

Oklahoma Water Resources Bulletin & Summary of Current Conditions



AUGUST 15, 2001

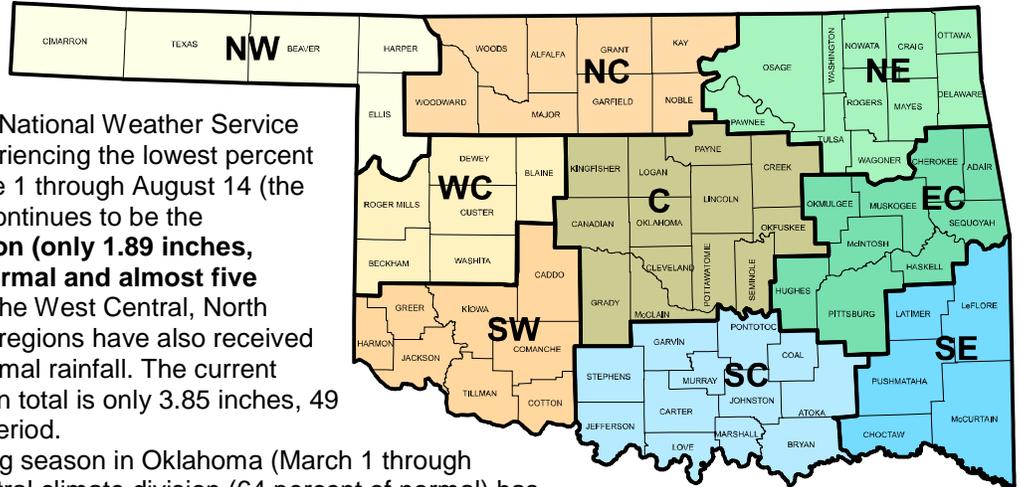
OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Dry conditions continue to dominate throughout much of Oklahoma, although the sustained heat spell has been at least temporarily alleviated. While scattered rainfall during the past two weeks has helped conditions in many areas, but much more rain is needed to bring the state out of the current dry episode.

According to preliminary Mesonet weather station data provided by the [Oklahoma Climatological Survey](#) and National Weather Service (see below), the area experiencing the lowest percent of normal rainfall from June 1 through August 14 (the current summer season) continues to be the **Southwest climate division (only 1.89 inches, which is 28 percent of normal and almost five inches below average)**. The West Central, North Central and South Central regions have also received less than one-half their normal rainfall. The current state-averaged precipitation total is only 3.85 inches, 49 percent of normal for the period.

For the current growing season in Oklahoma (March 1 through August 14), the South Central climate division (64 percent of normal) has received the least amount of rainfall. All regions report precipitation deficits. The state-averaged total is only 74 percent of normal.



PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION

(IN INCHES)

DIVISION (#)	CURRENT GROWING SEASON MARCH 1 – AUGUST 14, 2001			SUMMER 2001 JUNE 1 – AUGUST 14, 2001			RAINFALL SINCE JULY 31
	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	
Northwest (1)	11.14	-1.18	90	3.33	-3.13	52	0.47
North Central (2)	12.31	-3.75	77	3.44	-4.40	44	0.62
Northeast (3)	14.42	-6.66	68	4.95	-3.77	57	0.45
West Central (4)	13.24	-1.89	88	2.29	-4.74	33	0.35
Central (5)	13.71	-4.94	74	3.97	-3.76	51	0.91
East Central (6)	17.56	-4.55	79	5.31	-2.77	66	1.18
Southwest (7)	11.28	-4.27	73	1.89	-4.93	28	1.09
South Central (8)	12.74	-7.31	64	3.57	-4.08	47	0.31
Southeast (9)	19.38	-5.52	78	5.71	-3.39	63	0.96
STATE-AVERAGED	13.86	-4.75	74	3.85	-3.99	49	0.70

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](#) (August 11, below), drought conditions continue to arise throughout most of Oklahoma; **seven regions are now in the "moderate drought" category; one is in "mild drought."** All of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since July 28; the Northwest/Panhandle ("incipient moist spell") climate division experienced the greatest decrease during the period. However, the PDSI does not account for the substantial rainfall which many areas of the state received after midnight Saturday.

The latest monthly [Standardized Precipitation Index](#) (through July, below) indicates that only the Northeast climate division (moderately dry, according to the 12-month SPI) is experiencing long-term dryness among the *selected* time periods (3-, 6-, 9- and 12-month SPI's). However, the 1-, 2-, 4- and 5-month SPI reports generally dry to very dry conditions for virtually all of Oklahoma, including **extremely dry conditions (2-month SPI) in the Southwest climate division.**

The latest [Keetch-Byram Drought Index](#) (August 13, 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 remain a major concern. Statewide, 51 stations are currently above 600, generally indicative of more severe drought conditions (20 stations had a reading above 600 on August 1); four stations are above 700. Burneyville and Madill, both in South Central Oklahoma, share the highest KBDI value (754), followed by Grandfield (Southwest; 722). According to the Oklahoma Department of Agriculture (Forestry Services), as of August 9, [Statewide Wildfire Preparedness](#) is at Level 3 (high fire danger). **A Burning Ban continues for 44 counties throughout most of the western two-thirds of Oklahoma. A Red Flag Fire Alert remains in effect for most of the remaining counties.** Hot temperatures and dry and windy conditions have combined to increase fire danger across the state. In central and eastern areas, there is significant danger of wildland fires escaping control. Extra precautions should be taken when burning anything outdoors and outdoor burning should be avoided entirely when winds exceed 20 miles per hour.

PALMER DROUGHT SEVERITY INDEX					STANDARDIZED PRECIPITATION INDEX THROUGH JULY 2001			
CLIMATE DIVISION (#)	CURRENT STATUS 8/11/2001	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		8/11	7/28					
Northwest (1)	INCIPIENT MOIST SPELL	0.63	1.45	-0.82	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	MODERATE DROUGHT	-2.21	-1.54	-0.67	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MODERATE DROUGHT	-2.56	-2.17	-0.39	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY
West Central (4)	MODERATE DROUGHT	-2.37	-1.81	-0.56	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	MODERATE DROUGHT	-2.52	-2.17	-0.35	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MODERATE DROUGHT	-2.41	-2.13	-0.28	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MODERATE DROUGHT	-2.58	-2.26	-0.32	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MODERATE DROUGHT	-2.83	-2.38	-0.45	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	MILD DROUGHT	-1.95	-1.84	-0.11	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL

KEETCH-BYRAM DROUGHT FIRE INDEX

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 8/13/2001	ANTICIPATED IMPACT
Burneyville	Love	South Central	754	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.
Madill	Marshall	South Central	754	
Grandfield	Tillman	Southwest	722	

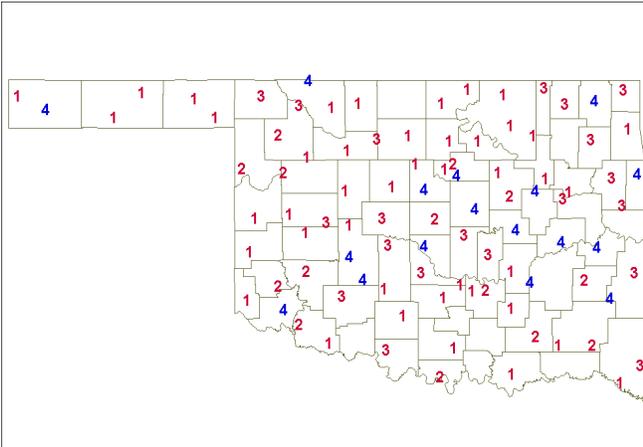
51 total stations above 600

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 13, 2001
(courtesy Oklahoma Climatological Survey)

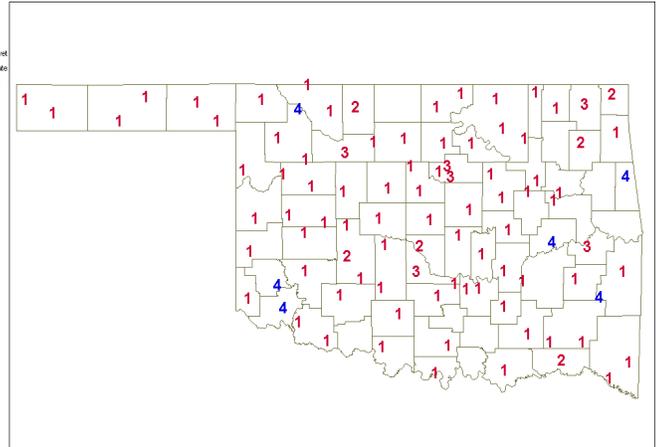
5 cm

Mon, Aug 13, 2001
 0000 UTC
 ## 5cm Cat. 4 = Moist/Wet
 ## 5cm Cat. 3 = Adequate
 ## 5cm Cat. 2 = Limited
 ## 5cm Cat. 1 = Dry
 --- County borders (OK)



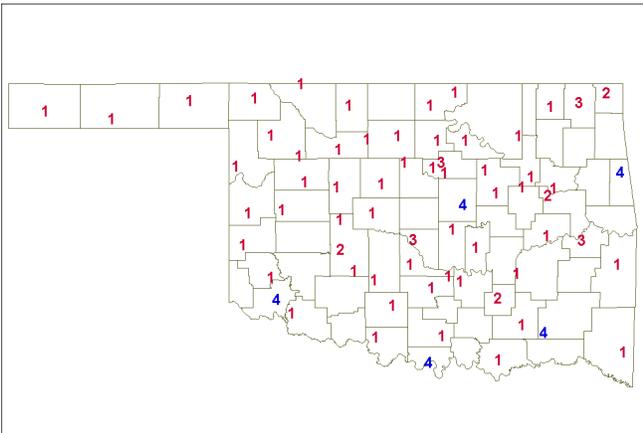
25 cm

Mon, Aug 13, 2001
 0000 UTC
 ## 25cm Cat. 4 = Moist/Wet
 ## 25cm Cat. 3 = Adequate
 ## 25cm Cat. 2 = Limited
 ## 25cm Cat. 1 = Dry
 --- County borders (OK)



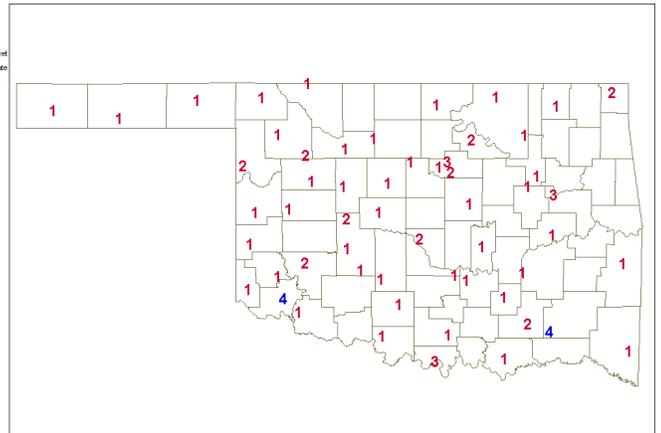
60 cm

Mon, Aug 13, 2001
 0000 UTC
 ## 60cm Cat. 4 = Moist/Wet
 ## 60cm Cat. 3 = Adequate
 ## 60cm Cat. 2 = Limited
 ## 60cm Cat. 1 = Dry
 --- County borders (OK)



75 cm

Mon, Aug 13, 2001
 0000 UTC
 ## 75cm Cat. 4 = Moist/Wet
 ## 75cm Cat. 3 = Adequate
 ## 75cm Cat. 2 = Limited
 ## 75cm Cat. 1 = Dry
 --- County borders (OK)



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 (beginning October 1, 2000), flows in most state rivers and streams remain generally below or near average. Considering overall trends as well as current flows, the most recent data (August 14, 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, 2000 compared to long-term, normal/median daily discharges) indicate **much below average flow** in the *northwest* (Cimarron River in Woods County); **below average flow** in *central* (Canadian River in McClain County) Oklahoma; and **near average flow** in the *southwest* (North Fork/Red River in Beckham County), *northeast* (Baron Fork in Cherokee County), *south central* (Washita River in Carter County) and *southeast* (Glover River in McCurtain County) regions.

Weather Forecast

The National Weather Service [8- to 14-day outlook](#) (August 21-27) calls for normal precipitation for generally all of Oklahoma. Above normal temperatures are expected through the period.

Current models indicate that positive (warmer than normal) sub-surface temperature (SST) anomalies in the equatorial Pacific have risen to their highest levels since the 1997-98 El Niño episode. This trend is expected to continue during the remainder of 2001 and into the first half of 2002. El Niños, warm water patterns that increase the chances for cooler, wetter conditions in the southern U.S. (including Oklahoma), generally return every two to seven years.

Crop Report

August 13 -- Weather across Oklahoma was hot and dry for much of the week before a front moved in over the weekend bringing much-needed precipitation and cooler temperatures. Most areas received moisture during the week as only one Mesonet station failed to receive any precipitation. However, quantities of rainfall were highly variable from one location to the next. Recent moisture will be beneficial to crops and pastures more statewide rainfall is desperately needed to replenish soil moisture levels and reduce stress. Culling and early weaning was necessary for some livestock producers in the drier areas of the state as pasture conditions and hay production continued to decline. Grasshopper populations remained active in many areas but were dwindling in others. Farmers had 6.2 days suitable for fieldwork during the week.

Producers made limited progress plowing wheat and oat ground and preparing seedbeds, but progress should pick up due to the improved soil moisture supplies. Wheat stubble was plowed at least once on 95 percent of the state's acreage, slightly ahead of the five-year average. Twenty-one percent of the wheat ground had been prepared for seeding by the end of the week, slightly behind the normal pace for this time of year. Oat acreage plowed was 95 percent complete, ahead of the five-year average of 92 percent. Hot and dry weather during much of the week continued to stress row crops. Crop conditions should improve in some areas, depending on the amount of moisture received. Yield potential remained a concern for both dryland and irrigated row crops. Corn, sorghum, and soybean harvest has begun in a few areas on a limited scale. Nearly one-fourth of the corn crop had reached maturity by week's end and ranged from 85 percent in south central Oklahoma to a small number of acres in the Panhandle. The majority of the cotton crop was rated in fair condition with 96 percent of the acreage squaring and 83 percent setting bolls. Cotton fields were opening bolls in a few isolated areas. As of Sunday, 74 percent of the sorghum had headed, 17 percentage points ahead of the five-year average. One-fourth of the sorghum acreage was coloring, ahead of normal for this time of year. Soybeans blooming advanced to 77 percent while 63 percent were setting pods. Peanuts pegging and setting pods advanced during the week and reached 96 and 82 percent, respectively, while two percent of the crop had reached maturity.

Alfalfa and all other hay cuttings were running ahead of normal pace despite reduced hay growth. However, lower than normal hay yields continued to be reported in many areas due to enduring dry weather. Both alfalfa and all other hay were rated in mostly fair or poor condition statewide.

Supplemental feeding was necessary in the drier areas that lacked sufficient pasture availability. Livestock were in mostly fair to good condition. Insect activity was rated mostly moderate to light. Cattle auctions reported above average marketings for the week. The price for feeder steers less than 800 pounds was up nearly two dollars from last week and averaged \$92.30 per cwt. The price for feeder heifers less than 800 pounds was down over a dollar from last week and averaged \$86.50 per cwt. The recent rains should stimulate pasture growth but much more rain is needed. Concern remained high as to the possibility that re-growth of pasture grasses will be limited and adequate winter pasture will not be available. Range and pasture conditions were rated mostly poor to fair.

Reservoir Storage

Reservoir storage in Oklahoma remains generally adequate, although lake levels continue to decline in most areas. As of August 15, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 89.9 percent full, a 2.1 percent decrease from that recorded on August 1, according to information from the [U.S. Army Corps of Engineers \(Tulsa District\)](#). Twenty-three reservoirs have experienced lake level decreases since that time. Twenty-seven reservoirs are currently operating at less than full capacity (compared to the same number two weeks ago); three reservoirs (Lugert-Altus, 43.9 percent; Keystone, 66.3 percent; and Hulah, 79.9 percent) are below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs as of August 15, 2001				
Climate Division	Conservation Storage	Present Storage	Percent of Storage	
Lake or Reservoir	(acre-feet)	(acre-feet)	conservation	flood
NORTH CENTRAL				
Fort Supply	13,900	12,996	93.5	0.00
Great Salt Plains	31,420	27,847	88.6	0.00
Kaw*	383,005	378,798	98.9	0.00
Regional Totals/Averages	428,325	419,641	98.0	0.00
NORTHEAST				
Birch	19,225	16,380	85.2	0.00
Copan	43,400	38,477	88.7	0.00
Fort Gibson	365,200	359,590	98.5	0.00
Grand	1,672,000	1,581,450	94.6	0.00
Hudson	200,300	200,300	100.0	10.87
Hulah	31,160	24,885	79.9	0.00
Keystone	278,122	184,400	66.3	0.00
Oologah	552,210	552,210	100.0	0.94
Skiatook	322,700	303,505	94.1	0.00
Regional Totals/Averages	3,484,317	3,261,197	93.6	1.31
WEST CENTRAL				
Canton	111,310	103,625	93.1	0.00
Foss	165,480	155,949	94.2	0.00
Regional Totals/Averages	276,790	259,574	93.8	0.00
CENTRAL				
Arcadia	27,520	26,132	95.0	0.00
Heyburn	7,105	6,374	89.7	0.00
Thunderbird	119,600	116,660	97.5	0.00
Regional Totals/Averages	154,225	149,166	96.7	0.00
EAST CENTRAL				
Eufaula*	2,368,223	2,036,994	86.0	0.00
Tenkiller	654,100	589,440	90.1	0.00
Regional Totals/Averages	3,022,323	2,626,434	86.9	0.00
SOUTHWEST				
Fort Cobb	80,010	78,299	97.9	0.00
Lugert-Altus	132,830	58,265	43.9	0.00
Tom Steed	88,970	76,565	86.1	0.00
Regional Totals/Averages	301,810	213,129	70.6	0.00
SOUTH CENTRAL				
Arbuckle	72,400	69,556	96.1	0.00
McGee Creek	113,930	112,839	99.0	0.00
Texoma*	2,604,650	2,259,795	86.8	0.00
Waurika*	190,200	182,169	95.8	0.00
Regional Totals/Averages	2,981,180	2,624,359	88.0	0.00
SOUTHEAST				
Broken Bow*	958,180	841,529	87.8	0.00
Hugo*	158,617	158,617	100.0	0.26
Pine Creek*	61,570	61,570	100.0	0.68
Sardis	274,330	270,848	98.7	0.00
Wister	60,162	51,132	85.0	0.00
Regional Totals/Averages	1,512,859	1,383,696	91.5	0.19
STATE TOTALS	12,161,829	10,937,196	89.9	0.41

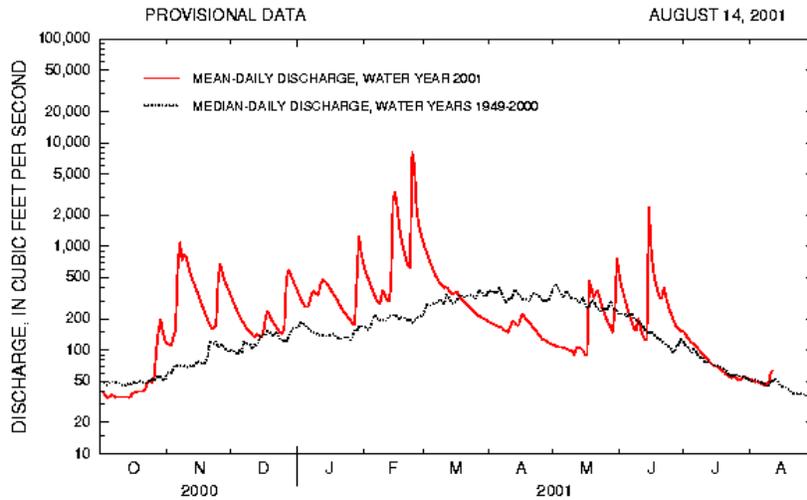
* indicates seasonal pool operation; actual storage figures/percentages may vary.

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 2001 and period of record for Baron Fork at Eldon, Oklahoma.

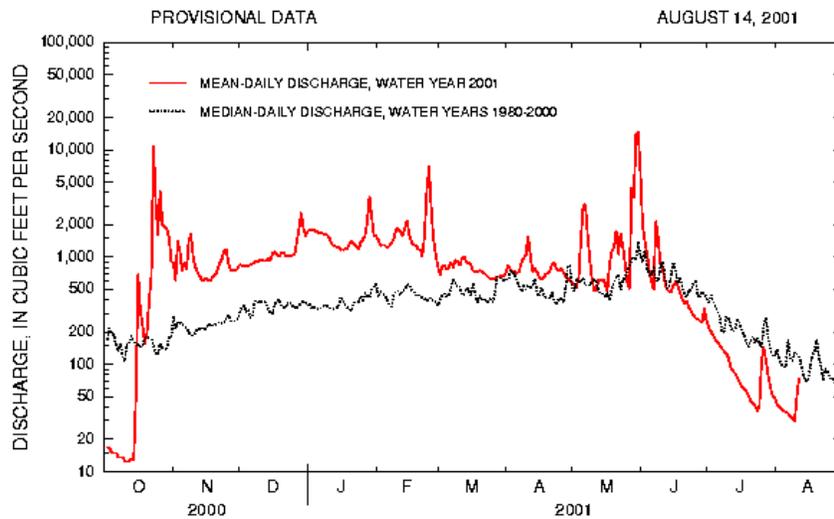
Data from U.S. Geological Survey

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 2001 and period of record for Canadian River at Purcell, Oklahoma.

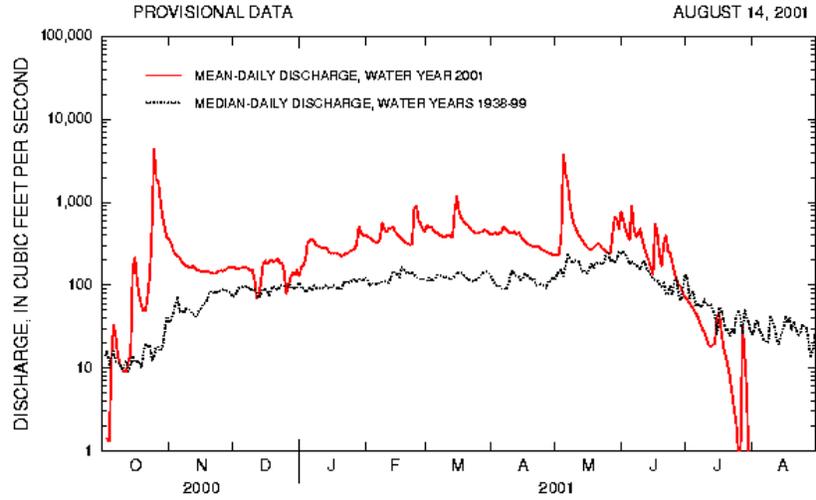
Data from U.S. Geological Survey

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 2001 and period of record for Cimarron River near Waynoka, Oklahoma.

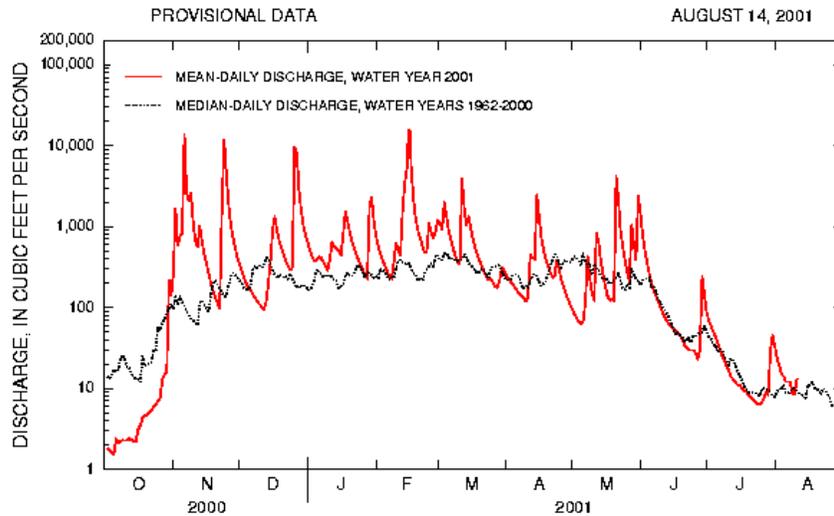
Data from U.S. Geological Survey

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 2001 and period of record for Glover River near Glover, Oklahoma.

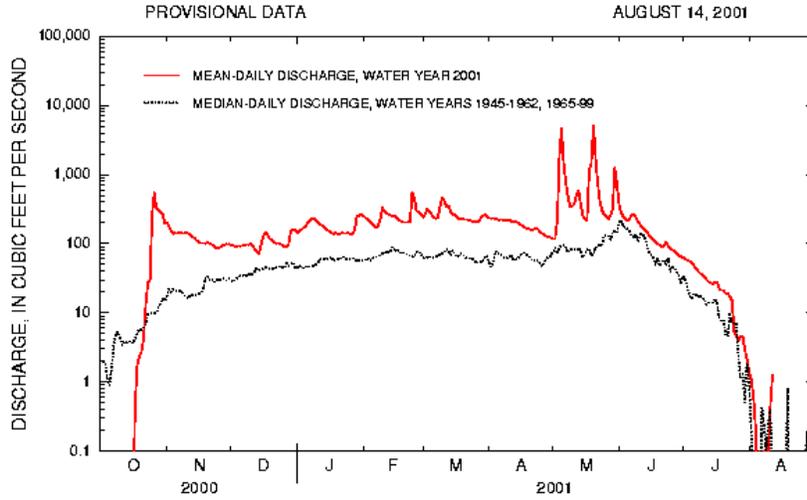
Data from U.S. Geological Survey

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 2001 and period of record for North Fork Red River near Carter, Oklahoma.

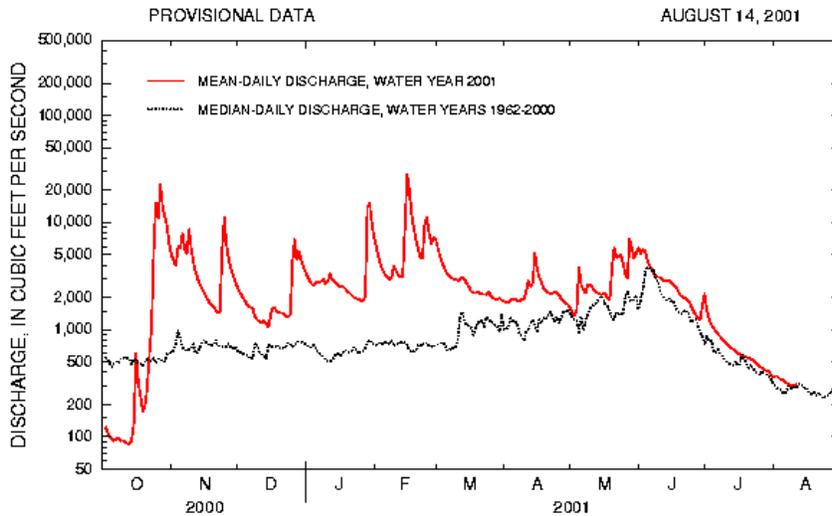
Data from U.S. Geological Survey

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 2001 and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey