

Oklahoma Water Resources Bulletin

& Summary of Current Conditions



MARCH 12, 2003

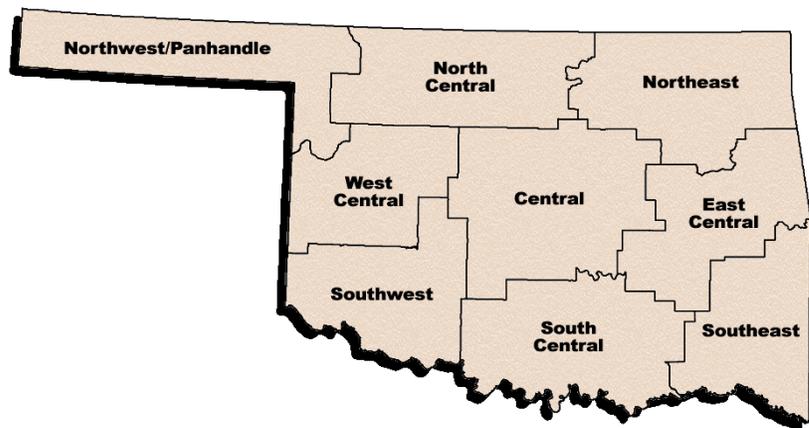
OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Despite moisture from recent snowfall, most areas of Oklahoma have received less than one-half of normal precipitation so far this calendar year.

According to preliminary Mesonet weather station data provided by the Oklahoma Climatological Survey and National Weather Service (see below), the areas receiving the lowest percent of normal rainfall from September 1, 2002 through March 9 (the current growing season), are the Northeast and East Central climate divisions (both only 58 percent of normal precipitation). The Southeast region is also somewhat dry, receiving 17.43 inches of precipitation (67 percent of normal) during the period. The current state-averaged rainfall total is 12.59 inches, 78 percent of normal.

For the current calendar year (January 1 through March 9), the West Central and Southwest regions report only 24 and 28 percent of normal precipitation, respectively, and all climate divisions are below 50 percent of normal rainfall. The state-averaged rainfall total is only 1.67 inches (41 percent of normal).



Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	COOL GROWING SEASON SEPTEMBER 1, 2002—MARCH 9, 2003			CALENDAR YEAR JANUARY 1—MARCH 9, 2003			RAINFALL SINCE FEBRUARY 9
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	7.46	+0.70	110	0.51	-1.13	31	0.33
North Central (2)	12.86	+0.76	106	1.20	-1.73	41	0.87
Northeast (3)	11.00	-7.93	58	2.26	-2.35	49	1.70
West Central (4)	11.32	+0.14	101	0.65	-2.07	24	0.18
Central (5)	13.36	-3.40	80	1.44	-2.73	35	0.87
East Central (6)	13.01	-9.25	58	2.84	-2.90	49	2.09
Southwest (7)	12.18	-0.35	97	0.85	-2.20	28	0.32
South Central (8)	15.10	-4.26	78	2.11	-3.03	41	1.40
Southeast (9)	17.43	-8.50	67	3.23	-4.02	45	2.54
STATE-AVERAGED	12.59	-3.55	78	1.67	-2.45	41	1.14

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

Drought Indices

According to the latest Palmer Drought Severity Index (March 10, below), no drought conditions exist in any region of Oklahoma. Only two of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since February 8. The greatest decrease occurred in the Southwest climate division.

The latest monthly Standardized Precipitation Index (through February, below) continues to indicate some long-term dryness in eastern Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), "moderately dry" conditions are indicated in the East Central climate division throughout the last 6- and 9-month periods. Also, the Northeast region is dry throughout the last 6 months. Considering longer periods (through six years), the Northeast and Northwest climate divisions indicate dry conditions at various times over the past 24- and 30-month periods. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (March 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 remain good. Statewide, no Mesonet stations are currently above or even near 600, generally indicative of more severe drought conditions (no stations had a reading above 600 on February 10). Hooker, in Northwest Oklahoma, has the highest KBDI value (377). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness remains at Level 2 (moderate fire danger). Warm, sunny days can increase the fire danger very quickly. Dormant grassy fuels can easily ignite under dry conditions. Outdoor burning should be avoided when winds exceed 20 miles per hour.

Palmer Drought Severity Index					Standardized Precipitation Index Through February 2003			
CLIMATE DIVISION (#)	CURRENT STATUS 3/8/2003	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		3/8	2/8					
Northwest (1)	MOIST SPELL	1.10	0.62	0.48	NEAR NORMAL	MODERATELY WET	MODERATELY WET	NEAR NORMAL
North Central (2)	UNUSUAL MOIST SPELL	2.50	2.01	0.49	NEAR NORMAL	MODERATELY WET	VERY WET	MODERATELY WET
Northeast (3)	NEAR NORMAL	-0.29	-1.55	1.26	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
West Central (4)	MOIST SPELL	1.12	1.17	-0.05	NEAR NORMAL	MODERATELY WET	NEAR NORMAL	NEAR NORMAL
Central (5)	INCIPIENT MOIST SPELL	0.93	0.85	0.08	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	NEAR NORMAL	0.28	-0.47	0.75	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
Southwest (7)	MOIST SPELL	1.16	1.40	-0.24	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MOIST SPELL	1.45	1.34	0.11	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	NEAR NORMAL	-0.07	-0.43	0.36	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL

Keetch-Byram Drought Fire Index

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 3/10/2003	ANTICIPATED IMPACT
Hooker	Texas	Northwest	377	<u>600-800</u> : often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively. <u>400-600</u> : lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.
Washington	McClain	Central	292	
Vinita	Craig	Northeast	285	

Total stations above 600 = 0

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.

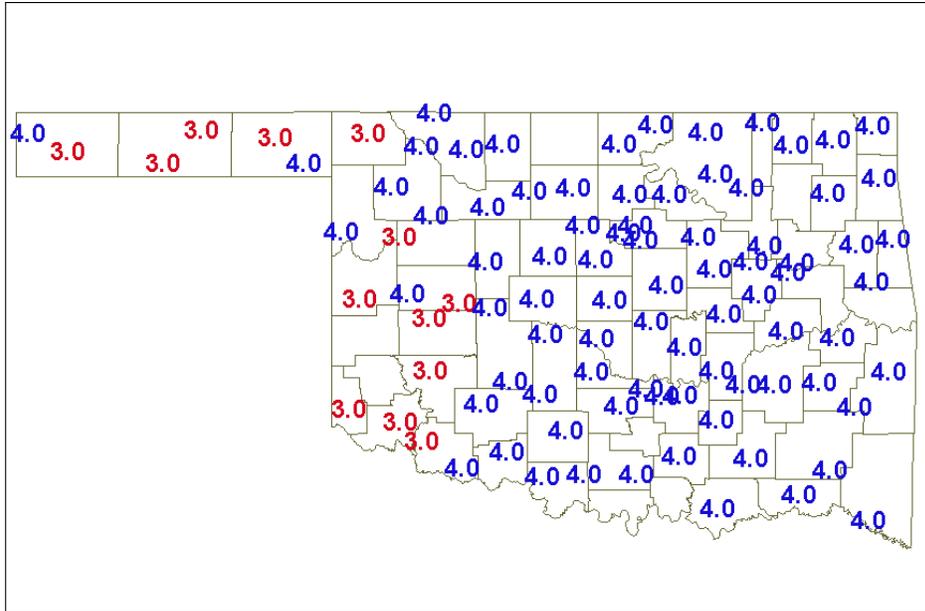
Soil Moisture

March 8, 2003

(Courtesy Oklahoma Climatological Survey)

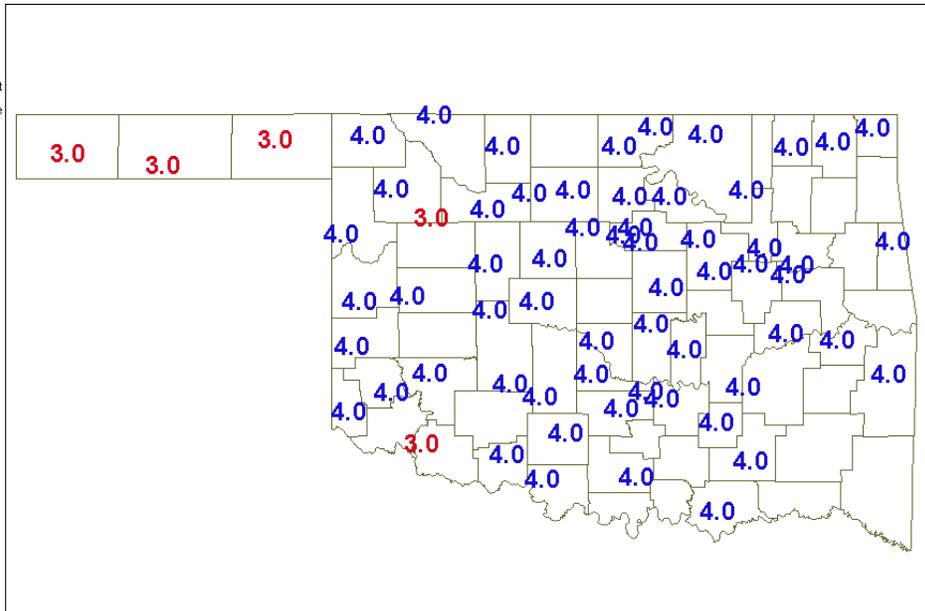
5 cm

Sat, Mar 8, 2003
0000 UTC
5cm Cat. 4 = Moist/wet
5cm Cat. 3 = Adequate
5cm Cat. 2 = Limited
5cm Cat. 1 = Dry
— County borders (OK)



60 cm

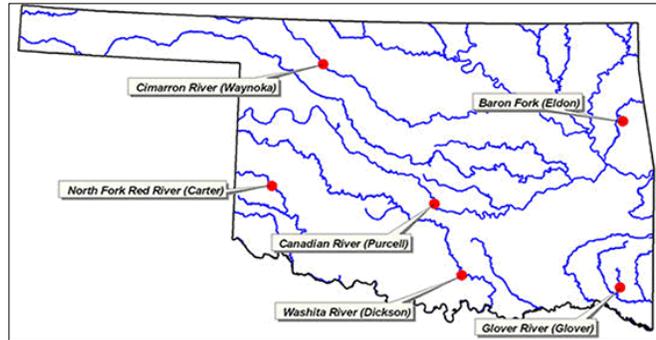
Sat, Mar 8, 2003
0000 UTC
60cm Cat. 4 = Moist/wet
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— County borders (OK)



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 near normal. Considering overall trends as well as current flows, the most recent data (March 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, 2001, compared to long-term, normal/median daily discharges) indicate **below average flow** in *northeast* (Baron Fork, Cherokee County) Oklahoma; **near average flow** in the *southeast* (Glover River, McCurtain County), *northwest* (Cimarron River, Woods County), *central* (Canadian River, McClain County), and *south central* (Washita River, Carter County) regions; and **above average flow** in the *southwest* (North Fork/Red River, Beckham County).



Weather Forecast

The National Weather Service 8- to 14-day outlook (March 17-23) calls for above normal precipitation and above normal temperatures for the entire state throughout the period.

Models indicate that the current mature El Niño episode is weakening and should continue to weaken through April. Thereafter, the consensus forecast is for near-normal conditions during the May-October period. El Niños, warm water anomalies in the equatorial regions 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

February 28 - Large quantities of snow and below freezing temperatures were received at the end of February. Northeast and central Oklahoma counties were hit the hardest by the winter storm with many counties reporting up to 20 inches of snow. The recent snowstorm brought much-needed moisture to the state. The greatest concentrations of moisture were received in the southeast, east central, south central, and northeast regions, which all accumulated more than two inches of precipitation during the month. Both topsoil and subsoil moisture conditions were rated mostly short to adequate.

Statewide, winter wheat condition at the end of February was rated good to fair. Most of the wheat has been at a standstill due to the extended freezing temperatures. Warmer conditions are needed to continue the growth process of wheat. Rye and oats were rated in mostly good to fair condition. Winter wheat grazed reached 62 percent, compared to 38 percent last year and the 5-year average of 41 percent. Rye grazed was 86 percent, compared to 53 percent last year and the 5-year average of 34 percent.

Livestock were rated in mostly good to fair condition statewide, but the cold and wet conditions have caused stress to cattle. With spring calving underway, producers are losing a large number of calves at birth due to the cold conditions. Farmers and ranchers have been forced to feed extra amounts of hay and feed during these adverse conditions.

Range and pasture were rated in mostly good to fair condition. Wheat pasture available for grazing was scarce across the state due to the cold temperatures. This lack of grazing availability has caused heavy supplemental feeding in most areas. The southwest and east central regions reported pastures in mostly very poor to poor condition.

Reservoir Storage

Reservoir storage levels in Oklahoma continue to improve and remain in generally good condition. As of March 10, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 94 percent full, a 1.6 percent increase from that recorded on February 10, according to information from the U.S. Army Corps of Engineers (Tulsa District). Only seven reservoirs have experienced lake level decreases since that time. Thirteen reservoirs are currently operating at less than full capacity (compared to 17 one month ago). Three reservoirs (including **Lugert-Altus, only 40.1 percent**; and Tom Steed, 57.1 percent) remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs						
03/10/2003						
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	0.11
Great Salt Plains	31,420		31,420		100.0	2.06
Kaw*	381,436		381,436		100.0	1.08
Regional Totals/Averages	426,756		426,756		100.0	1.08
Northeast						
Birch	19,225		15,101		78.5	0.00
Copan	43,400		42,997		99.1	0.00
Fort Gibson	365,200		365,200		100.0	1.45
Grand	1,672,000		1,545,801		92.5	0.00
Hudson	200,300		200,300		100.0	1.90
Hulah	25,100		25,100		100.0	1.22
Keystone	510,059		510,059		100.0	1.22
Oologah	552,210		552,210		100.0	0.79
Skiatook	322,700		262,879		81.5	0.00
Regional Totals/Averages	3,710,194		3,519,647		94.9	0.73
West Central						
Canton	111,310		111,310		100.0	0.78
Foss	165,480		162,541		98.2	0.00
Regional Totals/Averages	276,790		273,851		98.9	0.39
Central						
Arcadia	27,520		27,520		100.0	0.29
Heyburn	7,105		7,105		100.0	0.05
Thunderbird	119,600		111,918		93.6	0.00
Regional Totals/Averages	154,225		146,543		95.0	0.11
East Central						
Eufaula*	2,314,583		2,106,916		91.0	0.00
Tenkiller	654,100		609,758		93.2	0.00
Regional Totals/Averages	2,968,683		2,716,674		91.5	0.00
Southwest						
Fort Cobb	80,010		80,010		100.0	3.18
Lugert-Altus	132,830		53,273		40.1	0.00
Tom Steed	88,970		50,799		57.1	0.00
Regional Totals/Averages	301,810		184,082		61.0	1.06
South Central						
Arbuckle	72,400		72,400		100.0	3.92
McGee Creek	113,930		113,930		100.0	0.85
Texoma*	2,418,626		2,314,285		95.7	0.00
Waurika*	190,200		185,757		97.7	0.00
Regional Totals/Averages	2,795,156		2,686,372		96.1	1.19
Southeast						
Broken Bow*	918,070		875,017		95.3	0.00
Hugo*	158,617		158,617		100.0	11.97
Pine Creek*	53,750		53,750		100.0	0.99
Sardis	274,330		274,330		100.0	1.70
Wister	60,162		60,162		100.0	0.61
Regional Totals/Averages	1,464,929		1,421,876		97.1	3.05
State Totals	12,098,543		11,375,801		94.0	1.10

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

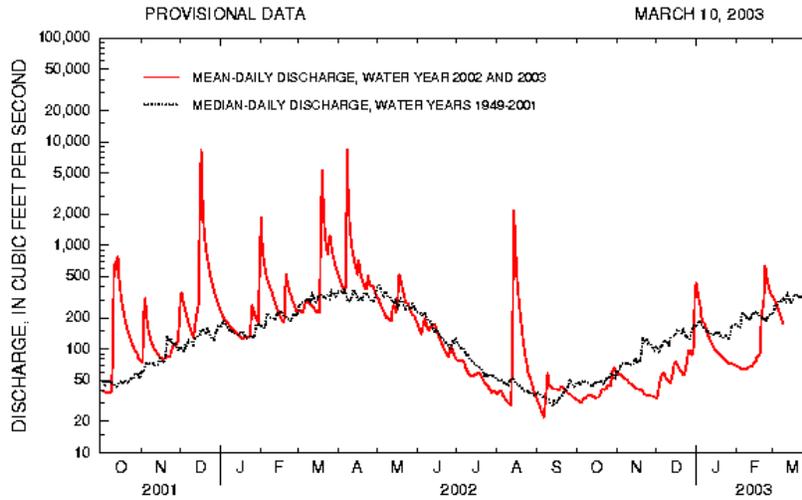
Baron Fork at Eldon

Baron Fork at Eldon, Oklahoma

Station No. 07197000

Northeast Oklahoma

Drainage Area 307 square miles



Comparison of daily discharges for water year 2002 and 2003 and period of record for Baron Fork at Eldon, Oklahoma.

Data from U.S. Geological Survey

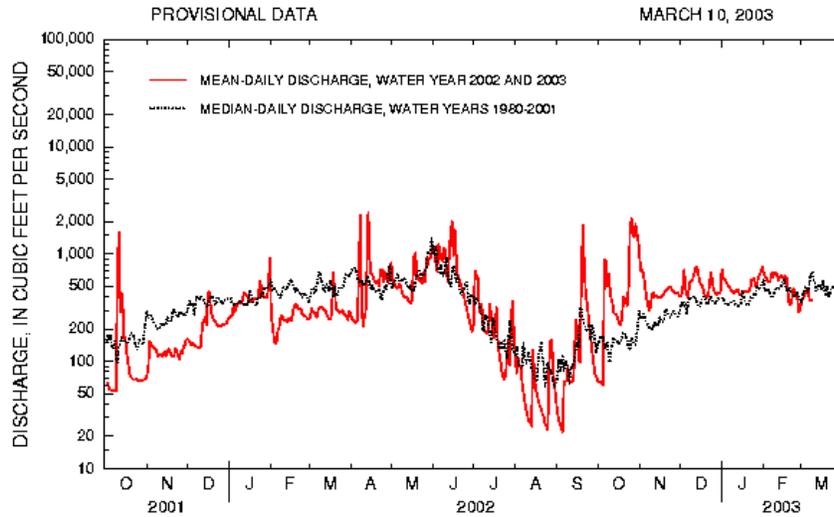
Canadian River at Purcell

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 2003 and period of record for Canadian River at Purcell, Oklahoma.

Data from U.S. Geological Survey

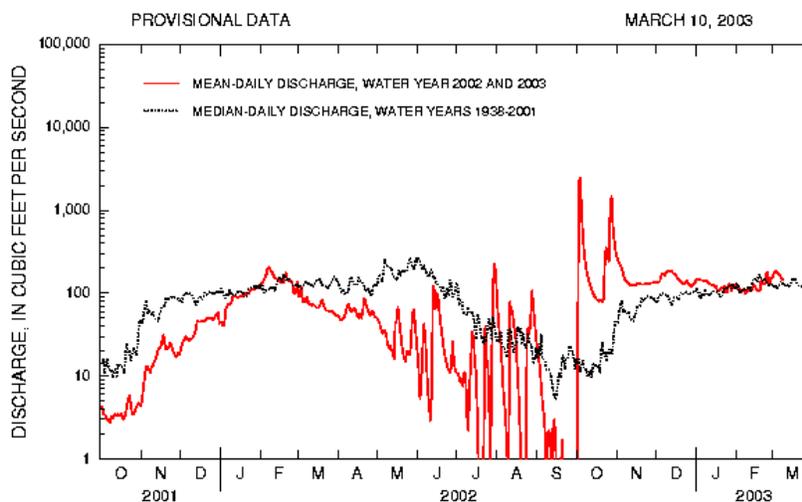
Cimarron River near Waynoka

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 2003 and period of record for Cimarron River near Waynoka, Oklahoma.

Data from U.S. Geological Survey

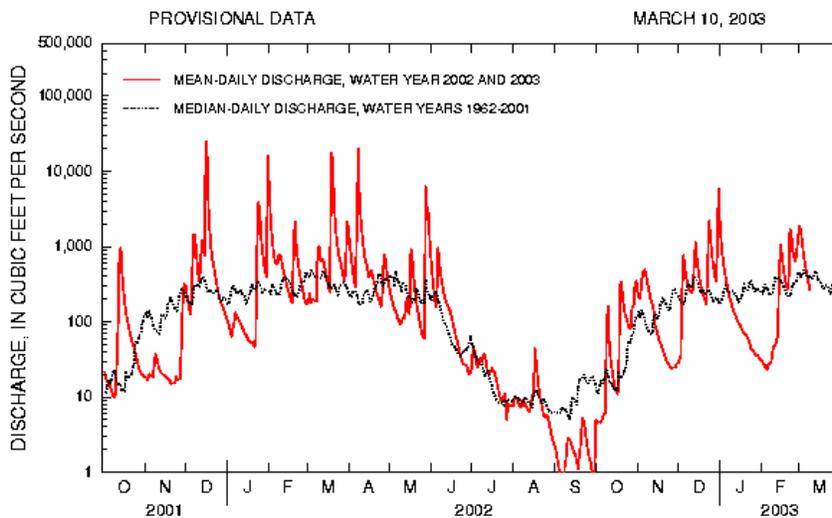
Glover River near Glover

Glover River near Glover, Oklahoma

Station No. 07337900

Southeast Oklahoma

Drainage Area 315 square miles



Comparison of daily discharges for water year 2002 and 2003 and period of record for Glover River near Glover, Oklahoma.

Data from U.S. Geological Survey

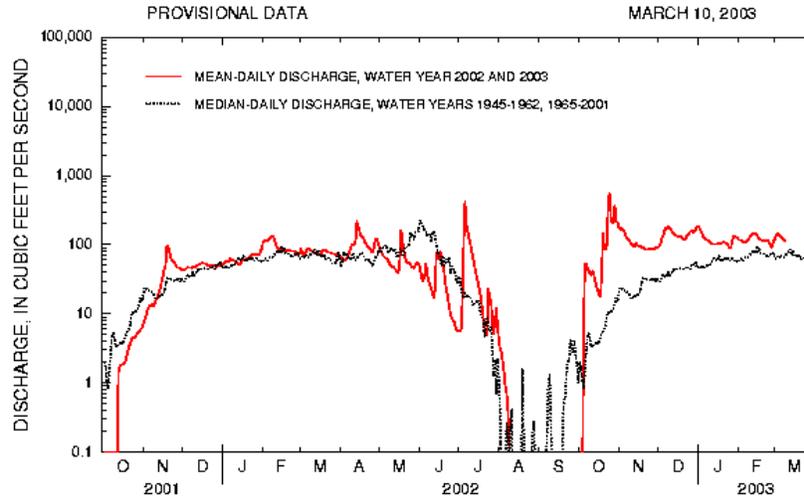
North Fork of the Red River near Carter

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 2003 and period of record for North Fork Red River near Carter, Oklahoma.

Data from U.S. Geological Survey

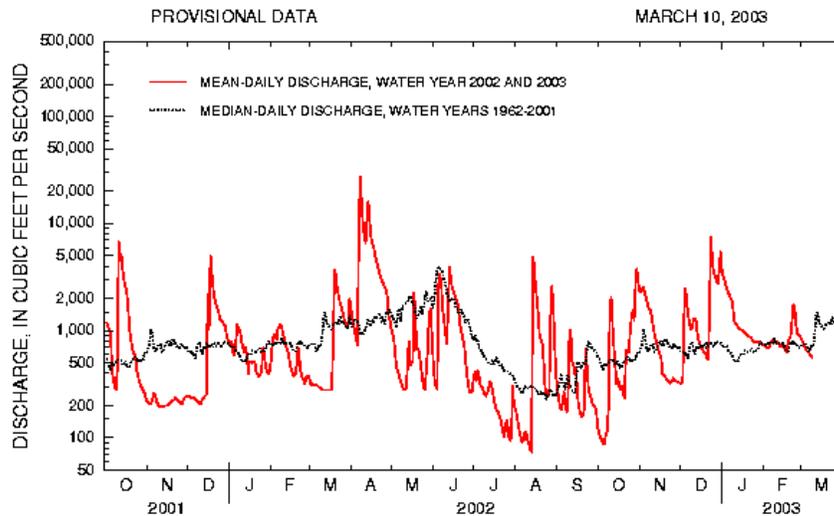
Washita River near Dickson

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 2003 and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey