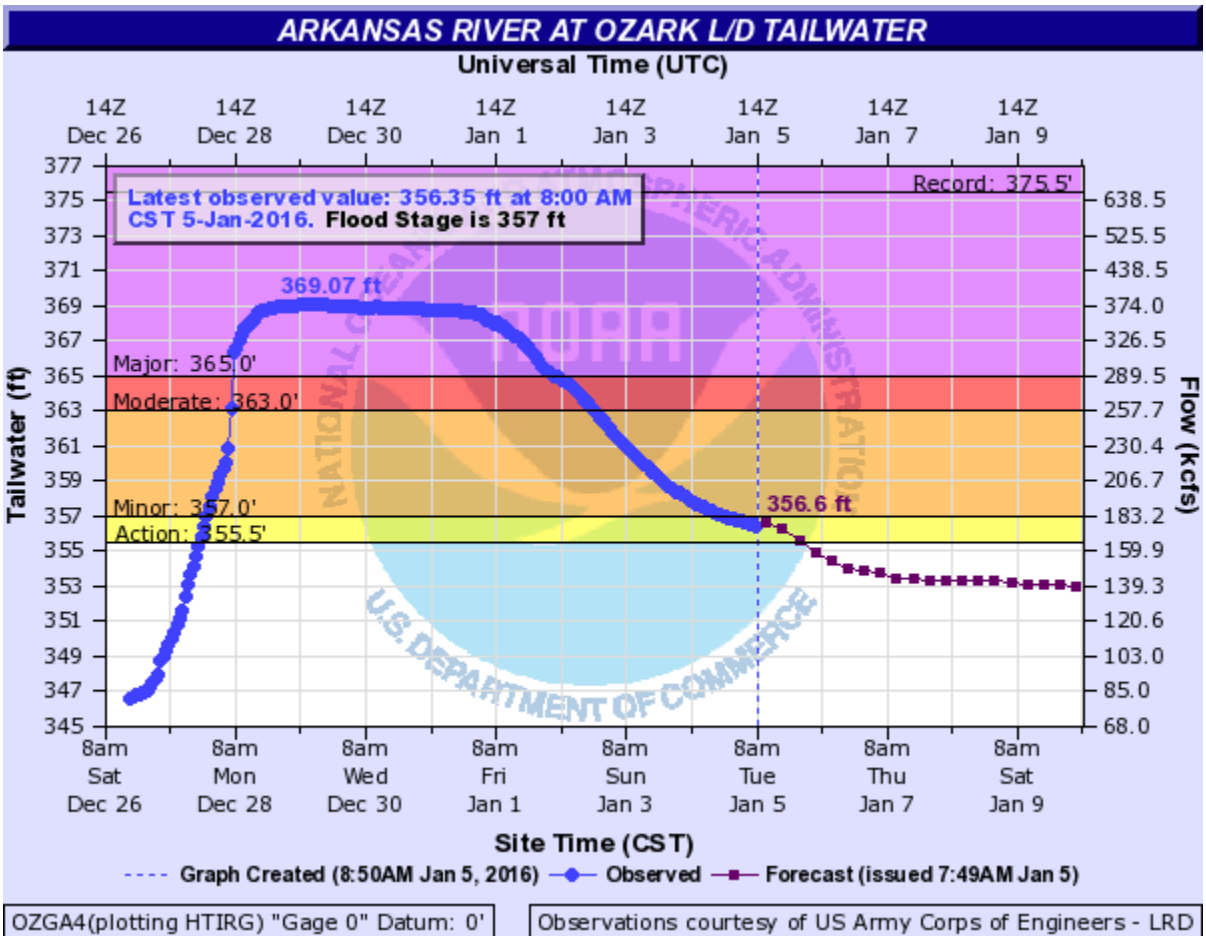
QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

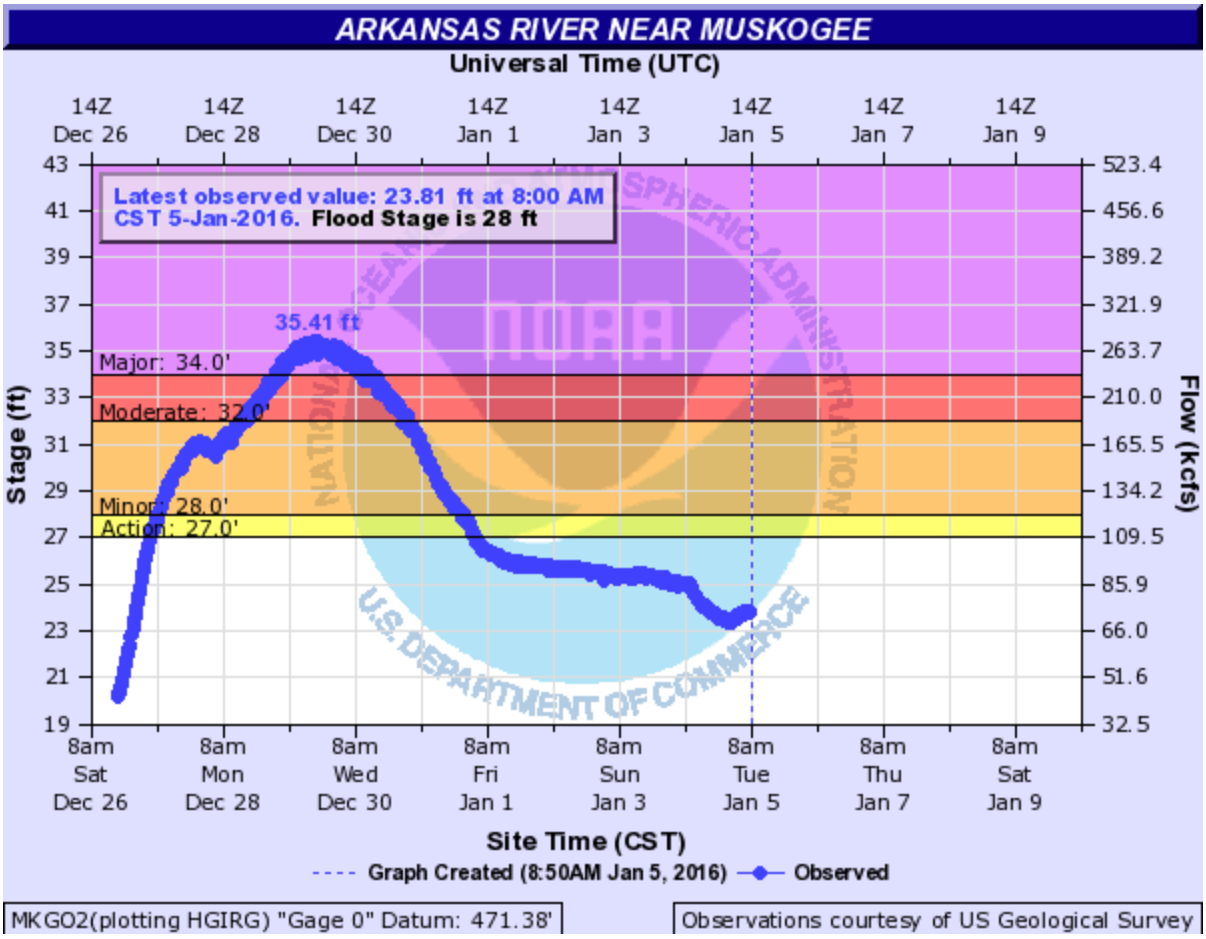
Observations courtesy of US Geological Survey

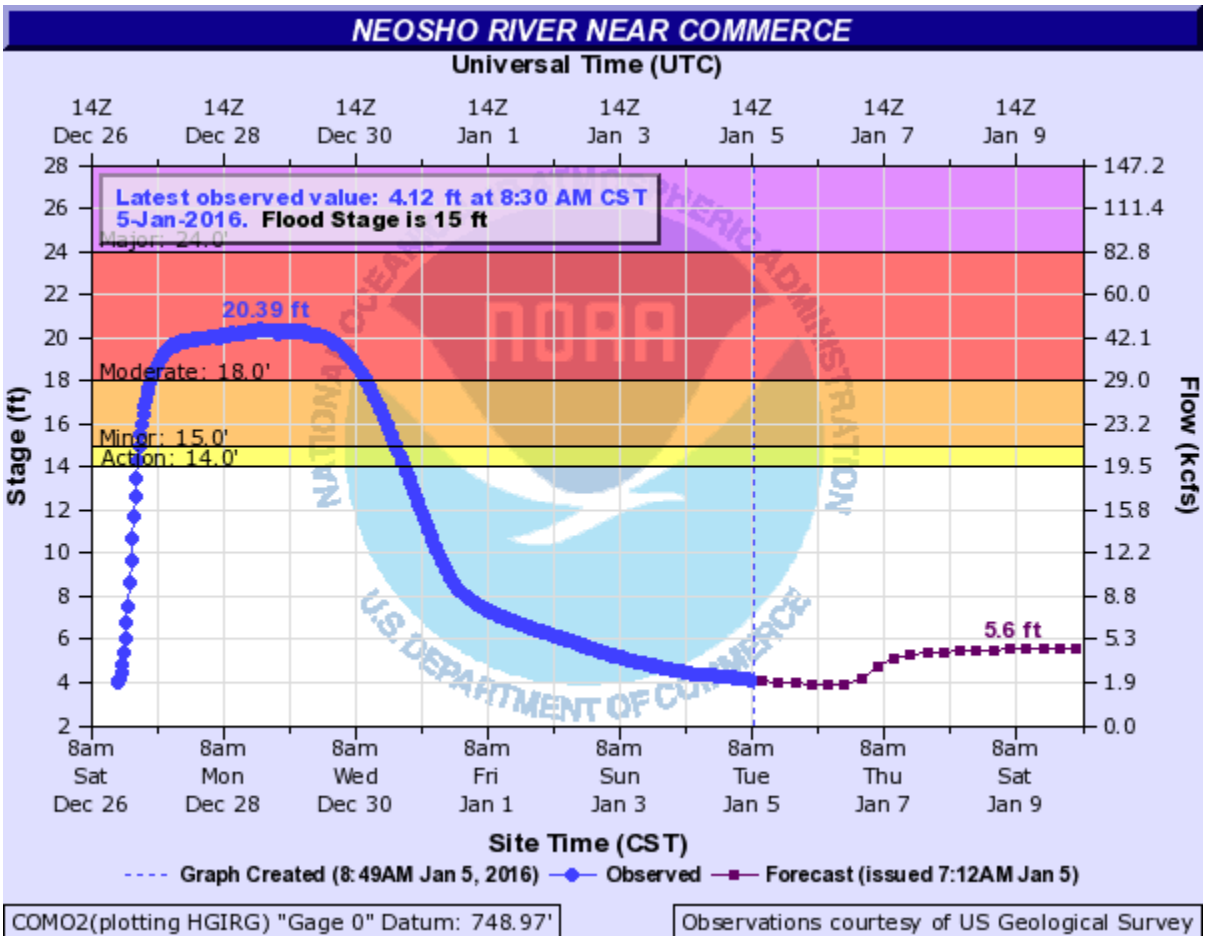


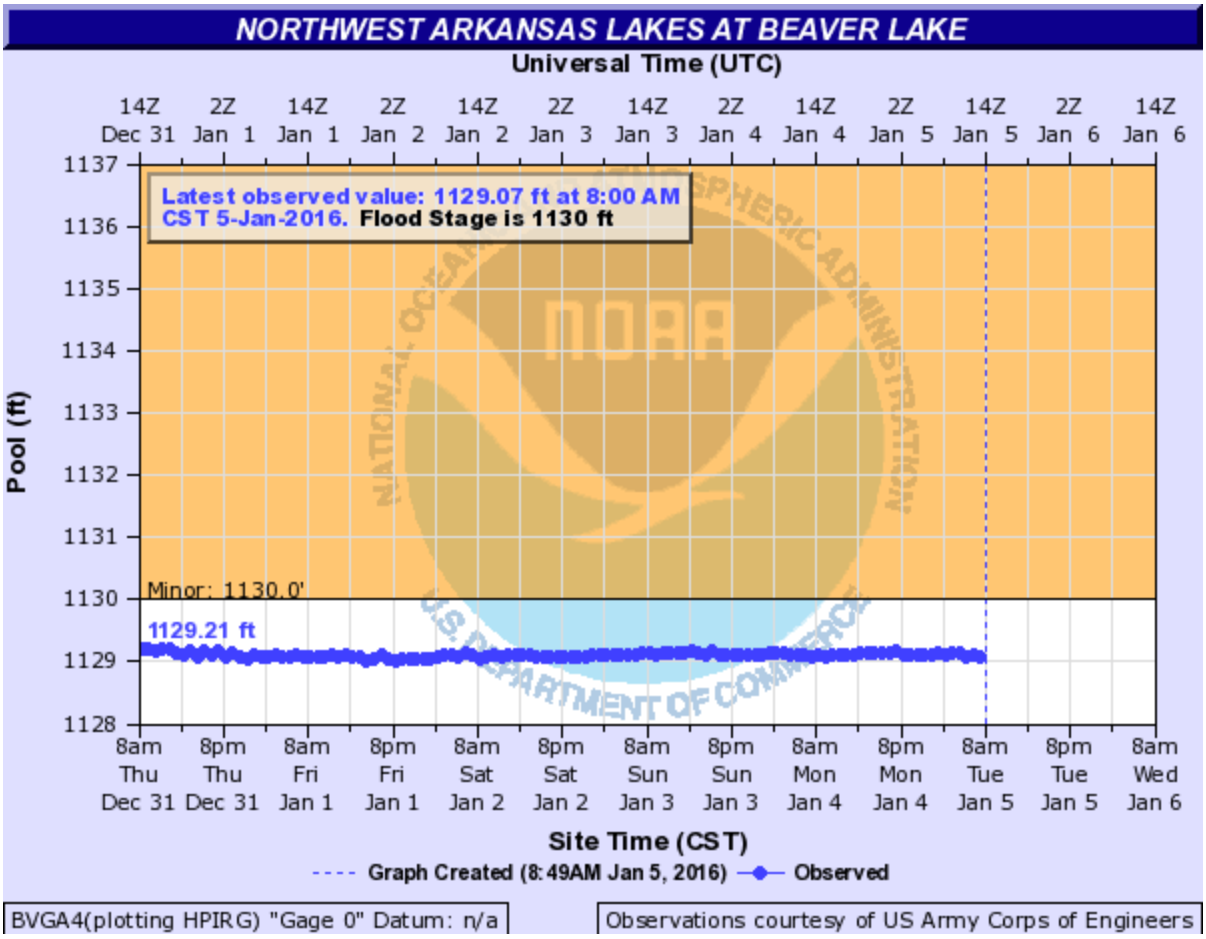
PTAO2(plotting HGIRG) "Gage 0" Datum: 409.4'

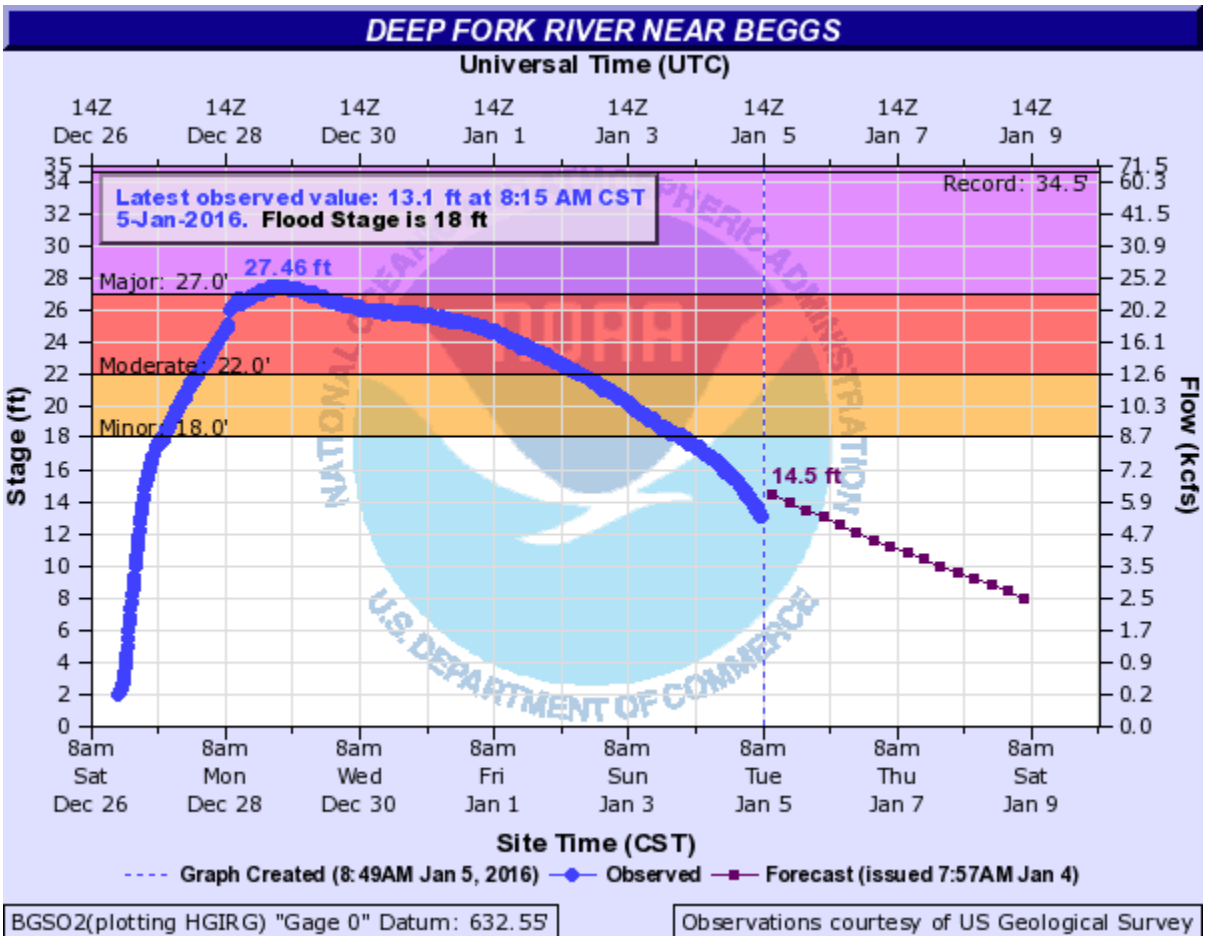

POTEAU RIVER NEAR PANAMA
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 27.63 ft at 8:30 AM CST 5-Jan-2016. Flood Stage is 29 ft
Record: 49.6'
44.05 ft
Major: 41.0'
Moderate: 33.0'
Minor: 29.0'
27.1 ft
Stage (ft)
Flow (kcfs)
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:50AM Jan 5, 2016)
Observed
Forecast (issued 7:49AM Jan 5)
PANO2(plotting HGIRG) "Gage 0" Datum: 387.97'
Observations courtesy of US Geological Survey

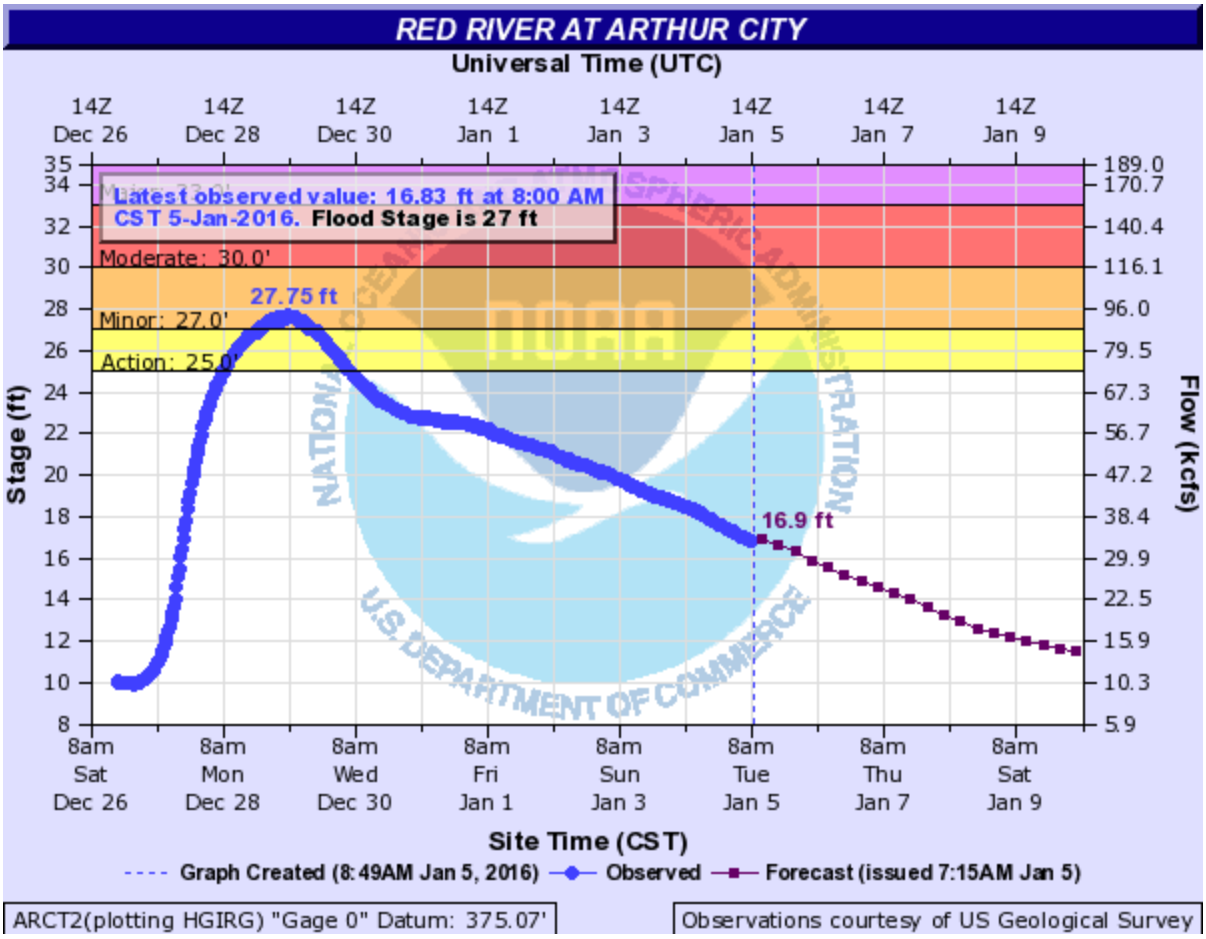

ARKANSAS RIVER AT OZARK L/D TAILWATER
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 356.35 ft at 8:00 AM CST 5-Jan-2016. Flood Stage is 357 ft
Record: 375.5'
369.07 ft
Major: 365.0'
Moderate: 363.0'
Minor: 357.0'
Action: 355.5'
356.6 ft
Tailwater (ft)
Flow (kcfs)
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:50AM Jan 5, 2016)
Observed
Forecast (issued 7:49AM Jan 5)
OZGA4(plotting HTIRG) "Gage 0" Datum: 0'
Observations courtesy of US Army Corps of Engineers - LRD

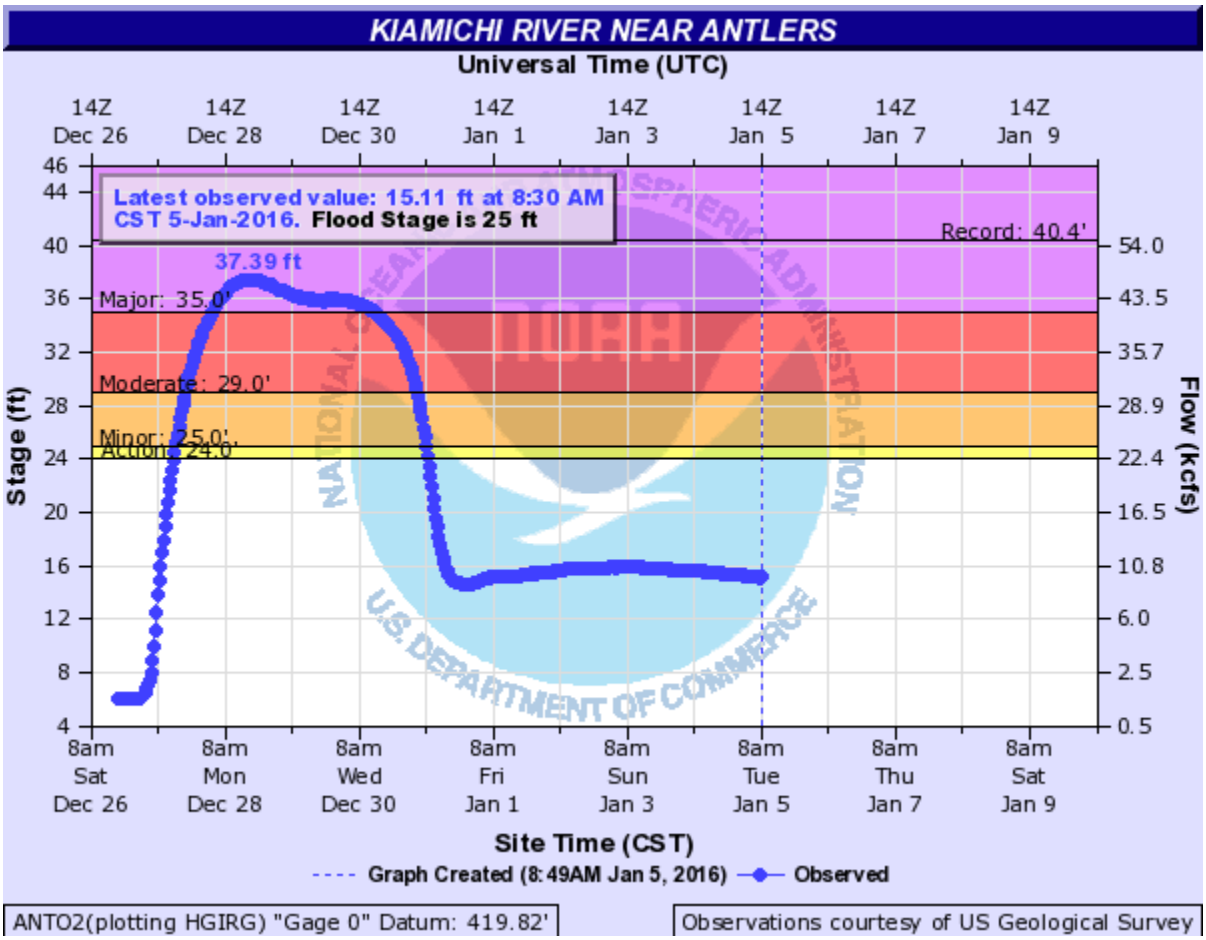

ARKANSAS RIVER NEAR MUSKOGEE
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 23.81 ft at 8:00 AM CST 5-Jan-2016. Flood Stage is 28 ft
35.41 ft
Major: 34.0'
Moderate: 32.0'
Minor: 28.0'
Action: 27.0'
Stage (ft)
Flow (kcfs)
43
41
39
37
35
33
31
29
27
25
23
21
19
523.4
456.6
389.2
321.9
263.7
210.0
165.5
134.2
109.5
85.9
66.0
51.6
32.5
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:50AM Jan 5, 2016)
Observed
MKGO2(plotting HGIRG) "Gage 0" Datum: 471.38'
Observations courtesy of US Geological Survey

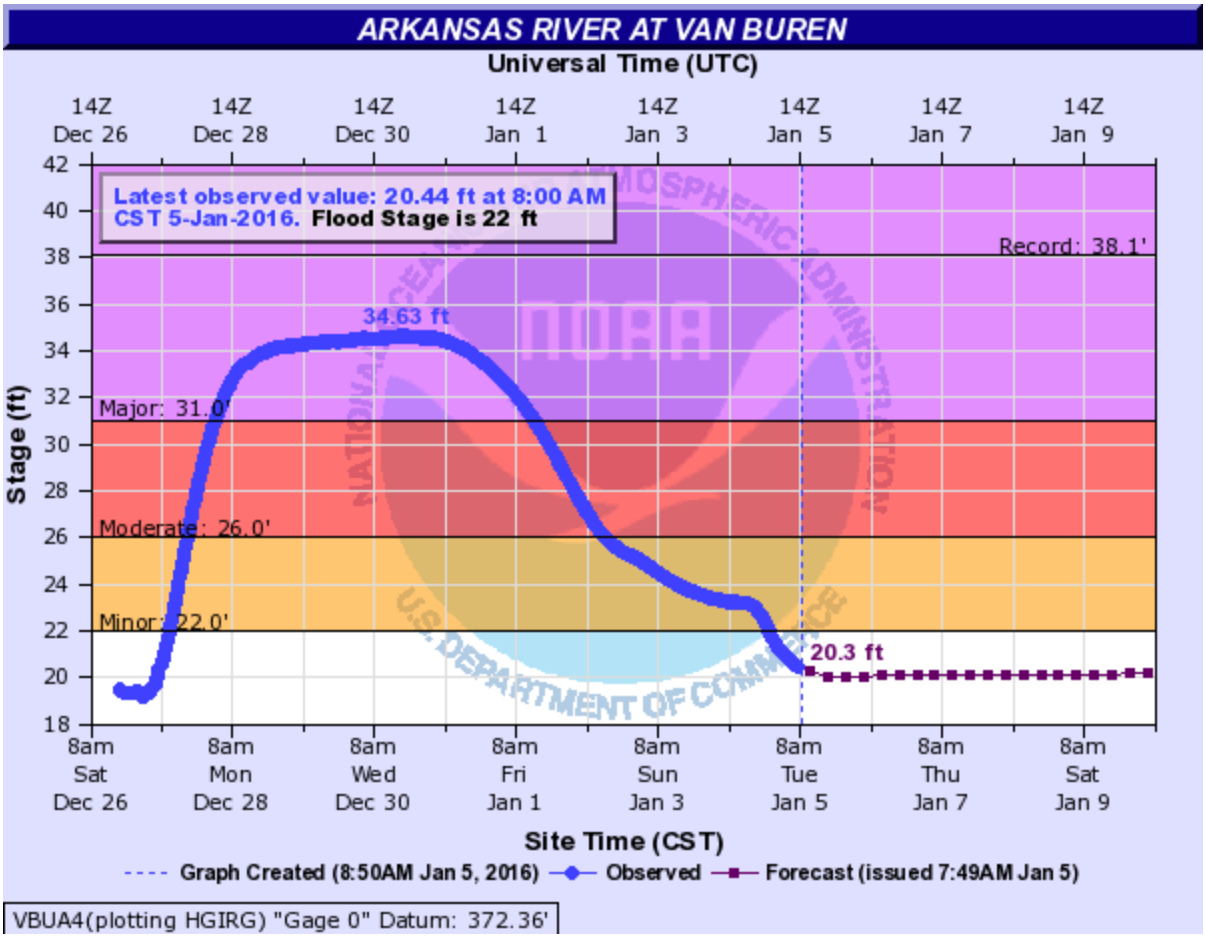

NEOSHO RIVER NEAR COMMERCE
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 4.12 ft at 8:30 AM CST 5-Jan-2016. Flood Stage is 15 ft
Major: 24.0'
20.39 ft
Moderate: 18.0'
Minor: 15.0'
Action: 14.0'
5.6 ft
Stage (ft)
Flow (kcfs)
28
26
24
22
20
18
16
14
12
10
8
6
4
2
147.2
111.4
82.8
60.0
42.1
29.0
23.2
19.5
15.8
12.2
8.8
5.3
1.9
0.0
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:49AM Jan 5, 2016)
Observed
Forecast (issued 7:12AM Jan 5)
COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'
Observations courtesy of US Geological Survey

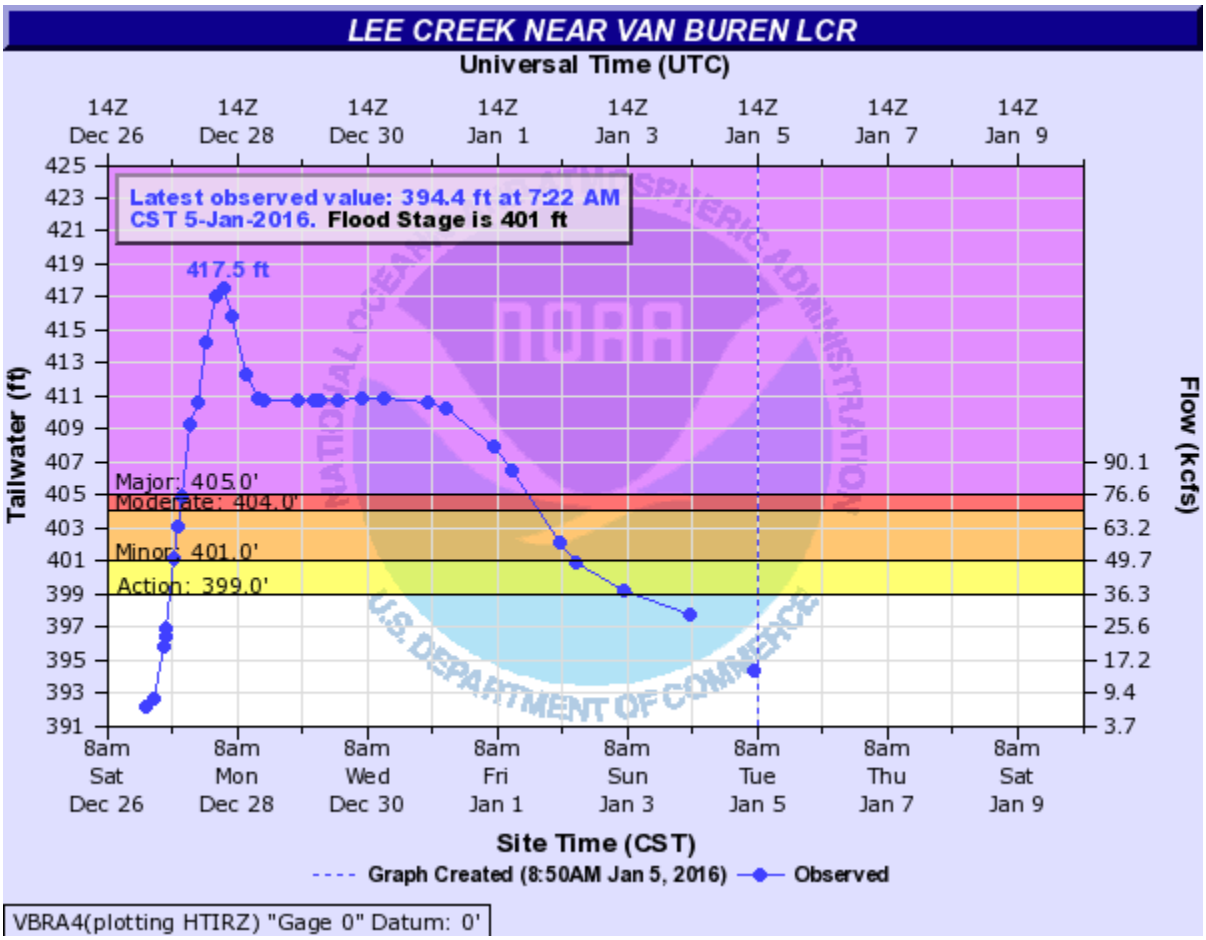

NORTHWEST ARKANSAS LAKES AT BEAVER LAKE
Universal Time (UTC)
14Z Dec 31
2Z Jan 1
14Z Jan 1
2Z Jan 2
14Z Jan 2
2Z Jan 3
14Z Jan 3
2Z Jan 4
14Z Jan 4
2Z Jan 5
14Z Jan 5
2Z Jan 6
14Z Jan 6
Latest observed value: 1129.07 ft at 8:00 AM CST 5-Jan-2016. Flood Stage is 1130 ft
Pool (ft)
1137
1136
1135
1134
1133
1132
1131
1130
1129
1128
Minor: 1130.0'
1129.21 ft
8am Thu Dec 31
8pm Thu Dec 31
8am Fri Jan 1
8pm Fri Jan 1
8am Sat Jan 2
8pm Sat Jan 2
8am Sun Jan 3
8pm Sun Jan 3
8am Mon Jan 4
8pm Mon Jan 4
8am Tue Jan 5
8pm Tue Jan 5
8am Wed Jan 6
Site Time (CST)
Graph Created (8:49AM Jan 5, 2016)
Observed
BVGA4(plotting HPIRG) "Gage 0" Datum: n/a
Observations courtesy of US Army Corps of Engineers

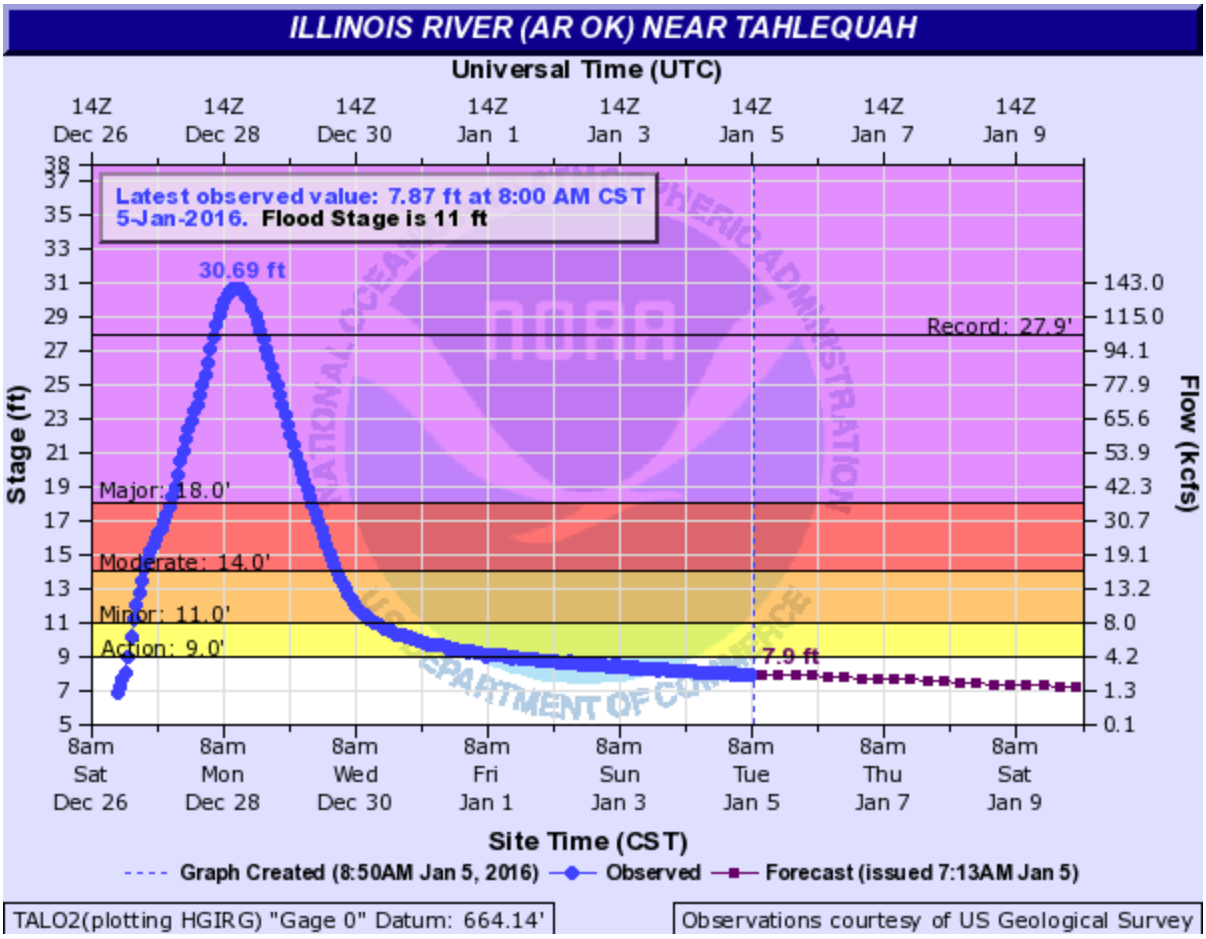

DEEP FORK RIVER NEAR BEGGS
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 13.1 ft at 8:15 AM CST 5-Jan-2016. Flood Stage is 18 ft
Record: 34.5'
Stage (ft)
35
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Flow (kcfs)
71.5
60.3
41.5
30.9
25.2
20.2
16.1
12.6
10.3
8.7
7.2
5.9
4.7
3.5
2.5
1.7
0.9
0.2
0.0
Major: 27.0'
27.46 ft
Moderate: 22.0'
Minor: 18.0'
14.5 ft
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:49AM Jan 5, 2016)
Observed
Forecast (issued 7:57AM Jan 4)
BGSO2(plotting HGIRG) "Gage 0" Datum: 632.55'
Observations courtesy of US Geological Survey

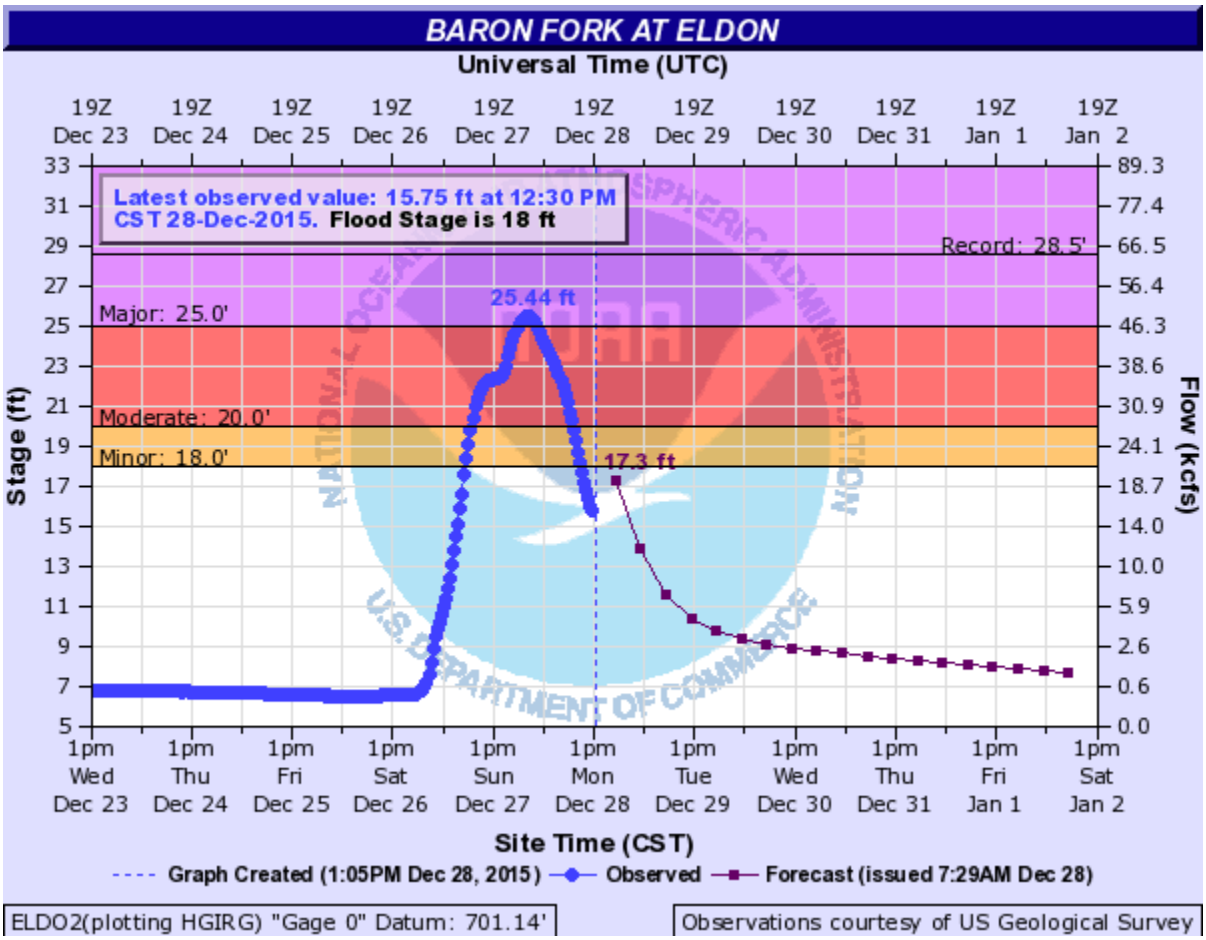

RED RIVER AT ARTHUR CITY
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 16.83 ft at 8:00 AM CST 5-Jan-2016. Flood Stage is 27 ft
Moderate: 30.0'
Minor: 27.0'
Action: 25.0'
27.75 ft
16.9 ft
Stage (ft)
Flow (kcfs)
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:49AM Jan 5, 2016)
Observed
Forecast (issued 7:15AM Jan 5)
ARCT2(plotting HGIRG) "Gage 0" Datum: 375.07'
Observations courtesy of US Geological Survey


KIAMICHI RIVER NEAR ANTLERS
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 15.11 ft at 8:30 AM CST 5-Jan-2016. Flood Stage is 25 ft
Record: 40.4'
Major: 35.0'
Moderate: 29.0'
Minor: 25.0'
Action: 24.0'
37.39 ft
Stage (ft)
Flow (kcfs)
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:49AM Jan 5, 2016)
Observed
ANTO2(plotting HGIRG) "Gage 0" Datum: 419.82'
Observations courtesy of US Geological Survey


ARKANSAS RIVER AT VAN BUREN
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 20.44 ft at 8:00 AM CST 5-Jan-2016. Flood Stage is 22 ft
Record: 38.1'
34.63 ft
Major: 31.0'
Moderate: 26.0'
Minor: 22.0'
20.3 ft
Stage (ft)
42
40
38
36
34
32
30
28
26
24
22
20
18
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:50AM Jan 5, 2016)
Observed
Forecast (issued 7:49AM Jan 5)
VBUA4(plotting HGIRG) "Gage 0" Datum: 372.36'


LEE CREEK NEAR VAN BUREN LCR
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 394.4 ft at 7:22 AM CST 5-Jan-2016. Flood Stage is 401 ft
417.5 ft
Major: 405.0'
Moderate: 404.0'
Minor: 401.0'
Action: 399.0'
Tailwater (ft)
425
423
421
419
417
415
413
411
409
407
405
403
401
399
397
395
393
391
Flow (kcfs)
90.1
76.6
63.2
49.7
36.3
25.6
17.2
9.4
3.7
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:50AM Jan 5, 2016)
Observed
VBRA4(plotting HTIRZ) "Gage 0" Datum: 0'


ILLINOIS RIVER (AR OK) NEAR TAHLEQUAH
Universal Time (UTC)
14Z Dec 26
14Z Dec 28
14Z Dec 30
14Z Jan 1
14Z Jan 3
14Z Jan 5
14Z Jan 7
14Z Jan 9
Latest observed value: 7.87 ft at 8:00 AM CST 5-Jan-2016. Flood Stage is 11 ft
30.69 ft
Record: 27.9'
Major: 18.0'
Moderate: 14.0'
Minor: 11.0'
Action: 9.0'
7.9 ft
Stage (ft)
Flow (kcfs)
8am Sat Dec 26
8am Mon Dec 28
8am Wed Dec 30
8am Fri Jan 1
8am Sun Jan 3
8am Tue Jan 5
8am Thu Jan 7
8am Sat Jan 9
Site Time (CST)
Graph Created (8:50AM Jan 5, 2016)
Observed
Forecast (issued 7:13AM Jan 5)
TALO2(plotting HGIRG) "Gage 0" Datum: 664.14'
Observations courtesy of US Geological Survey


BARON FORK AT ELDON
Universal Time (UTC)
19Z Dec 23
19Z Dec 24
19Z Dec 25
19Z Dec 26
19Z Dec 27
19Z Dec 28
19Z Dec 29
19Z Dec 30
19Z Dec 31
19Z Jan 1
19Z Jan 2
Latest observed value: 15.75 ft at 12:30 PM CST 28-Dec-2015. Flood Stage is 18 ft
Record: 28.5'
25.44 ft
Major: 25.0'
Moderate: 20.0'
Minor: 18.0'
17.3 ft
Stage (ft)
Flow (kcfs)
1pm Wed Dec 23
1pm Thu Dec 24
1pm Fri Dec 25
1pm Sat Dec 26
1pm Sun Dec 27
1pm Mon Dec 28
1pm Tue Dec 29
1pm Wed Dec 30
1pm Thu Dec 31
1pm Fri Jan 1
1pm Sat Jan 2
Site Time (CST)
Graph Created (1:05PM Dec 28, 2015)
Observed
Forecast (issued 7:29AM Dec 28)
ELDO2(plotting HGIRG) "Gage 0" Datum: 701.14'
Observations courtesy of US Geological Survey