

<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>April</b>	YEAR <b>2014</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>May 2, 2014</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.

Although a few spots received above normal precipitation this month, most of the HSA once again recorded below normal rainfall during April 2014. 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 2014 ranged from around half an inch in portions of western Osage County to around 6" in parts of Pushmataha and southern LeFlore counties in southeast Oklahoma and also a small part of Madison County in northwest Arkansas. The majority of the HSA received 2"-4" of rain this month. Most of the HSA received less than 50% of the normal rainfall for April, with portions of northeast Oklahoma to the north of Interstate 44 only reaching 10%-25% of normal (Fig. 1b). Isolated areas southeast of a McAlester to Berryville line had above normal rainfall, up to 150% of the normal April precipitation.

Tulsa, OK (TSA): April, 2014 Monthly Observed Precipitation  
 Valid at 5/1/2014 1200 UTC- Created 5/2/14 13:36 UTC

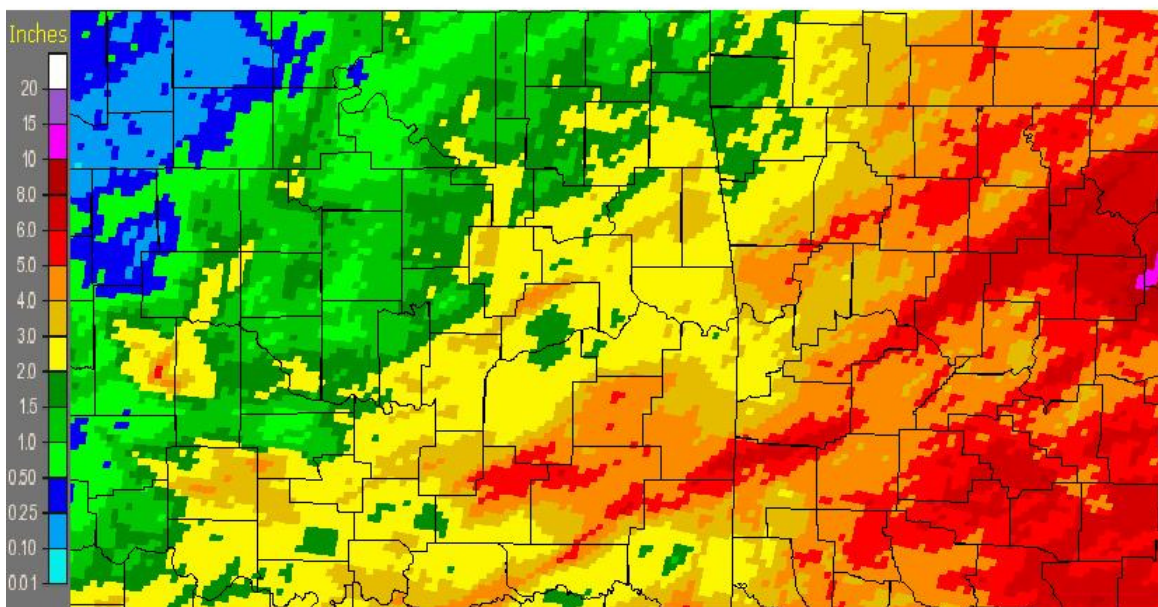


Fig. 1a. Estimated Observed Rainfall for April 2014

Tulsa, OK (TSA): April, 2014 Monthly Percent of Normal Precipitation  
 Valid at 5/1/2014 1200 UTC- Created 5/2/14 13:38 UTC

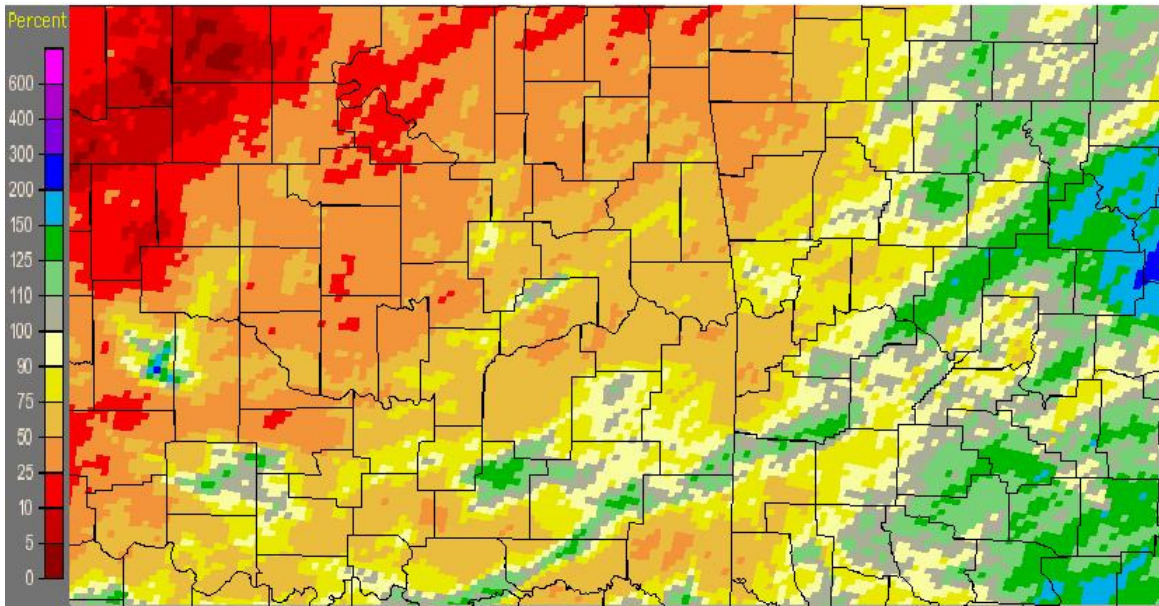


Fig. 1b. Estimated % of Normal Rainfall for April 2014

In Tulsa, OK, April 2014 tied for the 38<sup>th</sup> coldest April (59.2°F, tied 2009; since records began in 1905) and the 24<sup>th</sup> driest April (2.13", tied 1955; since records began in 1888). Fort Smith, AR tied for the 62<sup>nd</sup> warmest April (61.7°F, tied 1897, 1914, 1933, 1972, 1976; since records began in 1883) and the 46<sup>th</sup> driest April (2.94"; since records began in 1883). Fayetteville, AR tied for the 19<sup>th</sup> coldest April (55.4°F, tied 1966) and was the 16<sup>th</sup> driest April (3.03") since records began in 1950.

Some of the larger precipitation reports (in inches) for April 2014 included:

Cloudy 5 ENE, OK (coop)	5.95	Talihina 4 SE, OK (meso)	5.01	Natural Dam 5 S, AR (coop)	4.78
Clayton 4 NNE, OK (meso)	4.62	Cloudy 6 SSE, OK (meso)	3.78	Wister 3 ENE, OK (meso)	3.73
Antlers 3 WNW, OK (meso)	3.63	Hugo 2 NW, OK (meso)	3.66	Sallisaw 2 SSW, OK (meso)	3.29

Some of the lowest precipitation reports (in inches) for April 2014 included:

Foraker 8 ESE, OK (meso)	0.69	Ralston, OK (coop)	0.78	Skiatook 4 NW, OK (meso)	0.80
Burbank, OK (meso)	0.82	Copan 3 ENE, OK (meso)	1.03	Wynona 2 S, OK (meso)	1.10
Vinita 10 NNW, OK (meso)	1.16	Bartlesville 2 W, OK (ASOS)	1.20	Mannford 6 NW, OK (coop)	1.25

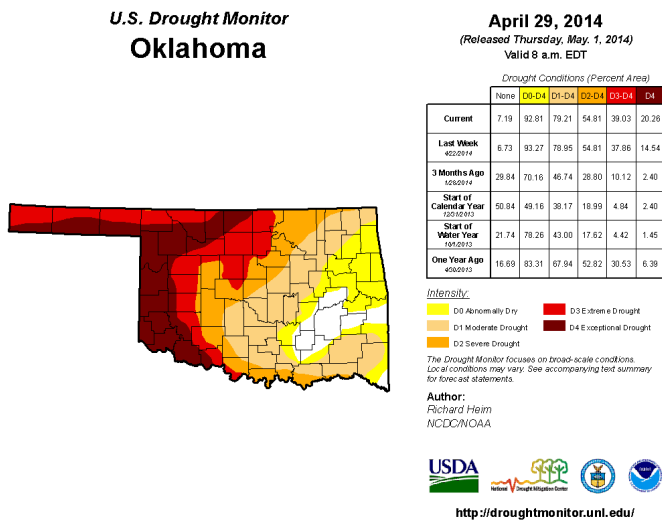


Fig. 2. Drought Monitor for Oklahoma

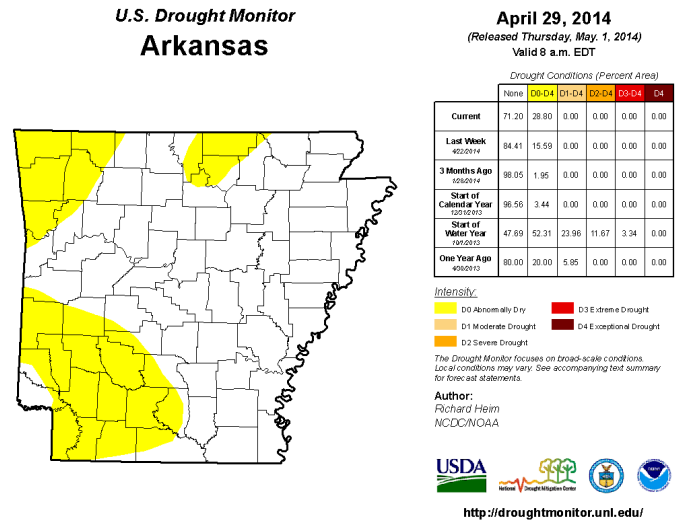


Fig. 3. Drought Monitor for Arkansas

According to the [U.S. Drought Monitor](http://droughtmonitor.unl.edu/) (USDM) from April 29, 2014 (Figs 2, 3), Severe Drought (D2) conditions were present across portions of northeast Oklahoma to the north of the Interstate 44 corridor, including most of

Osage and Pawnee counties and northern portions of Washington and Nowata counties. Moderate Drought (D1) conditions were located across a large portion of northeast Oklahoma and also far southeast Oklahoma, affecting southeastern Osage, eastern Pawnee, southern Washington, southern Nowata, Craig, Ottawa, Rogers, Tulsa, Creek, most of Okfuskee, western Okmulgee, northwestern Mayes, Pushmataha, Choctaw, and southwestern LeFlore counties. Abnormally Dry (D0), but not experiencing drought, conditions were occurring across the remainder of eastern Oklahoma, except for McIntosh, Pittsburg, northern Latimer, and central LeFlore counties. In northwest Arkansas, D0 conditions were affecting Benton, Carroll, Washington, Madison, Crawford, and western Franklin counties.

According to the USACE, most of the major reservoirs in the HSA were operating within  $\pm 3\%$  of the top of their conservation pools as of 5/1/2014. A few lakes remained below normal: Skiatook Lake 70% and Birch Lake 89%. Hugo Lake 104% had a level within its flood control pool.

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

Rank since 1921	Last 30 Days (Apr 2 – May 1)	Last 60 Days (Mar 3 – May 1)	Year-to-Date (Jan 1 – May 1)	Last 120 Days (Jan 2 – May 1)	Water Year-to-Date (Oct 1 – May 1)	Last 365 Days (May 2, 2013 – May 1, 2014)
Northeast OK	10 <sup>th</sup> driest	11 <sup>th</sup> driest	2 <sup>nd</sup> driest	2 <sup>nd</sup> driest	7 <sup>th</sup> driest	27 <sup>th</sup> driest
East Central OK	16 <sup>th</sup> driest	25 <sup>th</sup> driest	3 <sup>rd</sup> driest	3 <sup>rd</sup> driest	21 <sup>st</sup> driest	30 <sup>th</sup> driest
Southeast OK	37 <sup>th</sup> driest	34 <sup>th</sup> driest	6 <sup>th</sup> driest	6 <sup>th</sup> driest	30 <sup>th</sup> driest	36 <sup>th</sup> driest
Statewide	9 <sup>th</sup> driest	8 <sup>th</sup> driest	2 <sup>nd</sup> driest	2 <sup>nd</sup> driest	7 <sup>th</sup> driest	20 <sup>th</sup> driest

## **Outlooks**

The [Climate Prediction Center](#) (CPC) outlook for May 2014 (issued April 30, 2014) indicates an enhanced chance for above normal temperatures across all of eastern Oklahoma and northwest Arkansas. This outlook also indicates a slightly enhanced chance for above median rainfall across far northeast Oklahoma and far northwest Arkansas, as well as equal chances for above, near, and below median rainfall across the rest of eastern Oklahoma and west central Arkansas. This outlook is based on short-range forecasts of expected weather conditions, especially for the first few days of May.

For the 3-month period May-June-July 2014, CPC is forecasting a slightly enhanced chance for above normal temperatures and equal chances for above, near, and below median rainfall across all of eastern Oklahoma and northwest Arkansas (outlook issued April 17, 2014). According to CPC, ENSO neutral conditions remained through April. ENSO neutral conditions are expected to continue through Spring 2014. However, an El Niño Watch has been issued, indicating conditions are favorable for El Niño development within the next 6 months. Therefore, this outlook is based on both statistical and dynamical forecast tools, as well as antecedent soil moisture, under ENSO neutral conditions.

## **Summary of Precipitation Events**

### **April 1-15**

Scattered strong to borderline severe storms developed during the early morning hours of the 3<sup>rd</sup> across east central Oklahoma and into western Arkansas, producing some hail and isolated rainfall amounts up to half an inch. These storms moved into central Arkansas by the noon hour. Later in the day, the first real severe weather episode of the spring season affected a good portion of eastern Oklahoma and northwest Arkansas during the afternoon and evening hours of the 3<sup>rd</sup>. A cold front pushed into northeast Oklahoma during the morning hours on the 3<sup>rd</sup>, reaching roughly the Interstate 44 corridor by early afternoon. Thunderstorms developed fairly rapidly along the front, many of which quickly began to produce large hail and sporadic wind damage. The thunderstorms pushed eastward across the rest of eastern Oklahoma and into western Arkansas

during the afternoon and into the evening. Rainfall amounts of greater than half an inch were common, with a stripe of 3 to 4 inch amounts across northern McIntosh and a small portion of western Muskogee counties.

An upper level storm system moved across Oklahoma and Arkansas from late on the 5<sup>th</sup> through the day on the 6<sup>th</sup>, producing widespread showers, primarily along and south of Interstate 40. Most locations saw rainfall amounts from half an inch to an inch.

During the early morning hours of the 13<sup>th</sup>, scattered showers with isolated thunder developed and moved eastward across much of eastern Oklahoma and western Arkansas in advance of a strong storm system. Morning rainfall amounts were generally light. Additional, stronger storms developed along a cold front and dryline across southern Kansas and into north central Oklahoma during the early to mid-afternoon hours, sweeping through much of eastern Oklahoma and western Arkansas through the afternoon and evening. The storms produced an EF1 tornado in Franklin County, as well as large hail and some wind damage. Rainfall amounts were heaviest to the southeast of Interstate 44, with amounts greater than an inch in parts of far southeast Oklahoma.

### **April 16-30**

After an extended dry spell to begin the second half of the month, an upper level disturbance moved into the Southern Plains region beginning the 20<sup>th</sup>. Widespread showers developed during the day on the 20<sup>th</sup>, primarily during the afternoon hours, with a second round ahead of the cold front on the 21<sup>st</sup>. The heaviest rainfall amounts were found in southeast Oklahoma, where some locations saw in excess of 2 inches, especially portions of Pushmataha, Pittsburg, Latimer, and LeFlore counties. A secondary maximum of around an inch was found in northeast Oklahoma and far northwest Arkansas from near Tulsa to Pryor and Grove into northwest Benton County.

Late evening on the 23<sup>rd</sup>, showers and a few thunderstorms moved into portions of eastern Oklahoma west of Highway 75 before beginning to decay during the early morning hours of the 24<sup>th</sup>. Only a few hundredths of an inch of rain were seen, but the decaying thunderstorms did lead to some non-thunderstorm wind damage across portions of Tulsa, Rogers, and Mayes counties. Additional thunderstorms developed toward sunrise on the 24<sup>th</sup> across south central Oklahoma, pushing into southeast Oklahoma during the morning and producing small hail and gusty winds. As a cold front moved into the area during the afternoon of the 24<sup>th</sup>, yet another round of strong to severe thunderstorms developed across southeast Oklahoma and into western Arkansas. Total rainfall amounts from the 24<sup>th</sup> were up to a quarter of an inch across most of eastern Oklahoma and northwest Arkansas, with around three-quarters of an inch in parts of southeast Oklahoma.

Several rounds of strong to severe storms affected eastern Oklahoma and northwest Arkansas from the morning hours on the 27<sup>th</sup> to after midnight on the 28<sup>th</sup>, as an upper level storm system pushed into the Plains region and a dryline set up to the west of the area. A line of thunderstorms developed ahead of the dryline just west of the Interstate 35 corridor before sunrise on the 27<sup>th</sup> due to an increasing low level jet. The storms pushed eastward into eastern Oklahoma during the morning hours, producing some hail and up to an inch of rainfall across portions of northeast Oklahoma, generally west of Highway 69. As the dryline slowly pushed into eastern Oklahoma during the afternoon hours, more storms developed first in southeast Oklahoma and later in far northeast Oklahoma and western Arkansas. These storms produced two tornadoes between 5 and 6 pm, an EF2 that moved through Quapaw in Ottawa County and an EF1 near Octavia in LeFlore County. After these storms moved eastward into Arkansas, another line of severe storms developed in eastern Oklahoma during the mid to late evening hours, moving through western Arkansas from late evening to just after midnight. Afternoon and evening rainfall amounts ranged from half an inch to just over an inch in most locations.

Written by:

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**Products issued in April 2014:**

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

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

- 1 Flash Flood Warnings (FFW)
- 2 Flash Flood Statements (FFS)
- 0 Flash/Areal Flood Watches (FFA) (0 Watch FFA CON/EXT/CAN)
- 0 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) (7 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)