

<b>NWS FORM E-5</b> (11-88) (PRES. by NWS Instruction 10-924)	<b>U.S. DEPARTMENT OF COMMERCE</b> NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	HYDROLOGIC SERVICE AREA (HSA) <b>Tulsa, Oklahoma (TSA)</b>
	<b>MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS</b>	REPORT FOR: MONTH <b>February</b> YEAR <b>2012</b>
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283	SIGNATURE <b>Steven F. Piltz</b> (Meteorologist-in-Charge)	DATE <b>March 2, 2012</b>

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

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

It was a warm and dry February across most of eastern OK and northwest AR, with most of the region receiving well below normal rainfall for the month. Normal precipitation across the Hydrologic Service Area (HSA) in February ranges from 1.8 inches in Osage County to 3.2 inches in Choctaw County. In the Ozark region of northwest Arkansas, the normal monthly precipitation is 2.9 inches.

### Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for February 2012 ranged from just under one inch near the I-44 corridor to around three inches elsewhere. Locations across northern Osage, western Pawnee, and eastern Kay Counties received up to around 200% of the normal rainfall in February, while the remainder of the HSA was well below normal, only receiving 25% to 75% of the normal rainfall for February (Fig. 1b).

Tulsa, OK (TSA): February, 2012 Monthly Observed Precipitation  
Valid at 3/1/2012 1200 UTC- Created 3/1/12 19:42 UTC

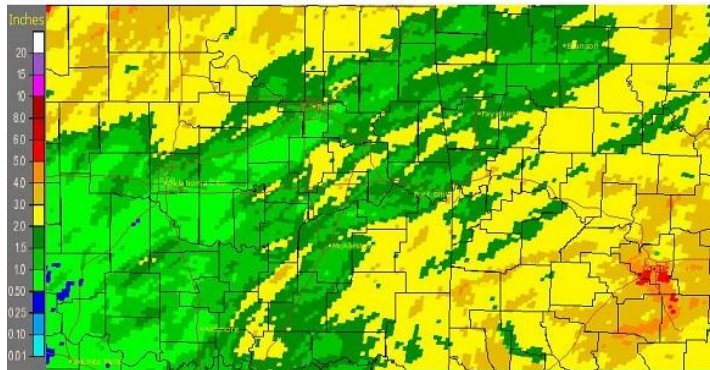


Fig. 1a. Estimated Observed Rainfall for February 2012

Tulsa, OK (TSA): February, 2012 Monthly Percent of Normal Precipitation  
Valid at 3/1/2012 1200 UTC- Created 3/1/12 19:45 UTC

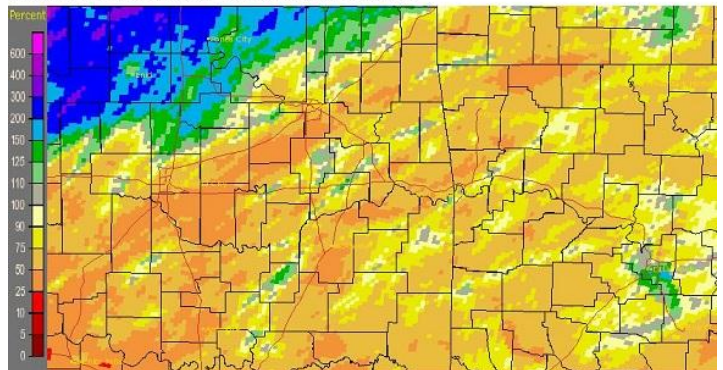


Fig. 1b. Estimated % of Normal Rainfall for February 2012

In Tulsa, OK, February 2012 ranked as the 26<sup>th</sup> warmest February (45.2°F, tied with 1952; since records began in 1905), the 54<sup>th</sup> wettest February (1.61", since records began in 1888), and the 55<sup>th</sup> snowiest February (1.2", tied with 1919, 1928; since records began in 1900). Fort Smith, AR, was the 19<sup>th</sup> warmest February (47.7°F, tied with 2009, 1991; since records began in 1883), the 63<sup>rd</sup> wettest February (2.18", since records began in 1883), and the 32<sup>nd</sup> snowiest February (2.0", tied with 1906, 1910, 1948; since records began in 1884).

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

Foraker, OK (meso)	3.89	Oktaha 2NE, OK (coop)	3.19	Copan, OK (meso)	3.08
Tuskahoma, OK (coop)	2.95	Muskogee, OK (ASOS)	2.91	Burbank, OK (meso)	2.80
Pawnee, OK (meso)	2.80	Bartlesville, OK (ASOS)	2.72	Clayton, OK (meso)	2.71
Wister, OK (meso)	2.71				

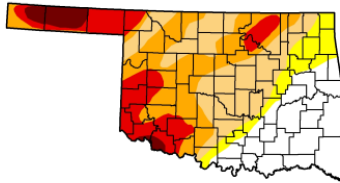
Some of the lowest precipitation reports (in inches) for February 2012 included:

Bristow, OK (meso)	0.82	Hectorville, OK (meso)	0.94	Bixby, OK (meso)	1.00
McAlester, OK (ASOS)	1.21	Pryor, OK (meso)	1.26	Inola, OK (meso)	1.27
Jenks, OK (ASOS)	1.27	McAlester, OK (meso)	1.33	Berryville 5NW, AR (coop)	1.36

## U.S. Drought Monitor Oklahoma

February 28, 2012  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	24.91	75.09	66.46	41.79	19.03	3.78
Last Week (02/21/2012 map)	24.91	75.09	66.46	41.79	19.03	3.78
3 Months Ago (11/29/2011 map)	7.33	92.67	85.70	59.58	39.92	10.27
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 (02/22/2011 map)	0.02	99.98	63.04	18.15	0.00	0.00



**Intensity:**



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

<http://droughtmonitor.unl.edu>



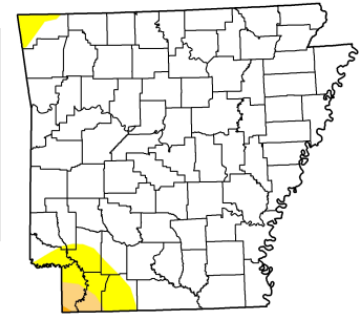
Released Thursday, March 1, 2012  
Mark Svoboda, National Drought Mitigation Center

Fig. 3. Drought Monitor for Oklahoma

## U.S. Drought Monitor Arkansas

February 28, 2012  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	94.01	5.99	1.16	0.05	0.00	0.00
Last Week (02/21/2012 map)	94.01	5.99	1.16	0.05	0.00	0.00
3 Months Ago (11/29/2011 map)	70.15	29.85	15.78	5.23	2.68	0.51
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 (02/22/2011 map)	0.00	100.00	97.24	56.17	9.41	0.00



**Intensity:**



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, March 1, 2012  
Mark Svoboda, National Drought Mitigation Center

Fig. 4. Drought Monitor for Arkansas

According to the [U.S. Drought Monitor](http://droughtmonitor.unl.edu) (USDM) from February 28, 2012, extreme drought (D3) conditions encompassed a large portion of Osage and Pawnee Counties. Severe drought (D2) conditions stretched across most of Pawnee, Osage, Washington, and northwest Nowata Counties in eastern OK. Moderate drought (D1) conditions were found across portions of Craig, Nowata, Rogers, Washington, Tulsa, Creek, and Okfuskee Counties in eastern OK (see Figs. 2 & 3). Abnormally Dry (D0) conditions affected portions of Ottawa, Delaware, Craig, Mayes, Rogers, Wagoner, Okmulgee, and northern Cherokee Counties in eastern OK, and Benton County in northwest AR.

## Winter (December-January-February) Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 2a), rainfall totals for Winter 2011-12 ranged from around 2" to around 15". The highest totals occurred across far southeast Le Flore County, with the lowest totals from the Tulsa metro area and southwest. Much of northeast OK only received 50% to 75% of the normal winter rainfall, while portions of far southeast OK had 150% to near 200% of the normal rain (Fig. 2b).

Tulsa, OK (TSA): Current 90-Day Observed Precipitation  
Valid at 3/1/2012 1200 UTC - Created 3/1/12 18:15 UTC



Fig. 2a. Estimated Observed Rainfall for Winter 2011-12

Tulsa, OK (TSA): Current 90-Day Percent of Normal Precipitation  
Valid at 3/1/2012 1200 UTC - Created 3/1/12 18:18 UTC

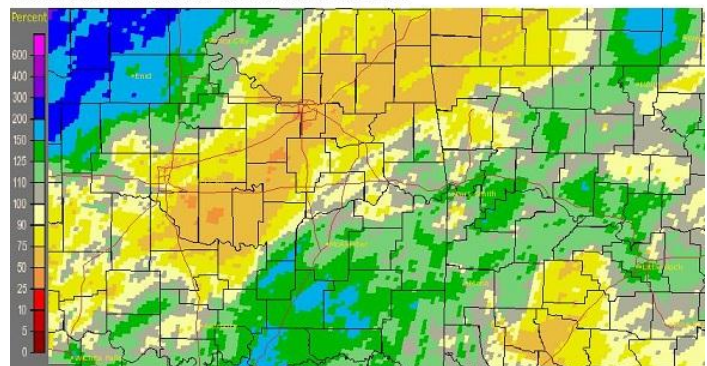


Fig. 2b. Estimated % of Normal Rainfall for Winter 2011-12

For Winter 2011-2012 (Dec-Jan-Feb), Tulsa, OK, ranked as the 3<sup>rd</sup> warmest Winter (44.4°F; since records began in 1905-06), the 30<sup>th</sup> driest Winter (3.67"; since records began in 1888-89), and the 10<sup>th</sup> least snowy Winter (1.7"; since records began in 1900-01). Fort Smith, AR, was the 3<sup>rd</sup> warmest Winter (46.6°F; since records began in 1882-83), the 33<sup>rd</sup> wettest Winter (10.04"; since records began in 1882-83), and the 40<sup>th</sup> least snowy Winter (2.0, tied with 1888, 1996, 2007; since records began in 1883-84).

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

Rank since 1921	Last 30 Days (Jan 30-Feb 28, 2012)	Cool Growing Season (Sep 1, 2011 – Feb 29, 2012)	Water Year (Oct 1, 2011 – Feb 29, 2012)	Last 120 Days (Nov 2, 2011 – Feb 29, 2012)	Winter-to-Date (Dec 1, 2011– Feb 29, 2012)	Last 365 days (Mar 2, 2011– Feb 29, 2012)
Northeast OK	36 <sup>th</sup> wettest	8 <sup>th</sup> driest	10 <sup>th</sup> wettest	3 <sup>rd</sup> wettest	11 <sup>th</sup> driest	4 <sup>th</sup> driest
East Central OK	27 <sup>th</sup> driest	9 <sup>th</sup> wettest	6 <sup>th</sup> wettest	3 <sup>rd</sup> wettest	10 <sup>th</sup> wettest	10 <sup>th</sup> driest
Southeast OK	28 <sup>th</sup> driest	8 <sup>th</sup> wettest	4 <sup>th</sup> wettest	2 <sup>nd</sup> wettest	6 <sup>th</sup> wettest	9 <sup>th</sup> driest
Statewide	41 <sup>st</sup> wettest	8 <sup>th</sup> wettest	5 <sup>th</sup> wettest	2 <sup>nd</sup> wettest	7 <sup>th</sup> wettest	3 <sup>rd</sup> driest

Most of the major reservoirs in the Tulsa HSA were within  $\pm 3\%$  of the top of their conservation pools as of March 1, 2012. The following reservoirs were reporting conservation pool deficits below 97% as of March 1, 2012: Birch Lake 47% and Skiatook Lake 62%. These two lakes continue to report the lowest lake levels since they were initially constructed and filled.

### **Outlooks**

The [Climate Prediction Center](#) (CPC) outlook for March 2012 (issued February 29, 2012) indicates a strongly enhanced chance for above normal temperatures across northeast OK and northwest AR, and an enhanced chance of above normal temperatures for southeast OK. This outlook also indicates equal chances for above, near, and below median precipitation for the entire area. This outlook was based primarily on short-term dynamic computer models with La Niña and Madden-Julian (MJO) impacts considered.

For the 3-month period Mar-Apr-May 2012, CPC is forecasting an enhanced chance for above average temperatures and equal chances for above, near, and below median precipitation across all of eastern OK and northwest AR (outlook issued February 16, 2012). This outlook is based on dynamic computer models and is consistent with a La Niña pattern plus a positive phase of the Arctic Oscillation (AO). According to CPC, weak La Niña conditions remained in place at the end of February. La Niña conditions in the tropical Pacific are likely to become neutral by May, though atmospheric impacts may linger a little longer.

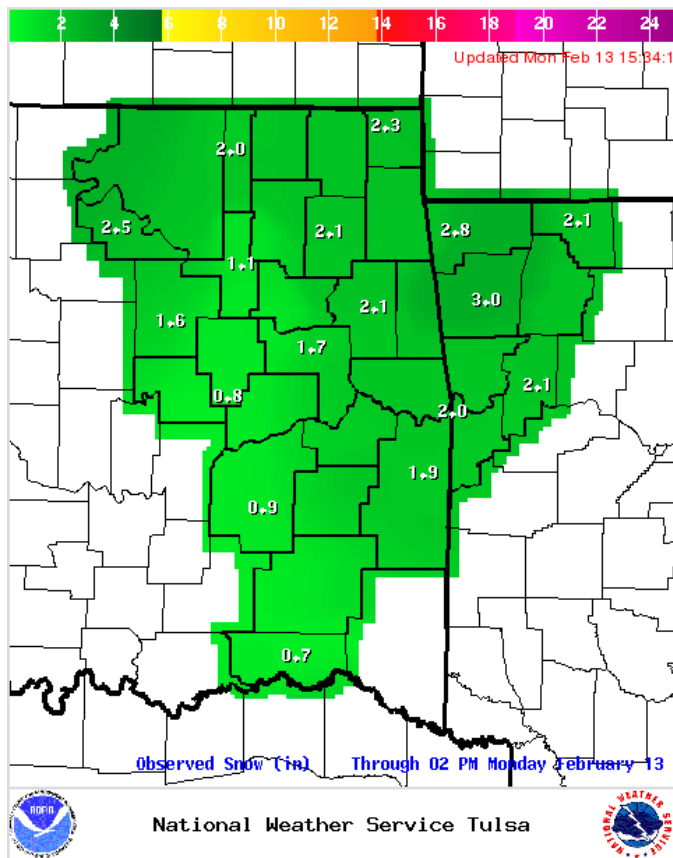
### **Summary of Precipitation Events**

#### **February 1 – 14:**

By late morning on February 1<sup>st</sup>, scattered showers and thunderstorms developed along a stalled boundary across southeast OK. This activity lasted into the afternoon before shifting east. Rainfall totals along and south of a McAlester to southern Sebastian County line ranged from a few hundredths to around 0.25". As temperatures cooled, some light freezing rain occurred across portions of southeast and east central OK as well as northwest AR.

A surface low tracked across OK on the 3<sup>rd</sup>, with showers and thunderstorms occurring along both the attendant warm and cold fronts. This led to several rounds of rain across the HSA. Most of the area received between 0.5" and 1.5" of rain, though a few isolated areas received less than 0.5". A large portion of Osage, Pawnee, and eastern Kay Counties received 1.5" to 2.5" of rain from this system. This area was experiencing D2/Severe to D3/Extreme drought conditions at the time of the rain, so this precipitation was much needed in this area. However, with such dry conditions in place, little runoff occurred and no response was observed in Skiatook or Birch Lakes. According to the Drought Monitor, no improvements were made in the drought conditions.

Light rain fell over the entire HSA on the 9<sup>th</sup> and into the 10<sup>th</sup> ahead of a cold front. Most locations received one tenth to a quarter of an inch of rain. Much colder air moved into the region with this frontal passage. As the



next system approached the region, moist air was advected into eastern OK and northwest AR. Precipitation began as snow late on the 12<sup>th</sup> and lasted through the morning of the 13<sup>th</sup> across eastern Oklahoma and northwest Arkansas. As warmer air moved into the region from the south, the snow transitioned to a brief mix of sleet and/or freezing rain. By afternoon, temperatures had warmed enough that all of the precipitation fell as rain before coming to an end during the evening.

Snowfall totals ranged from around half an inch across portions of southeast OK to near 3" in northwest AR and northeast OK (see Fig. 5). The highest measured reports were 3" in Shidler, OK (Osage Co.), Garfield, AR (Benton Co.), and Springdale, AR (Washington Co.). Most of the snow had melted by the end of the day on the 13<sup>th</sup>. Liquid totals ranged from around 0.10" to near 0.50", with the highest totals across southeast OK and west central AR. Clearing skies overnight resulted in very dense freezing fog primarily northwest of I-44 by morning of the 14<sup>th</sup>. Numerous accidents occurred due to the glaze, especially on bridges and overpasses, and HWY 169 was shut down at 106<sup>th</sup> St. N. in Owasso, OK during the morning commute due to a number of accidents (including roll-over accidents) in that area.

Fig. 5. Estimated and observed snowfall totals through 2pm CST 2/13/2012

### **February 15 – 29:**

Scattered showers and isolated thunderstorms developed during the early morning hours of the 15<sup>th</sup> within an area of warm air advection ahead of a Pacific cold front. The showers and thunderstorms were fast-moving, limiting the precipitation totals for any one location. Additional showers and thunderstorms affected northeast OK during the evening as the low moved over the area. The rain ended across the area by late evening, with scattered rainfall totals of around 0.10" to around 0.50" across the HSA. Showers developed over western OK on the 17<sup>th</sup>, ahead of an approaching upper-level wave. This activity spread into a portion of eastern OK before dissipating. A few locations in McIntosh, Okfuskee, Pittsburg, and Pushmataha Counties received 0.10" to 0.50", with just sprinkles elsewhere. As the upper wave moved across TX on the 18<sup>th</sup>, rain affected southeast OK, bringing an additional 0.10" to 0.50" to locations south of I-40.

A line of thunderstorms developed along a cold front and quickly swept through eastern OK and northwest AR during the late afternoon and evening hours of the 20<sup>th</sup>. Due to the fast movement, rainfall totals remained low, with most locations receiving between 0.10" and 0.50" of rain.

A strong storm system brought severe weather beginning late evening of the 28<sup>th</sup> and lasting into the early morning hours of the 29<sup>th</sup>. As a warm front lifted north across the region, thunderstorms developed in the moist atmosphere ahead of a dry line and cold front. There were reports of hail and wind damage from this activity in northeast OK and northwest AR. The storms were moving at nearly 60 mph, which led to low amounts of rainfall at any one location. Those areas affected by thunderstorms received from around one quarter to around three quarters of an inch of rain. This same storm system went on to produce deadly tornadoes in Missouri (including Branson) and Illinois.

Written by:

Nicole McGavock  
Service Hydrologist  
WFO Tulsa

Products issued:

- 0 River Flood Warnings (FLW)
- 0 River Flood Statements (FLS)
- 0 River Flood Advisories (FLS) (3 Advisory FLS CON/EXT/CAN)
- 0 River Flood Watches (FFA) (0 Watch FFA CON/EXT/CAN)
- 0 River Statements (RVS)
- 0 Hydrologic Outlooks (ESF)
- 1 Drought Information Statements (DGT)