

Oklahoma Water Resources Bulletin & Summary of Current Conditions



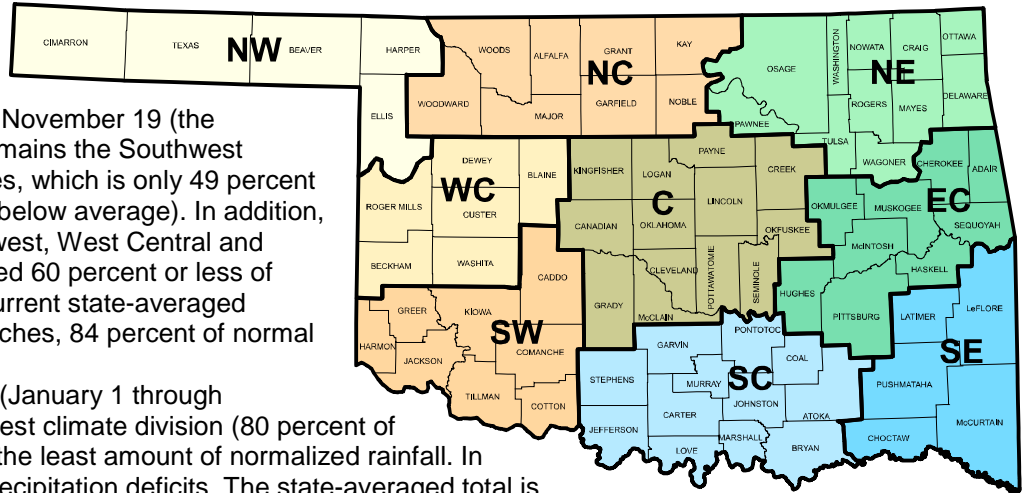
NOVEMBER 21, 2001

OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Generally dry conditions continue throughout much of Oklahoma, especially in the west. 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 September 1 through November 19 (the current autumn season) remains the Southwest climate division (3.56 inches, which is only 49 percent of normal and 3.71 inches below average). In addition, three other regions (Northwest, West Central and North Central) have received 60 percent or less of their normal rainfall. The current state-averaged precipitation total is 7.15 inches, 84 percent of normal for the period.

For the calendar year (January 1 through November 19), the Southwest climate division (80 percent of normal) has also received the least amount of normalized rainfall. In all, seven regions report precipitation deficits. The state-averaged total is 92 percent of normal.



PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION

DIVISION (#)	CALENDAR YEAR			AUTUMN 2001			RAINFALL SINCE OCTOBER 21
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	16.37	-2.42	87	2.11	-1.84	53	0.56
North Central (2)	22.66	-3.77	86	4.10	-2.68	60	1.00
Northeast (3)	31.95	-4.97	87	8.65	-1.85	82	2.54
West Central (4)	22.59	-2.44	90	3.90	-2.71	59	0.97
Central (5)	29.77	-2.16	93	8.01	-0.89	90	1.35
East Central (6)	40.57	1.27	103	10.66	-0.52	95	1.89
Southwest (7)	21.22	-5.17	80	3.56	-3.71	49	1.34
South Central (8)	35.29	0.09	100	12.10	2.04	120	0.45
Southeast (9)	43.5	-0.83	98	10.52	-1.58	87	0.88
STATE-AVERAGED	29.23	-2.45	92	7.15	-1.39	84	1.23

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 (November 17 below), **drought conditions continue to linger** in several areas of the state and five regions remain in drought. The North Central, Northeast and West Central climate divisions are in the “moderate drought” category while the Southwest and Northwest regions are in “mild drought.” Eight of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since October 20. The greatest decreases occurred in the South Central and Northwest climate divisions.

The latest monthly Standardized Precipitation Index (through October, below) indicates that North Central and Northeast Oklahoma continue to experience long-term dryness. Among the *selected* time periods (3-, 6-, 9- and 12-month SPI’s), those climate divisions generally report **moderately dry conditions** throughout the last 12 months. The Northwest, Southwest and West Central also report some extended dryness. Among other periods, no regions report dry conditions past the 15-month SPI range.

The latest Keetch-Byram Drought Index (November 19, 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 remain generally good. Statewide, only four stations are currently above 600, generally indicative of more severe drought conditions (eight stations had a reading above 600 on October 22). Cherokee, in North Central Oklahoma, reports the highest KBDI value (671), followed by Goodwell (Northwest; 657) and Buffalo (Northwest; 620). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). Only one county, Texas County, remains in the Governor’s the Ban on Outdoor Burning; nine additional counties in northwest/north central Oklahoma (Alfalfa, Beaver, Cimarron, Dewey, Ellis, Harper, Major, Woods, and Woodward) remain under a Red Flag Fire Alert. Moisture over the weekend benefited some problem areas. In counties experiencing high to very high fire danger, wildfires are easily ignited. Extra precautions should be observed with all use of fire outdoors.

PALMER DROUGHT SEVERITY INDEX					STANDARDIZED PRECIPITATION INDEX THROUGH OCTOBER 2001			
CLIMATE DIVISION (#)	CURRENT STATUS 11/17/2001	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		11/17	10/20					
Northwest (1)	MILD DROUGHT	-1.34	0.02	-1.36	VERY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
North Central (2)	MODERATE DROUGHT	-2.56	-2.14	-0.42	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY
Northeast (3)	MODERATE DROUGHT	-2.31	-1.96	-0.35	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY
West Central (4)	MODERATE DROUGHT	-2.27	-2.25	-0.02	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	NEAR NORMAL	-0.10	0.70	-0.80	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	NEAR NORMAL	-0.17	1.13	-1.30	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MILD DROUGHT	-1.84	-2.17	0.33	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
South Central (8)	INCIPIENT MOIST SPELL	0.60	2.05	-1.45	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	MODERATELY WET
Southeast (9)	NEAR NORMAL	0.25	1.35	-1.10	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY WET

KEETCH-BYRAM DROUGHT FIRE INDEX

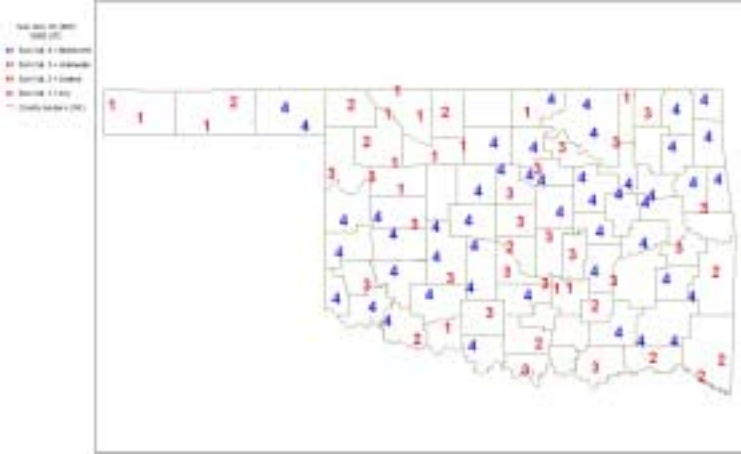
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 11/19/2001	ANTICIPATED IMPACT
Cherokee	Alfalfa	North Central	671	600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively. 400-600: lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.
Goodwell	Texas	Northwest	657	
Buffalo	Harper	Northwest	620	

4 total stations above 600

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
November 18, 2001
(courtesy Oklahoma Climatological Survey)

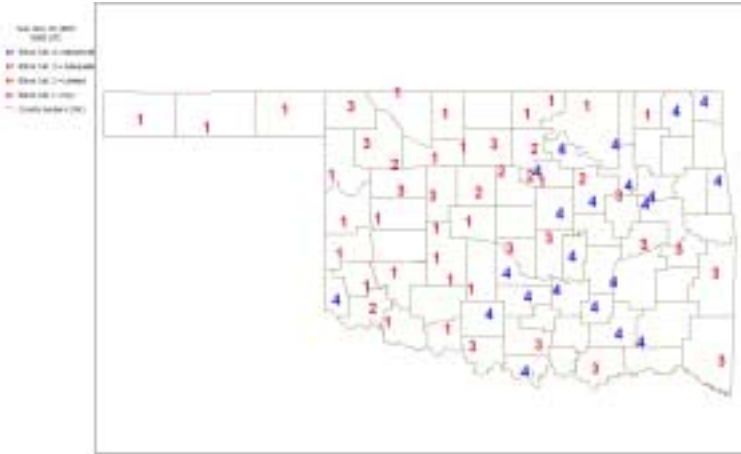
5 cm



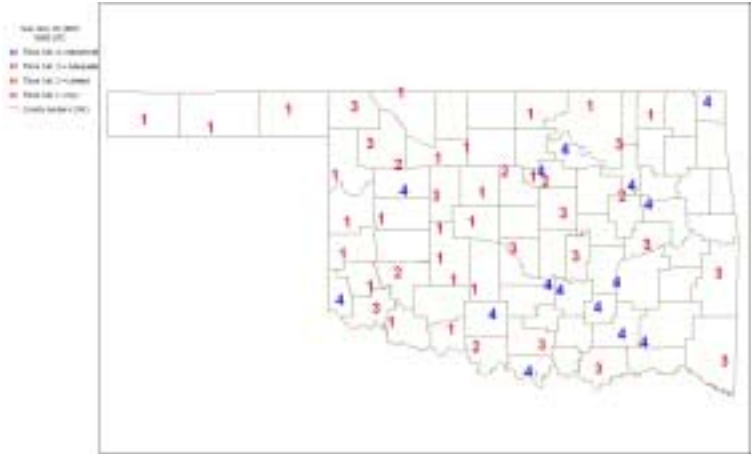
25 cm



60 cm



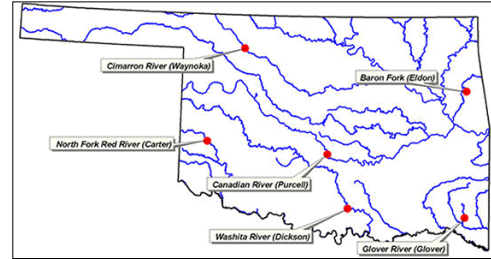
75 cm



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



Weather Forecast

The National Weather Service 8- to 14-day outlook (November 27 through December 3) calls for normal precipitation for all of Oklahoma throughout the period. Normal temperatures are anticipated for all but the general northwest quadrant of the state, where below normal temperatures are likely to prevail.

Current models indicate that positive (warmer than normal) sub-surface temperature (SST) anomalies continue to arise in the equatorial Pacific Ocean. This trend is expected to continue during the remainder of 2001 and into the first half of 2002. The impacts that this warming, a potential El Niño event, will have on global temperature and precipitation patterns depend to a large degree on its intensity, although Climate Prediction Center officials predict it will most likely be weak or moderate. El Niños, warm water patterns that increase the chances for cooler, wetter conditions in the southern U.S. (including Oklahoma), generally occur every two to seven years.

Crop Report

November 18 -- A series of rain showers crossed parts of Oklahoma late last week, bringing much needed moisture. However, precipitation was variable with higher concentrations in the west. Despite the rains, soil moisture levels were critical in many areas and rated mostly short to very short statewide. Daytime temperatures were mild throughout most of the week. Wheat fields should improve in areas that received precipitation, yet widespread showers are greatly needed for further wheat growth and development. Available wheat pasture remained a concern and livestock grazing was limited. Emergence of fall small grains progressed where soil moisture was favorable. Harvest of remaining row crops advanced before being slowed or halted by the showers.

Areas that received rainfall during the week should soon experience some wheat improvement. However, wheat fields in many other areas remain stressed from lack of precipitation. These areas desperately need moisture to aid plant growth and root development before dormancy occurs. Moisture is also needed to improve existing stands and assist future planting and emergence. Condition of emerged wheat stands varied across the state, depending on moisture, soil type, and planting date. Wheat ranged from poor or very poor condition in the western third of the state to mostly good condition in central, northeast, and east central Oklahoma. Remaining row crop harvest continued but progress was slowed or halted in some areas by the rains. Cotton harvest totaled 69 percent statewide, ranging from 20 percent in central Oklahoma to 85 percent complete in the major-producing southwest area. An additional 6 percent of the state's peanuts were combined during the week and reached 88 percent complete statewide. Digging of peanuts were winding down and totaled 96 percent by week's end. Sorghum and soybean harvest made limited advancement and were 91 and 94 percent complete, respectively, ahead of last year and the five-year averages. Cutting and baling of hay continued where possible. Alfalfa condition ranged from poor to very poor in the southwest to mostly good in east central Oklahoma. Condition of all other hay ranged from mostly very poor in the southwest to fair to good in the south central and east central regions.

Cattle auctions reported average marketings. Lack of sufficient pastures increased supplemental feeding in some areas. Adequate hay supplies remained a major concern. Insect activity on cattle was mostly light statewide. Late-week showers should bring temporary relief to some pastures. In other areas, extreme pasture stress continued from lack of moisture and any additional growth was impossible. Statewide, range and pasture condition was rated mostly fair to poor. Wheat pasture available for livestock grazing remained limited as producers wait to put out stockers until wheat root systems develop.

Reservoir Storage

Following a recent rebound, reservoir storage levels have begun to drop in many areas of the state. As of November 20, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 90.7 percent full, a 2.8 percent decrease from that recorded on October 22, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-three reservoirs have experienced lake level decreases since that time, including all nine in the east central, southwest, and south central regions. Twenty-two reservoirs are currently operating at less than full capacity (compared to 20 four weeks ago); seven reservoirs (**Lugert-Altus, only 35.7 percent; Hulah, 47.8 percent; Canton, 71.8 percent; Keystone, 73.8 percent; Tom Steed, 74.1 percent; Birch, 74.9 percent; and Copan, 75.9 percent**) are below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs				
<i>11/20/2001</i>				
<i>Climate Division</i>	<i>Conservation Storage</i>	<i>Present Storage</i>	<i>Percent of Storage</i>	
<i>Lake or Reservoir</i>	<i>(acre-feet)</i>	<i>(acre-feet)</i>	<i>conservation</i>	<i>flood</i>
NORTH CENTRAL				
Fort Supply	13,900	13,900	100.0	1.06
Great Salt Plains	31,420	28,740	91.5	0.00
Kaw*	406,540	403,552	99.3	0.00
Regional Totals/Averages	451,860	446,192	98.7	0.35
NORTHEAST				
Birch	19,225	14,406	74.9	0.00
Copan	43,400	32,926	75.9	0.00
Fort Gibson	365,200	365,200	100.0	0.88
Grand	1,672,000	1,537,440	92.0	0.00
Hudson	200,300	200,300	100.0	0.77
Hulah	31,160	14,895	47.8	0.00
Keystone	278,122	205,246	73.8	0.00
Oologah	552,210	552,210	100.0	0.41
Skiatook	322,700	273,054	84.6	0.00
Regional Totals/Averages	3,484,317	3,195,677	91.7	0.23
WEST CENTRAL				
Canton	111,310	79,913	71.8	0.00
Foss	165,480	149,165	90.1	0.00
Regional Totals/Averages	276,790	229,078	82.8	0.00
CENTRAL				
Arcadia	27,520	27,520	100.0	0.49
Heyburn	7,105	6,493	91.4	0.00
Thunderbird	119,600	117,320	98.1	0.00
Regional Totals/Averages	154,225	151,333	98.1	0.16
EAST CENTRAL				
Eufaula*	2,314,581	1,972,736	85.2	0.00
Tenkiller	654,100	589,204	90.1	0.00
Regional Totals/Averages	2,968,681	2,561,940	86.3	0.00
SOUTHWEST				
Fort Cobb	80,010	73,418	91.8	0.00
Lugert-Altus	132,830	47,476	35.7	0.00
Tom Steed	88,970	65,959	74.1	0.00
Regional Totals/Averages	301,810	186,853	61.9	0.00
SOUTH CENTRAL				
Arbuckle	72,400	72,400	100.0	0.85
McGee Creek	113,930	112,718	98.9	0.00
Texoma*	2,701,706	2,587,688	95.8	0.00
Waurika*	190,200	173,951	91.5	0.00
Regional Totals/Averages	3,078,236	2,946,757	95.7	0.21
SOUTHEAST				
Broken Bow*	918,070	788,796	85.9	0.00
Hugo*	184,917	178,457	96.5	0.00
Pine Creek*	56,986	56,986	100.0	0.75
Sardis	274,330	274,330	100.0	0.45
Wister	60,162	60,162	100.0	0.36
Regional Totals/Averages	1,494,465	1,358,731	90.9	0.31
STATE TOTALS	12,210,384	11,076,561	90.7	0.19

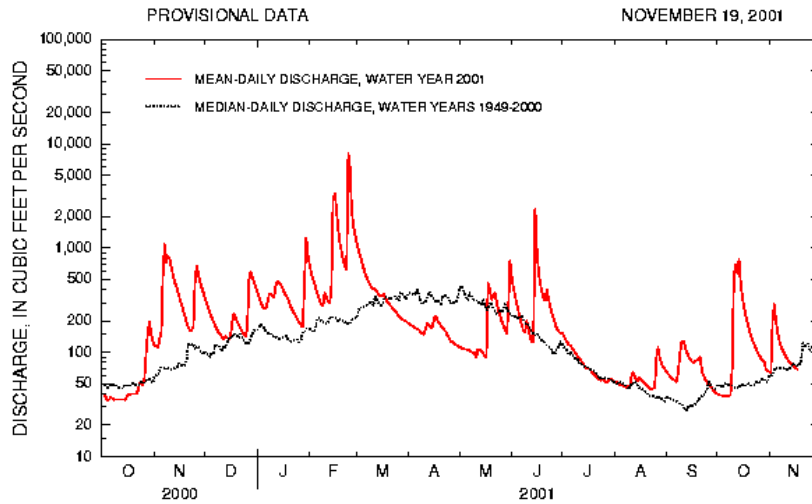
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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.

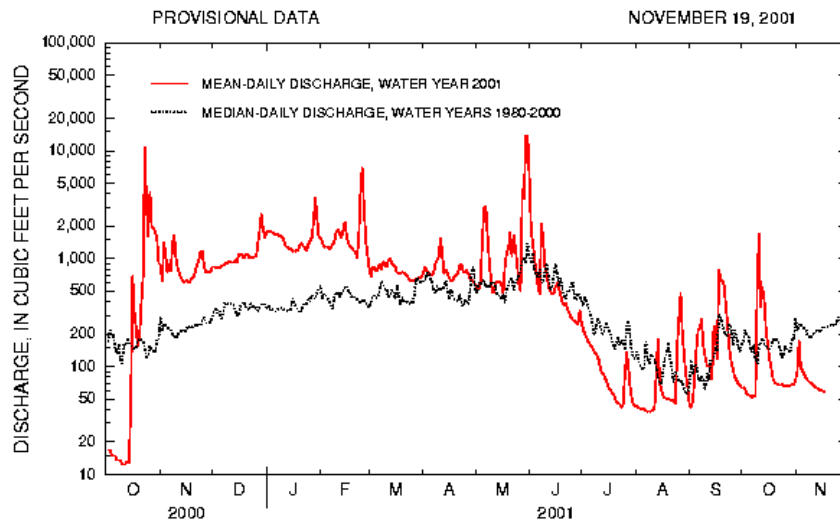
Data from U.S. Geological Survey

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.

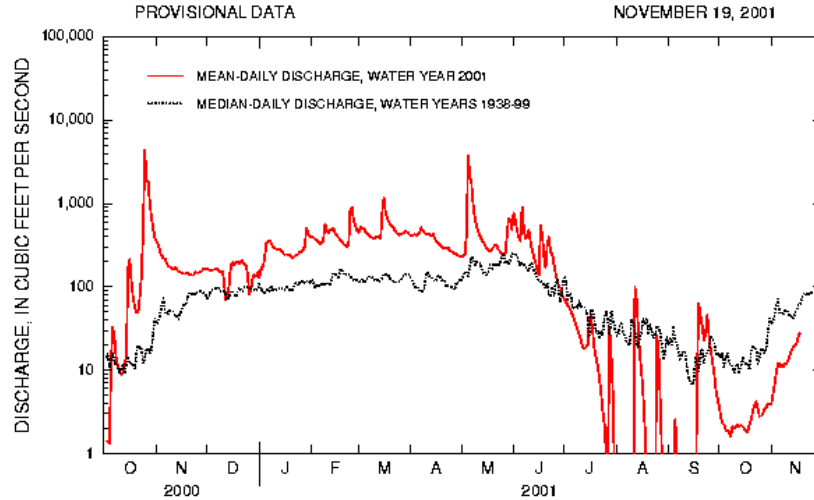
Data from U.S. Geological Survey

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.

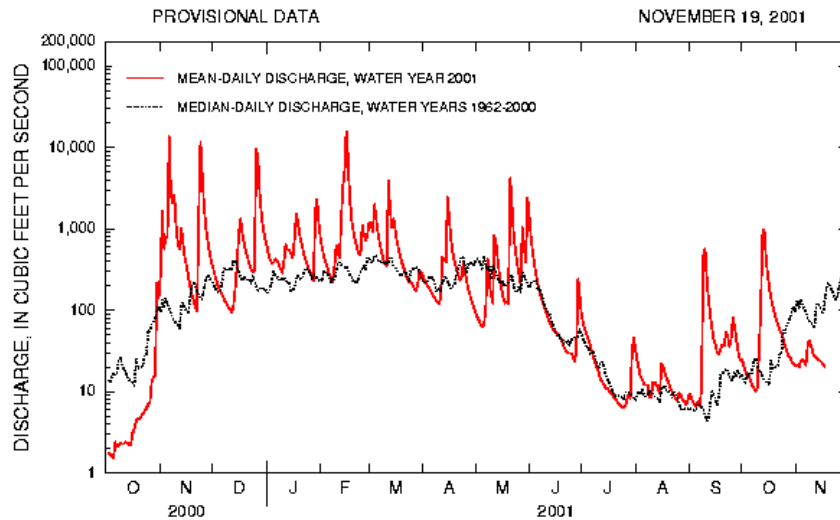
Data from U.S. Geological Survey

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

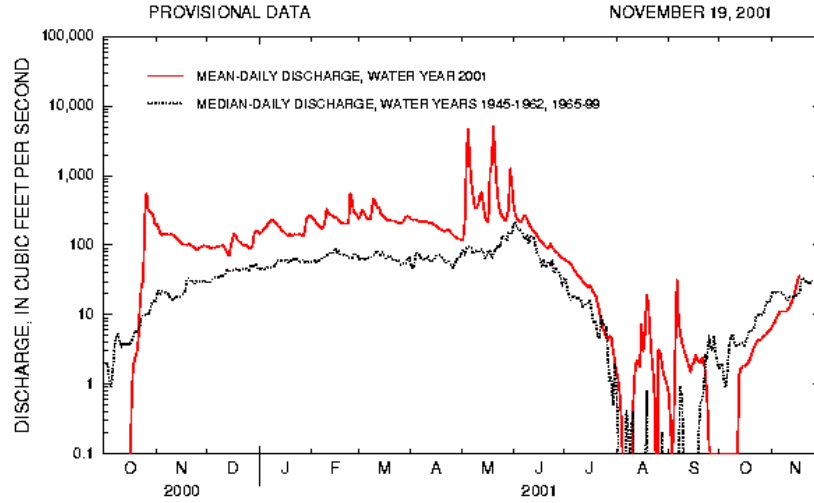
North Fork of the Red River near Carter

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

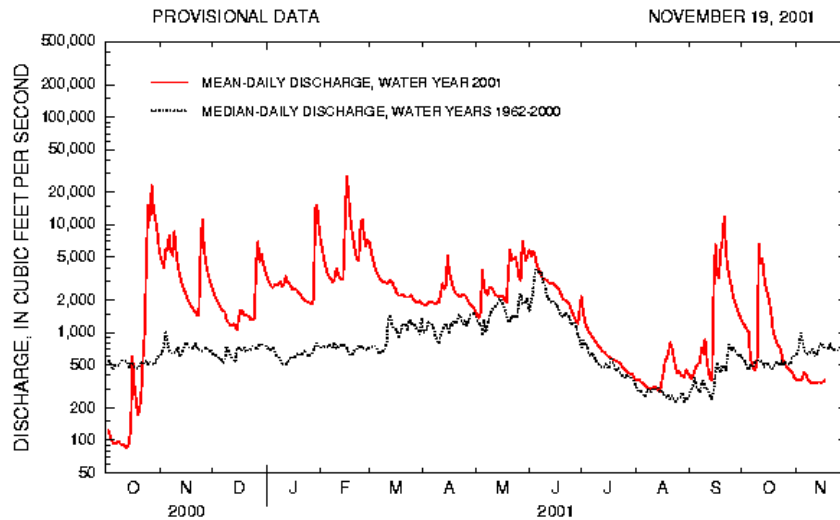
Washita River near Dickson

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