

Oklahoma Water Resources Bulletin

& Summary of Current Conditions



MARCH 6, 2002

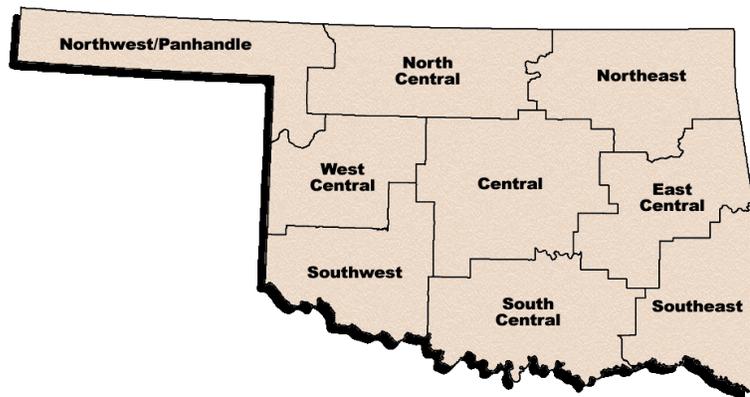
OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Rainfall deficits have worsened throughout much of Oklahoma during the past few weeks. However, the deficits now incorporate updated 30-year “normals” (1970-2000 rather than 1960-1990) for the state’s climate divisions. These new normals reflect a relatively wet decade during the 90s, so the deficits appear somewhat more dramatic than those included in the last *Water Bulletin*.

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 September 1, 2001 through March 3, 2002 (the current growing season) is the Northwest climate division (3.12 inches, only 48 percent of normal precipitation). In all, four regions have received less than 60 percent of their normals for the period. The current state-averaged precipitation total is 12.86 inches, 83 percent of normal for the period.

For the calendar year (January 1 through March 3), six climate divisions report precipitation deficits, including the Northwest and South Central regions at only 68 percent. The state-averaged total is 3.23 inches (92 percent of normal).



Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	CALENDAR YEAR JANUARY 1 – MARCH 3, 2002			GROWING SEASON SEPTEMBER 1, 2001 – MARCH 3, 2002			RAINFALL SINCE FEBRUARY 11
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	0.89	-0.43	68	3.12	-3.33	48	0.03
North Central (2)	2.22	-0.19	92	6.67	-4.91	58	0.28
Northeast (3)	4.02	0.11	103	14.91	-3.31	82	0.76
West Central (4)	1.97	-0.28	88	6.09	-4.62	57	0.15
Central (5)	3.44	-0.11	97	13.04	-3.09	81	0.40
East Central (6)	3.97	-0.99	80	19.72	-1.75	92	1.16
Southwest (7)	2.62	0.01	100	6.82	-5.27	56	0.28
South Central (8)	3.05	-1.41	68	19.37	0.69	104	0.82
Southeast (9)	7.33	0.95	115	26.59	1.53	106	1.62
STATE-AVERAGED	3.23	-0.28	92	12.86	-2.68	83	0.59

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 (March 2, below), drought conditions have worsened slightly in recent weeks. Three regions—the North Central, West Central, and Northwest climate divisions (all experiencing “mild drought”)—are classified in a drought category. Seven of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since February 9. The greatest decrease occurred in the Northwest climate division.

The latest monthly Standardized Precipitation Index (through February, 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 are the West Central and North Central regions, which are “very dry” over the past 9 and 12 months, respectively. Among periods beyond one year, only the 15- and 18-month SPIs (North Central and Northeast, both “moderately dry”) report dry conditions for any area of Oklahoma.

The latest Keetch-Byram Drought Index (February 25, 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 have worsened somewhat. Statewide, however, only one station is currently above 600, generally indicative of more severe drought conditions (one station had a reading above 600 on February 11). Goodwell, in Northwest Oklahoma (658), retains the highest KBDI value, followed by Hooker (Northwest; 584) and Beaver (Northwest; 577). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). However, **very high to extreme fire danger now exists throughout western and central Oklahoma.** A Red Flag Fire Alert, previously in effect for 18 western counties, has been expanded to include all but the far eastern quarter of Oklahoma. Texas County remains in the Governor’s Ban on Outdoor Burning.

Palmer Drought Severity Index					Standardized Precipitation Index Through January 2001			
CLIMATE DIVISION (#)	CURRENT STATUS 3/2/2002	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		3/2	2/9					
Northwest (1)	MILD DROUGHT	-1.13	-0.54	-0.59	NEAR NORMAL	MODERATELY DRY	EXTREMELY DRY	MODERATELY DRY
North Central (2)	MILD DROUGHT	-1.68	-1.19	-0.49	NEAR NORMAL	MODERATELY DRY	EXTREMELY DRY	VERY DRY
Northeast (3)	INCIPIENT DROUGHT	-0.59	-0.61	0.02	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
West Central (4)	MILD DROUGHT	-1.61	-1.12	-0.49	NEAR NORMAL	MODERATELY DRY	VERY DRY	MODERATELY DRY
Central (5)	MOIST SPELL	1.03	1.11	-0.08	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MOIST SPELL	1.57	1.54	0.03	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	INCIPIENT DROUGHT	-0.88	-0.48	-0.40	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
South Central (8)	MOIST SPELL	1.85	1.97	-0.12	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	UNUSUAL MOIST SPELL	2.01	2.36	-0.35	MODERATELY WET	MODERATELY WET	NEAR NORMAL	NEAR NORMAL

Keetch-Byram Drought Fire Index

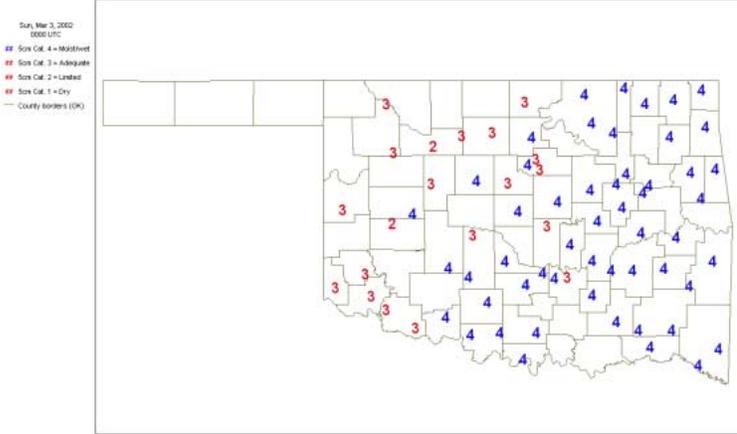
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 2/25/2002	ANTICIPATED IMPACT
Goodwell	Texas	Northwest	658	600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively. 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	584	
Beaver	Beaver	Northwest	577	

1 total station above 600

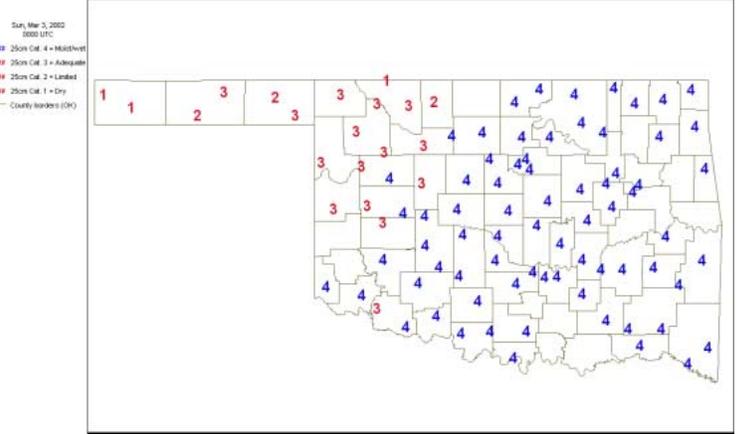
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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
March 3, 2002
(courtesy Oklahoma Climatological Survey)

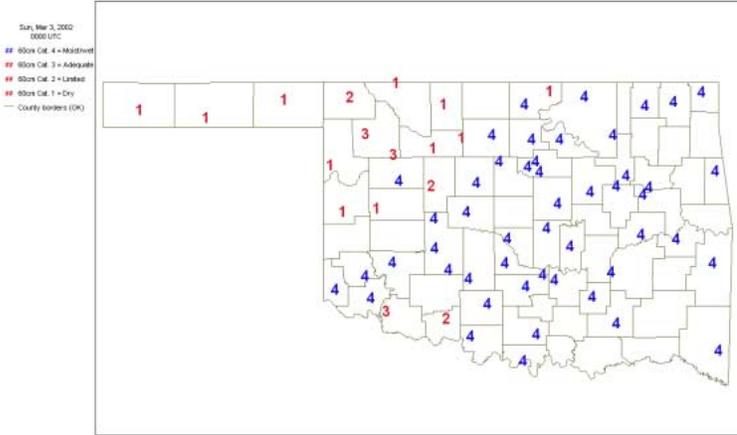
5 cm



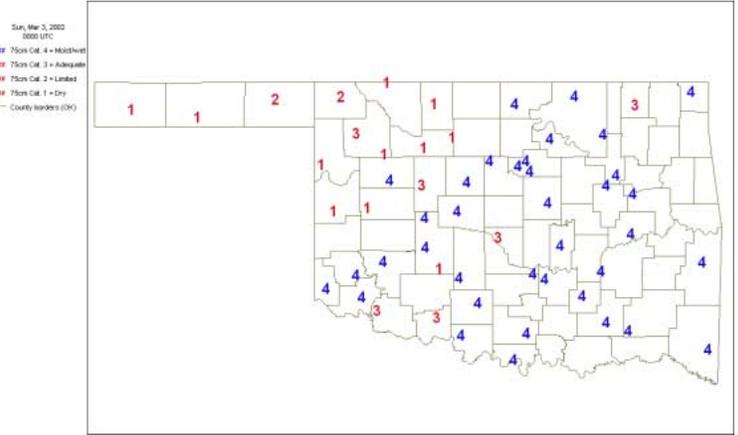
25 cm



60 cm



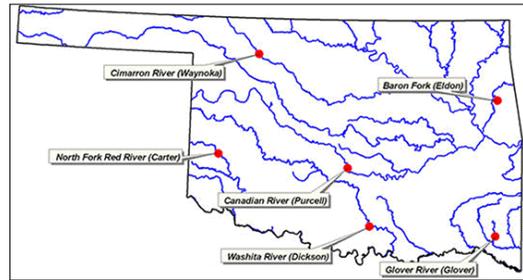
75 cm



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 current water year, flows in state rivers and streams are generally average across Oklahoma. Considering overall trends as well as current flows, the most recent data (March 5, 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 *south central* (Washita River, Carter County) Oklahoma; and **near average flow** in the *northwest* (Cimarron River, Woods County), *southeast* (Glover River, McCurtain County), *southwest* (North Fork/Red River, Beckham County), *central* (Canadian River, McClain County), and *northeast* (Baron Fork, Cherokee County).



Weather Forecast

The National Weather Service 8- to 14-day outlook (March 11-17) calls for above normal precipitation for Oklahoma. Normal temperatures are anticipated for generally all but the northeastern region of the state, where below normal temperatures should prevail.

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 cooler, wetter conditions in the southern U.S. (including Oklahoma), generally occur every two to seven years.

Crop Report

March 4 -- The effects of last month's ice storm lingered well into February with many producers going without power to pump water for their livestock. Statewide, topsoil and subsoil moisture supplies improved slightly in February, but the situation in the Panhandle and most western counties was still dire. Warm temperatures and mild conditions during the middle of the month allowed most farmers to begin fertilizing and prepare for spring planting. Dry and windy conditions were causing erosion problems in some fields in north central Oklahoma. Precipitation in the western half of the state slipped further behind normal while south central and eastern counties improved slightly.

Wheat condition at the end of February improved slightly from January, but most wheat was still rated in fair to poor condition. The Panhandle and southwestern regions reported the poorest wheat conditions while farmers in central and south central areas reported most wheat in fair to good condition. Army and cut worms were still a problem in north central Oklahoma. The condition of rye and oats remained about the same as last month with most of both crops rated in fair or poor condition. Winter wheat grazed reached 39 percent compared with 24 percent last year and the 5-year average of 43 percent. Rye grazed was 55 percent compared with 24 percent last year and the 5-year average of 38 percent.

Livestock were rated in mostly fair or good condition. However, there were some reports of cattle being sold in poor condition due to the lack of wheat forage and over-grazed native grass pastures. Hay supplies for the rest of the season continued to be mostly below average. Statewide, range and pasture conditions were rated in mostly fair to poor condition, but this varied widely. Western and central counties were rated in mostly fair to poor condition while eastern counties were rated in mostly fair to good condition.

Reservoir Storage

Except for a few isolated areas, reservoir storage levels in Oklahoma remain generally good. As of March 4, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 95.8 percent full, a 1.4 percent decrease from that recorded on February 12, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-four reservoirs have experienced lake level decreases since that time. Eighteen reservoirs are currently operating at less than full capacity (compared to 13 last month); four reservoirs (including **Hula, only 35.7 percent**, and **Lugert-Altus, 44.6 percent**) remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs				
03/04/2002				
Climate Division	Conservation Storage	Present Storage	Percent of Storage	
Lake or Reservoir	(acre-feet)	(acre-feet)	conservation	flood
North Central				
Fort Supply	13,900	13,525	97.3	0.00
Great Salt Plains	31,420	31,420	100.0	0.84
Kaw*	370,453	369,040	99.6	0.00
Regional Totals/Averages	415,773	413,985	99.6	0.28
Northeast				
Birch	19,225	15,718	81.8	0.00
Copan	43,400	31,815	73.3	0.00
Fort Gibson	365,200	365,200	100.0	0.50
Grand	1,672,000	1,531,410	91.6	0.00
Hudson	200,300	200,300	100.0	1.63
Hulah	31,160	11,123	35.7	0.00
Keystone	278,122	260,595	93.7	0.00
Oologah	552,210	552,210	100.0	0.41
Skiatook	322,700	269,193	83.4	0.00
Regional Totals/Averages	3,484,317	3,237,564	92.9	0.28
West Central				
Canton	111,310	90,803	81.6	0.00
Foss	165,480	152,131	91.9	0.00
Regional Totals/Averages	276,790	242,934	87.8	0.00
Central				
Arcadia	27,520	27,520	100.0	0.03
Heyburn	7,105	7,035	99.0	0.00
Thunderbird	119,600	119,600	100.0	2.39
Regional Totals/Averages	154,225	154,155	100.0	0.81
East Central				
Eufaula*	2,314,581	2,292,781	99.1	0.00
Tenkiller	654,100	654,100	100.0	0.73
Regional Totals/Averages	2,968,681	2,946,881	99.3	0.37
Southwest				
Fort Cobb	80,010	76,550	95.7	0.00
Lugert-Altus	132,830	59,295	44.6	0.00
Tom Steed	88,970	60,531	68.0	0.00
Regional Totals/Averages	301,810	196,376	65.1	0.00
South Central				
Arbuckle	72,400	72,400	100.0	0.13
McGee Creek	113,930	113,930	100.0	1.14
Texoma*	2,418,626	2,353,042	97.3	0.00
Waurika*	190,200	173,951	91.5	0.00
Regional Totals/Averages	2,795,156	2,713,323	97.1	0.32
Southeast				
Broken Bow*	918,070	917,219	99.9	0.00
Hugo*	158,617	158,617	100.0	0.41
Pine Creek*	53,750	53,750	100.0	0.67
Sardis	274,330	274,330	100.0	1.92
Wister	60,162	60,162	100.0	0.90
Regional Totals/Averages	1,464,929	1,464,078	99.9	0.78
State Totals	11,861,681	11,369,296	95.8	0.38

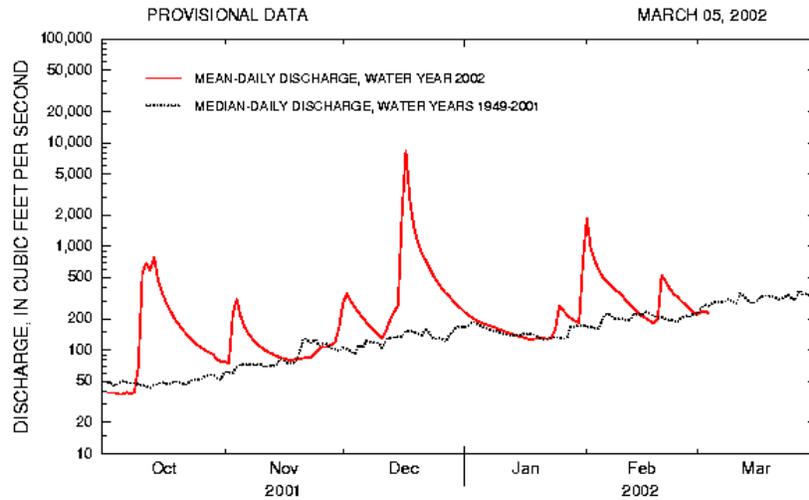
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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.

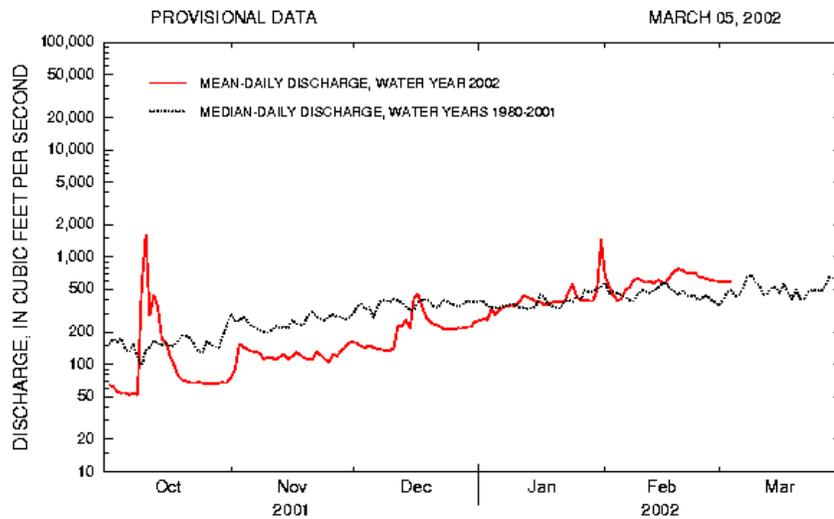
Data from U.S. Geological Survey

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.

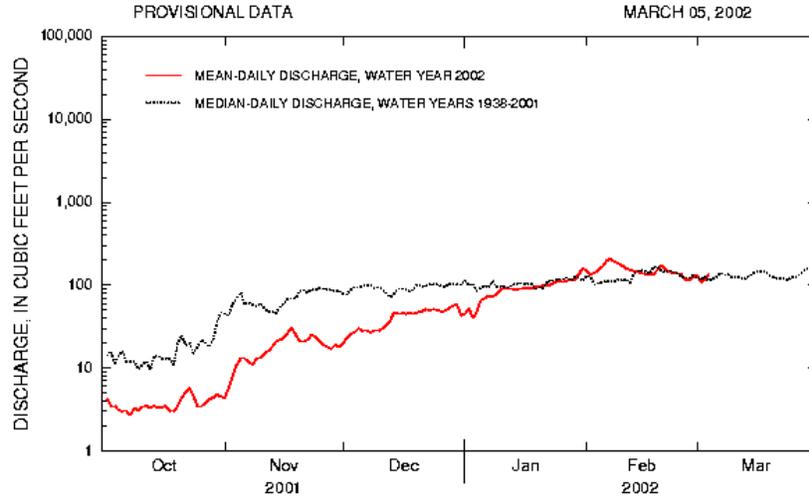
Data from U.S. Geological Survey

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.

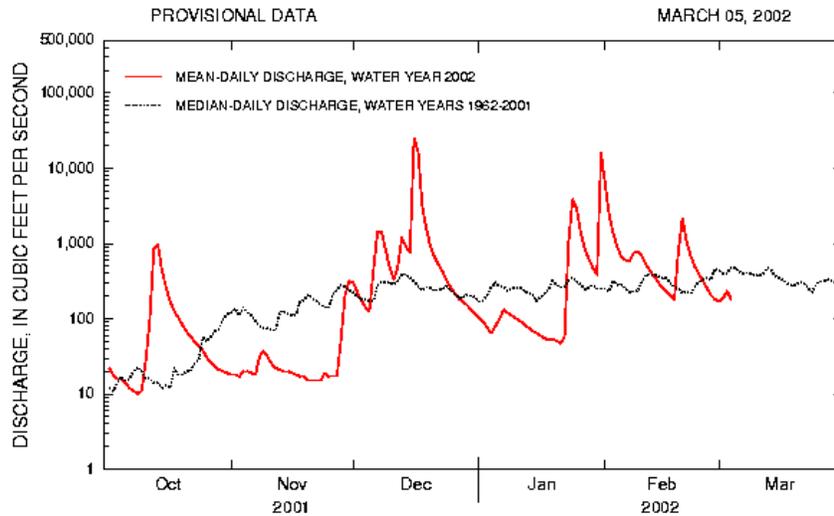
Data from U.S. Geological Survey

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

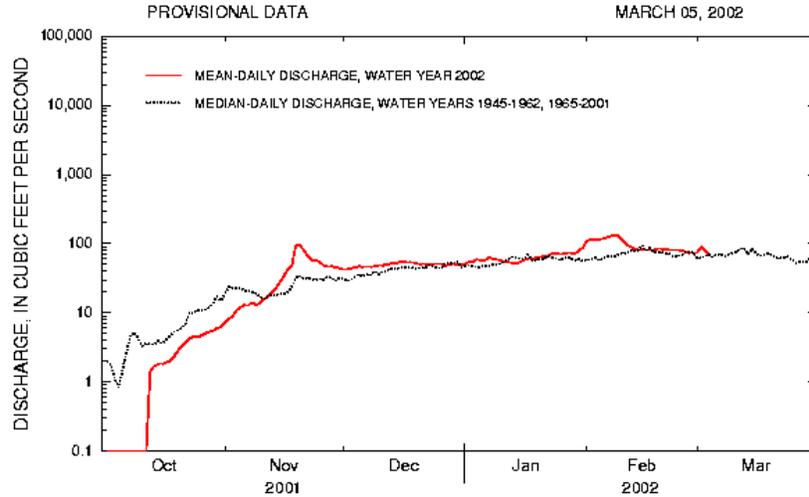
North Fork of the Red River near Carter

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

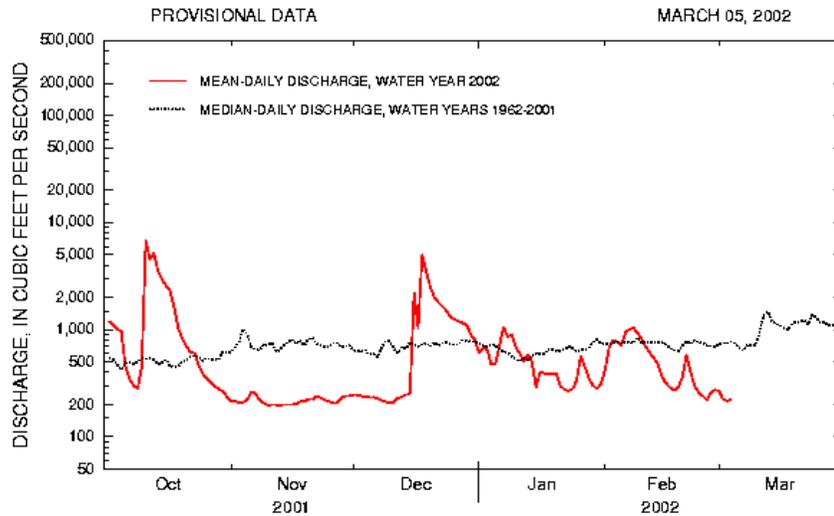
Washita River near Dickson

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