

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



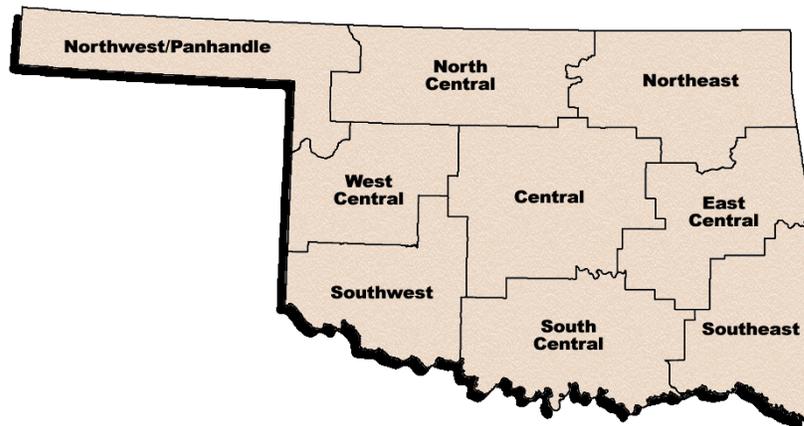
JULY 16, 2003

OKLAHOMA WATER RESOURCES BOARD

### Statewide Precipitation & General Summary

Dryness in southern and eastern Oklahoma is spreading into central areas of the state. According to preliminary Mesonet weather station data provided by the Oklahoma Climatological Survey and National Weather Service (see below), the areas receiving the lowest percent of normal rainfall from March 1 through July 14 (the current growing season) are the Southeast (a deficit of 7.68 inches, 65 percent of normal precipitation) and South Central (a 6.59-inch deficit, 65 percent of normal precipitation) climate divisions. The current state-averaged rainfall total is 12.99 inches, 76 percent of normal.

For the current water year (October 1, 2002 through July 14, 2003), eight regions report precipitation deficits, although all remain at or above 70 percent of normal. The state-averaged rainfall total is 23.06 inches, 81 percent of normal.



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON MARCH 1—JULY 14, 2003			WATER YEAR OCTOBER 1, 2002—JULY 14, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	9.93	-0.98	91	15.48	+0.15	101
North Central	12.43	-3.21	79	22.37	-1.47	94
Northeast	17.46	-1.74	91	25.65	-6.62	79
West Central	10.54	-4.18	72	19.43	-2.74	88
Central	12.74	-5.39	70	22.29	-7.55	75
East Central	14.48	-6.03	71	26.55	-10.07	72
Southwest	12.80	-2.24	85	22.65	-0.88	96
South Central	12.11	-6.59	65	24.49	-8.19	75
Southeast	13.97	-7.68	65	29.31	-12.39	70
<b>Statewide</b>	<b>12.99</b>	<b>-4.19</b>	<b>76</b>	<b>23.06</b>	<b>-5.55</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 (July 12, below), four regions in Oklahoma (Southeast, South Central, East Central, and Central, all in "mild drought") are currently experiencing drought conditions. All of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since June 28. The greatest decrease occurred in the North Central climate division.

The latest monthly Standardized Precipitation Index (through June, below) continues to indicate both short- and long-term dryness in southern and eastern 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 6 months. East Central Oklahoma is "moderately dry" over the past 3-, 6-, 9- and 12-month periods. Considering longer periods (through six years), various eastern climate divisions indicate "moderately dry" conditions throughout the past 15-, 18-, and 36-month periods. [SPI updates are available around the 10<sup>th</sup> of each month.]

The latest Keetch-Byram Drought Index (July 14, 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, although dryness is beginning to develop. 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 June 30). Clayton, in Southeast Oklahoma, retains the highest KBDI value (488). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness is at Level 2 (moderate fire danger). The fire danger is increasing. Some drier areas may experience short-term periods of very high fire danger. Grasses are now beginning to cure and will ignite and burn with surprising intensity. Outdoor burning should be avoided when winds exceed 20 miles per hour.

Palmer Drought Severity Index					Standardized Precipitation Index Through June 2003			
CLIMATE DIVISION (#)	CURRENT STATUS 7/12/2003	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		7/12	6/28					
Northwest (1)	NEAR NORMAL	0.14	0.41	-0.27	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	MODERATELY WET
North Central (2)	NEAR NORMAL	0.33	1.62	-1.29	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY WET
Northeast (3)	INCIPIENT DROUGHT	-0.55	-0.41	-0.14	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	INCIPIENT DROUGHT	-0.52	0.49	-1.01	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	MILD DROUGHT	-1.18	-0.67	-0.51	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MILD DROUGHT	-1.50	-1.06	-0.44	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY
Southwest (7)	NEAR NORMAL	-0.44	0.71	-1.15	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MILD DROUGHT	-1.53	-0.68	-0.85	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
Southeast (9)	MILD DROUGHT	-1.71	-1.19	-0.52	NEAR NORMAL	VERY DRY	MODERATELY DRY	MODERATELY DRY

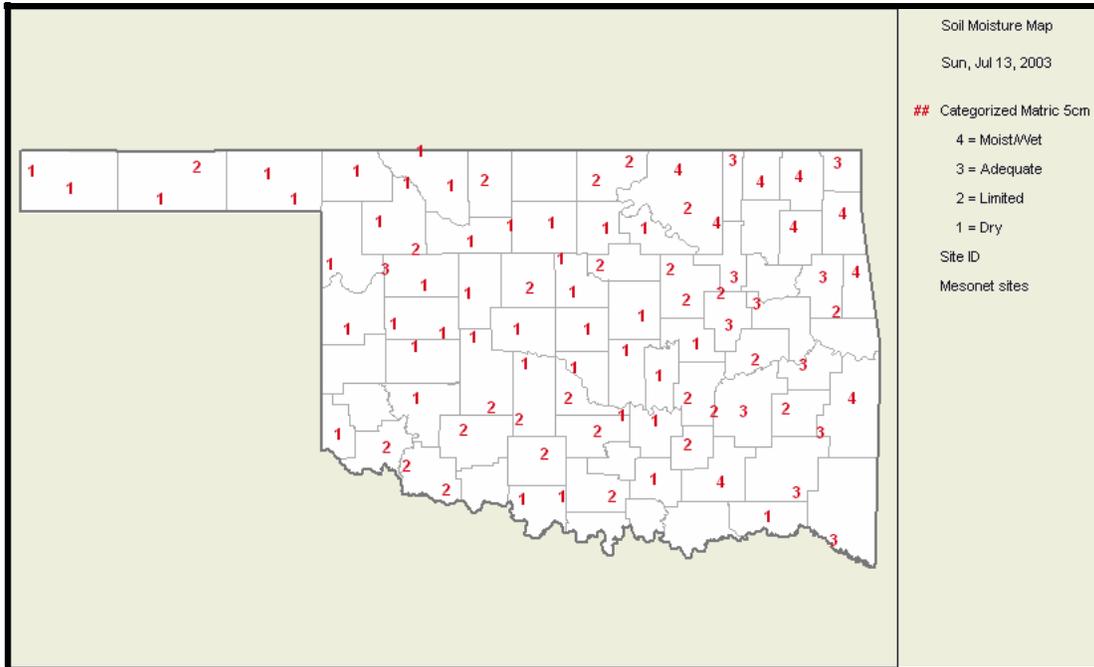
Keetch-Byram Drought Fire Index				
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 7/14/2003	ANTICIPATED IMPACT
Clayton	Pushmataha	Southeast	488	<b>600-800:</b> often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; 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.
Spencer	Oklahoma	Central	444	
Bowlegs	Seminole	Central	436	

Total stations above 600 = 0

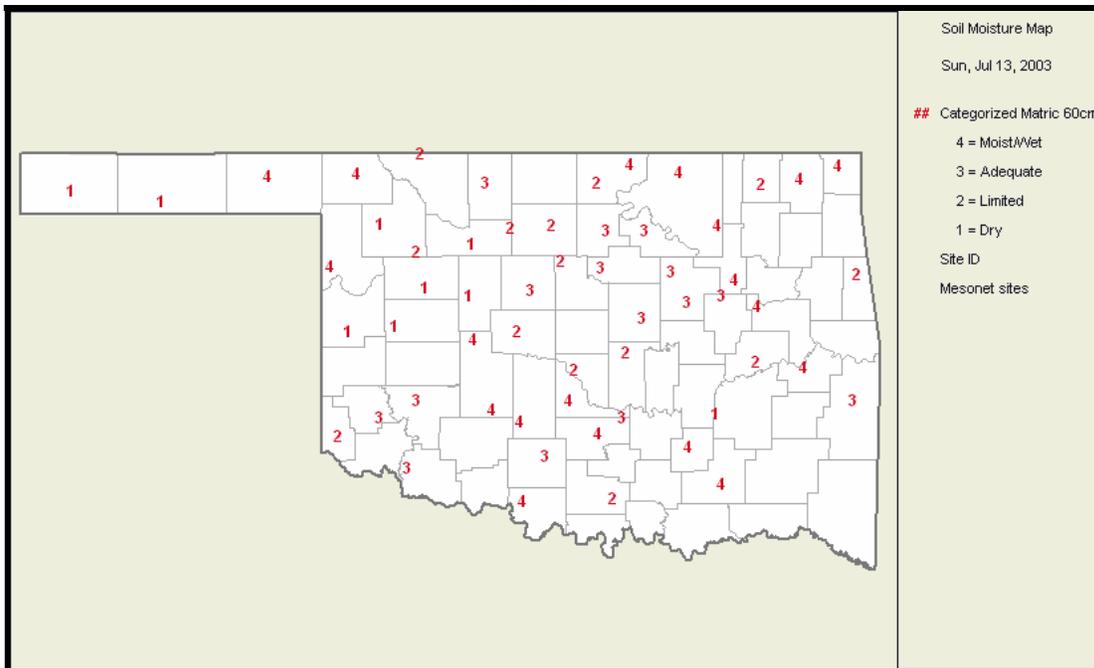
*The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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**  
**July 13, 2003**  
*(Courtesy Oklahoma Climatological Survey)*

**5 cm**



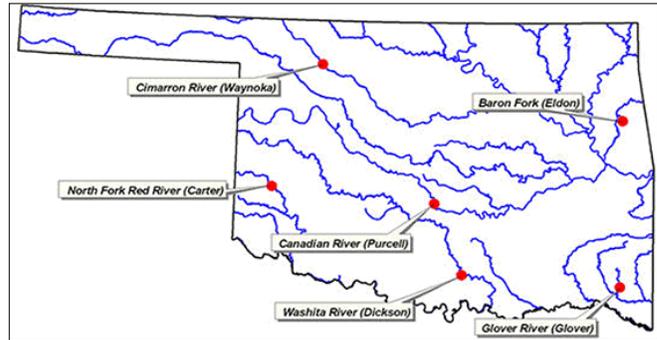
**60 cm**



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

### Streamflow Conditions

Flows in state rivers and streams are beginning to exhibit impacts associated with reduced precipitation and runoff. Considering overall trends as well as current flows, the most recent data (July 14, 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 *central* (Canadian River, McClain County) and *southwest* (North Fork/Red River, Beckham County) Oklahoma; and **near average flow** in the *northwest* (Cimarron River, Woods County), *northeast* (Baron Fork, Cherokee County), *southeast* (Glover River, McCurtain County), and *south central* (Washita River, Carter County) regions.



### Weather Forecast

The National Weather Service 8- to 14-day outlook (July 22-28) calls for normal precipitation for all but the western one-third of Oklahoma, where above normal rainfall is anticipated. Normal temperatures are expected for all but the far western Panhandle, where above normal temperatures should prevail throughout the period.

Observed trends in oceanic and atmospheric variables indicate considerable uncertainty for the next several months. However, the majority of forecasts indicate near neutral conditions during the last half of 2003. Previous forecasts had predicted a gradual transition to La Niña over the next few months. La Niña episodes, cold-water phenomena, are generally believed to cause temporary warmer and drier conditions throughout most of the southern U.S.

### Crop Report

July 13 – Hot temperatures coupled with dry weather continued across Oklahoma during the week. Rainfall was mostly nonexistent except for a few scattered areas. Moisture continues to be greatly needed across the state to replenish soil moisture levels and minimize heat stress to crops and pastures. Soil moisture supplies dwindled from the hot and dry conditions and were rated as mostly short to adequate. Farmers had 6.7 days suitable for fieldwork during the week.

Dry weather during the week kept producers busy plowing wheat ground. Wheat stubble was plowed at least once on 78 percent of the state's acreage, 8 percentage points ahead of the normal pace. Oat harvest was 95 percent done by week's end and 64 percent of fields were plowed. Farmers will soon be concentrating their efforts on land preparation for fall planting.

A full week of hot, dry weather has slowed growth and development of all summer row crops. Irrigation was active where possible as crops continued to suffer from heat and lack of moisture. Forty-two percent of the corn was silking while 23 percent of the corn entered the dough stage of development. At week's end, 5 percent of this year's corn crop had reached maturity. Harmon County reported that producers should begin chopping corn silage within the next few weeks. Sorghum planting was virtually completed and 95 percent had emerged. Eight percent of the sorghum's crop was headed while limited counties were seeing coloring. Soybean planting was nearly complete and 94 percent has emerged. At week's end, soybean blooming advanced to 23 percent while 4 percent were setting pods. Peanuts pegging reached 80 percent and 17 percent had begun setting pods. The majority of the cotton crop was rated in fair to good condition, with 66 percent of the acreage squaring and 9 percent setting bolls.

Both alfalfa and other hay were rated in mostly fair to good condition. Producers were taking advantage of the drier conditions with the second and third cutting of alfalfa in full swing across the state. The second and third cutting of alfalfa were at 98 and 48 percent complete, respectively. Other hay first cutting gained 8 percentage points from last week to 89 percent complete while 24 percent had been cut for a second time. Watermelons were rated in mostly fair to good condition. Harvest was 11 percent complete and was running behind the normal pace.

Pasture and range conditions declined from last week due to the hot temperatures and lack of moisture, but were rated as mostly fair to good. A growing number of pastures were showing signs of stress. Pawnee County reported grasses have started to burn up. Grasshopper infestations continued to increase during the week. Livestock conditions remained rated as mostly fair to excellent. Livestock insect activities were rated as light to moderate with some areas reporting heavy activity.

### Reservoir Storage

Reservoir storage remains good in most areas of Oklahoma. As of July 14, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 95.8 percent full, a 1.1 percent decrease from that recorded on July 1, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-nine reservoirs have experienced lake level decreases since that time. Nineteen reservoirs are currently operating at less than full capacity (compared to 11 two weeks ago). Two reservoirs in southwest Oklahoma—Lugert-Altus, only 50.1 percent, and Tom Steed, only 68.9 percent—remain well below 80 percent capacity.

<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>			
<i>07/14/2003</i>			
<i>Climate Division</i>	<i>Conservation Storage</i>	<i>Present Storage</i>	<i>Percent of</i>
<i>Lake or Reservoir</i>	<i>(acre-feet)</i>	<i>(acre-feet)</i>	<i>Conservation Storage</i>
<b>North Central</b>			
Fort Supply	13,900	13,900	100.0
Great Salt Plains	31,420	31,196	99.3
Kaw*	459,850	459,850	100.0
<b>Regional Totals/Averages</b>	<b>505,170</b>	<b>504,946</b>	<b>100.0</b>
<b>Northeast</b>			
Birch	19,225	17,179	89.4
Copan	43,400	43,400	100.0
Fort Gibson	365,200	365,200	100.0
Grand	1,672,000	1,643,020	98.3
Hudson	200,300	200,300	100.0
Hulah	25,100	25,100	100.0
Keystone	510,059	493,347	96.7
Oologah	552,210	552,210	100.0
Skiatook	322,700	287,520	89.1
<b>Regional Totals/Averages</b>	<b>3,710,194</b>	<b>3,627,276</b>	<b>97.8</b>
<b>West Central</b>			
Canton	111,310	110,993	99.7
Foss	165,480	163,263	98.7
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>274,256</b>	<b>99.1</b>
<b>Central</b>			
Arcadia	27,520	27,057	98.3
Heyburn	7,105	6,955	97.9
Thunderbird	119,600	116,480	97.4
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>150,492</b>	<b>97.6</b>
<b>East Central</b>			
Eufaula*	2,529,143	2,265,267	89.6
Tenkiller	654,100	639,647	97.8
<b>Regional Totals/Averages</b>	<b>3,183,243</b>	<b>2,904,914</b>	<b>91.3</b>
<b>Southwest</b>			
Fort Cobb	80,010	80,010	100.0
Lugert-Altus	132,830	66,506	50.1
Tom Steed	88,970	61,320	68.9
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>207,836</b>	<b>68.9</b>
<b>South Central</b>			
Arbuckle	72,400	72,400	100.0
McGee Creek	113,930	107,989	94.8
Texoma*	2,742,146	2,714,089	99.0
Waurika*	190,200	182,460	95.9
<b>Regional Totals/Averages</b>	<b>3,118,676</b>	<b>3,076,938</b>	<b>98.7</b>
<b>Southeast</b>			
Broken Bow*	958,180	925,220	96.6
Hugo*	198,067	198,067	100.0
Pine Creek*	71,120	71,120	100.0
Sardis	274,330	271,117	98.8
Wister	60,162	60,162	100.0
<b>Regional Totals/Averages</b>	<b>1,561,859</b>	<b>1,525,686</b>	<b>97.7</b>
<b>State Totals</b>	<b>12,811,967</b>	<b>12,272,344</b>	<b>95.8</b>

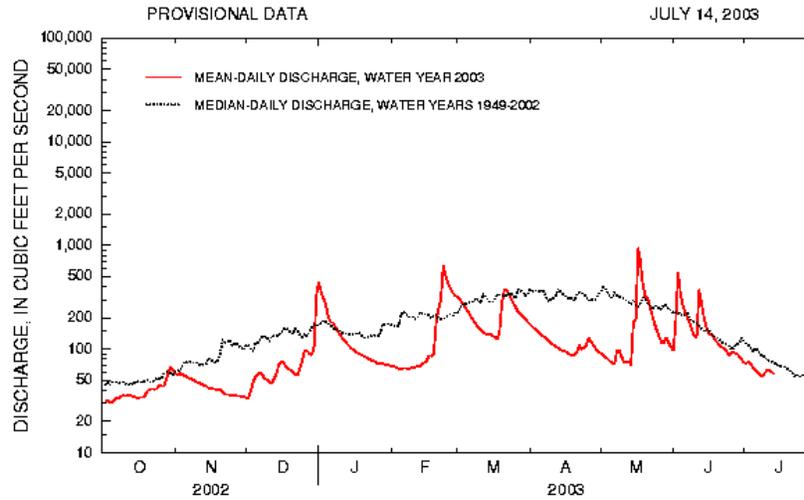
\* indicates seasonal pool operation; actual storage figures/percentages may vary.

### 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 period of record for Baron Fork at Eldon, Oklahoma.

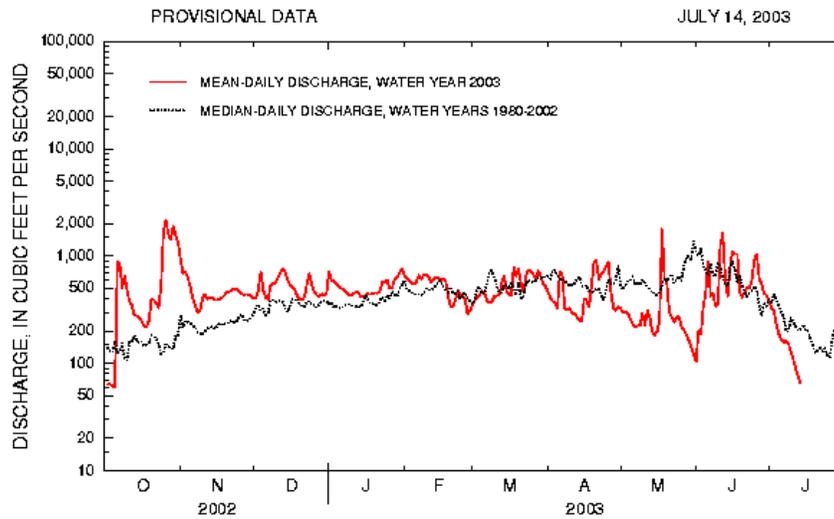
Data from U.S. Geological Survey

### 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 period of record for Canadian River at Purcell, Oklahoma.

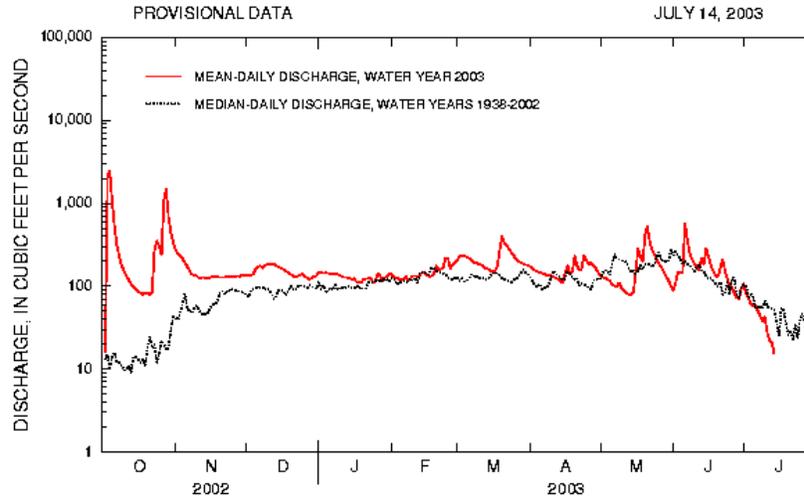
Data from U.S. Geological Survey

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

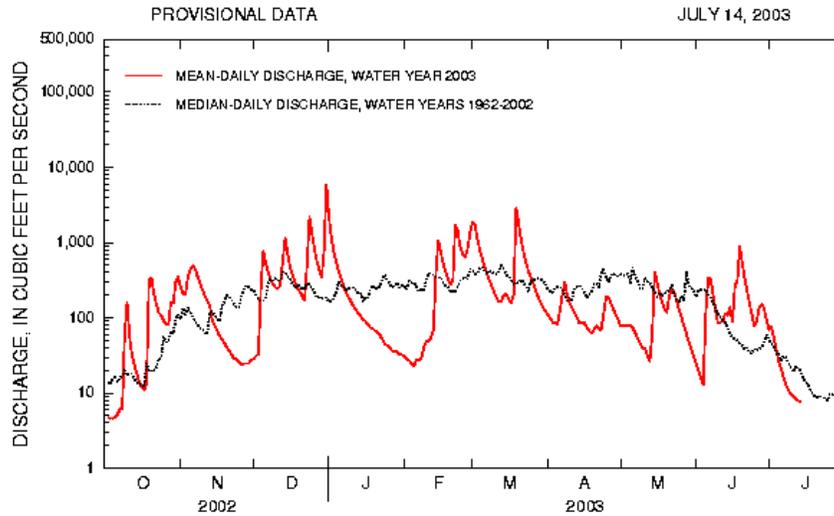
Data from U.S. Geological Survey

### 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 period of record for Glover River near Glover, Oklahoma.

Data from U.S. Geological Survey

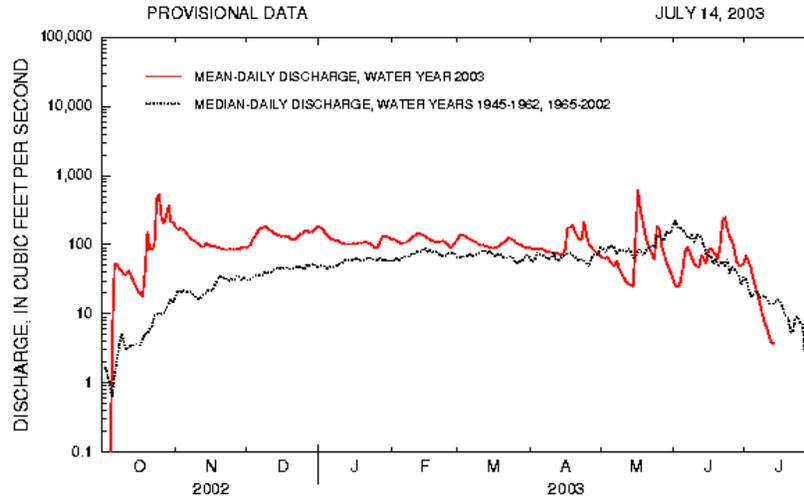
### North Fork of the Red River near Carter

*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 period of record for North Fork Red River near Carter, Oklahoma.

Data from U.S. Geological Survey

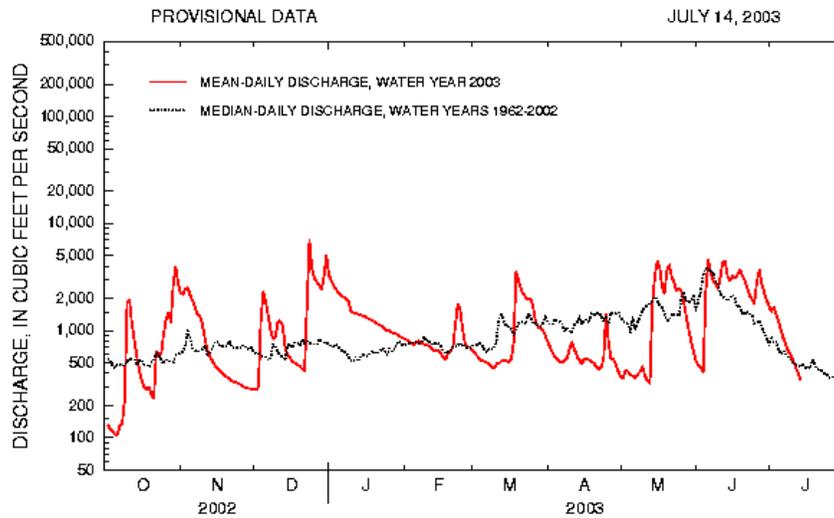
### Washita River near Dickson

*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 period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey