

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

REPORT FOR:
 MONTH **January** YEAR **2013**

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
February 1, 2013

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 cold fronts traversed the region in January 2013, bringing very warm temperatures followed by very cold temperatures. Most of the fronts came through with very little precipitation, until the very end of the month when a low pressure system brought some much needed rain to the area. Normal precipitation for January ranges from 1.2 inches in Pawnee County to 2.2 inches in Haskell County. In the Ozark region of northwest Arkansas, precipitation averages 2.2 inches for the month.

Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for January 2013 ranged from 1" to around 5", with the highest totals in east central and southeast OK as well as west central AR. Due to the heavy rainfall event on January 29, several areas ended the month with 150%-300% of the normal January rainfall, while other areas still only received half of the normal rainfall in January (Fig. 1b).

Tulsa, OK (TSA): January, 2013 Monthly Observed Precipitation
 Valid at 2/1/2013 1200 UTC- Created 2/1/13 13:42 UTC

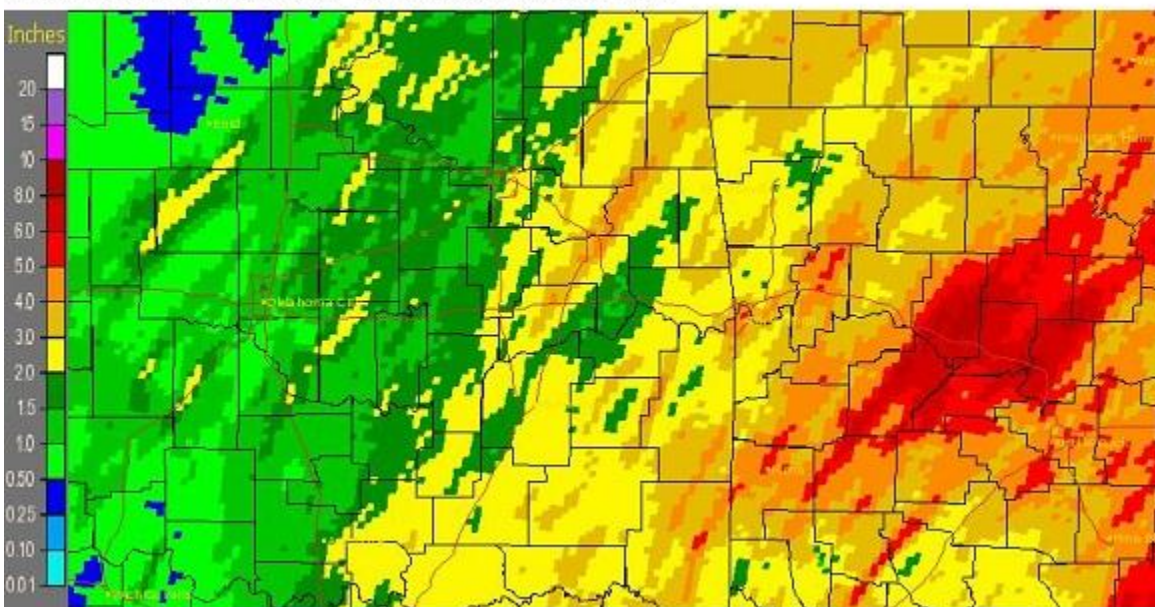


Fig. 1a. Estimated Observed Rainfall for January 2013

Tulsa, OK (TSA): January, 2013 Monthly Percent of Normal Precipitation
 Valid at 2/1/2013 1200 UTC- Created 2/1/13 13:44 UTC

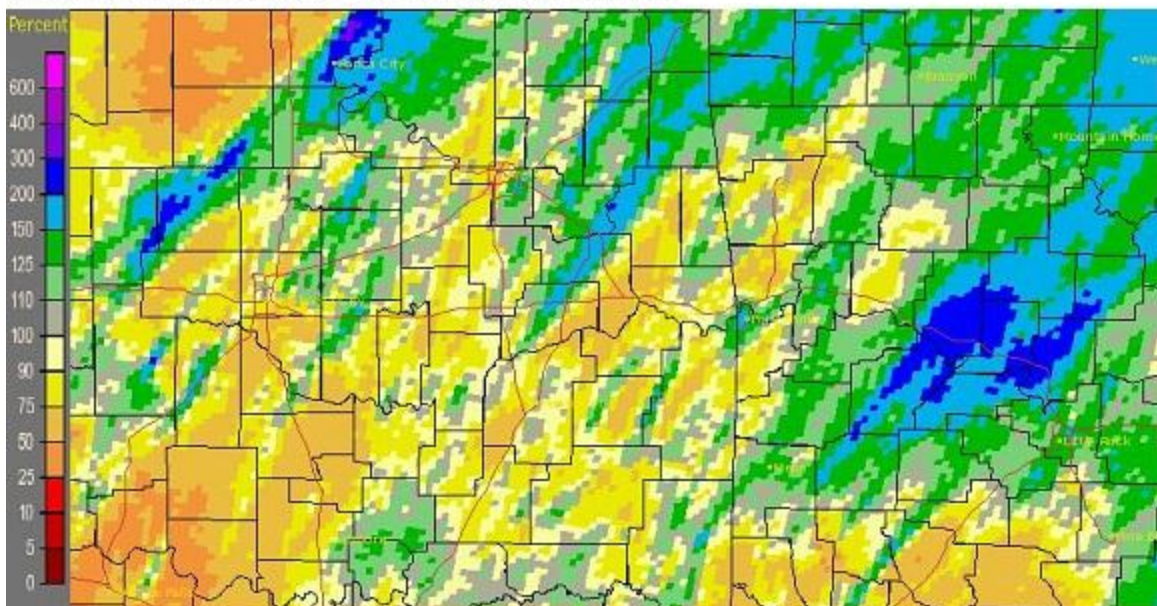


Fig. 1b. Estimated % of Normal Rainfall for January 2013

In Tulsa, OK, January 2013 ranked as the 25th warmest January (40.5°F; since records began in 1905) and the 56th wettest January (1.54", tied 1923; since records began in 1888). A trace of snow was recorded this month in Tulsa. Fort Smith, AR was the 30th warmest January (43.2°F; since records began in 1883) and the 23rd wettest January (3.97"; since records began in 1883). A trace of snow was recorded this month in Fort Smith. Fayetteville, AR was the 15th warmest (38.5°F) and the 18th wettest (3.03") January since records began in 1950. A trace of snow was recorded this month in Fayetteville.

Some of the larger precipitation reports (in inches) for January 2013 included:

St. Paul, AR (coop)	6.15	Ozark, AR (coop)	5.04	Spavinaw, OK (coop)	4.75
Odell 2N, AR (coop)	4.17	Oktaha, OK (coop)	4.15	Fanshawe, OK (coop)	4.12
Jay, OK (meso)	4.05	Fort Smith, AR (ASOS)	3.97	Mountainburg 2NE, AR (coop)	3.74

Some of the lowest precipitation reports (in inches) for January 2013 included:

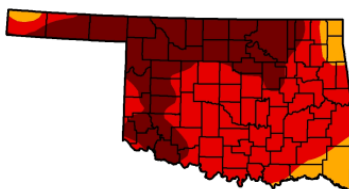
Skiatook, OK (meso)	1.43	Pawnee, OK (meso)	1.45	Tulsa, OK (ASOS)	1.54
Mannford 6NW, OK (coop)	1.71	Oilton, OK (meso)	1.77	Pawnee, OK (coop)	1.78
Bristow, OK (meso)	1.80	Copan, OK (meso)	1.84	Bartlesville, OK (ASOS)	1.87

U.S. Drought Monitor

January 29, 2013
Valid 7 a.m. EST

Oklahoma

	Drought Conditions (Percent Area)						
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	
Current	0.00	100.00	100.00	100.00	92.14	39.58	
Last Week (01/22/2013 map)	0.00	100.00	100.00	100.00	91.80	39.58	
3 Months Ago (10/30/2012 map)	0.00	100.00	100.00	99.43	67.64	27.13	
Start of Calendar Year (01/01/2013 map)	0.00	100.00	100.00	100.00	94.89	37.06	
Start of Water Year (09/25/2012 map)	0.00	100.00	100.00	99.98	95.33	42.09	
One Year Ago (01/24/2012 map)	16.77	83.23	68.16	50.55	28.86	3.78	



Intensity:

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

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

<http://droughtmonitor.unl.edu>



Released Thursday, January 31, 2013
Mark Svoboda, National Drought Mitigation Center

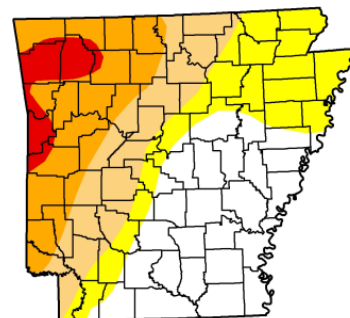
Fig. 2. Drought Monitor for Oklahoma

U.S. Drought Monitor

January 29, 2013
Valid 7 a.m. EST

Arkansas

	Drought Conditions (Percent Area)						
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	
Current	34.07	65.93	43.75	25.22	5.53	0.00	
Last Week (01/22/2013 map)	34.07	65.93	43.75	25.22	5.53	0.00	
3 Months Ago (10/30/2012 map)	6.44	93.56	83.34	73.01	35.62	0.63	
Start of Calendar Year (01/01/2013 map)	24.37	75.63	54.32	41.05	24.37	0.00	
Start of Water Year (09/25/2012 map)	0.11	99.89	91.37	73.93	41.99	8.74	
One Year Ago (01/24/2012 map)	92.41	7.59	1.83	0.73	0.23	0.00	



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- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

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

<http://droughtmonitor.unl.edu>



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Fig. 3. Drought Monitor for Arkansas

According to the [U.S. Drought Monitor](http://droughtmonitor.unl.edu) (USDM) from January 29, 2013 (Figs 2, 3), all of eastern OK and northwest AR was in Severe to Exceptional drought. Note that the data cut-off time for the Drought Monitor

was 6am on the 29th, therefore, the heavy rainfall that occurred on January 29, 2013 was not included in this Drought Monitor depiction. Exceptional (D4) drought was occurring over portions of Osage, Pawnee, Creek, western Tulsa, Washington, and western Nowata Counties in eastern OK. Severe (D2) drought was present across portions of Ottawa, eastern Craig, and Delaware Counties in eastern OK, and Benton, Carroll, Crawford, and Franklin Counties in northwest AR. Extreme drought (D3) conditions existed across the remainder of the area.

Most of the major reservoirs in the Tulsa HSA were operating below 90% of their conservation pools as of January 31, 2013. However, 2 reservoirs were operating above their conservation pools: Hudson Lake 108% and Wister Lake 104%. Reservoirs reporting conservation pool deficits below 90% as of January 31, 2013: Hulah Lake 42%, Birch Lake 50%, Hugo Lake 61%, Skiatook Lake 64%, Eufaula Lake 68%, Tenkiller Lake 68%, Beaver Lake 69%, Keystone Lake 70%, Copan Lake 75%, and Oologah Lake 80%.

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

Rank since 1921	Jan. 2013	Winter-to-Date (Dec 1 – Jan 31)	Water Year-to-Date (Oct 1 – Jan 31)	Cool Growing Season (Sep 1 – Jan 31)	Last 180 Days (Aug 5 – Jan 31)	Last 365 Days (Feb 2, 2012 – Jan 31, 2013)
Northeast OK	24 th wettest	39 th driest	18 th driest	15 th driest	17 th driest	18 th driest
East Central OK	34 th wettest	33 rd driest	10 th driest	14 th driest	16 th driest	10 th driest
Southeast OK	34 th wettest	41 st driest	9 th driest	7 th driest	6 th driest	9 th driest
Statewide	38 th wettest	28 th driest	8 th driest	9 th driest	9 th driest	8 th driest

Outlooks

The [Climate Prediction Center](#) (CPC) outlook for February 2013 (issued January 31, 2013) indicates an enhanced chance for above normal temperatures and equal chances for above, near, and below median precipitation across all of eastern OK and northwest AR. This outlook is based primarily on short-range computer models. Early-in-the-month models indicate a mid-level ridge over the center of the U.S. and a trough over the southwest.

For the 3-month period Feb-Mar-Apr 2013, CPC is forecasting a slightly enhanced chance for above normal temperatures and an equal chance for above, near, and below median precipitation across all of eastern OK and northwest AR (outlook issued January 17, 2013). According to CPC, ENSO neutral conditions remained through January. ENSO neutral conditions are expected to continue well into Spring 2013, followed by uncertain conditions in the ENSO state beyond that time. Therefore, this outlook is primarily based on dynamic computer model output, with some input from statistical forecast tools and long-term trends.

Summary of Precipitation Events

January 1-16

The first precipitation of 2013 occurred during the morning hours of the 5th as a mid-level shortwave moved through the area. Due to limited moisture, only light rain and snow flurries occurred with little to no accumulation reported.

Moisture significantly increased over eastern OK and northwest AR ahead of a strong low pressure system. Several rounds of precipitation occurred as the low approached the area. The first round of showers and thunderstorms began during the afternoon of the 8th across southeast OK and west central AR and then spread north into northeast OK and far northwest AR during the evening and overnight hours. Rainfall totals ranged from 0.10" to 1" southeast of I-44, with the highest amounts of 0.75" to 1.5" across southeast OK (see Fig. 4). Areas of light rain continued primarily south of I-40 during the day on the 9th before a second round of more intense rainfall moved into southeast OK and west central AR during the afternoon. Rainfall spread north over

portions of north central into east central OK. Locations along and southwest of a Pawhuska to Tulsa to Fort Smith line received an additional 0.1" to 0.75" of rain (see Fig. 5). As the upper-level low lifted northeast across OK on the 10th, the final round of precipitation with this system brought 0.5" or less of rain to primarily locations north of I-40 (see Fig. 6). Franklin County, however, received around 0.75" on the 10th before the system moved out of the region.

Tulsa, OK (TSA): 1/9/2013 1-Day Observed Precipitation
Valid at 1/9/2013 1200 UTC- Created 1/11/13 23:31 UTC

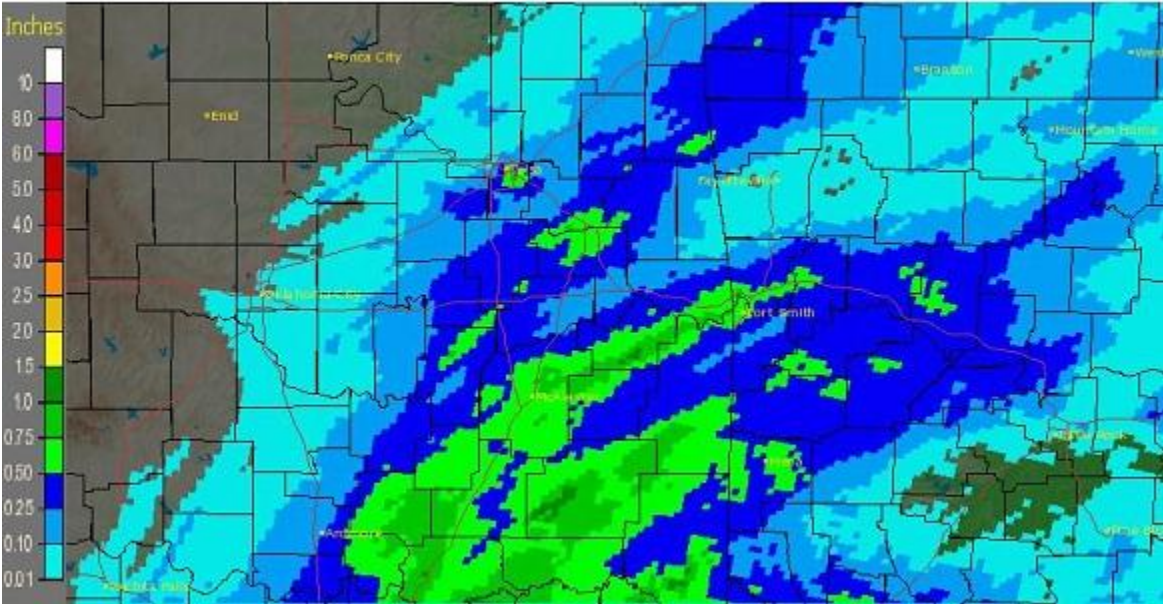


Fig. 4. Estimated 24-hr Observed Rainfall ending at 6am CST 1/09/2013

Tulsa, OK (TSA): 1/10/2013 1-Day Observed Precipitation
Valid at 1/10/2013 1200 UTC- Created 1/12/13 23:30 UTC

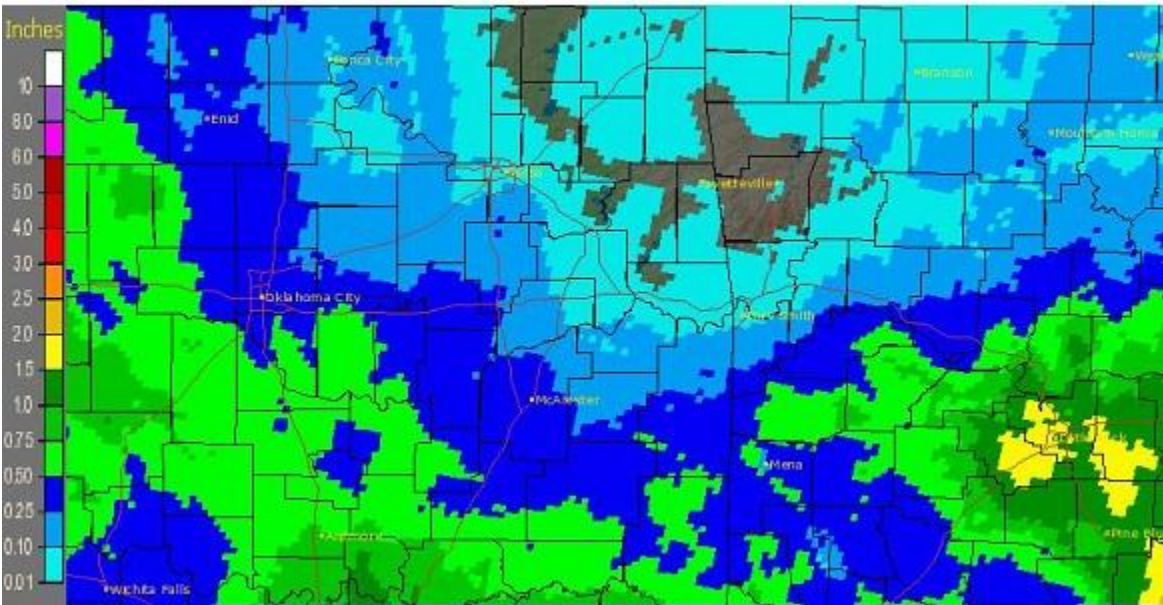


Fig. 5. Estimated 24-hr Observed Rainfall ending at 6am CST 1/10/2013

Tulsa, OK (TSA): 1/11/2013 1-Day Observed Precipitation
Valid at 1/11/2013 1200 UTC- Created 1/13/13 23:31 UTC

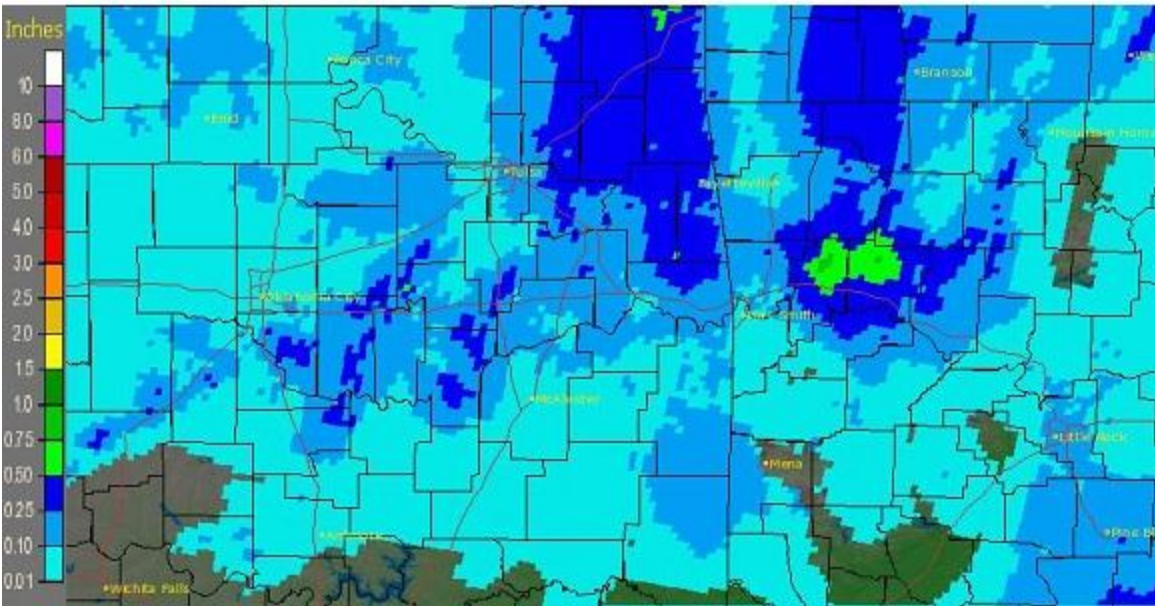


Fig. 6. Estimated 24-hr Observed Rainfall ending at 6am CST 1/11/2013

A cold front moved across eastern OK and northwest AR on the 12th, bringing a mix of rain, snow, sleet, and freezing rain to the area. Showers and isolated thunderstorms developed along and ahead of the front, with additional precipitation behind the front due to a very strong southwesterly upper-level jet. A warm layer above the much colder surface air allowed for freezing rain to develop, producing a glaze on elevated surfaces and making bridges and overpasses slick. As the colder surface air deepened, some of the rain/freezing rain mixed with sleet and snow pellets. Several areas became cold enough before the precipitation ended to receive snow. Ice accumulations of 0.1" to 0.2" were reported in Tulsa, McIntosh, and Benton Counties, while 0.5" to 2" of snow were reported across Osage, Nowata, Ottawa, McIntosh, Muskogee, Delaware, and Cherokee Counties. Rainfall/liquid equivalent totals ranged from less than 0.10" northwest of I-44 to around 1" in spots across eastern OK and west central AR (see Fig. 7). The heavy, flooding rains remained east of the HSA.

Tulsa, OK (TSA): 1/13/2013 1-Day Observed Precipitation
Valid at 1/13/2013 1200 UTC- Created 1/15/13 23:31 UTC

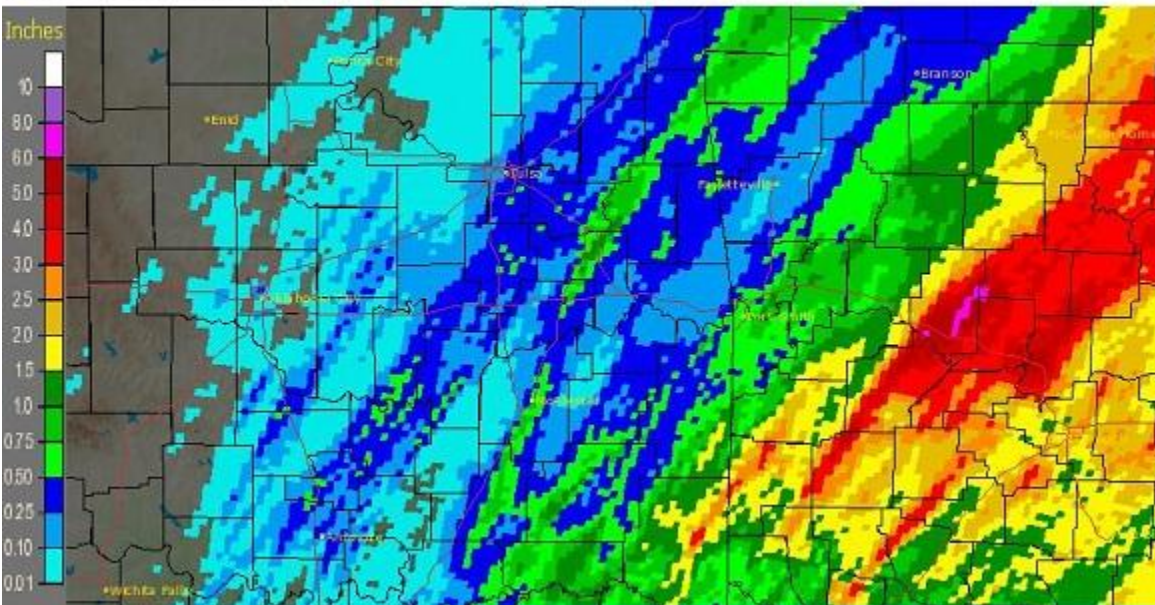


Fig. 7. Estimated 24-hr Observed Rainfall ending at 6am CST 1/13/2013

An upper-level trough moved through the region on the 14th-16th. Snow flurries affected southeast OK and northwest AR on the 14th. Light snow mixed with sleet and some freezing rain fell over southeast OK and

northwest AR on the 15th. Little to no accumulation was reported on either day.

January 17-31

It felt more like spring than winter on the 29th, and the spring-like weather brought heavy rain and tornadoes to eastern OK and northwest AR. Even north central OK finally received some rain during this event after going 27-78 consecutive days with less than 0.25" of rain (according to OCS). Showers and thunderstorms developed along and ahead of a cold front as a strong low pressure system moved into the region. The individual storms moved north northeast as the entire convective line progressed eastward. This led to training thunderstorms and resultant higher rainfall totals. The entire HSA received rain from this event, with most of the area recording 0.75"-1.50" (see Figs. 8, 9). However, several locations had rainfall totals of 2.50" to near 4" of rain. 3 tornadoes also occurred due to the enhanced low-level winds with this system, though thankfully no injuries or deaths were reported. Tornado 1 was an EF-2 that developed in extreme northeastern Sequoyah Co OK and moved rapidly northeast to the north of Natural Dam AR in Crawford Co. Tornado 2 was an EF-1 and damaged numerous homes along its 4.2 mile path near Elkins in Washington Co. AR. Tornado 3 was also an EF-1 and occurred in the McIlroy Wildlife Management Area near Rockhouse, AR in Madison Co. Some light snow affected far northeast OK and far northwest AR during the morning hours of the 30th, on the back-side of this storm system. Little to no accumulation occurred.

Some of the highest measured rainfall totals for January 29, 2013:

Kingston, AR	3.87	St. Paul, AR	3.82	Odell 2N, AR	3.46
Ozark, AR	3.00	Spavinaw, OK	2.92	Fort Smith, AR	2.71
Fayetteville, AR	2.68	Kingston 5NW, AR	2.68	Newkirk, OK	2.67
Miami 1NNW, OK	2.65	Jay 4N, OK	2.57	Barling L&D, AR	2.56
New Eucha 5W, OK	2.55	Vian 5.3ENE, OK	2.54	Winslow 7NE, AR	2.50

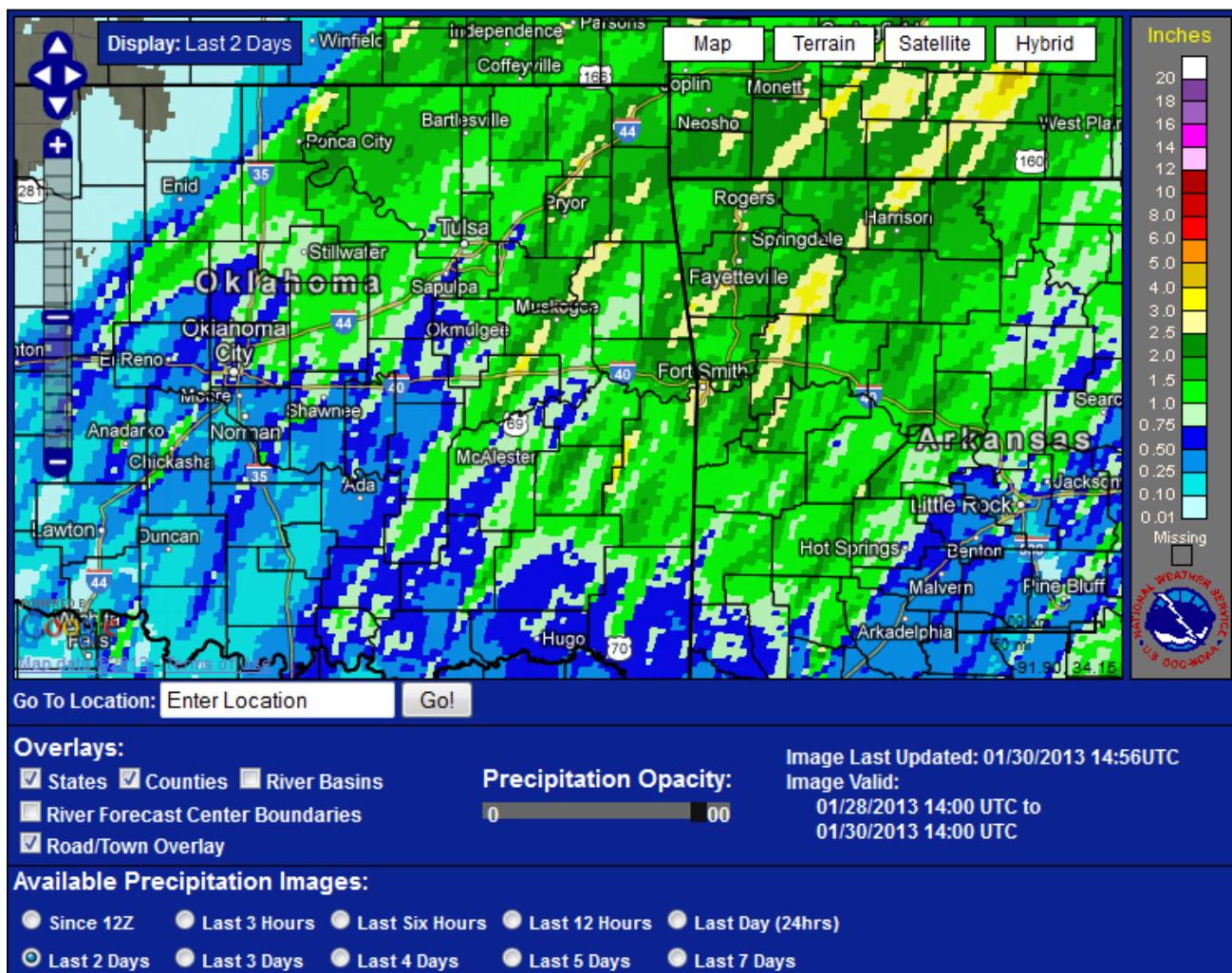
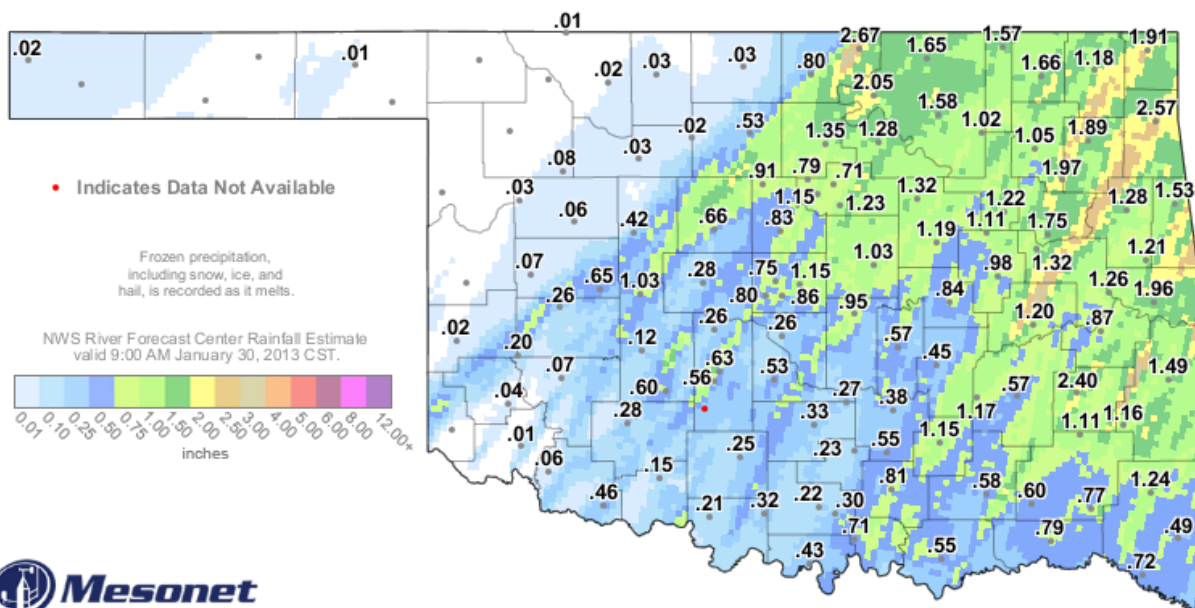


Fig. 8. Estimated 48-hr Observed Rainfall ending at 8am CST 1/30/2013



9:35 AM January 30, 2013 CST

Created 9:40:05 AM January 30, 2013 CST. © Copyright 2013

Fig. 9. Estimated 48-hr Observed Rainfall ending at 9:35am CST 1/30/2013 courtesy of OCS.

Written by:
 Nicole McGavock
 Service Hydrologist
 WFO Tulsa

Products issued in January 2013:

- 0 Flash Flood Warnings (FFW)
- 0 Flash Flood Statements (FFS)
- 0 Flash/Areal Flood Watches (FFA) (2 Watch FFA CON/EXT/CAN)
- 1 Urban and Small Stream Advisories (FLS)
- 0 Areal Flood Warnings (FLW)
- 0 Areal Flood Statements (FLS)
- 0 River Flood Warnings (FLW)
- 0 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)
- 0 River Statements (RVS)
- 0 Hydrologic Outlooks (ESF)
- 2 Drought Information Statements (DGT)

Preliminary Hydrographs:

No river flooding occurred this month.