

Oklahoma Water Resources Bulletin & Summary of Current Conditions



MAY 22, 2002

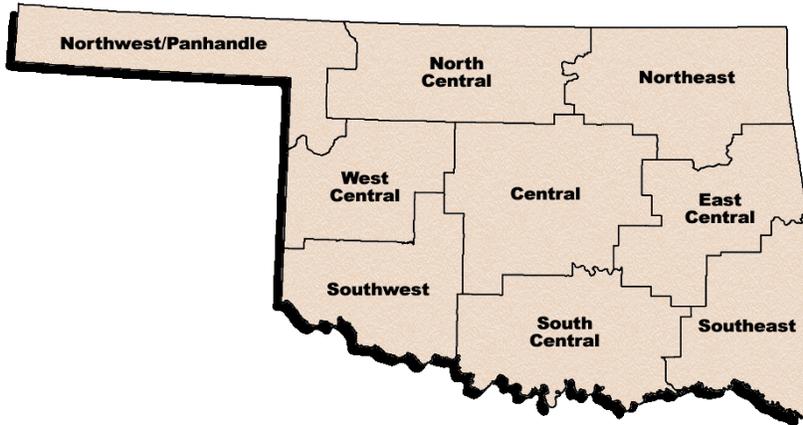
OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

While widespread rainfall alleviated dry conditions in some areas, much of the Panhandle and northwestern Oklahoma continues to suffer from drought conditions.

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 October 1, 2001 through May 20, 2002 (the current water year) remains the Northwest climate division (only 2.99 inches, 30 percent of normal precipitation). In addition, the West Central and North Central regions have received only 54 percent (8.45 inches) and 55 percent (9.25 inches) of their normal rainfall totals, respectively. The current state-averaged precipitation total is 17.77 inches, 84 percent of normal.

For the current growing season (March 1 through May 20), the Northwest region has received a paltry 1.39 inches (25 percent of normal), much of that received last week. The state-averaged total is 8.75 inches (89 percent of normal).



Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	WATER YEAR OCTOBER 1, 2001—MAY 20, 2002			WARM GROWING SEASON MARCH 1—MAY 20, 2002			RAINFALL SINCE MAY 6
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	2.99	-7.07	30	1.39	-4.26	25	0.44
North Central (2)	9.25	-7.63	55	5.30	-3.39	61	1.87
Northeast (3)	22.54	-1.74	93	10.40	-0.81	93	3.58
West Central (4)	8.45	-7.16	54	5.06	-3.10	62	1.31
Central (5)	17.18	-4.94	78	8.62	-1.78	83	2.08
East Central (6)	28.19	-0.14	100	12.95	0.73	106	3.12
Southwest (7)	11.09	-5.53	67	6.08	-2.06	75	0.40
South Central (8)	23.30	-1.61	94	12.11	1.18	111	1.85
Southeast (9)	38.79	5.67	117	17.59	4.52	135	2.44
STATE-AVERAGED	17.77	-3.49	84	8.75	-1.08	89	1.92

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 (May 18, below), drought conditions continue to worsen slightly in northwest Oklahoma, but have generally improved in other areas of concern. **The Panhandle region remains in the “severe” drought category** and two additional regions—the North Central, West Central, and Northeast climate divisions—remain in “moderate” drought. Six of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since May 4; the greatest decrease occurred in the Southwest climate division (“incipient” drought). Conditions have improved considerably in the Northeast (“near normal”).

The latest monthly Standardized Precipitation Index (through April, below) indicates long-term dryness throughout the past year in northern Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), **the Northwest and North Central climate divisions both report “very dry” conditions throughout the last 9- and 12-month periods.** In addition, the Northeast and West Central regions are “moderately dry” over the past 12- and 9-month periods, respectively. Among periods beyond one year, the 15-, 18-, and 24-month SPIs also report dry conditions for the three northern climate divisions. In particular, the North Central region is “very dry” throughout the past 15 months.

The latest Keetch-Byram Drought Index (May 20, 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 continue to be of concern in northwest Oklahoma. Statewide, only three stations are currently above 600, generally indicative of more severe drought conditions (four stations had a reading above 600 on May 6). Hooker, in Northwest Oklahoma (636), retains the highest KBDI value, followed by Buffalo (Northwest; 634), and Beaver (Northwest; 623). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). Effective April 23, the Governor’s Ban on Outdoor Burning remains in effect for five counties in northwest Oklahoma (Beaver, Cimarron, Harper, Texas and Woodward Counties).

Palmer Drought Severity Index					Standardized Precipitation Index Through April 2002			
CLIMATE DIVISION (#)	CURRENT STATUS 5/18/2002	VALUE 5/18	VALUE 5/4	CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
Northwest (1)	SEVERE DROUGHT	-3.41	-3.08	-0.33	MODERATELY DRY	MODERATELY DRY	VERY DRY	VERY DRY
North Central (2)	MODERATE DROUGHT	-2.70	-2.81	0.11	NEAR NORMAL	NEAR NORMAL	VERY DRY	VERY DRY
Northeast (3)	NEAR NORMAL	0.45	-1.13	1.58	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
West Central (4)	MODERATE DROUGHT	-2.42	-2.44	0.02	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL
Central (5)	NEAR NORMAL	0.02	0.08	-0.06	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT MOIST SPELL	0.59	0.68	-0.09	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	MODERATELY WET
Southwest (7)	INCIPIENT DROUGHT	-0.78	0.19	-0.97	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MOIST SPELL	1.30	1.84	-0.54	MODERATELY WET	MODERATELY WET	MODERATELY WET	NEAR NORMAL
Southeast (9)	UNUSUAL MOIST SPELL	2.00	2.39	-0.39	MODERATELY WET	VERY WET	VERY WET	VERY WET

Keetch-Byram Drought Fire Index				
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 5/20/2002	ANTICIPATED IMPACT
Hooker	Texas	Northwest	636	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.
Buffalo	Harper	Northwest	634	
Beaver	Beaver	Northwest	623	

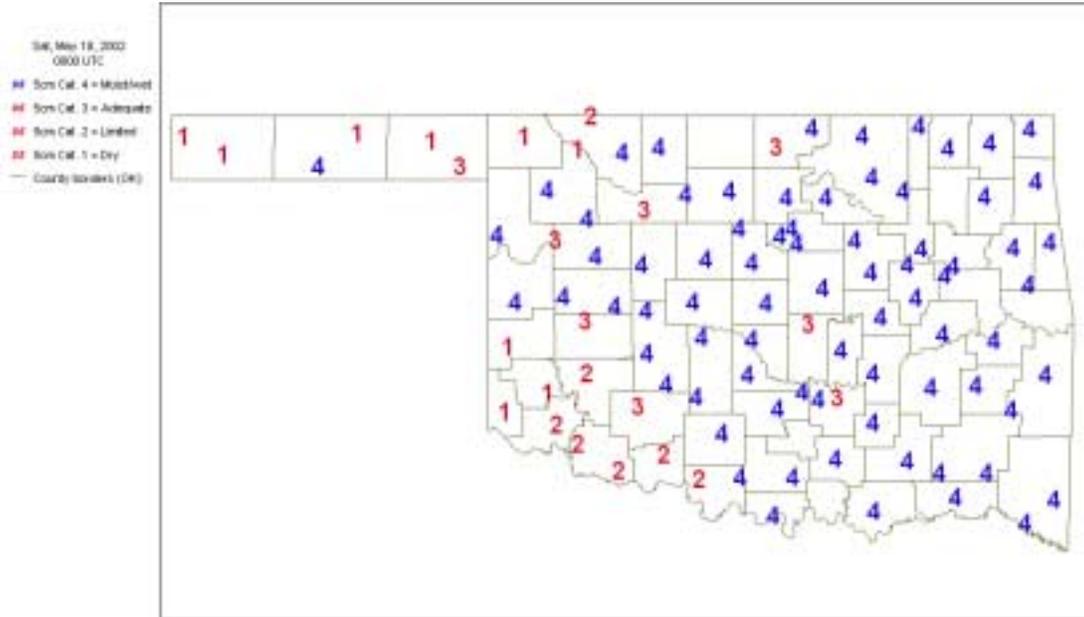
3 total stations above 600

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.

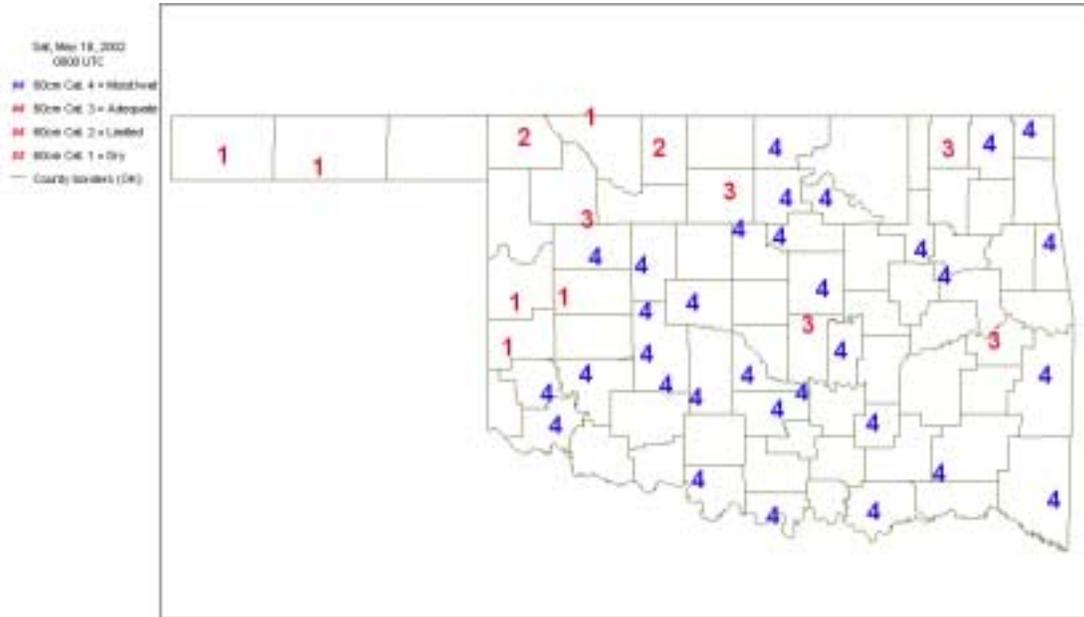
Soil Moisture
May 18, 2002

(courtesy Oklahoma Climatological Survey)

5 cm



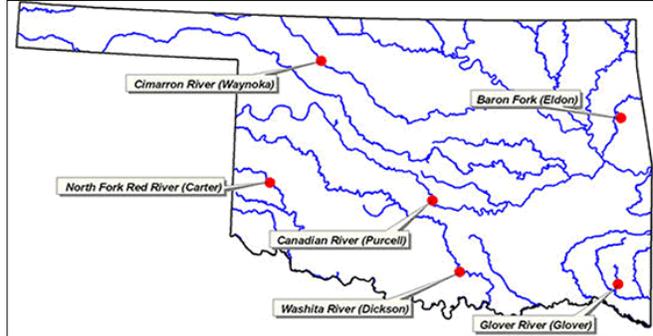
60 cm



Category Description		Depth -- Metric Conversion
Category 4	Moist/wet	5 cm = 2 inches
Category 3	Adequate	*corresponds to the approximate depth of grass roots
Category 2	Limited	60 cm = 23.6 inches
Category 1	Dry	*corresponds to the approximate root depth of the majority of Oklahoma crops

Streamflow Conditions

For the current water year, flows in state rivers and streams remain generally about average across Oklahoma, although flows in the northwest are mostly inadequate. Considering overall trends as well as current flows, the most recent data (May 7, 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, 2001 compared to long-term, normal/median daily discharges) indicate **below average flow** in *northwest* (Cimarron River, Woods County) and *central* (Canadian River, McClain County) Oklahoma; and **near average flow** in the *southeast* (Glover River, McCurtain County), *south central* (Washita River, Carter County), *southwest* (North Fork/Red River, Beckham County), and *northeast* (Baron Fork, Cherokee County) regions.



Weather Forecast

The National Weather Service 8- to 14-day outlook (May 28 to June 3) calls for above normal precipitation for the entire state. Above normal temperatures are anticipated for all but the southeast and south central areas of Oklahoma, where normal temperature 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. Forecasts indicate a gradual warming over the next several months with weak to moderate El Niño conditions by the end of 2002. The impacts that this warming will have on global temperature and precipitation patterns depend to a large degree on its intensity. El Niños, warm water patterns that increase the chances for generally cooler, wetter conditions in the southern U.S. (including Oklahoma), occur about every two to seven years.

Crop Report

May 19—Powerful thunderstorms with heavy rain, hail and strong winds struck late Thursday. The Mesonet site at Fairview in Major County recorded 5.53 inches of rainfall between Thursday evening and Friday morning. Kingfisher County reported severe hail damage in some areas between Omega and Okarche. Statewide, soil moisture supplies improved; topsoil moisture was rated 17 percent very short, 21 percent short, 57 percent adequate, and 5 percent surplus. Subsoil moisture also showed some improvement. Statewide, there were 4.9 days suitable for fieldwork.

Wheat conditions improved slightly last week with most of the crop rated in fair or good condition. Parts of the southwest that have not benefited from recent rain have reported wheat conditions going downhill. Statewide, wheat was advancing rapidly through the dough stage with 61 percent in the dough last week, compared with 37 percent the previous week. Comanche County reported that harvesting of wheat could begin toward the end of next week in the southern part of the county. Oat development was continuing ahead with 63 percent headed last week compared with 53 percent the previous week. Oats in the soft dough stage reached 42 percent compared with 35 percent the previous week. Crop insect activity continued to be rated as mostly none or light. Producers continued preparation of row crop seedbeds until being hindered by the eruption of storms. Peanut and corn seedbed preparation was virtually completed last week, while sorghum is about two-thirds complete and soybeans just past three-quarters complete. All row crops were rated in mostly fair or good condition. Cotton County reported cotton fields were drying and emergence was slow. First cutting of alfalfa hay caught up with the five-year average of 75 percent completed, but was still running behind last year's fast pace of 89 percent completed. Other hay cutting reached 34 percent complete, a 10 point advance from the previous week, but still behind last year and the average pace. Statewide, both alfalfa and other hay were rated in mostly fair or good condition. Major County reported hay quality was looking good but previous drought conditions were causing lower yields.

Livestock were rated in mostly fair or good condition. Livestock insect activity was rated mostly light to moderate although horned flies and ticks were increasing in some areas. Cattle auctions reported a slight decrease in marketings of steers less than 800 pounds, but marketings of steers greater than 800 pounds was substantially higher than the previous week. Statewide, range and pasture conditions were rated in mostly fair or good condition, but the Panhandle and southwest regions continue to rate a large number of acres in poor to very poor condition. Some producers were busy spraying and fertilizing pastures last week.

Reservoir Storage

Reservoir storage levels in Oklahoma have improved over the past week. Hulah Lake, only about one-half full two weeks ago, is now full. As of May 20, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 98.8 percent full, a 1.0 percent increase from that recorded on May 6, according to information from the U.S. Army Corps of Engineers (Tulsa District). Only 10 reservoirs have experienced lake level decreases since that time. Only six reservoirs are currently operating at less than full capacity (compared to 10 two weeks ago). Two reservoirs (including Lugert-Altus, 53.4 percent; and Tom Steed, 68.5 percent) remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs				
<i>05/20/2002</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	0.09
Great Salt Plains	31,420	31,420	100.0	1.82
Kaw*	459,850	459,850	100.0	0.18
Regional Totals/Averages	505,170	505,170	100.0	0.70
Northeast				
Birch	19,225	19,225	100.0	5.01
Copan	43,400	43,400	100.0	9.61
Fort Gibson	365,200	365,200	100.0	23.87
Grand	1,672,000	1,672,000	100.0	17.55
Hudson	200,300	200,300	100.0	9.62
Hulah	25,100	25,100	100.0	1.49
Keystone	577,499	577,499	100.0	1.49
Oologah	552,210	552,210	100.0	16.95
Skiatook	322,700	304,721	94.4	0.00
Regional Totals/Averages	3,777,634	3,759,655	99.5	9.51
West Central				
Canton	111,310	111,310	100.0	0.84
Foss	165,480	157,828	95.4	0.00
Regional Totals/Averages	276,790	269,138	97.2	0.42
Central				
Arcadia	27,520	27,520	100.0	2.40
Heyburn	7,105	7,105	100.0	3.01
Thunderbird	119,600	119,600	100.0	1.91
Regional Totals/Averages	154,225	154,225	100.0	2.44
East Central				
Eufaula*	2,314,581	2,314,581	100.0	1.28
Tenkiller	654,100	654,100	100.0	0.66
Regional Totals/Averages	2,968,681	2,968,681	100.0	0.97
Southwest				
Fort Cobb	80,010	80,010	100.0	1.16
Lugert-Altus	132,830	70,898	53.4	0.00
Tom Steed	88,970	60,951	68.5	0.00
Regional Totals/Averages	301,810	211,859	70.2	0.39
South Central				
Arbuckle	72,400	72,400	100.0	5.49
McGee Creek	113,930	112,961	99.1	0.00
Texoma*	2,620,826	2,591,593	98.9	0.00
Waurika*	190,200	190,200	100.0	0.07
Regional Totals/Averages	2,997,356	2,967,154	99.0	1.39
Southeast				
Broken Bow*	950,170	950,170	100.0	2.06
Hugo*	198,067	198,067	100.0	0.94
Pine Creek*	71,120	71,120	100.0	1.73
Sardis	274,330	274,330	100.0	1.70
Wister	60,162	60,162	100.0	1.75
Regional Totals/Averages	1,553,849	1,553,849	100.0	1.64
State Totals	12,535,515	12,389,731	98.8	3.63
* indicates seasonal pool operation; actual storage figures/percentages may vary.				

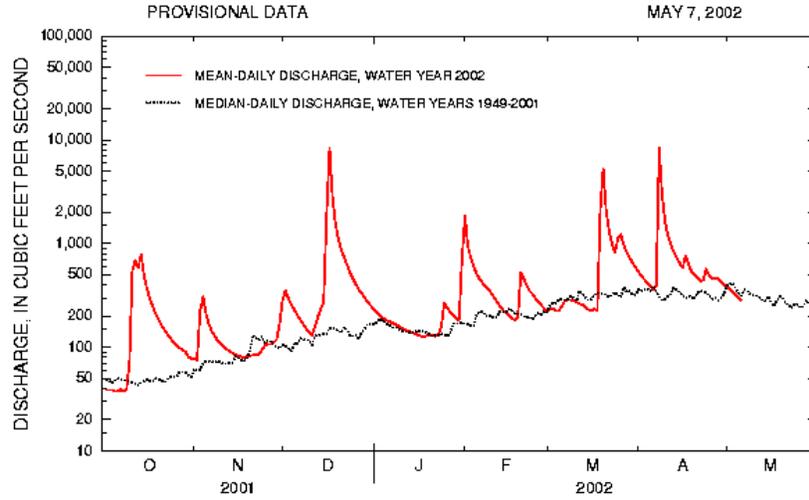
Baron Fork at Eldon

Baron Fork at Eldon, Oklahoma

Station No. 07197000

Northeast Oklahoma

Drainage Area 307 square miles



Comparison of daily discharges for water year 2002 and period of record for Baron Fork at Eldon, Oklahoma.

Data from U.S. Geological Survey

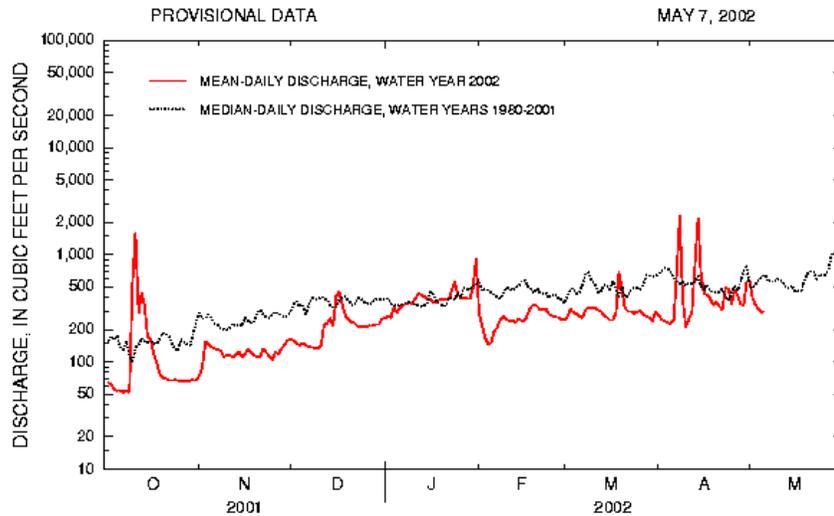
Canadian River at Purcell

Canadian River at Purcell, Oklahoma

Station No. 07229200

Central Oklahoma

Drainage Area 25,939 square miles



Comparison of daily discharges for water year 2002 and period of record for Canadian River at Purcell, Oklahoma.

Data from U.S. Geological Survey

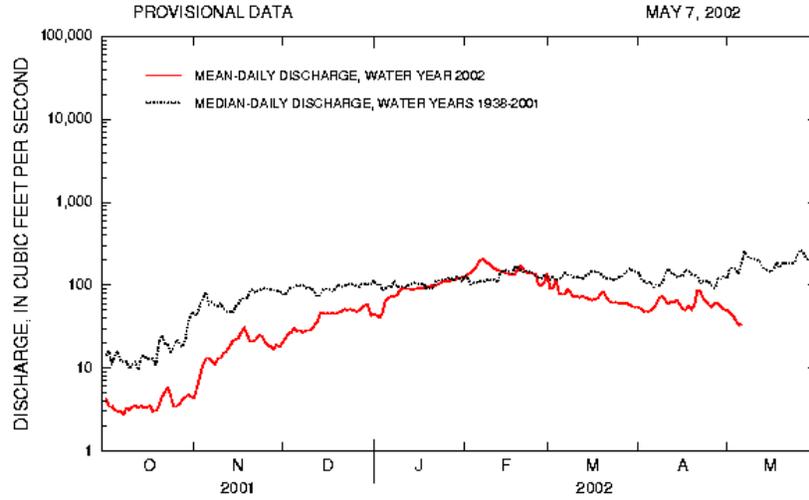
Cimarron River near Waynoka

Cimarron River near Waynoka, Oklahoma

Station No. 07158000

Northwest Oklahoma

Drainage Area 13,334 square miles



Comparison of daily discharges for water year 2002 and period of record for Cimarron River near Waynoka, Oklahoma.

Data from U.S. Geological Survey

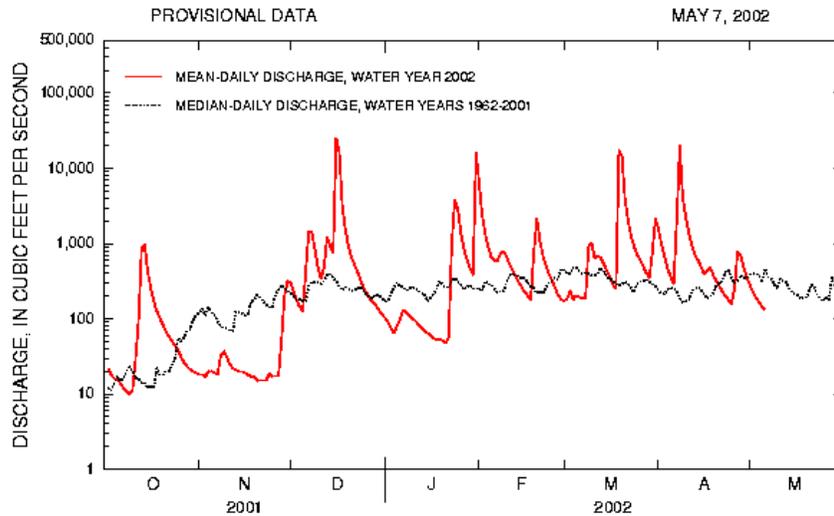
Glover River near Glover

Glover River near Glover, Oklahoma

Station No. 07337900

Southeast Oklahoma

Drainage Area 315 square miles



Comparison of daily discharges for water year 2002 and period of record for Glover River near Glover, Oklahoma.

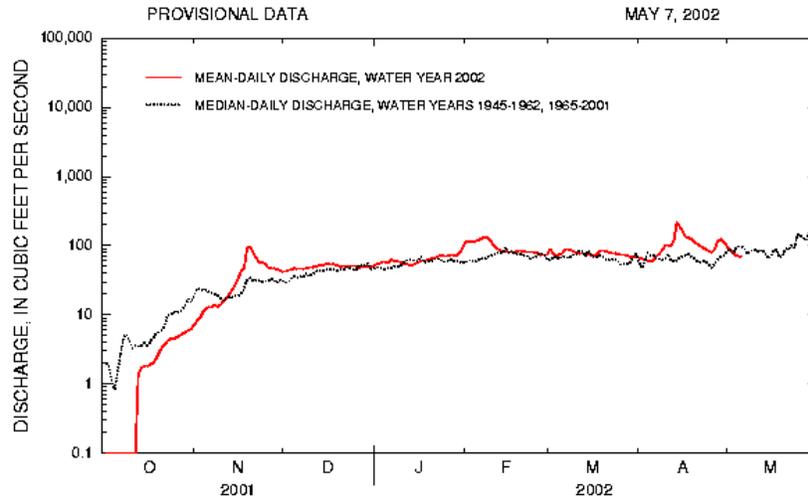
Data from U.S. Geological Survey

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

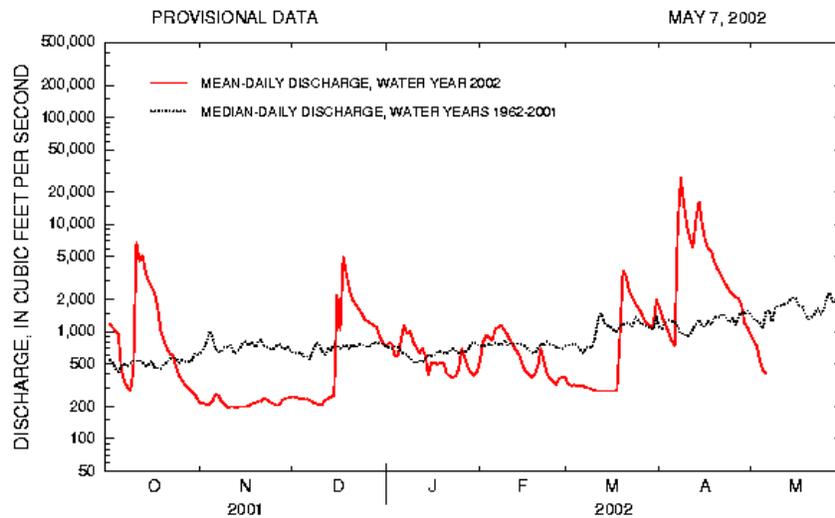
Data from U.S. Geological Survey

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

Data from U.S. Geological Survey