Oklahoma Water Resources Bulletin
& Summary of Current Conditions

JULY 3, 2002 — OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Drought and drought-like conditions continue to plague many areas of Oklahoma, especially in the northwest. 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 October 1, 2001, through July 1, 2002 (the current water year), remains the Northwest climate division (6.03 inches, only 42 percent of normal precipitation). The West Central (13.40 inches, 63 percent of normal) and North Central (15.47 inches, 68 percent of normal) regions also remain quite dry. The current state-averaged precipitation total is 23.24 inches, 85 percent of normal.

For the current growing season (March 1 through July 1), the Northwest region has received 4.43 inches (45 percent of normal) of rainfall. Five other regions report precipitation deficits over the period. The state-averaged total is 14.20 inches (89 percent of normal).

Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	WATER YEAR OCTOBER 1, 2001—JULY 1, 2002			WARM GROWING SEASON MARCH 1—JULY 1, 2002			RAINFALL SINCE JUNE 17
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	6.03	-8.24	42	4.43	-5.43	45	0.17
North Central (2)	15.47	-7.12	68	11.52	-2.88	80	0.39
Northeast (3)	28.68	-2.28	93	16.44	-1.43	92	0.39
West Central (4)	13.40	-7.88	63	10.00	-3.83	72	0.45
Central (5)	23.07	-5.69	80	14.51	-2.54	85	0.77
East Central (6)	34.27	-1.10	97	19.03	-0.24	99	0.82
Southwest (7)	15.97	-6.64	71	10.96	-3.17	78	0.75
South Central (8)	29.16	-2.46	92	17.97	+0.34	102	1.27
Southeast (9)	44.69	+4.50	111	23.50	+3.35	117	1.04
STATE-AVERAGED	**23.24**	**-4.22**	**85**	**14.20**	**-1.83**	**89**	**0.67**

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 29, below), drought conditions have deteriorated throughout Oklahoma as six climate divisions are now in various drought categories. **The Panhandle/Northwest region is now in the "extreme" drought category while the West Central and North Central climate divisions are in "moderate" drought.** All of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since June 15; the greatest decrease occurred in the Northeast region.

The latest monthly Standardized Precipitation Index (through May, below) indicates long-term dryness throughout the past year in much of northern and western Oklahoma, especially the Northwest/Panhandle climate division. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), **the Northwest climate division reports "extremely dry" conditions throughout the last 9- and 12-month periods and "very dry" conditions in the last 3- and 6-month periods. "Very dry" conditions have also impacted North Central, West Central and Southwest regions during the last 12-month period**. Among periods beyond one year, the 15-, 18-, and 24-month SPIs also report particularly dry conditions for the Northwest and North Central climate divisions. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (June 17, 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 of concern in northwest Oklahoma and the Panhandle. Statewide, however, only two stations are currently above 600, generally indicative of more severe drought conditions (one station had a reading above 600 on June 17). Buffalo, in Northwest Oklahoma (685), retains the highest KBDI value, followed by Hooker (Northwest; 634), and Alva (North Central; 596). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). Effective June 19, the Governor's Ban on Outdoor Burning remains in effect for two counties in the Panhandle region of Oklahoma (Cimarron and Texas Counties).

Palmer Drought Severity Index / Standardized Precipitation Index Through May 2002

Climate Division (#)	Current Status 6/29/2002	Value 6/29	Value 6/15	Change In Value	3-Month	6-Month	9-Month	12-Month
Northwest (1)	EXTREME DROUGHT	-4.32	-3.46	**-0.86**	VERY DRY	VERY DRY	EXTREMELY DRY	EXTREMELY DRY
North Central (2)	MODERATE DROUGHT	-2.49	-1.44	**-1.05**	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	VERY DRY
Northeast (3)	INCIPIENT DROUGHT	-0.66	0.87	**-1.53**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
West Central (4)	MODERATE DROUGHT	-2.69	-2.22	**-0.47**	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	VERY DRY
Central (5)	MILD DROUGHT	-1.01	0.11	**-1.12**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MILD DROUGHT	-1.06	0.24	**-1.30**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MILD DROUGHT	-1.30	-0.80	**-0.50**	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	VERY DRY
South Central (8)	INCIPIENT DROUGHT	-0.70	0.63	**-1.33**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	NEAR NORMAL	0.19	1.17	**-0.98**	MODERATELY WET	VERY WET	MODERATELY WET	MODERATELY WET

Keetch-Byram Drought Fire Index

Mesonet Station	County	Climate Division	Current Value 7/1/2002	Anticipated Impact
Buffalo	Harper	Northwest	685	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.
Hooker	Texas	Northwest	634	
Alva	Woods	North Central	596	400-600: lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.

8 total stations above 500; 2 stations above 600

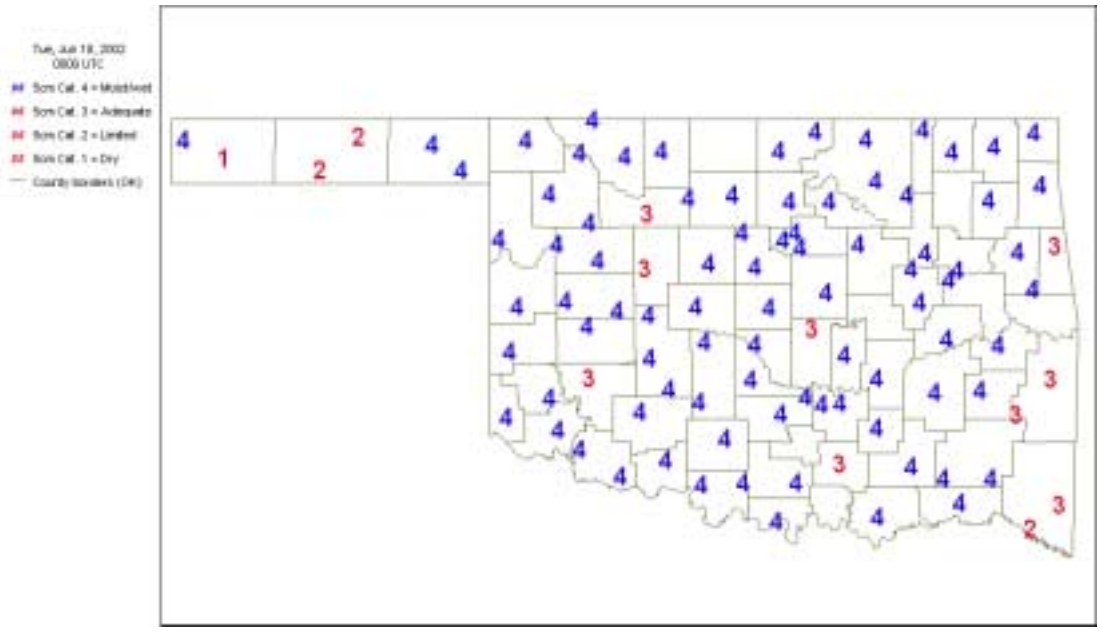
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides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

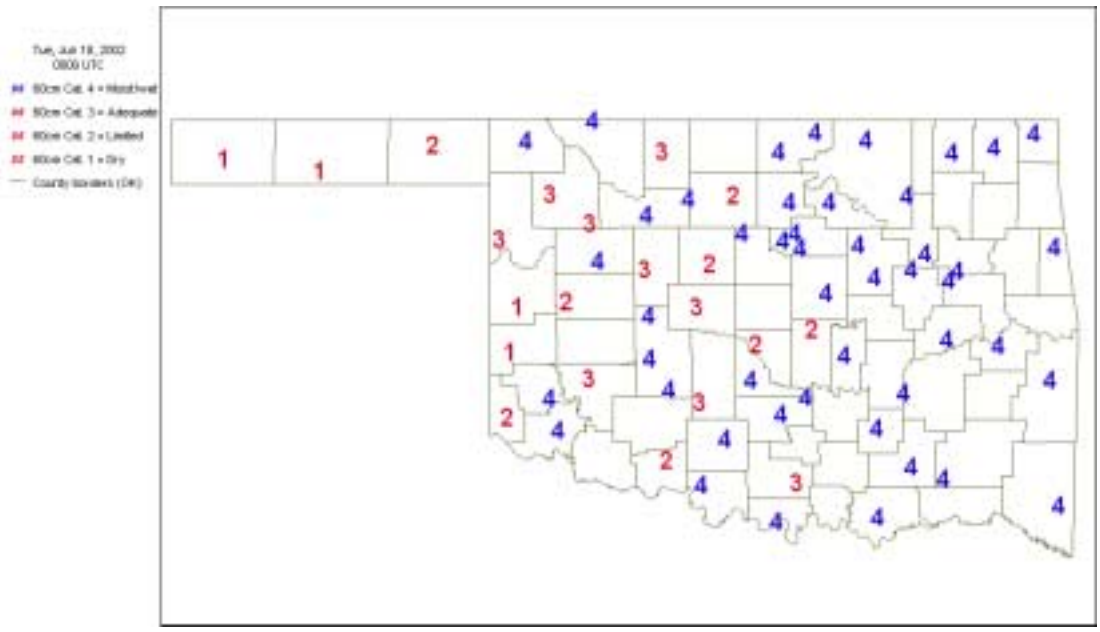
June 18, 2002

(courtesy Oklahoma Climatological Survey)

5 cm



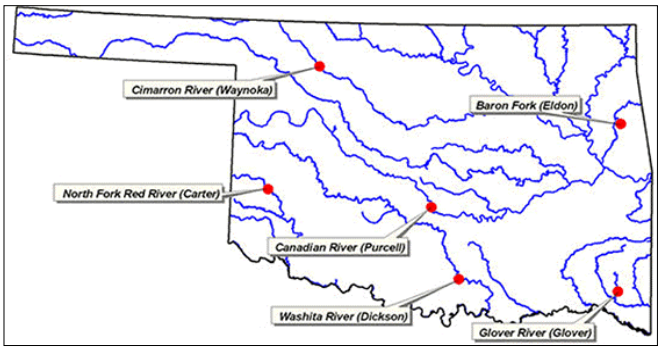
60 cm



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

For the current water year, flows in many state rivers and streams remain generally low. Considering overall trends as well as current flows, the most recent data (June 30, 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, 2001, 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 *southwest* (North Fork/Red River, Beckham County), *southeast* (Glover River, McCurtain County), and *south central* (Washita River, Carter County) regions; and **near average flow** in *northeast* (Baron Fork, Cherokee County) and *central* (Canadian River, McClain County) Oklahoma.



Weather Forecast

The National Weather Service 8- to 14-day outlook (July 9-15) calls for normal precipitation for all but the general southern tier counties and western Panhandle region where above normal rainfall is anticipated. Below normal temperatures are expected for all of Oklahoma throughout the period.

Current models indicate that positive (warmer than normal) sub-surface temperature (SST) anomalies have recently intensified somewhat in the equatorial Pacific Ocean. Forecasts continue to indicate a gradual warming over the next several months with weak to moderate El Niño conditions developing through the end of 2002. The impacts that this warming will have on global temperature and precipitation patterns depend to a large degree on its intensity. 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 23—Most of Oklahoma needs additional rainfall to prevent stress to crops and pastures. Topsoil moisture supplies were sliding with 50 percent rated adequate last week compared with 67 percent the previous week. Subsoil moisture supplies were rated 20 percent very short, 30 percent short, 47 percent adequate, and 3 percent surplus compared to 17 percent very short, 26 percent short, 53 percent adequate, and 4 percent surplus the previous week. The Panhandle region continued to be the driest area of the state. Grasshoppers continued to be a serious problem with the heaviest infestations reported in the west central region. There were 6.4 days suitable for fieldwork.

The winter wheat harvest was wrapping up around the state at 95 percent completed. This was 3 percentage points behind last year's pace, but 9 points ahead of the five-year average. Wheat acres left to be harvested remained mostly in the Panhandle. Oat harvest gained 35 percentage points to reach 89 percent complete. Many producers were busy plowing small grain fields where moisture conditions were adequate. Sorghum and soybean planting was nearing completion with 95 and 94 percent completed, respectively. Corn entering the silking stage of development reached 43 percent; well ahead of last year's pace of 26 percent, and the five-year average of 16 percent. Ten percent of the corn crop was in the dough stage by week's end. Soybeans blooming were 15 percent, slightly ahead of both last year and the five-year average. Peanuts pegging gained 17 percentage points to 40 percent of the crop. Nearly half of this year's cotton crop was squaring. All row crops continued to be rated in mostly fair or good condition, however some sorghum in the Panhandle and soybeans in the southwest were rated in very poor condition due to dry weather. Cutting of alfalfa was progressing rapidly with 88 percent of the second cutting completed and the third cutting getting underway in parts of the state. Other hay cutting was moving ahead steadily with the first cutting 81 percent completed and the second cutting getting underway. Both alfalfa and other hay were rated in mostly fair or good condition.

Livestock remained in mostly good condition, but some herds were reported in very poor condition in the Panhandle. Livestock insect activity remained mostly light or moderate, however tick and fly activity were heavy in parts of the state. Cattle auctions reported a modest increase in trade of both steers and heifers less than 800 pounds. Pasture conditions were rated mostly fair or good statewide, but the Panhandle had about one-third of their pasture rated in very poor condition. Grasshopper activity was reported to be taking a toll on many pastures.

Reservoir Storage

Reservoir storage levels in Oklahoma remain generally good. As of July 2, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 98.8 percent full, a 0.3 percent decrease from that recorded on June 17, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-eight reservoirs have experienced lake level decreases since that time. Nine reservoirs are currently operating at less than full capacity (compared to six two weeks ago). Two reservoirs (including Lugert-Altus, 54 percent; and Tom Steed, 64.6 percent) remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs
07/02/2002

Climate Division / *Lake or Reservoir*	*Conservation Storage* (acre-feet)	*Present Storage* (acre-feet)	*Percent of Storage* conservation	flood
North Central				
Fort Supply	13,900	13,730	98.8	0.00
Great Salt Plains	31,420	31,420	100.0	0.28
Kaw*	459,850	459,850	100.0	9.83
Regional Totals/Averages	**505,170**	**505,000**	**100.0**	**3.37**
Northeast				
Birch	19,225	18,950	98.6	0.00
Copan	43,400	43,400	100.0	1.48
Fort Gibson	365,200	365,200	100.0	2.62
Grand	1,672,000	1,672,000	100.0	2.78
Hudson	200,300	200,300	100.0	3.94
Hulah	25,100	25,100	100.0	2.63
Keystone	577,499	577,499	100.0	2.63
Oologah	552,210	552,210	100.0	14.99
Skiatook	322,700	315,476	97.8	0.00
Regional Totals/Averages	**3,777,634**	**3,770,135**	**99.8**	**3.45**
West Central				
Canton	111,310	102,861	92.4	0.00
Foss	165,480	159,001	96.1	0.00
Regional Totals/Averages	**276,790**	**261,862**	**94.6**	**0.00**
Central				
Arcadia	27,520	27,520	100.0	1.82
Heyburn	7,105	7,105	100.0	0.09
Thunderbird	119,600	119,600	100.0	1.59
Regional Totals/Averages	**154,225**	**154,225**	**100.0**	**1.17**
East Central				
Eufaula*	2,314,581	2,303,853	99.5	0.00
Tenkiller	654,100	654,100	100.0	2.79
Regional Totals/Averages	**2,968,681**	**2,957,953**	**99.6**	**1.40**
Southwest				
Fort Cobb	80,010	80,010	100.0	2.14
Lugert-Altus	132,830	71,701	54.0	0.00
Tom Steed	88,970	57,450	64.6	0.00
Regional Totals/Averages	**301,810**	**209,161**	**69.3**	**0.71**
South Central				
Arbuckle	72,400	72,400	100.0	3.27
McGee Creek	113,930	113,930	100.0	2.19
Texoma*	2,742,146	2,742,146	100.0	1.70
Waurika*	190,200	190,200	100.0	0.60
Regional Totals/Averages	**3,118,676**	**3,118,676**	**100.0**	**1.94**
Southeast				
Broken Bow*	958,180	938,417	97.9	0.00
Hugo*	198,067	198,067	100.0	0.00
Pine Creek*	71,120	71,120	100.0	0.73
Sardis	274,330	274,330	100.0	4.30
Wister	60,162	60,162	100.0	0.31
Regional Totals/Averages	**1,561,859**	**1,542,096**	**98.7**	**1.07**
State Totals	**12,664,845**	**12,519,108**	**98.8**	**2.02**

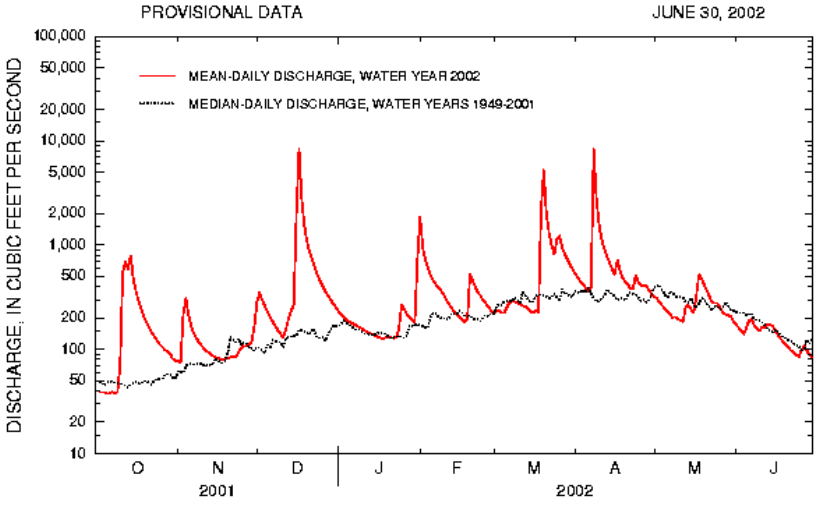
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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 2002
and period of record for Baron Fork at Eldon, Oklahoma.

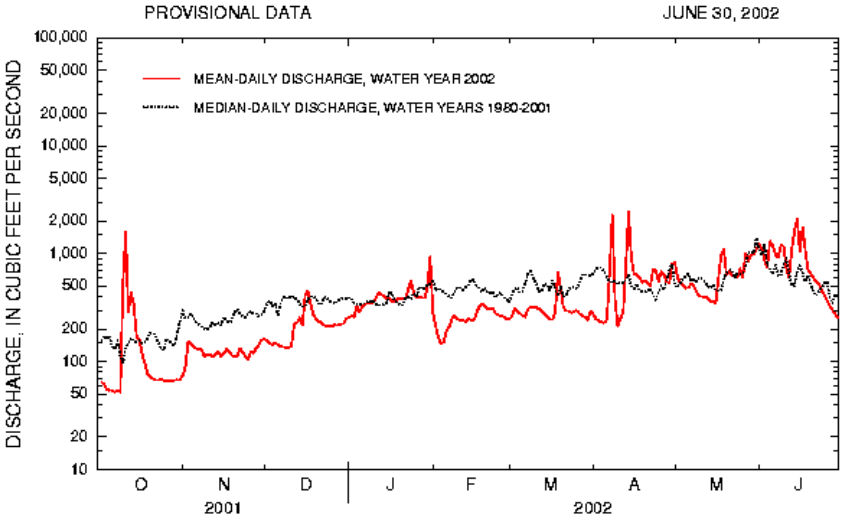
Data from U.S. Geological Survey

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 2002
and period of record for Canadian River at Purcell, Oklahoma.

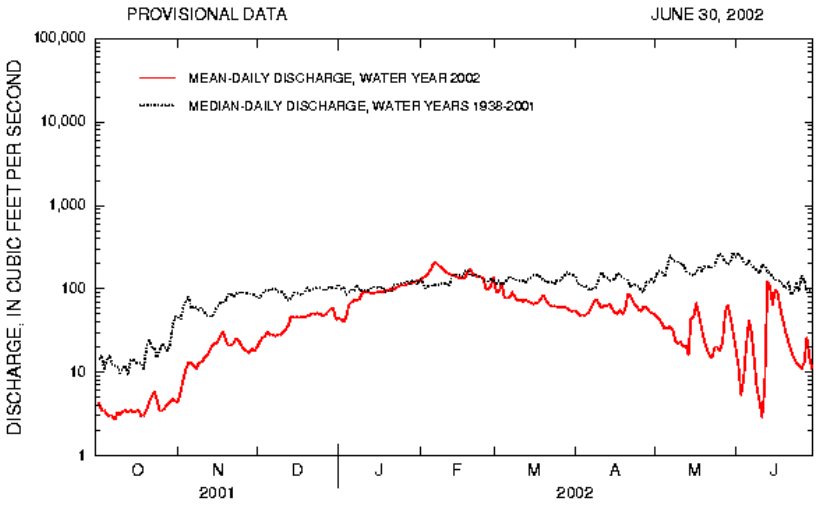
Data from U.S. Geological Survey

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 2002
and period of record for Cimarron River near Waynoka, Oklahoma.

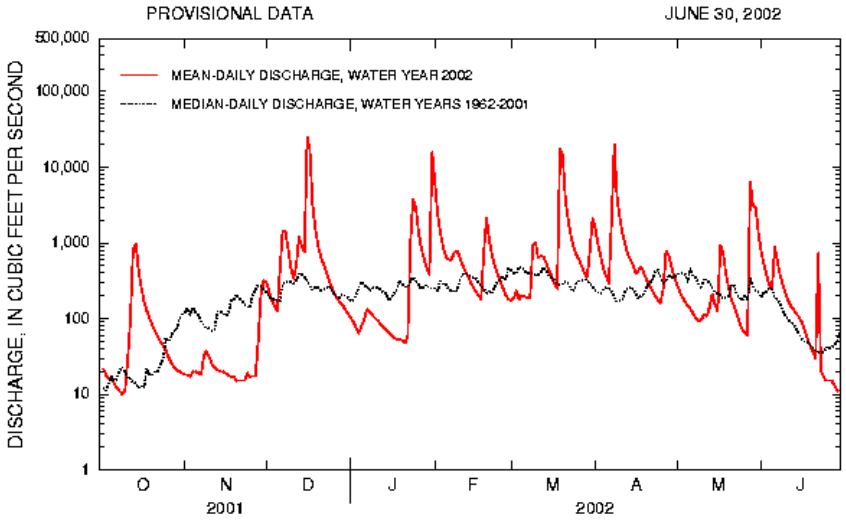
Data from U.S. Geological Survey

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 2002
and period of record for Glover River near Glover, Oklahoma.

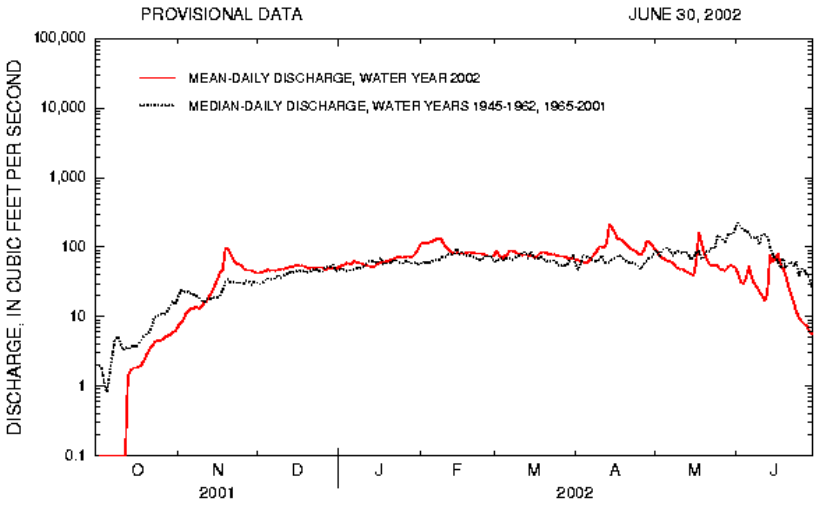
Data from U.S. Geological Survey

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 2002
and period of record for North Fork Red River near Carter, Oklahoma.

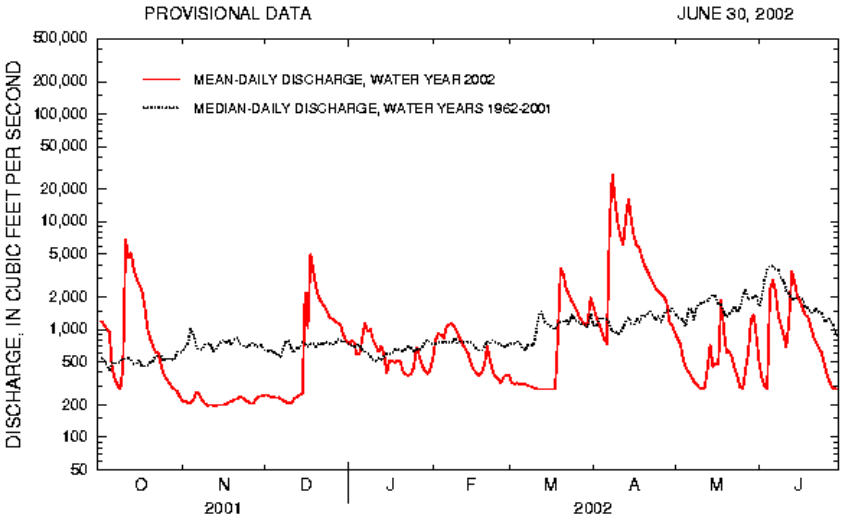
Data from U.S. Geological Survey

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 2002
and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey