

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



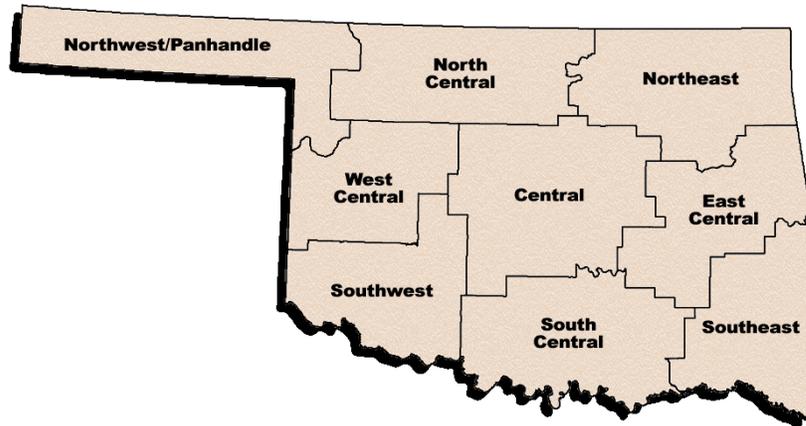
MARCH 24, 2004

OKLAHOMA WATER RESOURCES BOARD

### Statewide Precipitation & General Summary

Recent rainfall has improved conditions considerably throughout the state. 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 1-21 (the current growing season) is the Southeast climate division (1.75 inches, a deficit of 1.25 inches and 59 percent of normal precipitation). The current state-averaged rainfall total is 2.86 inches, 136 percent of normal.

For the current calendar year, the state-averaged rainfall total is 6.85 inches, 129 percent of normal. Only the Southeast, East Central and South Central climate divisions report a deficit for the year.



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON MARCH 1–MARCH 21, 2004			CALENDAR YEAR JANUARY 1–MARCH 21, 2004		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	1.90	+0.80	172	2.88	+0.62	127
North Central	3.31	+1.50	182	7.03	+3.06	177
Northeast	3.88	+1.40	156	7.83	+1.79	130
West Central	3.75	+2.12	230	7.31	+3.67	201
Central	3.40	+1.21	155	7.34	+1.92	135
East Central	2.73	-0.04	99	6.92	-0.41	94
Southwest	3.27	+1.74	213	7.93	+4.01	202
South Central	1.60	-0.80	67	6.33	-0.18	97
Southeast	1.78	-1.25	59	8.48	-0.51	94
<b>Statewide</b>	<b>2.86</b>	<b>+0.75</b>	<b>136</b>	<b>6.85</b>	<b>+1.53</b>	<b>129</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 (March 20, below), no region in Oklahoma is currently experiencing drought conditions and only three of Oklahoma's nine climate divisions have undergone a PDSI moisture decrease since February 21. The greatest decrease occurred in the South Central climate division.

The latest monthly Standardized Precipitation Index (through February, below) continues to indicate some long-term dryness in southern and eastern Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), "moderately dry" conditions are indicated in the Southwest over the past 6 months and in the East Central, South Central and Southeast climate divisions throughout the last 12-month period. Considering longer periods (through six years), southern and eastern Oklahoma regions indicate moderate dryness at various periods over the past 36 months. [SPI updates are available around the 10<sup>th</sup> of each month.]

The latest Keetch-Byram Drought Index (March 22, 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 in most areas of Oklahoma. 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 February 23). Burneyville, in South Central Oklahoma, reports the highest KBDI value (424). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness remains at Level 3 (high fire danger). A Red Flag Fire Alert is now in effect for 15 counties in northwest and north central Oklahoma. Fire danger at this time of year changes very quickly. Extreme conditions can develop relatively soon after rainfall, with high winds or very low humidity. Persons using fire outdoors are advised to obtain accurate, up to the minute weather information prior to burning. Avoid burning anything outdoors when the winds exceed 20 mph or the relative humidity is below 20 percent. A Burn Ban remains in effect for Cimarron County, in the Oklahoma Panhandle.

Palmer Drought Severity Index					Standardized Precipitation Index Through February 2004			
CLIMATE DIVISION (#)	CURRENT STATUS 3/20/2004	VALUE 3/20	CHANGE 2/21	IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
Northwest (1)	MOIST SPELL	1.47	-0.14	<b>1.61</b>	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL
North Central (2)	UNUSUAL MOIST SPELL	2.27	1.51	<b>0.76</b>	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MOIST SPELL	1.93	1.43	<b>0.50</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	MOIST SPELL	1.93	0.77	<b>1.16</b>	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	MOIST SPELL	1.09	0.59	<b>0.50</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT MOIST SPELL	0.55	0.69	<b>-0.14</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
Southwest (7)	MOIST SPELL	1.77	0.65	<b>1.12</b>	MODERATELY WET	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
South Central (8)	NEAR NORMAL	0.26	0.60	<b>-0.34</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
Southeast (9)	NEAR NORMAL	0.45	0.72	<b>-0.27</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY

### Keetch-Byram Drought Fire Index

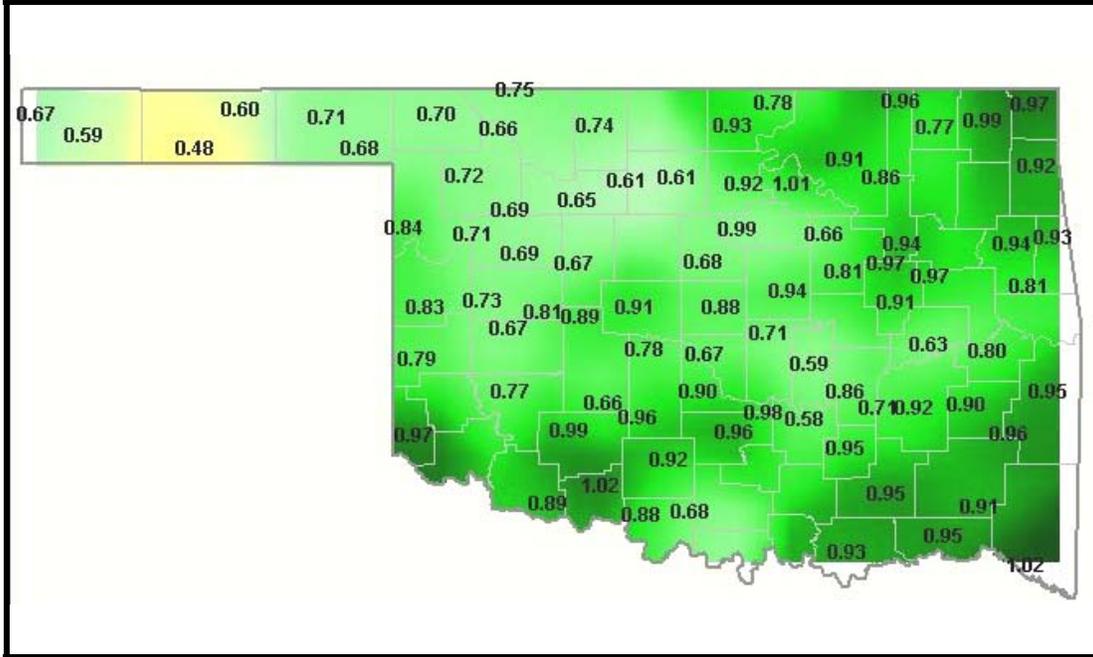
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 3/22/2004	ANTICIPATED IMPACT
Burneyville	Love	South Central	424	600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.
Kenton	Cimarron	Northwest	415	
Boise City	Cimarron	Northwest	351	

Total stations above 600 = 0

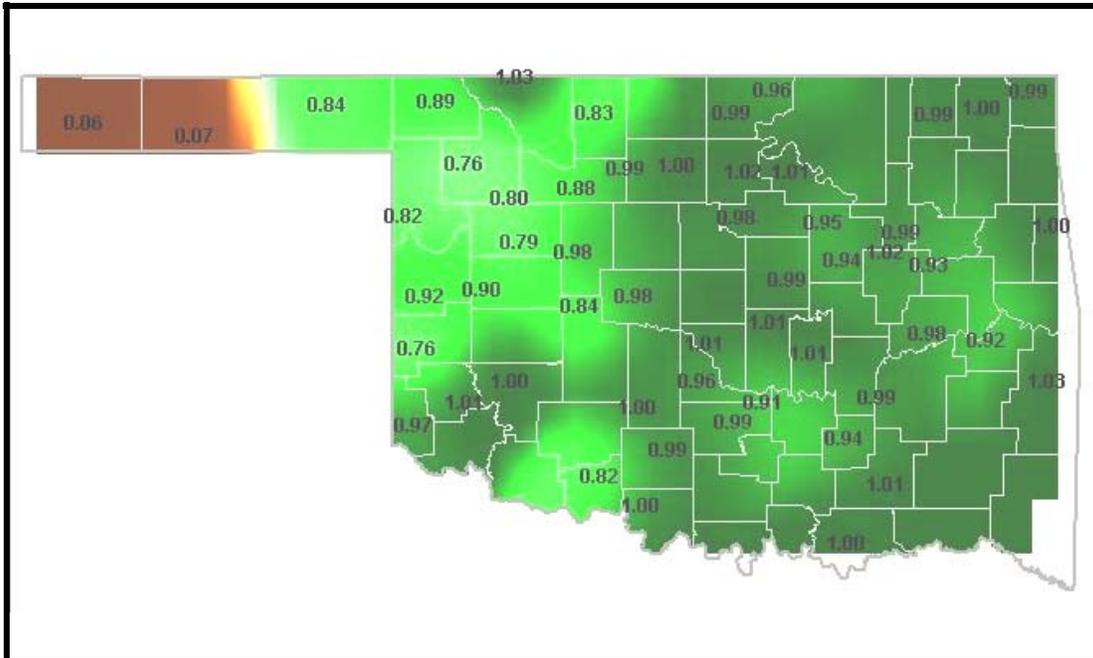
*The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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**  
March 22, 2004  
(Courtesy Oklahoma Climatological Survey)

**5 cm (~2 inches)**



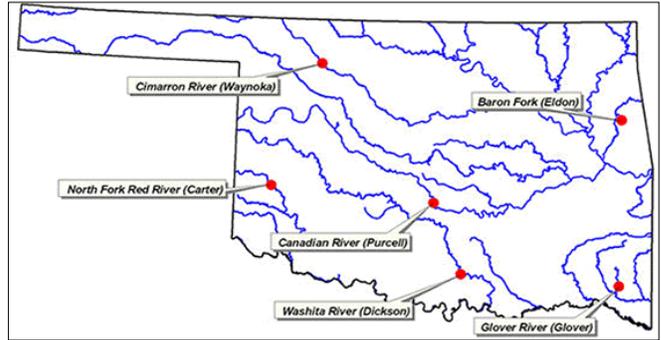
**60 cm (~2 feet)**



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 continue to improve. Considering overall trends as well as current flows, the most recent data (March 12, 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) Oklahoma; **near average flow** in the *central* (Canadian River, McClain County), *northwest* (Cimarron River, Woods County), *northeast* (Baron Fork, Cherokee County), and *southwest* (North Fork/Red River, Beckham County) regions; and **above average flow** in the *southeast* (Glover River, McCurtain County).



### Weather Forecast

The National Weather Service 8- to 14-day outlook (March 30 to April 5) calls for above normal precipitation and above normal temperatures for all of Oklahoma throughout the period.

Given recent trends and observed oceanic and atmospheric patterns, it is likely that ENSO-neutral (El Niño/Southern Oscillation) conditions in the tropical Pacific will continue for at least the next 3 to 6 months.

### Crop Report

March 14 - Farmers are starting to get back into the fields after last week's rain. The temperatures, along with the moisture, have improved the outlook for small grains and row crops. Soil moisture is much improved, however, there is some damage due to severe flooding that occurred in some areas. Topsoil moisture was 12 percent surplus, 85 percent adequate and 3 percent short. Subsoil moisture was at 6 percent surplus, 71 percent adequate, 18 percent short and 5 percent very short. The temperatures averaged in the low 50s throughout the state. There were only 3.5 days suitable for fieldwork.

Wheat, oat, and rye conditions were rated as mostly good to fair. The winter wheat condition was 9 percent excellent, 44 percent good, 28 percent fair, 14 percent poor and 5 percent very poor. Wheat was 25 percent jointing. Most areas saw wheat conditions improve due to the rain. However, some areas reported slight damage to wheat fields due to dry conditions. Some areas reported that rain and wind may have damaged some crops. Rye conditions were helped tremendously by the recent weather. Rye condition was 8 percent excellent, 55 percent good, 23 percent fair, 9 percent poor and 5 percent very poor. Rye was reported at 46 percent jointing. Oat condition was at 6 percent excellent, 30 percent good, 48 percent fair, 11 percent poor and 5 percent very poor with 77 percent of the acreage planted and 1 percent jointing. Overall, small grains made some improvement. Insect activity remained light.

Seedbed preparation was getting underway for row crops. Wet fields have slowed field preparation in some areas. Cotton seedbed prepared was at 10 percent. Corn seedbed prepared was at 22 percent. Sorghum seedbed prepared was at 8 percent. Soybeans and peanuts seedbed prepared were at 13 and 14 percent, respectively. Most producers were busy preparing the fields and applying fertilizers and pesticides.

Livestock condition changed little from last week, ranging from good to fair condition. Livestock condition was rated as 11 percent excellent, 51 percent good, 30 percent fair, 6 percent poor, and 2 percent very poor. The milder weather has helped livestock conditions. The death loss of cattle continues to be light. Hay supplies were rated as mostly average. Pasture and range conditions have also benefited from the rain. Conditions were rated as 4 percent excellent, 21 percent good, 44 percent fair, 22 percent poor, and 9 percent very poor. The rains this past week greatly improved the outlook for spring pasture. Spring green-up should appear soon.

### Reservoir Storage

Although lakes in southwest Oklahoma continue to experience low levels, lake storage elsewhere remains generally good. As of March 22, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 98.8 percent full, a 6 percent increase from that recorded on February 24, according to information from the U.S. Army Corps of Engineers (Tulsa District). Only four reservoirs have experienced lake level decreases since that time. Only seven reservoirs are currently operating at less than full capacity (compared to 14 four weeks ago). Two reservoirs—Lugert-Altus, only 36.6 percent full; and Tom Steed, 57.8 percent—remain below 80 percent capacity.

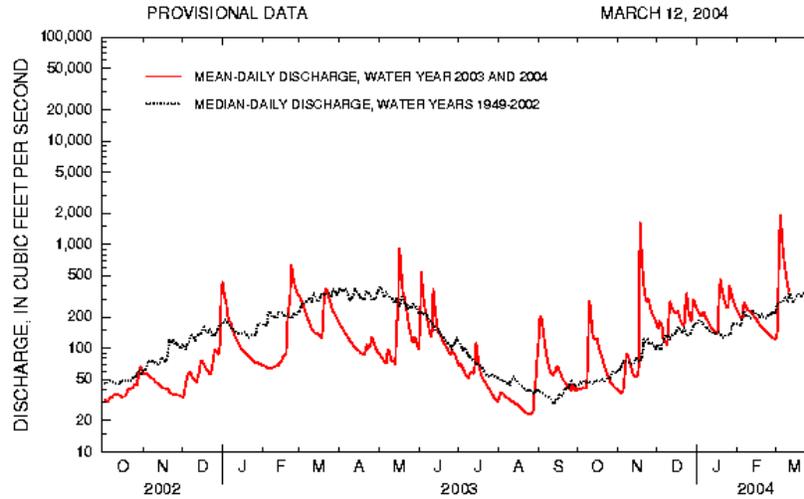
<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>			
<b>03/22/2004</b>			
<i>Climate Division</i> <b>Lake or Reservoir</b>	<b>Conservation Storage</b> (acre-feet)	<b>Present Storage</b> (acre-feet)	<b>Percent of Conservation Storage</b>
<b>North Central</b>			
Fort Supply	13,900	13,900	100.0
Great Salt Plains	31,420	31,420	100.0
Kaw*	387,712	387,712	100.0
<b>Regional Totals/Averages</b>	<b>433,032</b>	<b>433,032</b>	<b>100.0</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	1,672,000	100.0
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>3,710,194</b>	<b>100.0</b>
<b>West Central</b>			
Canton	111,310	111,310	100.0
Foss	165,480	163,609	98.9
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>274,919</b>	<b>99.3</b>
<b>Central</b>			
Arcadia	27,520	27,520	100.0
Heyburn	7,105	7,105	100.0
Thunderbird	119,600	113,368	94.8
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>147,993</b>	<b>96.0</b>
<b>East Central</b>			
Eufaula*	2,314,583	2,314,583	100.0
Tenkiller	654,100	654,100	100.0
<b>Regional Totals/Averages</b>	<b>2,968,683</b>	<b>2,968,683</b>	<b>100.0</b>
<b>Southwest</b>			
Fort Cobb	80,010	80,010	100.0
Lugert-Altus	132,830	48,564	36.6
Tom Steed	88,970	51,425	57.8
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>179,999</b>	<b>59.6</b>
<b>South Central</b>			
Arbuckle	72,400	69,510	96.0
McGee Creek	113,930	111,869	98.2
Texoma*	2,418,626	2,418,626	100.0
Waurika*	190,200	190,200	100.0
<b>Regional Totals/Averages</b>	<b>2,795,156</b>	<b>2,790,205</b>	<b>99.8</b>
<b>Southeast</b>			
Broken Bow*	918,070	918,070	100.0
Hugo*	174,397	169,714	97.3
Pine Creek*	57,750	57,750	100.0
Sardis	274,330	274,330	100.0
Wister	60,162	60,162	100.0
<b>Regional Totals/Averages</b>	<b>1,484,709</b>	<b>1,480,026</b>	<b>99.7</b>
<b>State Totals</b>	<b>12,124,599</b>	<b>11,985,051</b>	<b>98.8</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*



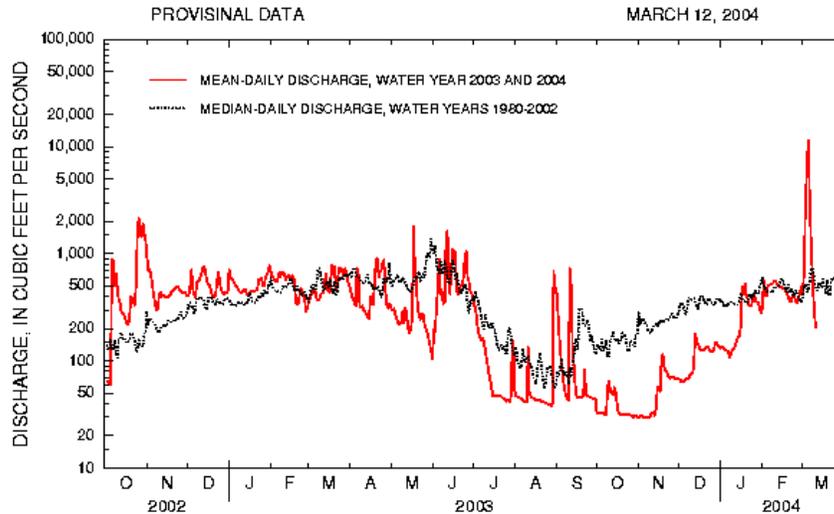
Comparison of daily discharges for water year 2003 and 2004 and period of record for Baron Fork at Eldon, Oklahoma.

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.

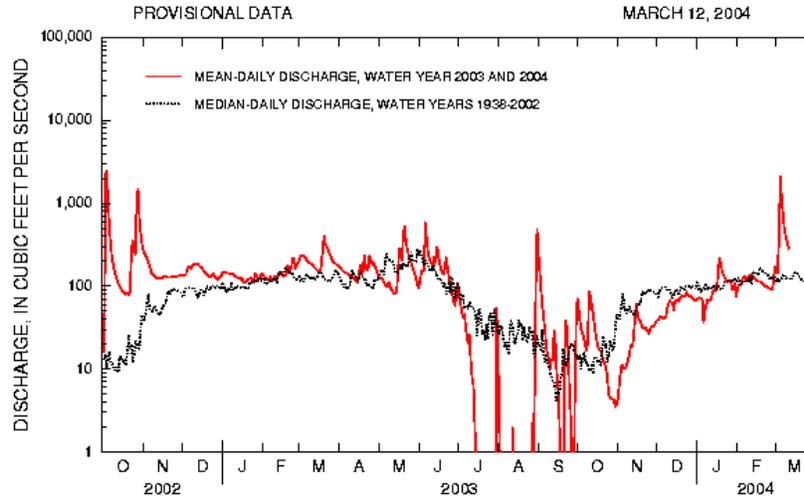
Data from U.S. Geological Survey

### 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.

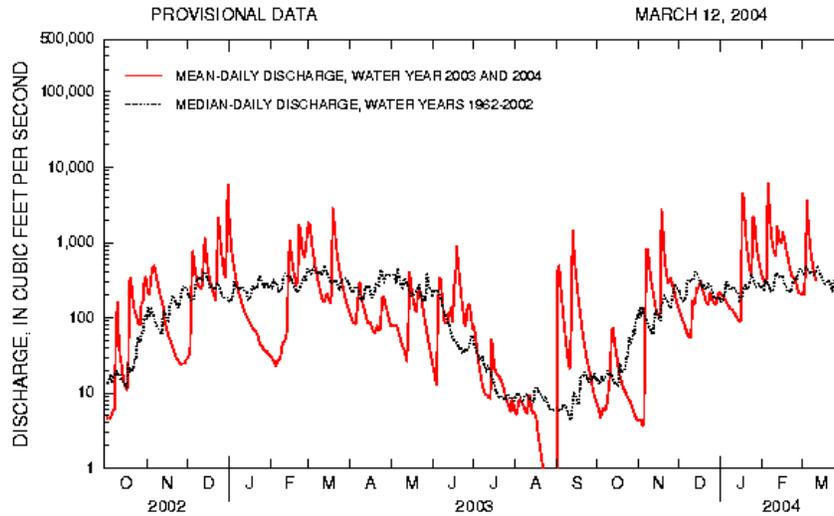
Data from U.S. Geological Survey

### 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

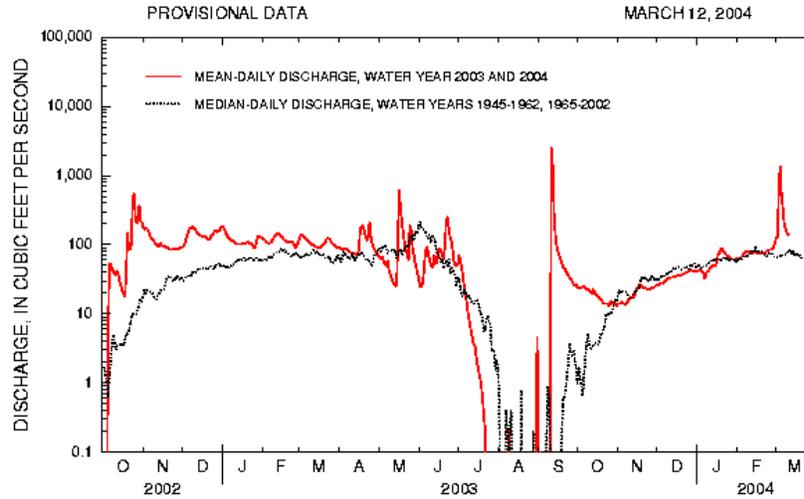
### North Fork of the Red River near Carter

*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

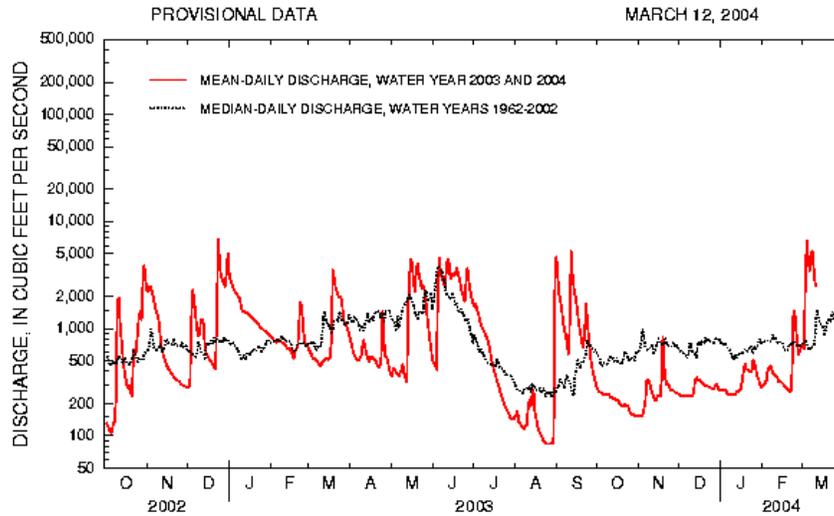
### Washita River near Dickson

*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