NWS FORM E-5 (11-88) (PRES. by NWS Instruction 10-924)	**U.S. DEPARTMENT OF COMMERCE** NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE
HYDROLOGIC SERVICE AREA (HSA)	**Tulsa, Oklahoma (TSA)**
MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS	REPORT FOR: MONTH **April** YEAR **2010**
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 **May 4, 2010**

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] An "X" in the box indicates no flood stages were reached in this HSA during the month above.

Severe weather activity was minimal across eastern Oklahoma and northwest Arkansas during April 2010 as a wet winter continued to transition to a dry spring. 2010 makes only the 8th time since 1950 in which zero tornadoes occurred before May 1st in the NWS Tulsa area of responsibility. The last time this occurred was in 1992. 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.

Summary of Rain Events

April 1-14:

A line of early morning convection affected eastern OK on April 2, bringing damaging winds and small hail to portions of northeast OK. This activity produced rainfall rates up to one half inch per hour. This line weakened as it continued to move east across eastern OK and western AR through the afternoon and early evening hours. Most locations in the hydrologic service area (HSA) reported between one half and one inch of rainfall, with isolated areas of receiving near 1.5 inches. Strong to severe thunderstorms developed along a nearly stationary front on the evening of the 4th and continued to train across the same area into the overnight hours. Heavy rain affected a narrow corridor from near Ponca City, OK to northern Craig Co., where rainfall totals reached one half to around 2 inches (see Fig. 1). The Oklahoma Mesonet site Burbank (7 mi. SW Burbank) recorded 1.91" and the Copan site (2 mi. ENE of Copan) recorded 1.85" from these storms.

As a cold front overtook a dryline on the evening of April 6th, thunderstorms developed along the surface boundaries across central OK. These storms quickly developed into a line of thunderstorms that propagated into northeast and east central OK. When these storms first moved into eastern OK, wind gusts to around 60 mph and hail to 1" was reported. Rainfall totals along and north of an Okmulgee to Jay line ranged from around one quarter to over half an inch. The highest totals of 0.75" to 1.5" affected Pawnee, Osage, and northern Creek Counties. This activity weakened and decreased in aerial coverage during the early morning hours as it moved into northwest AR, with only an additional tenth of an inch or less of rainfall.

Fig. 1. 24-hr rainfall ending at 7am CDT 04/05/2010

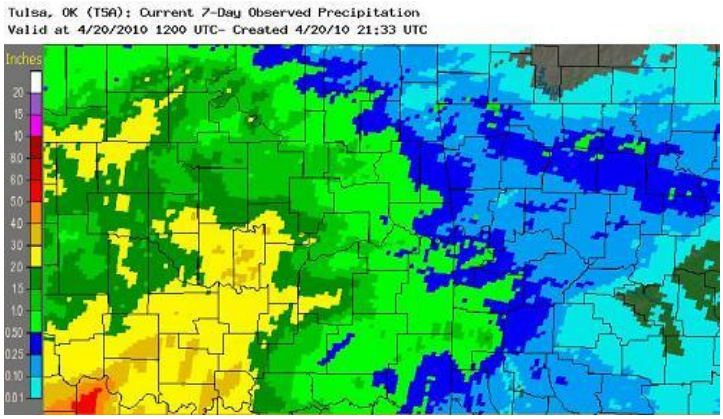


Fig. 2. Rainfall total for April 16-18, 2010.

April 15-30:

A slow moving upper-level system affected the HSA April 16-18. A cold front moved southeast through the area on the 16th, with showers and isolated thunderstorms developing along and north of the boundary. Precipitation affected locations along and north of an Okemah, OK to Bentonville, AR line. A moisture gradient then set up across the region, with dewpoints increasing from east to the west. Additional shower and thunderstorm activity developed on the 17th and 18th, with the rainfall gradient generally following the dewpoint gradient. The 3-day rainfall total, shown in Fig. 2, ranged from near 3 inches in Okfuskee County to near one quarter inch across Ottawa to Carroll Counties.

A low-level jet initiated elevated showers and thunderstorms during the early morning hours of the 23rd. This activity affected locations northwest of a Bristow to Nowata line, with the heaviest rainfall and strongest storms across portions of north central OK, including Osage and Pawnee Counties. Rainfall totals ranged from a few hundredths to near one inch. Strong dynamics set up across the Southern Plains and Lower Mississippi Valley later in the day, bringing significant severe weather and long-lived deadly tornadoes to Louisiana and Mississippi. Fortunately, no severe weather was reported in the HSA. Some shower and thunderstorm activity developed ahead of a dryline that had set up near Hwy 75, while additional storms moved northeast out of Texas. All of this activity affected locations in OK and AR primarily east of an Okemah to Jay line on the 23rd and into the morning of the 24th. Rainfall totals ranged from around one tenth of an inch to near 1.5 inches. As the upper low moved overhead during the afternoon, showers and thunderstorms continued across far northeast OK and northwest AR on the 24th. An additional 0.5 to 1.5 inches of rain fell across Madison, Washington, Carroll, and Benton Counties in northwest AR, with lesser amounts elsewhere.

The last day of April brought another round of storms to the HSA. As moisture deepened ahead of an upper-level low pressure system, elevated convection developed along an eastward moving cold front during the morning of the 30th. This activity increased in coverage and became surface-based through the afternoon hours, bringing isolated wind damage and some large hail to eastern OK and northwest AR. All of the HSA received rain from this activity, with totals ranging from a few hundredths to just over one inch.

Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 3a.), rainfall totals for April 2010 were around 4 inches or less. The only exception was across far western Osage and far northwestern Pawnee Counties, where the monthly totals were 4" to 6". These totals correspond to between 1" and 3" below average April precipitation for all but western Osage and northwestern Pawnee Counties, which ended the month with 1"-3" above average rainfall. Most of the HSA only received 25%-75% of the average rainfall for April (see Fig. 3b).

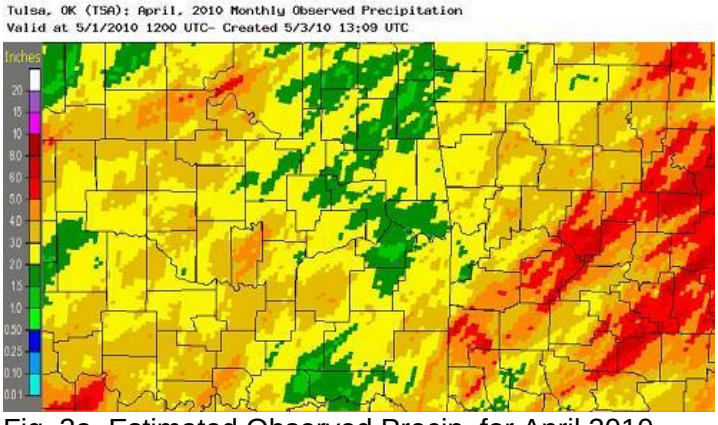
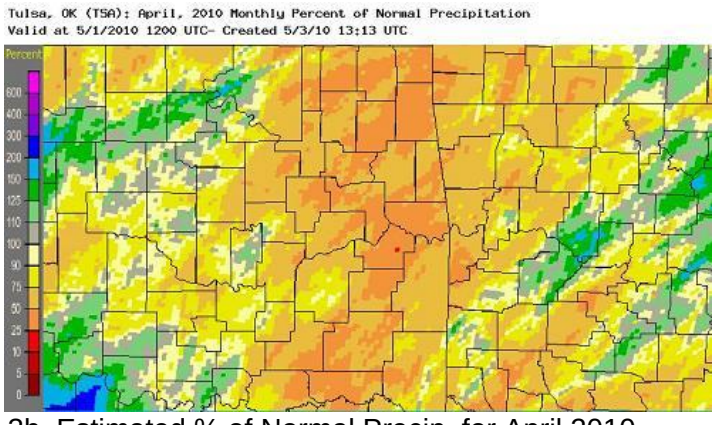


Fig. 3a. Estimated Observed Precip. for April 2010



3b. Estimated % of Normal Precip. for April 2010

In Tulsa, OK, April 2010 ranked as the 20th warmest April (63.7°F, tied with 1915, since records began in 1905), and was the 23rd driest April (2.08", since records began in 1888). Fort Smith, AR was also the 20th warmest April (64.5°F) and the 27th driest April (2.25", tied with 1962) since records began in 1883.

Some of the larger precipitation reports (in inches) for April 2010 included:

Burbank, OK (meso)	5.86	Fayetteville, AR (ASOS)	3.69	McAlester, OK (meso)	3.67
McAlester, OK (ASOS)	3.52	Burbank, OK (coop)	3.44	Ozark, AR (coop)	3.42
Okemah, OK (coop)	3.26	Okemah, OK (meso)	3.22	Copan, OK (meso)	3.20

According to the U.S. Drought Monitor (USDM) from April 27, 2010, drought conditions did not exist across northeast OK and northwest AR.

The major reservoirs in the Tulsa HSA reported full conservation pools and little to no flood control storage as of April 30, 2010. The exceptions were Ft. Gibson Lake, which was reporting a conservation pool of 77%, and Hudson Lake, which reported 4% of its flood control pool in use.

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

Rank since 1921 (ending May 1, 2010)	Last 30 Days	Year-to-Date 2010	Spring-to-Date (Mar. 1 – May 1)	Water Year (Oct.1 – May 1)	Last 365 days (May 2, 2009 – May 1, 2010)
Northeast OK	25th driest	34th driest	30th driest	35th wettest	34th wettest
East Central OK	**15th driest**	23rd driest	18th driest	36th wettest	23rd wettest
Southeast OK	17th driest	36th driest	17th driest	22nd wettest	**5th wettest**

The Climate Prediction Center (CPC) outlook for May 2010 (issued April 30, 2010) indicates a slightly enhanced chance for above median precipitation in west central AR and an equal chance for above, near, and below median precipitation elsewhere. The May 2010 outlook also indicates an equal chance for above, near, and below average temperatures for the entire area. For the 3-month period May-Jun-Jul 2010, CPC is forecasting a slightly enhanced chance for below average temperatures and a slightly enhanced chance for above median precipitation (outlook issued April 15, 2010). Sea-surface temperatures in the equatorial Pacific indicate that moderate El Niño conditions currently exist. According to CPC, El Niño is expected to continue weakening through May. The atmospheric response to El Nino has been diminishing since March and therefore, the outlook has been based more on statistical model output. However, recent above normal soil moisture across the Southern Plains was an additional factor in the enhanced chances for cooler and wetter conditions. An El Niño Advisory remains in effect.

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Products issued:

- 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)
- 0 Drought Information Statements (DGT)