

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



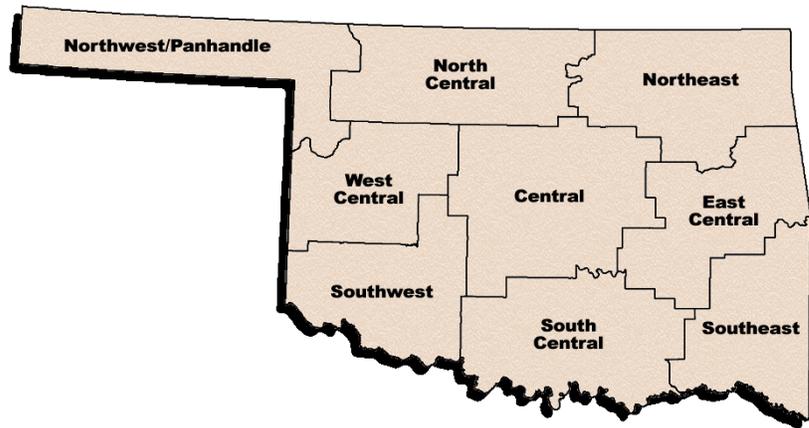
JUNE 18, 2003

OKLAHOMA WATER RESOURCES BOARD

### Statewide Precipitation & General Summary

Moderate rainfall continues to improve Oklahoma's moisture situation, although much of the south 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 June 16 (the current growing season) remains the Southeast climate division (10.84 inches, 61 percent of normal precipitation and 7 inches below normal). The South Central region (67 percent of normal, a rainfall deficit of more than 5 inches) is also quite dry throughout the period. The current state-averaged rainfall total is 10.7 inches, 77 percent of normal.

For the current water year (October 1, 2002 through June 16, 2003), seven regions report precipitation deficits, although only the Southeast is below 70 percent of normal. The state-averaged rainfall total is 20.79 inches, 82 percent of normal.



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON MARCH 1—JUNE 16, 2003			WATER YEAR OCTOBER 1, 2002—JUNE 16, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	7.51	-0.91	89	13.06	+0.23	102
North Central	11.13	-1.33	89	21.07	+0.42	102
Northeast	13.78	-1.83	88	21.97	-6.72	77
West Central	8.92	-3.04	75	17.81	-1.60	92
Central	10.88	-3.95	73	20.43	-6.11	77
East Central	12.45	-4.45	74	24.52	-8.49	74
Southwest	10.03	-2.09	83	19.87	-0.73	96
South Central	10.25	-5.13	67	22.77	-6.61	78
Southeast	10.84	-7.00	61	26.18	-11.71	69
<b>Statewide</b>	<b>10.70</b>	<b>-3.25</b>	<b>77</b>	<b>20.79</b>	<b>-4.59</b>	<b>82</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 (June 14, below), only one region in Oklahoma (Southeast, "mild drought") is currently experiencing drought conditions. All of Oklahoma's nine climate divisions have undergone PDSI moisture increases since May 31. The most modest increase occurred in the Northeast climate division.

The latest monthly Standardized Precipitation Index (through May, 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 South Central and Southeast climate divisions throughout the last 3 months and in East Central Oklahoma over the past 9- and 12-month periods. Considering longer periods (through six years), the Northwest/Panhandle climate division indicates "very dry" conditions throughout the past 24 months. [SPI updates are available around the 10<sup>th</sup> of each month.]

The latest Keetch-Byram Drought Index (June 16, 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 relatively good and have actually improved somewhat in recent weeks. 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 2). Tahlequah, in East Central Oklahoma, has the highest KBDI value (350). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness remains at Level 1 (low fire danger). However, as spring transitions to summer, long periods of hot, dry, and windy weather could result in a return to dangerous wildfire conditions. Outdoor burning should be avoided when winds exceed 20 miles per hour.

Palmer Drought Severity Index					Standardized Precipitation Index Through May 2003			
CLIMATE DIVISION (#)	CURRENT STATUS 6/14/2003	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		6/14	5/31					
Northwest (1)	INCIPIENT MOIST SPELL	0.60	-1.64	<b>2.24</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	UNUSUAL MOIST SPELL	2.14	1.76	<b>0.38</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY WET
Northeast (3)	INCIPIENT MOIST SPELL	0.53	0.50	<b>0.03</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	INCIPIENT MOIST SPELL	0.63	-0.07	<b>0.70</b>	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	INCIPIENT DROUGHT	-0.54	-0.83	<b>0.29</b>	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT DROUGHT	-0.66	-1.07	<b>0.41</b>	MODERATELY DRY	NEAR NORMAL	VERY DRY	VERY DRY
Southwest (7)	INCIPIENT MOIST SPELL	0.54	-0.96	<b>1.50</b>	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
South Central (8)	INCIPIENT DROUGHT	-0.63	-1.41	<b>0.78</b>	VERY DRY	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
Southeast (9)	MILD DROUGHT	-1.45	-1.86	<b>0.41</b>	VERY DRY	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY

### Keetch-Byram Drought Fire Index

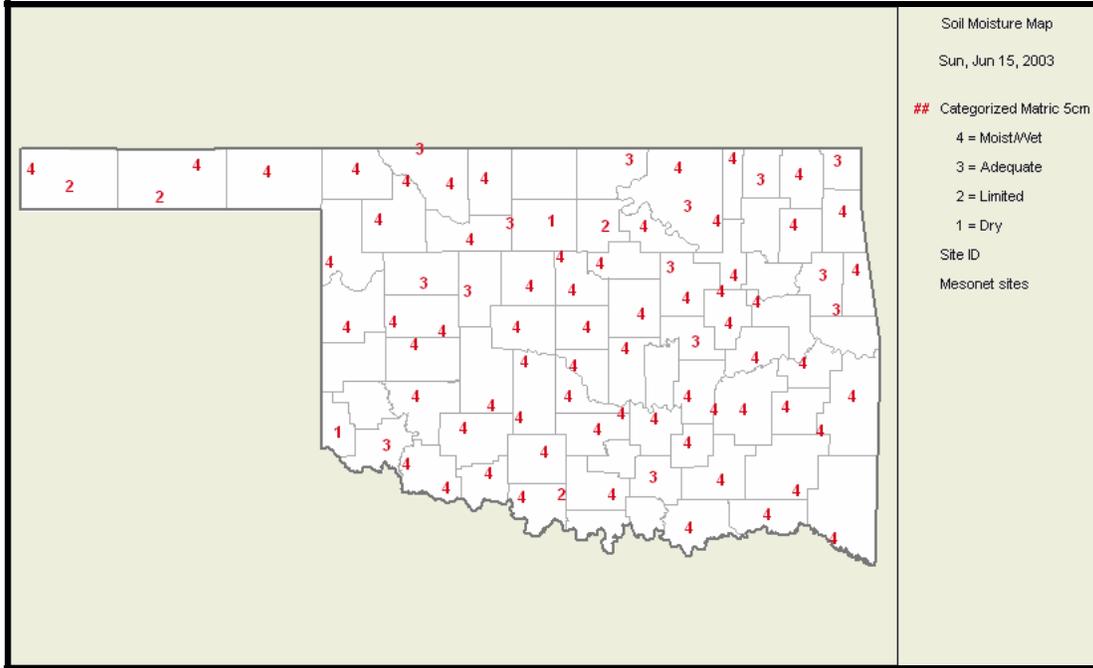
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 6/16/2003	ANTICIPATED IMPACT
Tahlequah	Cherokee	East Central	350	<b>600-800:</b> often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn 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	335	
Lane	Atoka	South Central	292	

Total stations above 600 = 0

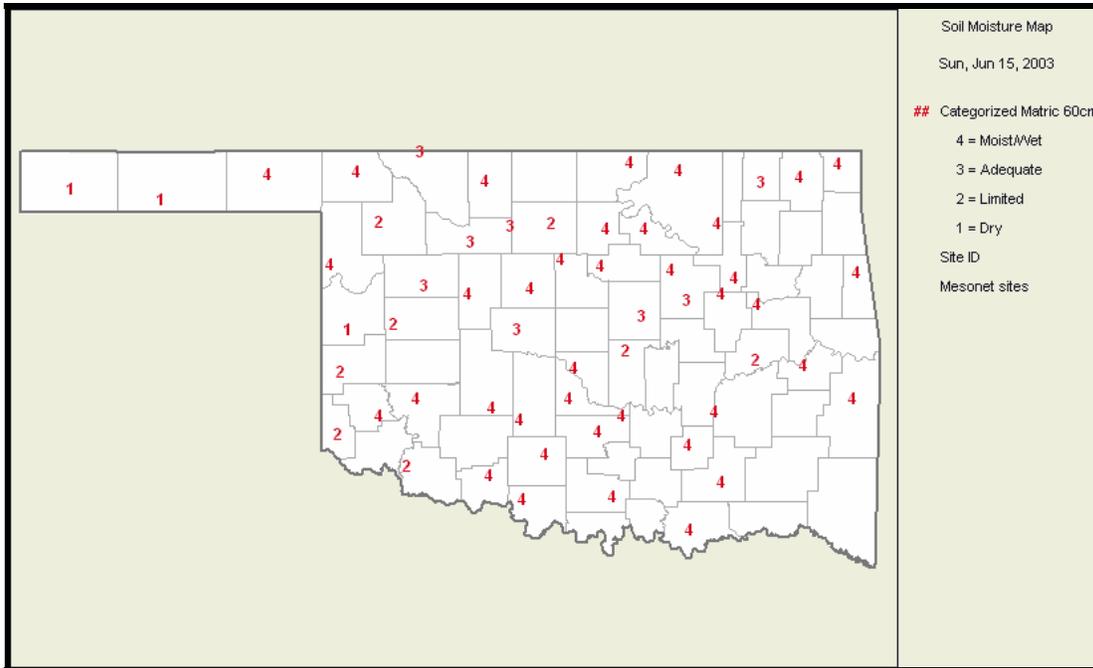
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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**  
**June 15, 2003**  
*(Courtesy Oklahoma Climatological Survey)*

**5 cm**



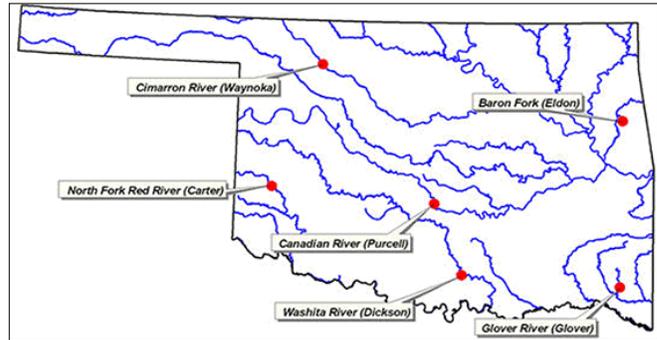
**60 cm**



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

Although on the rebound, flows in some state rivers and streams continue to reflect recent dry conditions. Considering overall trends as well as current flows, the most recent data (June 16, 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 *southeast* (Glover River, McCurtain County) and *south central* (Washita River, Carter County) Oklahoma; and **near average flow** in the *central* (Canadian River, McClain County), *northeast* (Baron Fork, Cherokee County), *southwest* (North Fork/Red River, Beckham County), and *northwest* (Cimarron River, Woods County) regions.



### Weather Forecast

The National Weather Service 8- to 14-day outlook (June 24-30) calls for above normal precipitation and normal temperatures for all of Oklahoma throughout the period.

Observed trends in oceanic and atmospheric variables indicate that the recent El Niño episode continues to rapidly dissipate and a transition to La Niña is underway with more pronounced conditions likely to develop over the next few months. 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. 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

June 15 – The wheat harvest resumed as conditions allowed after recent storms and began to gain momentum in northern Oklahoma. However, thunderstorms throughout the week again delayed harvest in many areas. Wheat is now ripe across most of the state, which has led to a shortage of custom harvesters in some areas. Rains during the week were mostly scattered. Every Mesonet station in Oklahoma received rainfall, ranging from Hobart with 5.84 inches to Copan with 0.04 inch. Soil moisture supplies continued to respond favorably to the recent moisture and were rated as adequate statewide. Farmers had 3.3 days suitable for fieldwork during the week.

The winter wheat harvest advanced an additional 19 percentage points from last week to 39 percent complete. Scattered rains throughout the week stopped or slowed wheat cutting. Excessive rain has caused some farmers to be concerned about wheat sprouting in heads. Harvest ranged from 70 percent complete in the southwest to 6 percent harvested in the Panhandle. Oat and rye conditions were both rated as mostly fair to good. Oat harvest was 22 percent complete, behind the five-year average of 40 percent. Crop insect activity was reported as none to moderate across the state.

Growth and development for row crops advanced during the week, but more moisture is needed for many row crops. Corn silking advanced an additional 3 percentage points from last week to 8 percent complete. Sorghum planting was 48 percent complete, ranging from 74 percent in north central Oklahoma to 32 percent planted in the Panhandle. Soybean planting was 66 percent complete, ranging from 89 percent in the central region to 56 percent planted in the northeast. Peanuts advanced in the pegging stage and gained an additional 26 percentage points from last week and totaled 29 percent.

Alfalfa and other hay conditions both were rated mostly fair to good. As of Sunday, 57 percent of the alfalfa hay had been cut for the second time, ahead of the five-year average of 50 percent. Other hay first cutting was at 64 percent cut.

Pasture and range conditions were rated mostly fair to good. Some producers began to treat pastures due to the grasshopper activity. Livestock conditions were rated mostly fair to good. Livestock insect activities were rated as light to moderate. Cattle auctions reported average marketings for the week.

### Reservoir Storage

Reservoir storage levels remain a concern in some areas of southwest Oklahoma, but levels are generally good elsewhere. As of June 14, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 97.3 percent full, a 1.9 percent increase from that recorded on June 3, according to information from the U. S. Army Corps of Engineers (Tulsa District). Fourteen reservoirs have experienced lake level decreases since that time. Ten reservoirs are currently operating at less than full capacity (compared to 13 two weeks ago). Two reservoirs in southwest Oklahoma—Lugert-Altus, only 52.7 percent, and Tom Steed, only 67.5 percent—remain well below 80 percent capacity.

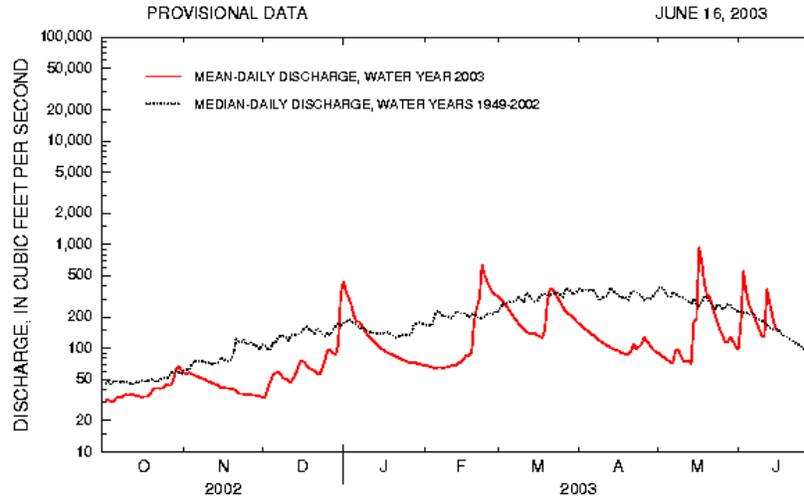
<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>				
<b>06/14/2003</b>				
<i>Climate Division</i>	<i>Conservation Storage</i>	<i>Present Storage</i>	<i>Percent of Storage</i>	
<i>Lake or Reservoir</i>	<i>(acre-feet)</i>	<i>(acre-feet)</i>	<i>conservation</i>	<i>flood</i>
<b>North Central</b>				
Fort Supply	13,900	13,900	100.0	0.43
Great Salt Plains	31,420	31,420	100.0	2.73
Kaw*	433,195	433,195	100.0	8.50
<b>Regional Totals/Averages</b>	<b>478,515</b>	<b>478,515</b>	<b>100.0</b>	<b>3.89</b>
<b>Northeast</b>				
Birch	19,225	17,987	93.6	0.00
Copan	43,400	43,400	100.0	1.53
Fort Gibson	365,200	365,200	100.0	3.47
Grand	1,672,000	1,667,401	99.7	0.00
Hudson	200,300	200,300	100.0	3.89
Hulah	25,100	25,100	100.0	2.83
Keystone	510,059	510,059	100.0	2.83
Oologah	552,210	552,210	100.0	12.38
Skiatook	322,700	291,856	90.4	0.00
<b>Regional Totals/Averages</b>	<b>3,710,194</b>	<b>3,673,513</b>	<b>99.0</b>	<b>2.99</b>
<b>West Central</b>				
Canton	111,310	111,310	100.0	0.84
Foss	165,480	164,612	99.5	0.00
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>275,922</b>	<b>99.7</b>	<b>0.42</b>
<b>Central</b>				
Arcadia	27,520	27,520	100.0	0.55
Heyburn	7,105	7,105	100.0	0.27
Thunderbird	119,600	119,600	100.0	1.83
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>154,225</b>	<b>100.0</b>	<b>0.88</b>
<b>East Central</b>				
Eufaula*	2,529,143	2,351,715	93.0	0.00
Tenkiller	654,100	654,100	100.0	2.29
<b>Regional Totals/Averages</b>	<b>3,183,243</b>	<b>3,005,815</b>	<b>94.4</b>	<b>1.15</b>
<b>Southwest</b>				
Fort Cobb	80,010	80,010	100.0	5.56
Lugert-Altus	132,830	70,037	52.7	0.00
Tom Steed	88,970	60,020	67.5	0.00
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>210,067</b>	<b>69.6</b>	<b>1.85</b>
<b>South Central</b>				
Arbuckle	72,400	72,400	100.0	4.11
McGee Creek	113,930	113,930	100.0	8.24
Texoma*	2,742,146	2,742,146	100.0	2.62
Waurika*	190,200	184,497	97.0	0.00
<b>Regional Totals/Averages</b>	<b>3,118,676</b>	<b>3,112,973</b>	<b>99.8</b>	<b>3.74</b>
<b>Southeast</b>				
Broken Bow*	958,180	927,655	96.8	0.00
Hugo*	198,067	197,197	99.6	0.00
Pine Creek*	71,120	71,120	100.0	0.63
Sardis	274,330	274,330	100.0	0.00
Wister	60,162	60,162	100.0	1.90
<b>Regional Totals/Averages</b>	<b>1,561,859</b>	<b>1,530,464</b>	<b>98.0</b>	<b>0.51</b>
<b>State Totals</b>	<b>12,785,312</b>	<b>12,441,494</b>	<b>97.3</b>	<b>2.18</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*



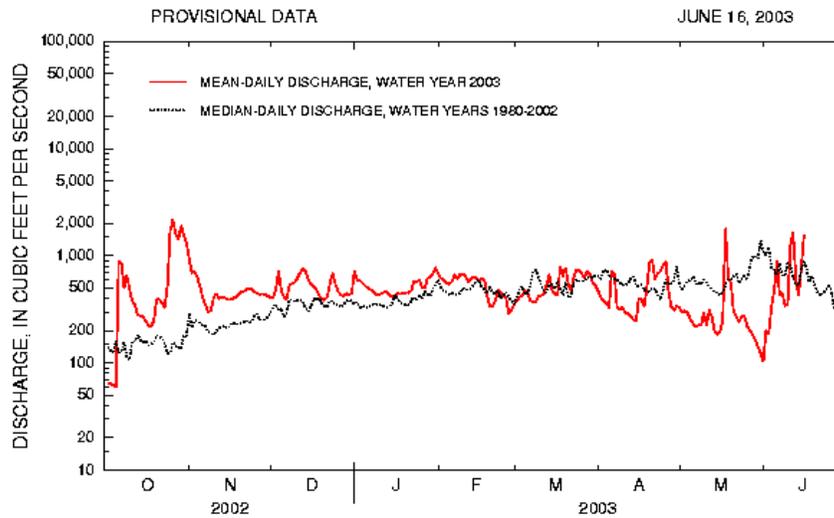
Comparison of daily discharges for water year 2003 and period of record for Baron Fork at Eldon, Oklahoma.

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.

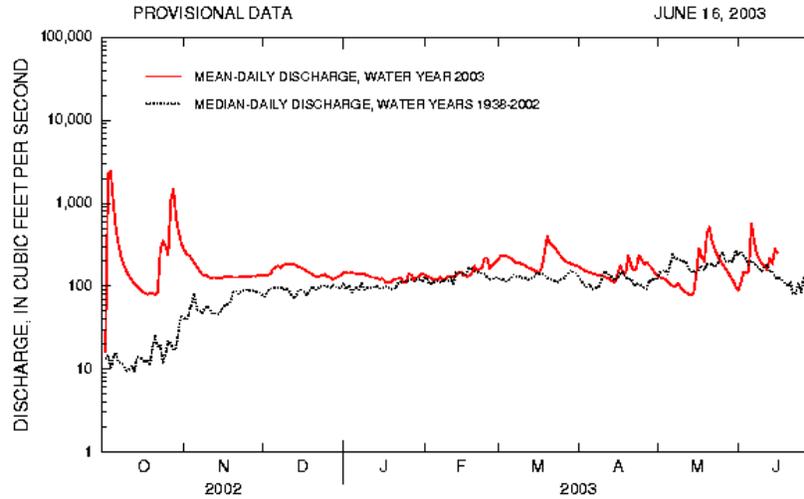
Data from U.S. Geological Survey

### 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.

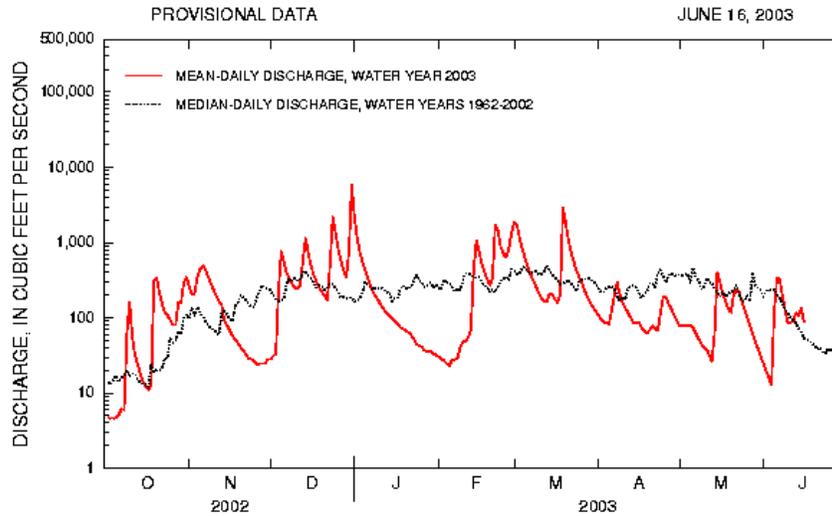
Data from U.S. Geological Survey

### 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

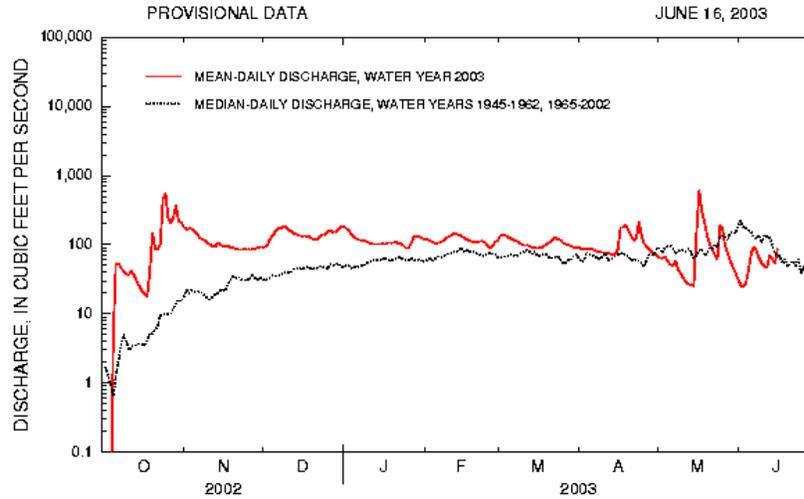
### North Fork of the Red River near Carter

*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

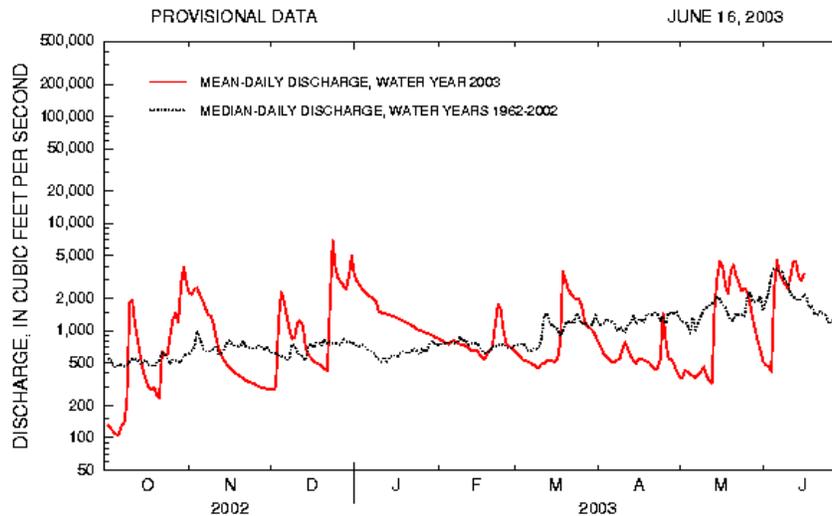
### Washita River near Dickson

*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