Oklahoma Water Resources Bulletin
& Summary of Current Conditions

DECEMBER 12, 2001 **OKLAHOMA WATER RESOURCES BOARD**

Statewide Precipitation & General Summary

Dry conditions continue to proliferate throughout western Oklahoma. 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 December 9 (the current autumn season) remains the Southwest climate division (3.81 inches, which is only 47 percent of normal and 4.35 inches below average). In addition, three other regions (Northwest, West Central and North Central) have received less than 55 percent of their normal rainfall. The current state-averaged precipitation total is 7.71 inches, 78 percent of normal for the period.

For the calendar year (January 1 through December 9), the Southwest climate division (79 percent of normal) has also received the least amount of normalized rainfall. In all, eight regions report precipitation deficits. The state-averaged total is 90 percent of normal.

Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	CALENDAR YEAR JANUARY 1 – DECEMBER 9, 2001			AUTUMN 2001 SEPTEMBER 1 – DECEMBER 9, 2001			RAINFALL SINCE NOVEMBER 19
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	16.40	-2.92	85	2.15	-2.35	48	0.03
North Central (2)	22.78	-4.66	83	4.22	-3.57	54	0.12
Northeast (3)	32.29	-6.46	83	8.99	-3.34	73	0.34
West Central (4)	22.71	-3.19	88	4.02	-3.46	54	0.12
Central (5)	30.04	-3.22	90	8.29	-1.95	81	0.37
East Central (6)	41.81	0.40	101	11.90	-1.39	90	1.24
Southwest (7)	21.47	-5.81	79	3.81	-4.35	47	0.25
South Central (8)	36.05	-0.66	98	12.85	1.29	111	0.76
Southeast (9)	45.72	-1.17	98	12.75	-1.92	87	2.22
STATE-AVERAGED	**29.79**	**-3.26**	**90**	**7.71**	**-2.20**	**78**	**0.56**

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 (December 8, below), many areas of Oklahoma remain dry. The North Central, Northeast and West Central climate divisions are classified in the "moderate drought" category while the Northwest and Southwest regions are in "mild drought." Seven of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since November 17. The greatest decrease occurred in the Central climate division.

The latest monthly Standardized Precipitation Index (through November, below) indicates that several regions, especially the North Central climate division (which indicates "extremely dry" conditions over the last 6-month period), are experiencing long-term dryness. Among the *selected* time periods (3-, 6-, 9- and 12-month SPI's), the Northeast, Northwest, West Central and Southwest climate divisions report moderately dry to very dry conditions throughout at least the last six to nine months. Among periods beyond one year, only the 15-month SPI (Northeast, moderately dry) reports dry conditions for any area of Oklahoma.

The latest Keetch-Byram Drought Index (December 10, 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 five stations are currently above 600, generally indicative of more severe drought conditions (four stations had a reading above 600 on November 19). Cherokee, in North Central Oklahoma (658), and Goodwell (Northwest; 658) report the highest KBDI values, followed by Buffalo (Northwest; 627) and Hinton (Southwest, 626). 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 November 2001)

Climate Division (#)	Current Status 12/08/2001	Value 12/8	Value 11/17	Change In Value	3-Month	6-Month	9-Month	12-Month
Northwest (1)	MILD DROUGHT	-1.80	-1.34	-0.46	NEAR NORMAL	VERY DRY	MODERATELY DRY	NEAR NORMAL
North Central (2)	MODERATE DROUGHT	-2.87	-2.56	-0.31	MODERATEY DRY	EXTREMELY DRY	VERY DRY	MODERATELY DRY
Northeast (3)	MODERATE DROUGHT	-2.70	-2.31	-0.39	NEAR NORMAL	VERY DRY	VERY DRY	MODERATELY DRY
West Central (4)	MODERATE DROUGHT	-2.58	-2.27	-0.31	NEAR NORMAL	VERY DRY	MODERATELY DRY	NEAR NORMAL
Central (5)	INCIPIENT DROUGHT	-0.60	-0.10	-0.50	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	NEAR NORMAL	-0.12	-0.17	0.05	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MILD DROUGHT	-1.78	-1.84	0.06	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
South Central (8)	NEAR NORMAL	0.17	0.60	-0.43	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	NEAR NORMAL	0.14	0.25	-0.11	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL

Keetch-Byram Drought Fire Index

Mesonet Station	County	Climate Division	Current Value 12/10/2001	Anticipated Impact
Cherokee	Alfalfa	North Central	658	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.
Goodwell	Texas	Northwest	658	
Buffalo	Harper	Northwest	627	
Hinton	Caddo	Southwest	626	400-600: lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.

5 total stations above 600

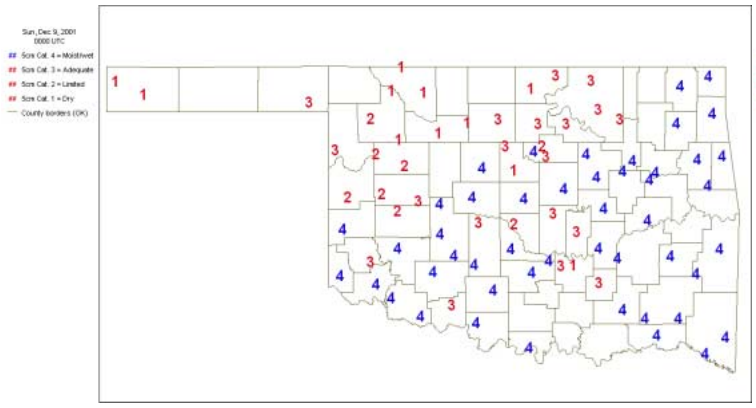
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides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

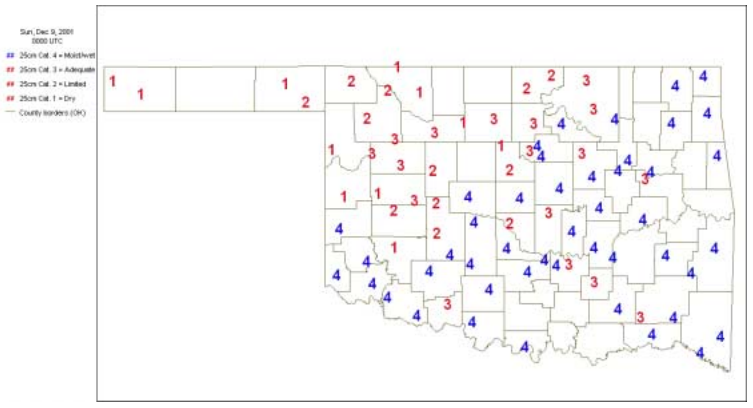
December 9, 2001

(courtesy Oklahoma Climatological Survey)

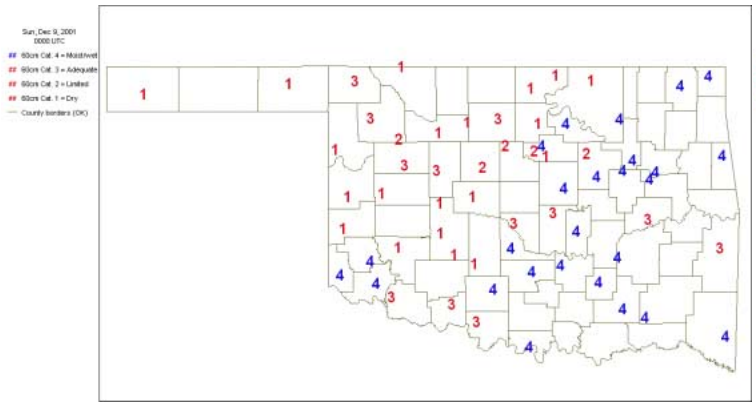
5 cm



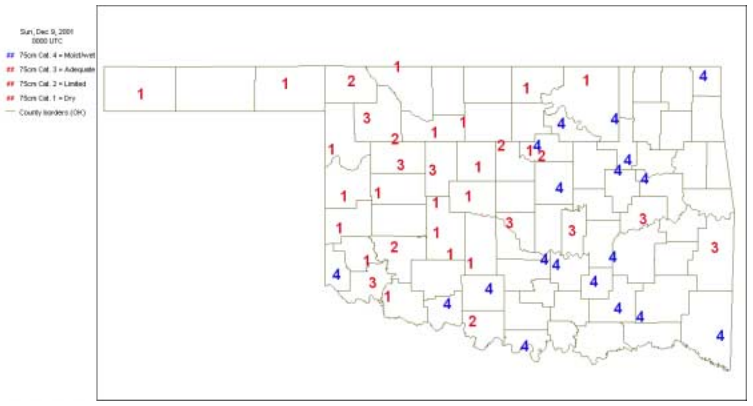
25 cm



60 cm



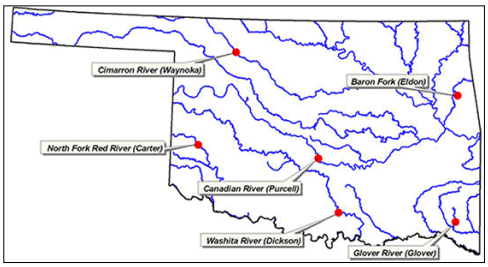
75 cm



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 to average across Oklahoma. Considering overall trends as well as current flows, the most recent data (December 10, 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 *northwest* (Cimarron River Woods County) and *central* (Canadian River McClain County) regions; and **near average flow** in *south central* (Washita River Carter County), *southwest* (North Fork/Red River Beckham County), *northeast* (Baron Fork Cherokee County), and *southeast* (Glover River McCurtain County) Oklahoma.



Weather Forecast

The National Weather Service 8- to 14-day outlook (December 18-24) calls for below normal precipitation for all but the northeast corner of Oklahoma, where normal rainfall is anticipated. Above normal temperatures are predicted for the entire state throughout the period.

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 26 -- Rain showers crossed through most of Oklahoma late in the week, bringing much-needed moisture. However, precipitation amounts were varied. The rains were good news for small grain producers as the added moisture will help relieve the dry weather stress and allow recently dry-planted wheat to emerge. Wheat fields showed green-up in areas that received precipitation, yet the impact on growth and development remains to be seen. In some areas, the rainfall was so light that little benefit will be realized. Available wheat pasture remained a concern and livestock grazing was limited. Despite the precipitation, 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 and winds were heavy. A hard freeze occurred in many areas of the state, particularly early in the week, and row crop harvest elevated in those areas. Sorghum, soybean, and peanut harvest were winding down, while one-fourth of the cotton crop had yet to be harvested. Farmers had 5.6 days suitable for fieldwork during the week.

Areas that received adequate rainfall during the week exhibited some wheat improvement. However, wheat fields in many other areas remain stressed from lack of precipitation. Emergence of fall small grains progressed where soil moisture was favorable. Additional moisture is greatly needed to stimulate growth and development before dormancy occurs. The condition of emerged wheat stands varied across the state. Wheat in the southwest and west central regions was rated in poor or very poor condition. Remaining row crop harvest advanced and future progress will be boosted by the recent hard freezes. Cotton harvest was nearly three-fourths complete statewide, ranging from 35 percent in the central region to nearly finished in the major-producing southwest region. An additional 9 percent of peanuts were combined during the week with harvest 97 percent complete statewide. Sorghum and soybean harvest made progress and were 96 and 97 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 east central and south central regions.

Cattle auctions reported below average marketings after the Thanksgiving Holiday. Lack of sufficient pastures increased supplemental feeding in some areas and adequate hay supplies remained a major concern. Insect activity on cattle was mostly light statewide. Pastures in the areas where rains were adequate will benefit from the moisture and growth of winter forages will be boosted. In other areas where rainfall was minimal, pasture stress continued. Statewide, range and pasture condition was rated mostly fair to poor. Stockers turned out on wheat pasture increased in some areas but was limited statewide.

Reservoir Storage

Reservoir storage levels remain low in some areas of the state. As of December 10, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 90.7 percent full, a 0.6 percent increase from that recorded on November 20, according to information from the U.S. Army Corps of Engineers (Tulsa District). Sixteen reservoirs have experienced lake level decreases since that time, including seven of nine in the East Central climate division. Twenty-two reservoirs are currently operating at less than full capacity (compared to 22 three weeks ago); seven reservoirs (**Lugert-Altus, only 36.7 percent**; **Hulah, 44.5 percent**; Keystone, 70.1 percent; Tom Steed, 72.5 percent; Canton, 72.7 percent; Birch, 73.7 percent; and Copan, 74 percent) are below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs

12/10/2001

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	0.26
Great Salt Plains	31,420	30,676	97.6	0.00
Kaw*	406,540	406,540	100.0	0.30
Regional Totals/Averages	**451,860**	**451,116**	**99.8**	**0.19**
Northeast				
Birch	19,225	14,167	73.7	0.00
Copan	43,400	32,103	74.0	0.00
Fort Gibson	365,200	365,200	100.0	1.15
Grand	1,672,000	1,544,920	92.4	0.00
Hudson	200,300	195,159	97.4	0.00
Hulah	31,160	13,861	44.5	0.00
Keystone	278,122	194,931	70.1	0.00
Oologah	552,210	548,586	99.3	0.00
Skiatook	322,700	268,641	83.2	0.00
Regional Totals/Averages	**3,484,317**	**3,177,568**	**91.2**	**0.13**
West Central				
Canton	111,310	80,929	72.7	0.00
Foss	165,480	148,471	89.7	0.00
Regional Totals/Averages	**276,790**	**229,400**	**82.9**	**0.00**
Central				
Arcadia	27,520	27,520	100.0	0.23
Heyburn	7,105	6,493	91.4	0.00
Thunderbird	119,600	116,540	97.4	0.00
Regional Totals/Averages	**154,225**	**150,553**	**97.6**	**0.08**
East Central				
Eufaula*	2,314,581	1,956,206	84.5	0.00
Tenkiller	654,100	594,383	90.9	0.00
Regional Totals/Averages	**2,968,681**	**2,550,589**	**85.9**	**0.00**
Southwest				
Fort Cobb	80,010	73,382	91.7	0.00
Lugert-Altus	132,830	48,734	36.7	0.00
Tom Steed	88,970	64,526	72.5	0.00
Regional Totals/Averages	**301,810**	**186,642**	**61.8**	**0.00**
South Central				
Arbuckle	72,400	72,400	100.0	1.17
McGee Creek	113,930	112,232	98.5	0.00
Texoma*	2,669,354	2,610,438	97.8	0.00
Waurika*	190,200	172,749	90.8	0.00
Regional Totals/Averages	**3,045,884**	**2,967,819**	**97.4**	**0.29**
Southeast				
Broken Bow*	918,070	826,418	90.0	0.00
Hugo*	184,917	184,917	100.0	0.90
Pine Creek*	53,750	53,750	100.0	1.64
Sardis	274,330	274,330	100.0	0.79
Wister	60,162	60,162	100.0	1.00
Regional Totals/Averages	**1,491,229**	**1,399,577**	**93.9**	**0.87**
State Totals	**12,174,796**	**11,113,264**	**91.3**	**0.24**

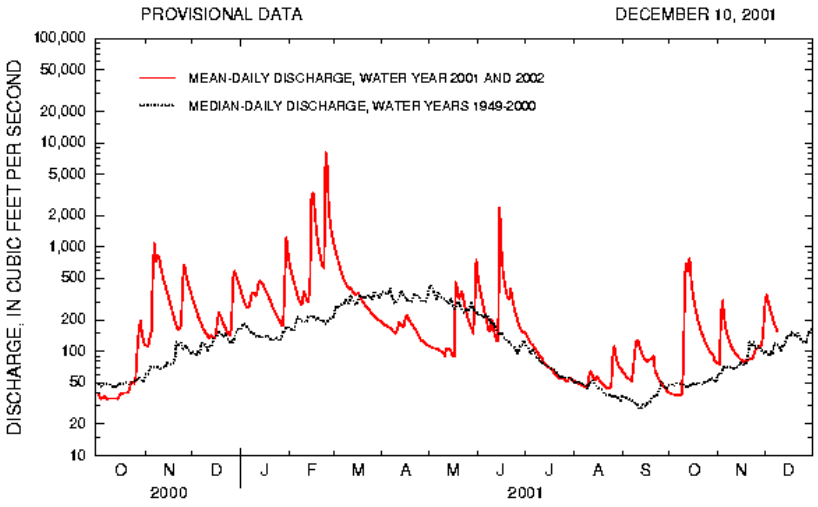
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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 2002 and period of record for Baron Fork at Eldon, Oklahoma.

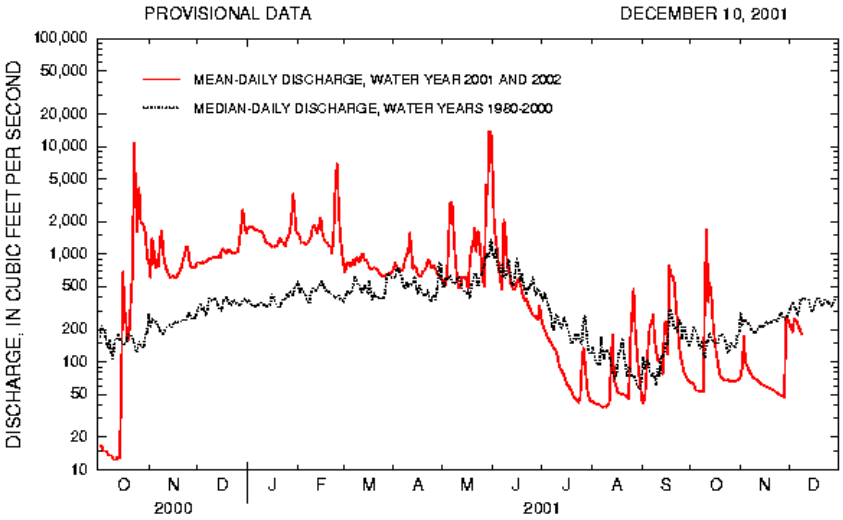
Data from U.S. Geological Survey

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 2002 and period of record for Canadian River at Purcell, Oklahoma.

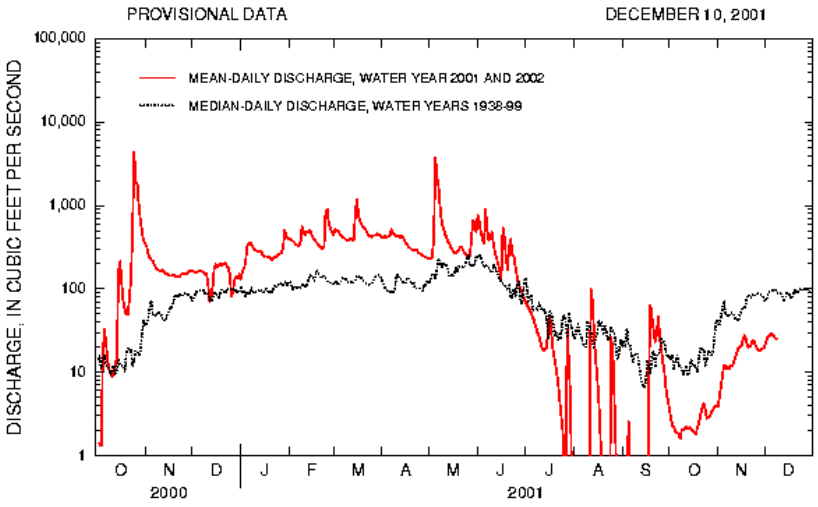
Data from U.S. Geological Survey

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 2002
and period of record for Cimarron River near Waynoka, Oklahoma.

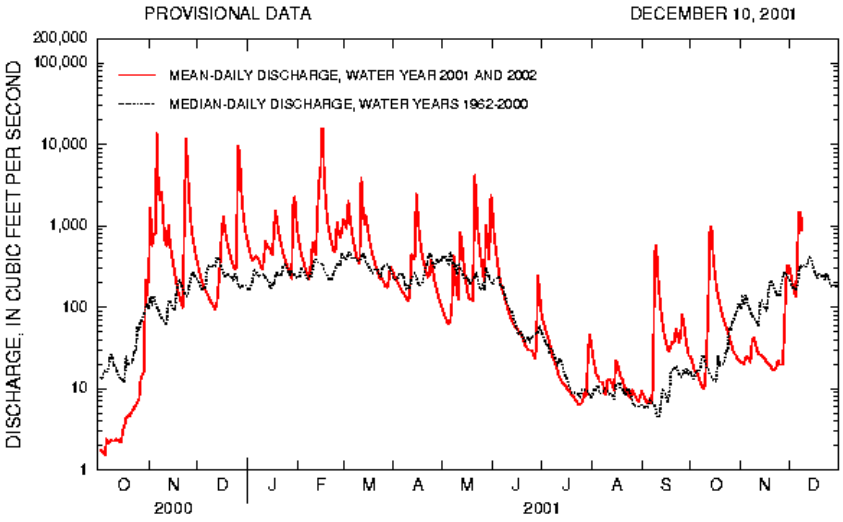
Data from U.S. Geological Survey

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 2002
and period of record for Glover River near Glover, Oklahoma.

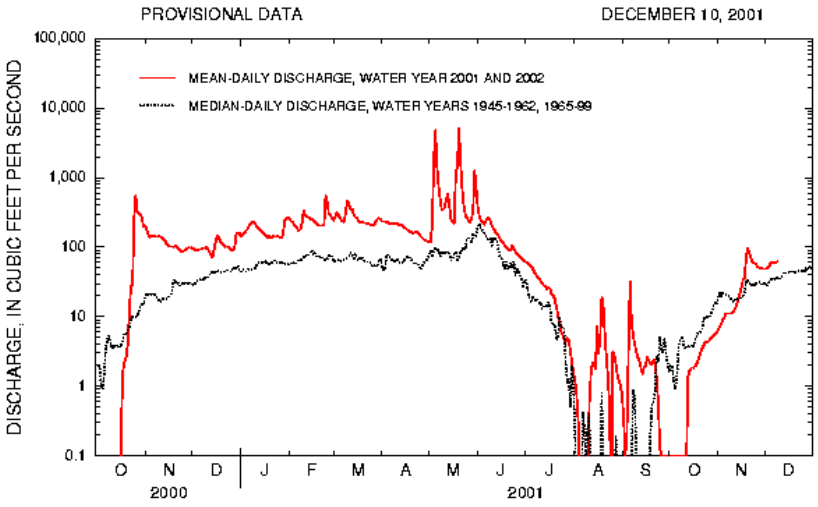
Data from U.S. Geological Survey

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 2002
and period of record for North Fork Red River near Carter, Oklahoma.

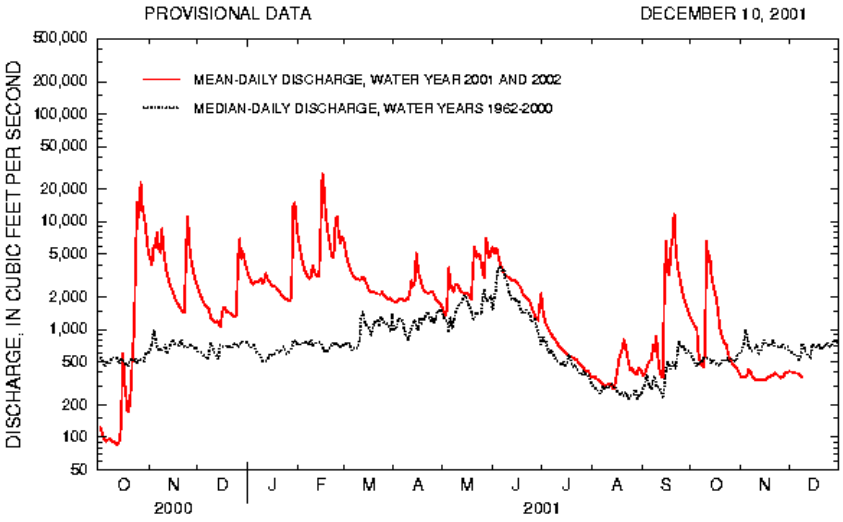
Data from U.S. Geological Survey

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 2002
and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey