

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



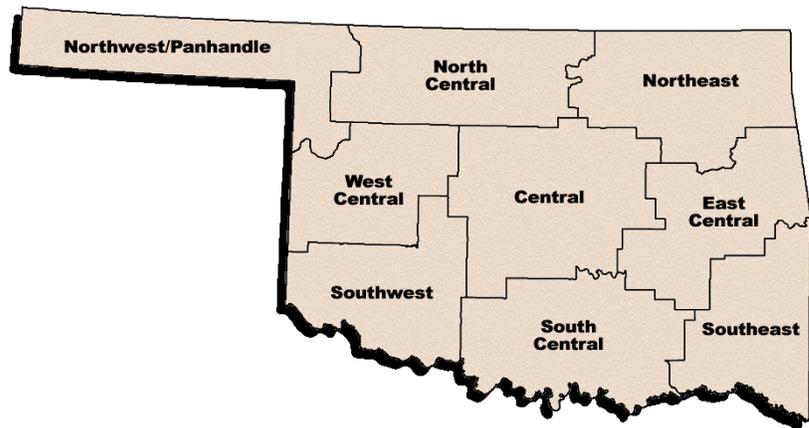
APRIL 9, 2003

OKLAHOMA WATER RESOURCES BOARD

### Statewide Precipitation & General Summary

Much of western and southern Oklahoma remains relatively dry. 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 March 1 through April 7 (the current growing season) is the West Central climate division (only .96 inches, 32 percent of normal precipitation). The Southwest, South Central and Southeast regions have also received less than one-half of normal rainfall throughout the period. The current state-averaged rainfall total is 2.32 inches, 60 percent of normal.

For the current water year (October 1, 2002 through April 7, 2003), seven regions report precipitation deficits. However, no climate divisions have received less than 70 percent of normal precipitation. The state-averaged rainfall total is 12.42 inches (81 percent of normal).



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON MARCH 1—APRIL 7, 2003			WATER YEAR OCTOBER 1, 2002—APRIL 7, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Northwest (1)	1.27	-0.79	61	6.82	+0.34	105
North Central (2)	2.68	-0.69	79	12.61	+1.05	109
Northeast (3)	4.30	-0.31	93	12.49	-5.20	71
West Central (4)	0.96	-2.04	32	9.86	-0.60	94
Central (5)	2.90	-1.16	71	12.45	-3.33	79
East Central (6)	2.86	-2.24	56	14.93	-6.28	70
Southwest (7)	1.00	-1.89	35	10.84	-0.53	95
South Central (8)	1.55	-2.88	35	14.18	-4.24	77
Southeast (9)	2.73	-2.80	49	18.07	-7.51	71
<b>STATE-AVERAGED</b>	<b>2.32</b>	<b>-1.58</b>	<b>60</b>	<b>12.42</b>	<b>-2.90</b>	<b>81</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>.**

### Drought Indices

According to the latest Palmer Drought Severity Index (April 5, below), only one region in Oklahoma (South Central, "mild drought") is currently classified in a drought category, although four additional regions are in the "incipient drought" stage. Seven of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since March 8. The greatest decrease occurred in the South Central climate division.

The latest monthly Standardized Precipitation Index (through March, below) indicates some long-term dryness in east central Oklahoma and shorter-term dryness in the south. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), "moderately dry" conditions are indicated in the East Central climate division throughout the last 9- and 12-month periods. Also, the West Central, Southwest, South Central, and Southeast regions are dry throughout the last 3 months. Considering longer periods (through six years), the Northeast and Northwest climate divisions indicate dry conditions over the past 24 months. [SPI updates are available around the 10<sup>th</sup> of each month.]

The latest Keetch-Byram Drought Index (April 7, 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 good. Statewide, no Mesonet stations are currently above or even near 600, generally indicative of more severe drought conditions (no stations had a reading above 600 on March 10). Hooker, in Northwest Oklahoma, retains the highest KBDI value (320). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness is at Level 3 (high fire danger). All 77 counties in Oklahoma are under a Red Flag Fire Alert. Warm, windy and dry conditions will result in extreme fire danger in dormant grassy fuels and woodlands. Extra precautions are needed with all outdoor burning as fires may spread quickly and be difficult to control under these conditions. Outdoor burning should be avoided when winds exceed 20 miles per hour.

Palmer Drought Severity Index					Standardized Precipitation Index Through March 2003			
CLIMATE DIVISION (#)	CURRENT STATUS 4/5/2003	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		4/5	3/8					
Northwest (1)	NEAR NORMAL	0.97	1.10	-0.13	NEAR NORMAL	MODERATELY WET	MODERATELY WET	NEAR NORMAL
North Central (2)	NEAR NORMAL	2.36	2.50	-0.14	NEAR NORMAL	MODERATELY WET	MODERATELY WET	MODERATELY WET
Northeast (3)	MOIST SPELL	0.72	-0.29	1.01	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	INCIPIENT DROUGHT	0.59	1.12	-0.53	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	NEAR NORMAL	1.24	0.93	0.31	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT DROUGHT	-0.33	0.28	-0.61	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
Southwest (7)	INCIPIENT DROUGHT	0.37	1.16	-0.79	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MILD DROUGHT	0.43	1.45	-1.02	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	INCIPIENT DROUGHT	-0.70	-0.07	-0.63	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL

### Keetch-Byram Drought Fire Index

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 4/7/2003	ANTICIPATED IMPACT
Hooker	Texas	Northwest	320	<b>600-800:</b> often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively. <b>400-600:</b> lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.
Hollis	Harmon	Southwest	297	
Mangum	Greer	Southwest	269	

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.

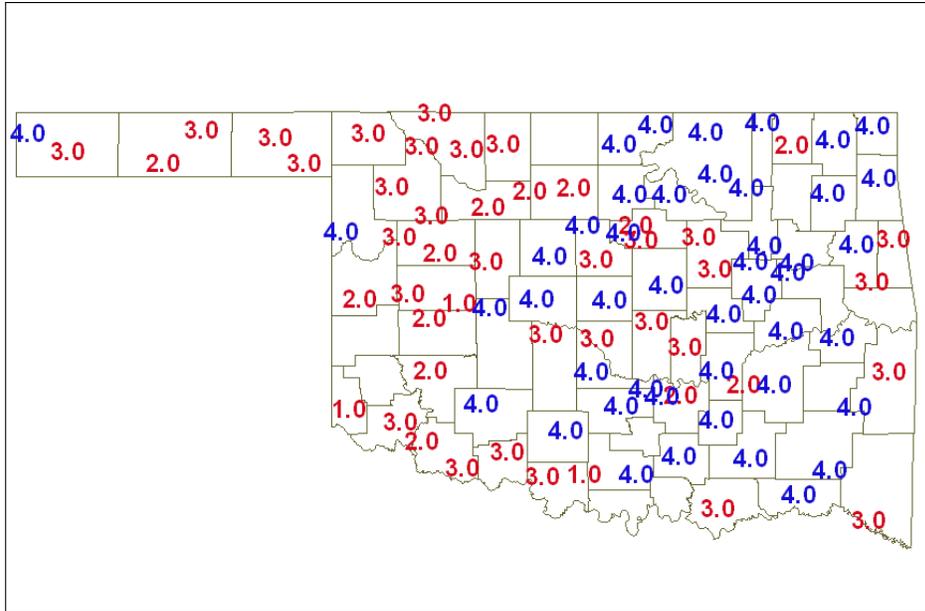
### Soil Moisture

April 5, 2003

(Courtesy Oklahoma Climatological Survey)

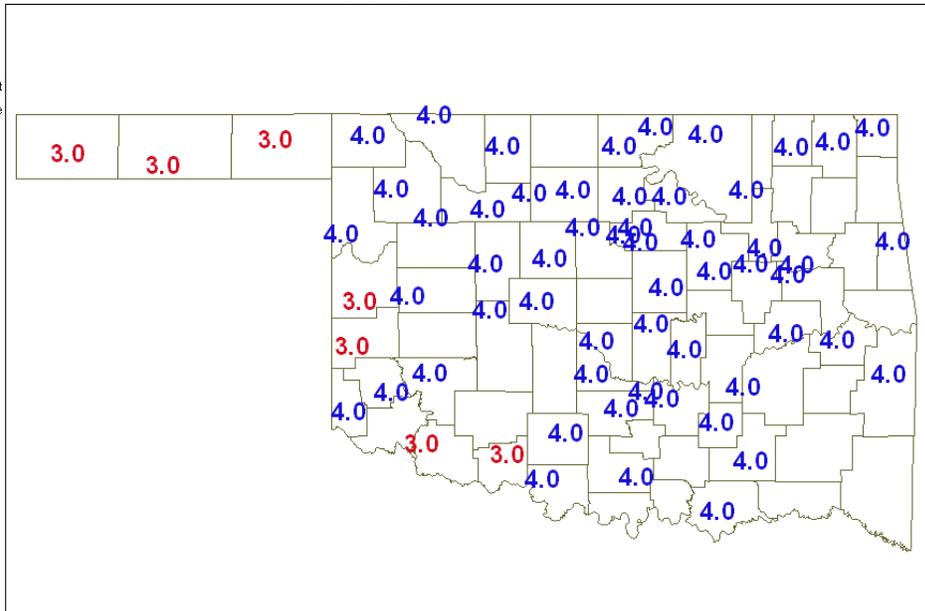
#### 5 cm

Sat, Apr 5, 2003  
0000 UTC  
## 5cm Cat. 4 = Moist/wet  
## 5cm Cat. 3 = Adequate  
## 5cm Cat. 2 = Limited  
## 5cm Cat. 1 = Dry  
— County borders (OK)



#### 60 cm

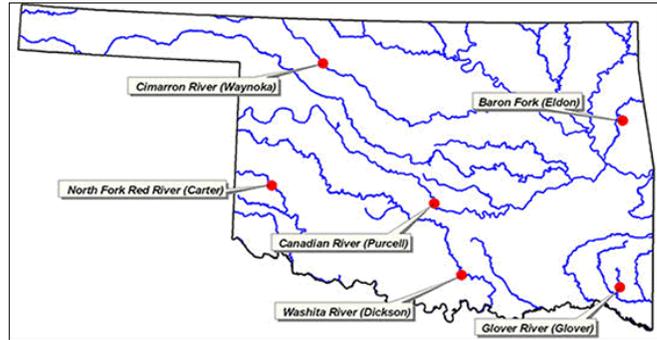
Sat, Apr 5, 2003  
0000 UTC  
## 60cm Cat. 4 = Moist/wet  
## 60cm Cat. 3 = Adequate  
## 60cm Cat. 2 = Limited  
## 60cm Cat. 1 = Dry  
— County borders (OK)



Category Description		Depth -- Metric Conversion
Category 4	Moist/wet	5 cm = 2 inches
Category 3	Adequate	*corresponds to the approximate depth of grass roots
Category 2	Limited	60 cm = 23.6 inches
Category 1	Dry	*corresponds to the approximate root depth of the majority of Oklahoma crops

### Streamflow Conditions

For the current water year, flows in state rivers and streams remain generally near normal. Considering overall trends as well as current flows, the most recent data (April 7, 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, 2001, compared to long-term, normal/median daily discharges) indicate **below average flow** in *northeast* (Baron Fork, Cherokee County) and *south central* (Washita River, Carter County) Oklahoma; **near average flow** in the *southeast* (Glover River, McCurtain County), *central* (Canadian River, McClain County), and *northwest* (Cimarron River, Woods County) regions; and **above average flow** in the *southwest* (North Fork/Red River, Beckham County).



### Weather Forecast

The National Weather Service 8- to 14-day outlook (April 14-20) calls for generally above normal precipitation for all of Oklahoma and above normal temperatures for all but the western one-half of the Panhandle region, where normal temperatures are expected to prevail throughout the period.

Models indicate that the current mature El Niño episode continues to weaken and should reach near normal conditions during the April-October period. Some models then indicate the possibility of continued weak El Niño conditions, while other models indicate the development of La Niña conditions during the last half of 2003. El Niños, warm water anomalies in the equatorial regions that increase the chances for generally cooler, wetter conditions in the southern U.S. (including Oklahoma), occur about every two to seven years.

### Crop Report

April 6 - Warm temperatures, high winds, and lack of adequate moisture dwindled soil moisture supplies during much of the week. However, weekend rains and storms brought much-needed moisture to most of the state. The southwest and Panhandle regions received the least amount of moisture with less than one-tenth of an inch of moisture. They continue to need additional moisture. Warm conditions last week allowed row crop field preparation to proceed in full swing and planting occurred on a wider scale. Statewide, topsoil and subsoil moisture supplies were rated short to adequate. Some of the reports for this week's crop weather arrived before the weekend rains and storms, therefore soil moisture supplies and crop conditions may understate actual conditions. Farmers had 6.2 days suitable for fieldwork during the week.

The winter wheat crop improved from the ideal growing conditions last week and was rated as mostly good to excellent. Seventy-eight percent of the wheat had jointed, ahead of the 5-year average of 69 percent. Thirty percent of the oats had jointed, slightly behind the 5-year average of 35 percent. Crop insect activities were rated as none to light; however, some producers were still reporting heavy crop damage due to aphids.

Drier conditions helped producers make significant progress with row crop preparation and planting activities. Corn producers planted an additional 7 percent of the crop during the week and had 21 percent planted by week's end. As of Sunday, corn seedbeds were 66 percent prepared, while 65 percent of cotton seedbeds had been prepared. Sorghum and soybean seedbeds were at 35 and 34 percent prepared, respectively. Peanut seedbeds reached 36 percent prepared.

Livestock conditions were rated mostly fair to good. Cattle auctions reported marketings were average. Range and pasture conditions were rated fair to good. Warm conditions over much of the state have improved the growth of cool season grasses.

### Reservoir Storage

Reservoir storage levels in Oklahoma remain in generally good condition, except in some areas of the southwest. As of April 7, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 97.6 percent full, a 3.6 percent increase from that recorded on March 10, according to information from the U.S. Army Corps of Engineers (Tulsa District). Ten reservoirs have experienced lake level decreases since that time. Twelve reservoirs are currently operating at less than full capacity (compared to 13 one month ago). Two reservoirs (including **Lugert-Altus, only 43.5 percent**; and Tom Steed, 55.7 percent) remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs				
04/07/2003				
Climate Division	Conservation Storage	Present Storage	Percent of Storage	
Lake or Reservoir	(acre-feet)	(acre-feet)	conservation	flood
<b>North Central</b>				
Fort Supply	13,900	13,730	98.8	0.00
Great Salt Plains	31,420	31,420	100.0	2.73
Kaw*	398,695	398,695	100.0	1.57
<b>Regional Totals/Averages</b>	<b>444,015</b>	<b>443,845</b>	<b>100.0</b>	<b>1.43</b>
<b>Northeast</b>				
Birch	19,225	18,984	98.7	0.00
Copan	43,400	43,400	100.0	3.39
Fort Gibson	365,200	365,200	100.0	1.28
Grand	1,672,000	1,555,039	93.0	0.00
Hudson	200,300	200,300	100.0	3.21
Hulah	25,100	25,100	100.0	2.02
Keystone	510,059	510,059	100.0	2.02
Oologah	552,210	552,210	100.0	10.35
Skiatook	322,700	296,815	92.0	0.00
<b>Regional Totals/Averages</b>	<b>3,710,194</b>	<b>3,567,107</b>	<b>96.1</b>	<b>2.47</b>
<b>West Central</b>				
Canton	111,310	111,310	100.0	0.51
Foss	165,480	163,075	98.5	0.00
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>274,385</b>	<b>99.1</b>	<b>0.26</b>
<b>Central</b>				
Arcadia	27,520	27,520	100.0	2.45
Heyburn	7,105	7,105	100.0	0.72
Thunderbird	119,600	118,340	98.9	0.00
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>152,965</b>	<b>99.2</b>	<b>1.06</b>
<b>East Central</b>				
Eufaula*	2,314,583	2,314,583	100.0	2.77
Tenkiller	654,100	646,371	98.8	0.00
<b>Regional Totals/Averages</b>	<b>2,968,683</b>	<b>2,960,954</b>	<b>99.7</b>	<b>1.39</b>
<b>Southwest</b>				
Fort Cobb	80,010	80,010	100.0	1.10
Lugert-Altus	132,830	57,755	43.5	0.00
Tom Steed	88,970	49,542	55.7	0.00
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>187,307</b>	<b>62.1</b>	<b>0.37</b>
<b>South Central</b>				
Arbuckle	72,400	72,400	100.0	2.03
McGee Creek	113,930	113,930	100.0	0.71
Texoma*	2,418,626	2,406,426	99.5	0.00
Waurika*	190,200	184,205	96.8	0.00
<b>Regional Totals/Averages</b>	<b>2,795,156</b>	<b>2,776,961</b>	<b>99.3</b>	<b>0.69</b>
<b>Southeast</b>				
Broken Bow*	922,135	915,540	99.3	0.00
Hugo*	198,067	198,067	100.0	0.19
Pine Creek*	66,536	66,536	100.0	2.34
Sardis	274,330	274,330	100.0	0.57
Wister	60,162	60,162	100.0	0.88
<b>Regional Totals/Averages</b>	<b>1,521,230</b>	<b>1,514,635</b>	<b>99.6</b>	<b>0.80</b>
<b>State Totals</b>	<b>12,172,103</b>	<b>11,878,159</b>	<b>97.6</b>	<b>1.32</b>

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

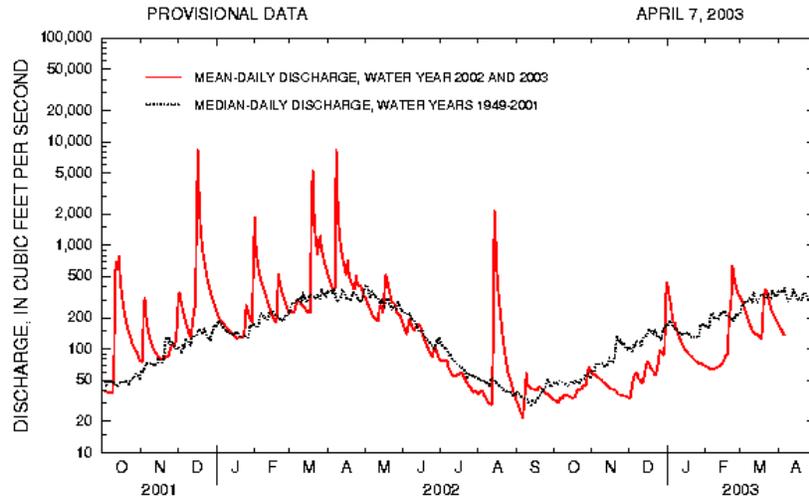
### Baron Fork at Eldon

*Baron Fork at Eldon, Oklahoma*

*Station No. 07197000*

*Northeast Oklahoma*

*Drainage Area 307 square miles*



Comparison of daily discharges for water year 2002 and 2003 and period of record for Baron Fork at Eldon, Oklahoma.

Data from U.S. Geological Survey

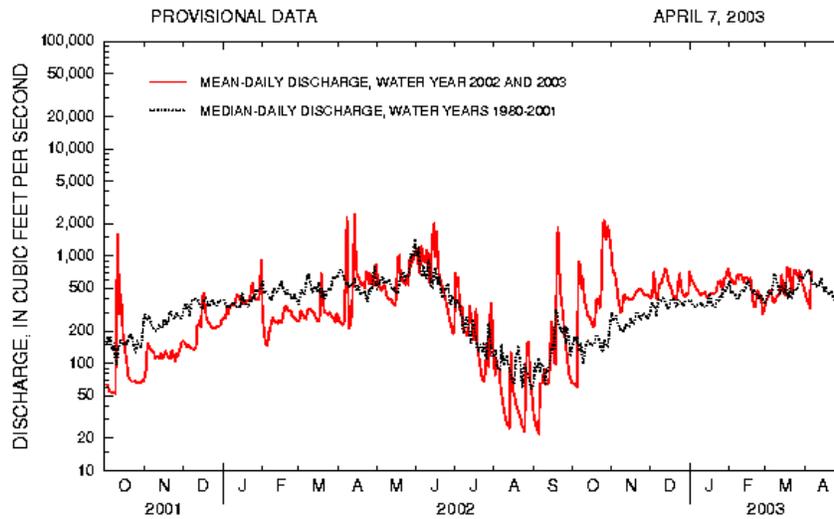
### Canadian River at Purcell

*Canadian River at Purcell, Oklahoma*

*Station No. 07229200*

*Central Oklahoma*

*Drainage Area 25,939 square miles*



Comparison of daily discharges for water year 2002 and 2003 and period of record for Canadian River at Purcell, Oklahoma.

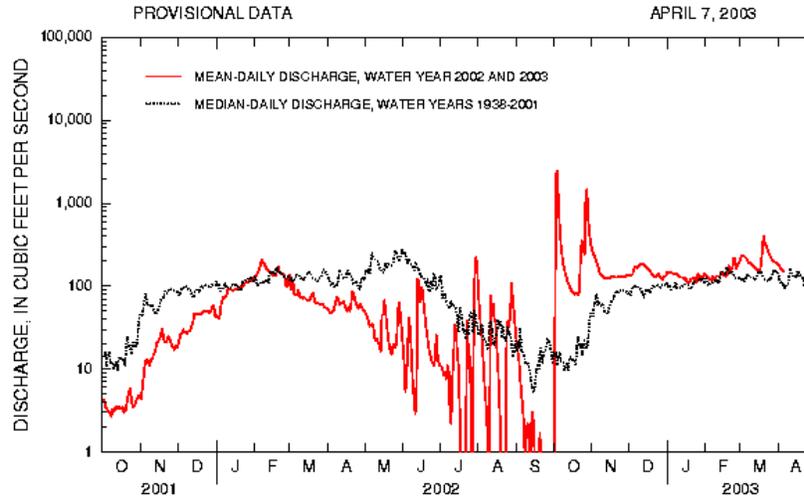
Data from U.S. Geological Survey

### 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 2002 and 2003 and period of record for Cimarron River near Waynoka, Oklahoma.

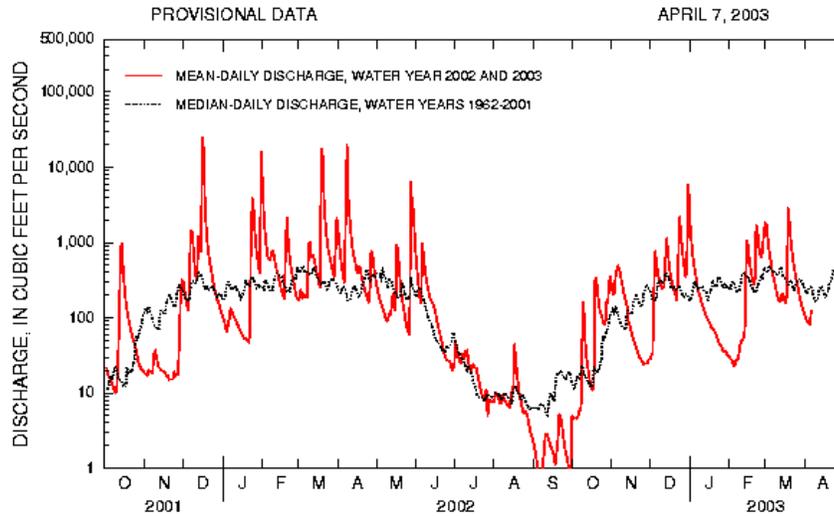
Data from U.S. Geological Survey

### 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 2002 and 2003 and period of record for Glover River near Glover, Oklahoma.

Data from U.S. Geological Survey

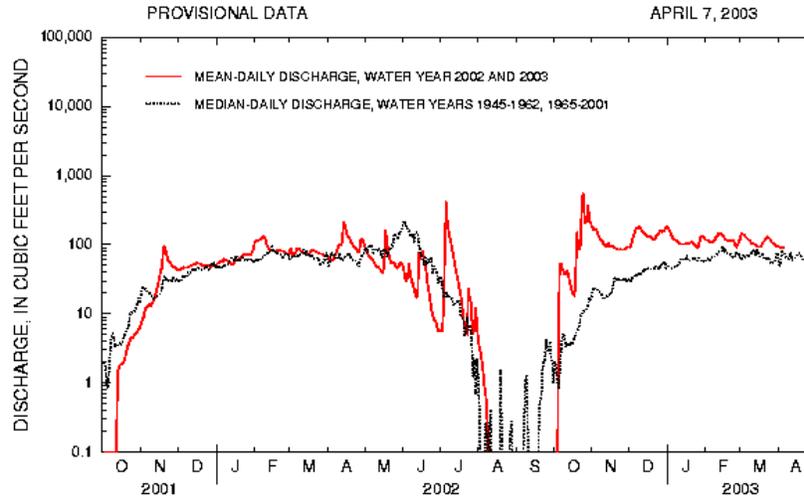
### North Fork of the Red River near Carter

*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 2002 AND 2003 and period of record for North Fork Red River near Carter, Oklahoma.

Data from U.S. Geological Survey

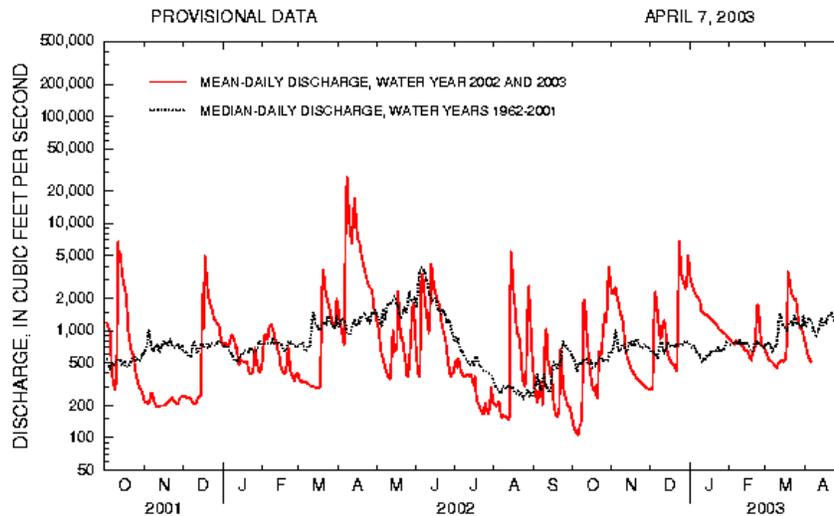
### Washita River near Dickson

*Washita River near Dickson, Oklahoma*

Station No. 07331000

South-Central Oklahoma

Drainage Area 7,202 square miles



Comparison of daily discharges for water year 2002 and 2003 and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey