

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

REPORT FOR:

MONTH **April** YEAR **2012**

SIGNATURE

Steven F. Piltz
(Meteorologist-in-Charge)

DATE

May 4, 2012

TO: Hydrometeorological Information Center, W/OH2
NOAA / National Weather Service
1325 East West Highway, Room 7230
Silver Spring, MD 20910-3283

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 flooding rains affected northeast Oklahoma during April 2012, while the remainder of the HSA ended the month with below normal rainfall. Normal precipitation for the month of April ranges from 3.1 inches in Pawnee County to 4.7 inches in Latimer County. The Ozark region of northwest Arkansas averages 4.3 inches for the month.

Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for April 2012 ranged from near 12" along the Oklahoma-Kansas border to near 1" in southeast Oklahoma. Areas northwest of I-44 received above normal rainfall for April, with locations near the Oklahoma-Kansas border getting 200-350% of the normal April rain (Fig. 1b). For most of the remainder of eastern OK and northwest AR, this month's rainfall was only 25% to 75% of normal.

Tulsa, OK (TSA): April, 2012 Monthly Observed Precipitation
Valid at 5/1/2012 1200 UTC- Created 5/1/12 17:42 UTC

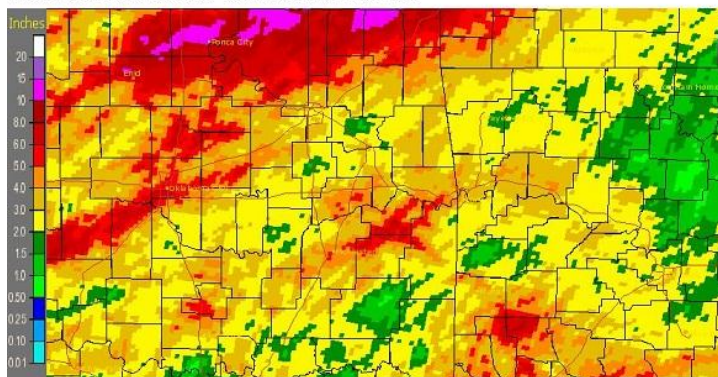


Fig. 1a. Estimated Observed Rainfall for April 2012

Tulsa, OK (TSA): April, 2012 Monthly Percent of Normal Precipitation
Valid at 5/1/2012 1200 UTC- Created 5/1/12 17:46 UTC

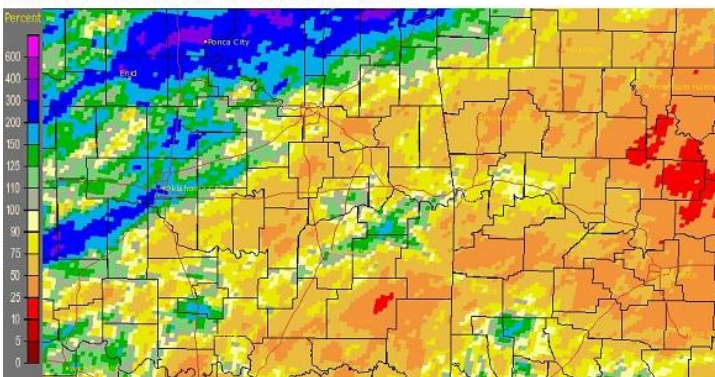


Fig. 1b. Estimated % of Normal Rainfall for April 2012

In Tulsa, OK, April 2012 ranked as the 10th warmest April (65.6°F; since records began in 1905) and the 59th driest April (3.62"; since records began in 1888). Fort Smith, AR, was the 3rd warmest April (67.5°F) and the 48th driest April (2.99") since records began in 1883. Ponca City (regional airport) recorded its wettest April since records began in 1948 with 11.54". The previous record was 9.66" in 1994.

Some of the larger precipitation reports (in inches) for April 2012 included:

Foraker, OK (meso)	9.79	Burbank, OK (meso)	8.26	Nowata, OK (meso)	7.75
Copan, OK (meso)	7.57	Miami, OK (meso)	7.54	Bartlesville, OK (ASOS)	7.36
Vinita, OK (meso)	7.15	Skiatook, OK (meso)	6.56	Wynona, OK (meso)	6.30

Some of the lowest precipitation reports (in inches) for April 2012 included:

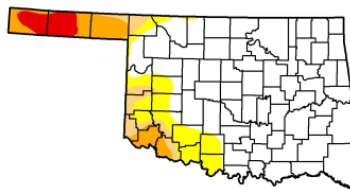
Tuskahoma, OK (coop)	1.52	Okmulgee, OK (meso)	1.57	Okemah, OK (meso)	1.65
Cloudy, OK (meso)	1.72	Northwest AR Reg. Arpt. (ASOS)	1.94	Tahlequah, OK (meso)	1.98
Clayton, OK (meso)	2.01	Muskogee, OK (coop)	2.04	Oktaha, OK (coop)	2.05

U.S. Drought Monitor

Oklahoma

May 1, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	75.68	24.32	14.11	9.78	3.27	0.00
Last Week (04/24/2012 map)	74.94	25.06	15.00	9.78	3.27	0.00
3 Months Ago (01/31/2012 map)	24.91	75.09	66.53	49.80	26.62	3.78
Start of Calendar Year (12/27/2011 map)	14.83	85.17	78.76	50.55	27.48	3.33
Start of Water Year (09/27/2011 map)	0.00	100.00	100.00	100.00	78.97	66.42
One Year Ago (04/26/2011 map)	16.89	83.11	72.45	60.83	38.86	1.95



Intensity:



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



Released Thursday, May 3, 2012

<http://droughtmonitor.unl.edu>

Matthew Rosencrans, Climate Prediction Center/NCEP/NWS/NOAA

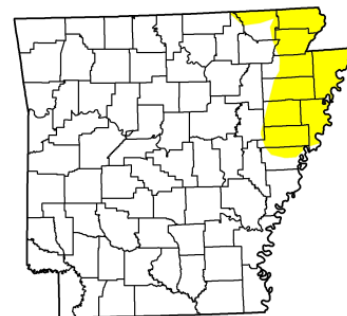
Fig. 2. Drought Monitor for Oklahoma

U.S. Drought Monitor

Arkansas

May 1, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	89.23	10.77	0.00	0.00	0.00	0.00
Last Week (04/24/2012 map)	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago (01/31/2012 map)	93.10	6.90	1.83	0.73	0.23	0.00
Start of Calendar Year (12/27/2011 map)	86.20	13.80	3.95	1.06	0.23	0.00
Start of Water Year (09/27/2011 map)	1.21	98.79	75.99	39.48	18.92	1.53
One Year Ago (04/26/2011 map)	50.13	49.87	24.45	13.41	3.86	0.00



Intensity:



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



Released Thursday, May 3, 2012

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Matthew Rosencrans, Climate Prediction Center/NCEP/NWS/NOAA

Fig. 3. Drought Monitor for Arkansas

According to the [U.S. Drought Monitor](#) (USDM) from May 1, 2012 (Figs 2, 3), drought conditions no longer existed in eastern OK and northwest AR.

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

Rank since 1921	April 2012	Spring (Mar 1-Apr 30, 2012)	Year-to-Date (Jan 1 – Apr 30, 2012)	Water Year (Oct 1, 2011 – Apr 30, 2012)	Last 90 Days (Feb 1 – Apr 30, 2012)	Last 180 Days (Nov 3, 2011 – Apr 30, 2012)	Last 365 days (May 2, 2011– Apr 30, 2012)
Northeast OK	17 th wettest	7 th wettest	11 th wettest	14 th wettest	7 th wettest	6 th wettest	39 th wettest
East Central OK	20 th driest	32 nd wettest	30 th wettest	28 th wettest	34 th wettest	20 th wettest	28 th driest
Southeast OK	13 th driest	30 th wettest	25 th wettest	17 th wettest	35 th wettest	11 th wettest	29 th driest
Statewide	33 rd wettest	12 th wettest	14 th wettest	11 th wettest	13 th wettest	8 th wettest	23 rd driest

Most of the major reservoirs in the Tulsa HSA were operating within $\pm 5\%$ of the top of their conservation pools as of May 1, 2012. Only two reservoirs were reporting conservation pool deficits as of May 1, 2012: Skiatook Lake 83% (which is an increase from 72% at the end of March) and Hugo Lake 92%. Several reservoirs in the Grand-Neosho, Verdigris, and Arkansas River Basins were operating within their flood pools as of May 1, 2012: Hulah Lake 41%, Copan Lake 27%, Oologah Lake 15%, Pensacola Lake 10%, and Kaw Lake 8%.

Outlooks

The [Climate Prediction Center](#) (CPC) outlook for May 2012 (issued April 30, 2012) indicates an enhanced chance for above normal temperatures and equal chances for above, near, and below median precipitation for the entire area. This outlook was based primarily on short-term dynamic computer models.

For the 3-month period May-Jun-Jul 2012, CPC is forecasting a slightly enhanced chance for above average temperatures across southeast OK and west central AR, with equal chances for above, near, and below normal temperatures elsewhere. This outlook also indicates equal chances for above, near, and below median precipitation across the region (outlook issued April 19, 2012). This outlook is based primarily on dynamic computer models since La Niña no longer plays a direct role in the forecast. According to CPC, La Niña has weakened and ENSO neutral conditions are expected through the summer. However, there may be some lingering atmospheric and soil moisture impacts from La Niña in the short-term.

Summary of Precipitation Events

April 1 – 12:

A line of convection developed across central OK and central TX on the 3rd, which moved eastward into east central and southeast OK and west central AR during the afternoon and evening hours. A few severe thunderstorms produced wind damage in Latimer, Le Flore, Sebastian, and Crawford Counties. Minor flash flooding was also reported in Crawford County. (This storm system was also responsible for several tornadoes in the DFW metroplex.) Rainfall totals from southeast OK into west central AR ranged from around 0.50" to 1.5", with higher totals of 1.5" to around 3" in portions of Pittsburg, Pushmataha, Latimer, Haskell, Sequoyah, Crawford, and Franklin Counties.

Showers and thunderstorms that had developed over the TX panhandle on the evening of the 6th, moved east across OK and affected northeast OK and northwest AR during the morning and afternoon hours of the 7th. Rainfall totals ranged from around 0.10" to around 1", with the highest totals of 1"-2.5" occurring over portions of Osage, Washington (OK), and Nowata Counties.

Showers and isolated thunderstorms affected Pittsburg, Pushmataha, and Choctaw Counties in southeast OK starting early on Easter Sunday, April 8th, and continuing into the late afternoon. Rainfall totals were generally 0.5" to 1.5".

A couple of isolated thunderstorms affected Osage and Washington, and Craig and Nowata Counties in northeast OK on the evening of the 9th. Rainfall totals of 0.25" to 1" occurred across the affected locations, with reports of hail to the size of golf balls. A few light showers moved out of MO and through Carroll County in northwest AR during the early morning of the 10th.

A band of showers and thunderstorms developed shortly after midnight on the 11th along an elevated frontal boundary from south central KS, across the HSA, and into southwest AR. This activity lingered into the afternoon hours before dissipating. Rainfall amounts across much of the affected area ranged from around 0.1"-0.5". Higher totals of 1"-2.5" occurred from Creek County southeast to Le Flore County. The boundary then lifted quickly north on the evening of the 11th and 12th.

April 13 – 27:

The HSA remained in the warm sector April 13-15 as several shortwaves ejected from a trough of low pressure to the west. This resulted in two rounds of severe weather across the HSA. Thunderstorms developed during the afternoon of the 13th across northeast OK, while additional storms developed over central OK and moved into northeast OK during the evening hours and overnight hours. These storms finally moved northeast of the HSA by late morning of the 14th. This activity affected locations along and northwest of I-44, where rainfall ranged from 0.25" to 2.5" (Fig. 4). A few of these storms were severe, producing 1" hail and damaging wind gusts. Scattered light showers and isolated thunderstorms then affected eastern OK during the afternoon and evening hours of the 14th, followed by a squall line that moved into eastern OK during the early morning hours of the 15th. Most of the area received between 0.25" and 1.5" of rain as this line moved east across eastern OK and western AR during the day on the 15th. Damaging winds and 2 EF-1 tornadoes (one near Skiatook and one from the northern portion of Tenkiller Lake into Adair County) also occurred with the squall line (Fig. 5).

A cold front moved through the region on the 19th. Showers and thunderstorms developed near the front during the evening and overnight hours, bringing widespread 0.1"-0.5" of rain to much of eastern OK and northwest AR. Isolated areas received 0.5" to near 1.5" of rainfall from this activity.

Tulsa, OK (TSA): 4/14/2012 1-Day Observed Precipitation
Valid at 4/14/2012 1200 UTC- Created 4/16/12 23:31 UTC



Fig. 4. Estimated Observed Rainfall ending 7am April 14, 2012

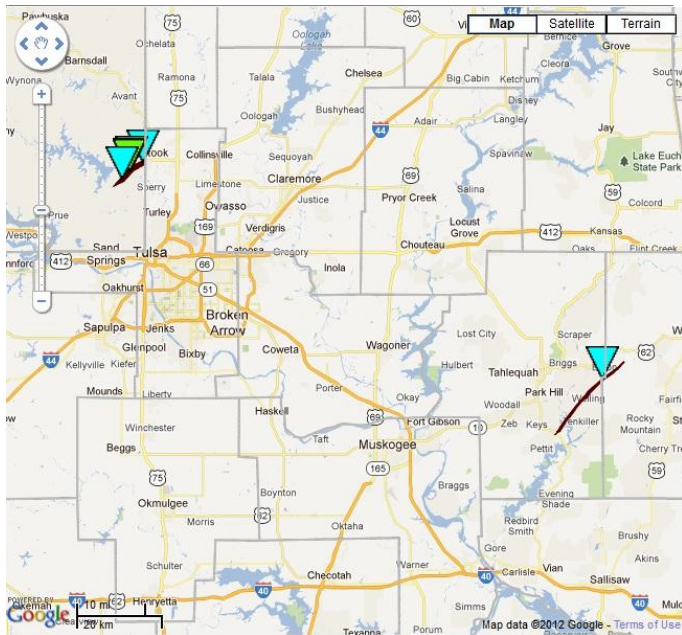


Fig. 5. 2 EF-1 tornado tracks from the squall line on April 15, 2012.

April 28 – May 1:

A nearly stationary front located along a line from near Stillwater to near Bartlesville provided the focus for showers and thunderstorms during the overnight and morning hours of the 29th. 0.5" to around 2" of rain fell northwest of I-44 from this activity. The widespread rainfall gradually shifted north into KS during the day on the 29th before scattered shower activity renewed over north central and northeast OK during the afternoon hours. As an upper-level wave passed over the area late in the day, more widespread and organized convection developed near the quasi-stationary boundary located northwest of I-44. With the upper-level flow oriented along the stationary boundary, the same areas of north central and northeast OK that had the moderate rain on the 29th (in addition to southeast KS) experienced repeated rounds of additional heavy rain during the late evening of the 29th through the morning hours of the 30th (see Fig. 6). The highest rainfall totals within the HSA were 5"-8", occurring over eastern Kay, northern Osage, and far northern Washington Counties. In Burbank (Osage Co.), 1.44" fell during the first round of storms, followed by 3.26" the next night for a total of 4.70" (measurements from the OK Mesonet). This rainfall over Burbank (and the even higher totals upstream) led to severe flash flooding in Burbank, necessitating swift water rescues and evacuations (by boat) of approximately 12 homes on the 30th as Salt Creek flooded. State Highway 18 near Fairfax was also closed due to high water from Salt Creek, and numerous county roads were impassible throughout Osage County. An EF-1 tornado

also occurred in Osage County approximately 6 miles east northeast of Fairfax. Figure 7 show the rainfall from both rain events combined.

The line of showers and thunderstorms finally moved southeast during the day on the 30th, affecting the remainder of eastern OK and northwest AR. Outside of the heaviest rain axis already discussed, rainfall totals ranged from around 2" in northeast OK to around 0.3"-1" across most of eastern OK and northwest AR.

A third round of nocturnal thunderstorms affected locations along the OK-KS state line from the evening of the 30th to the early morning hours of May 1st. This round of storms brought widespread 0.25"-1" of rain to eastern OK and northwest AR, with some areas receiving around 2" of rain. Higher amounts of 2"-6" fell over northern Nowata and northern Craig Counties (and extended further north into southeast KS) (see Figs. 8, 9). These high amounts combined with the antecedent rainfall from the past two nights, led to more flash flooding and exacerbated the ongoing river flooding. The greatest flooding impact for this last round of rain occurred across Nowata and Craig Counties, with reports of flooded homes in South Coffeyville and in Welch. Media reports indicated around 17 people were rescued by boat from flooded homes on the west side of Welch. GRDA patrolmen and a Centralia volunteer fire fighter rescued 7 adults, 5 children, and 5 family dogs, in flood waters that were reported to be as high as 15' in some places. High water also washed out the State Highway 10 bridge west of Welch. In addition to the flooding, 4 confirmed tornadoes (and 4 possible tornadoes pending at the time of this writing) also occurred. These storms formed a line that moved through the remainder of eastern OK and northwest AR during the early morning hours of May 1st, bringing an additional 0.25" of rain with isolated areas around 0.75".

Widespread 5"-6" of rain fell across the Verdigris River basin upstream of Lenapah, with areas of over 7" in the upper reaches through the morning of the 30th. After the additional rainfall April 30-May 1, widespread storm total rainfall of 6"-10" with an isolated 12" occurred over the Verdigris River basin upstream of Lenapah. This led to major flooding along the Verdigris River near Lenapah. Moderate flooding occurred along the Neosho River near Commerce due to widespread 3" and isolated areas of over 5" of rain across the basin in southeast KS through the morning of the 30th and widespread 3"-5" with isolated 7" from the last round of storms. Figure 10 shows the 3-day storm total rainfall across northeast OK and southeast KS. Additional minor river flooding occurred along the Neosho River near Quapaw (refer to the April and May E3 reports for specific information on all river floods) and several other river forecast points rose to within inches of flood stage. Preliminary hydrographs are available at the end of this report.

After 3 days of thunderstorms, most locations northwest of I-44 received a total of 2" to 10" of rain, as shown in Fig. 11. For the rest of the HSA, rainfall totals across all but far southeast OK were 0.5" to 2". All of this rain led to widespread damage, especially to many roads and several homes, across northeast OK. Thankfully, no fatalities were reported, thanks in part to the efforts of swift water rescue teams. Information on this 3-day event can also be found at: http://www.srh.noaa.gov/tsa/?n=weather-event_2012aprfflood

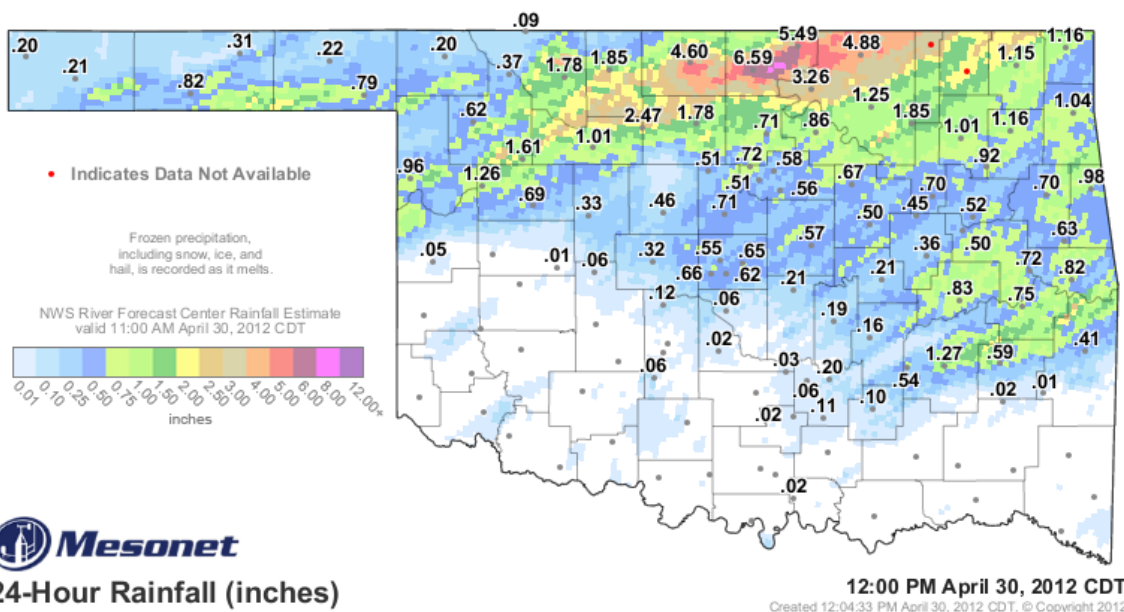
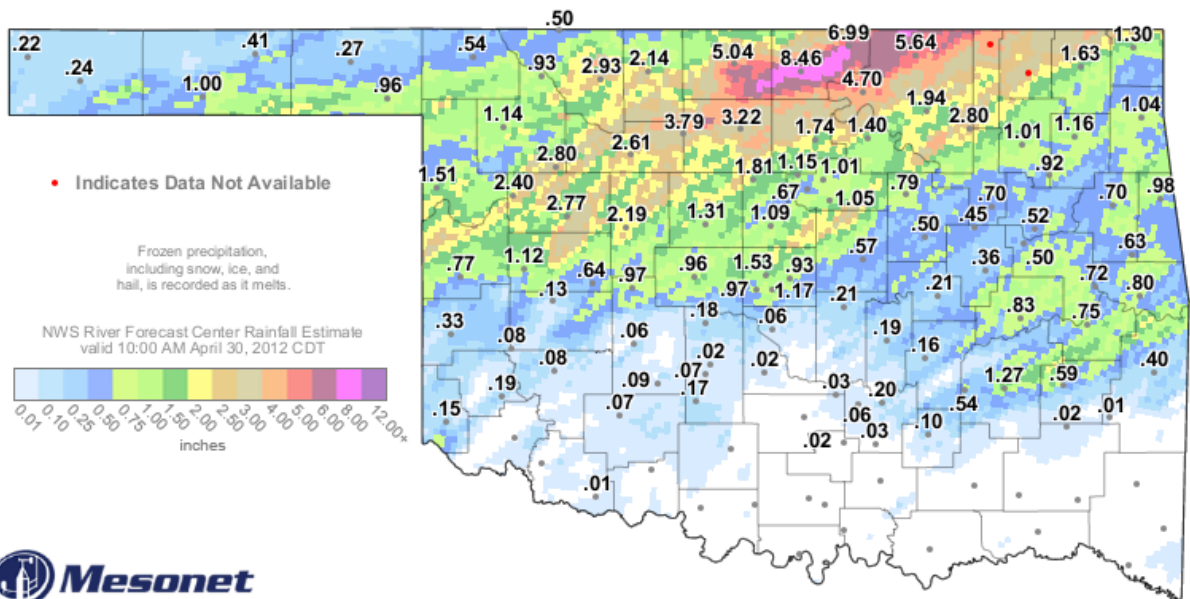


Fig. 6. 24-hr rainfall total ending at Noon 4/30/12. Courtesy of the OK Mesonet.



2-Day Rainfall (inches)

11:05 AM April 30, 2012 CDT

Created 11:09:28 AM April 30, 2012 CDT. © Copyright 2012

Fig. 7. 48-hr rainfall total ending at 11:05am 4/30/2012. Courtesy of the OK Mesonet.

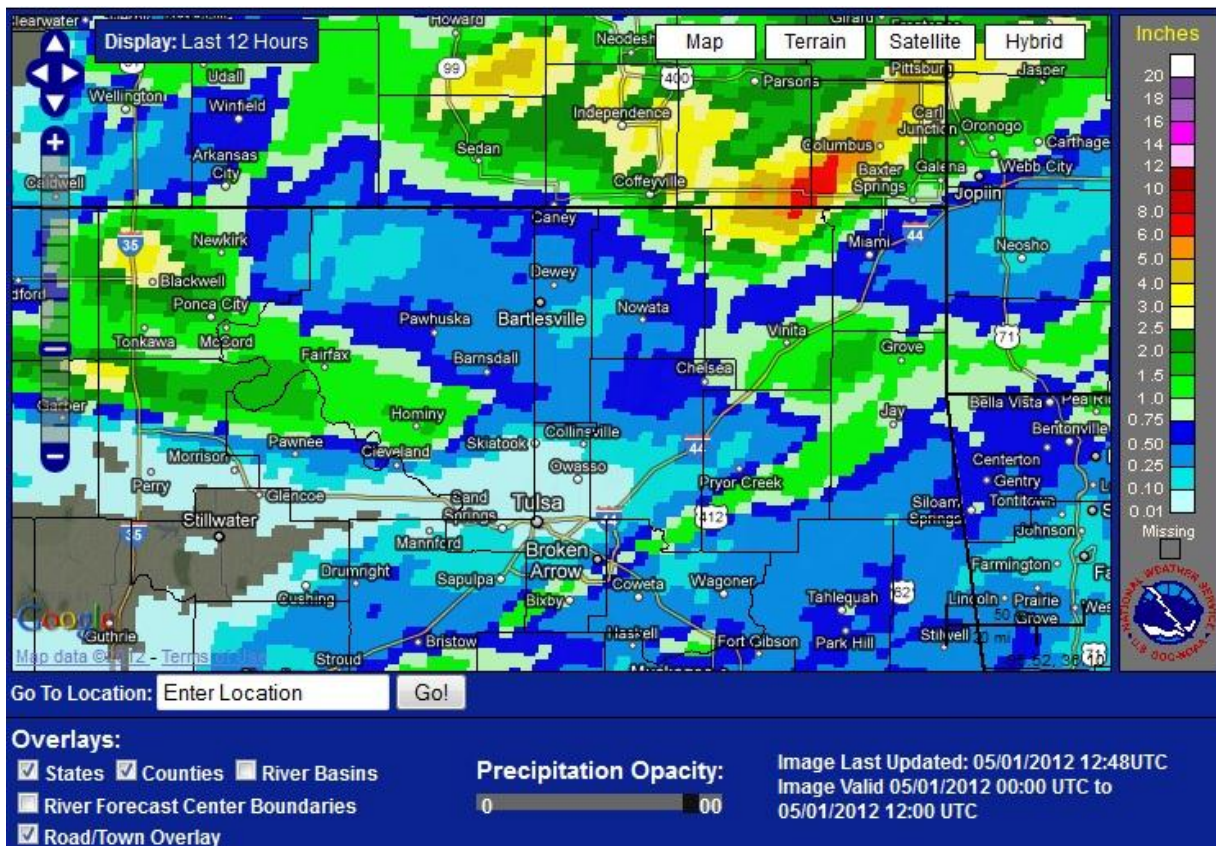
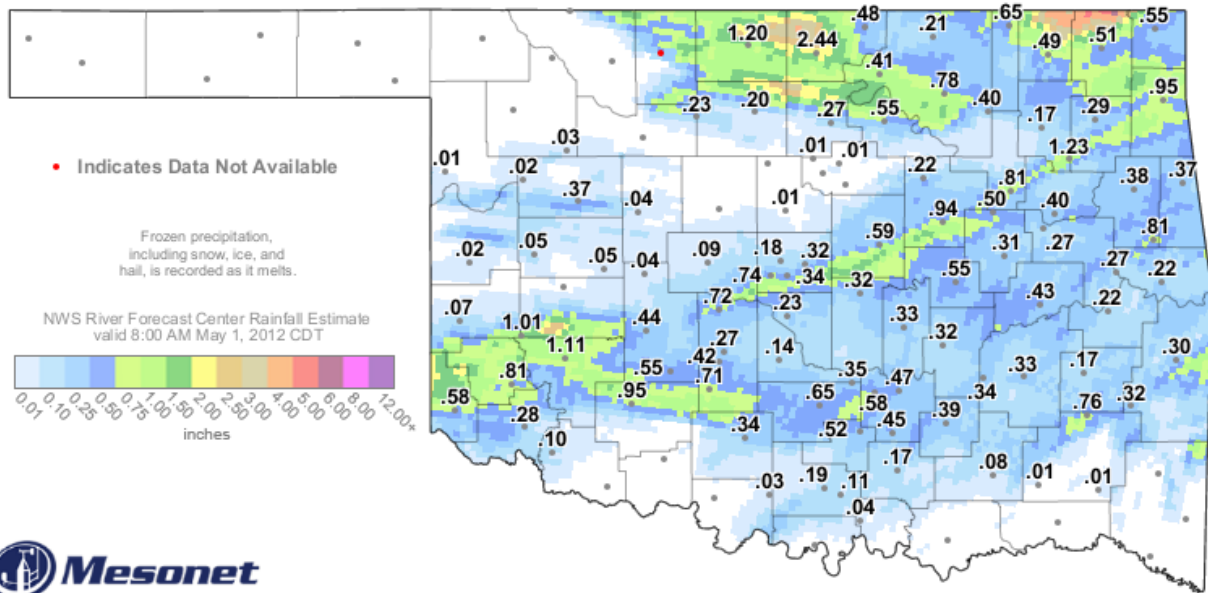


Fig. 8. 12-hour rainfall totals from 7pm April 30-7am May 1.



12-Hour Rainfall (inches)

9:05 AM May 1, 2012 CDT

Created 9:09:32 AM May 1, 2012 CDT. © Copyright 2012

Fig. 9. 12-hr rainfall total ending at 9:05am May 1, 2012 (courtesy of the OK Mesonet)

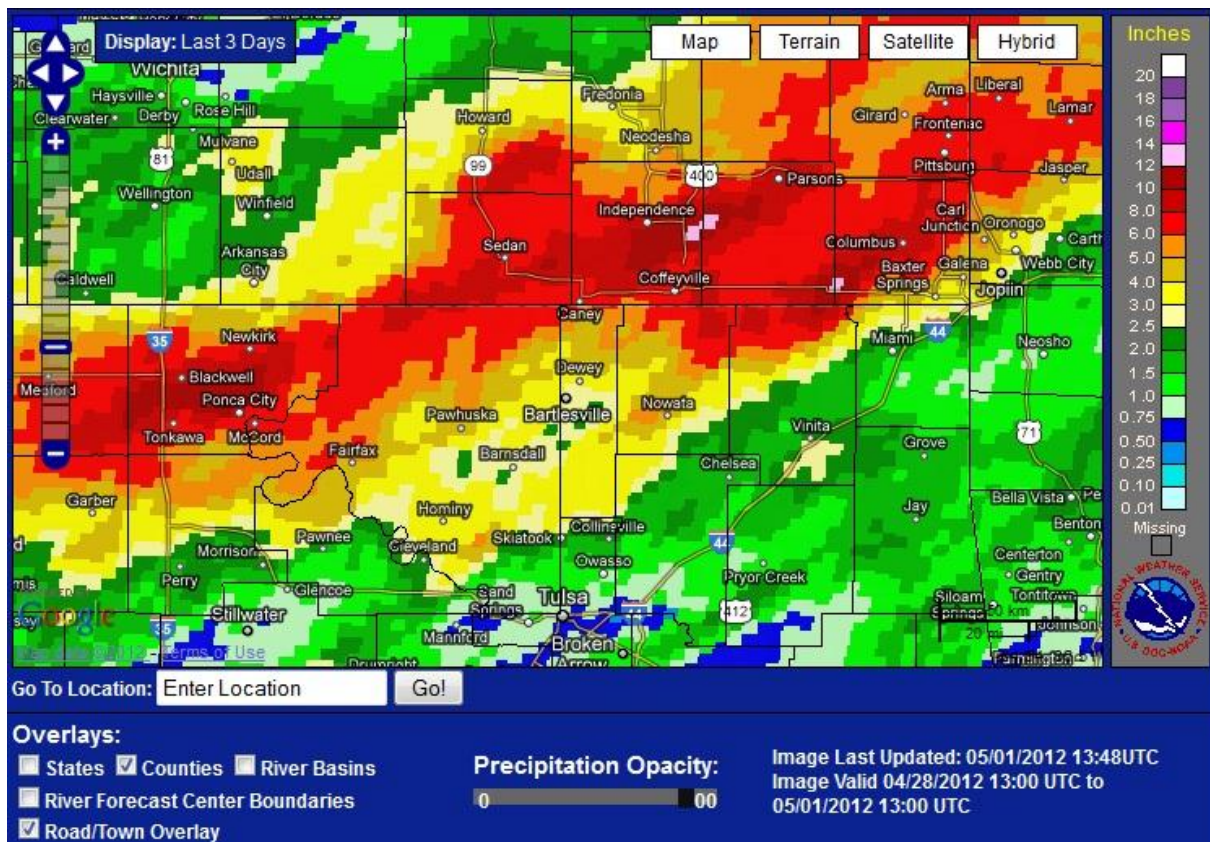


Fig. 10. 3-day rainfall total ending at 8am May 1, 2012, zoomed in to northeast OK/southeast KS

Tulsa, OK (TSA): Current 7-Day Observed Precipitation
Valid at 5/1/2012 1200 UTC- Created 5/1/12 17:56 UTC

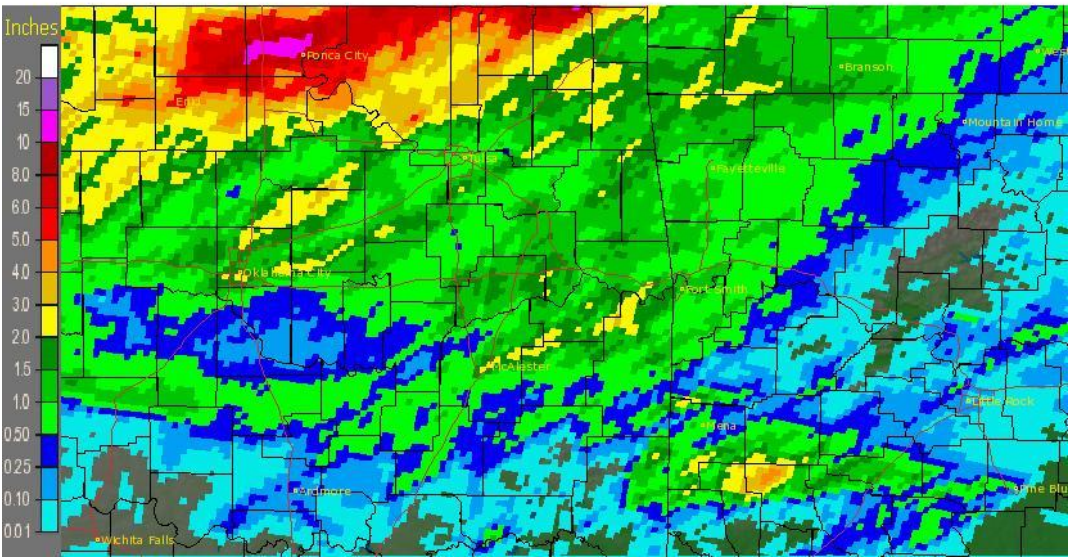


Fig. 11. Storm total rainfall from April 29-May 1, 2012.

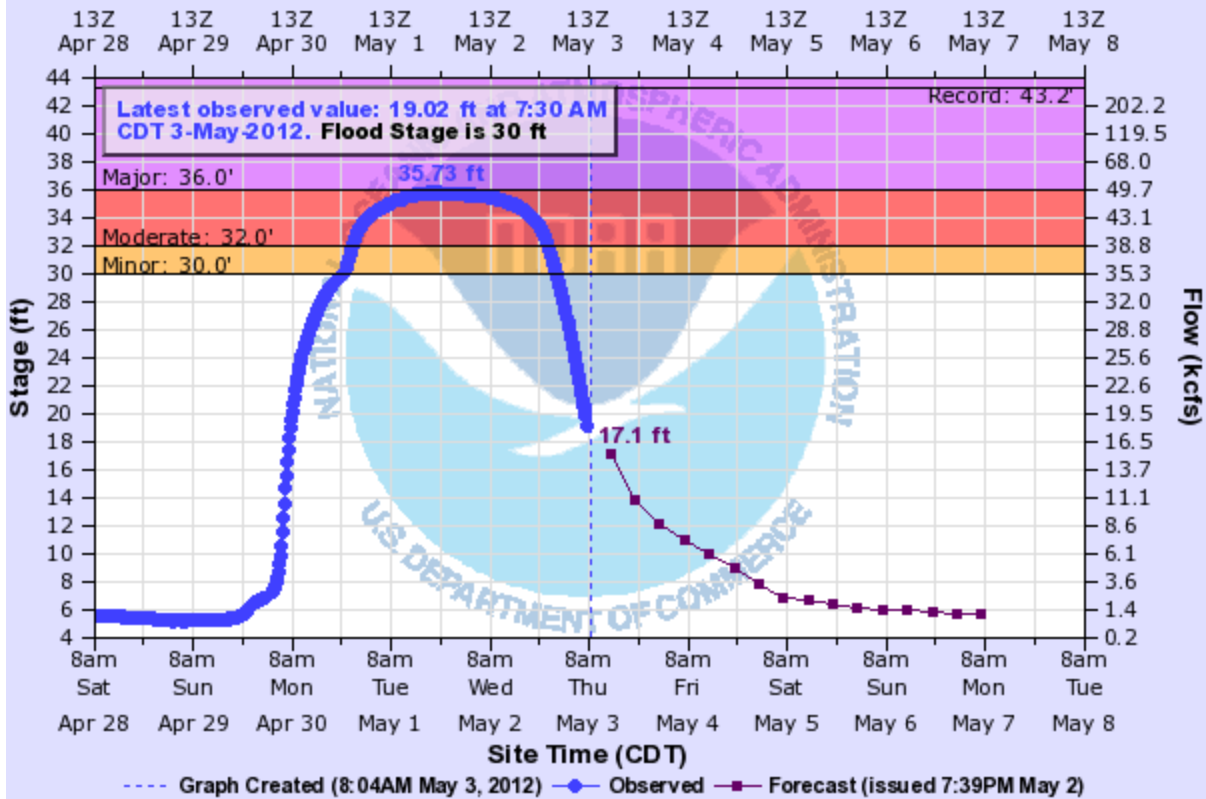
Written by:
Nicole McGavock
Service Hydrologist
WFO Tulsa

- Products issued in April 2012:
- 5 Flash Flood Warnings (FFW)
 - 3 Flash Flood Statements (FFS)
 - 1 Flash/Areal Flood Watches (FFA) (1 Watch FFA CON/EXT/CAN)
 - 9 Urban and Small Stream Advisories (FLS) (3 Advisory FLS CON/EXT/CAN)
 - 2 Areal Flood Warnings (FLW)
 - 1 Areal Flood Statements (FLS)
 - 5 River Flood Warnings (FLW)
 - 12 River Flood Statements (FLS)
 - 0 River Flood Advisories (FLS) (0 Advisory FLS CON/EXT/CAN)
 - 0 River Flood Watches (FFA) (0 Watch FFA CON/EXT/CAN)
 - 2 River Statements (RVS)
 - 0 Hydrologic Outlooks (ESF)
 - 0 Drought Information Statements (DGT)

Preliminary Hydrographs:

VERDIGRIS RIVER NEAR LENAPAH

Universal Time (UTC)

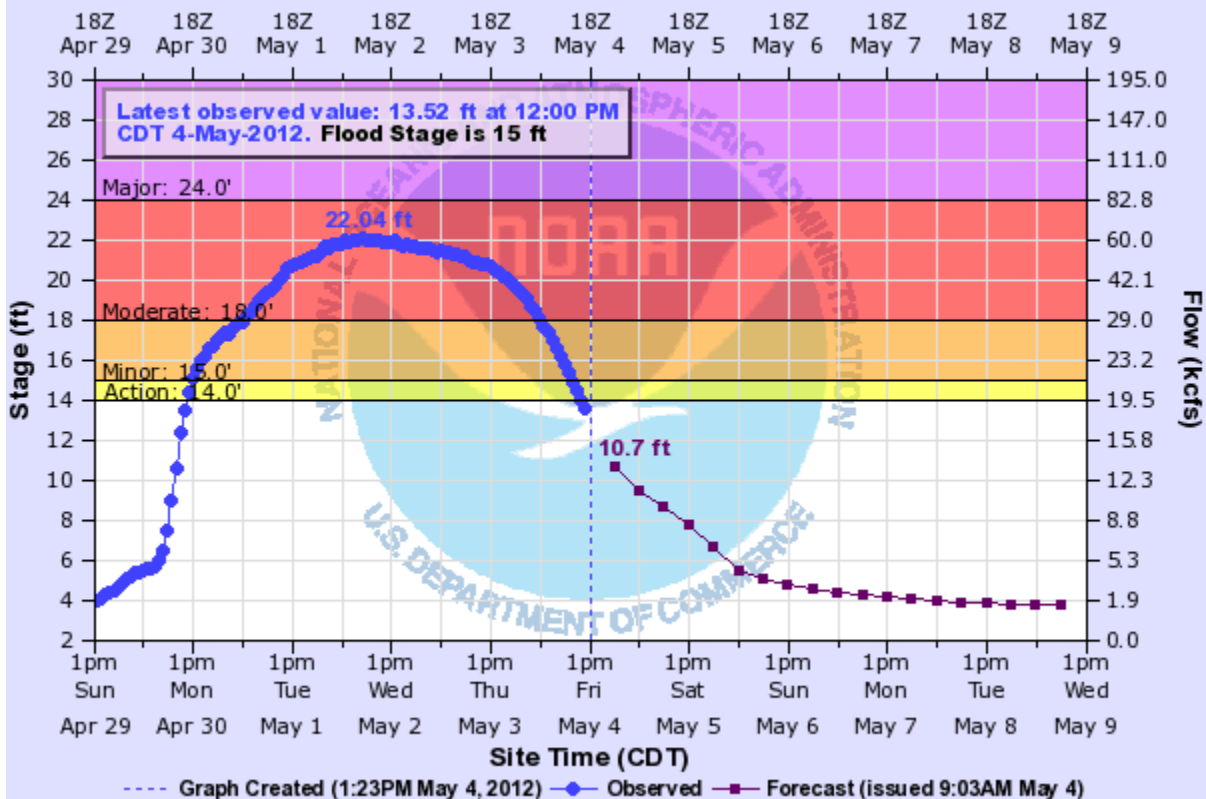


LEPO2(plotting HGIRG) "Gage 0" Datum: 644.9'

Observations courtesy of US Geological Survey

NEOSHO RIVER NEAR COMMERCE

Universal Time (UTC)

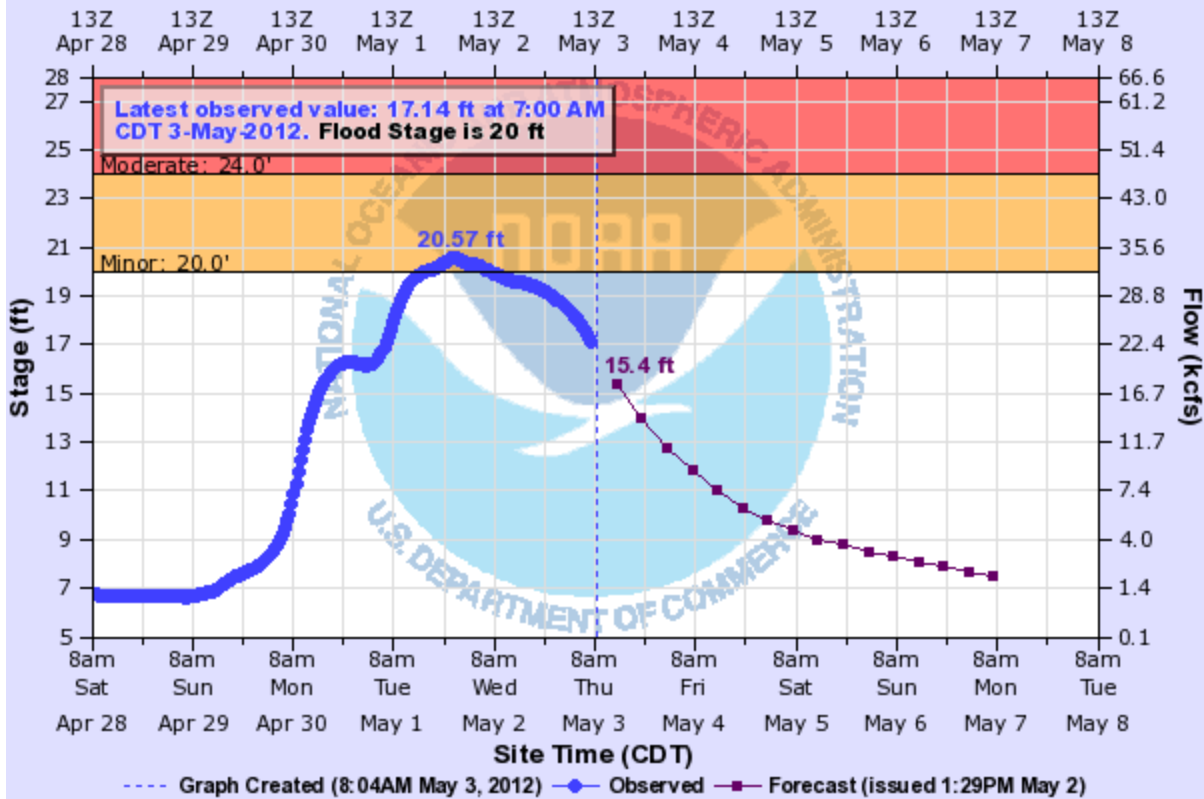


COMO2(plotting HGIRG) "Gage 0" Datum: 748.97'

Observations courtesy of US Geological Survey

SPRING RIVER NEAR QUAPAW

Universal Time (UTC)

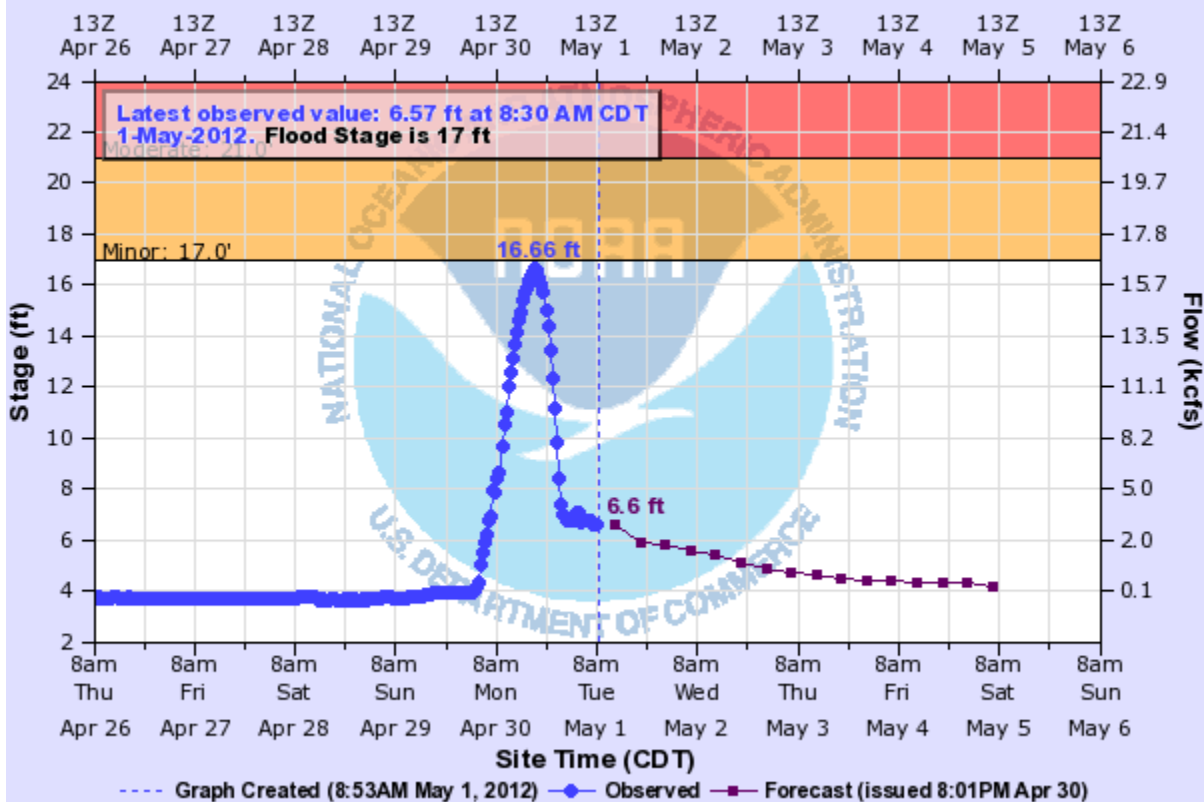


QUAO2(plotting HGIRG) "Gage 0" Datum: 746.25'

Observations courtesy of US Geological Survey

BIRD CREEK AT AVANT

Universal Time (UTC)

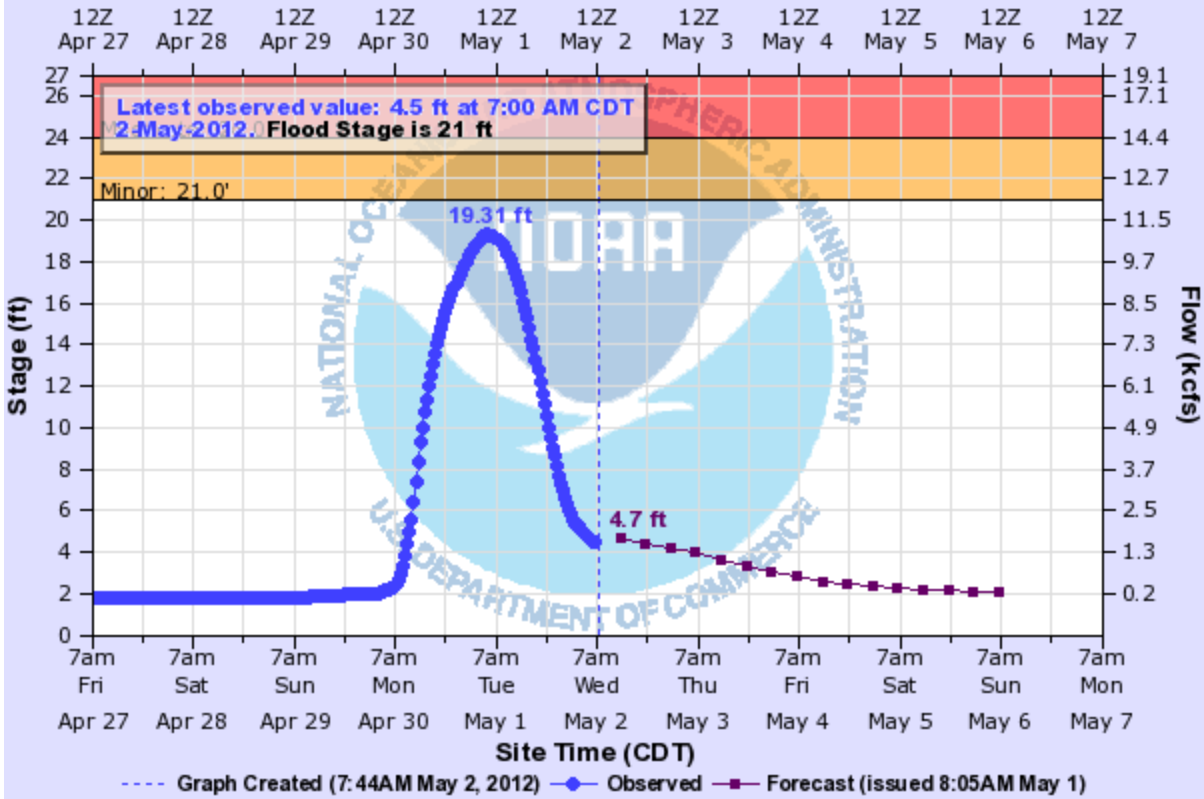


AVTO2(plotting HGIRG) "Gage 0" Datum: 646.28'

Observations courtesy of US Geological Survey

BIRD CREEK NEAR SPERRY

Universal Time (UTC)

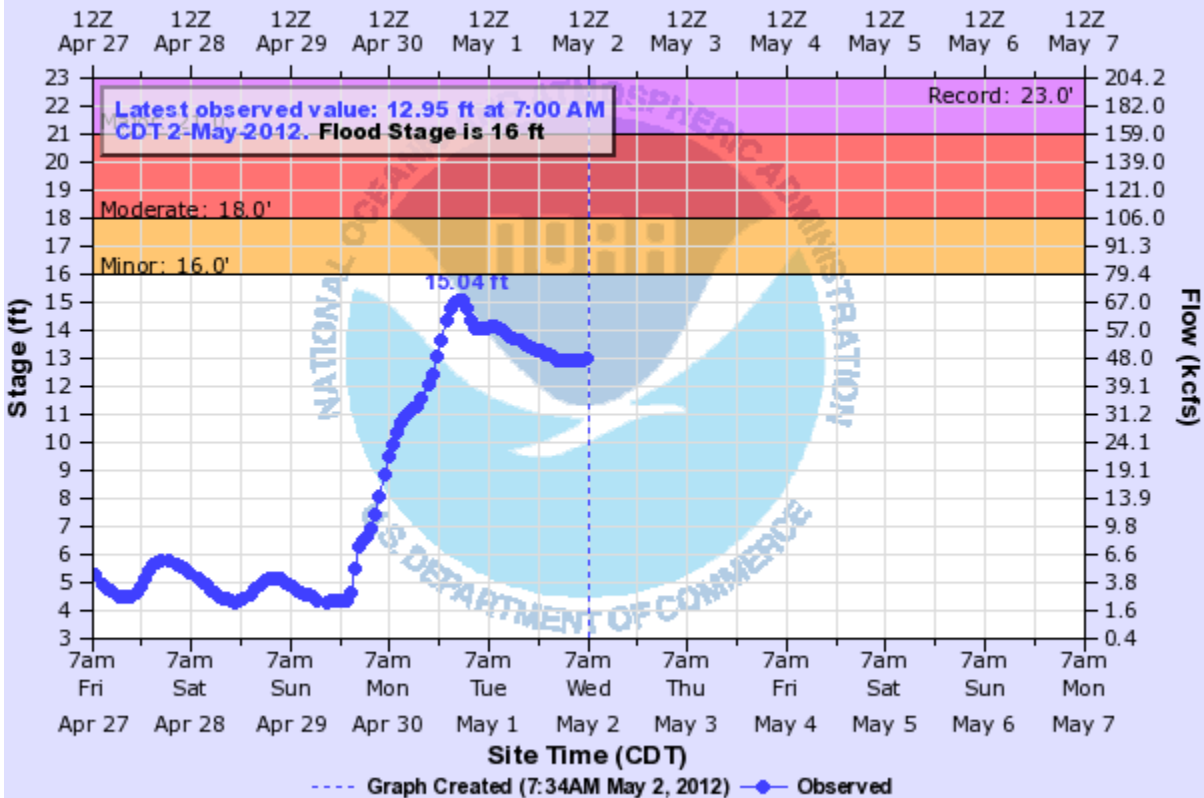


SPEO2(plotting HGIRG) "Gage 0" Datum: 579.43'

Observations courtesy of US Geological Survey

ARKANSAS RIVER AT RALSTON

Universal Time (UTC)

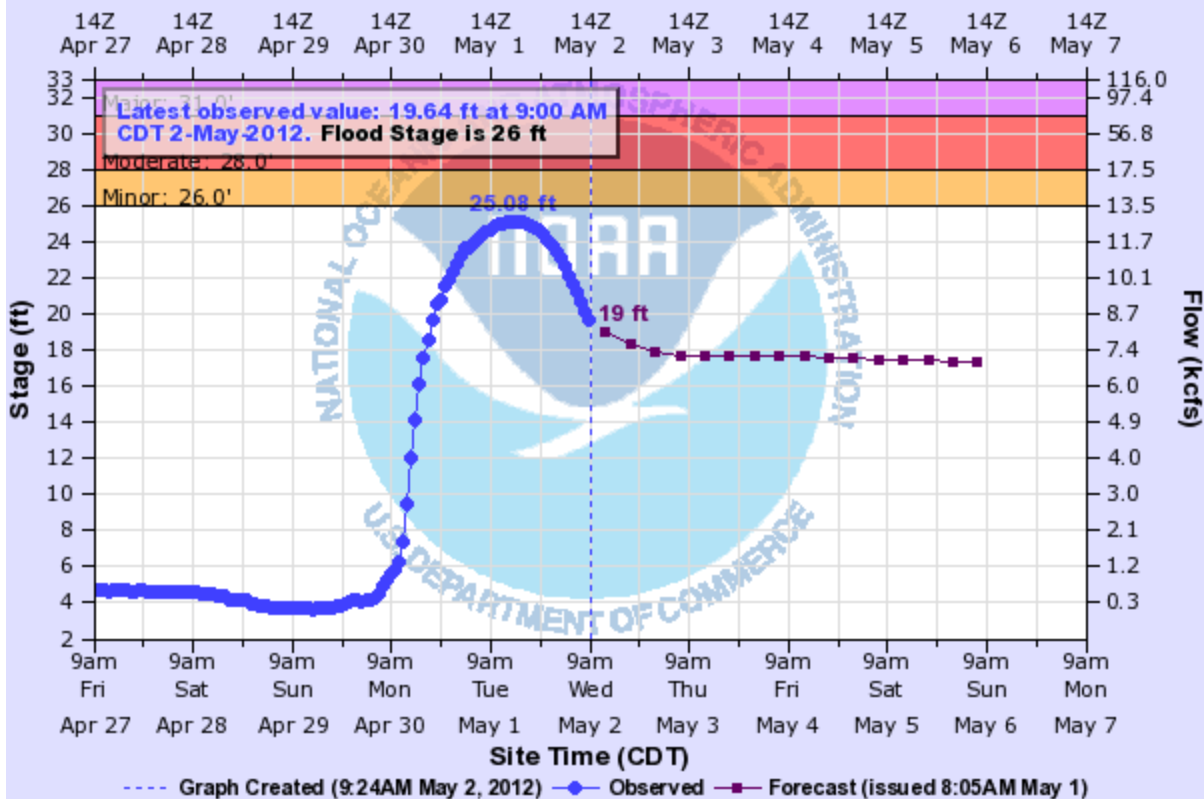


RLSO2(plotting HGIRG) "Gage 0" Datum: 776.7'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR RAMONA

Universal Time (UTC)

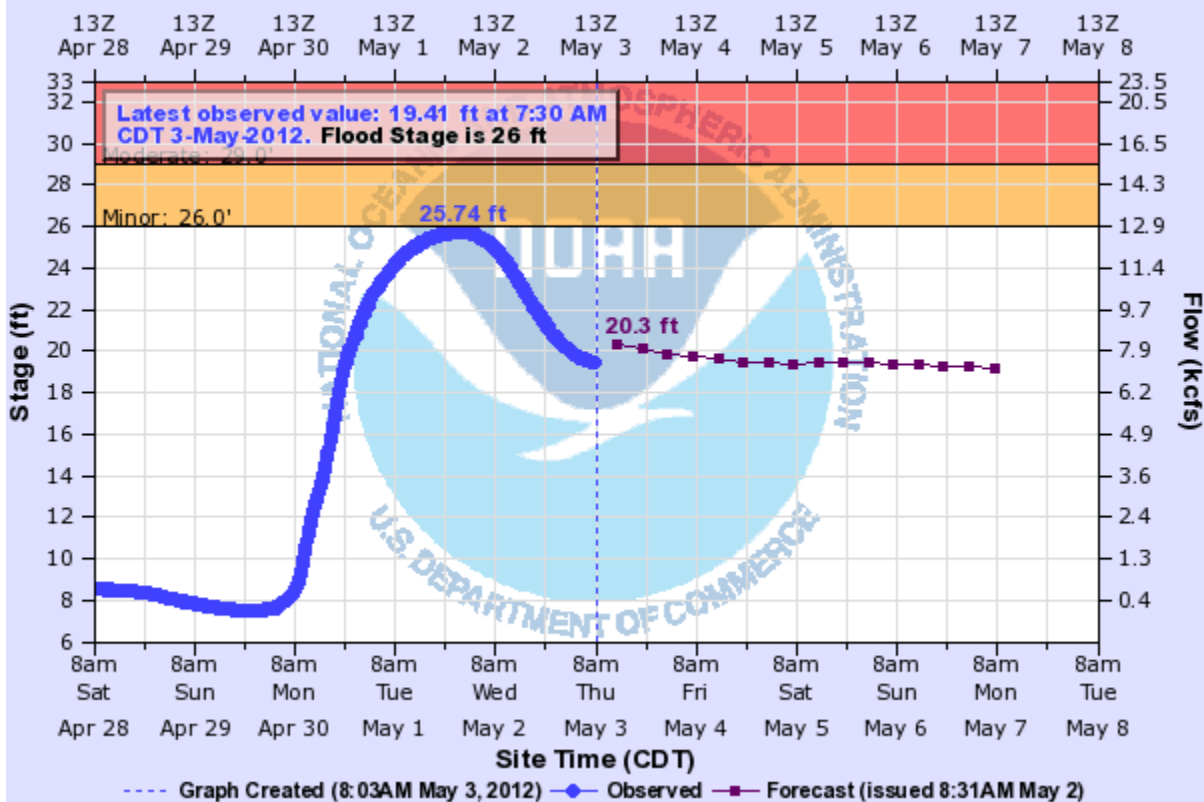


RAMO2(plotting HGIRG) "Gage 0" Datum: 586.43'

Observations courtesy of US Geological Survey

CANEY RIVER NEAR COLLINSVILLE

Universal Time (UTC)



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