Oklahoma Water Resources Bulletin

& Summary of Current Conditions

JULY 30, 2003 — OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Dryness in southern and eastern Oklahoma continues to spread into central areas of the state. 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 July 28 (the current growing season) are the South Central (a deficit of 7.73 inches, 61 percent of normal precipitation) and Southeast (a 8.81-inch deficit, 62 percent of normal precipitation) climate divisions. The current state-averaged rainfall total is 13.12 inches, 71 percent of normal.

For the current water year (October 1, 2002 through July 28, 2003), all regions report precipitation deficits, although only one climate division—the Southeast (69 percent of normal)—is below 70 percent of normal. The state-averaged rainfall total is 23.2 inches, 78 percent of normal.

Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON MARCH 1—JULY 28, 2003			WATER YEAR OCTOBER 1, 2002—JULY 28, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	10.06	-1.99	83	15.61	-0.86	95
North Central	12.45	-4.54	73	22.39	-2.79	89
Northeast	17.81	-2.82	86	26.00	-7.70	77
West Central	10.64	-5.05	68	19.53	-3.60	84
Central	12.75	-6.54	66	22.31	-8.70	72
East Central	14.72	-7.14	67	26.79	-11.18	71
Southwest	12.81	-3.22	80	22.65	-1.86	92
South Central	12.11	-7.73	61	24.50	-9.33	72
Southeast	14.45	-8.81	62	29.79	-13.53	69
Statewide	**13.12**	**-5.29**	**71**	**23.20**	**-6.64**	**78**

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 (July 26, below), all but one region in Oklahoma is experiencing drought conditions. The South Central climate division is in "moderate drought" while all others, except the Southwest, are in "mild drought." All of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since July 12. The greatest decrease occurred in the North Central climate division.

The latest monthly Standardized Precipitation Index (through June, 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 Southeast climate division throughout the last 6 months. East Central Oklahoma is "moderately dry" over the past 3-, 6-, 9- and 12-month periods. Considering longer periods (through six years), various eastern climate divisions indicate "moderately dry" conditions throughout the past 15-, 18-, and 36-month periods. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (July 29, 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 have advanced considerably throughout the last two weeks. However, statewide, no Mesonet stations are currently above 600, generally indicative of more severe drought conditions (no stations had a reading above 600 on July 14). Bowlegs, in Central Oklahoma, has the highest KBDI value (590). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness is at Level 3 (high fire danger). Effective July 25, **a Red Flag Fire Alert is in effect for the general western two-thirds of Oklahoma.** Hot, windy conditions combined with generally low rainfall have resulted in very high to extreme fire danger, particularly in the grassy fuels of central and western Oklahoma. Extra precautions should be taken with all outdoor burning in the Fire Alert counties. Expect fires to ignite easily, spread quickly, and be difficult to control under these conditions. Outdoor burning should be avoided when winds exceed 20 miles per hour.

Palmer Drought Severity Index / Standardized Precipitation Index (Through June 2003)

Climate Division (#)	Current Status 7/26/2003	Value 7/26	Value 7/12	Change In Value	3-Month	6-Month	9-Month	12-Month
Northwest (1)	MILD DROUGHT	-1.08	0.14	**-1.22**	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	MODERATELY WET
North Central (2)	MILD DROUGHT	-1.25	0.33	**-1.58**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY WET
Northeast (3)	MILD DROUGHT	-1.03	-0.55	**-0.48**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	MILD DROUGHT	-1.21	-0.52	**-0.69**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	MILD DROUGHT	-1.81	-1.18	**-0.63**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MILD DROUGHT	-1.95	-1.50	**-0.45**	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY
Southwest (7)	INCIPIENT DROUGHT	-0.87	-0.44	**-0.43**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MODERATE DROUGHT	-2.08	-1.53	**-0.55**	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
Southeast (9)	MILD DROUGHT	-1.93	-1.71	**-0.22**	NEAR NORMAL	VERY DRY	MODERATELY DRY	MODERATELY DRY

Keetch-Byram Drought Fire Index

Mesonet Station	County	Climate Division	Current Value 7/29/2003
Bowlegs	Seminole	Central	590
McAlester	Pittsburg	East Central	584
Clayton	Pushmataha	Southeast	583

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.

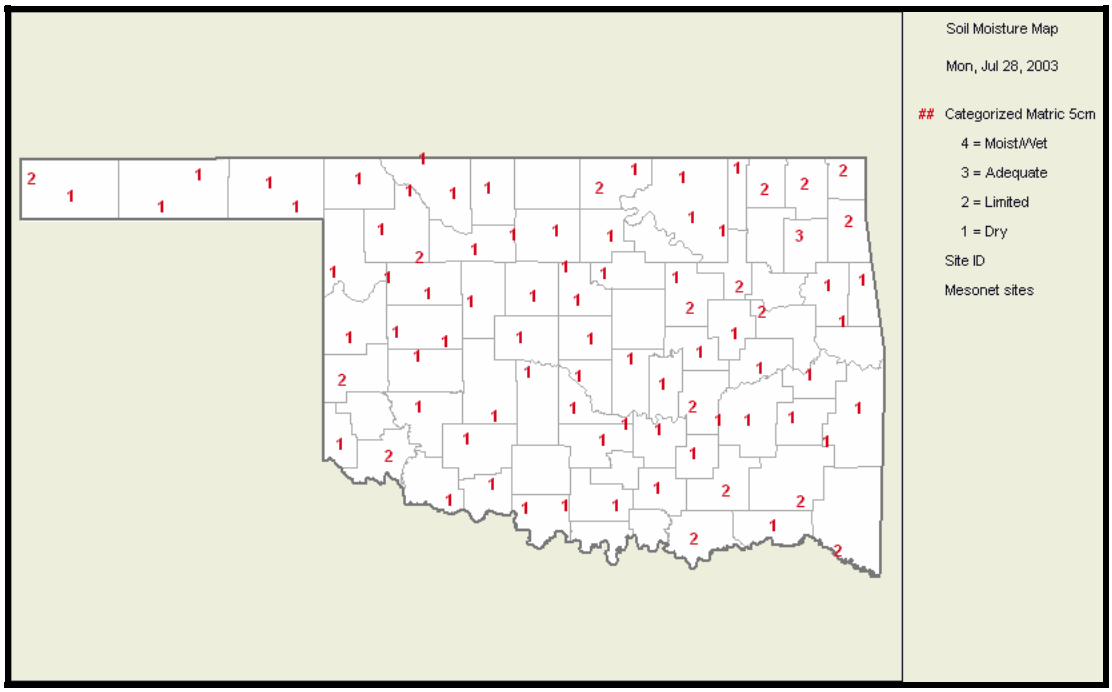
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides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

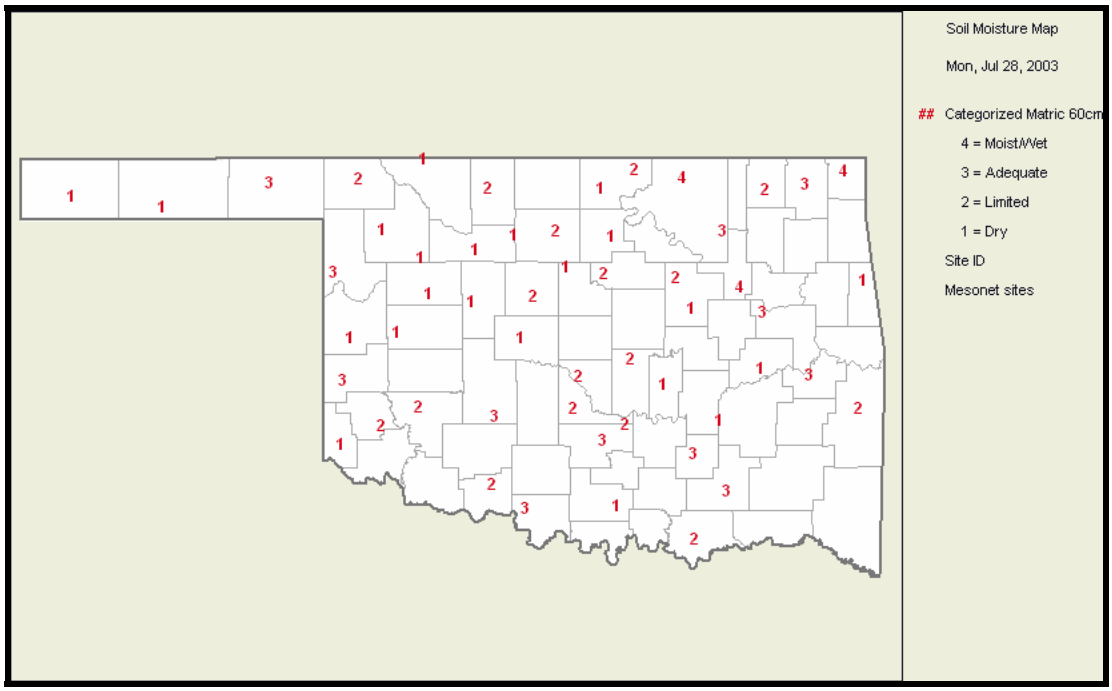
July 28, 2003

(Courtesy Oklahoma Climatological Survey)

5 cm



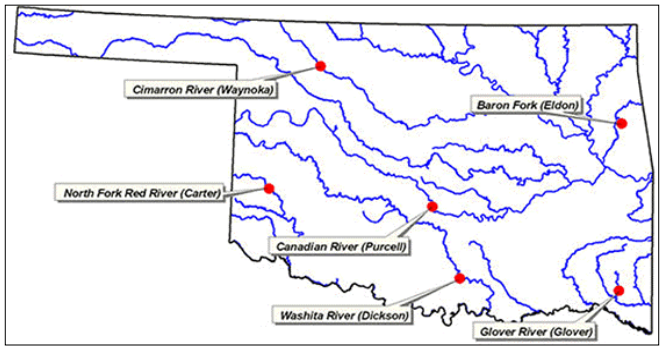
60 cm



Category Description		Depth -- Metric Conversion
Category 4	Moist/wet	5 centimeters = 2 inches
Category 3	Adequate	*corresponds to the approximate depth of grass roots
Category 2	Limited	60 centimeters = 23.6 inches
Category 1	Dry	*corresponds to the approximate root depth of the majority of Oklahoma crops

Streamflow Conditions

Flows in state rivers and streams reflect greatly reduced precipitation and runoff. Considering overall trends as well as current flows, the most recent data (July 28, 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) and *southwest* (North Fork/Red River, Beckham County) Oklahoma; **below average flow** in the *south central* (Washita River, Carter County) and *central* (Canadian River, McClain County) regions; and **near average flow** in the *northeast* (Baron Fork, Cherokee County) and *southeast* (Glover River, McCurtain County).



Weather Forecast

The National Weather Service 8- to 14-day outlook (August 5-11) calls for normal precipitation for all of Oklahoma. Above normal temperatures are expected for the west, while normal temperatures are expected to prevail in the east throughout the period.

Observed trends in oceanic and atmospheric variables indicate considerable uncertainty for the next several months. However, the majority of forecasts indicate near neutral conditions during the last half of 2003. Previous forecasts had predicted a gradual transition to La Niña over the next few months. 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

July 27 – Last week, most of Oklahoma last week failed once again to receive beneficial moisture and the extreme hot and dry weather continued to further deteriorate crops and pastures. The southeast region received the most rainfall (0.44 inches) while the Panhandle and north central Oklahoma received none. Some producers are concerned that the lack of moisture, coupled with the excessive heat, could threaten the dryland row crops potential in production. Both topsoil and subsoil moisture continued to diminish. Grasshoppers continued to be a major problem to many crops and pastures. Farmers had 6.7 days suitable for fieldwork during the week.

Wheat stubble was plowed at least once on 90 percent of the state's acreage, 3 percentage points ahead of the normal pace. At week's end, 5 percent of the wheat ground had been prepared for seeding. Ninety-one percent of the oat fields had been plowed and seedbed preparation was underway with 4 percent completed.

Dryland row crops continued to be hampered from hot weather and lack of rainfall. Irrigation remained active where water supplies allowed as crops continued to stress due to the heat. Seventy-five percent of the corn was silking. Corn maturity gained another 5 percentage points from last week to 12 percent complete. At week's end, 30 percent of the sorghum had headed, slightly behind the normal pace. Sorghum changing color advanced 4 percentage points to 7 percent complete. Soybeans blooming reached 45 percent while 23 percent were setting pods. Peanuts setting pods gained 24 percentage points from last week to 55 percent complete. The heat was helping cotton's development, with 88 percent of the acreage squaring and 41 percent setting bolls. Crop insect activity was mostly light to moderate with the heaviest infestations being reported in the southwest.

Both alfalfa and other hay remained rated in mostly fair to good condition. The third cutting of alfalfa advanced to 86 percent complete. Other hay first cutting was nearly completed with 94 percent cut while the second cutting gained 4 percentage points to 32 percent cut. Watermelons were rated in mostly fair to good condition. Harvest advanced 17 percentage points to 63 percent complete.

Pasture and range conditions continued to decline in most areas from last week but still were rated as mostly fair to good. Livestock conditions were rated as mostly fair to good. Some producers were feeding supplements in drier areas that lacked adequate pasture availability. Livestock insect activities were rated as mostly light to heavy. Cattle auctions reported an average increase in marketings for the week.

Reservoir Storage

Although levels are generally declining, reservoir storage remains good in most areas of Oklahoma. As of July 29, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 94.2 percent full, a 1.6 percent decrease from that recorded on July 14, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-eight reservoirs have experienced lake level decreases since that time. Twenty-seven reservoirs are currently operating at less than full capacity (compared to 19 two weeks ago). Two reservoirs in southwest Oklahoma—Lugert-Altus, a paltry 34.6 percent, and Tom Steed, only 66 percent—remain well below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs
07/29/2003

Climate Division / *Lake or Reservoir*	*Conservation Storage* (acre-feet)	*Present Storage* (acre-feet)	*Percent of Conservation Storage*
North Central			
Fort Supply	13,900	13,678	98.4
Great Salt Plains	31,420	26,730	85.1
Kaw*	389,281	389,281	100.0
Regional Totals/Averages	**434,601**	**429,689**	**98.9**
Northeast			
Birch	19,225	16,389	85.2
Copan	43,400	43,158	99.4
Fort Gibson	365,200	355,476	97.3
Grand	1,672,000	1,622,399	97.0
Hudson	200,300	200,300	100.0
Hulah	25,100	25,100	100.0
Keystone	510,059	466,336	91.4
Oologah	552,210	552,210	100.0
Skiatook	322,700	279,892	86.7
Regional Totals/Averages	**3,710,194**	**3,561,260**	**96.0**
West Central			
Canton	111,310	107,829	96.9
Foss	165,480	160,871	97.2
Regional Totals/Averages	**276,790**	**268,700**	**97.1**
Central			
Arcadia	27,520	25,918	94.2
Heyburn	7,105	6,540	92.0
Thunderbird	119,600	112,904	94.4
Regional Totals/Averages	**154,225**	**145,362**	**94.3**
East Central			
Eufaula*	2,411,135	2,191,871	90.9
Tenkiller	654,100	612,218	93.6
Regional Totals/Averages	**3,065,235**	**2,804,089**	**91.5**
Southwest			
Fort Cobb	80,010	79,192	99.0
Lugert-Altus	132,830	46,000	34.6
Tom Steed	88,970	58,760	66.0
Regional Totals/Averages	**301,810**	**183,952**	**60.9**
South Central			
Arbuckle	72,400	71,727	99.1
McGee Creek	113,930	103,745	91.1
Texoma*	2,677,442	2,606,196	97.3
Waurika*	190,200	178,193	93.7
Regional Totals/Averages	**3,053,972**	**2,959,861**	**96.9**
Southeast			
Broken Bow*	958,180	898,195	93.7
Hugo*	198,067	187,875	94.9
Pine Creek*	66,918	63,482	94.9
Sardis	274,330	267,367	97.5
Wister	60,162	58,803	97.7
Regional Totals/Averages	**1,557,657**	**1,475,722**	**94.7**
State Totals	**12,554,484**	**11,828,635**	**94.2**

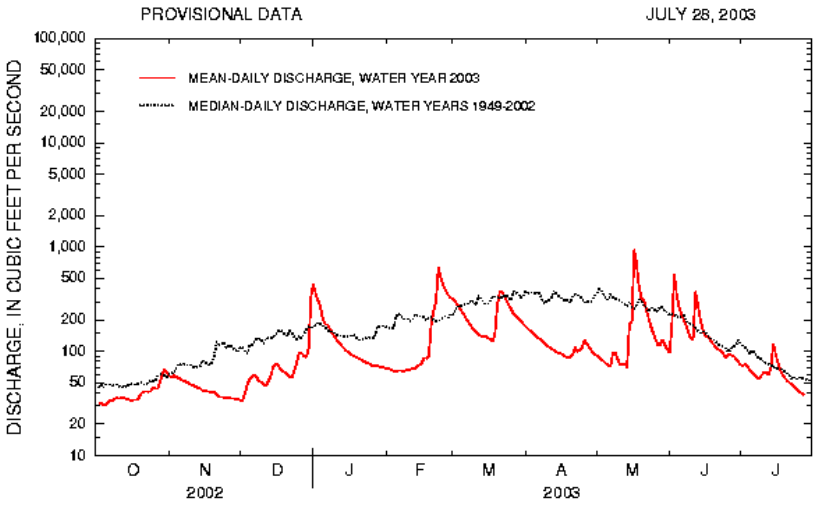
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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.

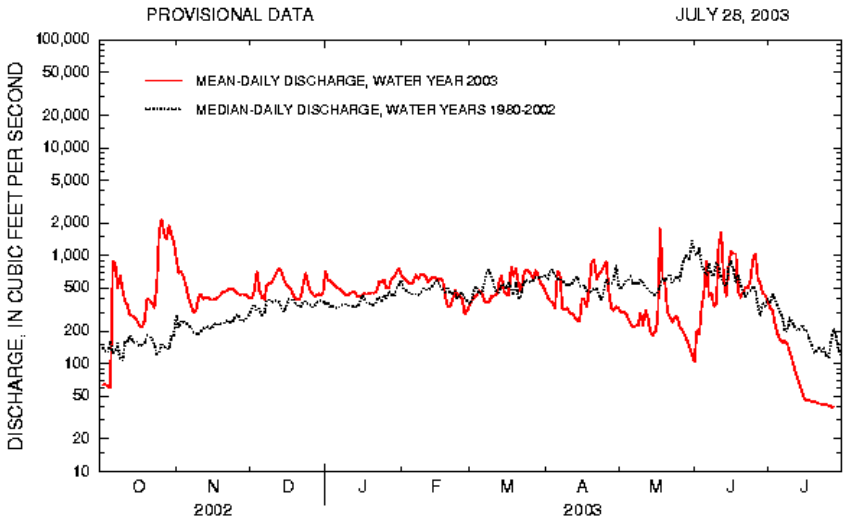
Data from U.S. Geological Survey

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.

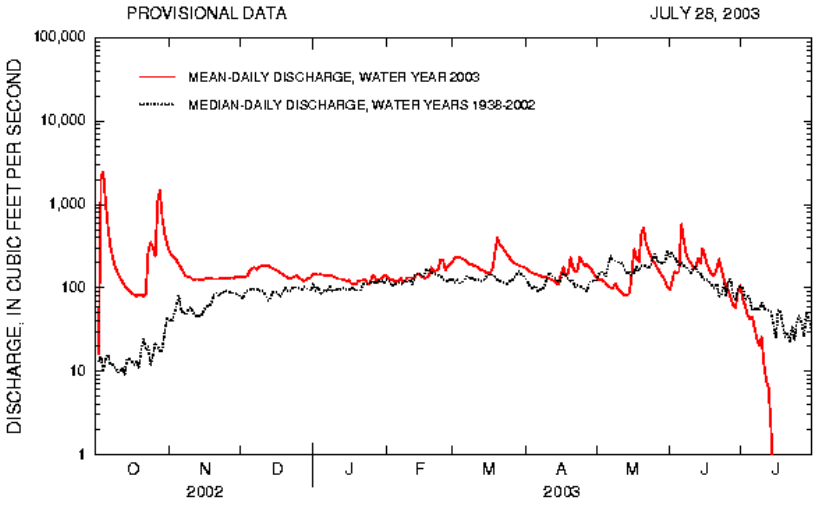
Data from U.S. Geological Survey

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.

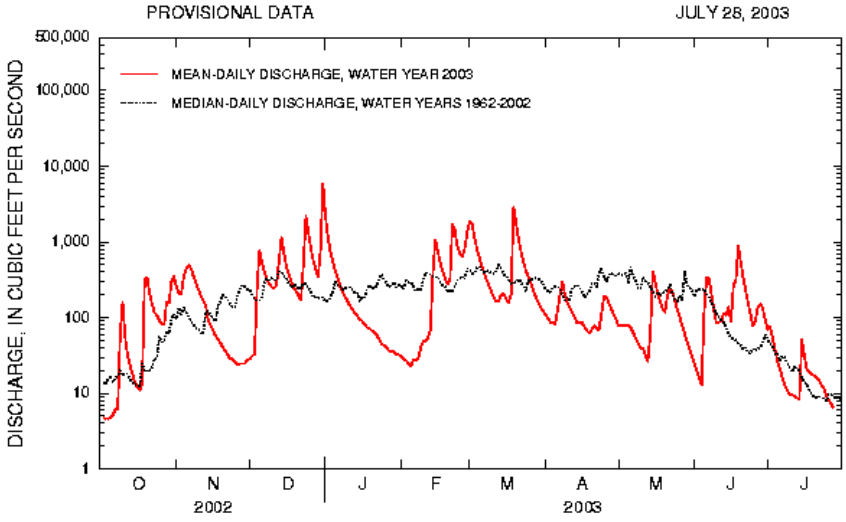
Data from U.S. Geological Survey

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.

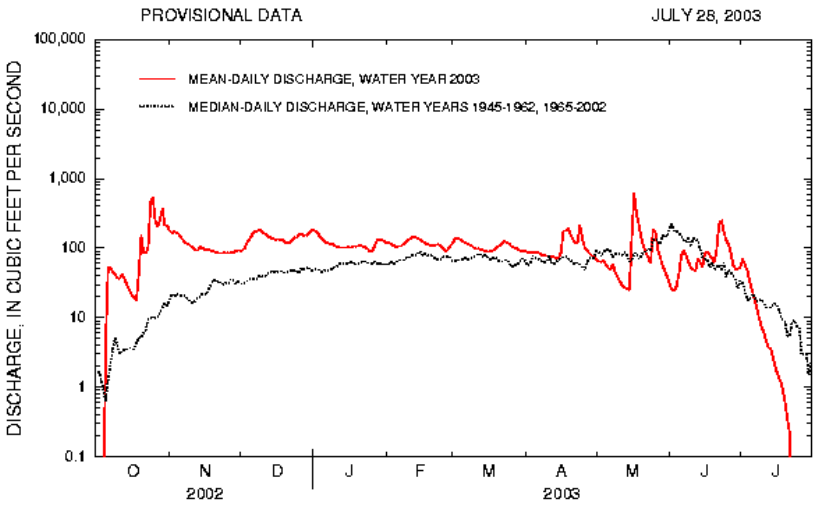
Data from U.S. Geological Survey

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.

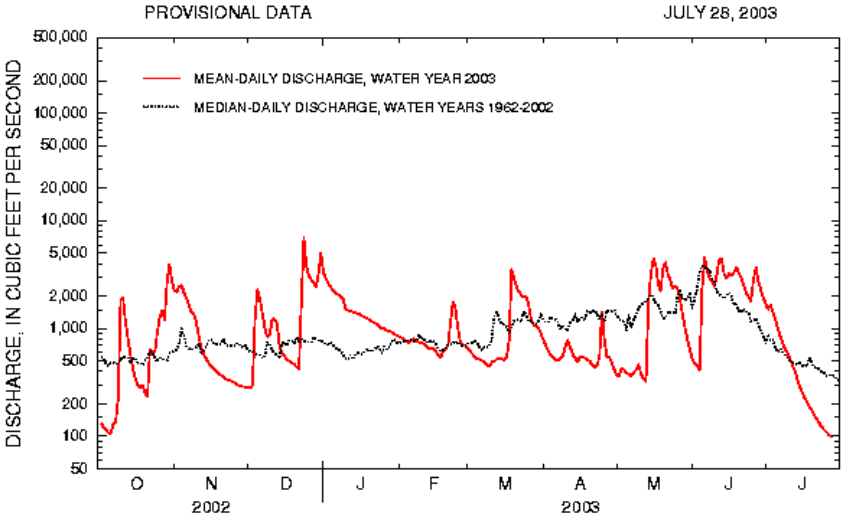
Data from U.S. Geological Survey

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