

<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>	
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283		REPORT FOR: MONTH <b>November</b> YEAR <b>2009</b>
		SIGNATURE <b>Steven F. Piltz</b> (Meteorologist-in-Charge)
		DATE <b>December 10, 2009</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)*

**X No flood stages were reached in this HSA during the month above.**

After an extremely wet October, November 2009 was very dry across eastern Oklahoma and northwest Arkansas. Normal precipitation for November ranges from 2.6 inches in Pawnee County to 4.4 inches in Haskell County. Normal precipitation for the Ozark region of northwest Arkansas averages 4.2 inches.

**Summary of Rain Events**

**November 1-17:**

After a cold, wet October, November began warm and dry despite several weak cold frontal passages. A few showers and thunderstorms were able to develop along a cold front on November 9<sup>th</sup>, affecting Pawnee, Osage, northern Creek, and eastern Kay Counties. Rainfall totals were around one tenth to around one inch, with higher localized amounts of 1.5 to 2 inches across portions of northern Osage County.

A cold front brought light rain, from a few hundredths to around half an inch, to locations northwest of I-44 on November 14. Showers and thunderstorms continued on the 15<sup>th</sup> near the slow moving front. Widespread rainfall totals ranged from around one quarter of an inch to around one inch. Higher amounts to around 2 inches fell across portions of Latimer, Pushmataha, Le Flore, Sebastian, and Franklin Counties. As the upper-level low moved into the region behind the front, additional wrap-around light rain and even a few snow flurries affected northeast OK and northwest AR on the 16<sup>th</sup> and 17<sup>th</sup>. Only a few hundredths of an inch of rain fell and no snow accumulations occurred with this activity.

**November 18-30:**

An inverted trough over the HSA brought scattered showers and isolated thunderstorms to the area on the 20<sup>th</sup>. Most of the precipitation occurred southeast of I-44 and northwest of a Wilburton, OK to Berryville, AR line. Rainfall totals from this activity were generally around half an inch or less. However, heavier rainfall of 1 to 1.5 inches affected portions of Wagoner, Cherokee, Muskogee, Sequoyah, and Latimer Counties. The highest totals of 1.5 to near 2.5 occurred near Muskogee.

Scattered showers developed along a cold front late on Nov. 23<sup>rd</sup> and into the early morning of the 24<sup>th</sup>. Rainfall totals remained light, with only a few hundredths to around half an inch southeast of a Stidham, to Tahlequah, to Bentonville line. The final round of precipitation for the month of November occurred on the 29<sup>th</sup> as cold front moved through the region. Locations northwest of I-44 remained dry, while rainfall totals of a few hundredths to around half an inch occurred elsewhere.

**Monthly Summary**

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a.), rainfall totals for November 2009 ranged from around one quarter of an inch to around 3 inches, which is several inches below normal for November. This corresponded to almost the entire HSA receiving only between 10% and 50% of the normal November precipitation (see Fig. 1b). In addition, most locations received the majority of their rainfall on only a couple of days during the month.

Tulsa, OK (TSA): November, 2009 Monthly Observed Precipitation  
Valid at 12/1/2009 1200 UTC- Created 12/1/09 23:44 UTC



Tulsa, OK (TSA): November, 2009 Monthly Percent of Normal Precipitation  
Valid at 12/1/2009 1200 UTC- Created 12/1/09 23:49 UTC

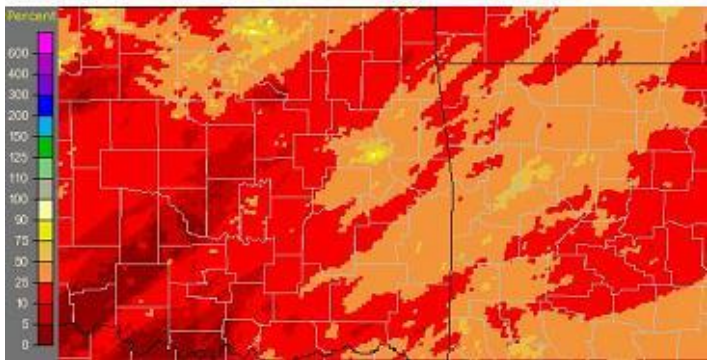


Fig. 1a. Estimated Observed Precip. for Nov. 2009

1b. Estimated % of Normal Precip. for Nov. 2009

Several stations recorded one of the top 10 warmest Novembers on record this year, and the first freeze came late in the season across much of the HSA. However, no daily temperature records were set this month at Tulsa, Fort Smith, or McAlester.

- Tulsa – 8<sup>th</sup> warmest (since 1905), 17<sup>th</sup> driest (since 1888)
- Tulsa – 2<sup>nd</sup> latest occurrence of temperatures  $\leq 32^\circ$  on Nov. 26<sup>th</sup> (latest ever for  $32^\circ$  is Nov. 28, 1990 since 1906)
- Fort Smith – 9<sup>th</sup> warmest, 34<sup>th</sup> driest (since 1882)
- Fort Smith – tied as 6<sup>th</sup> latest occurrence  $\leq 32^\circ$  on Nov. 26<sup>th</sup> (since 1901)
- McAlester – 8<sup>th</sup> warmest, 4<sup>th</sup> driest (since 1953)
- Bartlesville – tied as 9<sup>th</sup> warmest (since 1920)

Some of the larger precipitation reports (in inches) for November 2009 included:

Muskogee, OK (ASOS)	3.63	Muskogee, OK (coop)	2.57	Talihina, OK (meso)	2.12
Tuskahoma, OK (coop)	1.97	Fanshawe, OK (coop)	1.91	Oktaha 2NE, OK (coop)	1.89
Clayton, OK (meso)	1.89	Cookson, OK (meso)	1.86	Wister, OK (meso)	1.86

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

Rank since 1921 ("Last XX days" ending Dec. 6, 2009)	Last 30 days	Last 60 days	Last 120 days	Last 365 days (Dec. 7, 2008 – Dec. 6, 2009)	Year-to-Date (Jan. 1 – Dec. 6)
Northeast OK	23 <sup>rd</sup> driest	16 <sup>th</sup> wettest	<b>10<sup>th</sup> wettest</b>	16 <sup>th</sup> wettest	20 <sup>th</sup> wettest
East Central OK	23 <sup>rd</sup> driest	20 <sup>th</sup> wettest	<b>7<sup>th</sup> wettest</b>	18 <sup>th</sup> wettest	14 <sup>th</sup> wettest
Southeast OK	25 <sup>th</sup> driest	18 <sup>th</sup> wettest	<b>5<sup>th</sup> wettest</b>	<b>8<sup>th</sup> wettest</b>	<b>7<sup>th</sup> wettest</b>

According to the U.S. Drought Monitor (USDM) from December 1, 2009, drought conditions did not exist across northeast OK and northwest AR.

Most of the major reservoirs in the Tulsa HSA reported levels within 6% of their flood control pools by December 7, 2009. However, Oologah Lake was operating at 93% of its conservation pool.

The Climate Prediction Center (CPC) outlook for December 2009 (issued November 30, 2009) indicates an enhanced chance for below normal temperatures and equal chances for above, near, and below normal precipitation. According to CPC, output from several computer models for this December indicates "a negative Arctic Oscillation (AO), a negative North Atlantic Oscillation (NAO), and a positive Pacific-North American Oscillation (PNA) pattern. These features are associated with below normal temperatures throughout much of the central and eastern portions of the CONUS. This is expected to overwhelm the usual ENSO temperature teleconnection pattern favored in the early part of an El Niño winter." For the 3-month period Dec-Jan-Feb 2009-10, CPC is forecasting equal chances for above, near, and below normal temperatures and precipitation during the upcoming winter (outlook issued November 19, 2009). Sea-surface temperatures in the equatorial

Pacific indicate that moderate El Niño conditions currently exist. These conditions are expected to continue this winter. An El Niño Advisory remains in effect.

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Products issued:

- 0 River Flood Warnings
- 1 River Flood Statements
- 0 River Flood Advisories
- 0 River Flood Watches
- 1 River Statements
- 0 Hydrologic Outlooks
- 0 Drought Information Statements