

Oklahoma Water Resources Bulletin

& Summary of Current Conditions



AUGUST 18, 2003

OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Dry conditions have emerged in many areas of Oklahoma. 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 August 17 (the current growing season) is the South Central climate division (a deficit of 8.16 inches, 62 percent of normal precipitation). Southeast Oklahoma also remains somewhat dry (an 8.6-inch deficit, 66 percent of normal). The current state-averaged rainfall total is 14.81 inches, 73 percent of normal.

For the current water year (October 1, 2002 through August 17, 2003), all regions report precipitation deficits, although no climate divisions are below 70 percent of normal. The state-averaged rainfall total is 24.88 inches, 79 percent of normal.



Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON MARCH 1—AUGUST 17, 2003			WATER YEAR OCTOBER 1, 2002—AUGUST 17, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	11.42	-2.26	83	16.97	-1.12	94
North Central	13.53	-5.42	71	23.47	-3.67	86
Northeast	19.75	-2.92	87	27.95	-7.81	78
West Central	12.31	-5.07	71	21.21	-3.62	85
Central	14.65	-6.34	70	24.20	-8.49	74
East Central	17.58	-6.14	74	29.65	-10.18	74
Southwest	14.00	-3.72	79	23.84	-2.36	91
South Central	13.32	-8.16	62	25.67	-9.80	72
Southeast	16.49	-8.60	66	31.83	-13.32	71
Statewide	14.81	-5.39	73	24.88	-6.75	79

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 (August 16, below), all but one region in Oklahoma continues to experience drought conditions. The South Central climate division is in "moderate drought" while all others, except the Southwest, are in "mild drought." Seven of Oklahoma's nine climate divisions have undergone PDSI moisture decreases, though only minor ones, since July 26. The greatest decrease occurred in the North Central climate division.

The latest monthly Standardized Precipitation Index (through July, below) indicates both short- and long-term dryness in central, southern and eastern Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), "very dry" conditions are indicated in the Southeast and East Central climate divisions throughout the last 9 and 12 months, respectively. Central, South Central, and West Central Oklahoma indicate "moderately dry" conditions at various times over the past 3, 6, and 9 months. Considering longer periods (through six years), East Central and Northeast Oklahoma are dry throughout the past 15-, 18-, 30-, and 36-month periods. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (August 18, 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 continue to advance in many areas. Statewide, 19 Mesonet stations are currently at or above 600, generally indicative of more severe drought conditions (no stations had a reading above 600 on July 29). Tishomingo, in South Central Oklahoma, has the highest KBDI value (674). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness is at Level 3 (high fire danger). Effective August 4, **a Red Flag Fire Alert is in effect for the general western two-thirds of Oklahoma as well as much of the northeast.** Rainfall and cooler weather across eastern Oklahoma has temporarily reduced fire danger there below critical levels. Hot, windy and dry conditions continue across the rest of the state, particularly in southwestern Oklahoma. These conditions have resulted in very high to extreme fire danger, particularly in the grassy fuels. Extra precautions should be taken with all outdoor burning in the counties covered by this alert. 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 July 2003			
CLIMATE DIVISION (#)	CURRENT STATUS 8/16/2003	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		8/16	7/26					
Northwest (1)	MILD DROUGHT	-1.27	-1.08	-0.19	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	MILD DROUGHT	-1.77	-1.25	-0.52	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MILD DROUGHT	-1.23	-1.03	-0.20	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	MILD DROUGHT	-1.28	-1.21	-0.07	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL
Central (5)	MILD DROUGHT	-1.85	-1.81	-0.04	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
East Central (6)	MILD DROUGHT	-1.85	-1.95	0.10	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	VERY DRY
Southwest (7)	INCIPIENT DROUGHT	-0.96	-0.87	-0.09	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MODERATE DROUGHT	-2.13	-2.08	-0.05	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
Southeast (9)	MILD DROUGHT	-1.82	-1.93	0.11	NEAR NORMAL	MODERATELY DRY	VERY DRY	MODERATELY DRY

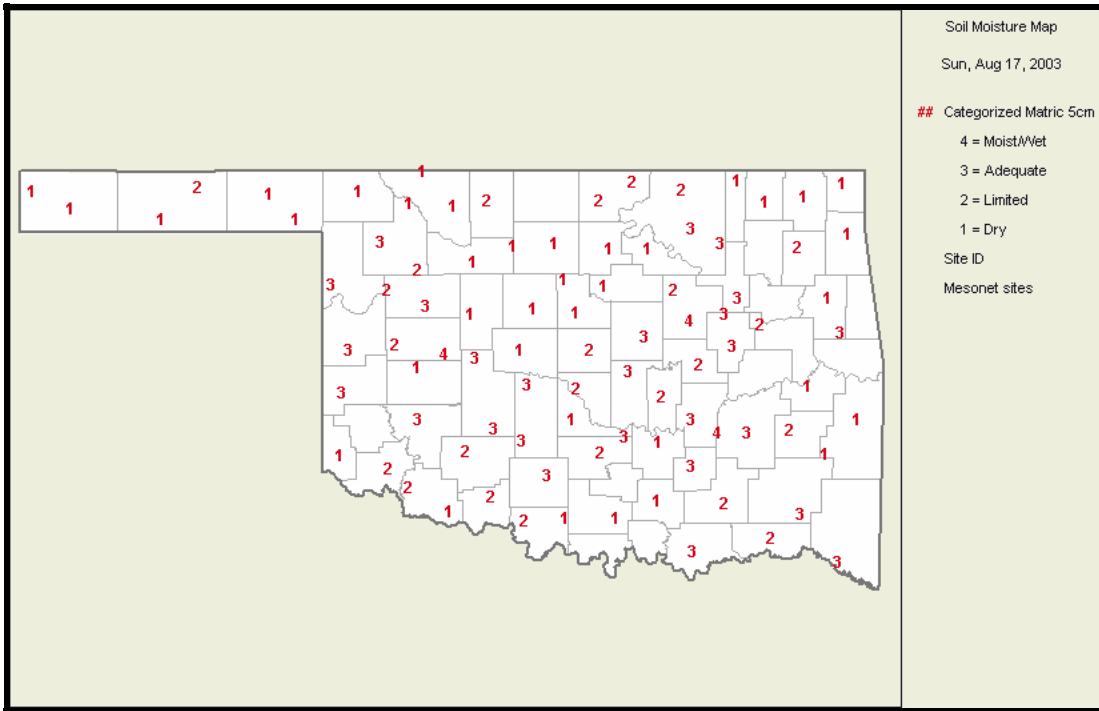
Keetch-Byram Drought Fire Index				
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 8/18/2003	ANTICIPATED IMPACT
Tishomingo	Johnston	South Central	674	600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.
Ada	Pontotoc	South Central	667	
Breckinridge	Garfield	North Central	667	

Total stations above 600 = 19

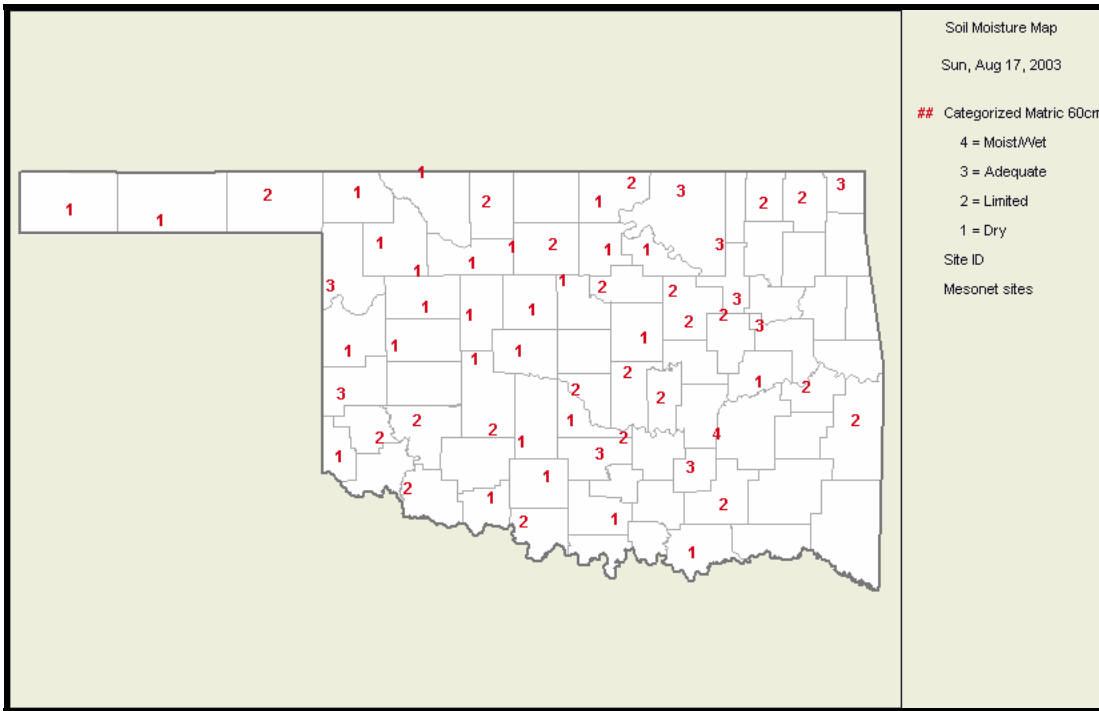
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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
August 17, 2003
 (Courtesy Oklahoma Climatological Survey)

5 cm



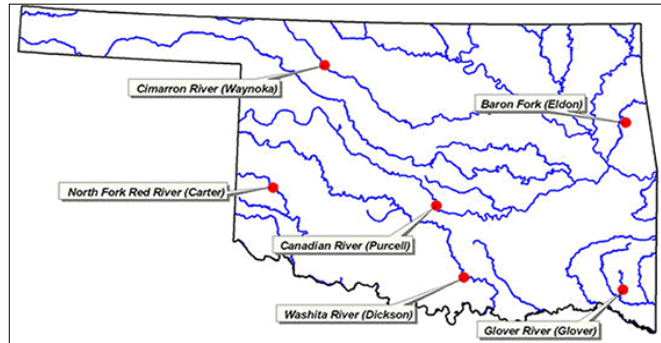
60 cm



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 continue to reflect reduced precipitation and runoff. Considering overall trends as well as current flows, the most recent data (August 18, 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; and **below average flow** in the *southeast* (Glover River, McCurtain County), *southwest* (North Fork/Red River, Beckham County), *south central* (Washita River, Carter County), *central* (Canadian River, McClain County), and *northeast* (Baron Fork, Cherokee County) regions.



Weather Forecast

The National Weather Service 8- to 14-day outlook (August 26 through September 1) calls for normal precipitation for all but far eastern Oklahoma, where above normal rainfall is anticipated. Normal temperatures are expected the entire state throughout the period.

A majority of statistical and coupled model forecasts of atmospheric and oceanic conditions in the tropical Pacific indicate near neutral conditions for the remainder of 2003 and early 2004 and do not support the imminent development of either La Niña or El Niño.

Crop Report

August 17 – Generally dry conditions and extreme heat continued to have a negative impact on crops and pastures. More rainfall is greatly needed statewide to replenish soil moisture levels to aid planting of fall small grain crops and to minimize stress to row crops and pastures. Corn, sorghum, and soybean harvest was beginning in some portions of Oklahoma. Producers were busy preparing seedbeds and applying fertilizer for fall planting despite the dry conditions. Soil moisture supplies remained mostly very short to short. Farmers had 6.3 days suitable for fieldwork during the week.

Dry conditions continued to slow preparation for planting across the state. At week's end, 27 percent of the wheat ground had been prepared for seeding. Oat and rye seedbeds were 22 and 30 percent prepared, respectively. Hot temperatures and lack of moisture continued to stress row crops. It has also caused these crops to mature ahead of normal. Harvest was underway for corn, sorghum, and soybeans. Nine percent of the corn acreage had been harvested while sorghum and soybean harvest were 3 and 2 percent harvested, respectively. Corn condition was rated as mostly good to excellent and 34 percent of the crop had reached maturity. Sorghum condition declined from last week and ranged from mostly poor to good. At week's end, 70 percent of the sorghum crop had headed while 30 percent was coloring. Soybean condition remained rated as mostly poor to good with 7 percent of the crop maturing. Peanut condition was rated as mostly fair to good. Peanuts setting pods advanced during the week and totaled 94 percent complete while 10 percent of the crop had reached maturity. The cotton crop was rated in mostly fair to good condition with 80 percent setting bolls. Cotton bolls were opening on 7 percent of the acreage.

Both alfalfa and other hay conditions ranged from mostly poor to good across the state. The fourth cutting of alfalfa advanced to 33 percent cut. The second cutting of other hay was at 64 percent cut.

Pasture and range conditions continued to dwindle from the hot and dry weather and were rated in mostly poor to fair condition. Grasshopper problems were still being reported in many areas and they continued to damage pastures.

Many cattle herds were showing signs of stress but were still rated in mostly fair to good condition. Water levels were depleting quickly and have caused major concerns for producers. Cattle auctions reported a decrease in marketings of steers under 800 pounds, but an increase in heifers less than 800 pounds.

Reservoir Storage

While reservoir storage remains good in most areas of Oklahoma, lakes in the southwest are reaching critically low levels. As of August 18, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 92.2 percent full, a 2 percent decrease from that recorded on July 29, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-six reservoirs have experienced lake level decreases since that time. Twenty-nine reservoirs are currently operating at less than full capacity (compared to 27 three weeks ago). Three reservoirs—Lugert-Altus, a paltry 18.1 percent; Tom Steed, only 63.3 percent; and Great Salt Plains, 78.4 percent—are below 80 percent capacity.

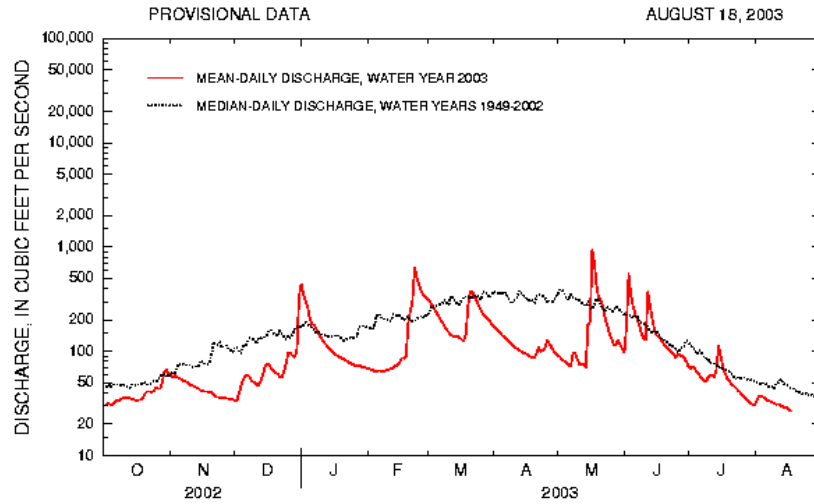
Storage in Selected Oklahoma Lakes & Reservoirs			
<i>08/18/2003</i>			
Climate Division	Conservation Storage	Present Storage	Percent of
Lake or Reservoir			Conservation Storage
	(acre-feet)	(acre-feet)	
North Central			
Fort Supply	13,900	13,150	94.6
Great Salt Plains	31,420	24,646	78.4
Kaw*	375,160	373,591	99.6
Regional Totals/Averages	420,480	411,387	97.8
Northeast			
Birch	19,225	15,739	81.9
Copan	43,400	41,666	96.0
Fort Gibson	365,200	362,395	99.2
Grand	1,672,000	1,490,639	89.2
Hudson	200,300	200,300	100.0
Hulah	25,100	24,938	99.4
Keystone	510,059	457,127	89.6
Oologah	552,210	547,981	99.2
Skiatook	322,700	273,890	84.9
Regional Totals/Averages	3,710,194	3,414,675	92.0
West Central			
Canton	111,310	105,383	94.7
Foss	165,480	159,001	96.1
Regional Totals/Averages	276,790	264,384	95.5
Central			
Arcadia	27,520	25,551	92.8
Heyburn	7,105	7,078	99.6
Thunderbird	119,600	111,396	93.1
Regional Totals/Averages	154,225	144,025	93.4
East Central			
Eufaula*	2,260,943	2,103,257	93.0
Tenkiller	654,100	587,670	89.8
Regional Totals/Averages	2,915,043	2,690,927	92.3
Southwest			
Fort Cobb	80,010	77,704	97.1
Lugert-Altus	132,830	24,017	18.1
Tom Steed	88,970	56,341	63.3
Regional Totals/Averages	301,810	158,062	52.4
South Central			
Arbuckle	72,400	70,451	97.3
McGee Creek	113,930	99,312	87.2
Texoma*	2,588,474	2,469,369	95.4
Waurika*	190,200	174,044	91.5
Regional Totals/Averages	2,965,004	2,813,176	94.9
Southeast			
Broken Bow*	958,180	859,993	89.8
Hugo*	158,617	158,617	100.0
Pine Creek*	61,570	61,082	99.2
Sardis	274,330	265,493	96.8
Wister	60,162	56,657	94.2
Regional Totals/Averages	1,512,859	1,401,842	92.7
State Totals	12,256,405	11,298,478	92.2
* 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.

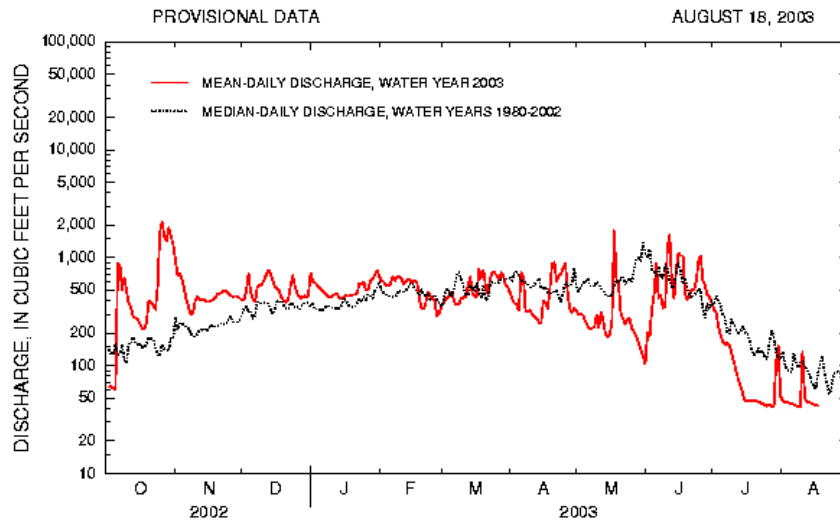
Data from U.S. Geological Survey

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.

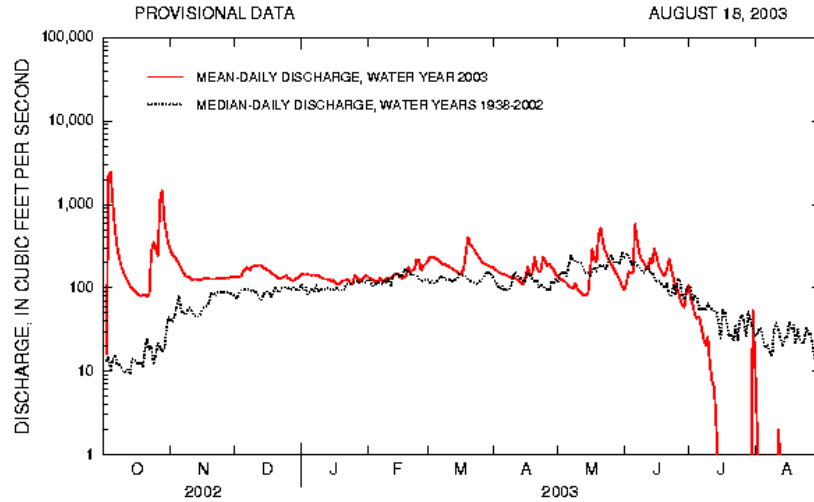
Data from U.S. Geological Survey

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.

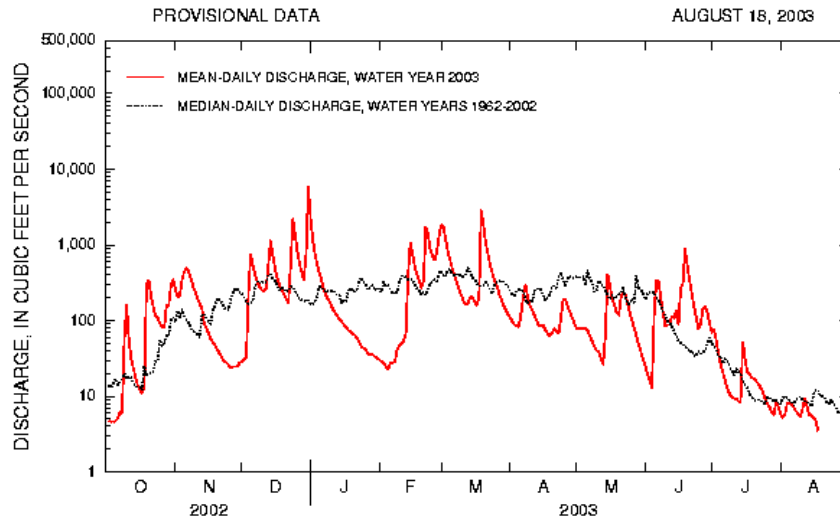
Data from U.S. Geological Survey

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

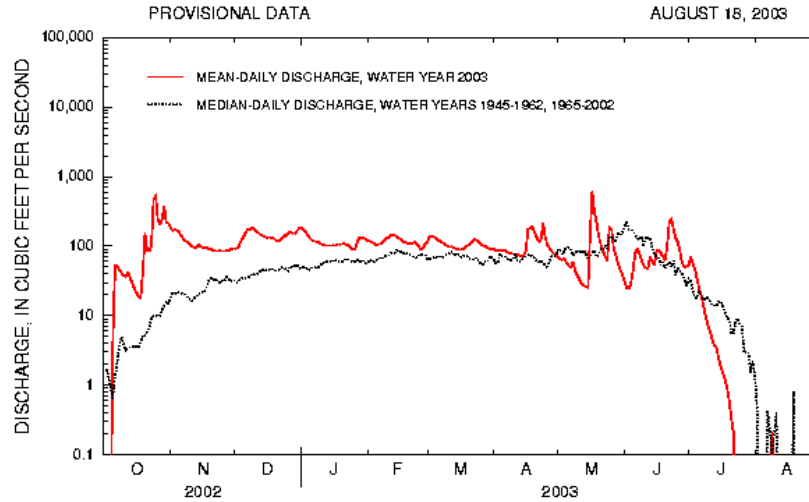
North Fork of the Red River near Carter

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

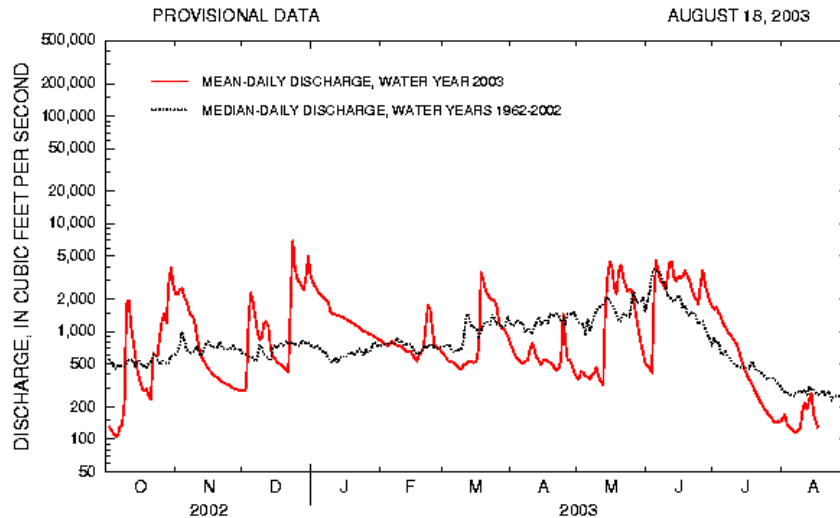
Washita River near Dickson

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