

Oklahoma Water Resources Bulletin

& Summary of Current Conditions



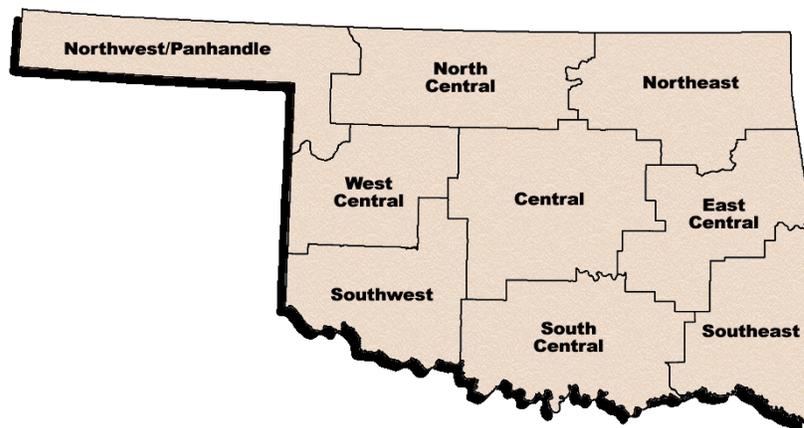
AUGUST 22, 2002

OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Although drought conditions persist throughout much of northwest Oklahoma and the Panhandle region, recent rains have improved the situation in some areas. 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 August 21, 2002 (the current water year), remains the Northwest climate division (10.63 inches, 58 percent of normal precipitation). Only one region reports a surplus of precipitation. The current state-averaged rainfall total is 28.08 inches, 88 percent of normal.

For the current growing season (March 1 through August 21), the Northwest region has received 9.03 inches (65 percent of normal) of rainfall. Five additional regions report precipitation deficits over the period. The state-averaged rainfall total is 19.07 inches (93 percent of normal).



Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	WATER YEAR OCTOBER 1, 2001—AUGUST 21, 2002			WARM GROWING SEASON MARCH 1—AUGUST 21, 2002			RAINFALL SINCE AUGUST 5
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	10.63	-7.78	58	9.03	-4.97	65	2.62
North Central (2)	21.51	-6.02	78	17.56	-1.78	91	2.38
Northeast (3)	34.49	-1.67	95	22.41	-0.67	97	2.16
West Central (4)	17.51	-7.67	70	14.11	-3.62	80	0.49
Central (5)	27.22	-5.81	82	18.67	-2.65	88	1.86
East Central (6)	39.46	-0.74	98	24.22	0.12	101	2.57
Southwest (7)	19.48	-7.06	73	14.47	-3.59	80	0.64
South Central (8)	34.19	-1.61	96	23.00	1.19	105	2.18
Southeast (9)	49.63	4.13	109	28.43	2.99	112	1.92
STATE-AVERAGED	28.08	-3.90	88	19.07	-1.49	93	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.owrb.state.ok.us/features/drought.html>.

Drought Indices

According to the latest Palmer Drought Severity Index (August 17, below), drought conditions have generally improved in many areas of Oklahoma. However, four climate divisions are still in various drought categories. **The Panhandle/Northwest region remains in the “extreme” drought category while the West Central climate division has been downgraded to “severe” drought.** Only two of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since August 3; the greatest decrease occurred in the Southwest region (“mild” drought).

The latest monthly Standardized Precipitation Index (through July, below) continues to indicate long-term dryness throughout the past year in northwest Oklahoma. Also, north central and west central Oklahoma have experienced an extended, moderately dry period. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), **the Northwest/Panhandle climate division reports “extremely dry” conditions throughout the last 12-month period and “very dry” conditions during the last 6 and 9 months.** Among periods beyond one year, the 15-, 18-, and 24-month SPIs also report particularly dry conditions for much of northern and western Oklahoma. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (August 22, 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 generally good. Statewide, only two stations are currently above 600, generally indicative of more severe drought conditions (three stations had a reading above 600 on August 5). Idabel, in Southeast Oklahoma (655), has the highest KBDI value, followed by Broken Bow (Southeast; 613), and Altus (Southwest; 592). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). The Governor’s Ban on Outdoor Burning remains in effect for Cimarron and Texas Counties in the Oklahoma Panhandle.

Palmer Drought Severity Index					Standardized Precipitation Index Through July 2002			
CLIMATE DIVISION (#)	CURRENT STATUS 8/17/2002	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		8/17	8/3					
Northwest (1)	EXTREME DROUGHT	-4.45	-4.93	0.48	MODERATELY DRY	VERY DRY	VERY DRY	EXTREMELY DRY
North Central (2)	MILD DROUGHT	-1.43	-2.43	1.00	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
Northeast (3)	NEAR NORMAL	-0.35	-0.98	0.63	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	SEVERE DROUGHT	-3.12	-2.75	-0.37	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
Central (5)	INCIPIENT DROUGHT	-0.68	-1.30	0.62	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT DROUGHT	-0.76	-1.57	0.81	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MILD DROUGHT	-1.22	-0.69	-0.53	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	NEAR NORMAL	0.06	-0.49	0.55	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	INCIPIENT DROUGHT	-0.69	-0.70	0.01	NEAR NORMAL	MODERATELY WET	MODERATELY WET	VERY WET

Keetch-Byram Drought Fire Index

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 8/22/2002	ANTICIPATED IMPACT
Idabel	McCurtain	Southeast	655	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.
Broken Bow	McCurtain	Southeast	613	
Altus	Jackson	Southwest	592	

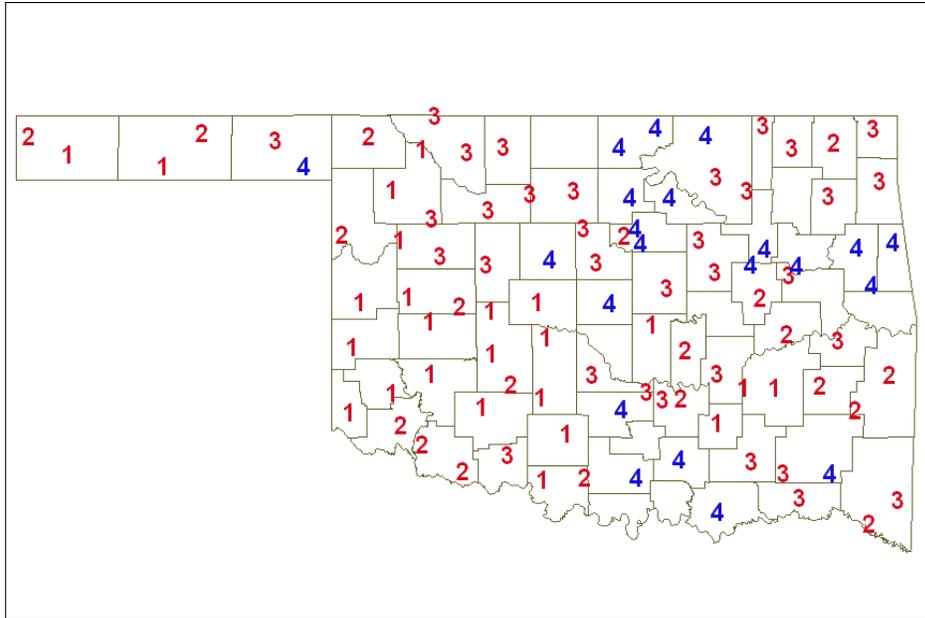
2 total stations above 600)

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
August 20, 2002
(courtesy Oklahoma Climatological Survey)

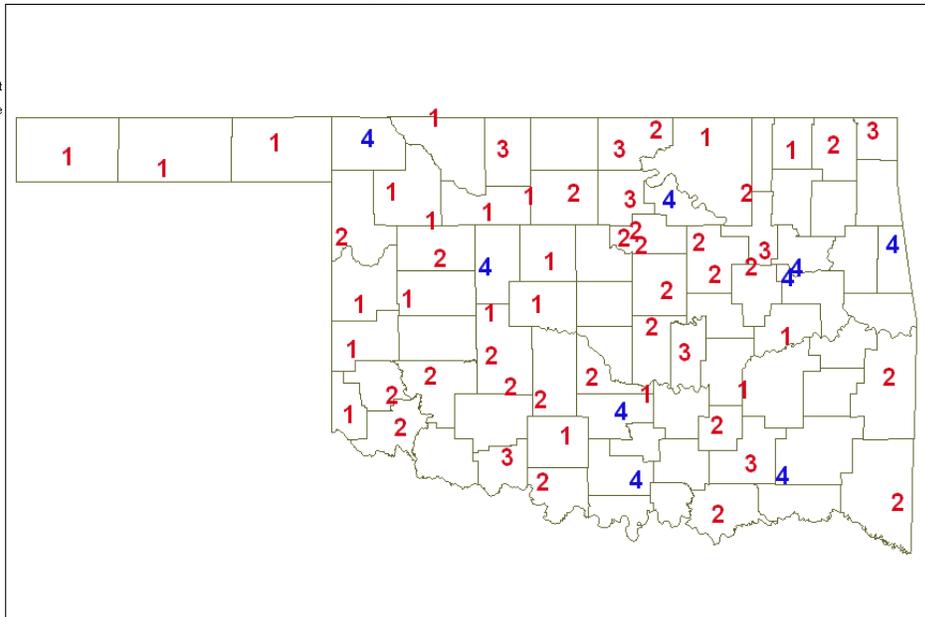
5 cm

Tue, Aug 20, 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

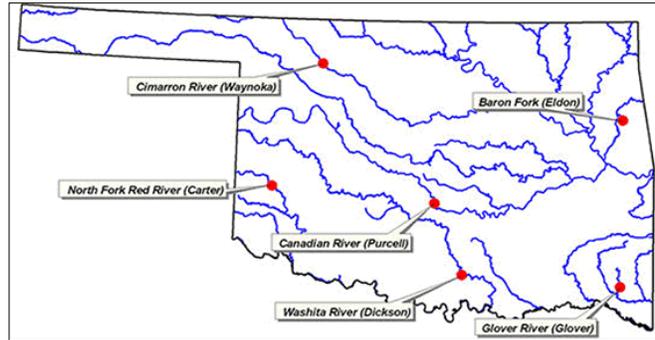
Tue, Aug 20, 2002
 0000 UTC
 ## 60cm Cat. 4 = Moist/wet
 ## 60cm Cat. 3 = Adequate
 ## 60cm Cat. 2 = Limited
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 — County borders (OK)



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 many state rivers and streams remain generally low. Considering overall trends as well as current flows, the most recent data (August 20, 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 **much below average flow** in *northwest* (Cimarron River, Woods County) and *south central* (Washita River, Carter County) Oklahoma; **below average flow** in the *southeast* (Glover River, McCurtain County); and **near average flow** in *northeast* (Baron Fork, Cherokee County), *central* (Canadian River, McClain County) and *southwest* (North Fork/Red River, Beckham County) Oklahoma.



Weather Forecast

The National Weather Service 8- to 14-day outlook (August 29-September 4) calls for above normal precipitation for all but the general western Panhandle and southeastern regions of Oklahoma, where normal rainfall is anticipated. Below normal temperatures are expected for all but the western Panhandle area, where normal temperatures should prevail throughout the period.

Models continue to indicate gradual warming of equatorial Pacific Ocean waters and relatively weak El Niño conditions (especially compared to the very strong 1997-98 El Niño) are forecasted to develop through the end of 2002 and early 2003. 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

August 18— A strong cool front crossed Oklahoma early last week triggering powerful thunderstorms and heavy rains. Optimism was running high with many reporters commenting on how much better conditions are currently than the past couple years. Producers have been busy applying anhydrous and getting fields ready for fall seeding. Grasshopper infestations continue to be a concern and many producers are planning to wait until their activity subsides before planting. Soil moisture supplies rebounded last week with most of the state rated adequate. However, strong winds in some areas began drying fields out. Farmers had 5.1 days suitable for fieldwork during the week.

Preparations for fall small grain planting continued. Wheat, oat, and rye seedbed preparations were all running ahead of last year's pace and the five-year average. Kingfisher County reported that producers are concerned about grasshopper damage to early planted wheat and that most are planning to double drill the first three rounds then go back and replant after the grasshoppers are gone. Last week's rain was expected to improve crop conditions. All major row crops remained in mostly fair or good condition with many areas already seeing some improvement. Corn harvest was well underway in many areas, with south central Oklahoma leading at about one-third complete. Sorghum and soybean harvest was just getting started in isolated fields and should begin to pick up in coming weeks. Peanuts continued to mature slightly ahead of last year and the average pace. Cotton bolls opening increased two percentage points from the previous week and was running between last year and the average. The fourth cutting of alfalfa passed the halfway mark despite rain delays and was progressing well ahead of both last year and the five-year average. The second cutting of other hay was 73 percent complete, compared with 53 percent last year and the average of 36 percent. Both alfalfa and other hay condition improved with last week's rain, but continued to be rated mostly fair or good.

Livestock continued to be rated in mostly fair or good condition. Livestock insect activity was rated 5 percent none, 32 percent light, 48 percent moderate, and 15 percent heavy. Cattle auctions reported a slight decrease in marketings of steers less than 800 pounds, but an increase in heifers less than 800 pounds. Range and pasture conditions improved from the previous week and were rated in mostly fair or good condition.

Reservoir Storage

Reservoir storage levels in Oklahoma remain generally good, although they continue to drop in some areas. As of August 21, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 93.6 percent full, a 1.3 percent decrease from that recorded on August 5, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-six reservoirs have experienced lake level decreases since that time. Twenty-two reservoirs are currently operating at less than full capacity (compared to 20 two weeks ago). Two reservoirs (**Lugert-Altus, only 22.6 percent**; and Tom Steed, 58 percent) remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs				
<i>08/21/2002</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	13,832	99.5	0.00
Great Salt Plains	31,420	31,420	100.0	3.32
Kaw*	383,005	377,827	98.6	0.00
Regional Totals/Averages	428,325	423,079	98.8	1.11
Northeast				
Birch	19,225	17,115	89.0	0.00
Copan	43,400	41,827	96.4	0.00
Fort Gibson	365,200	365,200	100.0	0.08
Grand	1,672,000	1,491,480	89.2	0.00
Hudson	200,300	200,300	100.0	3.35
Hulah	25,100	25,100	100.0	1.22
Keystone	568,507	498,785	87.7	1.22
Oologah	552,210	544,054	98.5	0.00
Skiatook	322,700	296,118	91.8	0.00
Regional Totals/Averages	3,768,642	3,479,979	92.3	0.65
West Central				
Canton	111,310	97,916	88.0	0.00
Foss	165,480	153,810	92.9	0.00
Regional Totals/Averages	276,790	251,726	90.9	0.00
Central				
Arcadia	27,520	27,520	100.0	0.38
Heyburn	7,105	6,675	93.9	0.00
Thunderbird	119,600	114,560	95.8	0.00
Regional Totals/Averages	154,225	148,755	96.5	0.13
East Central				
Eufaula*	2,260,943	2,066,868	91.4	0.00
Tenkiller	654,100	654,100	100.0	1.66
Regional Totals/Averages	2,915,043	2,720,968	93.3	0.83
Southwest				
Fort Cobb	80,010	77,666	97.1	0.00
Lugert-Altus	132,830	30,013	22.6	0.00
Tom Steed	88,970	51,570	58.0	0.00
Regional Totals/Averages	301,810	159,249	52.8	0.00
South Central				
Arbuckle	72,400	72,400	100.0	4.18
McGee Creek	113,930	112,475	98.7	0.00
Texoma*	2,580,386	2,573,100	99.7	0.00
Waurika*	190,200	186,449	98.0	0.00
Regional Totals/Averages	2,956,916	2,944,424	99.6	1.05
Southeast				
Broken Bow*	958,180	843,422	88.0	0.00
Hugo*	158,617	158,617	100.0	0.24
Pine Creek*	61,570	61,570	100.0	0.13
Sardis	274,330	273,795	99.8	0.00
Wister	60,162	56,442	93.8	0.00
Regional Totals/Averages	1,512,859	1,393,846	92.1	0.07
State Totals	12,314,610	11,522,026	93.6	0.51

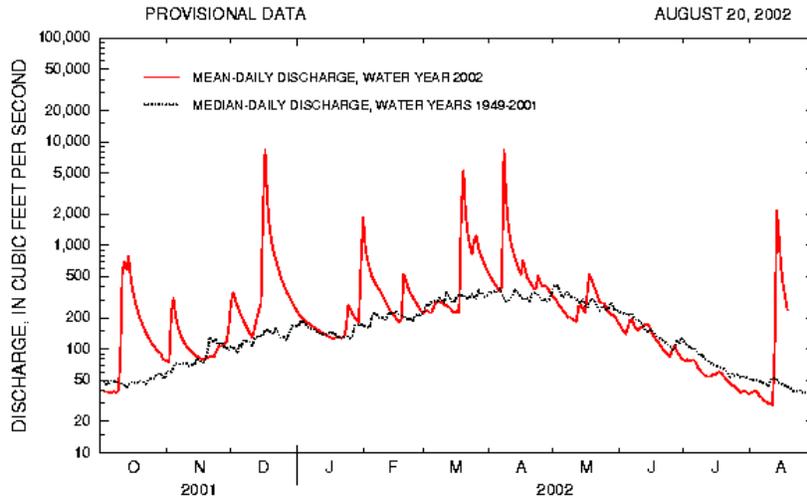
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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.

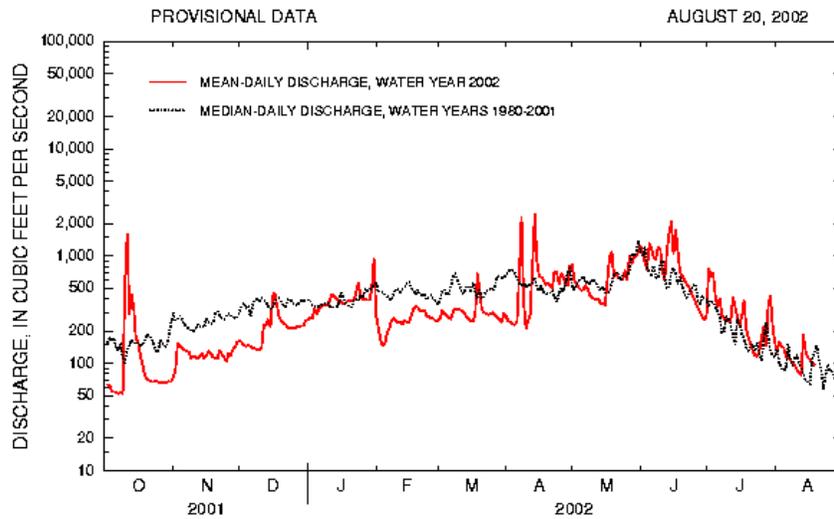
Data from U.S. Geological Survey

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.

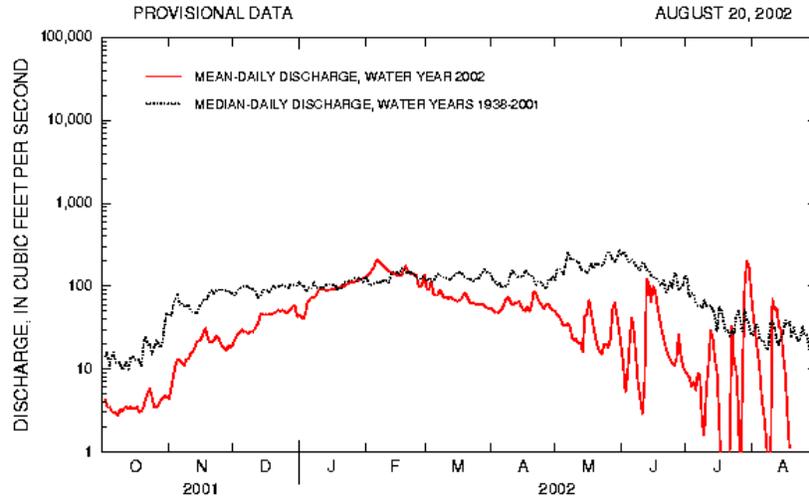
Data from U.S. Geological Survey

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.

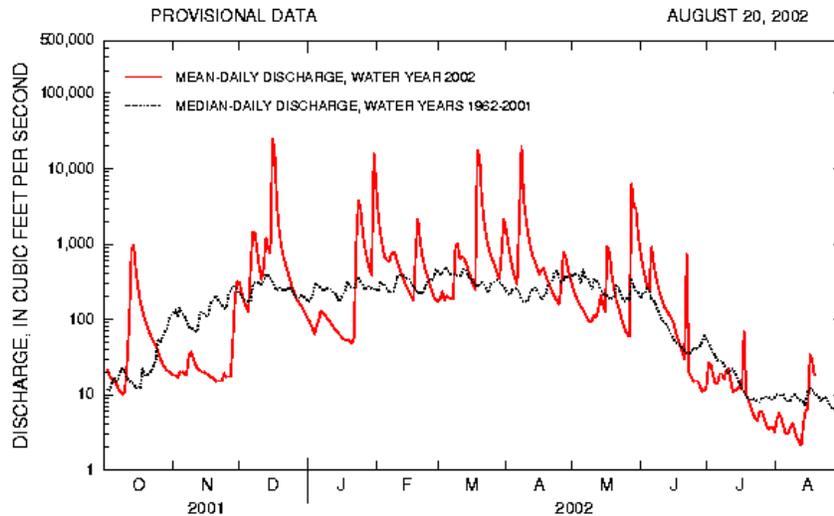
Data from U.S. Geological Survey

Glover River near Glover

Glover River near Glover, Oklahoma

*Station No. 07337900
Southeast Oklahoma*

Drainage Area 315 square miles



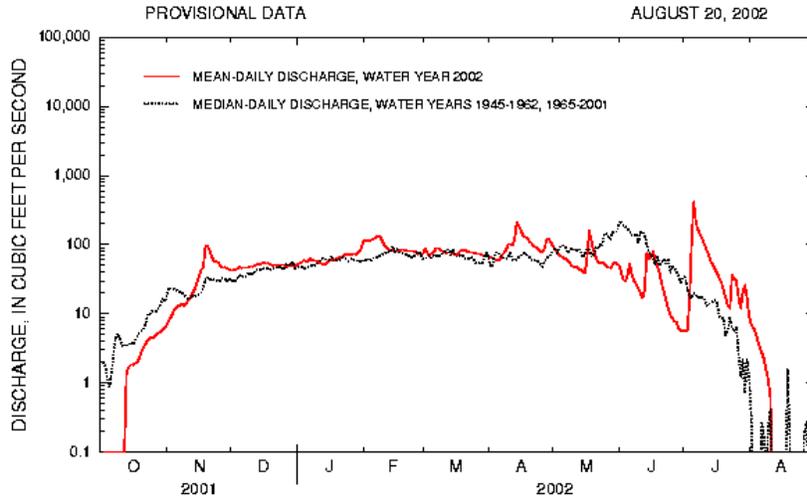
Comparison of daily discharges for water year 2002 and period of record for Glover River near Glover, Oklahoma.

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



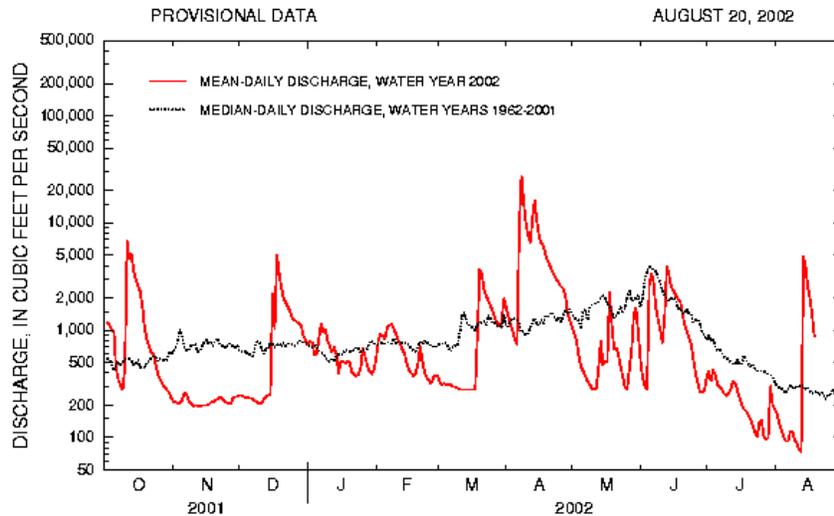
Comparison of daily discharges for water year 2002 and period of record for North Fork Red River near Carter, Oklahoma.

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