

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



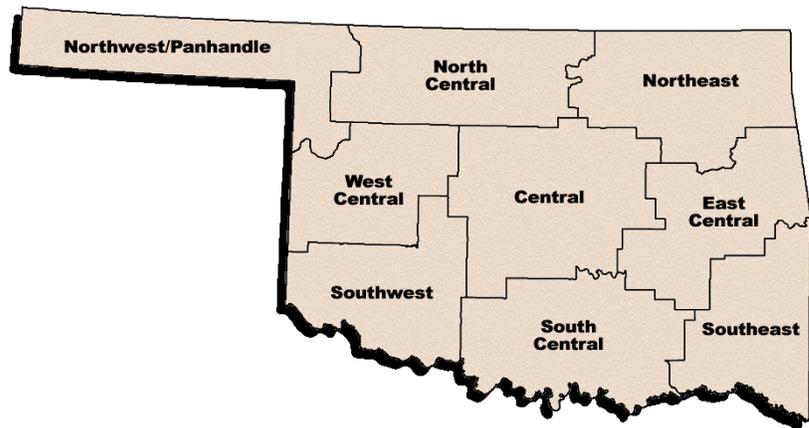
DECEMBER 3, 2003

OKLAHOMA WATER RESOURCES BOARD

### Statewide Precipitation & General Summary

Dry conditions continue to impact some areas of Oklahoma, especially in the west. According to preliminary Mesonet weather station data provided by the Oklahoma Climatological Survey and National Weather Service (see below), the area receiving the lowest percent of normal rainfall from September 1 through November 30 (the current growing season) remains the Southwest climate division (only 2.36 inches, a deficit of 5.74 inches and only 29 percent of normal precipitation). West Central Oklahoma also remains somewhat dry, with a deficit of more than 4 inches (45 percent of normal). The current state-averaged rainfall total is 6.15 inches, only 61 percent of normal.

For the current calendar year, the state-averaged rainfall total is 25.49 inches, 74 percent of normal.



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON SEPTEMBER 1-NOVEMBER 30, 2003			CALENDAR YEAR JANUARY 1—NOVEMBER 30, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	3.26	-1.18	73	18.07	-2.33	89
North Central	4.61	-3.26	59	22.25	-8.10	73
Northeast	8.41	-3.62	70	36.03	-3.66	91
West Central	3.29	-4.03	45	17.73	-10.22	63
Central	6.41	-4.17	61	25.98	-10.00	72
East Central	9.22	-4.31	68	32.22	-10.89	75
Southwest	2.36	-5.74	29	19.24	-10.18	65
South Central	7.27	-4.42	62	25.11	-13.32	65
Southeast	10.16	-4.44	70	31.21	-15.66	67
<b>Statewide</b>	<b>6.15</b>	<b>-3.86</b>	<b>61</b>	<b>25.49</b>	<b>-9.18</b>	<b>74</b>

Information and data contained in this update of Oklahoma's water resource conditions are courtesy of the National Weather Service, Climate Prediction Center, Oklahoma Climatological Survey, State Department of Agriculture, Oklahoma Forestry Services, 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. This publication is issued weekly during times of specific concern regarding statewide or regional water situations and periodically—biweekly or monthly—the remainder of the year. **For more information, visit <http://www.owrb.state.ok.us/features/drought.html> and <http://climate.ocs.ou.edu/drought/>.**

## Drought Indices

According to the latest Palmer Drought Severity Index (November 29, below), one region in Oklahoma, the West Central climate division, is currently experiencing drought conditions. Six of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since November 8. The greatest decrease occurred in the West Central climate division.

The latest monthly Standardized Precipitation Index (through October, below) indicates some long-term dryness in southern, eastern and western Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), "very dry" conditions are indicated in the Southeast climate division throughout the last 12 months. "Moderately dry" conditions are indicated in the Southeast, South Central, West Central, East Central and Southwest regions at various times during the past 9- and 12-month periods. Considering longer periods (through six years), Southeast Oklahoma is "very dry" throughout the past 15- and 18-month periods; East Central Oklahoma is "moderately dry" during those two periods. [SPI updates are available around the 10<sup>th</sup> of each month.]

The latest Keetch-Byram Drought Index (December 1, below), which 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, indicates that drought-related fire conditions remain generally good in most areas of Oklahoma. Statewide, only one Mesonet station is currently at or above 600, generally indicative of more severe drought conditions (one station had a reading above 600 on November 12). Acme, in Central Oklahoma, retains the highest KBDI value (611). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness has improved to Level 2 (moderate fire danger). However, a Burn Ban remains in effect for Cimarron County, in the Oklahoma Panhandle.

Palmer Drought Severity Index					Standardized Precipitation Index Through October 2003			
CLIMATE DIVISION (#)	CURRENT STATUS 11/29/2003	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		11/29	11/8					
Northwest (1)	NEAR NORMAL	0.34	0.42	-0.08	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	NEAR NORMAL	-0.18	0.24	-0.42	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MOIST SPELL	1.01	0.91	0.10	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	MILD DROUGHT	-1.29	-0.66	-0.63	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
Central (5)	NEAR NORMAL	-0.08	0.31	-0.39	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT MOIST SPELL	0.67	0.58	0.09	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
Southwest (7)	INCIPIENT DROUGHT	-0.98	-0.79	-0.19	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL
South Central (8)	NEAR NORMAL	0.32	0.60	-0.28	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
Southeast (9)	NEAR NORMAL	0.17	0.01	0.16	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	VERY DRY

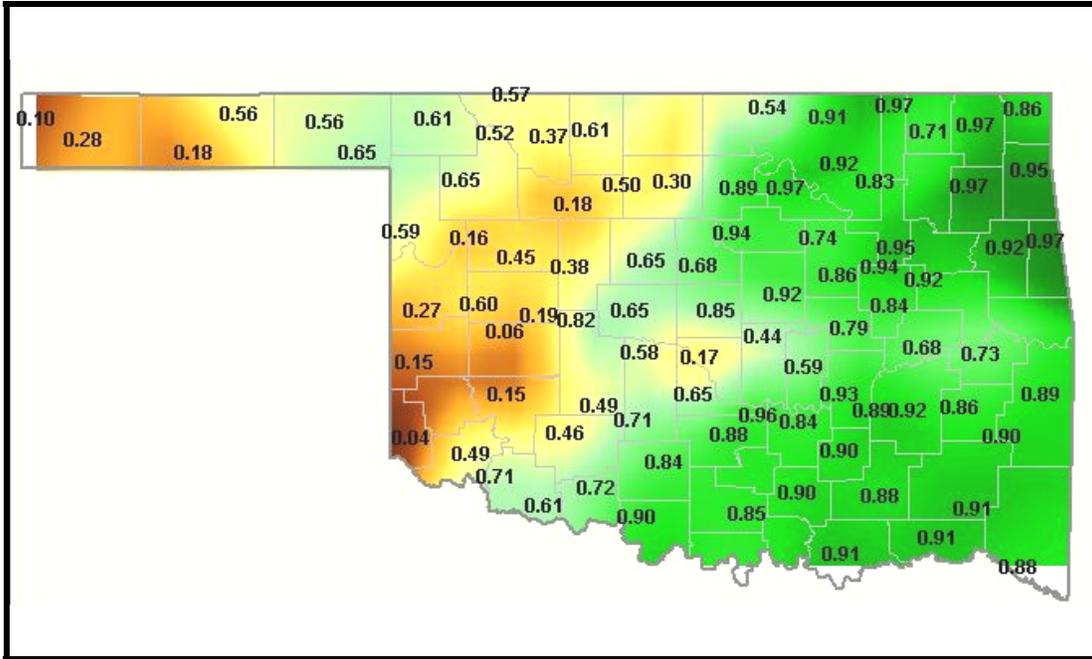
Keetch-Byram Drought Fire Index				
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 12/1/2003	ANTICIPATED IMPACT
Acme	Grady	Central	611	600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.
Mangum	Greer	Southwest	598	
Burneyville	Love	South Central	592	

Total stations above 600 = 1

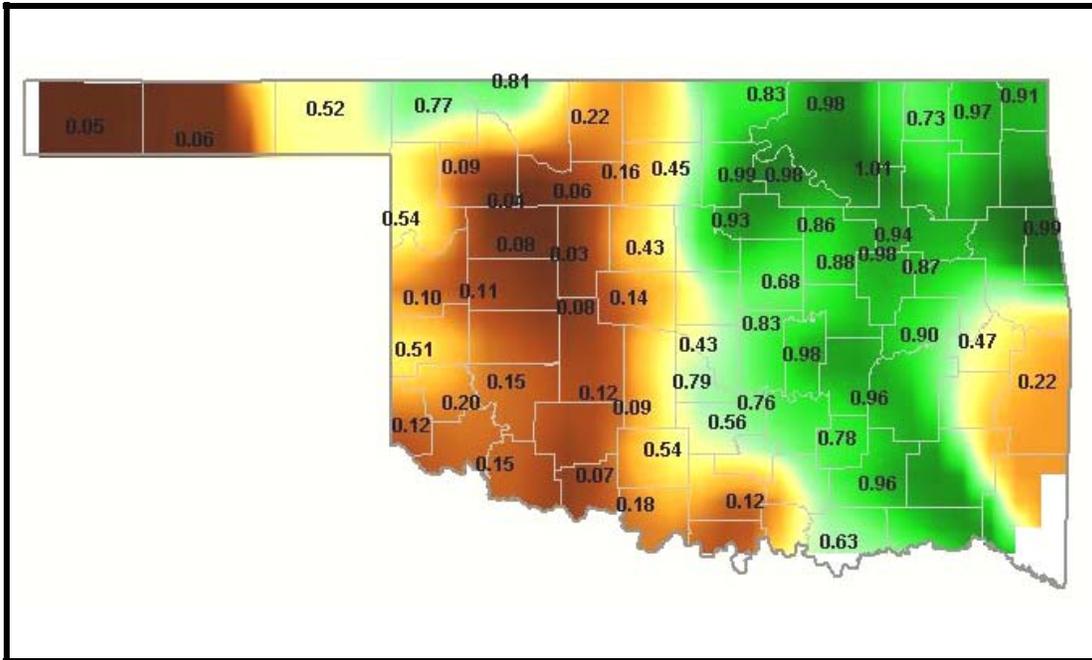
*The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides a seasonal estimation of precipitation while the 6-month SPI can be very effective in showing precipitation over distinct seasons. The Keetch-Byram Drought Index provides a gauge of dead fuel currently available for potential fires.*

**Soil Moisture  
Fractional Water Index**  
November 30, 2003  
(Courtesy Oklahoma Climatological Survey)

**5 cm (~2 inches)**



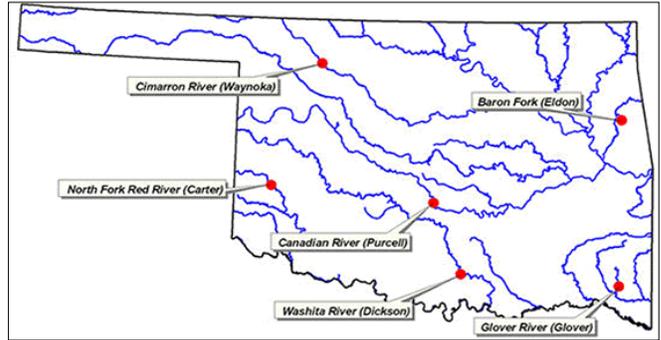
**60 cm (~2 feet)**



FWI Value Soil Wetness Conditions	
1.0 – 0.8	Enhanced Growth (~Field Capacity)
0.8 – 0.5	Limited Growth
0.5 – 0.3	Plants Dying
< 0.1	Barren Soil

### Streamflow Conditions

Flows in state rivers and streams continue to recede in some areas. Considering overall trends as well as current flows, the most recent data (November 30, attached) from the six U.S. Geological Survey/OWRB stream gage sites selected to monitor the general condition of Oklahoma streams (daily streamflow since October 1, 2002, compared to long-term, normal/median daily discharges) indicate **much below average flow** in *central* (Canadian River, McClain County) Oklahoma; **below average flow** in the *northwest* (Cimarron River, Woods County) and *south central* (Washita River, Carter County) regions; **near average flow** in the *southeast* (Glover River, McCurtain County) and *southwest* (North Fork/Red River, Beckham County); and **above average flow** in the *northeast* (Baron Fork, Cherokee County).



### Weather Forecast

The National Weather Service 8- to 14-day outlook (December 9-15) calls for above normal precipitation for all but the western two-thirds of the Oklahoma Panhandle region, where normal rainfall is anticipated. Below normal temperatures are expected for the entire state throughout the period.

A majority of statistical and coupled model forecasts of atmospheric and oceanic conditions in the tropical Pacific do not support the development of either La Niña or El Niño within the next few months. However, over the past few months, there has been a trend in the suite of forecasts towards somewhat warmer, borderline El Niño conditions.

### Crop Report

November 23 - The major wheat-producing areas of Oklahoma are still behind normal rainfall. Beneficial showers and warm weather during the week improved small grain crops emergence and growth. Producers took advantage of the good conditions and made progress with the remaining planting of small grains and harvesting their row crops. Continued dry weather is essential in order to wrap up the remaining planting and harvesting activities. Supplemental feeding occurred in most areas across the state. Farmers had 5.1 days suitable for fieldwork during the week.

Wheat, rye, and oat conditions were rated as mostly fair to good. Emergence of the earlier planted wheat fields continued to advance and was at 96 percent at week's end. Oats planted increased 4 percentage points to 65 percent complete. Oats emergence gained 2 percentage points from last week to 60 percent of the intended acres.

Harvest of the remaining row crops progressed throughout the state. Sorghum harvest gained 3 percentage points during the week and was 87 percent complete. Soybean harvest was 84 percent complete, compared with 92 percent last year and the normal average of 92 percent. An additional 2 percent of the state's peanuts were combined during the week to reach 97 percent complete at week's end. Cotton harvest totaled 69 percent, ranging from 13 percent in west central Oklahoma to 69 percent in the major-producing southwest region.

Alfalfa and other hay were rated in mostly fair to good condition. Harvest activities continued where possible in a few isolated areas. The fifth cutting of alfalfa made minimal movement from last week and totaled 85 percent cut.

Pasture conditions made some improvement in most areas, but particularly in those areas that received measurable rainfall. The recent unusual warm weather also helped maintain some of the pastures. However, pasture and range conditions varied greatly from mostly poor to good. Livestock ranged from mostly fair to excellent condition.

### Reservoir Storage

Lakes in southwest Oklahoma continue to suffer from critically low levels. Lake storage elsewhere remains generally good, despite a continued gradual decline statewide. As of December 2, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 87.2 percent full, a 0.3 percent decrease from that recorded on November 12, according to information from the U.S. Army Corps of Engineers (Tulsa District). Fifteen reservoirs have experienced lake level decreases since that time. Twenty-three reservoirs are currently operating at less than full capacity (compared to 24 three weeks ago). Two reservoirs—Lugert-Altus, 15.4 percent; and Tom Steed, only 54.6 percent—are below 80 percent capacity.

<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>			
<i>12/02/2003</i>			
<i>Climate Division</i> <b>Lake or Reservoir</b>	<b>Conservation Storage</b> (acre-feet)	<b>Present Storage</b> (acre-feet)	<b>Percent of Conservation Storage</b>
<b>North Central</b>			
Fort Supply	13,900	13,627	98.0
Great Salt Plains	31,420	31,420	100.0
Kaw*	415,425	410,926	98.9
<b>Regional Totals/Averages</b>	<b>460,745</b>	<b>455,973</b>	<b>99.0</b>
<b>Northeast</b>			
Birch	19,225	16,665	86.7
Copan	43,400	43,400	100.0
Fort Gibson	365,200	365,200	100.0
Grand	1,672,000	1,544,920	92.4
Hudson	200,300	200,300	100.0
Hulah	25,100	25,100	100.0
Keystone	510,059	479,391	94.0
Oologah	552,210	552,210	100.0
Skiatook	322,700	272,226	84.4
<b>Regional Totals/Averages</b>	<b>3,710,194</b>	<b>3,499,412</b>	<b>94.3</b>
<b>West Central</b>			
Canton	111,310	89,039	80.0
Foss	165,480	153,292	92.6
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>242,331</b>	<b>87.6</b>
<b>Central</b>			
Arcadia	27,520	27,235	99.0
Heyburn	7,105	7,105	100.0
Thunderbird	119,600	106,590	89.1
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>140,930</b>	<b>91.4</b>
<b>East Central</b>			
Eufaula*	2,260,943	1,820,986	80.5
Tenkiller	654,100	585,428	89.5
<b>Regional Totals/Averages</b>	<b>2,915,043</b>	<b>2,406,414</b>	<b>82.6</b>
<b>Southwest</b>			
Fort Cobb	80,010	72,744	90.9
Lugert-Altus	132,830	20,409	15.4
Tom Steed	88,970	48,620	54.6
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>141,773</b>	<b>47.0</b>
<b>South Central</b>			
Arbuckle	72,400	67,960	93.9
McGee Creek	113,930	92,237	81.0
Texoma*	2,701,706	2,268,677	84.0
Waurika*	190,200	158,265	83.2
<b>Regional Totals/Averages</b>	<b>3,078,236</b>	<b>2,587,139</b>	<b>84.0</b>
<b>Southeast</b>			
Broken Bow*	918,070	798,792	87.0
Hugo*	184,917	160,255	86.7
Pine Creek*	53,750	53,750	100.0
Sardis	274,330	260,163	94.8
Wister	60,162	58,803	97.7
<b>Regional Totals/Averages</b>	<b>1,491,229</b>	<b>1,331,763</b>	<b>89.3</b>
<b>State Totals</b>	<b>12,388,272</b>	<b>10,805,735</b>	<b>87.2</b>

\* indicates seasonal pool operation; actual storage figures/percentages may vary.

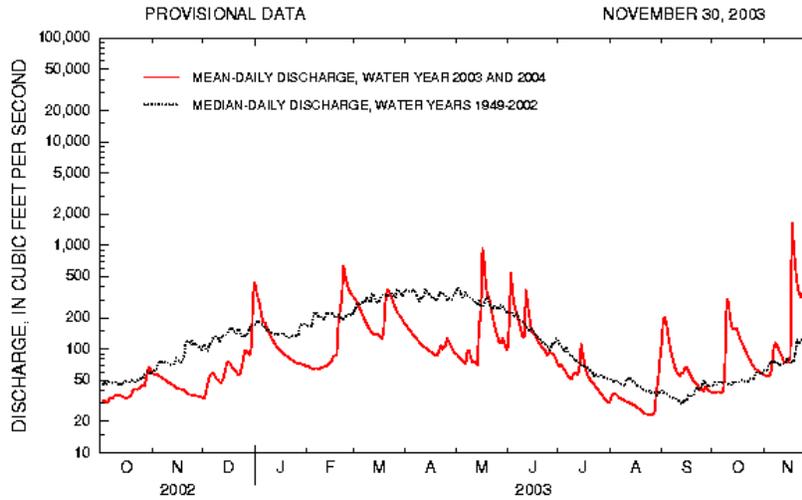
### Baron Fork at Eldon

*Baron Fork at Eldon, Oklahoma*

*Station No. 07197000*

*Northeast Oklahoma*

*Drainage Area 307 square miles*



Comparison of daily discharges for water year 2003 and 2004 and period of record for Baron Fork at Eldon, Oklahoma.

Data from U.S. Geological Survey

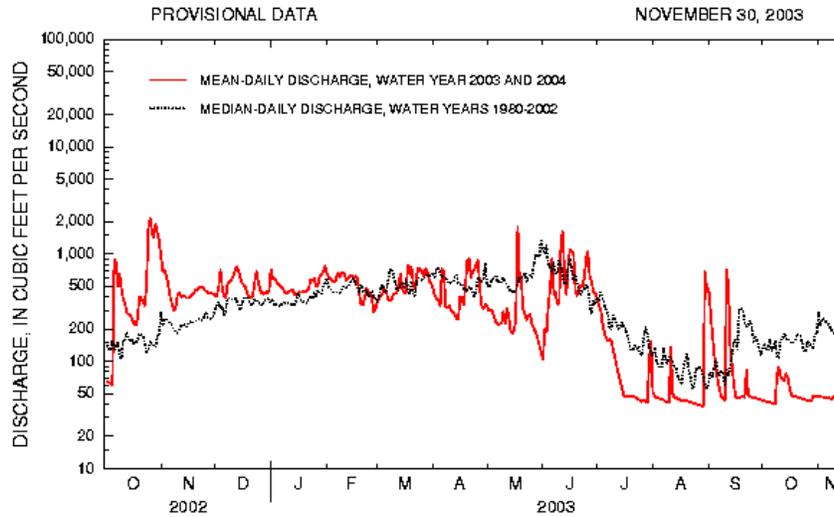
### Canadian River at Purcell

*Canadian River at Purcell, Oklahoma*

*Station No. 07229200*

*Central Oklahoma*

*Drainage Area 25,939 square miles*



Comparison of daily discharges for water year 2003 and 2004 and period of record for Canadian River at Purcell, Oklahoma.

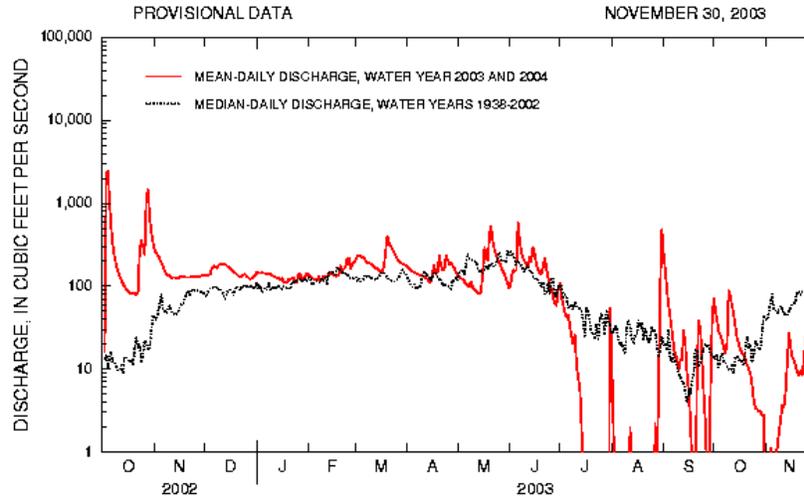
Data from U.S. Geological Survey

### Cimarron River near Waynoka

*Cimarron River near Waynoka, Oklahoma*

Station No. 071 58000  
Northwest Oklahoma

Drainage Area 13,334 square miles



Comparison of daily discharges for water year 2003 and 2004 and period of record for Cimarron River near Waynoka, Oklahoma.

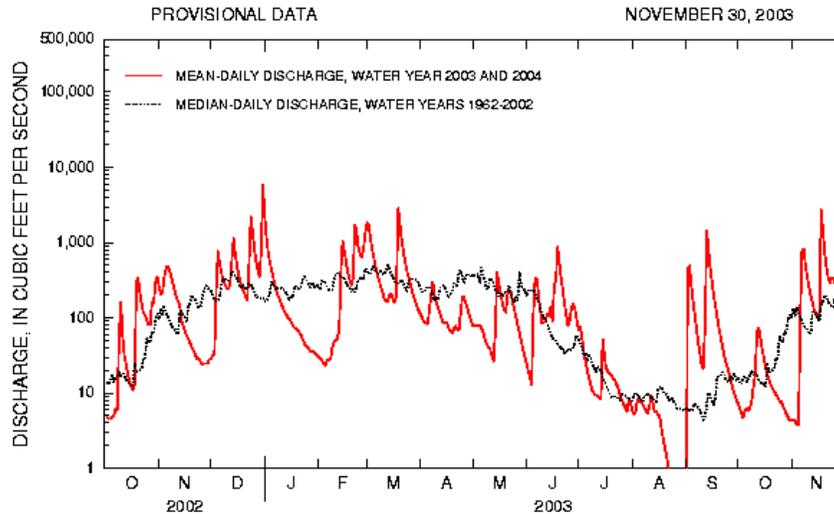
Data from U.S. Geological Survey

### Glover River near Glover

*Glover River near Glover, Oklahoma*

Station No. 07337900  
Southeast Oklahoma

Drainage Area 315 square miles



Comparison of daily discharges for water year 2003 and 2004 and period of record for Glover River near Glover, Oklahoma.

Data from U.S. Geological Survey

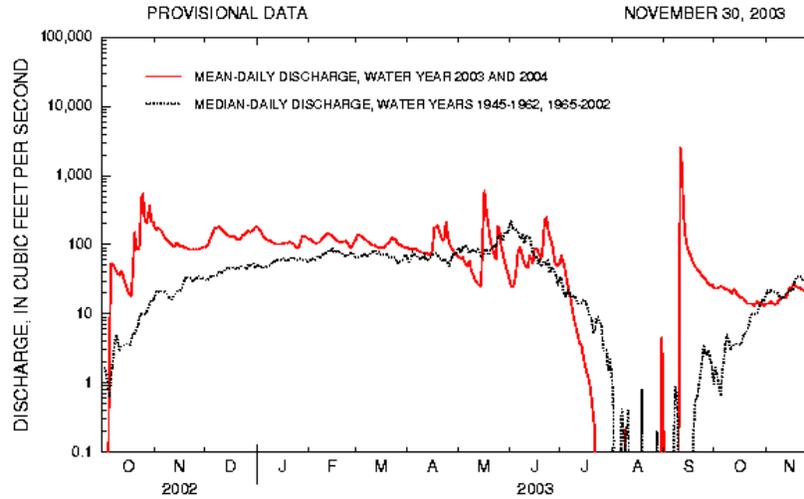
### North Fork of the Red River near Carter

*North Fork Red River near Carter, Oklahoma*

Station No. 07301500

Southwest Oklahoma

Drainage Area 2,337 square miles



Comparison of daily discharges for water year 2003 and 2004 and period of record for North Fork Red River near Carter, Oklahoma.

Data from U.S. Geological Survey

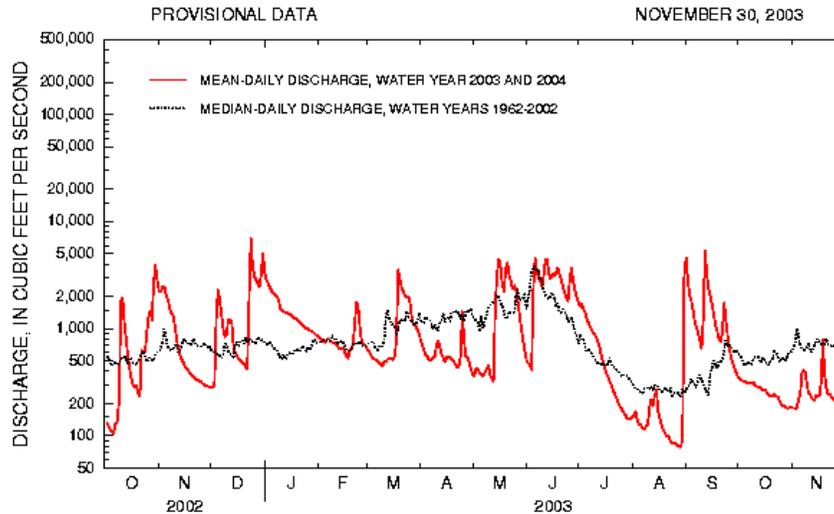
### Washita River near Dickson

*Washita River near Dickson, Oklahoma*

Station No. 07331000

South-Central Oklahoma

Drainage Area 7,202 square miles



Comparison of daily discharges for water year 2003 and 2004 and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey