

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



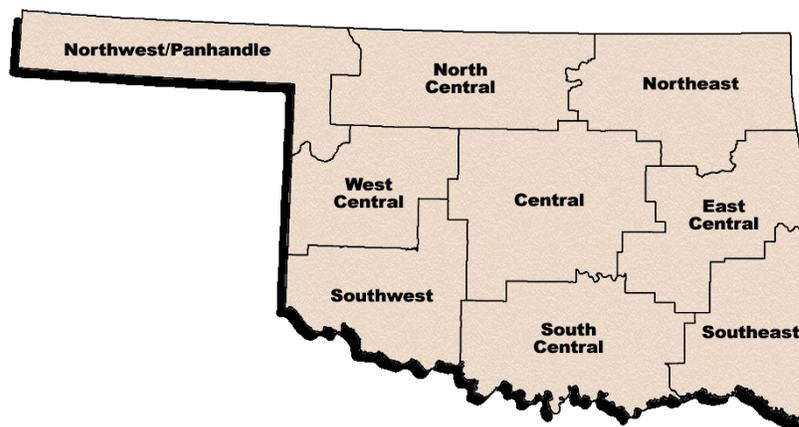
DECEMBER 31, 2003

OKLAHOMA WATER RESOURCES BOARD

### Statewide Precipitation & General Summary

Dry conditions continue to impact western and southern areas of Oklahoma. 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 December 28 (the current growing season) remains the Southwest climate division (only 2.66 inches, a deficit of 6.69 inches and only 28 percent of normal precipitation). West Central Oklahoma also remains somewhat dry, with a deficit of 3.85 inches (only 46 percent of normal). The current state-averaged rainfall total is 7.26 inches, 61 percent of normal.

For the current calendar year, the state-averaged rainfall total is 26.6 inches, 73 percent of normal. Six climate divisions report double-digit deficits for the year. Southeast Oklahoma is 17.77 inches below average.



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON SEPTEMBER 1-DECEMBER 28, 2003			CALENDAR YEAR JANUARY 1—DECEMBER 28, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	3.54	-1.52	70	18.35	-2.68	87
North Central	5.70	-3.34	63	23.35	-8.18	74
Northeast	10.77	-3.32	76	38.39	-3.36	92
West Central	3.85	-4.50	46	18.29	-10.68	63
Central	7.53	-4.86	61	27.11	-10.69	72
East Central	10.74	-5.48	66	33.74	-12.06	74
Southwest	2.66	-6.69	28	19.53	-11.13	64
South Central	8.30	-5.68	59	26.13	-14.58	64
Southeast	11.75	-6.53	64	32.78	-17.77	65
<b>Statewide</b>	7.26	-4.57	61	26.60	-9.89	73

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 (December 27, below), one region in Oklahoma, the Southwest climate division (“mild drought”), is currently experiencing drought conditions. Four of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since November 29. The greatest decrease occurred in the East Central climate division.

The latest monthly Standardized Precipitation Index (through November, below) indicates continued long-term dryness in all but northern Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), “very dry” conditions are indicated in the Southwest climate division throughout the last 3 months. “Moderately dry” conditions are indicated in the Southeast, South Central, West Central, East Central and Central regions at various times during the past 3-, 9- and 12-month periods. Considering longer periods (through six years), various regions, primarily in southern and eastern Oklahoma, are “moderately dry” during the past 15, 18, 24, and 30 months. [SPI updates are available around the 10<sup>th</sup> of each month.]

The latest Keetch-Byram Drought Index (December 29, 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, no Mesonet stations are currently at or above 600, generally indicative of more severe drought conditions (one station had a reading above 600 on December 1). Mangum, in Southwest Oklahoma, has the highest KBDI value (597). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness remains at 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 November 2003			
CLIMATE DIVISION (#)	CURRENT STATUS 12/27/2003	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		12/27	11/29					
Northwest (1)	NEAR NORMAL	0.48	0.34	0.14	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	NEAR NORMAL	0.13	-0.18	0.31	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MOIST SPELL	1.67	1.01	0.66	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	INCIPIENT DROUGHT	-0.90	-1.29	0.39	MODERATELY DRY	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
Central (5)	NEAR NORMAL	-0.01	-0.08	0.07	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
East Central (6)	NEAR NORMAL	0.04	0.67	-0.63	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL
Southwest (7)	MILD DROUGHT	-1.23	-0.98	-0.25	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	NEAR NORMAL	-0.06	0.32	-0.38	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
Southeast (9)	NEAR NORMAL	0.02	0.17	-0.15	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY

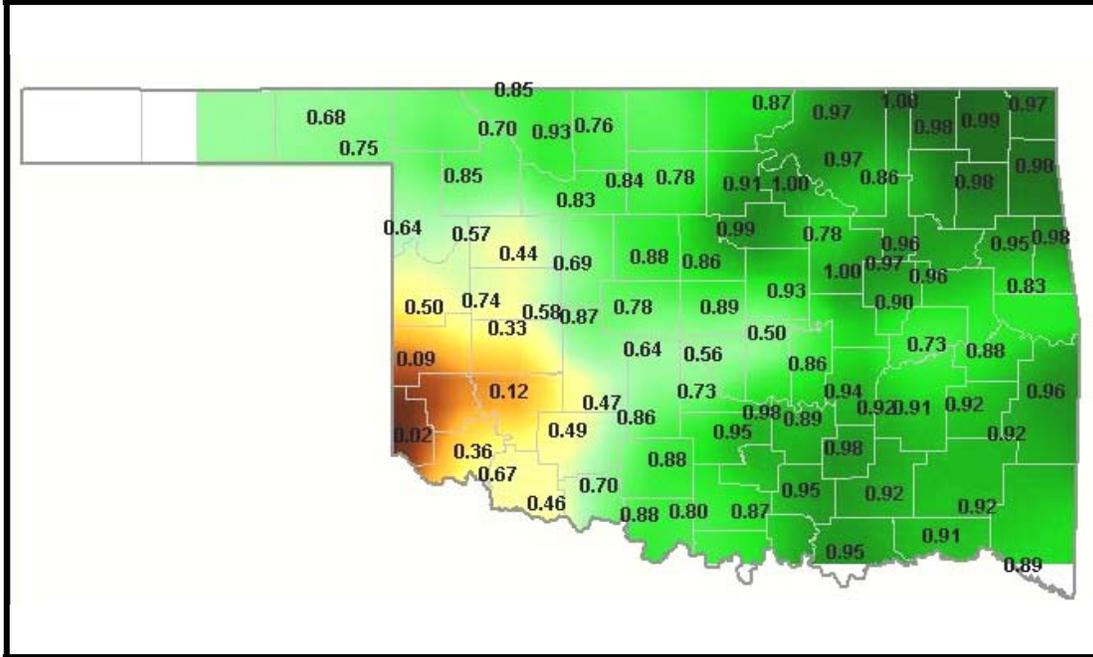
Keetch-Byram Drought Fire Index				
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 12/29/2003	ANTICIPATED IMPACT
Mangum	Greer	Southwest	597	600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.
Grandfield	Tillman	Southwest	593	
Tipton	Tillman	Southwest	587	

Total stations above 600 = 0

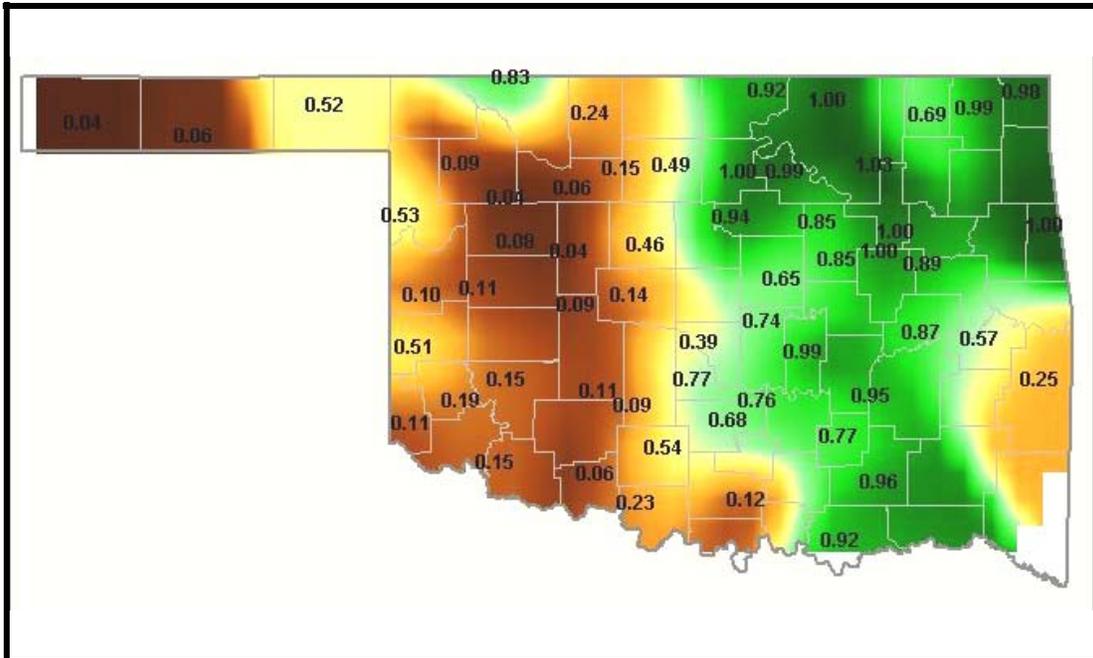
*The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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**  
December 28, 2003  
(Courtesy Oklahoma Climatological Survey)

**5 cm (~2 inches)**



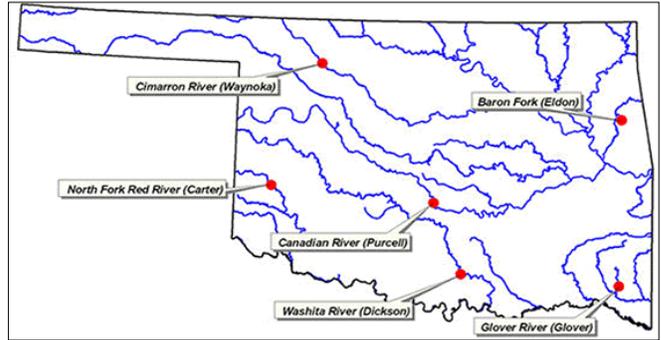
**60 cm (~2 feet)**



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 remain relatively low in some areas. Considering overall trends as well as current flows, the most recent data (December 22, 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 **below average flow** in *south central* (Washita River, Carter County) and *central* (Canadian River, McClain County) Oklahoma; and **near average flow** in the *northwest* (Cimarron River, Woods County), *southwest* (North Fork/Red River, Beckham County), *southeast* (Glover River, McCurtain County), and *northeast* (Baron Fork, Cherokee County) regions.



### Weather Forecast

The National Weather Service 8- to 14-day outlook (January 5-11) calls for above normal precipitation for all but far southwestern Oklahoma, where below 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

Although lakes in southwest Oklahoma continue to suffer from very low levels, lake storage elsewhere remains generally good. As of December 30, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 88.4 percent full, a 1.2 percent increase from that recorded on December 2, according to information from the U.S. Army Corps of Engineers (Tulsa District). Nine reservoirs have experienced lake level decreases since that time. Twenty reservoirs are currently operating at less than full capacity (compared to 23 four weeks ago). Three reservoirs—McGee Creek, 79.9 percent; Lugert-Altus, 15.4 percent; and Tom Steed, only 54.6 percent—are below 80 percent capacity.

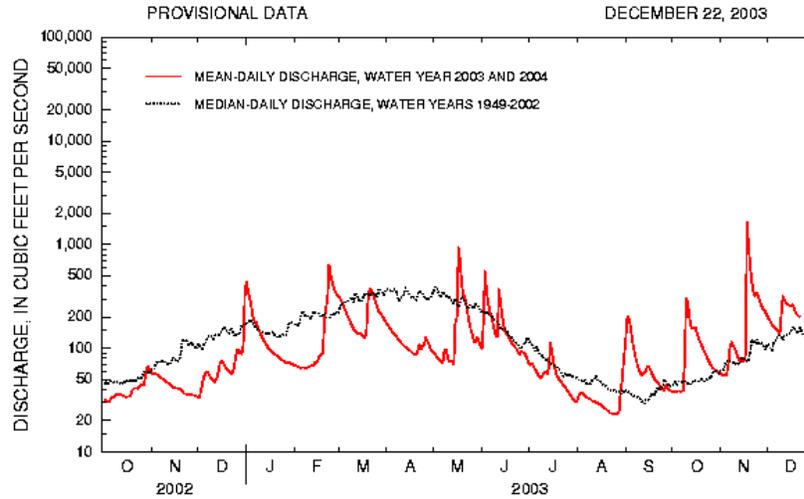
<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>			
<i>12/30/2003</i>			
<i>Climate Division Lake or Reservoir</i>	<i>Conservation Storage (acre-feet)</i>	<i>Present Storage (acre-feet)</i>	<i>Percent of Conservation Storage</i>
<b>North Central</b>			
Fort Supply	13,900	13,900	100.0
Great Salt Plains	31,420	31,420	100.0
Kaw*	442,080	441,759	99.9
<b>Regional Totals/Averages</b>	<b>487,400</b>	<b>487,079</b>	<b>99.9</b>
<b>Northeast</b>			
Birch	19,225	18,486	96.2
Copan	43,400	43,400	100.0
Fort Gibson	365,200	365,200	100.0
Grand	1,672,000	1,613,849	96.5
Hudson	200,300	200,300	100.0
Hulah	25,100	25,100	100.0
Keystone	510,059	496,695	97.4
Oologah	552,210	552,210	100.0
Skiatook	322,700	279,329	86.6
<b>Regional Totals/Averages</b>	<b>3,710,194</b>	<b>3,594,569</b>	<b>96.9</b>
<b>West Central</b>			
Canton	111,310	91,509	82.2
Foss	165,480	153,422	92.7
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>244,931</b>	<b>88.5</b>
<b>Central</b>			
Arcadia	27,520	27,520	100.0
Heyburn	7,105	7,105	100.0
Thunderbird	119,600	105,050	87.8
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>139,675</b>	<b>90.6</b>
<b>East Central</b>			
Eufaula*	2,260,943	1,822,747	80.6
Tenkiller	654,100	593,030	90.7
<b>Regional Totals/Averages</b>	<b>2,915,043</b>	<b>2,415,777</b>	<b>82.9</b>
<b>Southwest</b>			
Fort Cobb	80,010	72,779	91.0
Lugert-Altus	132,830	21,659	16.3
Tom Steed	88,970	47,192	53.0
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>141,630</b>	<b>46.9</b>
<b>South Central</b>			
Arbuckle	72,400	67,267	92.9
McGee Creek	113,930	91,063	79.9
Texoma*	2,596,562	2,213,561	85.2
Waurika*	190,200	156,002	82.0
<b>Regional Totals/Averages</b>	<b>2,973,092</b>	<b>2,527,893</b>	<b>85.0</b>
<b>Southeast</b>			
Broken Bow*	918,070	787,768	85.8
Hugo*	184,917	164,601	89.0
Pine Creek*	53,750	53,750	100.0
Sardis	274,330	259,775	94.7
Wister	60,162	60,162	100.0
<b>Regional Totals/Averages</b>	<b>1,491,229</b>	<b>1,326,056</b>	<b>88.9</b>
<b>State Totals</b>	<b>12,309,783</b>	<b>10,877,610</b>	<b>88.4</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*



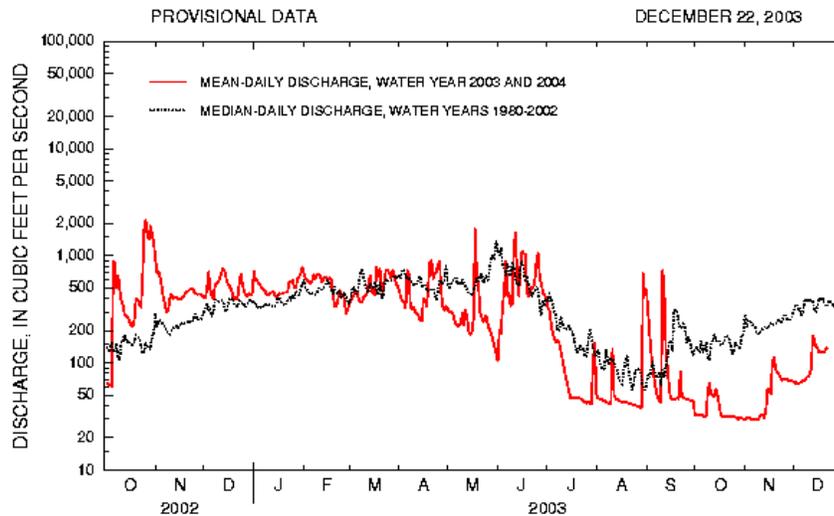
Comparison of daily discharges for water year 2003 and 2004 and period of record for Baron Fork at Eldon, Oklahoma.

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.

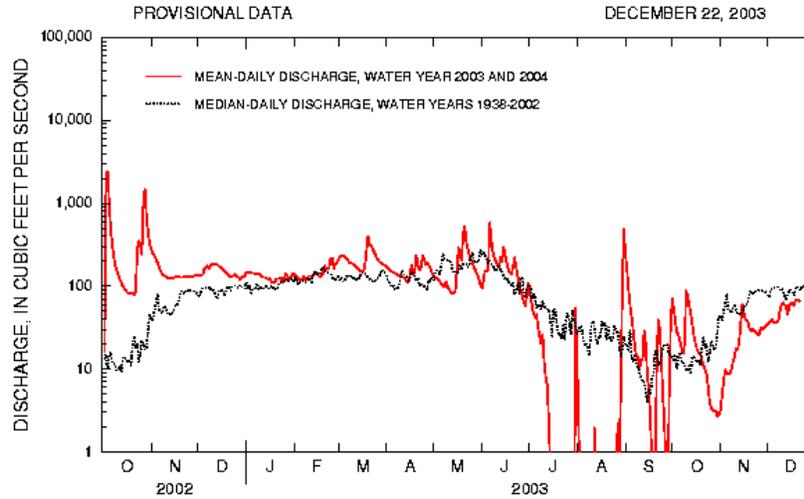
Data from U.S. Geological Survey

### Cimarron River near Waynoka

*Cimarron River near Waynoka, Oklahoma*

Station No. 07158000  
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.

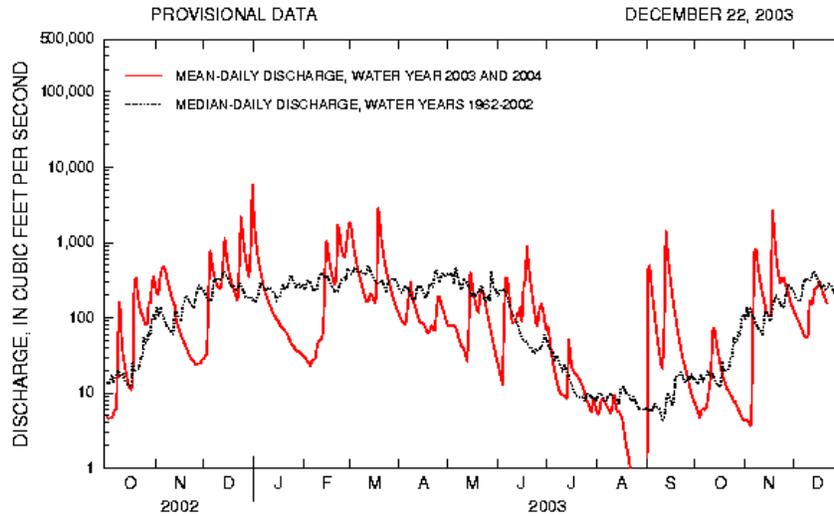
Data from U.S. Geological Survey

### 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

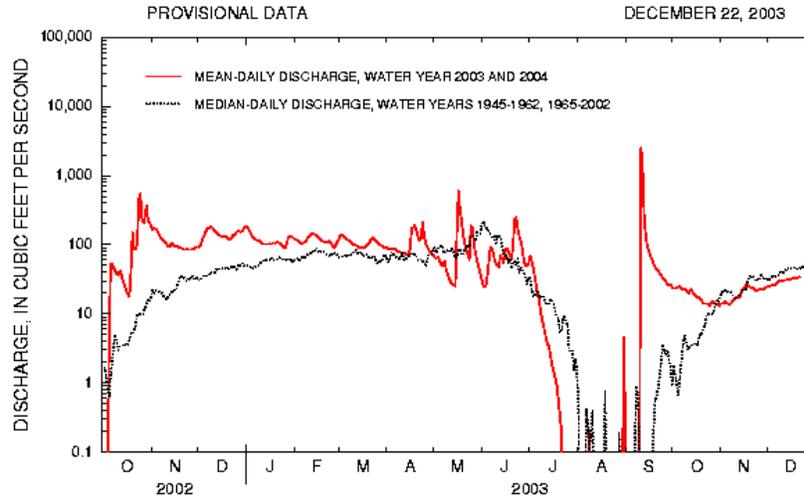
### North Fork of the Red River near Carter

*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

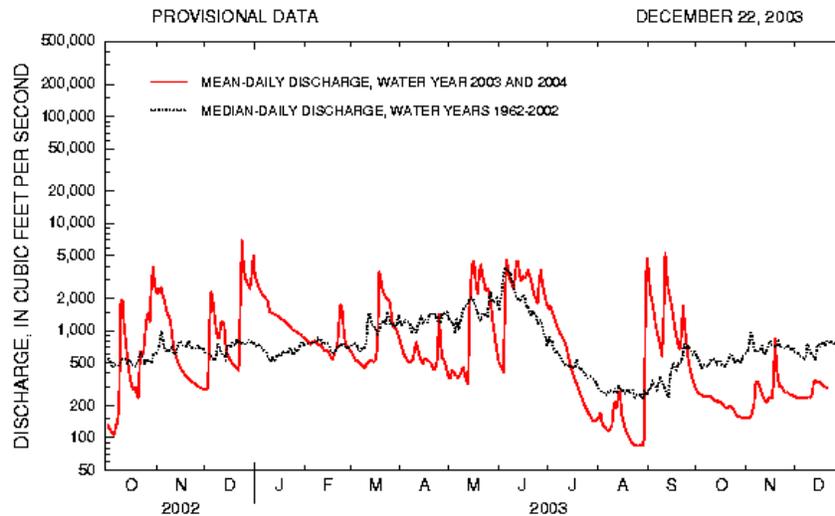
### Washita River near Dickson

*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