

Oklahoma Water Resources Bulletin & Summary of Current Conditions



APRIL 10, 2002

OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Although recent precipitation has benefited much of the state, rainfall deficits continue throughout most of northwest Oklahoma. In general, eastern Oklahoma is wet while western Oklahoma is dry, accentuating the state's variable climate.

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 April 8, 2002 (the current water year) remains the Northwest climate division (1.77 inches, only 27 percent of normal precipitation). In all, three regions (also West Central and North Central Oklahoma) have received less than one-half of their normals for the period. The current state-averaged precipitation total is 13.53 inches, 88 percent of normal.

For the current growing season (March 1 through April 8), five climate divisions report precipitation deficits, including the Northwest region at a paltry 8 percent of normal. In addition, the North Central and West Central climate divisions report only 31 and 34 percent of normal, respectively. The state-averaged total is 4.51 inches (112 percent of normal).



Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	WATER YEAR OCTOBER 1, 2001—APRIL 8, 2002			WARM GROWING SEASON MARCH 1—APRIL 8, 2002			RAINFALL SINCE MARCH 25
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	1.77	-4.77	27	0.17	-1.96	8	0.14
North Central (2)	5.02	-6.64	43	1.07	-2.40	31	0.64
Northeast (3)	15.75	-2.07	88	3.58	-1.15	76	1.58
West Central (4)	4.44	-6.11	42	1.04	-2.05	34	0.56
Central (5)	12.59	-3.30	79	4.03	-0.15	96	2.19
East Central (6)	23.55	+2.19	110	8.30	+3.06	158	3.68
Southwest (7)	8.13	-3.32	71	3.12	+0.15	105	1.62
South Central (8)	18.69	+0.15	101	7.50	+2.94	165	4.08
Southeast (9)	34.03	+8.30	132	12.83	+7.15	226	5.96
STATE-AVERAGED	13.53	-1.90	88	4.51	0.50	112	2.23

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 (April 6, below), drought conditions continue to worsen in northwest Oklahoma. Three regions—the North Central, West Central, and Northwest climate divisions—are experiencing “moderate” drought while the Northeast region is classified in the “mild” drought category. Seven of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since March 23. The greatest decrease occurred in the West Central climate division.

The latest monthly Standardized Precipitation Index (through March, below) indicates long-term dryness throughout the past 6 to 12 months, especially in northern Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), **the Northwest and North Central climate divisions report “extremely dry” conditions throughout the last 9-month period.** Also particularly dry is the West Central region, which is “very dry” over the past 6- and 9-month periods. Among periods beyond one year, the 15- 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 (April 8, 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 have improved throughout much of Oklahoma but remain of concern in northwestern areas. Statewide, only four stations are currently above 600, generally indicative of more severe drought conditions (one station had a reading above 600 on March 25). Goodwell, in Northwest Oklahoma (667), retains the highest KBDI value, followed by Hooker (Northwest; 606), Beaver (Northwest; 603), and Buffalo (Northwest; 603). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger), although recent rains have improved the situation in central and southern Oklahoma. Effective April 8, the Governor has issued a Ban on Outdoor Burning for 12 counties in northern Oklahoma. In addition to Texas County, where a burn ban has been in effect for many weeks, the expanded pronouncement includes Alfalfa, Beaver, Cimarron, Custer, Dewey, Ellis, Grant, Harper, Osage, Woods and Woodward Counties.

Palmer Drought Severity Index					Standardized Precipitation Index Through March 2002			
CLIMATE DIVISION (#)	CURRENT STATUS 4/6/2002	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		4/6	3/23					
Northwest (1)	MODERATE DROUGHT	-2.35	-2.19	-0.16	NEAR NORMAL	VERY DRY	EXTREMELY DRY	VERY DRY
North Central (2)	MODERATE DROUGHT	-2.74	-2.31	-0.43	NEAR NORMAL	VERY DRY	EXTREMELY DRY	VERY DRY
Northeast (3)	MILD DROUGHT	-1.05	-0.80	-0.25	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
West Central (4)	MODERATE DROUGHT	-2.57	-2.07	-0.50	NEAR NORMAL	VERY DRY	VERY DRY	MODERATELY DRY
Central (5)	INCIPIENT MOIST SPELL	0.97	1.07	-0.10	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MOIST SPELL	1.80	2.00	-0.20	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	NEAR NORMAL	-0.25	-0.46	0.21	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
South Central (8)	UNUSUAL MOIST SPELL	2.53	2.30	0.23	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	VERY MOIST SPELL	3.02	3.20	-0.18	VERY WET	VERY WET	VERY WET	MODERATELY WET

Keetch-Byram Drought Fire Index

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 4/8/2002	ANTICIPATED IMPACT
Goodwell	Texas	Northwest	667	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.
Hooker	Texas	Northwest	606	
Beaver	Beaver	Northwest	603	
Buffalo	Harper	Northwest	603	

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.

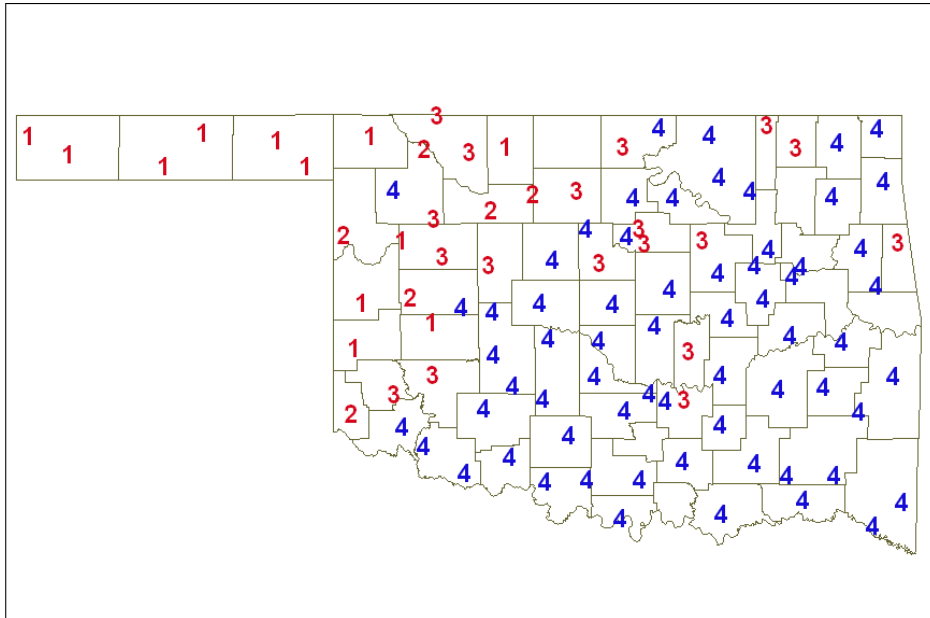
Soil Moisture April 7, 2002

(courtesy Oklahoma Climatological Survey)

5 cm

Sun, Apr 7, 2002
0000 UTC

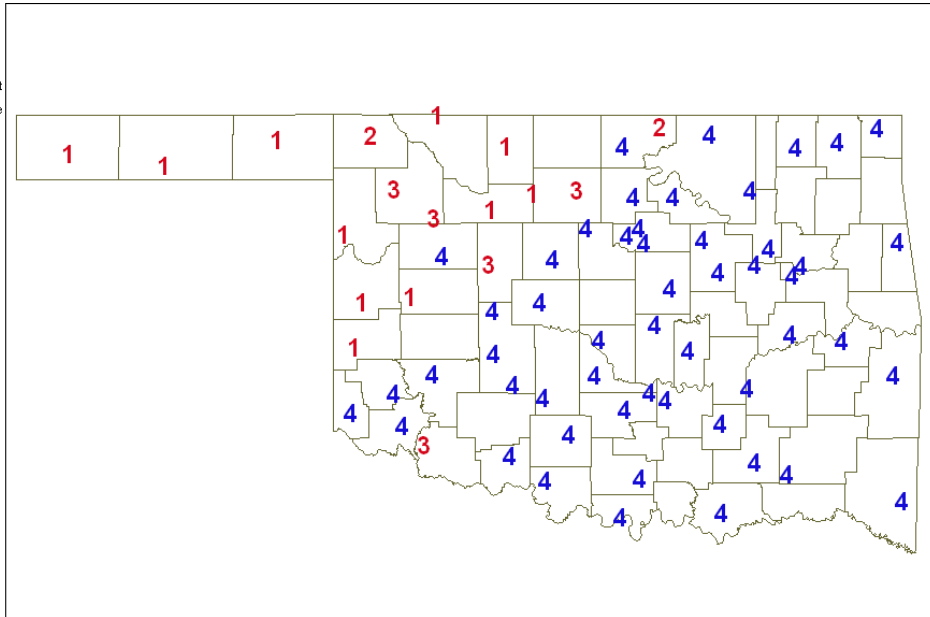
- ## Scm Cat. 4 = Moist/wet
- ## Scm Cat. 3 = Adequate
- ## Scm Cat. 2 = Limited
- ## Scm Cat. 1 = Dry
- County borders (OK)



60 cm

Sun, Apr 7, 2002
0000 UTC

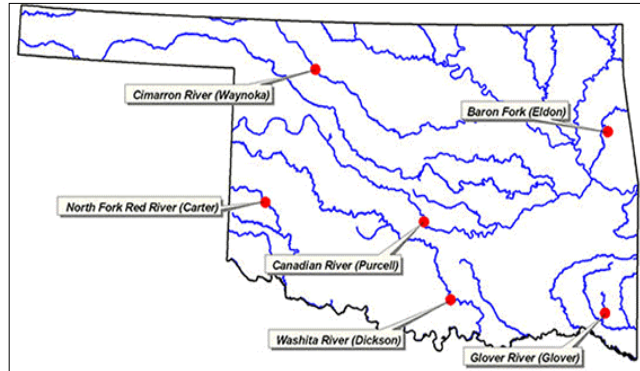
- ## 60cm Cat. 4 = Moist/wet
- ## 60cm Cat. 3 = Adequate
- ## 60cm Cat. 2 = Limited
- ## 60cm Cat. 1 = Dry
- County borders (OK)



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 are generally about average across Oklahoma, although flows are spiked in some areas due to increased runoff from last week's rainfall event. Considering overall trends as well as current flows, the most recent data (April 9, 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 *central* (Canadian River, McClain County) and *northwest* (Cimarron River, Woods County) Oklahoma; and **near average flow** in the *south central* (Washita River, Carter County), *southwest* (North Fork/Red River, Beckham County), *northeast* (Baron Fork, Cherokee County), and *southeast* (Glover River, McCurtain County) regions.



Weather Forecast

The National Weather Service 8- to 14-day outlook (April 16-22) calls for above normal precipitation for generally the northeast quadrant of Oklahoma while normal rainfall is anticipated elsewhere. Above normal temperatures are anticipated 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 and warm episode conditions are likely to develop over the next three months. 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 generally cooler, wetter conditions in the southern U.S. (including Oklahoma), occur about every two to seven years.

Crop Report

April 7—Weekend rain showers brought much-needed relief to most of Oklahoma. However, western and northern areas still require more rainfall for ranges, pastures, and crops to improve. Topsoil moisture supplies improved from the previous week with 56 percent rated as short or very short this week compared with 64 percent last week. Subsoil moisture also showed some improvement. Statewide, there were 5.4 days suitable for fieldwork.

State winter wheat conditions showed some improvement despite dire conditions in many counties. Most counties were hopeful conditions would improve with the added precipitation. Wheat jointing increased 25 points to 55 percent, compared with 41 percent jointed last year. Insects were still causing damage in many fields. Oats planted increased a point, while jointing reached 19 percent; 6 points ahead of last year. East central Oklahoma reported that recent heavy rains have slowed germination and growth of oats. Corn planted moved ahead with 22 percent completed last week compared with 14 percent last year and 16 percent on average. Sorghum seedbed prepared gained 8 points last week to reach 28 percent complete, slightly ahead of the 5-year average pace. Counties in the southwest reported many producers getting started preparing seedbeds for peanuts and soybeans.

Statewide, livestock continued to be rated in mostly fair or good condition. Southeast Oklahoma reported one producer losing many mature cows due to nitrate poisoning resulting from eating pigweed in hay. Cattle auctions reported marketings picking up from the previous week, but still lighter than average. The price received for feeder steers less than 800 pounds was up slightly and averaged \$84.00 per cwt. The price for feeder heifers less than 800 pounds was also up and averaged \$77.10 per cwt. The west central region reported native pasture conditions were deteriorating due to overgrazing caused by lack of rest. Many cattle were never placed on wheat last fall, causing even more damage to the native grasses. The northeast area reported bermuda grass sprigging was getting into full swing. Statewide, range and pasture conditions were still rated in mostly poor or very poor condition.

Reservoir Storage

Reservoir storage levels in Oklahoma remain steady, although supplies are very low in a few isolated areas. As of April 9, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 97.1 percent full, a 0.3 percent increase from that recorded on March 25, according to information from the U.S. Army Corps of Engineers (Tulsa District). Only six reservoirs have experienced lake level decreases since that time. Twelve reservoirs are currently operating at less than full capacity (compared to 12 two weeks ago). Four reservoirs (including **Hulah, the primary water supply for the City of Bartlesville, critically low at only 19 percent; Lugert-Altus, 48 percent; Copan, 71.5 percent; and Tom Steed, 66.6 percent**) remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs				
04/09/2002				
Climate Division	Conservation Storage	Present Storage	Percent of Storage	
Lake or Reservoir	(acre-feet)	(acre-feet)	conservation	flood
North Central				
Fort Supply	13,900	13,900	100.0	0.76
Great Salt Plains	31,420	31,420	100.0	1.15
Kaw*	398,695	392,885	98.5	0.00
Regional Totals/Averages	444,015	438,205	98.7	0.64
Northeast				
Birch	19,225	16,389	85.2	0.00
Copan	43,400	31,033	71.5	0.00
Fort Gibson	365,200	365,200	100.0	3.64
Grand	1,672,000	1,550,200	92.7	0.00
Hudson	200,300	200,300	100.0	9.05
Hulah	25,100	4,773	19.0	0.00
Keystone	278,122	278,122	100.0	0.00
Oologah	552,210	552,210	100.0	0.79
Skiatook	322,700	269,469	83.5	0.00
Regional Totals/Averages	3,478,257	3,267,696	93.9	1.50
West Central				
Canton	111,310	95,487	85.8	0.00
Foss	165,480	153,422	92.7	0.00
Regional Totals/Averages	276,790	248,909	89.9	0.00
Central				
Arcadia	27,520	27,520	100.0	4.47
Heyburn	7,105	7,105	100.0	3.81
Thunderbird	119,600	119,600	100.0	11.53
Regional Totals/Averages	154,225	154,225	100.0	6.60
East Central				
Eufaula*	2,314,581	2,314,581	100.0	28.91
Tenkiller	654,100	654,100	100.0	14.05
Regional Totals/Averages	2,968,681	2,968,681	100.0	21.48
Southwest				
Fort Cobb	80,010	78,410	98.0	0.00
Lugert-Altus	132,830	63,695	48.0	0.00
Tom Steed	88,970	59,264	66.6	0.00
Regional Totals/Averages	301,810	201,369	66.7	0.00
South Central				
Arbuckle	72,400	72,400	100.0	29.79
McGee Creek	113,930	113,930	100.0	63.93
Texoma*	2,418,626	2,418,626	100.0	12.90
Waurika*	190,200	183,430	96.4	0.00
Regional Totals/Averages	2,795,156	2,788,386	99.8	26.66
Southeast				
Broken Bow*	923,470	923,470	100.0	42.37
Hugo*	182,287	182,287	100.0	34.22
Pine Creek*	67,682	67,682	100.0	46.21
Sardis	274,330	274,330	100.0	56.58
Wister	60,162	60,162	100.0	97.37
Regional Totals/Averages	1,507,931	1,507,931	100.0	55.35
State Totals	11,926,865	11,575,402	97.1	14.89

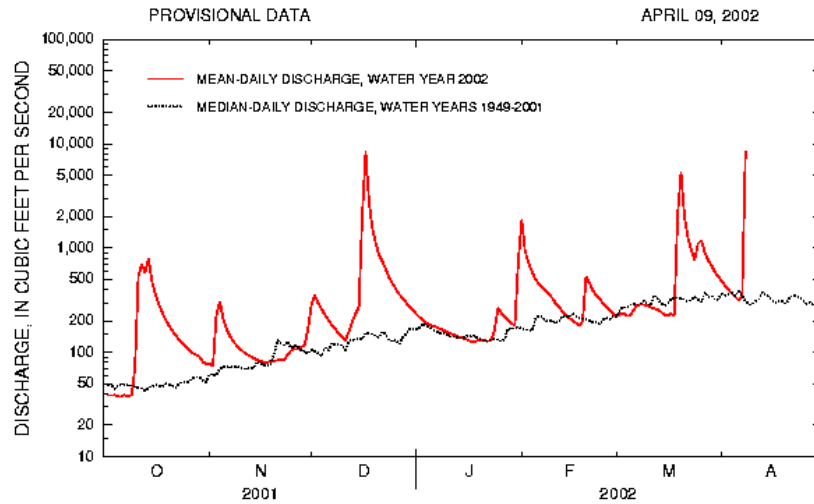
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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.

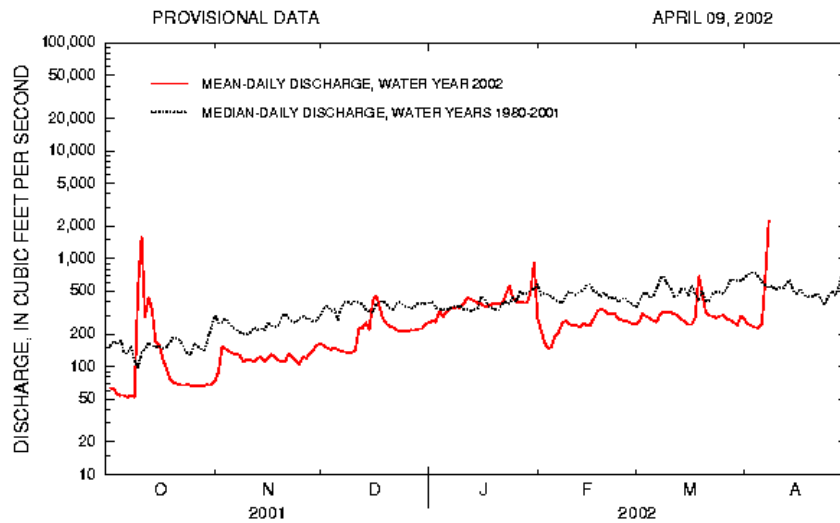
Data from U.S. Geological Survey

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

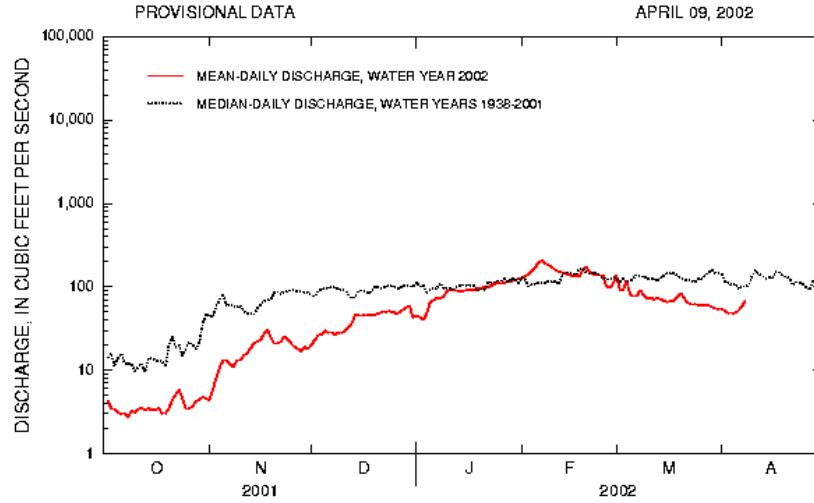
Cimarron River near Waynoka

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

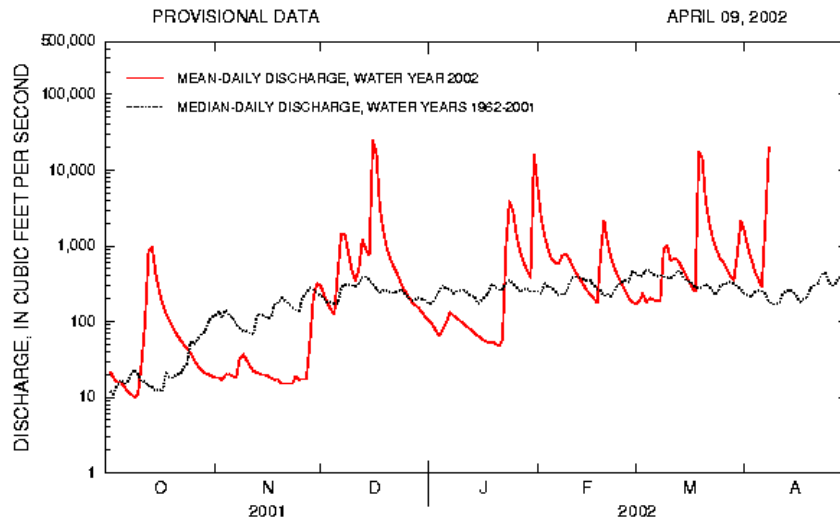
Glover River near Glover

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.

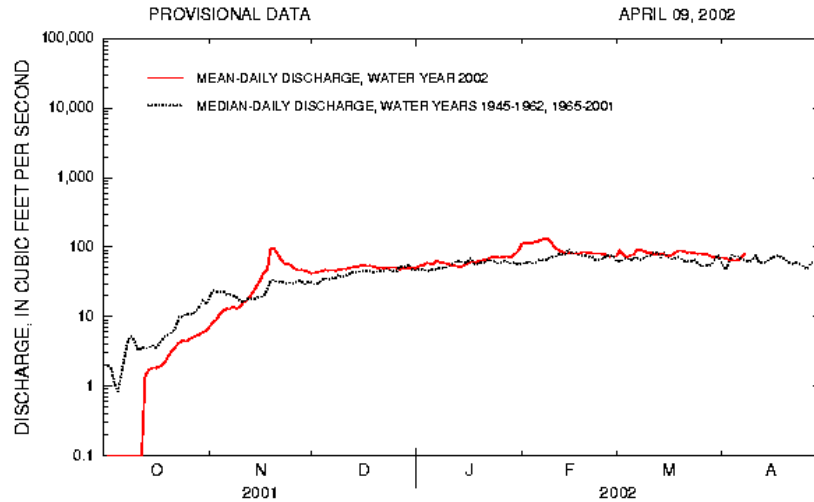
Data from U.S. Geological Survey

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.

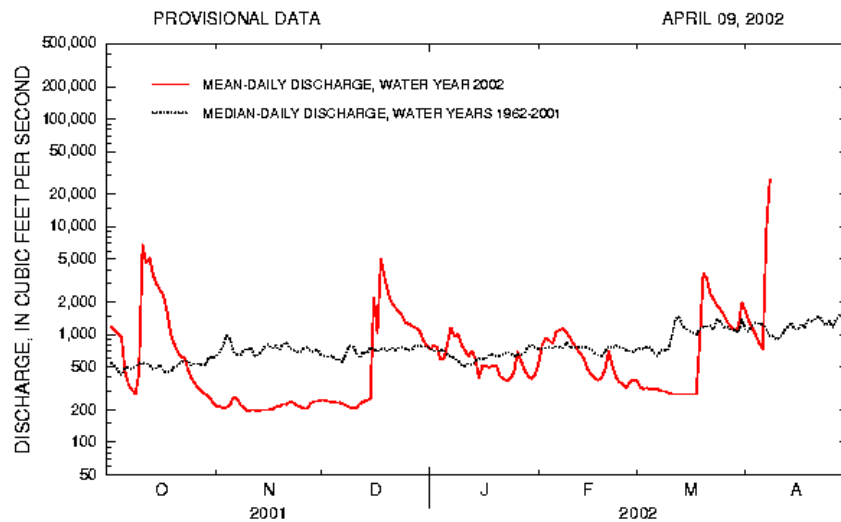
Data from U.S. Geological Survey

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