Oklahoma Water Resources Bulletin
& Summary of Current Conditions

June 16, 2004

Statewide Precipitation & General Summary

Although recent rainfall has somewhat benefited areas in eastern and especially southern Oklahoma, northwestern regions are becoming quite dry due to recent below normal rainfall. 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 June 14 (the current growing season) are the West Central (7.9 inches, a deficit of 3.8 inches and 68 percent of normal precipitation) and Panhandle (5.65 inches, a deficit of 2.56 inches, 69 percent of normal) climate divisions. The current state-averaged rainfall total is 10.82 inches, 79 percent of normal.

For the last 30 days, the state-averaged rainfall total is only 2.69 inches, 57 percent of normal. The Panhandle and West Central climate divisions have received only 0.65 inches (21 percent of normal) and 1.02 inches (24 percent) of rainfall, respectively, over that period—the third driest such period for both regions since 1921. The North Central and Southwest regions are also quite dry throughout the past month.

Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	Growing Season March 1—June 14, 2004			Last 30 Days May 16—June 14, 2004		
	Total Rainfall (inches)	Departure From Normal (inches)	Percent Of Normal	Total Rainfall (inches)	Departure From Normal (inches)	Percent Of Normal
Panhandle	5.65	-2.56	69	0.65	-2.45	21
North Central	10.00	-2.20	82	1.46	-2.81	34
Northeast	15.92	+0.61	104	3.11	-1.88	62
West Central	7.90	-3.80	68	1.02	-3.31	24
Central	10.66	-3.87	73	3.03	-2.00	60
East Central	13.84	-2.74	83	3.25	-2.05	61
Southwest	8.45	-3.39	71	1.91	-2.60	42
South Central	11.48	-3.60	76	4.96	-0.09	98
Southeast	12.93	-4.59	74	4.46	-1.02	81
Statewide	10.82	-2.85	79	2.69	-1.99	57

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 (June 12, below), six regions in Oklahoma—including the Northwest climate division ("moderate drought")—are currently experiencing drought conditions. Eight of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since May 15. The greatest decreases occurred in the Northwest and North Central climate divisions.

The latest monthly Standardized Precipitation Index (through May, below) indicates generally moderate 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 South Central Oklahoma over the past 3 months. Also, "moderately dry" conditions persist in the Southeast, East Central, and Southwest regions. Considering longer periods (through six years), the Southeast, East Central, and South Central climate divisions report "very dry" conditions at various times over the past 24 months. Those and other south, east, and central regions indicate moderate dryness at various periods over the past 36 months. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (June 15, 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 are becoming a concern in some 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 May 20). Idabel, in Southeast Oklahoma, reports the highest KBDI value (443). 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 May 2004)

Climate Division (#)	Current Status 6/12/2004	Value 6/12	Value 5/15	Change In Value	3-Month	6-Month	9-Month	12-Month
Northwest (1)	MODERATE DROUGHT	-2.11	0.21	**-2.32**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	INCIPIENT DROUGHT	-0.70	1.60	**-2.30**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	INCIPIENT MOIST SPELL	0.73	2.75	**-2.02**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	MILD DROUGHT	-1.85	0.29	**-2.14**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	MILD DROUGHT	-1.41	-0.67	**-0.74**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MILD DROUGHT	-1.36	-0.55	**-0.81**	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
Southwest (7)	MILD DROUGHT	-1.54	0.11	**-1.65**	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL
South Central (8)	INCIPIENT DROUGHT	-0.55	-0.97	**0.42**	VERY DRY	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY
Southeast (9)	MILD DROUGHT	-1.48	-1.00	**-0.48**	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL

Keetch-Byram Drought Fire Index

Mesonet Station	County	Climate Division	Current Value 6/15/2004
Idabel	McCurtain	Southeast	443
Hooker	Texas	Northwest	431
Goodwell	Texas	Northwest	415

Total stations above 600 = 0

Anticipated Impact:

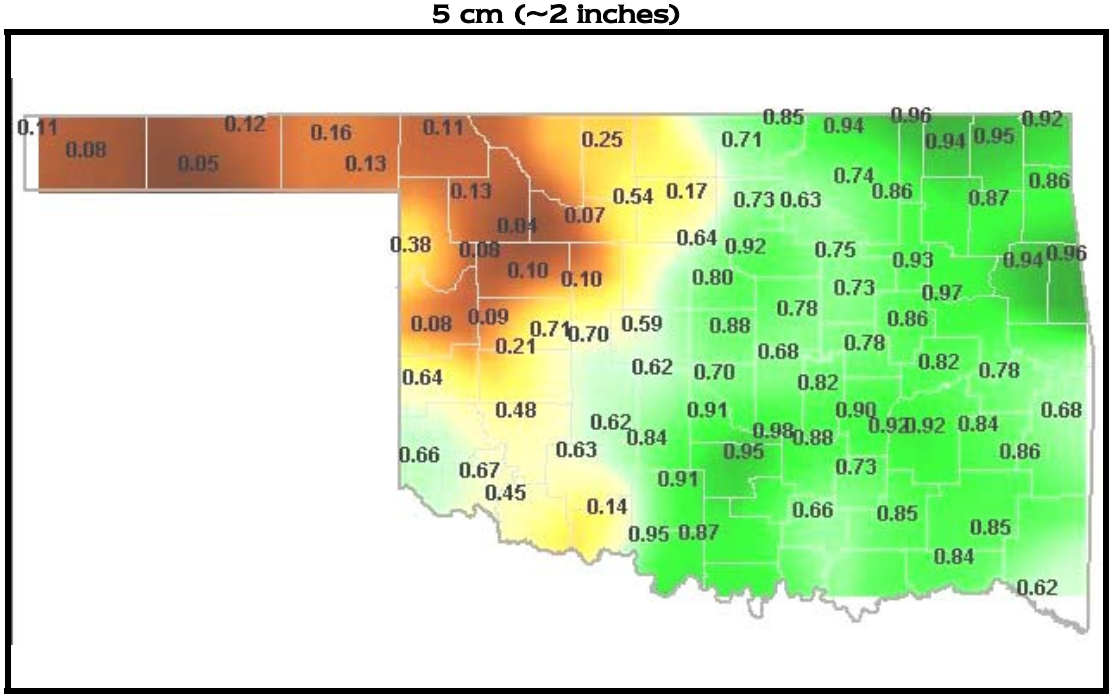
600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.

400-600: lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.

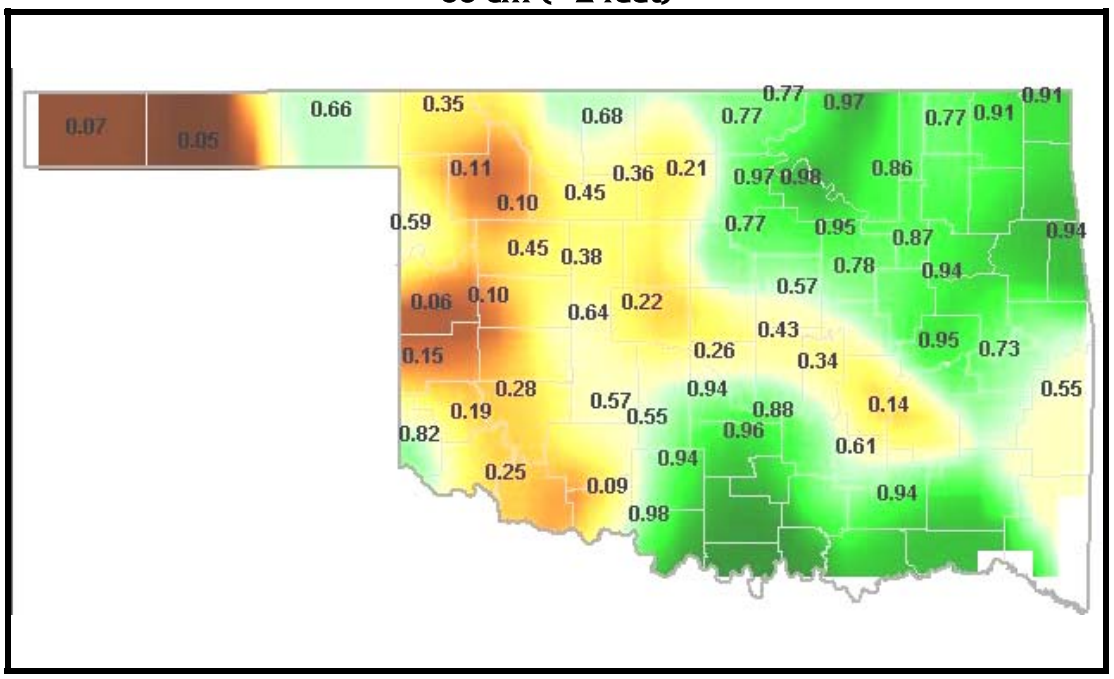
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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
June 14, 2004
(Courtesy Oklahoma Climatological Survey)

5 cm (~2 inches)



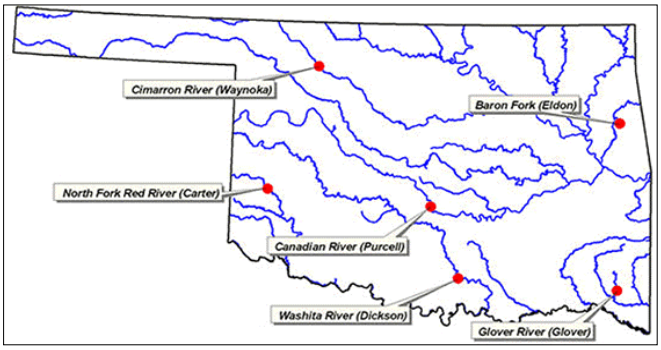
60 cm (~2 feet)



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 below or near average, although flows in northwest Oklahoma reflect recent very dry conditions in that region. Considering overall trends as well as current flows, the most recent data (June 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, 2002, compared to long-term, normal/median daily discharges) indicate **much below average flow** in *northwest* (Cimarron River, Woods County) Oklahoma; **below average flow** in the *northeast* (Baron Fork, Cherokee County), *south central* (Washita River, Carter County) and *central* (Canadian River, McClain County) regions; and **near average flow** in *southwest* (North Fork/Red River, Beckham County) and *southeast* (Glover River, McCurtain County) Oklahoma.



Weather Forecast

The National Weather Service 8- to 14-day outlook (June 22-28) calls for normal precipitation for all but very extreme northern Oklahoma, where above normal rainfall is expected. Normal temperatures are anticipated for all of Oklahoma throughout the period.

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 will 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

June 13 - Rain fell throughout the state last week. The rainfall was welcome but more will be needed as summer approaches. The Panhandle did not receive enough rain to make much difference in crop conditions. The rainfall slowed fieldwork although considerable progress was made with harvesting of small grain crops. Parts of Kay and Lincoln Counties reported light hail last week. Topsoil moisture throughout the state increased while subsoil moisture decreased slightly. There were 4.1 days suitable for fieldwork.

Wheat harvest continues to be ahead of normal. It increased 18 points this week to 80 percent, nearly double from normal. This was despite muddy fields in some areas, which meant fewer days suitable for fieldwork. Yields on wheat were varied with most being labeled average. Hail damage in isolated areas has affected the wheat yield. Rye harvested made a 30-point increase from last week and oats made a 20-point increase in harvested acres.

Row crops greatly benefited from the recent rains with most making good progress. Sorghum and soybean seedbed preparations were nearly complete at 96 and 95 percent, respectively. Sixty-seven percent of the sorghum was planted, increasing 25 points from the previous week, and 52 percent of the crop had emerged. Eighty-one percent of the soybeans had been planted, 10 points ahead of the five-year average. Soybeans that had emerged increased 16 points from last week to 73 percent. Corn silking doubled from 9 points last week to 18 points. Corn conditions were 7 percent excellent, 81 percent good, 11 percent fair and 1 percent poor. Ninety-eight percent of the peanuts had emerged and 10 percent of the peanuts were pegging. Peanut conditions were 7 percent excellent, 67 percent good, 25 percent fair, and 1 percent poor. Cotton planted was up to 95 percent. Cotton emerged jumped 4 points to 92 percent. Cotton squaring was at 8 percent, below last year's average of 9 percent but above the five-year average of 4 percent. There were a few reports of producers spraying cotton for fleahoppers and thrips.

Recent rains could greatly help hay production. The second cutting of alfalfa was 77 percent cut, 24 points higher than last year and 30 points higher than the five-year average. Other hay first cutting was 72 percent complete with the second cutting just getting underway at 4 percent complete. Watermelon vines were 85 percent running, which is up from last year at 80 percent and the five-year average of 74 percent. Setting fruit was at 48 percent, which is a 20-point increase from last week and above both last year and the five-year average. Livestock conditions were 17 percent excellent, 54 percent good, 25 percent fair, and 4 percent poor. Livestock insect activity was mostly moderate to light. The areas of the state that received rain were reporting an improvement in pasture conditions, but more rain is still required to make a big difference. Pasture conditions were rated as mostly fair to good.

Reservoir Storage

Lake storage in Oklahoma remains generally good, although lakes in the southwest continue to experience low levels. As of June 15, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 97.5 percent full, a 0.3 percent decrease from that recorded on May 20, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty reservoirs have experienced lake level decreases since that time. Only 10 reservoirs are currently operating at less than full capacity (compared to 11 four weeks ago). Two reservoirs—Lugert-Altus, only 45.8 percent full; and Tom Steed, 52.6 percent—remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs
06/15/2004

Climate Division Lake or Reservoir	*Conservation Storage* (acre-feet)	*Present Storage* (acre-feet)	*Percent of Conservation Storage*
North Central			
Fort Supply	13,900	13,354	96.1
Great Salt Plains	31,420	31,420	100.0
Kaw*	431,418	431,418	100.0
Regional Totals/Averages	**476,738**	**476,192**	**99.9**
Northeast			
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
Regional Totals/Averages	**3,710,194**	**3,710,194**	**100.0**
West Central			
Canton	111,310	93,501	84.0
Foss	165,480	155,690	94.1
Regional Totals/Averages	**276,790**	**249,191**	**90.0**
Central			
Arcadia	27,520	27,520	100.0
Heyburn	7,105	7,105	100.0
Thunderbird	119,600	111,512	93.2
Regional Totals/Averages	**154,225**	**146,137**	**94.8**
East Central			
Eufaula*	2,529,143	2,529,143	100.0
Tenkiller	654,100	654,100	100.0
Regional Totals/Averages	**3,183,243**	**3,183,243**	**100.0**
Southwest			
Fort Cobb	80,010	78,634	98.3
Lugert-Altus	132,830	60,800	45.8
Tom Steed	88,970	46,777	52.6
Regional Totals/Averages	**301,810**	**186,211**	**61.7**
South Central			
Arbuckle	72,400	70,799	97.8
McGee Creek	113,930	113,930	100.0
Texoma*	2,742,146	2,607,895	95.1
Waurika*	190,200	157,830	83.0
Regional Totals/Averages	**3,118,676**	**2,950,454**	**94.6**
Southeast			
Broken Bow*	958,180	958,180	100.0
Hugo*	198,067	198,067	100.0
Pine Creek*	71,120	71,120	100.0
Sardis	274,330	274,196	100.0
Wister	60,162	60,162	100.0
Regional Totals/Averages	**1,561,859**	**1,561,725**	**100.0**
State Totals	**12,783,535**	**12,463,347**	**97.5**

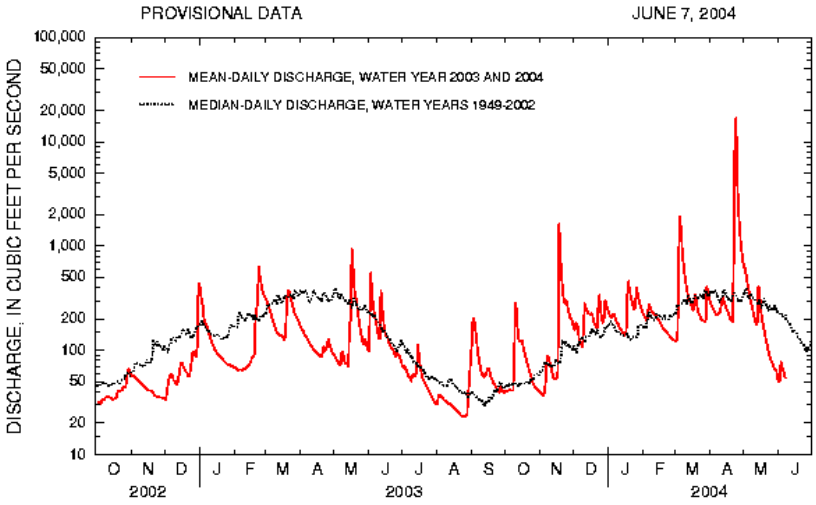
* indicates seasonal pool operation; actual storage figures/percentages may v ary.

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.

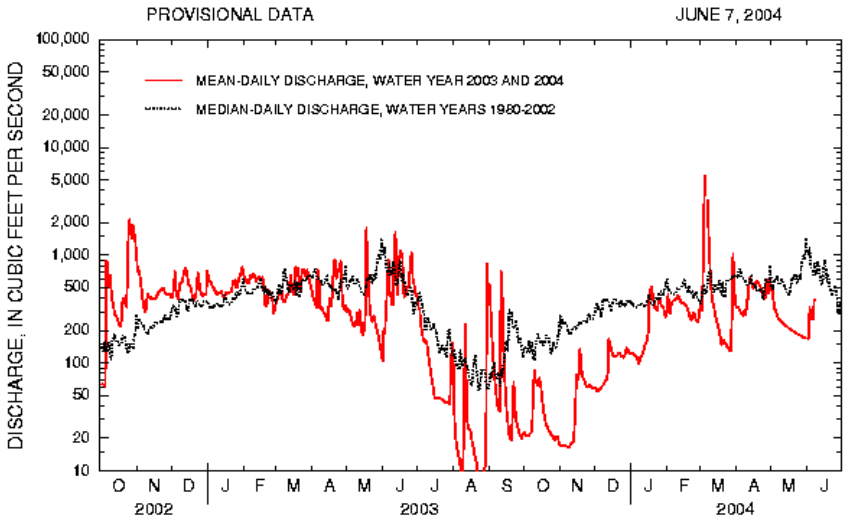
Data from U.S. Geological Survey

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.

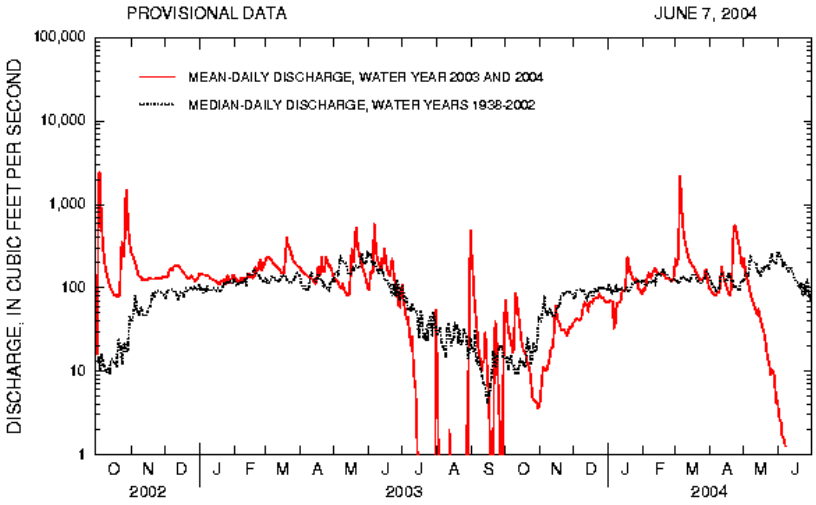
Data from U.S. Geological Survey

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.

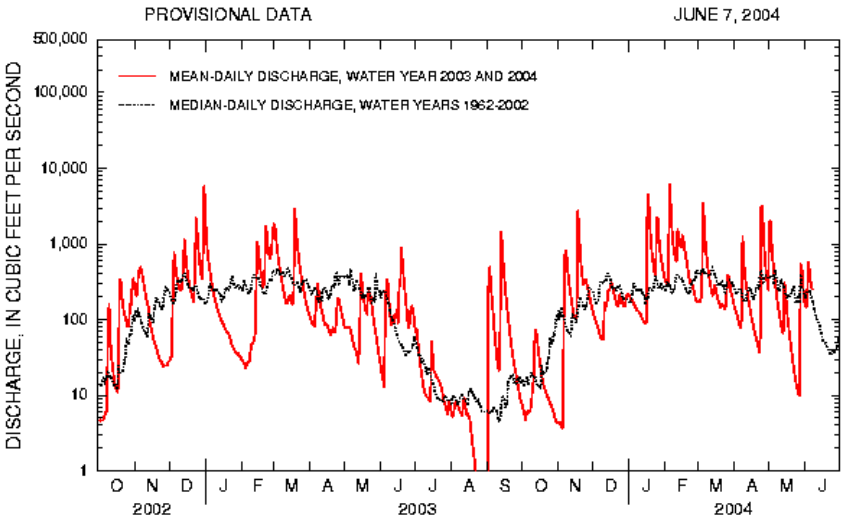
Data from U.S. Geological Survey

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.

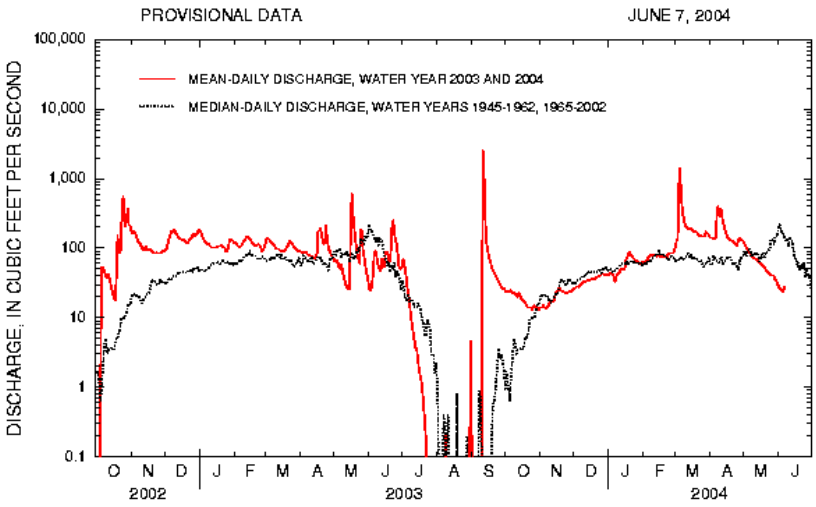
Data from U.S. Geological Survey

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.

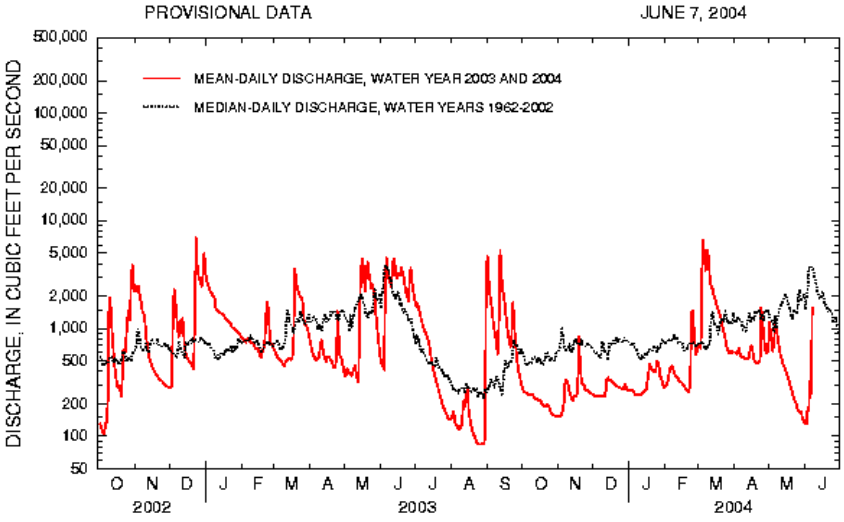
Data from U.S. Geological Survey

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