

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



August 4, 2004

### Statewide Precipitation & General Summary

Moisture conditions throughout much of Oklahoma remain good. 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 August 2 (the current growing season) are the Southwest and Southeast climate divisions (92 and 93 percent, respectively), although rainfall deficits in those regions remain less than two inches. The current state-averaged rainfall total is 19.24 inches, 102 percent of normal.

For the last 30 days, the state-averaged rainfall total is 3.02 inches, 114 percent of normal. Only West Central Oklahoma is somewhat dry over the period (1.43 inches, 68 percent of normal precipitation).



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON MARCH 1—AUGUST 2, 2004			LAST 30 DAYS JULY 4—AUGUST 2, 2004		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	12.67	+0.21	102	2.72	+0.28	111
North Central	17.65	+0.17	101	2.35	-0.53	81
Northeast	25.57	+4.43	121	4.28	+1.22	140
West Central	15.90	-0.17	99	1.43	-0.67	68
Central	18.91	-0.80	96	3.06	+0.57	123
East Central	24.52	+2.19	110	4.26	+1.38	148
Southwest	15.14	-1.28	92	1.91	-0.23	89
South Central	20.10	-0.16	99	3.66	+1.21	149
Southeast	22.21	-1.57	93	2.97	-0.44	87
<b>Statewide</b>	<b>19.24</b>	<b>+0.38</b>	<b>102</b>	<b>3.02</b>	<b>+0.36</b>	<b>114</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 (July 31, below), no regions in Oklahoma are currently experiencing drought conditions and five of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since July 10. The greatest decrease occurred in the West Central climate division.

The latest monthly Standardized Precipitation Index (through June, below) indicates only moderate long-term dryness in east central and southeast Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), no climate divisions indicate dry conditions. Considering longer periods (through six years), only the East Central and Southeast climate divisions report "moderately dry" conditions at various times over the past 30 months. [SPI updates are available around the 10<sup>th</sup> of each month.]

The latest Keetch-Byram Drought Index (August 4, 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 throughout Oklahoma, although they are deteriorating in some areas. Statewide, no Mesonet stations are currently at or above 600, generally indicative of more severe drought conditions (no stations had a reading above 600 on July 12). Idabel, in Southeast Oklahoma, retains the highest KBDI value (570). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness remains at Level 1 (low fire danger). No counties are currently in a Burn Ban or Red Flag Fire Alert.

Palmer Drought Severity Index					Standardized Precipitation Index Through June 2004			
CLIMATE DIVISION (#)	CURRENT STATUS 7/31/2004	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		7/31	7/10					
Northwest (1)	MOIST SPELL	1.59	1.62	-0.03	NEAR NORMAL	MODERATELY WET	NEAR NORMAL	NEAR NORMAL
North Central (2)	INCIPIENT MOIST SPELL	0.80	1.17	-0.37	NEAR NORMAL	MODERATELY WET	NEAR NORMAL	NEAR NORMAL
Northeast (3)	UNUSUAL MOIST SPELL	2.35	1.51	0.84	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	NEAR NORMAL	-0.04	0.66	-0.70	NEAR NORMAL	MODERATELY WET	NEAR NORMAL	NEAR NORMAL
Central (5)	NEAR NORMAL	0.30	-0.17	0.47	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MOIST SPELL	1.05	0.93	0.12	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	NEAR NORMAL	-0.04	0.20	-0.24	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MOIST SPELL	1.19	1.02	0.17	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	INCIPIENT MOIST SPELL	0.88	0.96	-0.08	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL

### Keetch-Byram Drought Fire Index

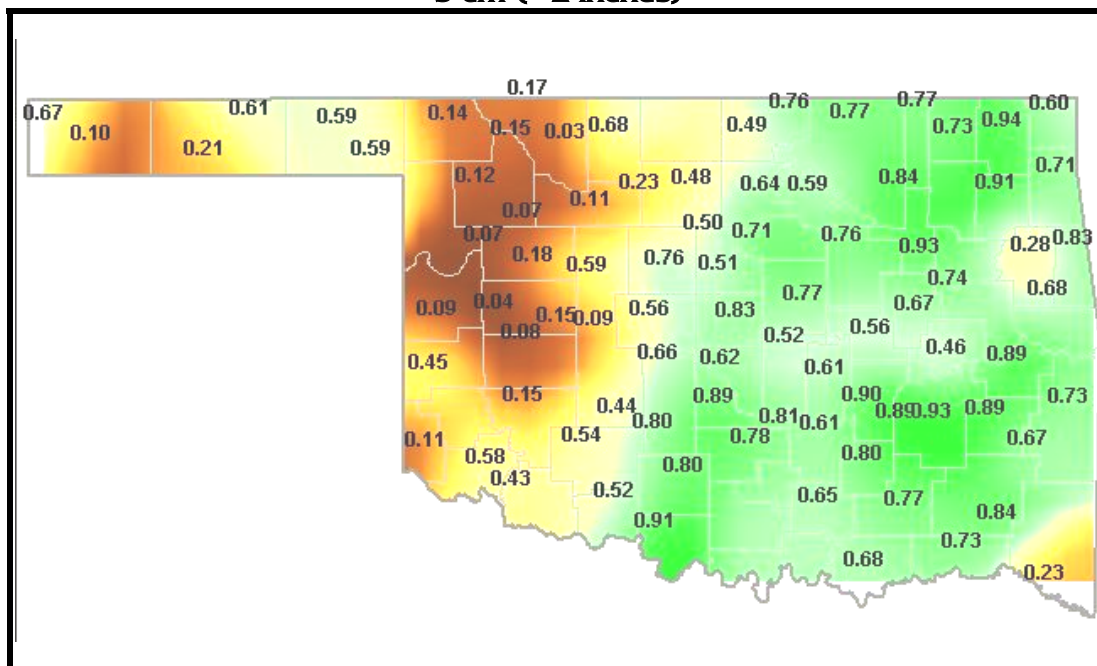
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 8/4/2004	ANTICIPATED IMPACT
Idabel	McCurtain	Southeast	570	<b>600-800:</b> often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.  <b>400-600:</b> lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.
Durant	Bryan	South Central	476	
Bee	Johnston	South Central	431	

Total stations above 600 = 0

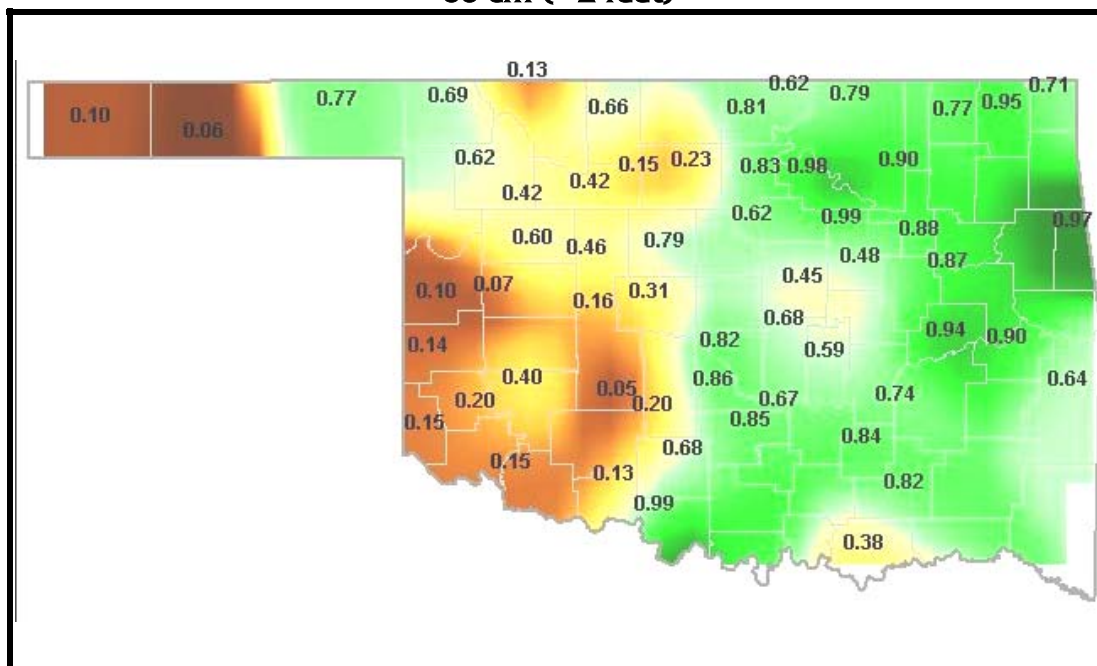
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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**  
August 3, 2004  
(Courtesy Oklahoma Climatological Survey)

**5 cm (~2 inches)**



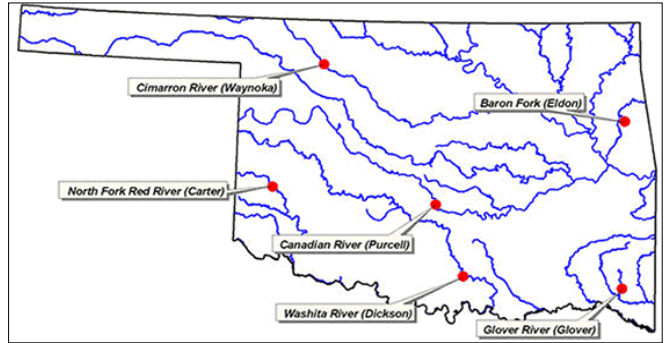
**60 cm (~2 feet)**



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 rivers and streams in Oklahoma remain generally near average, although in many areas they continue to reflect runoff from recent rainfall events. Considering overall trends as well as current flows, the most recent data (August 1, 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 *northwest* (Cimarron River, Woods County) Oklahoma; and **near average flow** in the *central* (Canadian River, McClain County), *southwest* (North Fork/Red River, Beckham County), *northeast* (Baron Fork, Cherokee County), *south central* (Washita River, Carter County) and *southeast* (Glover River, McCurtain County) regions.



### Weather Forecast

The National Weather Service 8- to 14-day outlook (August 11-17) calls for generally normal precipitation for all but far east central and southeastern Oklahoma, where below normal rainfall is anticipated. Normal temperatures should prevail for the main body of the state although below and above normal temperatures are expected in the east and Panhandle regions, respectively.

Given recent trends and observed oceanic and atmospheric patterns, it is likely that near-neutral ENSO (El Niño/Southern Oscillation) conditions in the tropical Pacific will continue for at least the next 3 months. After that, however, considerable uncertainty exists. Some forecasts indicate that El Niño could develop within the next three to six months and intensify through the end of the year. El Niños, warm water patterns 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

August 1 - More showers fell throughout Oklahoma, particularly in the east and south. While the rainfall was beneficial to the crops it also kept farmers from progressing in the field. Topsoil moisture was 5 percent surplus, 68 percent adequate, 20 percent short, and 7 percent very short. Subsoil moisture was 4 percent surplus, 67 percent adequate, 19 percent short, and 10 percent very short. Days suitable for field work during the week were 4.3.

Wheat plowed increased 2 points to 88 percent. This is below last year and the five-year average. Seedbed prepared was at 10 percent complete. Oats are 91 percent plowed with 6 percent seedbed prepared. Rye went up 5 points from last week to 93 percent plowed. The rainfall combined with below average temperatures helped to improve crop conditions. The percentage of corn, soybeans, and sorghum in excellent condition went up. Corn was mostly in excellent condition with all other crops in mostly good condition. Corn silking was complete at 99 percent. Fifty-six percent of corn was in the dough stage, ahead of both last year and the five-year average. Corn maturity gained another 7 percentage points to 22 percent mature. Sorghum headed and coloring both increased 1 point. Soybean emergence went up 1 point from last week to 98 percent. Soybeans were rated as mostly good. Soybeans blooming reached 56 percent with 36 percent setting pods. Peanuts pegging increased from the previous week to 96 percent complete. Peanut setting pods was at 72 percent, 10 percentage points above the five-year average. Cotton progressed to 90 percent squaring and 56 percent setting bolls. Crop and insect activity was mostly light to moderate.

Alfalfa and other hay condition increased last week; the hay crop is looking very good. The third cutting of alfalfa advanced to 93 percent complete, 12 points higher than the five-year average. Fourth cutting of alfalfa has begun with 12 percent complete statewide. Other hay first cutting was nearing complete with 94 percent cut with the second cutting at 45 percent cut.

Watermelons setting fruit was at 99 percent. Seventy-nine percent of the watermelon crop has been harvested, which is 20 points higher than the previous week. Watermelon conditions were mostly good to fair. Peaches and pecans were in good condition. Pecans reported having an average nut set.

Livestock conditions were 29 percent excellent, 54 percent good, 16 percent fair, and 1 percent poor. Livestock insect activity was mostly moderate to light. Pasture conditions were at 24 percent excellent, 49 percent good, 22 percent fair, and 5 percent poor to very poor. The rain and mild temperatures are helping improve pasture lands.

### Reservoir Storage

Lake storage in Oklahoma remains generally good, although lakes in the southwest continue to experience low levels. As of August 3, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 98.3 percent full, a 0.5 percent decrease from that recorded on July 12, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-eight reservoirs have experienced lake level decreases since that time. However, only 10 reservoirs are currently operating at less than full capacity (compared to 10 three weeks ago). Two reservoirs—Lugert-Altus, only 34.7 percent full; and Tom Steed, 55.4 percent—remain below 80 percent capacity.

<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>			
<b>08/03/2004</b>			
<b>Climate Division Lake or Reservoir</b>	<b>Conservation Storage (acre-feet)</b>	<b>Present Storage (acre-feet)</b>	<b>Percent of Conservation Storage</b>
<b>North Central</b>			
Fort Supply	13,900	13,065	94.0
Great Salt Plains	31,420	31,420	100.0
Kaw*	375,160	375,160	100.0
<b>Regional Totals/Averages</b>	<b>420,480</b>	<b>419,645</b>	<b>99.8</b>
<b>Northeast</b>			
Birch	19,225	19,225	100.0
Copan	43,400	43,400	100.0
Fort Gibson	365,200	365,200	100.0
Grand	1,672,000	1,651,300	98.8
Hudson	200,300	200,300	100.0
Hulah	25,100	25,100	100.0
Keystone	510,059	510,059	100.0
Oologah	552,210	552,210	100.0
Skiatook	322,700	322,700	100.0
<b>Regional Totals/Averages</b>	<b>3,710,194</b>	<b>3,689,494</b>	<b>99.4</b>
<b>West Central</b>			
Canton	111,310	92,992	83.5
Foss	165,480	155,819	94.2
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>248,811</b>	<b>89.9</b>
<b>Central</b>			
Arcadia	27,520	27,520	100.0
Heyburn	7,105	7,105	100.0
Thunderbird	119,600	119,360	99.8
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>153,985</b>	<b>99.8</b>
<b>East Central</b>			
Eufaula*	2,368,223	2,368,223	100.0
Tenkiller	654,100	654,100	100.0
<b>Regional Totals/Averages</b>	<b>3,022,323</b>	<b>3,022,323</b>	<b>100.0</b>
<b>Southwest</b>			
Fort Cobb	80,010	77,964	97.4
Lugert-Altus	132,830	46,131	34.7
Tom Steed	88,970	49,265	55.4
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>173,360</b>	<b>57.4</b>
<b>South Central</b>			
Arbuckle	72,400	72,400	100.0
McGee Creek	113,930	113,930	100.0
Texoma*	2,653,178	2,653,178	100.0
Waurika*	190,200	157,830	83.0
<b>Regional Totals/Averages</b>	<b>3,029,708</b>	<b>2,997,338</b>	<b>98.9</b>
<b>Southeast</b>			
Broken Bow*	958,180	953,794	99.5
Hugo*	174,397	174,397	100.0
Pine Creek*	65,390	65,390	100.0
Sardis	274,330	274,196	100.0
Wister	60,162	60,162	100.0
<b>Regional Totals/Averages</b>	<b>1,532,459</b>	<b>1,527,939</b>	<b>99.7</b>
<b>State Totals</b>	<b>12,447,989</b>	<b>12,232,895</b>	<b>98.3</b>

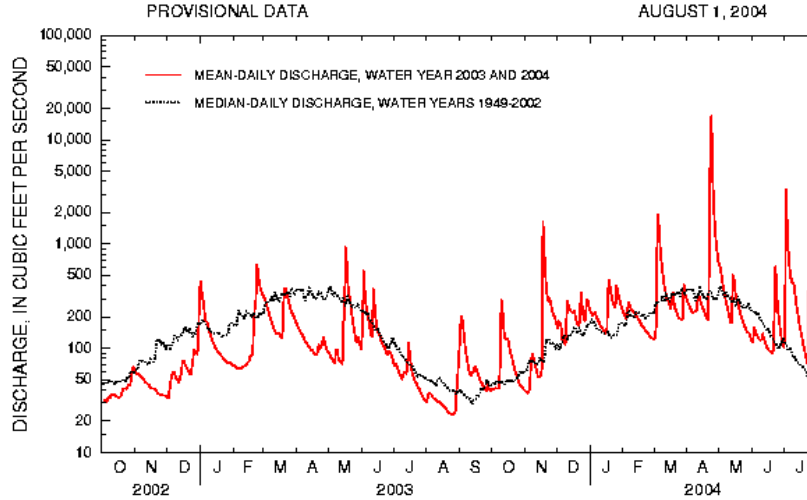
\* indicates seasonal pool operation; actual storage figures/percentages may vary.



**Baron Fork at Eldon**  
*Baron Fork at Eldon, Oklahoma*

*Station No. 07197000*  
*Northeast Oklahoma*

*Drainage Area 307 square miles*



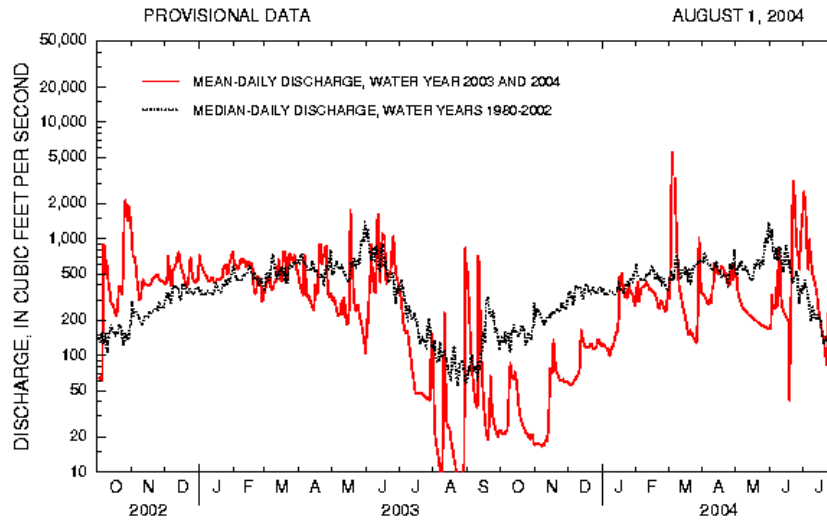
Comparison of daily discharges for water year 2003 and 2004 and period of record for Baron Fork at Eldon, Oklahoma.

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.

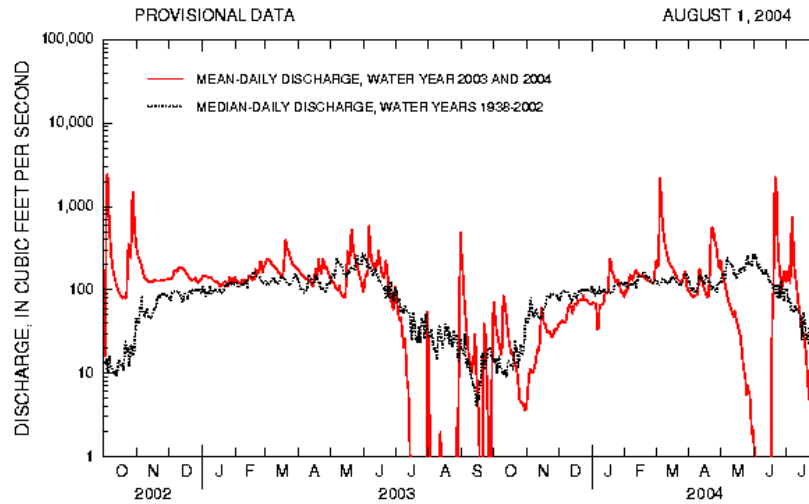
Data from U.S. Geological Survey

### 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.

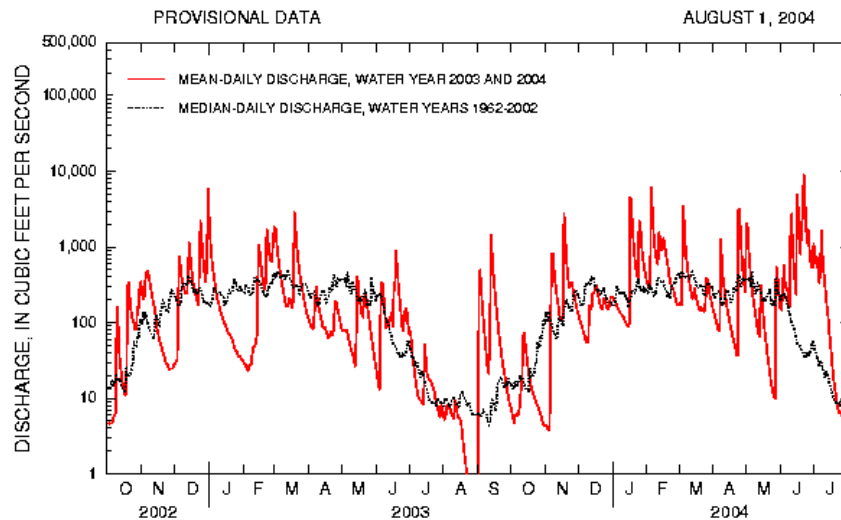
Data from U.S. Geological Survey

### 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

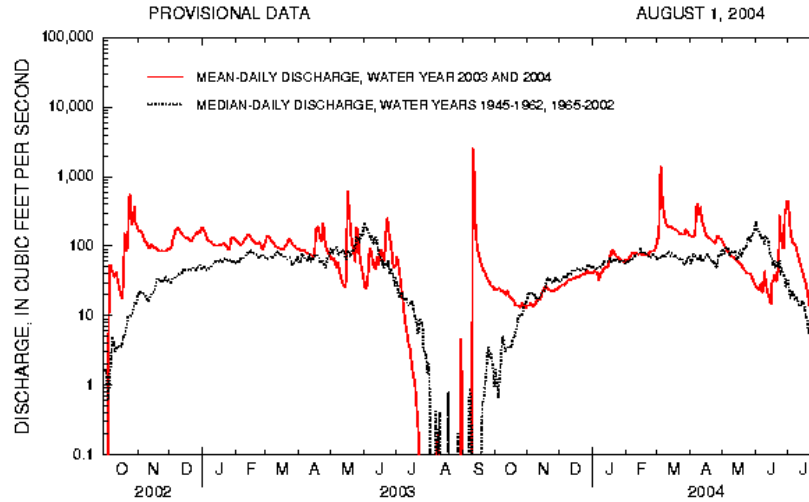
### North Fork of the Red River near Carter

*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

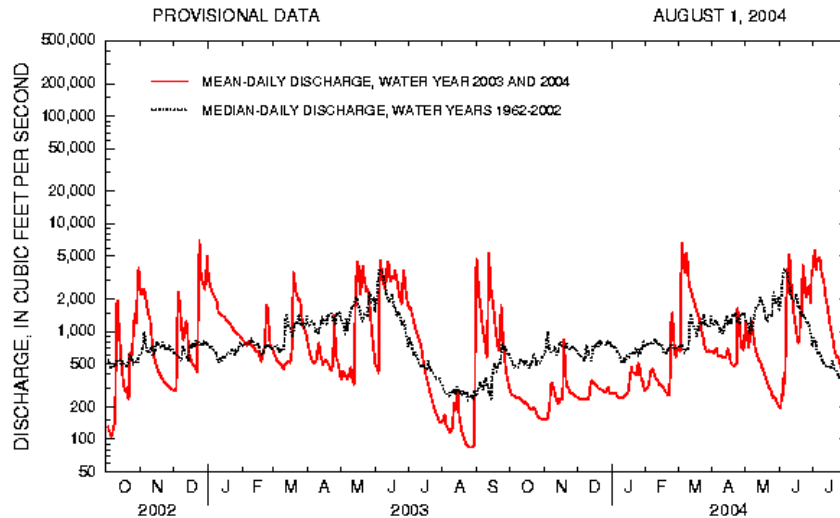
### Washita River near Dickson

*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