Oklahoma Water Resources Bulletin

& Summary of Current Conditions

SEPTEMBER 24, 2003 — OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Recent rainfall continues to abate dry 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 September 1-22 (the current growing season) is the Southwest climate division (a deficit of 1.86 inches, 25 percent of normal precipitation). West Central and North Central Oklahoma also remain somewhat dry, with deficits of 0.85 and 0.81 inches, respectively. The current state-averaged rainfall total is 2.58 inches, 92 percent of normal.

For the current water year (October 1, 2002 through September 22, 2003), the state-averaged rainfall total is 30.31 inches, 85 percent of normal.

Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	GROWING SEASON SEPTEMBER 1-22, 2003			WATER YEAR OCTOBER 1, 2002—SEPTEMBER 22, 2003		
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL
Panhandle	1.76	+0.38	127	21.73	+1.13	105
North Central	1.49	-0.81	65	28.33	-2.48	92
Northeast	2.96	-0.55	84	36.51	-4.18	90
West Central	1.37	-0.85	62	24.10	-4.18	85
Central	2.40	-0.62	80	30.05	-6.85	81
East Central	3.72	+0.08	102	35.60	-9.17	80
Southwest	0.62	-1.86	25	26.51	-3.39	89
South Central	4.37	+1.19	137	32.18	-7.62	81
Southeast	4.40	+1.04	131	37.34	-12.38	75
Statewide	**2.58**	**-0.22**	**92**	**30.31**	**-5.37**	**85**

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 (September 20, below), conditions continue to improve; no regions in Oklahoma are currently experiencing drought conditions. All of Oklahoma's nine climate divisions have undergone PDSI moisture increases since August 30. The smallest increase occurred in the Northeast climate division.

The latest monthly Standardized Precipitation Index (through August, below) indicates some long-term dryness in southeast and east central Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), "moderately dry" conditions are indicated in the Southeast climate division throughout the last 6-, 9- and 12-month periods and during the past 12 months in the East Central region. Considering longer periods (through six years), East Central Oklahoma is dry throughout the past 15- and 18-month periods while the Southeast is dry throughout the past 15 months. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (September 22, 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 generally good in most areas of Oklahoma. Statewide, only one Mesonet station is currently at or above 600, generally indicative of more severe drought conditions (one station had a reading above 600 on September 2). Miami, in Northeast Oklahoma, has the highest KBDI value (676). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness is at Level 2 (moderate fire danger). **A Burn Ban remains in effect for Cimarron County, in the Oklahoma Panhandle.**

Palmer Drought Severity Index / Standardized Precipitation Index Through August 2003

Climate Division (#)	Current Status 9/20/2003	Value 9/20	Value 8/30	Change In Value	3-Month	6-Month	9-Month	12-Month
Northwest (1)	MOIST SPELL	1.87	1.07	**0.80**	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	INCIPIENT MOIST SPELL	0.55	0.09	**0.46**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MOIST SPELL	1.56	1.27	**0.29**	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	NEAR NORMAL	0.18	-0.25	**0.43**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	MOIST SPELL	1.30	-0.29	**1.59**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT MOIST SPELL	0.78	-0.91	**1.69**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
Southwest (7)	INCIPIENT MOIST SPELL	0.61	0.28	**0.33**	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MOIST SPELL	1.15	-1.29	**2.44**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	NEAR NORMAL	0.14	-1.77	**1.91**	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY

Keetch-Byram Drought Fire Index

Mesonet Station	County	Climate Division	Current Value 9/22/2003	Anticipated Impact
Miami	Ottawa	Northeast	676	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.
Hinton	Caddo	Southwest	577	
Watonga	Blaine	West Central	576	

Total stations above 600 = 1

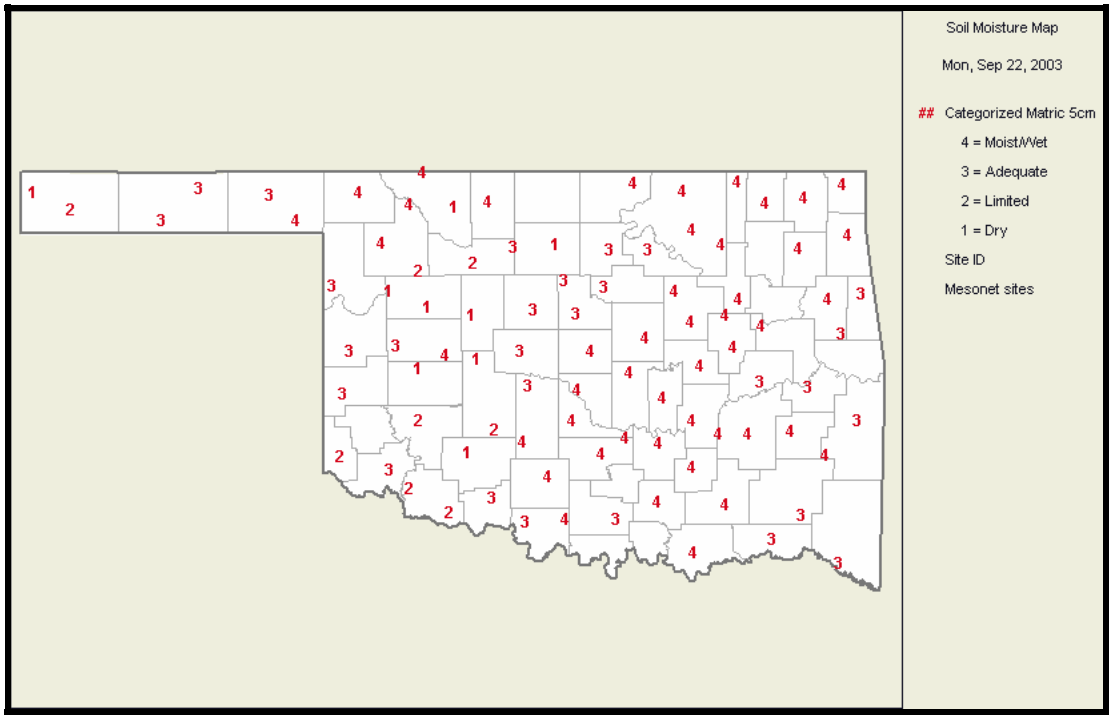
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides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

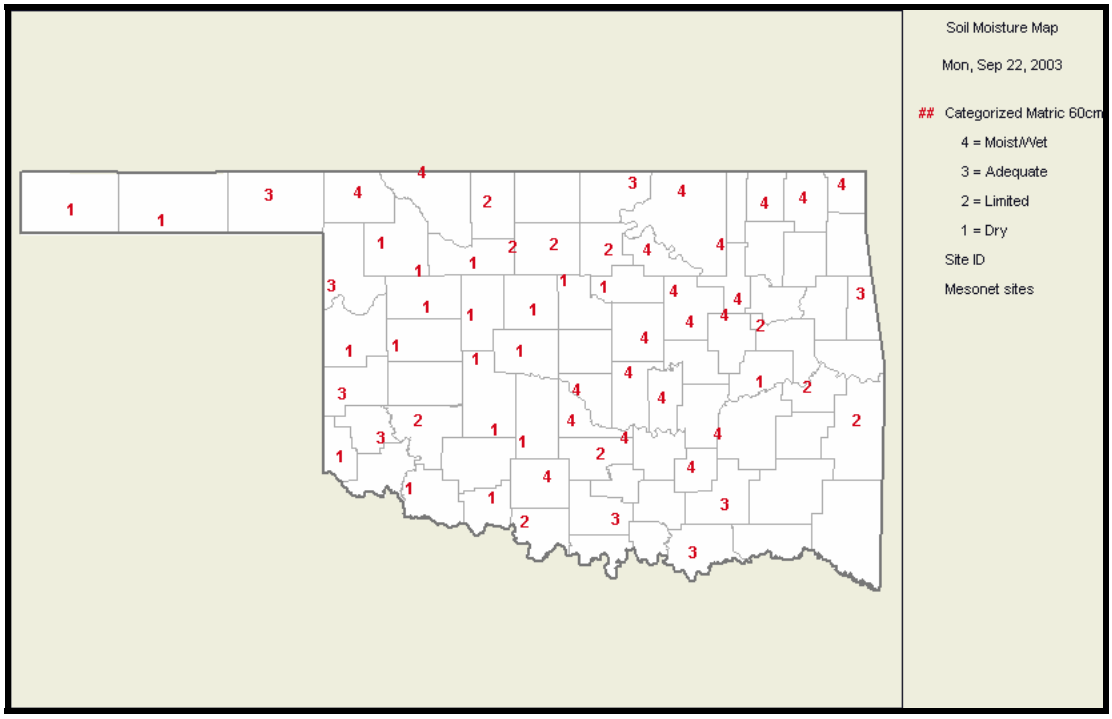
September 22, 2003

(Courtesy Oklahoma Climatological Survey)

5 cm



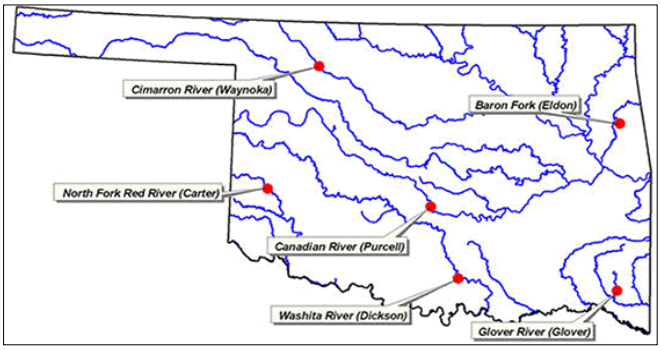
60 cm



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 have improved somewhat due to recent precipitation and runoff. Considering overall trends as well as current flows, the most recent data (September 19, 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 *southwest* (North Fork/Red River, Beckham County) and *central* (Canadian River, McClain County) regions; **near average flow** in the *northeast* (Baron Fork, Cherokee County); and **above average flow** in *south central* (Washita River, Carter County) and *southeast* (Glover River, McCurtain County) Oklahoma.



Weather Forecast

The National Weather Service 8- to 14-day outlook (September 30 through October 6) calls for below normal precipitation for all of Oklahoma. Above normal temperatures are expected for all but the general eastern region of the state, where normal temperatures should prevail.

A majority of statistical and coupled model forecasts of atmospheric and oceanic conditions in the tropical Pacific do not support the development of either La Niña or El Niño within the next few months.

Crop Report

September 21 - Temperatures were relatively cool throughout the week. Heavy thunderstorms crossed through much of the southern parts of the state over the weekend, producing rain, hail, and high winds. Some farmers were able to apply fertilizer to pastures and wheat fields during the week. Grasshoppers and armyworms have caused some problems in isolated areas for pastures and crops. Soil moisture supplies were rated from short to adequate. Farmers had 5.4 days suitable for fieldwork during the week.

The recent rainfall improved soil moisture supplies and will assist producers in making progress preparing land and sowing next year's small grain crops. At week's end, 87 percent of the wheat ground had been prepared for seeding. Thirty-eight percent of the state's intended wheat acreage had been planted. Some earlier planted fields were beginning to emerge in areas with favorable soil moisture conditions.

With many parts of the state receiving beneficial moisture late last week, row crop conditions in those areas should show improvement. Harvest activities made fair progress before being slowed over the weekend by the wet weather. Corn harvest made good progress and increased to 58 percent harvested, 6 percentage points behind normal. Sorghum and soybeans were at 23 and 21 percent harvested, respectively. Forty-seven percent of the sorghum acreage had reached maturity. Peanuts mature reached 68 percent with a few isolated fields being dug. The cotton crop was rated in mostly fair to good condition with 68 percent of the cotton opening bolls but harvest is not yet underway.

Both alfalfa and other hay ranged from fair to good condition. The rains were welcomed by most producers who needed another hay cutting before winter arrives. The fourth and fifth cutting of alfalfa increased to 78 and 25 percent cut, respectively. The second cutting of other hay was at 76 percent cut.

Pasture and range conditions have improved in those areas that have received good moisture during the last few weeks and were rated as mostly fair to good condition statewide. Supplemental feeding of livestock was still required for some producers but was decreasing with the recovering pasture conditions. Livestock conditions were rated mostly fair to good. Livestock insect activities were rated as light to moderate. Cattle auctions reported an average increase in marketings for the week.

Reservoir Storage

Lakes in southwest Oklahoma continue to suffer from critically low levels, but lake storage elsewhere is generally good. As of September 23, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 88.5 percent full, a 1.2 percent decrease from that recorded on September 2, according to information from the U.S. Army Corps of Engineers (Tulsa District). Nineteen reservoirs have experienced lake level decreases since that time. Twenty-two reservoirs are currently operating at less than full capacity (compared to 23 three weeks ago). Two reservoirs—Lugert-Altus, 15.1 percent; and Tom Steed, only 60.2 percent—remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs
09/23/2003

Climate Division *Lake or Reservoir*	*Conservation Storage (acre-feet)*	*Present Storage (acre-feet)*	*Percent of Conservation Storage*
North Central			
Fort Supply	13,900	12,792	92.0
Great Salt Plains	31,420	31,420	100.0
Kaw*	375,160	375,160	100.0
Regional Totals/Averages	**420,480**	**419,372**	**99.7**
Northeast			
Birch	19,225	17,200	89.5
Copan	43,400	43,400	100.0
Fort Gibson	365,200	365,200	100.0
Grand	1,672,000	1,503,889	89.9
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	272,962	84.6
Regional Totals/Averages	**3,710,194**	**3,490,320**	**94.1**
West Central			
Canton	111,310	101,026	90.8
Foss	165,480	156,727	94.7
Regional Totals/Averages	**276,790**	**257,753**	**93.1**
Central			
Arcadia	27,520	26,167	95.1
Heyburn	7,105	7,105	100.0
Thunderbird	119,600	112,266	93.9
Regional Totals/Averages	**154,225**	**145,538**	**94.4**
East Central			
Eufaula*	2,260,943	2,000,385	88.5
Tenkiller	654,100	567,356	86.7
Regional Totals/Averages	**2,915,043**	**2,567,741**	**88.1**
Southwest			
Fort Cobb	80,010	74,943	93.7
Lugert-Altus	132,830	20,033	15.1
Tom Steed	88,970	53,596	60.2
Regional Totals/Averages	**301,810**	**148,572**	**49.2**
South Central			
Arbuckle	72,400	70,358	97.2
McGee Creek	113,930	93,360	81.9
Texoma*	2,539,946	2,365,911	93.1
Waurika*	190,200	168,497	88.6
Regional Totals/Averages	**2,916,476**	**2,698,126**	**92.5**
Southeast			
Broken Bow*	958,180	802,753	83.8
Hugo*	158,617	152,439	96.1
Pine Creek*	57,750	57,132	98.9
Sardis	274,330	263,752	96.1
Wister	60,162	58,874	97.9
Regional Totals/Averages	**1,509,039**	**1,334,950**	**88.5**
State Totals	**12,204,057**	**11,062,372**	**90.6**

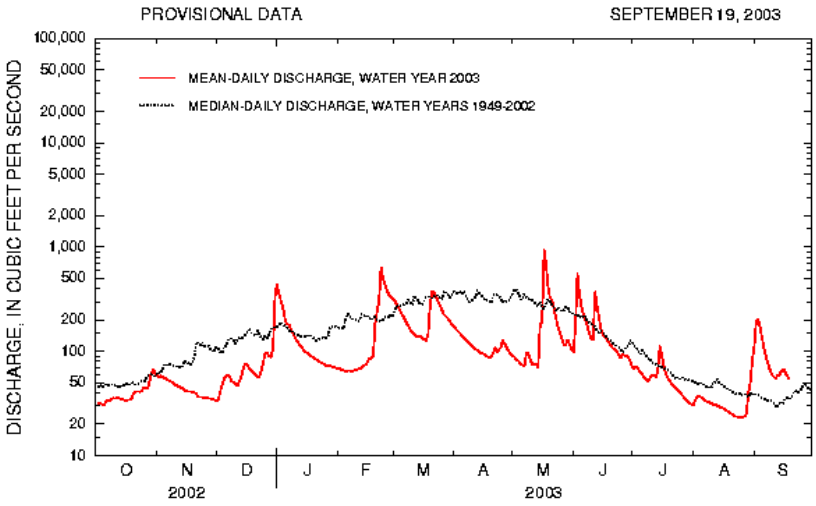
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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.

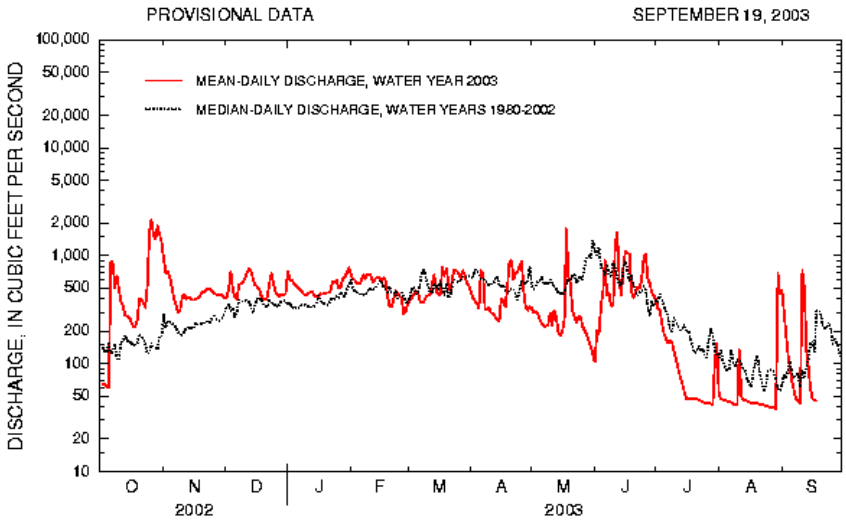
Data from U.S. Geological Survey

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.

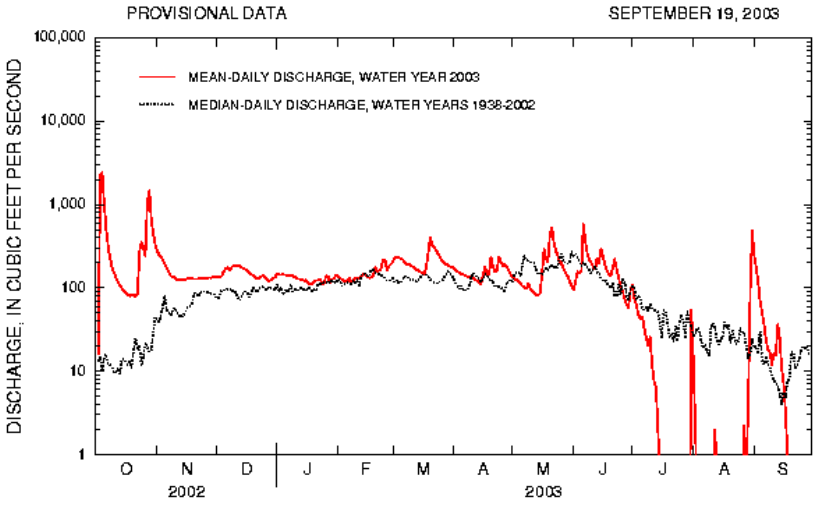
Data from U.S. Geological Survey

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.

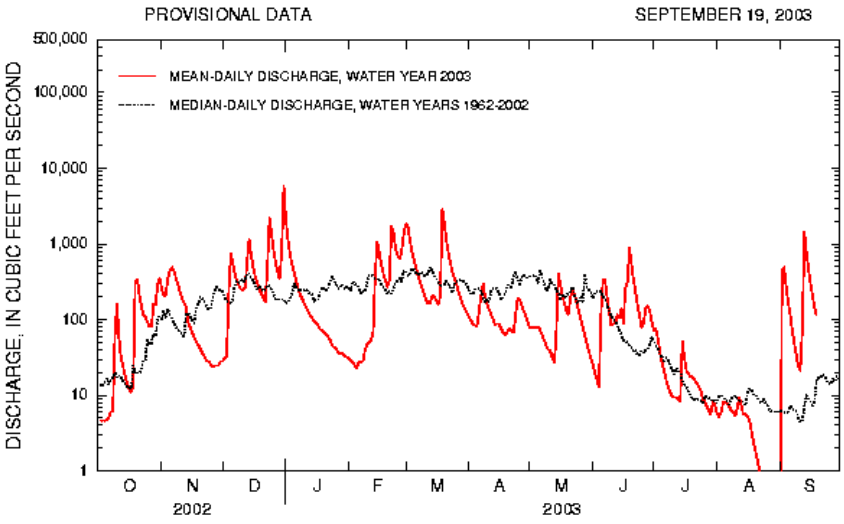
Data from U.S. Geological Survey

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.

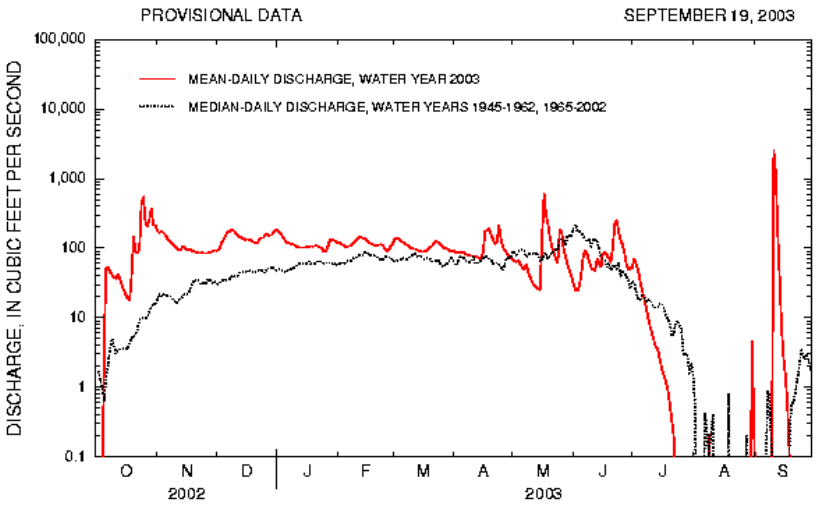
Data from U.S. Geological Survey

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.

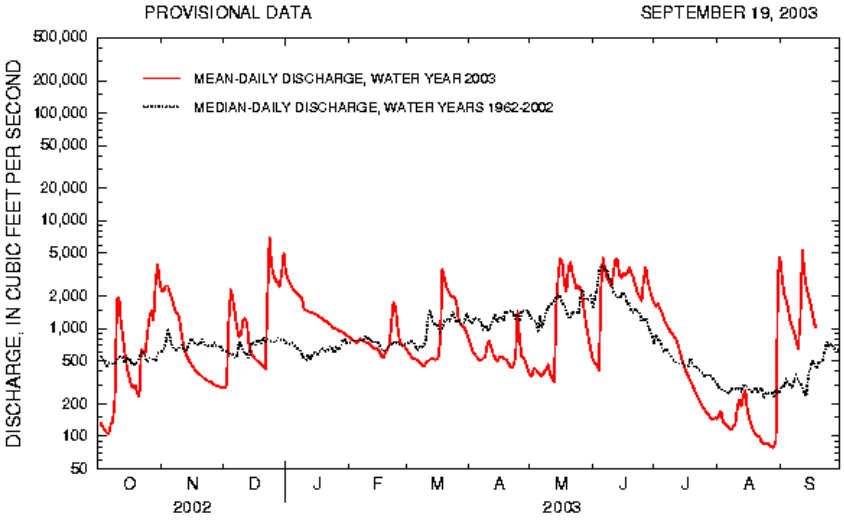
Data from U.S. Geological Survey

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