

<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>January</b>	YEAR <b>2015</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>February 5, 2015</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.

2015 began cold, with temperatures 10-20°F below normal on several days during the first half of the month. This was then followed by a warm second half of January, with several days of temperatures 10-20°F above normal. This resulted in near normal temperatures across the region for January as a whole. Far southeast Oklahoma started the year off with above normal rainfall; however, well below normal precipitation fell across northeast OK and northwest AR north of I-40. 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. This report, past E-5 reports, and monthly hydrology and climatology summaries can be found at <http://www.srh.noaa.gov/tsa/?n=hydro-monthly-summary>.

**Monthly Summary**

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for January 2015 ranged from 0.50" in northeast OK to around 4" in southeast OK. The majority of the HSA received 1"-3" of rain this month. Most of the HSA received below normal rainfall this month (Fig. 1b), with the greatest deficits occurring north of I-40. Portions of southeast OK, including parts of McIntosh, Pittsburg, Haskell, Le Flore, Pushmataha, and all of Choctaw Counties, received above normal rainfall this month with 110%-150% of the normal January rainfall. However, north of I-40, most locations only received 25% to 75% of the normal rainfall in January.

Tulsa, OK (TSA): January, 2015 Monthly Observed Precipitation  
 Valid at 2/1/2015 1200 UTC- Created 2/2/15 14:14 UTC

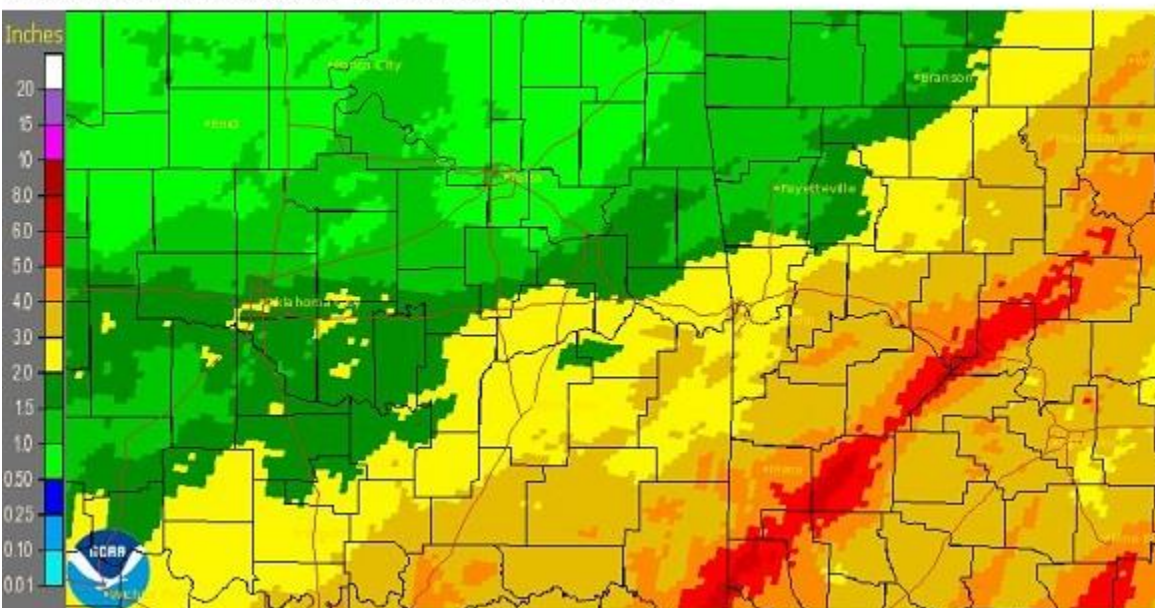


Fig. 1a. Estimated Observed Rainfall for January 2015

Tulsa, OK (TSA): January, 2015 Monthly Percent of Normal Precipitation  
 Valid at 2/1/2015 1200 UTC- Created 2/2/15 14:15 UTC

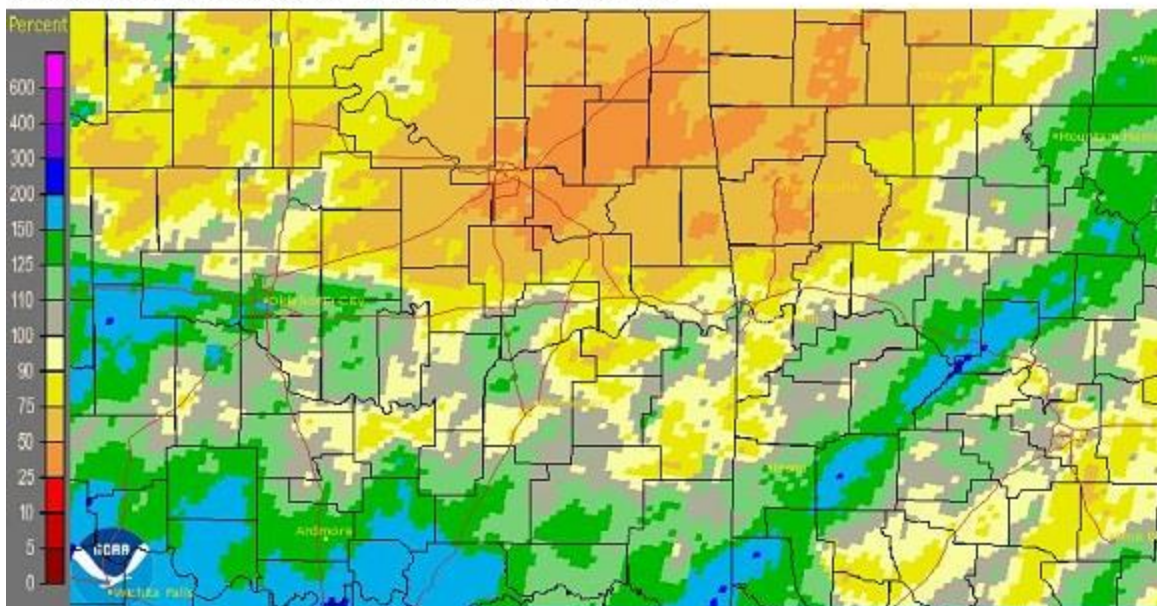


Fig. 1b. Estimated % of Normal Rainfall for January 2015

In Tulsa, OK, January 2015 ranked as the 50<sup>th</sup> warmest January (38.4°F, tied 1906; since records began in 1905) and the 36<sup>th</sup> driest January (0.75"; since records began in 1888). A trace of snow fell at Tulsa in January, which ties several years (since records began in 1900). The high temperature in Tulsa on 1/28/2015 was 80°F, making it only the 3<sup>rd</sup> time in recorded history with a temperature ≥80°F during January. Fort Smith, AR had the 62<sup>nd</sup> warmest January (39.8°F; since records began in 1883) and the 65<sup>th</sup> wettest January (2.22"; since records began in 1883). There was a trace of snow at Fort Smith in January, which ties several years (since records began in 1884). Fayetteville, AR had the 28<sup>th</sup> coldest (35.2°F, tied 1973) and the 15<sup>th</sup> driest (1.11") January since records began in 1950. There was a trace of snow at Fayetteville in January, which tied with several years (since records began in 1950).

Some of the larger precipitation reports (in inches) for January 2015 included:

Antlers, OK (meso)	3.42	Cloudy, OK (meso)	3.24	Hugo, OK (meso)	3.19
Antlers 5NW, OK (coop)	3.02	Bengal, OK (coop)	2.73	Ozark, AR (coop)	2.52
Clayton, OK (meso)	2.40	Talihina, OK (meso)	2.36	McAlester, OK (meso)	2.25
				Fanshawe, OK (coop)	2.25

Some of the lowest precipitation reports (in inches) for January 2015 included:

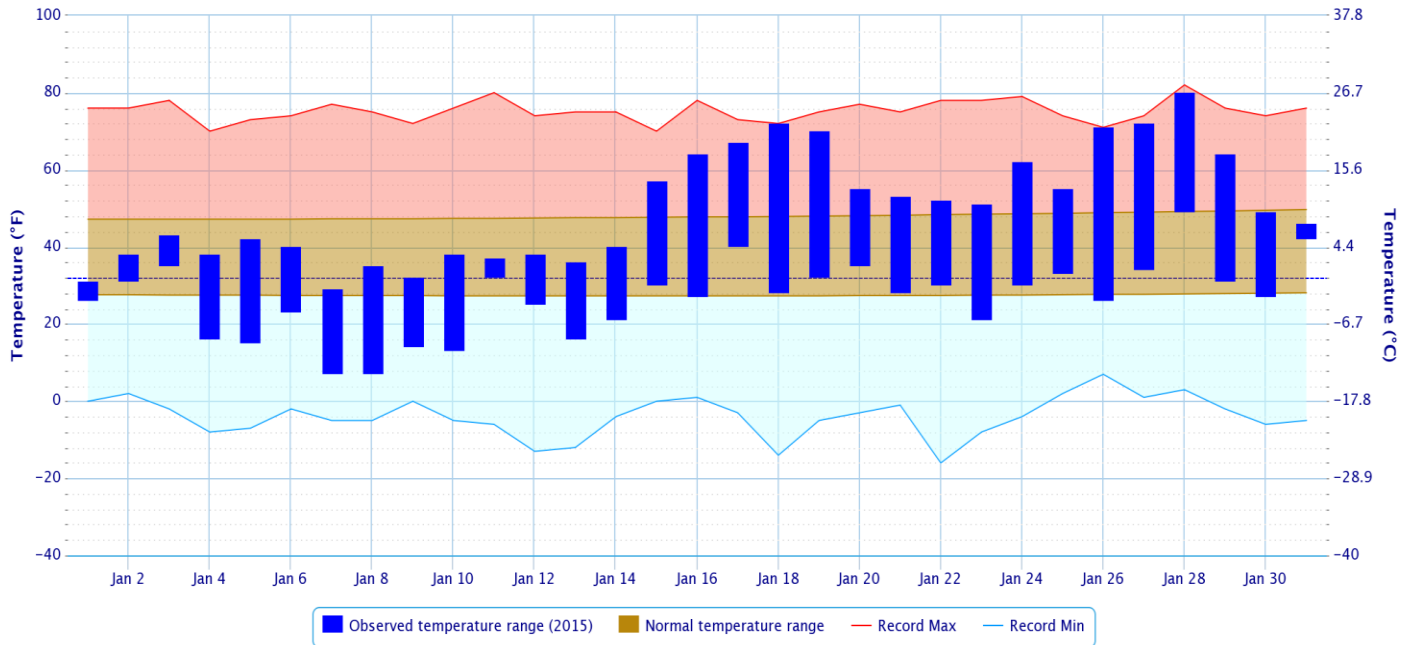
Ralston, OK (coop)	0.22	Jenks-Riverside Arpt, OK (ASOS)	0.47	Bartlesville, OK (ASOS)	0.69
Inola, OK (meso)	0.70	Copan, OK (meso)	0.73	Vinita, OK (meso)	0.74
Tulsa, OK (ASOS)	0.75	Bixby, OK (meso)	0.77	Pryor, OK (meso)	0.77

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

Rank since 1921	January 2015	Winter-to-Date (Dec 1 – Jan 31)	Last 90 Days (Nov 3 – Jan 31)	Water Year-to-Date (Oct 1, 2014 – Jan 31, 2015)	Cool Growing Season (Sep 1, 2014 – Jan 31, 2015)	Last 180 Days (Aug 5 – Jan 31)	Last 365 Days (Feb 1, 2014 – Jan 31, 2015)
Northeast OK	26 <sup>th</sup> driest	25 <sup>th</sup> driest	28 <sup>th</sup> driest	39 <sup>th</sup> wettest	43 <sup>rd</sup> wettest	42 <sup>nd</sup> driest	21 <sup>st</sup> driest
East Central OK	39 <sup>th</sup> driest	44 <sup>th</sup> driest	43 <sup>rd</sup> driest	40 <sup>th</sup> wettest	45 <sup>th</sup> wettest	41 <sup>st</sup> driest	30 <sup>th</sup> driest
Southeast OK	39 <sup>th</sup> wettest	44 <sup>th</sup> driest	30 <sup>th</sup> driest	40 <sup>th</sup> driest	43 <sup>rd</sup> driest	36 <sup>th</sup> driest	39 <sup>th</sup> driest
Statewide	42 <sup>nd</sup> wettest	43 <sup>rd</sup> driest	47 <sup>th</sup> wettest	43 <sup>rd</sup> wettest	41 <sup>st</sup> driest	28 <sup>th</sup> driest	21 <sup>st</sup> driest

### Daily Temperature Data – Tulsa Area, OK (ThreadEx)

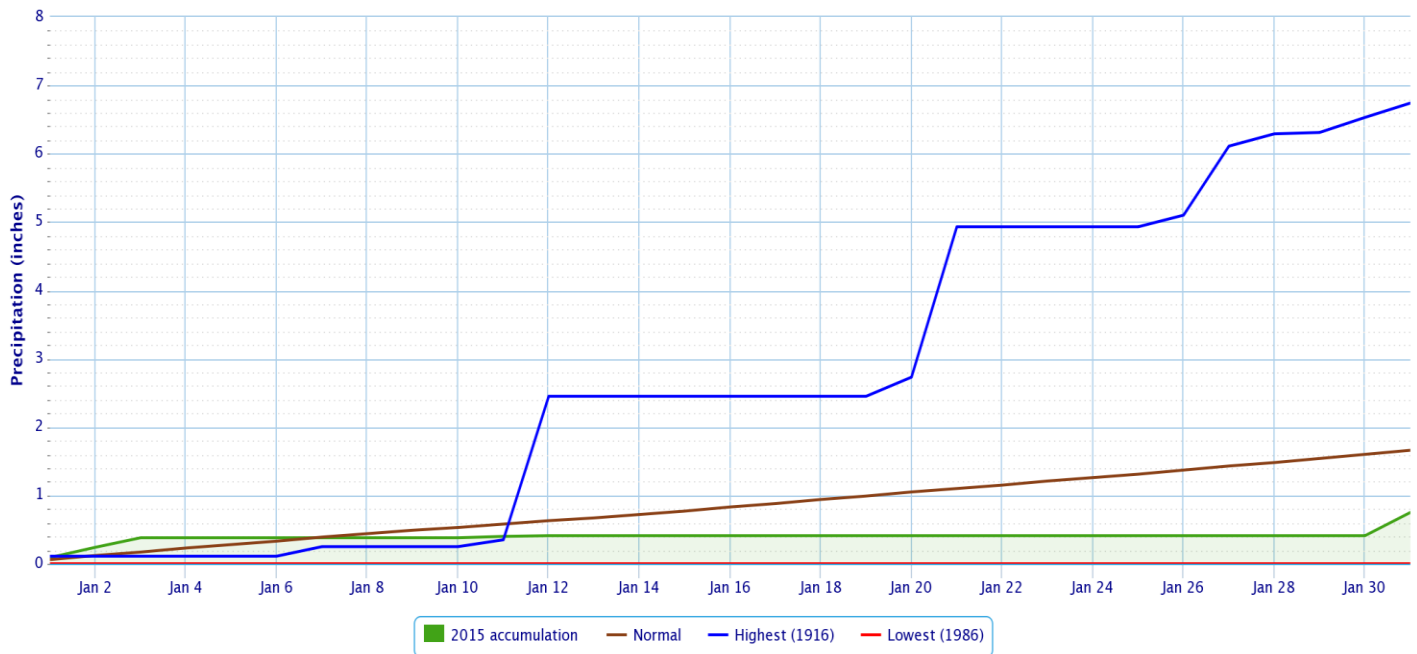
Period of Record – 1905-01-06 to 2015-02-01. Normals period: 1981-2010. Click and drag to zoom chart.



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### Accumulated Precipitation – Tulsa Area, OK (ThreadEx)

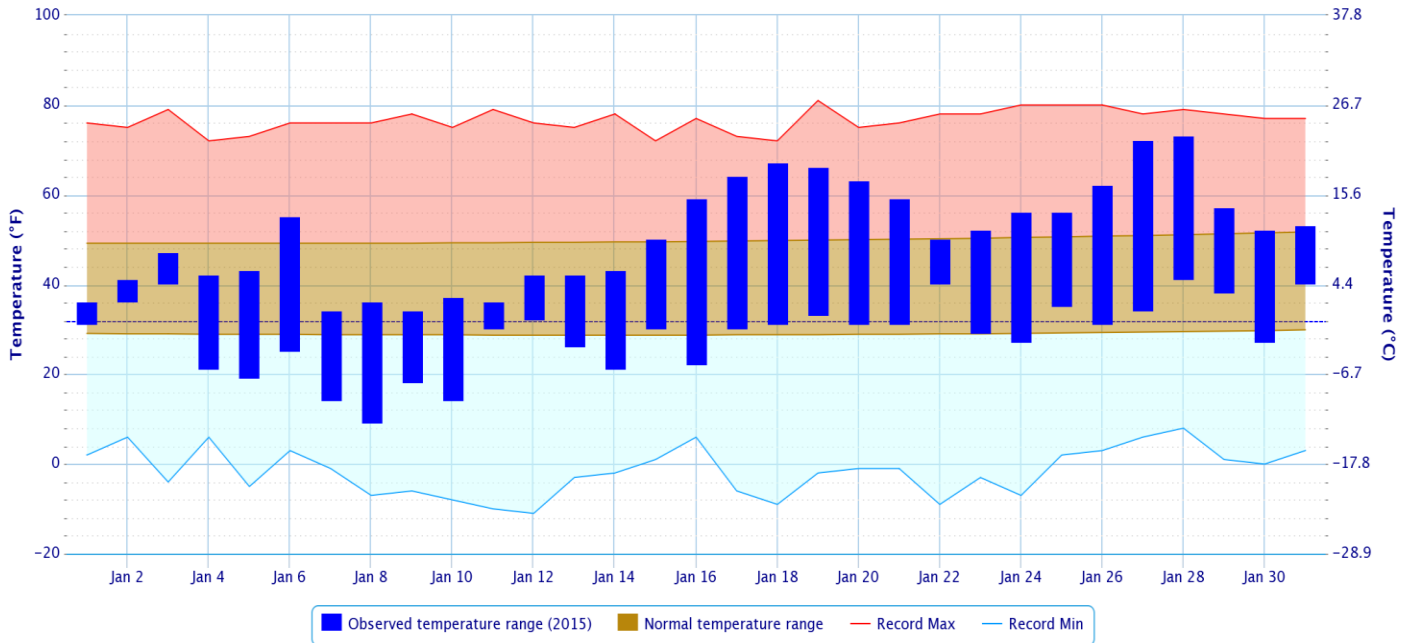
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

### Daily Temperature Data – Fort Smith Area, AR (ThreadEx)

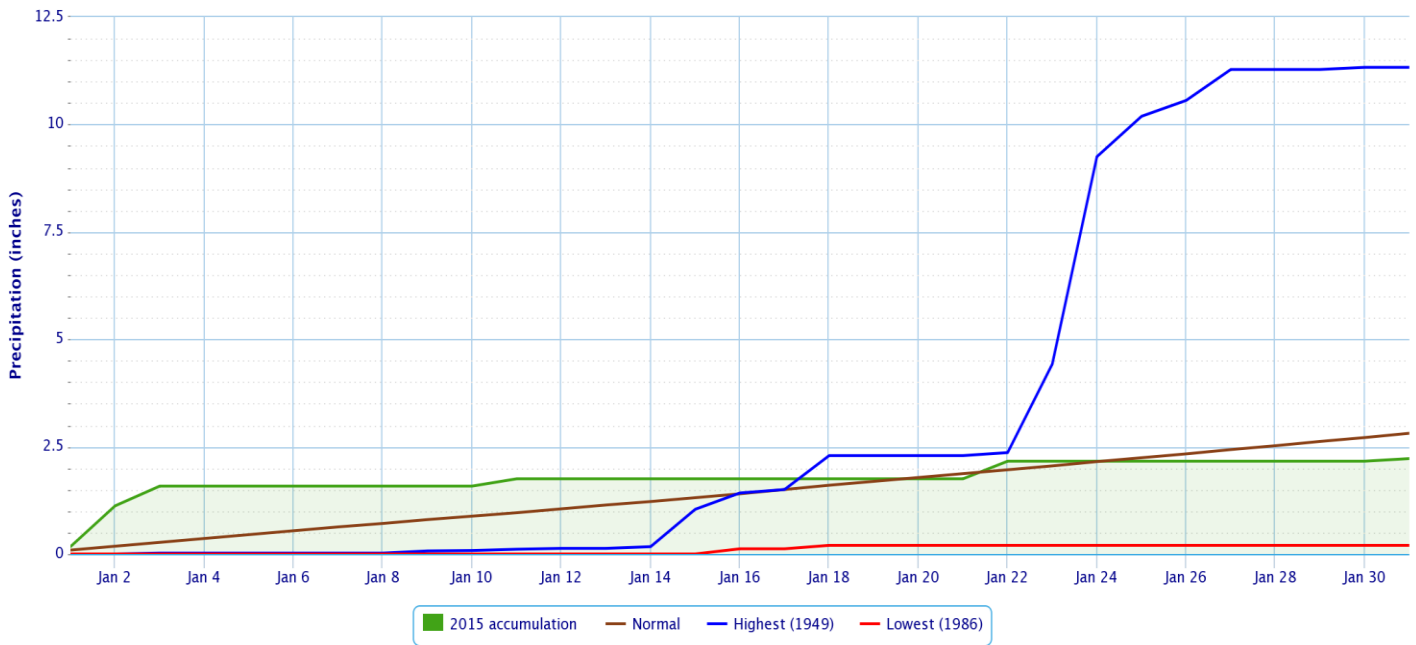
Period of Record – 1882-06-01 to 2015-02-01. Normals period: 1981-2010. Click and drag to zoom chart.



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### Accumulated Precipitation – Fort Smith Area, AR (ThreadEx)

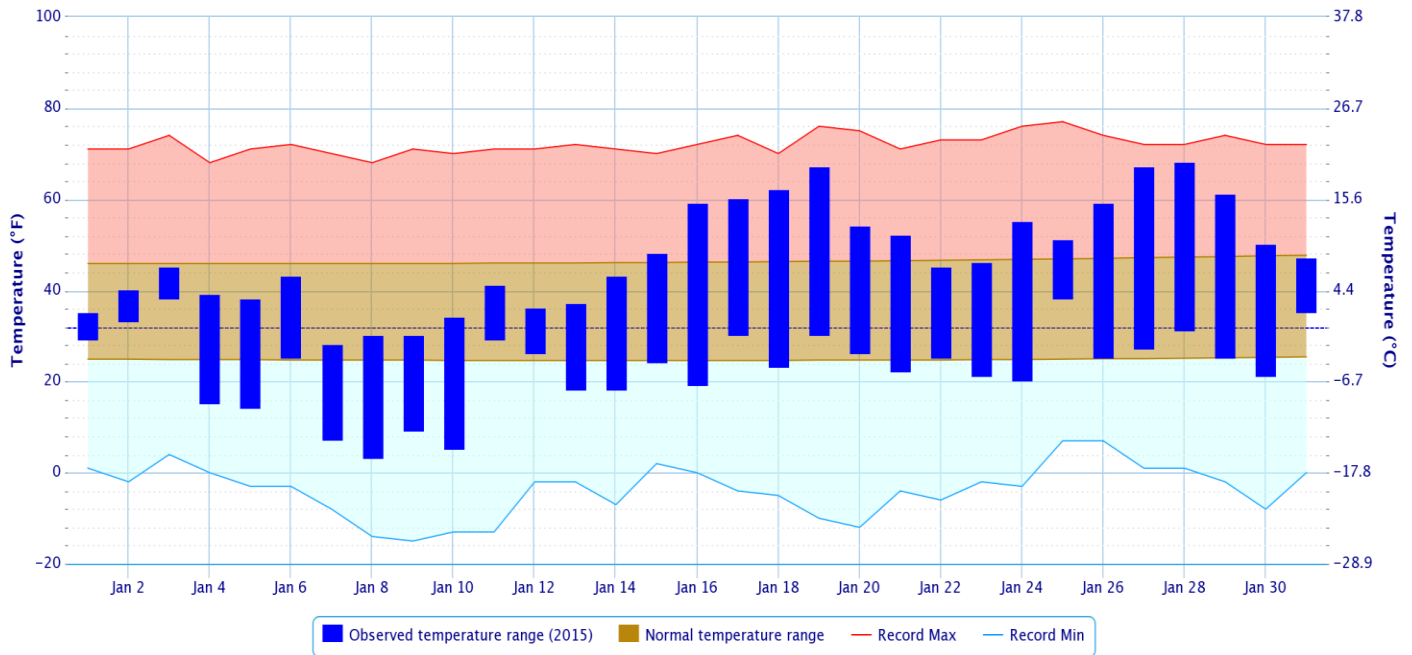
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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### Daily Temperature Data – FAYETTEVILLE DRAKE FLD, AR

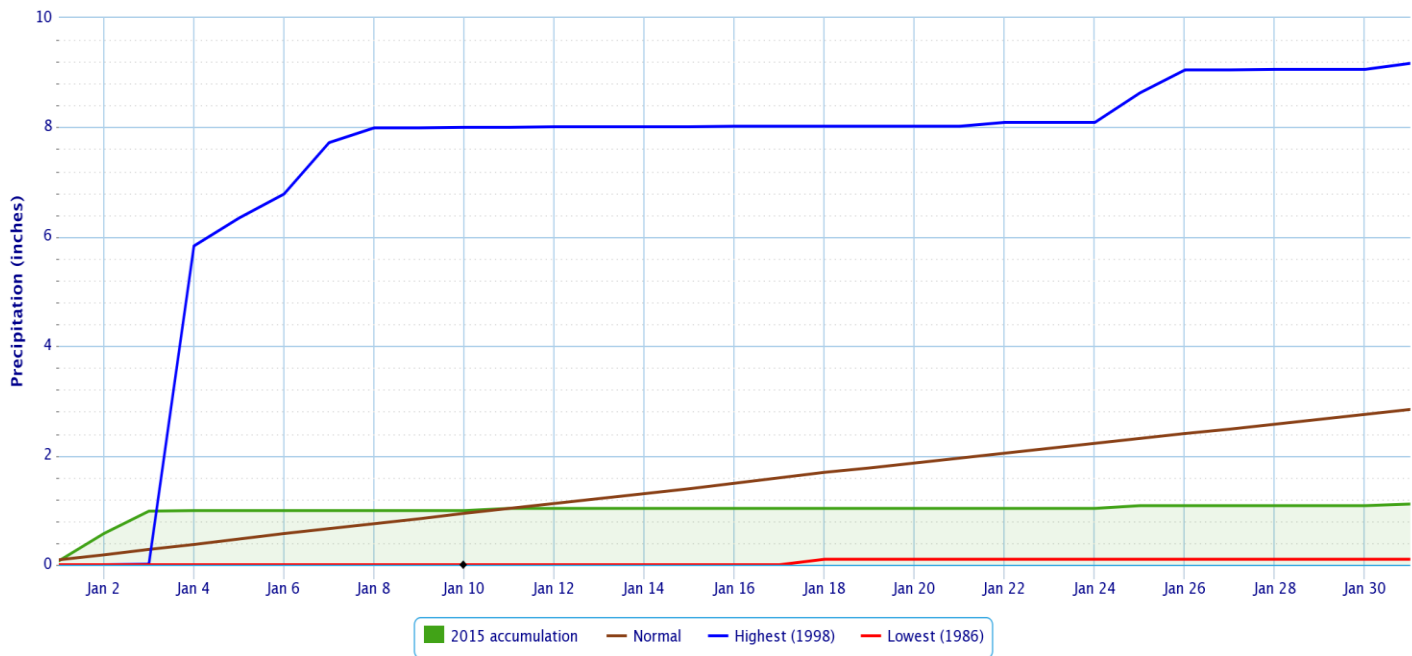
Period of Record – 1949-07-14 to 2015-02-01. Normals period: 1981-2010. Click and drag to zoom chart.



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### Accumulated Precipitation – FAYETTEVILLE DRAKE FLD, AR

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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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 2/02/2015. Skiatook Lake has slightly decreased in its conservation pool from 54% (697.28') at the end of December to 53% (696.80') at the end of January. This is the lowest the lake has been since it was filled in 1984. New low pool records will continue as the lake continues to fall. Several lakes were reporting below normal pool levels: Skiatook Lake 53%, Beaver Lake 80%, Eufaula Lake 82%, Keystone Lake 83%, Birch Lake 90%, and Tenkiller Lake 93%.

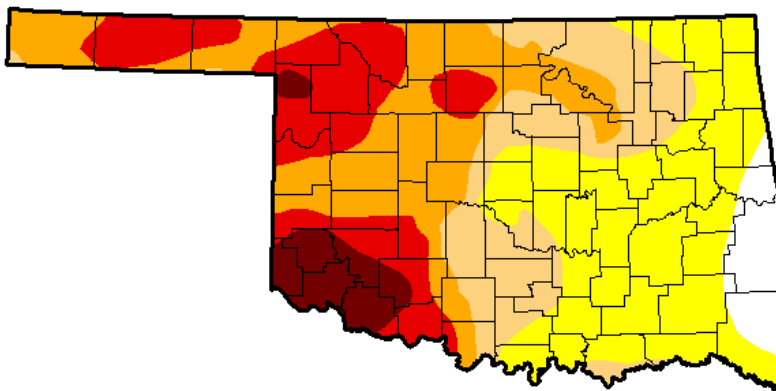
According to the [U.S. Drought Monitor](#) (USDM) from February 3, 2015 (Figs 2, 3), Severe Drought (D2) conditions were occurring across portions of Osage, Pawnee, northern Creek, and far western Tulsa Counties in eastern OK. Moderate Drought (D1) conditions were present across portions of Osage, Pawnee, eastern Kay, Tulsa, Creek, Washington, Rogers, and western Wagoner Counties in eastern OK. Abnormally Dry (D0), but not experiencing drought, conditions existed across the remainder of eastern OK, except for Le Flore, eastern Sequoyah, and southeastern Adair Counties. Abnormally Dry (D0) conditions were also present in western Benton County in northwest AR.

## U.S. Drought Monitor Oklahoma

**February 3, 2015**  
(Released Thursday, Feb. 5, 2015)  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	5.03	94.97	63.11	45.34	22.58	5.69
<b>Last Week</b> <i>1/27/2015</i>	5.03	94.97	60.60	45.34	22.58	5.69
<b>3 Months Ago</b> <i>11/4/2014</i>	22.69	77.31	64.78	48.74	21.57	6.56
<b>Start of Calendar Year</b> <i>12/31/2014</i>	25.63	74.37	62.03	40.84	21.74	5.70
<b>Start of Water Year</b> <i>9/30/2014</i>	8.55	91.45	73.31	58.13	20.92	4.64
<b>One Year Ago</b> <i>2/4/2014</i>	29.77	70.23	46.74	28.81	12.67	2.40



*Intensity:*

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

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

**Author:**

*Brian Fuchs  
National Drought Mitigation Center*

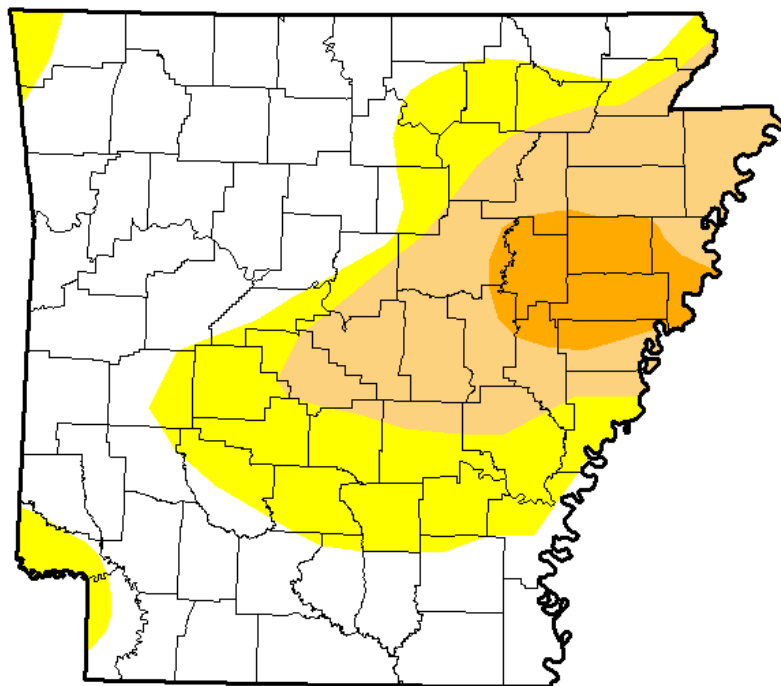


<http://droughtmonitor.unl.edu/>

Fig. 2. Drought Monitor for Oklahoma

# U.S. Drought Monitor Arkansas

**February 3, 2015**  
(Released Thursday, Feb. 5, 2015)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	54.32	45.68	23.78	5.69	0.00	0.00
<b>Last Week</b> <i>12/7/2015</i>	65.75	34.25	16.37	0.00	0.00	0.00
<b>3 Months Ago</b> <i>11/4/2014</i>	74.87	25.13	10.57	0.00	0.00	0.00
<b>Start of Calendar Year</b> <i>12/30/2014</i>	36.88	63.12	14.40	0.00	0.00	0.00
<b>Start of Water Year</b> <i>8/30/2014</i>	54.54	45.46	9.13	0.00	0.00	0.00
<b>One Year Ago</b> <i>2/4/2014</i>	97.59	2.41	0.00	0.00	0.00	0.00

*Intensity:*

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

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

**Author:**  
*Brian Fuchs*  
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

Fig. 3. Drought Monitor for Arkansas

## Outlooks

The [Climate Prediction Center](#) (CPC) outlook for February 2015 (issued January 31, 2015) indicates an equal chance for above, near, and below normal temperatures and precipitation across all of eastern OK and northwest AR. This outlook is based on weak or conflicting signals among the computer models, in addition to uncertainty regarding the possible impacts from El Niño.

For the 3-month period February-March-April 2015, CPC is forecasting a slightly enhanced chance for below normal temperatures across all of eastern OK and northwest AR. This outlook also indicates equal chances for above, near, and below median precipitation across eastern OK and northwest AR (outlook issued January 15, 2015). According to CPC, current atmospheric and oceanic observations continue to show mixed signals regarding the ENSO state. Taken as a whole, ENSO neutral conditions remain, with some aspects of an El Niño event. CPC is forecasting a 50%-60% chance for El Niño development during the next two months, with a return to ENSO neutral conditions favored thereafter. Therefore, this outlook is based on both statistical and dynamical forecast tools and considering weak El Niño conditions.

## Summary of Precipitation Events

### January 1-31

2015 started off with a wintery mix of precipitation across portions of eastern OK and northwest AR on the 1<sup>st</sup>. Rainfall/liquid equivalent totals ranged from 0.10" to around 0.75" south of an Okemah to Fayetteville line, with

less than 0.10" north of this line. While most of this precipitation was rain, there were periods of sleet and light freezing rain with little to no accumulation. Rain continued through the night and through the day on the 2<sup>nd</sup> as the next storm system moved into the Southern Plains. Widespread rainfall occurred across the entire HSA, with some brief periods of sleet and light freezing rain. Again, there was little to no frozen accumulation. Rainfall totals ranged from 0.10" to near 2" from northwest to southeast across eastern OK and northwest AR (Fig. 4). The rain continued into the early morning hours of the 3<sup>rd</sup>, followed by some patchy drizzle over northeast OK and northwest AR.

Tulsa, OK (TSA): 1/3/2015 1-Day Observed Precipitation  
Valid at 1/3/2015 1200 UTC- Created 1/14/15 9:31 UTC

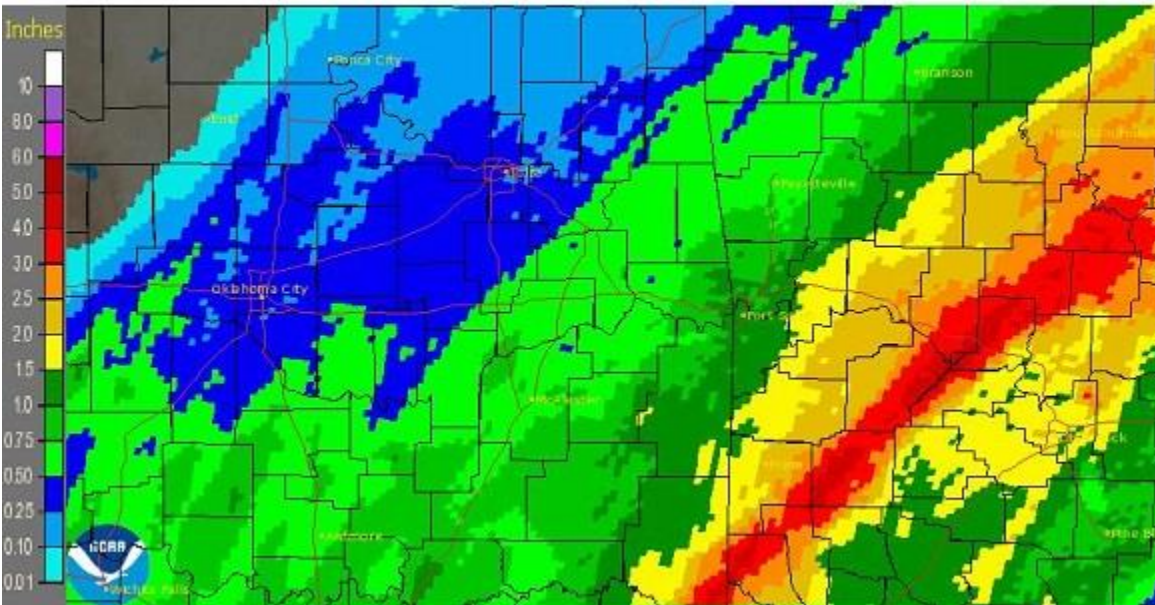


Fig. 4. 24- hour Estimated Observed Rainfall ending at 7am CST 01/03/2015

Tulsa, OK (TSA): Current 7-Day Observed Precipitation  
Valid at 1/26/2015 1200 UTC- Created 1/26/15 18:27 UTC

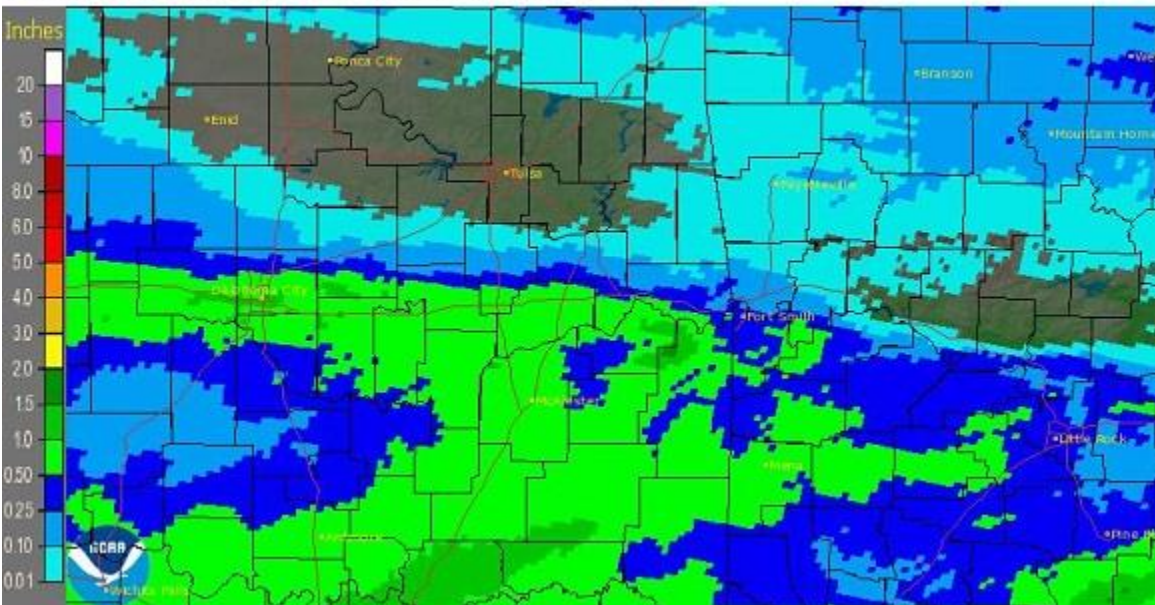


Fig. 5. 7-day Estimated Observed Rainfall ending at 7am CST 01/26/2015 showing rainfall for January 21-22.

As an upper-level wave approached the region, warm conveyor precipitation developed over eastern TX and spread north into southeast OK and northwest AR late on the 10<sup>th</sup> and into the 11<sup>th</sup>. Overall, rainfall amounts remained light, with locations southeast of a McAlester to Fayetteville line receiving around 0.10" to near 0.50" of rain. A cold front moved through the area later on the 11<sup>th</sup>, bringing drizzle and very light rain to much of the region.



A storm system brought widespread rainfall to locations along and south of I-40 on the 21<sup>st</sup>-22<sup>nd</sup>. There was a rain/snow mix across a portion of southeast OK, with snow accumulations of a dusting to near 1" in the higher terrain areas of primarily southern Le Flore Co. Rainfall totals ranged from 0.10" to around 1.5", though much of southeast OK and west central AR south of I-40 received 0.50"-1" of rain (Fig. 5).

Areas of rain spread west to east across all of eastern OK and northwest AR on the 31<sup>st</sup> and increased into the early morning hours of February 1 as strong wave moved into the region. Rainfall totals ranged from 0.25" to around 1" (Fig. 6).

Tulsa, OK (TSA): 2/1/2015 1-Day Observed Precipitation  
Valid at 2/1/2015 1200 UTC- Created 2/2/15 14:15 UTC

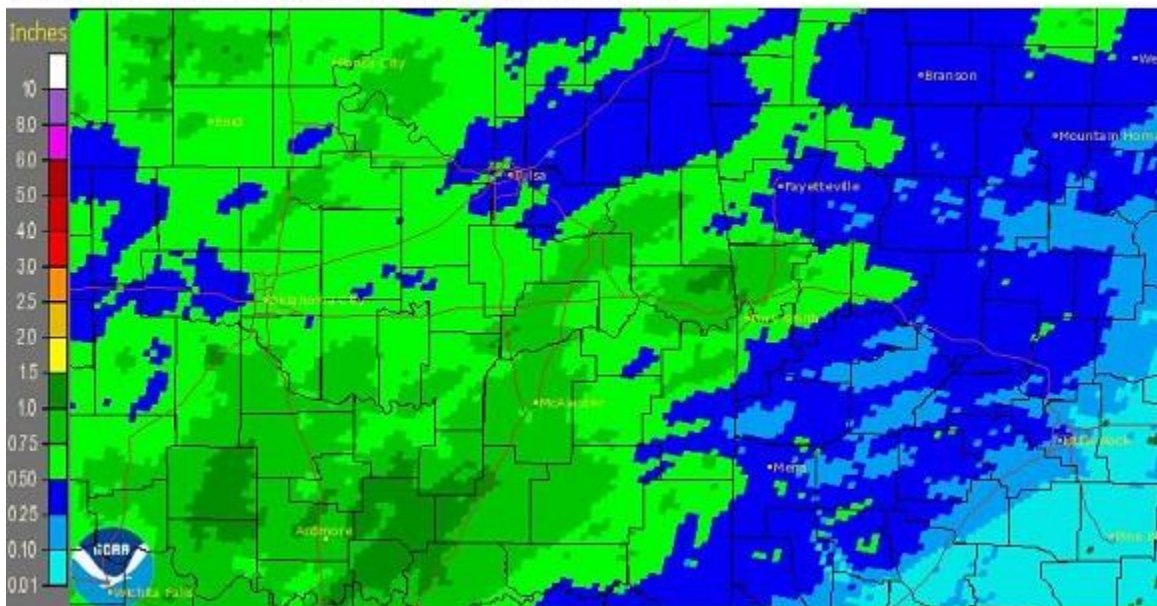


Fig. 6. 24-hour Estimated Observed Rainfall ending at 7am CST 02/01/2015.

Written by:

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Service Hydrologist  
WFO Tulsa

#### **Products issued in January 2015:**

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

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

- 0 Flash Flood Warnings (FFW)
- 0 Flash Flood Statements (FFS)
- 0 Flash/Areal Flood Watches (FFA) (0 Watch FFA CON/EXT/EXA/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) (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)
- 1 Drought Information Statements (DGT)

#### **Preliminary Hydrographs:**

None