# Oklahoma Water Resources Bulletin
## & Summary of Current Conditions

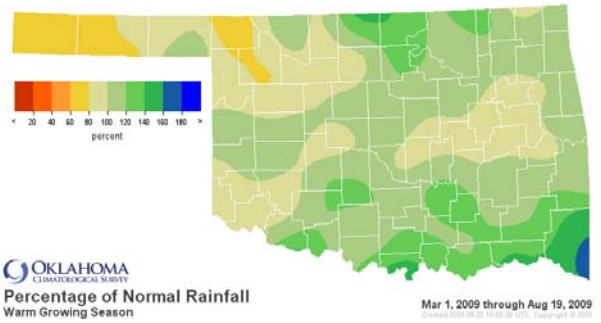
State of Oklahoma OWRB Water Resources Board the water agency

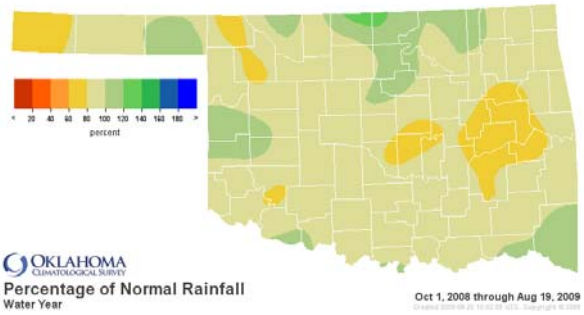
August 20, 2009

## PRECIPITATION

### Statewide Precipitation

| Climate Division | Warm Growing Season March 1—August 19, 2009 Total Rainfall (inches) | Departure From Normal (inches) | Percent Of Normal | Rank Since 1921 | Water Year October 1, 2008— August 19, 2009 Total Rainfall (inches) | Departure From Normal (inches) | Percent Of Normal | Rank Since 1921 |
|---|---|---|---|---|---|---|---|---|
| Panhandle | 10.73" | -3.11" | 78% | 22nd driest | 15.63" | -2.62" | 86% | 32nd driest |
| North Central | 20.06" | +0.91" | 105% | 28th wettest | 26.17" | -1.17" | 96% | 39th wettest |
| Northeast | 25.30" | +2.42" | 111% | 25th wettest | 34.19" | -1.77" | 95% | 44th wettest |
| West Central | 18.01" | +0.45" | 103% | 29th wettest | 24.30" | -0.71" | 97% | 33rd wettest |
| Central | 22.61" | +1.46" | 107% | 26th wettest | 28.95" | -3.91" | 88% | 44th wettest |
| East Central | 23.65" | -0.26" | 99% | 44th wettest | 31.75" | -8.27" | 79% | 20th driest |
| Southwest | 18.22" | +0.33" | 102% | 29th wettest | 23.18" | -3.19" | 88% | 41st driest |
| South Central | 25.90" | +4.25" | 120% | 16th wettest | 31.30" | -4.34" | 88% | 38th driest |
| Southeast | 33.00" | +7.73" | 131% | 10th wettest | 43.29" | -2.03" | 96% | 43rd driest |
| **Statewide** | 21.90" | +1.52" | 107% | 27th wettest | 28.65" | -3.16" | 90% | 43rd driest |

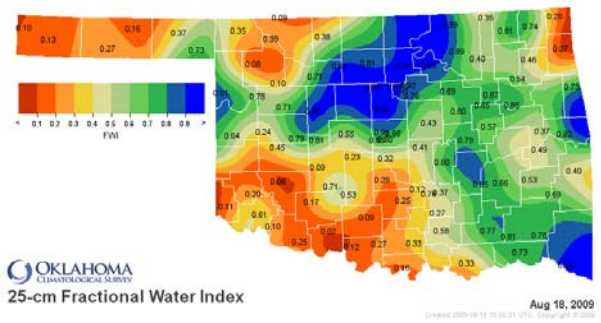


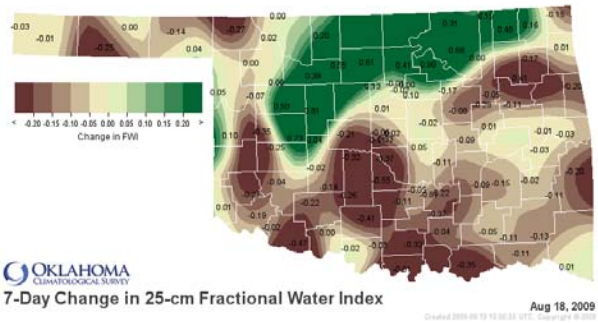




## SOIL MOISTURE

### Fractional Water Index[1]
**August 18, 2009**

**25 CM (~10 INCHES)**




[1] The Fractional Water Index ranges from very dry soil having a value of 0 to soil at field capacity illustrated by a value of 1. Specifically, 1.0 to 0.8 equals Enhanced Growth, 0.8 to 0.5 equals Limited Growth, 0.5 to 0.3 equals Plants Wilting, 0.3 to 0.1 equals Plants Dying, and less than 0.1 equals Barren Soil.

## DROUGHT INDICES

### Palmer Drought Severity Index[1] and Standardized Precipitation Index[2] Through July 2009

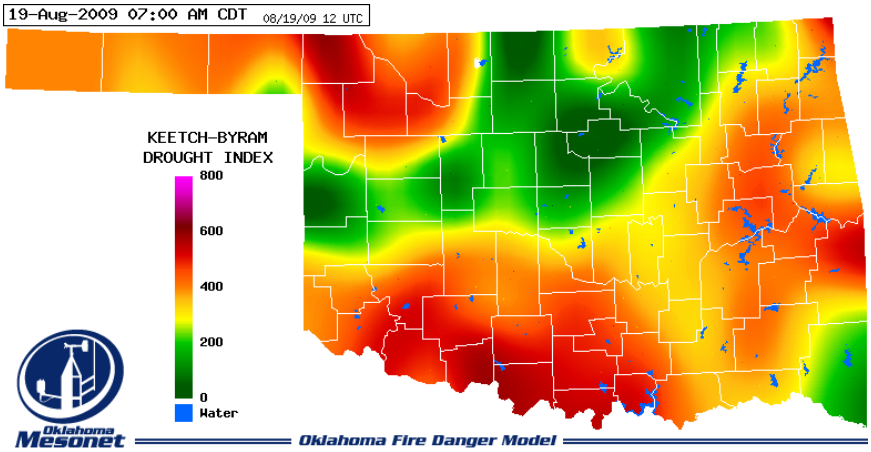
| Climate Division | Current Status 8/15/2009 | Value 8/15 | Value 7/18 | Change In Value | 3-Month | 6-Month | 9-Month | 12-Month |
|---|---|---|---|---|---|---|---|---|
| Northwest | NEAR NORMAL | -0.23 | -1.67 | **1.44** | VERY DRY | MODERATELY DRY | VERY DRY | NEAR NORMAL |
| North Central | NEAR NORMAL | 0.03 | 0.30 | **-0.27** | MODERATELY DRY | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| Northeast | INCIPIENT DROUGHT | -0.95 | -0.59 | **-0.36** | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| West Central | NEAR NORMAL | 0.14 | -1.38 | **1.52** | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| Central | NEAR NORMAL | -0.21 | -2.04 | **1.83** | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| East Central | MILD DROUGHT | -1.22 | -1.85 | **0.63** | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| Southwest | INCIPIENT DROUGHT | -0.53 | -1.40 | **0.87** | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| South Central | NEAR NORMAL | -0.14 | -1.41 | **1.27** | MODERATELY WET | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| Southeast | INCIPIENT MOIST SPELL | 0.54 | -1.04 | **1.58** | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |

- Only one climate division (East Central) is currently experiencing drought conditions, according to the PDSI.
- Two climate divisions have undergone PDSI moisture decreases since July 18.
- Only two climate divisions are experiencing near long-term dry conditions, according to the SPI.

### Keetch-Byram Drought Fire Index[3]

| Mesonet Station | County | Climate Division | Current Value 8/19/2009 |
|---|---|---|---|
| Walters | Cotton | Southwest | 603 |
| Buffalo | Harper | Northwest | 586 |
| Madill | Marshall | South Central | 567 |

- Stations currently at or above 600 (August 19) = 1
- Stations above 600 on July 20 = 3




[1] The Palmer Drought Severity Index, the first comprehensive drought index developed in the United States, is calculated based on precipitation, temperature, and soil moisture. Though widely used by government agencies and states to trigger drought relief programs, the PDSI may underestimate or overestimate the severity of ongoing dry periods.

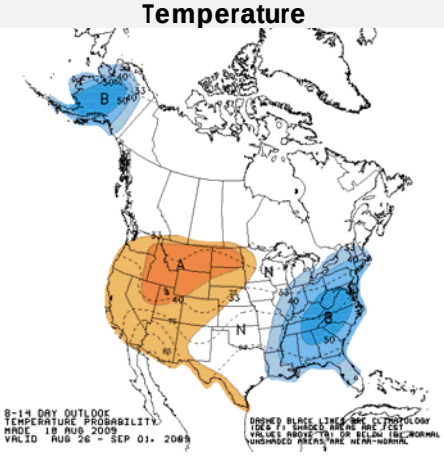
[2] The Standardized Precipitation Index, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides a seasonal estimation of precipitation while the 6-month SPI can be very effective in showing precipitation over distinct seasons.

[3] The Keetch-Byram Drought Index measures the state of near-surface soil moisture (within the uppermost eight inches of soil) as well as the amount of fuel available for fires. KBDI values of 600 and above are often associated with more severe drought and increased wildfire occurrence.

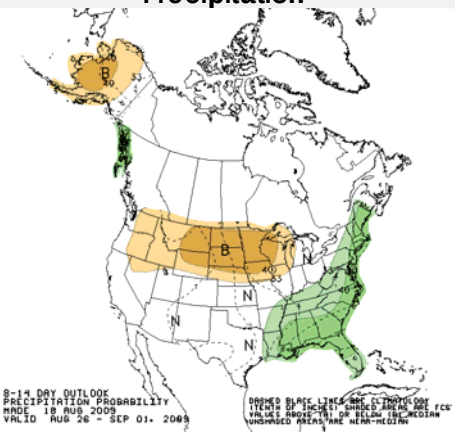
# WEATHER/DROUGHT FORECAST

## 8- to 14-Day Outlook
**August 26 – September 1, 2009**

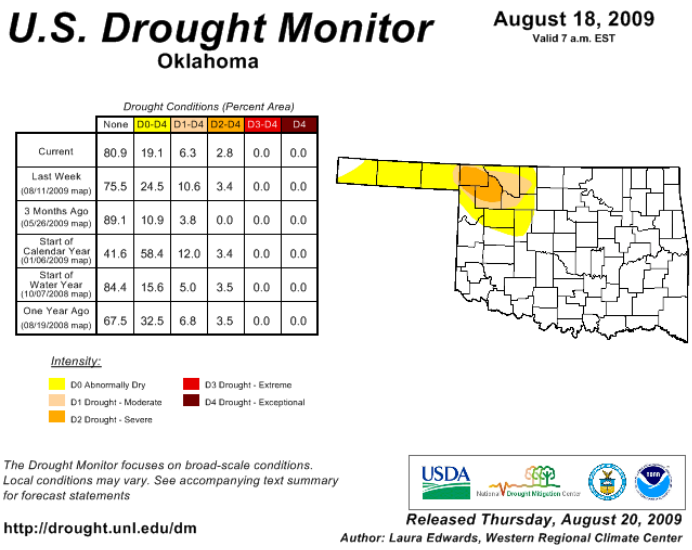
**Temperature**

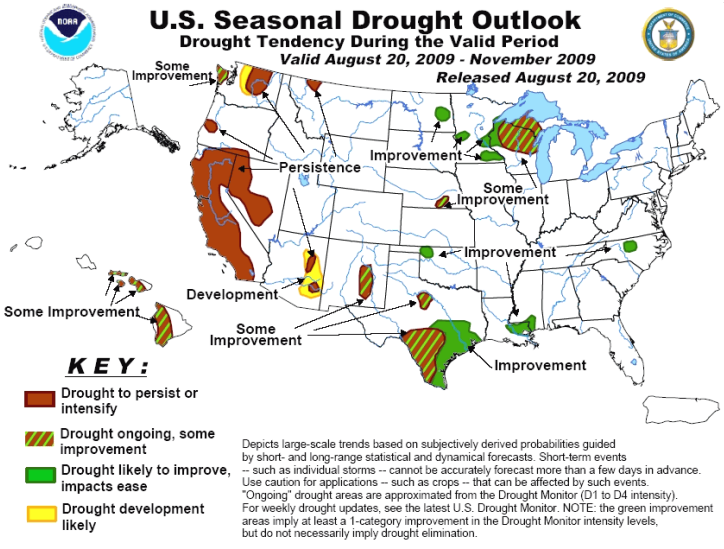



**Precipitation**




## Regional Drought Summary & Outlook




August 18—The latest U.S. Drought Monitor reports improvements due to beneficial rainfall in some Oklahoma drought areas. All drought designations were removed from eastern Oklahoma. Several counties on the east and south side of the core drought in the state also improved one category due to weekly precipitation observations of over two inches in many areas. Several small changes were made in Texas this week to reflect the slightly changing conditions around the exceptional drought in this state. Rain helped the panhandle region and an area southeast of San Antonio, and some improvements are depicted in these regions. Amarillo has now received record August monthly precipitation of 9.08 inches, with two weeks yet to go. Elsewhere, drought continues to expand in severity and extent. Several counties in central and north central Texas were degraded by one category. Despite decent rain in Shackelford County, surrounding areas continue to miss out, and some expansion was made here.

According to the Drought Outlook (August 20), as southern Texas continues to struggle with an historic drought, there are indications that the drought may begin to loosen its grip on some areas going into autumn. The beneficial impacts from the ongoing El Niño are usually more pronounced in this region from November on, but long-range forecasts suggest decreasing odds for below-normal rainfall by October. As a result, some improvement is forecast for the Texas drought areas over the next 3 months. Significant rains in the near term should contribute to drought improvement for southern Louisiana, and southern Mississippi. Indications from several of the longer range tools used to prepare the forecast suggest improvement over eastern North Dakota and northwestern Oklahoma.

## CROP REPORT

August 17, 2009—Much of the state received rain during the past week. Several Mesonet stations recorded two to nearly four inches of rain while others around the state recorded zero precipitation. A Sunday night storm blew through north central Oklahoma, dumping around six inches of rain in Garfield County. Both topsoil and subsoil moisture conditions are still rated mostly in the adequate to short range, very similar to the previous week. There were 5.6 days suitable for field work.

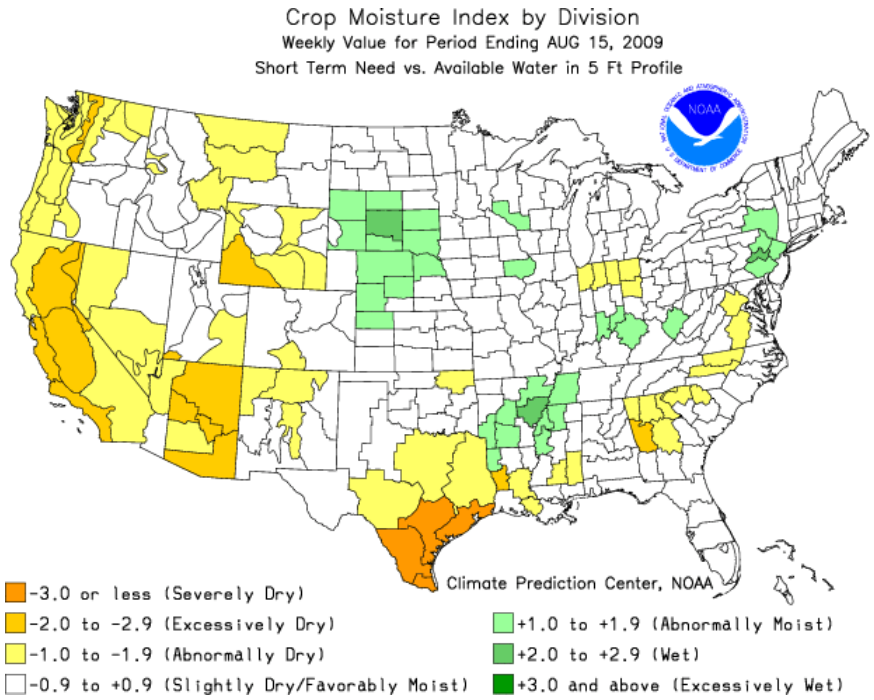
Plowing of small grain stubble is winding down around the state. Farmers are turning their attention to seedbed preparations for fall planting. By week's end, 96 percent of the state's winter wheat stubble had been plowed while seedbed preparation was completed on 18 percent of the winter wheat acres. Ninety-three percent of the state's rye acres had been plowed by Sunday, with 16 percent of rye seedbeds prepared, five points ahead of last year. Virtually all of the state's oat acres had been plowed by week's end and seedbed preparations had been completed on 20 percent of the oat acres.

Row crop conditions continue to be rated mostly in the good to fair range. Recent rains have had a positive impact. Eighty-nine percent of the state's corn crop had reached the dough stage by week's end, one point behind normal. Forty percent of the corn had reached the dent stage, an eight point jump from the prior week and 23 points ahead of the five-year average. Fourteen percent of the corn crop had reached maturity by Sunday, 20 points behind normal. Corn silage harvest continues around the state. By week's end, half of the state's sorghum crop had headed, while 14 percent of the crop was coloring, both well behind normal.

Eighty-four percent of the state's soybeans were blooming while 51 percent were setting pods, an 11 point jump from last week but two points behind the five-year average. Peanuts pegging is nearing completion at 96 percent, while peanuts setting pods increased seven points to reach 56 percent complete, both behind the five-year average. Nearly all of the state's cotton crop was squaring by week's end at 96 percent while 64 percent of the crop was setting bolls, up 23 points from last week but 13 points behind the five-year average. Watermelons harvested jumped 15 points to reach 68 percent complete by week's end, 16 points behind last year and 17 points behind the five-year average.

Producers continued to cut and bale hay as weather permitted. Conditions for both alfalfa and other hay were rated mostly in the good to fair range. As of Sunday, third cuttings of alfalfa were 90 percent complete, while fourth cuttings of alfalfa were 42 percent complete, up nine points from last week but eight points behind normal. First cuttings of other hay are nearing completion at 94 percent, three points behind the five-year average. Producers made a second cutting on 27 percent of the other hay acres, up one point from last week but 16 points behind normal.

Rainfall in some areas of the state greened up grasses but other areas are still in need of additional moisture. Pasture and range conditions continued to rate mostly in the good to fair range. Livestock conditions rated mostly in the good to fair range. Average livestock marketings were reported last week.



## RESERVOIR STORAGE

- 16 reservoirs are currently operating at less than full capacity (compared to 16 four weeks ago).
- 21 reservoirs have experienced lake level decreases.

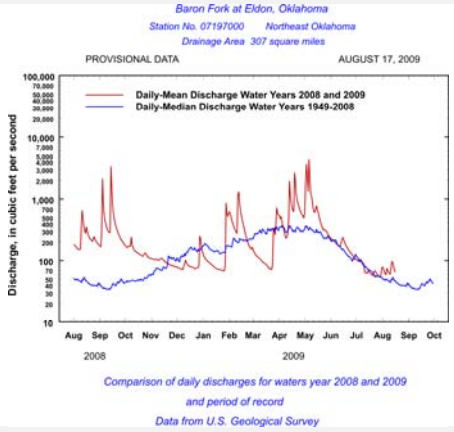
**Storage in Selected Oklahoma Lakes & Reservoirs**
*August 19, 2009*

| Lake or Reservoir | Normal Pool Elevation (feet) | Previous Elevation 07/21/2009 (feet) | Current Elevation 08/19/2009 (feet) | Change in Elevation (feet) | Current Flood Control Storage (acre-feet) |
|---|---|---|---|---|---|
| **North Central** | | | | | |
| Fort Supply | 2004.00 | 2003.40 | 2002.94 | (0.46) | (1,800) |
| Great Salt Plains | 1125.00 | 1125.35 | 1125.62 | 0.27 | 5,203 |
| Kaw* | 1008.00 | 1012.37 | 1008.53 | (3.84) | 8,576 |
| **Northeast** | | | | | |
| Birch | 750.50 | 750.96 | 751.37 | 0.41 | 1,009 |
| Copan | 710.00 | 710.47 | 710.25 | (0.22) | 1,419 |
| Fort Gibson | 554.00 | 555.37 | 556.17 | 0.80 | 42,853 |
| Grand* | 742.60 | 744.06 | 742.75 | (1.31) | 6,601 |
| Hudson | 619.00 | 620.03 | 620.04 | 0.01 | 11,505 |
| Hulah | 733.00 | 734.56 | 733.05 | (1.51) | 308 |
| Keystone* | 723.00 | 726.09 | 722.82 | (3.27) | (3,041) |
| Oologah* | 638.00 | 638.94 | 638.05 | (0.89) | 1,582 |
| Skiatook | 714.00 | 714.07 | 713.21 | (0.86) | (7,969) |
| **West Central** | | | | | |
| Canton | 1615.40 | 1614.87 | 1614.74 | (0.13) | (5,163) |
| Foss | 1642.00 | 1641.30 | 1641.05 | (0.25) | (6,346) |
| **Central** | | | | | |
| Arcadia | 1006.00 | 1005.67 | 1006.54 | 0.87 | 1,004 |
| Heyburn | 761.50 | 761.04 | 760.72 | (0.32) | (673) |
| Thunderbird | 1039.00 | 1038.42 | 1038.42 | 0.00 | (3,480) |
| **East Central** | | | | | |
| Eufaula* | 585.00 | 585.89 | 584.89 | (1.00) | (10,199) |
| Tenkiller | 632.00 | 630.95 | 631.38 | 0.43 | (13,715) |
| **Southwest** | | | | | |
| Fort Cobb | 1342.00 | 1341.84 | 1341.90 | 0.06 | (372) |
| Lugert-Altus | 1559.00 | 1548.26 | 1540.78 | (7.48) | (85,158) |
| Tom Steed | 1411.00 | 1407.20 | 1406.51 | (0.69) | (25,916) |
| **South Central** | | | | | |
| Arbuckle | 872.00 | 872.67 | 872.02 | (0.65) | 48 |
| McGee Creek** | 175.90 | 176.02 | 175.98 | (0.04) | 970 |
| Texoma* | 617.10 | 618.34 | 617.37 | (0.97) | 23,731 |
| Waurika* | 951.40 | 951.51 | 951.04 | (0.47) | (3,650) |
| **Southeast** | | | | | |
| Broken Bow* | 602.50 | 600.87 | 600.36 | (0.51) | (30,955) |
| Hugo* | 404.50 | 407.86 | 404.54 | (3.32) | 1,000 |
| Pine Creek* | 440.00 | 441.52 | 440.21 | (1.31) | 901 |
| Sardis | 599.00 | 598.73 | 598.85 | 0.12 | (2,009) |
| Wister | 478.00 | 477.61 | 477.63 | 0.02 | (2,169) |

** indicates seasonal pool operation* *** elevation in meters* *negative numbers in red, parentheses*

# STREAMFLOW CONDITIONS

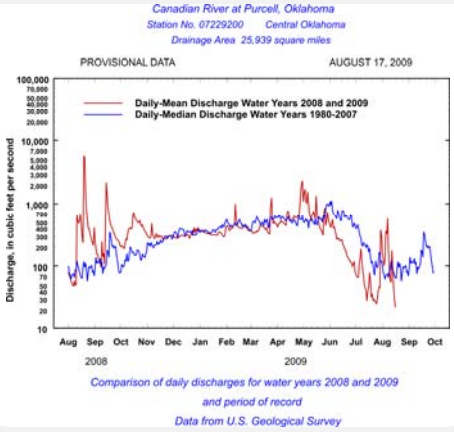
## Baron Fork at Eldon




*Comparison of daily discharges for waters year 2008 and 2009 and period of record*

*Data from U.S. Geological Survey*

## Canadian River at Purcell

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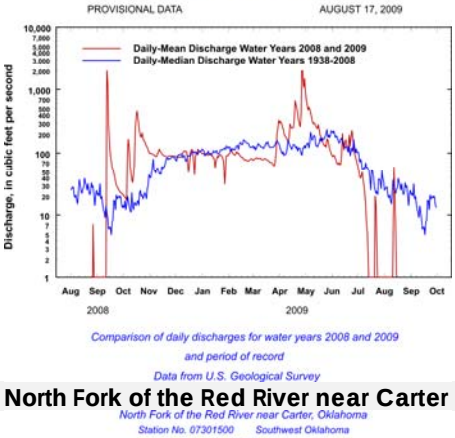
## Cimarron River near Waynoka

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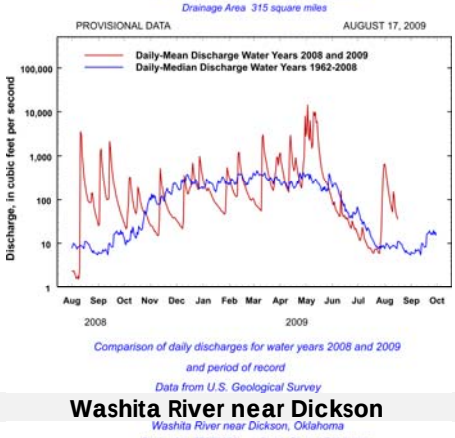
## Glover River near Glover

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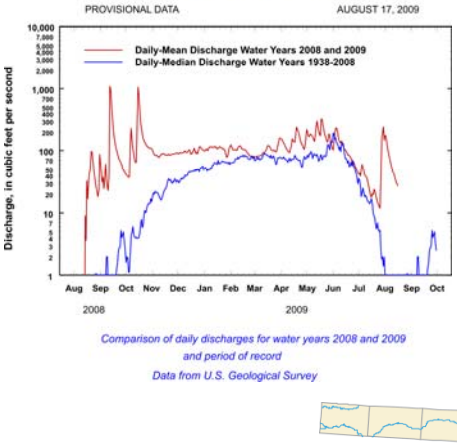
*Data from U.S. Geological Survey*

## North Fork of the Red River near Carter

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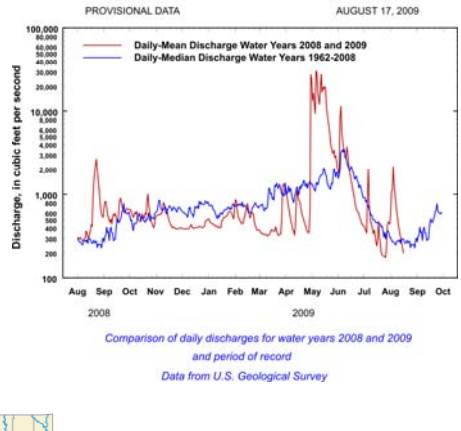
*Data from U.S. Geological Survey*

## Washita River near Dickson

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*Data from U.S. Geological Survey*


Water Bulletin information/data courtesy of National Weather Service, Climate Prediction Center, Oklahoma Climatological Survey, State Department of Agriculture, Food, and Forestry, Agricultural Statistics Service, U.S. Army Corps of Engineers, U.S. Department of Agriculture/Forest Service, U.S. Geological Survey, Western Drought Coordination Council, and National Drought Mitigation Center.
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