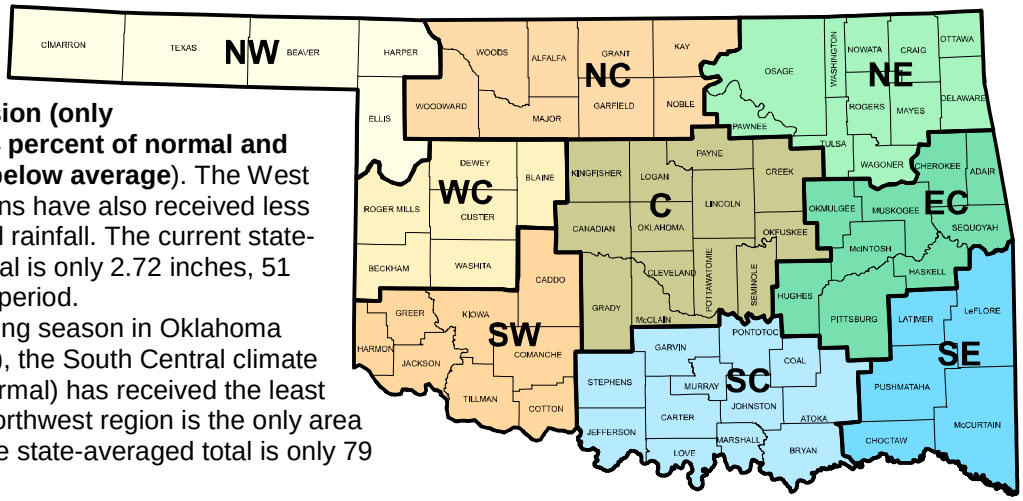
Oklahoma Water Resources Bulletin
& Summary of Current Conditions

JULY 18, 2001 **OKLAHOMA WATER RESOURCES BOARD**

Statewide Precipitation & General Summary

Dry conditions continue to emerge throughout much of Oklahoma, especially since the start of the summer season. According to preliminary Mesonet weather station data provided by the Oklahoma Climatological Survey and National Weather Service (see below), the area experiencing the lowest percent of normal rainfall from June 1 through July 16 (the current summer season) is the **Southwest climate division (only 0.66 inches, which is 14 percent of normal and more than four inches below average**). The West Central and Central regions have also received less than one-half their normal rainfall. The current state-averaged precipitation total is only 2.72 inches, 51 percent of normal for the period.



For the current growing season in Oklahoma (March 1 through July 16), the South Central climate division (67 percent of normal) has received the least amount of rainfall. The Northwest region is the only area not reporting a deficit. The state-averaged total is only 79 percent of normal.

PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION

(IN INCHES)

DIVISION (#)	CURRENT GROWING SEASON MARCH 1 – JULY 16, 2001			SUMMER 2001 JUNE 1 – JULY 16, 2001			RAINFALL SINCE JUNE 26
	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	
Northwest (1)	10.06	0.01	100	2.25	-1.94	54	0.84
North Central (2)	11.53	-1.84	86	2.66	-2.49	52	0.50
Northeast (3)	13.31	-4.95	73	3.84	-2.06	65	1.46
West Central (4)	12.75	-0.19	99	1.80	-3.04	37	0.47
Central (5)	12.13	-4.13	75	2.38	-2.96	45	1.28
East Central (6)	15.78	-3.69	81	3.53	-1.92	65	1.83
Southwest (7)	10.05	-3.42	75	0.66	-4.08	14	0.17
South Central (8)	11.98	-5.82	67	2.81	-2.59	52	2.30
Southeast (9)	18.16	-3.74	83	4.49	-1.61	74	3.35
STATE-AVERAGED	**12.72**	**-3.34**	**79**	**2.72**	**-2.58**	**51**	**1.35**

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.state.ok.us/~owrb/features/drought.html.

Drought Indices

According to the latest Palmer Drought Severity Index (July 14, below), drought conditions continue to arise throughout much of Oklahoma; **six regions (including all of southern and eastern Oklahoma) are now in the "mild drought" category**. All of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since June 23; the Southwest ("mild drought") climate division experienced the greatest decrease during the period.

The latest monthly Standardized Precipitation Index (through June, below) indicates that no climate divisions are experiencing long-term dryness among the selected time periods (3-, 6-, 9- and 12-month SPI's). The same trend – i.e., prevailing normal or wet conditions -- is generally true among all other monthly time steps throughout the last six years. However, the 1-month SPI reports **extremely dry conditions in the Southwest climate division**, very dry in the West Central region, and moderately dry in Central Oklahoma. In addition, the 4-month SPI indicates moderately dry conditions in the Central region.

The latest Keetch-Byram Drought Index (July 16, 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 in Oklahoma are becoming a major concern. Statewide, 59 stations are currently above 400, generally indicative of moderate drought conditions (only six stations had a reading above 400 on June 27). In addition, nine of these stations are above 500, including two above 600 (indicative of more severe drought conditions). Altus, in Southwest Oklahoma, has the highest KBDI value (638), followed by Medford (North Central; 604) and Wister (Southeast; 572). According to the Oklahoma Department of Agriculture (Forestry Services), as of July 7, Statewide Wildfire Preparedness is at Level 3 (high fire danger). **A Red Flag Fire Alert is in effect for all but the general eastern third of the state, part of the south central region and Cimarron County.** Hot, dry and windy conditions have combined to increase the fire danger throughout Oklahoma. The danger of wildland fires escaping control is significant in central and western areas. Extra precautions should be taken when burning anything outdoors and outdoor burning should be avoided entirely when winds exceed 20 mph.

PALMER DROUGHT SEVERITY INDEX

STANDARDIZED PRECIPITATION INDEX
THROUGH JUNE 2001

CLIMATE DIVISION (#)	CURRENT STATUS 7/14/2001	VALUE 7/14	VALUE 6/23	CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
Northwest (1)	UNUSUAL MOIST SPELL	2.10	3.29	-1.19	NEAR NORMAL	MODERATELY WET	VERY WET	NEAR NORMAL
North Central (2)	NEAR NORMAL	-0.40	1.60	-2.00	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL
Northeast (3)	MILD DROUGHT	-1.82	-0.99	-0.83	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	NEAR NORMAL	-0.39	1.76	-2.15	NEAR NORMAL	NEAR NORMAL	VERY WET	NEAR NORMAL
Central (5)	MILD DROUGHT	-1.68	-0.14	-1.54	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL
East Central (6)	MILD DROUGHT	-1.65	-0.82	-0.83	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL
Southwest (7)	MILD DROUGHT	-1.10	1.12	-2.22	NEAR NORMAL	NEAR NORMAL	VERY WET	NEAR NORMAL
South Central (8)	MILD DROUGHT	-1.22	-0.33	-0.89	NEAR NORMAL	NEAR NORMAL	VERY WET	NEAR NORMAL
Southeast (9)	MILD DROUGHT	-1.44	-1.16	-0.28	NEAR NORMAL	NEAR NORMAL	VERY WET	NEAR NORMAL

KEETCH-BYRAM DROUGHT FIRE INDEX

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 7/16/2001
Altus	Jackson	Southwest	638
Medford	Grant	North Central	604
Wister	LeFlore	Southeast	572

59 total stations above 400

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 15, 2001

(courtesy Oklahoma Climatological Survey)

Data from OCS's Mesonet soil moisture network are indicating rapid loss of moisture from the topmost three feet of soil throughout (at least) the general western one-half of Oklahoma.

5 cm

25 cm

60 cm

75 cm

Category Description		Depth -- Metric Conversion	
Category 4	Moist/wet	5 cm	2 inches
Category 3	Adequate	25 cm	9.8 inches
Category 2	Limited	60 cm	23.6 inches
Category 1	Dry	75 cm	29.5 inches

Streamflow Conditions

For the current water year (beginning October 1, 2000), flows in most state rivers and streams remain generally near average. Considering overall trends as well as current flows, the most recent data (July 16, 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, 2000 compared to long-term, normal/median daily discharges) indicate **near average flow** in all regions -- *southwest* (North Fork/Red River in Beckham County), *northwest* (Cimarron River in Woods County), *south central* (Washita River in Carter County), *central* (Canadian River in McClain County), *northeast* (Baron Fork in Cherokee County) and *southeast* (Glover River in McCurtain County) Oklahoma.

Weather Forecast

The National Weather Service 8- to 14-day outlook (July 23-29) calls for normal precipitation for the entire state. In addition, normal temperatures are anticipated for all of Oklahoma through the period.

Current models indicate that the persistent cold water phenomenon in the equatorial Pacific Ocean, referred to as La Niña, has substantially weakened and slightly warmer-than-normal conditions will likely prevail during late 2001 and early 2002. In addition, a pulse of warm water in the eastern Pacific currently traveling toward South America signals the potential onset of another El Niño within the next year or so. El Niños, warm water patterns that increase the chances for cooler, wetter conditions in the southern U.S. (including Oklahoma), generally return every two to seven years; the last one occurred in 1997.

Crop Report

July 16 -- Extreme heat and dry weather continued across most of Oklahoma during the week. Many areas exceeded the 100 degree mark for several days with the maximum recorded temperature of 110 degrees at Hollis on Thursday. However, a cool weather system during the weekend dropped temperatures significantly and scattered thunderstorms brought much-needed precipitation to some isolated parts of the state, although many areas failed to receive significant quantities of rainfall. More precipitation is needed in most areas to replenish soil moisture and minimize heat stress to crops and pastures.

Dry weather during most of the week kept producers busy plowing wheat ground. Wheat stubble was plowed at least once on 88 percent of the state's acreage, 21 percentage points ahead of the five-year average. Oat acreage plowed was 89 percent complete, also well ahead of normal. Farmers will soon be concentrating their efforts on land preparation for fall planting.

The intense heat and lack of moisture slowed or halted growth and development of many dryland row crops. Weekend showers and cool temperatures were welcomed and growing conditions should improve in the areas that received rain. Irrigation remained active, where possible, as crops continued to suffer from heat and moisture stress. Grasshoppers were damaging many fields and spraying was necessary in some areas. Corn silking continued to advance rapidly from the hot weather. By weeks' end, two-thirds of the state's corn acreage was silking, well ahead of the five-year average of 49 percent. The majority of the cotton crop was rated in fair to poor condition, with 64 percent of the acreage squaring and 9 percent setting bolls. No major cotton damage from insect pressure had been reported.

As of Sunday, virtually all sorghum and soybeans had emerged. Soybeans blooming advanced to 49 percent while 9 percent were setting pods. Peanuts pegging and setting pods jumped significantly during the week and reached 70 and 30 percent, respectively, but both were still slightly behind normal pace. Sorghum was coloring in a few isolated areas of Oklahoma. Alfalfa was rated in mostly good to fair condition statewide. A third alfalfa cutting was at the halfway mark, 19 percentage points ahead the five-year average. Other hay first and second cuttings made minimal progress; hay yields have been reported as low as one-half of normal production in many areas due to the lack of rain. Watermelons were rated in mostly good condition and harvest was 45 percent complete and running well ahead of the five-year average.

Livestock remained in mostly good condition. Livestock insect activity was rated mostly moderate to light, but was heavier in the southwest. Cattle auctions reported average marketings for the week. Pasture conditions declined from the previous week and were rated mostly fair to good, although a growing number of pastures were showing signs of stress. Grasshopper populations continued to increase during the week and damaged grasses in many areas. Pastures should improve some in areas that received rainfall last week.

Reservoir Storage

Reservoir storage in Oklahoma remains generally good, although lake levels have begun to decline in some areas. As of July 16, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 96.1 percent full, a 3.1 percent decrease from that recorded on June 26, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-five reservoirs have experienced lake level decreases since that time. Twenty-three reservoirs are currently operating at less than full capacity (compared to only nine in late June); one reservoir (Lugert-Altus, 76 percent) is below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs
as of July 16, 2001

Climate Division / *Lake or Reservoir*	*Conservation Storage* (acre-feet)	*Present Storage* (acre-feet)	*Percent of Storage* conservation	flood
NORTH CENTRAL				
Fort Supply	13,900	13,900	100.0	0.04
Great Salt Plains	31,420	31,345	99.8	0.00
Kaw*	406,540	406,540	100.0	0.15
Regional Totals/Averages	**451,860**	**451,785**	**100.0**	**0.06**
NORTHEAST				
Birch	19,225	18,065	94.0	0.00
Copan	43,400	42,695	98.4	0.00
Fort Gibson	365,200	342,180	93.7	0.00
Grand	1,672,000	1,640,260	98.1	0.00
Hudson	200,300	200,300	100.0	10.39
Hulah	31,160	29,604	95.0	0.00
Keystone	278,122	234,561	84.3	0.00
Oologah	552,210	552,210	100.0	0.38
Skiatook	322,700	316,901	98.2	0.00
Regional Totals/Averages	**3,484,317**	**3,376,776**	**96.9**	**1.20**
WEST CENTRAL				
Canton	111,310	110,199	99.0	0.00
Foss	165,480	160,136	96.8	0.00
Regional Totals/Averages	**276,790**	**270,335**	**97.7**	**0.00**
CENTRAL				
Arcadia	27,520	27,128	98.6	0.00
Heyburn	7,105	7,079	99.6	0.00
Thunderbird	119,600	119,600	100.0	2.15
Regional Totals/Averages	**154,225**	**153,807**	**99.7**	**0.72**
EAST CENTRAL				
Eufaula*	2,368,223	2,317,788	97.9	0.00
Tenkiller	654,100	645,192	98.6	0.00
Regional Totals/Averages	**3,022,323**	**2,962,980**	**98.0**	**0.00**
SOUTHWEST				
Fort Cobb	80,010	79,713	99.6	0.00
Lugert-Altus	132,830	100,957	76.0	0.00
Tom Steed	88,970	82,109	92.3	0.00
Regional Totals/Averages	**301,810**	**262,779**	**87.1**	**0.00**
SOUTH CENTRAL				
Arbuckle	72,400	72,029	99.5	0.00
McGee Creek	113,930	113,930	100.0	2.19
Texoma*	2,734,058	2,525,761	92.4	0.00
Waurika*	190,200	189,287	99.5	0.00
Regional Totals/Averages	**3,110,588**	**2,901,007**	**93.3**	**0.55**
SOUTHEAST				
Broken Bow*	958,180	907,749	94.7	0.00
Hugo*	198,067	195,460	98.7	0.00
Pine Creek*	70,738	70,738	100.0	0.80
Sardis	274,330	274,330	100.0	3.17
Wister	60,162	55,226	91.8	0.00
Regional Totals/Averages	**1,561,477**	**1,503,503**	**96.3**	**0.79**
STATE TOTALS	**12,363,390**	**11,882,972**	**96.1**	**0.62**

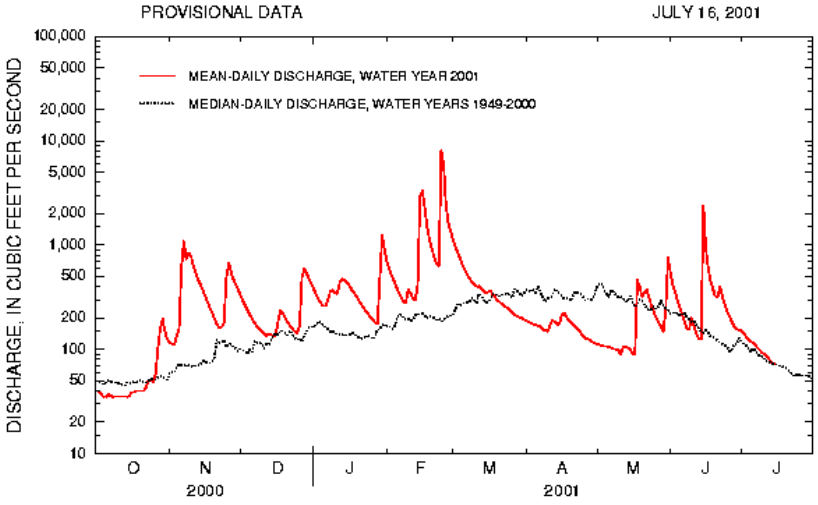
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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 2001
and period of record for Baron Fork at Eldon, Oklahoma.

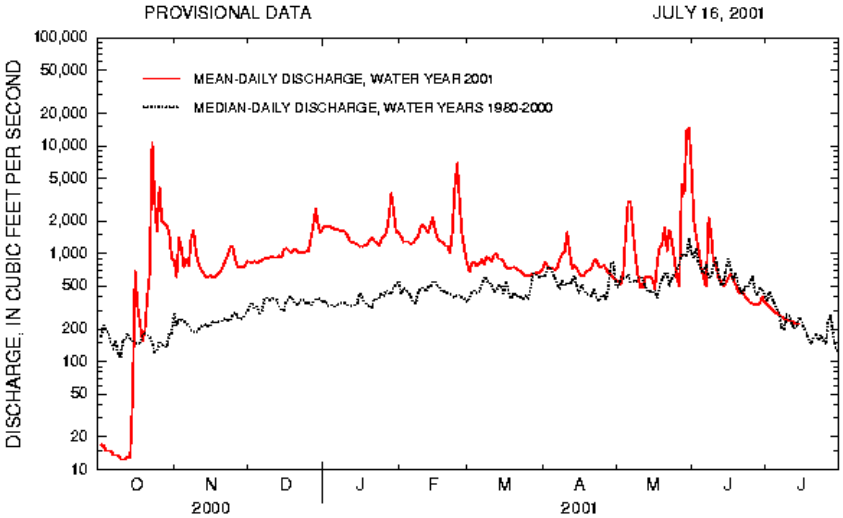
Data from U.S. Geological Survey

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 2001
and period of record for Canadian River at Purcell, Oklahoma.

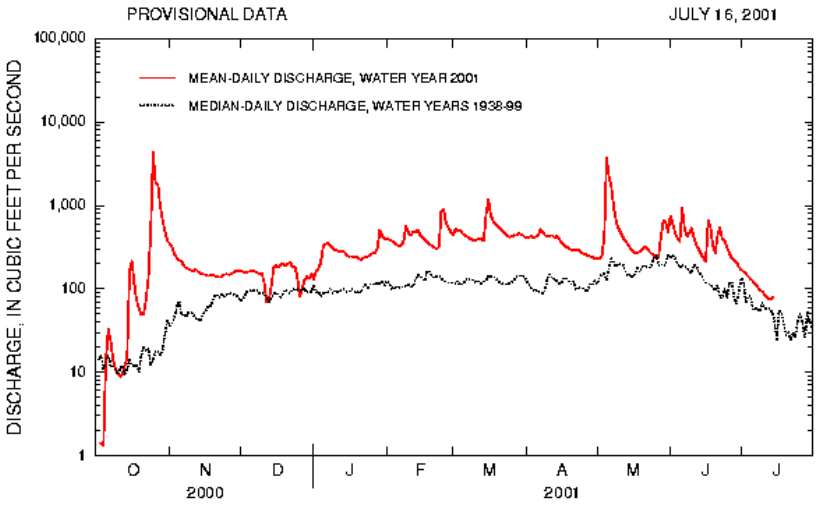
Data from U.S. Geological Survey

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 2001
and period of record for Cimarron River near Waynoka, Oklahoma.

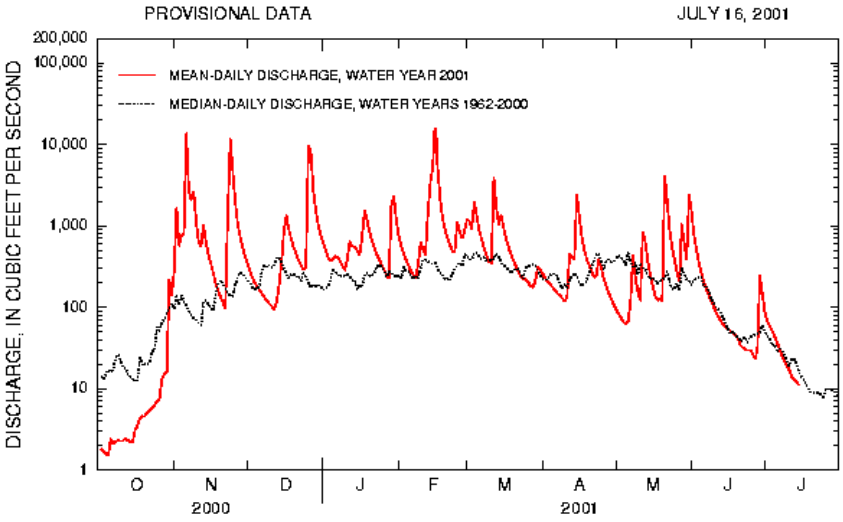
Data from U.S. Geological Survey

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 2001
and period of record for Glover River near Glover, Oklahoma.

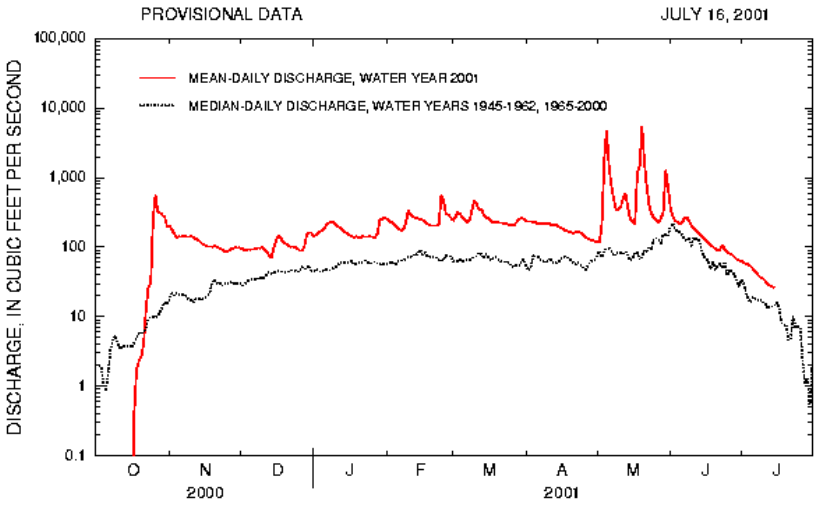
Data from U.S. Geological Survey

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 2001
and period of record for North Fork Red River near Carter, Oklahoma.

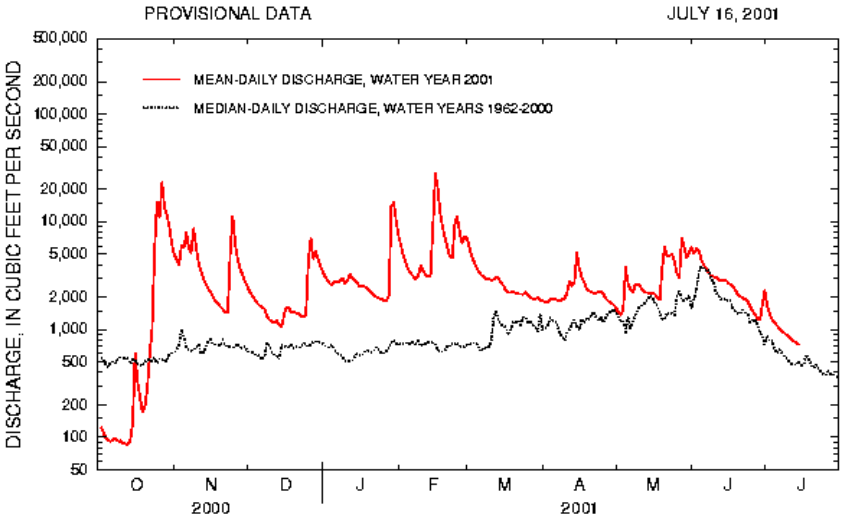
Data from U.S. Geological Survey

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 2001
and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey