Oklahoma Water Resources Bulletin

& Summary of Current Conditions

SEPTEMBER 3, 2003 — OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Rainfall during the past week has temporarily abated emerging drought conditions throughout much 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 September 1 (the current growing season) is the Southeast climate division (a deficit of 7.42 inches, 72 percent of normal precipitation). South Central and West Central Oklahoma also remain somewhat dry, with deficits of 6.2 and 4.87 inches, respectively. The current state-averaged rainfall total is 18.12 inches, 84 percent of normal.

For the current water year (October 1, 2002 through September 1, 2003), the state-averaged rainfall total is 28.23 inches, 86 percent of normal.

Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON MARCH 1—SEPTEMBER 1, 2003			WATER YEAR OCTOBER 1, 2002—SEPTEMBER 1, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	14.42	-0.45	97	19.97	+0.69	104
North Central	16.88	-3.55	83	26.85	-1.77	94
Northeast	25.64	+1.37	106	33.83	-3.52	91
West Central	13.84	-4.87	74	22.73	-3.43	87
Central	18.28	-4.02	82	27.89	-6.13	82
East Central	21.00	-4.19	83	33.07	-8.23	80
Southwest	16.19	-2.85	85	26.07	-1.45	95
South Central	16.58	-6.20	73	28.98	-7.79	79
Southeast	19.05	-7.42	72	34.59	-11.93	74
Statewide	**18.12**	**-3.46**	**84**	**28.23**	**-4.78**	**86**

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 30, below), conditions have improved significantly and only two regions in Oklahoma are currently experiencing drought conditions. The Southeast and South Central climate divisions are both in "mild drought." All of Oklahoma's nine climate divisions have undergone PDSI moisture in since August 16. The smallest increase occurred in the Southeast 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 (September 2, 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 improved considerably in most areas of Oklahoma. Statewide, only one Mesonet station is currently at or above 600, generally indicative of more severe drought conditions (19 stations had a reading above 600 on August 18). Erick, in West Central Oklahoma, has the highest KBDI value (604). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness is at Level 3 (high fire danger). Effective August 31, **a Burn Ban is in effect for 33 counties in western and central Oklahoma.**

Palmer Drought Severity Index / Standardized Precipitation Index Through July 2003

Climate Division (#)	Current Status 8/30/2003	Value 8/30	Value 8/16	Change In Value	3-Month	6-Month	9-Month	12-Month
Northwest (1)	MOIST SPELL	1.07	-1.27	**2.34**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	NEAR NORMAL	0.09	-1.77	**1.86**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MOIST SPELL	1.27	-1.23	**2.50**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	NEAR NORMAL	-0.25	-1.28	**1.03**	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL
Central (5)	NEAR NORMAL	-0.29	-1.85	**1.56**	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
East Central (6)	INCIPIENT DROUGHT	-0.91	-1.85	**0.94**	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	VERY DRY
Southwest (7)	NEAR NORMAL	0.28	-0.96	**1.24**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MILD DROUGHT	-1.29	-2.13	**0.84**	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
Southeast (9)	MILD DROUGHT	-1.77	-1.82	**0.05**	NEAR NORMAL	MODERATELY DRY	VERY DRY	MODERATELY DRY

Keetch-Byram Drought Fire Index

Mesonet Station	County	Climate Division	Current Value 9/2/2003	Anticipated Impact
Erick	Beckham	West Central	604	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.
Idabel	McCurtain	Southeast	578	
Wilburton	Latimer	Southeast	577	

Total stations above 600 = 1

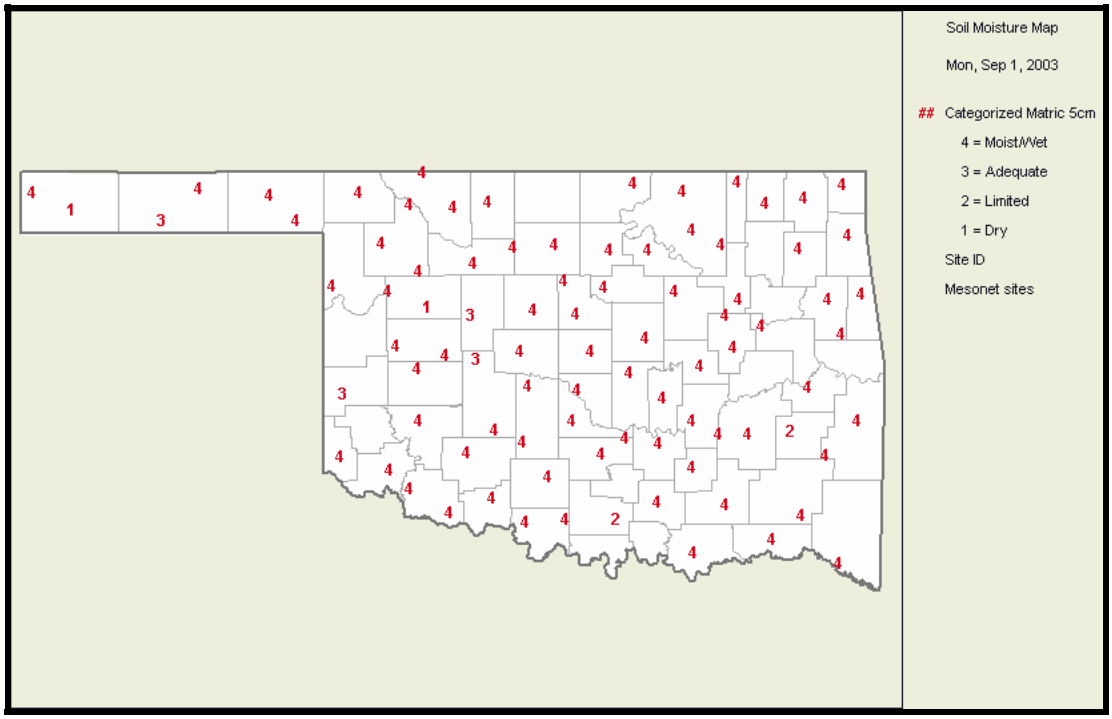
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides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

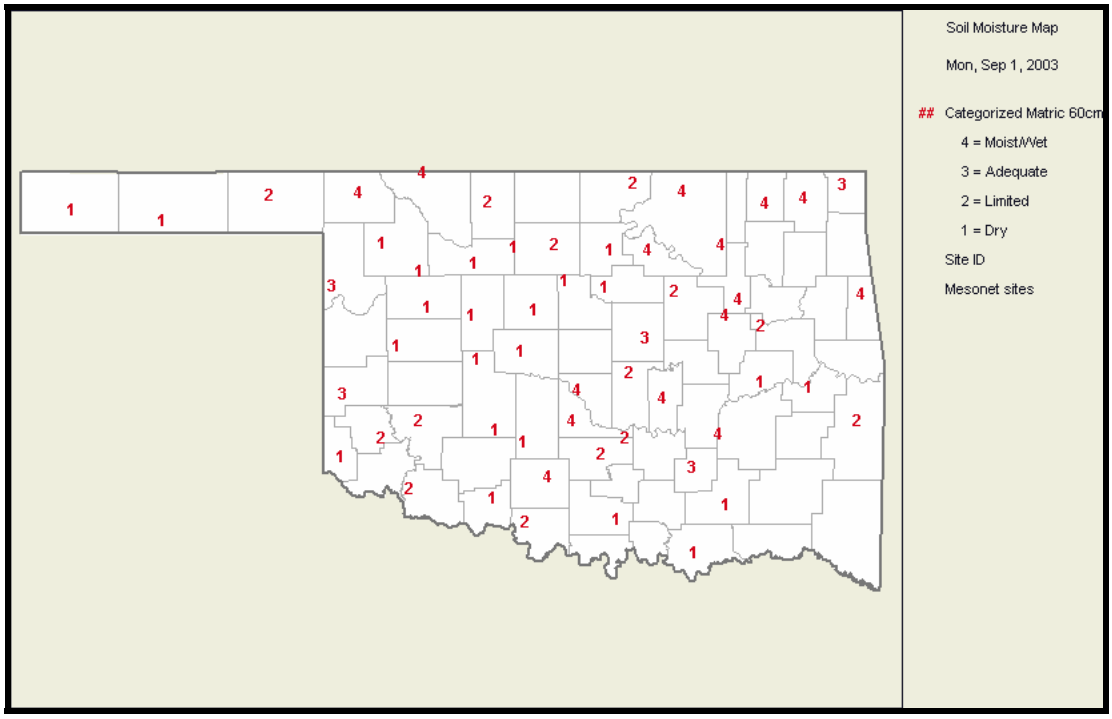
September 1, 2003

(Courtesy Oklahoma Climatological Survey)

5 cm



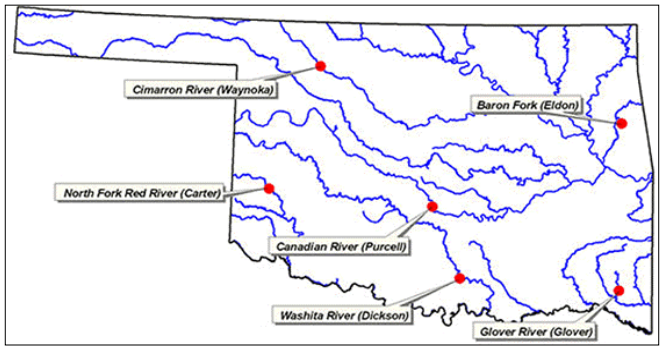
60 cm



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

Although flows are spiked due to runoff from recent rains, state rivers and streams continue to reflect reduced precipitation and runoff. Considering overall trends as well as current flows, the most recent data (September 2, 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 *southeast* (Glover River, McCurtain County) Oklahoma; **below average flow** in the *southwest* (North Fork/Red River, Beckham County) and *south central* (Washita River, Carter County) regions; and **near average flow** in the *central* (Canadian River, McClain County) and *northeast* (Baron Fork, Cherokee County).



Weather Forecast

The National Weather Service 8- to 14-day outlook (September 9-15) calls for below normal precipitation for all of Oklahoma. Normal temperatures are expected for the general eastern one-half of the state; above normal temperatures should prevail in the west 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

September 2 - Oklahoma farmers and ranchers finally received the rainfall and cooler temperatures to give them a break from the drought conditions experienced the past few weeks. Even with the rain, precipitation amounts were still behind normal but did make a big improvement in soil moisture supplies. Subsoil moisture was 1 percent surplus, 18 percent adequate, 46 percent short and 35 percent very short. Topsoil moisture conditions improved with 4 percent surplus, 22 percent adequate, 33 percent short, and 41 percent very short. Temperatures were also moderated with the highs in the early 90s replacing the 100-degree temperatures that have been prevalent in previous weeks.

Corn, sorghum, and soybean harvest progressed in most portions of the state. Crop insects were light to moderate. Farmers had 6 days suitable for fieldwork during the week. Some of the reports for this week's crop weather arrived before the weekend rains, therefore soil moisture supplies and crop conditions may understate actual conditions.

The statewide rains were a welcome relief for wheat and small grain farmers who needed moisture in order to begin fall planting. Planting activities will be picking up in many areas. At week's end, seedbed preparations for wheat, rye and oats were still slightly behind the normal pace for this time of year. The rain will also be beneficial to Oklahoma's row crops but some dryland row crops may still be damaged due to the summer heat. Corn harvest jumped to 32 percent complete while sorghum and soybeans were 8 and 5 percent harvested, respectively. Twenty-three percent of the sorghum acreage had reached maturity, ahead of the normal five-year average. Soybeans blooming and setting pods were slightly ahead of the 5-year average. Thirty seven percent of the peanuts were mature, up from the 5-year average of 16 percent. The cotton crop condition ranged from mostly fair to good condition with 23 percent of the crop opening bolls.

Both alfalfa and other hay conditions ranged from poor to good condition. The fourth cutting of alfalfa advanced to 51 percent cut. The second cutting of other hay was at 68 percent cut. Pasture and range conditions stayed in mostly fair to poor condition although the weekend rains, combined with some warm weather, may allow some pastures to be revitalized. Livestock conditions were rated mostly good to fair. Livestock insect activities were rated as moderate to light.

Reservoir Storage

Despite recent rainfall and runoff, lakes in the southwest continue to suffer from critically low levels. As of September 2, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 89.7 percent full, a 2.5 percent decrease from that recorded on August 18, according to information from the U.S. Army Corps of Engineers (Tulsa District). Eighteen reservoirs have experienced lake level decreases since that time. Twenty-three reservoirs are currently operating at less than full capacity (compared to 29 two weeks ago). Two reservoirs—Lugert-Altus, a paltry 10 percent; and Tom Steed, only 62.8 percent—remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs
09/02/2003

Climate Division / *Lake or Reservoir*	*Conservation Storage* (acre-feet)	*Present Storage* (acre-feet)	*Percent of Conservation Storage*
North Central			
Fort Supply	13,900	13,235	95.2
Great Salt Plains	31,420	31,420	100.0
Kaw*	375,160	373,120	99.5
Regional Totals/Averages	**420,480**	**417,775**	**99.4**
Northeast			
Birch	19,225	17,340	90.2
Copan	43,400	43,400	100.0
Fort Gibson	365,200	365,200	100.0
Grand	1,672,000	1,510,771	90.4
Hudson	200,300	200,300	100.0
Hulah	25,100	25,100	100.0
Keystone	510,059	435,264	85.3
Oologah	552,210	552,210	100.0
Skiatook	322,700	274,078	84.9
Regional Totals/Averages	**3,710,194**	**3,423,663**	**92.3**
West Central			
Canton	111,310	104,390	93.8
Foss	165,480	157,828	95.4
Regional Totals/Averages	**276,790**	**262,218**	**94.7**
Central			
Arcadia	27,520	25,758	93.6
Heyburn	7,105	7,105	100.0
Thunderbird	119,600	113,194	94.6
Regional Totals/Averages	**154,225**	**146,057**	**94.7**
East Central			
Eufaula*	2,260,943	1,968,244	87.1
Tenkiller	654,100	561,904	85.9
Regional Totals/Averages	**2,915,043**	**2,530,148**	**86.8**
Southwest			
Fort Cobb	80,010	76,587	95.7
Lugert-Altus	132,830	13,271	10.0
Tom Steed	88,970	55,837	62.8
Regional Totals/Averages	**301,810**	**145,695**	**48.3**
South Central			
Arbuckle	72,400	70,012	96.7
McGee Creek	113,930	96,954	85.1
Texoma*	2,556,122	2,350,729	92.0
Waurika*	190,200	171,826	90.3
Regional Totals/Averages	**2,932,652**	**2,689,521**	**91.7**
Southeast			
Broken Bow*	958,180	813,523	84.9
Hugo*	158,617	158,617	100.0
Pine Creek*	61,570	59,128	96.0
Sardis	274,330	265,359	96.7
Wister	60,162	57,014	94.8
Regional Totals/Averages	**1,512,859**	**1,353,641**	**89.5**
State Totals	**12,224,053**	**10,968,718**	**89.7**

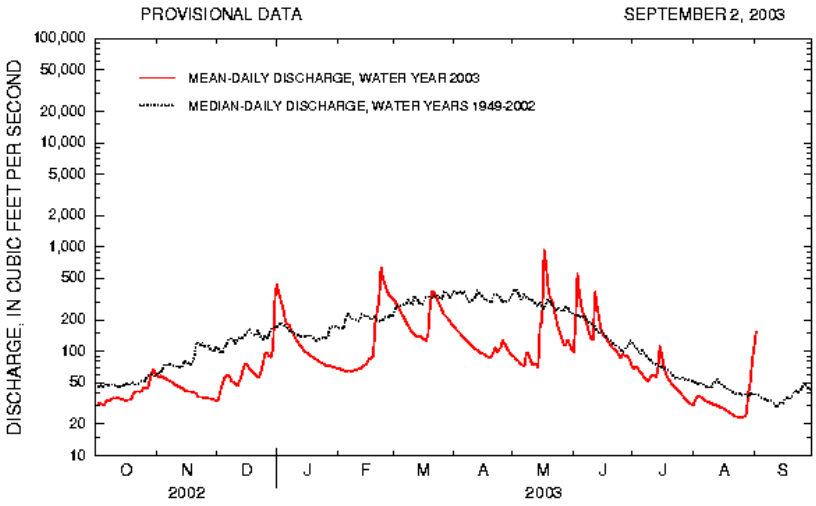
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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.

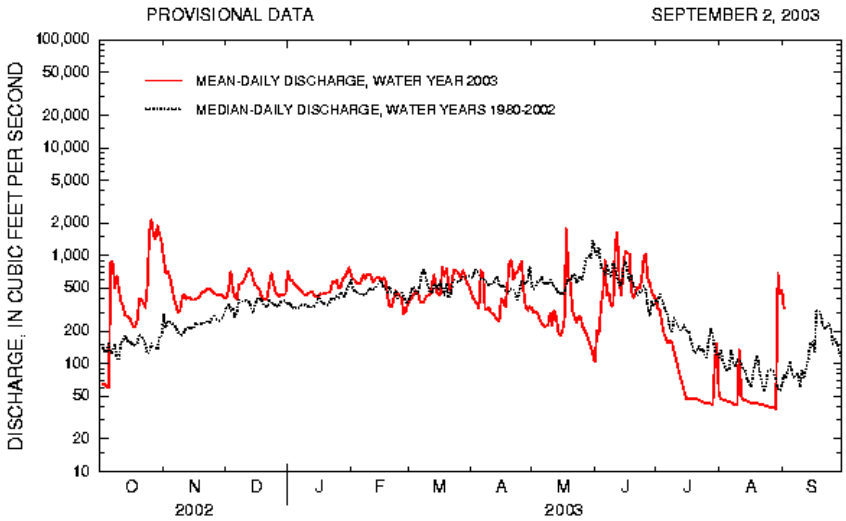
Data from U.S. Geological Survey

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.

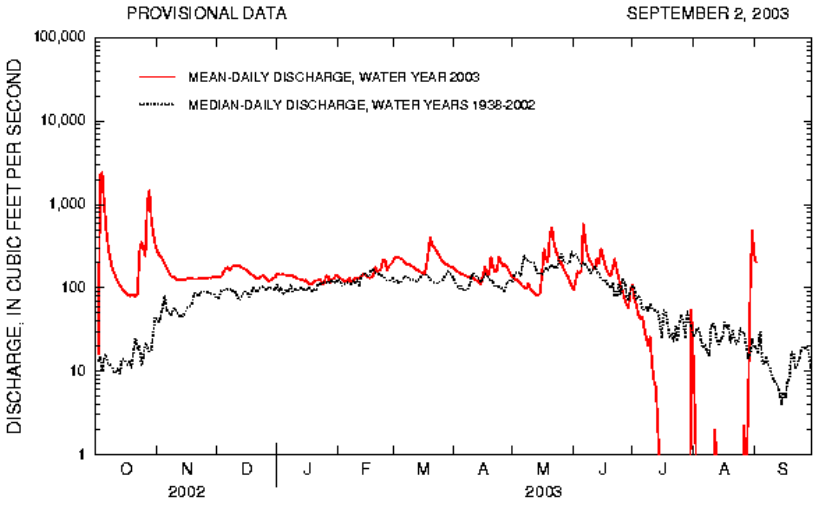
Data from U.S. Geological Survey

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.

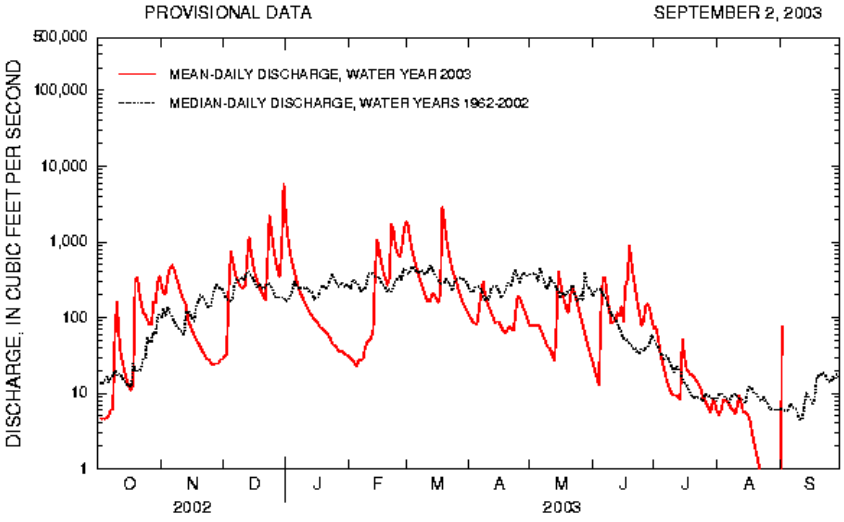
Data from U.S. Geological Survey

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.

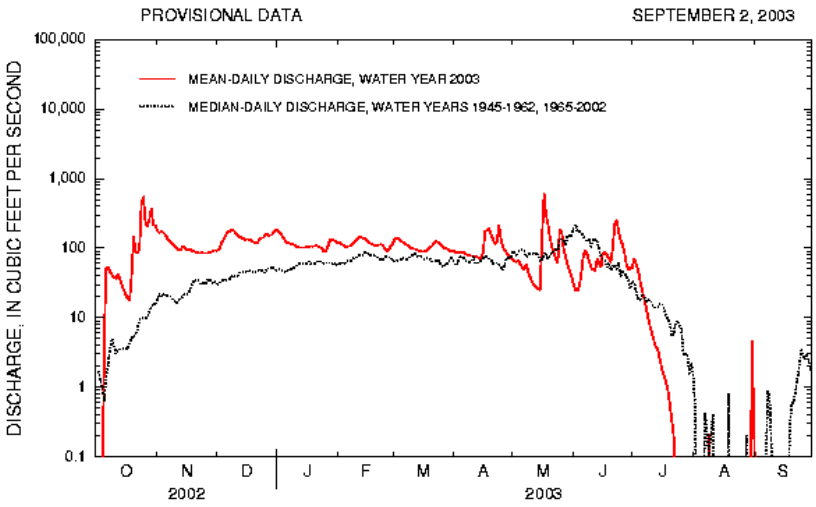
Data from U.S. Geological Survey

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.

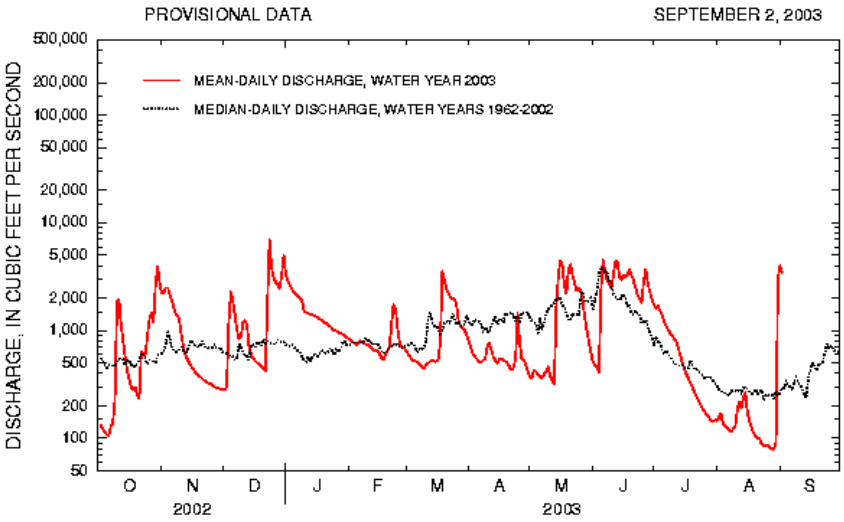
Data from U.S. Geological Survey

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