

# Oklahoma Water Resources Bulletin & Summary of Current Conditions



AUGUST 1, 2001

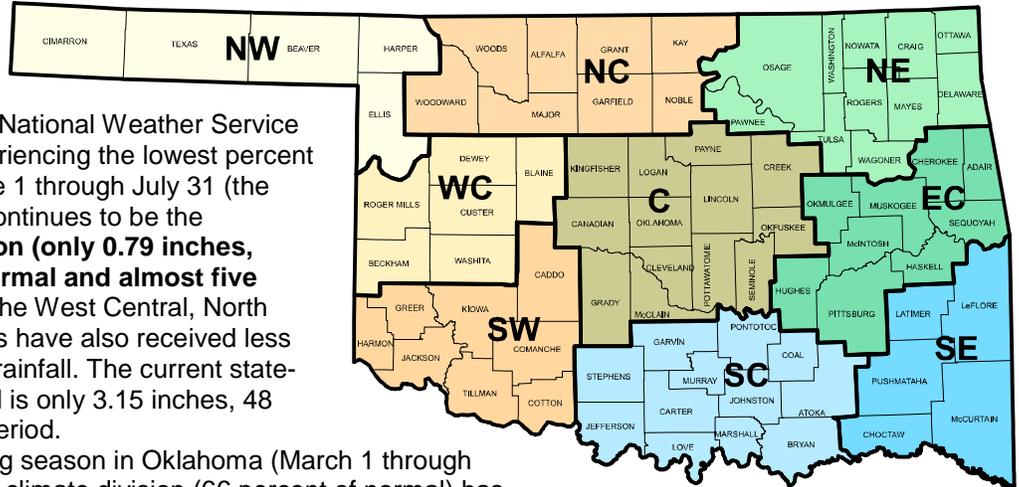
OKLAHOMA WATER RESOURCES BOARD

## Statewide Precipitation & General Summary

Dry conditions continue to dominate throughout much of Oklahoma, although rainfall last weekend somewhat tempered the deterioration in some areas. *The Oklahoma Climatological Survey reports that July 2001 was the sixth warmest and sixth driest July on record.*

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 July 31 (the current summer season) continues to be the **Southwest climate division (only 0.79 inches, which is 14 percent of normal and almost five inches below average)**. The West Central, North Central and Central regions have also received less than one-half their normal rainfall. The current state-averaged precipitation total is only 3.15 inches, 48 percent of normal for the period.

For the current growing season in Oklahoma (March 1 through July 31), the South Central climate division (66 percent of normal) has received the least amount of rainfall. All regions report precipitation deficits. The state-averaged total is only 76 percent of normal.



### PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION

(IN INCHES)

DIVISION (#)	CURRENT GROWING SEASON MARCH 1 – JULY 31, 2001			SUMMER 2001 JUNE 1 – JULY 31, 2001			RAINFALL SINCE JULY 16
	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	
Northwest (1)	10.67	-0.47	96	2.85	-2.43	54	0.61
North Central (2)	11.69	-3.01	80	2.82	-3.65	44	0.16
Northeast (3)	13.97	-5.58	71	4.50	-2.69	63	0.66
West Central (4)	12.89	-1.05	92	1.94	-3.90	33	0.14
Central (5)	12.80	-4.64	73	3.06	-3.46	47	0.67
East Central (6)	16.38	-4.36	79	4.13	-2.59	61	0.60
Southwest (7)	10.19	-4.26	71	0.79	-4.92	14	0.14
South Central (8)	12.43	-6.48	66	3.27	-3.24	50	0.45
Southeast (9)	18.42	-5.12	78	4.75	-2.99	61	0.26
<b>STATE-AVERAGED</b>	<b>13.16</b>	<b>-4.17</b>	<b>76</b>	<b>3.15</b>	<b>-3.42</b>	<b>48</b>	<b>0.44</b>

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](#) (July 28, below), drought conditions have arisen throughout most of Oklahoma; **five regions are now in the "moderate drought" category; three are in "mild drought."** All of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since July 14; the West Central ("mild drought") climate division experienced the greatest decrease during the period.

The latest monthly [Standardized Precipitation Index](#) (through June, below) indicates that no climate divisions are experiencing long-term dryness among the selected time periods (3-, 6-, 9- and 12-month SPI's). The same trend – i.e., prevailing normal or wet conditions -- is generally true among all other monthly time steps throughout the last six years. However, the 1-month SPI reports **extremely dry conditions in the Southwest climate division**, very dry in the West Central region, and moderately dry in Central Oklahoma. In addition, the 4-month SPI indicates moderately dry conditions in the Central region.

The latest [Keetch-Byram Drought Index](#) (August 1, 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 are now a major concern. Statewide, 20 stations are currently above 600, generally indicative of more severe drought conditions (only two stations had a reading above 600 on July 16). Altus, in Southwest Oklahoma, retains the highest KBDI value (717), followed by Madill (South Central; 699) and Burneyville (South Central; 699). According to the Oklahoma Department of Agriculture (Forestry Services), as of July 9, [Statewide Wildfire Preparedness](#) is at Level 3 (high fire danger). **The existing Burning Ban has been extended to now include 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.

<b>PALMER DROUGHT SEVERITY INDEX</b>					<b>STANDARDIZED PRECIPITATION INDEX THROUGH JUNE 2001</b>			
CLIMATE DIVISION (#)	CURRENT STATUS 7/28/2001	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		7/28	7/14					
Northwest (1)	MOIST SPELL	1.45	2.10	-0.65	NEAR NORMAL	MODERATELY WET	VERY WET	NEAR NORMAL
North Central (2)	MILD DROUGHT	-1.54	-0.40	-1.14	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL
Northeast (3)	MODERATE DROUGHT	-2.17	-1.82	-0.35	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	MILD DROUGHT	-1.81	-0.39	-1.42	NEAR NORMAL	NEAR NORMAL	VERY WET	NEAR NORMAL
Central (5)	MODERATE DROUGHT	-2.17	-1.68	-0.49	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL
East Central (6)	MODERATE DROUGHT	-2.13	-1.65	-0.48	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL
Southwest (7)	MODERATE DROUGHT	-2.26	-1.10	-1.16	NEAR NORMAL	NEAR NORMAL	VERY WET	NEAR NORMAL
South Central (8)	MODERATE DROUGHT	-2.38	-1.22	-1.16	NEAR NORMAL	NEAR NORMAL	VERY WET	NEAR NORMAL
Southeast (9)	MILD DROUGHT	-1.84	-1.44	-0.40	NEAR NORMAL	NEAR NORMAL	VERY WET	NEAR NORMAL

<b>KEETCH-BYRAM DROUGHT FIRE INDEX</b>				
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 8/1/2001	ANTICIPATED IMPACT
Altus	Jackson	Southwest	717	<b>600-800:</b> often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.  <b>400-600:</b> lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.
Madill	Marshall	South Central	699	
Burneyville	Love	South Central	699	

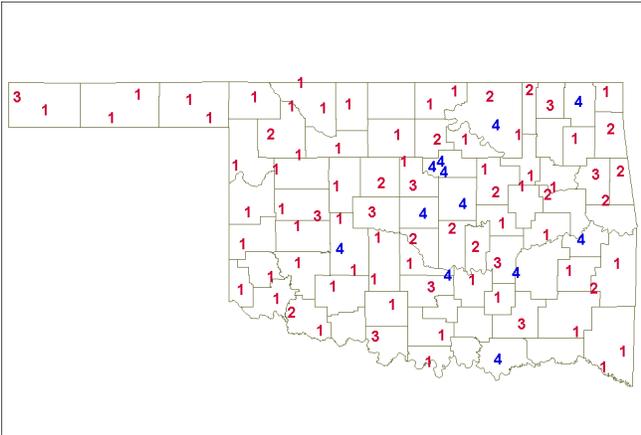
20 total stations above 400

*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**  
**July 31, 2001**  
*(courtesy Oklahoma Climatological Survey)*

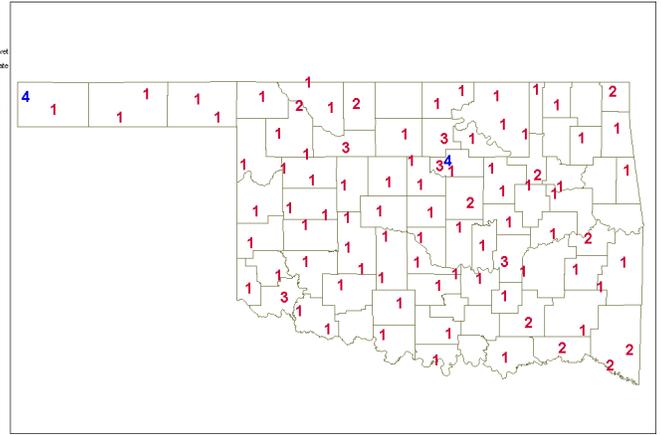
**5 cm**

Tue, Jul 31, 2001  
 0000 UTC  
 ## 5cm Cat. 4 = Moist/wet  
 ## 5cm Cat. 3 = Adequate  
 ## 5cm Cat. 2 = Limited  
 ## 5cm Cat. 1 = Dry  
 --- County borders (OK)



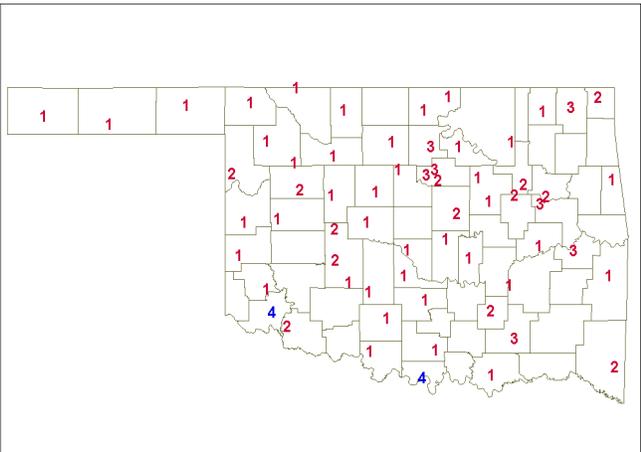
**25 cm**

Tue, Jul 31, 2001  
 0000 UTC  
 ## 25cm Cat. 4 = Moist/wet  
 ## 25cm Cat. 3 = Adequate  
 ## 25cm Cat. 2 = Limited  
 ## 25cm Cat. 1 = Dry  
 --- County borders (OK)



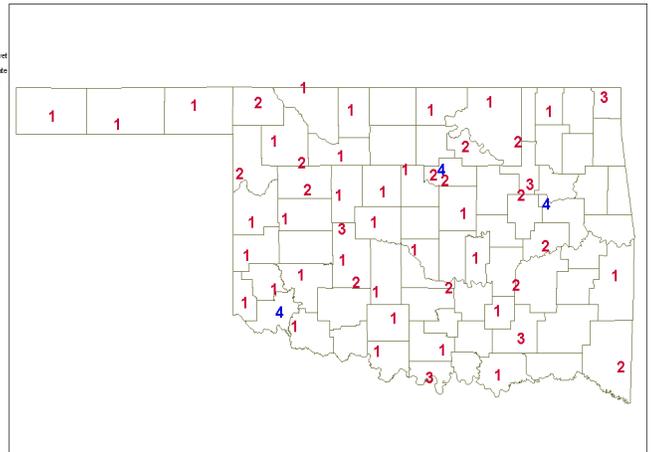
**60 cm**

Tue, Jul 31, 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**

Tue, Jul 31, 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 are generally below or near average. Considering overall trends as well as current flows, the most recent data (August 2, 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 *south central* (Washita River in Carter County), *southwest* (North Fork/Red River in Beckham County), *northeast* (Baron Fork in Cherokee County) and *southeast* (Glover River in McCurtain County) regions.

### **Weather Forecast**

The National Weather Service [8- to 14-day outlook](#) (August 9-15) calls for normal precipitation for all but the general southeastern quadrant of Oklahoma, where above normal rainfall is anticipated. Normal temperatures are expected for all of Oklahoma through the period.

Current models indicate that the persistent cold water phenomenon in the equatorial Pacific Ocean, referred to as La Niña, has substantially weakened and slightly warmer-than-normal conditions will likely prevail during late 2001 and early 2002. In addition, a pulse of warm water in the eastern Pacific currently traveling toward South America signals the potential onset of another El Niño within the next year or so. 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; the last one occurred in 1997.

### **Crop Report**

July 31 -- Prolonged hot, dry weather continued to deteriorate row crops and pastures. Temperatures during the week were scorching with most areas exceeding the 100 degree mark for several days. Notable precipitation was received over the weekend, primarily in central and northeast Oklahoma. However, many other areas did not receive any moisture and have now gone many weeks without significant rainfall. Substantial amounts of precipitation are desperately needed across the state to replenish soil moisture levels and reduce heat stress to crops and pastures. Precipitation for the week ranged from .67 inch in central Oklahoma to .12 inch in the west central region. Farmers had 6.8 days suitable for fieldwork during the week.

Producers made limited progress plowing wheat and oat ground and preparing seedbeds. Progress should pick up next week in areas that received rainfall. Wheat stubble was plowed on 92 percent of the state's acreage, 6 percentage points ahead of the five-year average. Ten percent of the wheat ground had been prepared for seeding by the end of the week and was on pace for this time of year. Oat acreage plowed was 91 percent complete, also ahead of normal. Exceptionally hot temperatures and lack of statewide precipitation continued to burden row crops. Crop conditions should improve some in areas that received weekend rainfall. Irrigation remained active where water supplies allowed as crops continued to endure heat stress. Damage from grasshoppers continued to be reported and spraying was necessary in some areas. Corn silking advanced rapidly due to the hot weather. By week's end, 96 percent of the state's corn acreage was silking, ahead of the five-year average of 89 percent. The majority of the cotton crop was rated in fair to poor condition, with 86 percent of the acreage squaring and 47 percent setting bolls. As of Sunday, 44 percent of the sorghum had headed, 17 percentage points ahead of the five-year average. Soybeans blooming advanced to 65 percent while 35 percent were setting pods. Peanuts pegging and setting pods advanced during the week and reached 85 and 48 percent, respectively, but both were still behind the normal pace. Alfalfa was rated in mostly fair condition statewide. The third alfalfa cutting was 89 percent cut, 30 percentage points ahead of the five-year average. Other hay first and second cuttings made limited progress during the week. Lower than normal hay yields have been reported in many areas due to the lack of rain. Future cuttings and production will be reduced unless timely rain arrives.

Watermelons were rated in mostly fair to good condition. Harvest was 70 percent complete, well ahead of the five-year average of 46 percent. No major watermelon damage from insect or disease pressure had been reported. Livestock were in mostly fair to good condition. Insect activity was rated mostly moderate to light. Cattle auctions reported average marketings for the week. The price for feeder steers less than 800 pounds was down nearly a dollar from last week and averaged \$92.40 per cwt. The price for feeder heifers less than 800 pounds was also down nearly a dollar from last week and averaged \$87.70 per cwt. Pasture conditions declined from the previous week and were rated mostly fair to poor. Many pastures were showing signs of stress. Grasshoppers remained active and continued to be a problem in many pastures.

### Reservoir Storage

Reservoir storage in Oklahoma remains generally good, although lake levels continue to decline in most areas. As of August 1, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 92 percent full, a 4.1 percent decrease from that recorded on July 16, according to information from the [U.S. Army Corps of Engineers \(Tulsa District\)](#). Twenty-eight reservoirs have experienced lake level decreases since that time. Twenty-seven reservoirs are currently operating at less than full capacity (compared to 23 two weeks ago); two reservoirs (Lugert-Altus, 56.4 percent; and Keystone, 62.9 percent) are below 80 percent capacity.

<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>				
<b>as of August 1, 2001</b>				
<b>Climate Division</b>	<b>Conservation Storage</b>	<b>Present Storage</b>	<b>Percent of Storage</b>	
<b>Lake or Reservoir</b>	<b>(acre-feet)</b>	<b>(acre-feet)</b>	<b>conservation</b>	<b>flood</b>
<b>NORTH CENTRAL</b>				
Fort Supply	13,900	13,320	95.8	0.00
Great Salt Plains	31,420	29,410	93.6	0.00
Kaw*	390,850	380,549	97.4	0.00
<b>Regional Totals/Averages</b>	<b>436,170</b>	<b>423,279</b>	<b>97.0</b>	<b>0.00</b>
<b>NORTHEAST</b>				
Birch	19,225	17,319	90.1	0.00
Copan	43,400	40,297	92.9	0.00
Fort Gibson	365,200	342,900	93.9	0.00
Grand	1,672,000	1,672,000	100.0	0.45
Hudson	200,300	200,300	100.0	17.13
Hulah	31,160	27,152	87.1	0.00
Keystone	278,122	175,076	62.9	0.00
Oologah	552,210	549,491	99.5	0.00
Skiatook	322,700	309,992	96.1	0.00
<b>Regional Totals/Averages</b>	<b>3,484,317</b>	<b>3,334,527</b>	<b>95.7</b>	<b>1.95</b>
<b>WEST CENTRAL</b>				
Canton	111,310	106,606	95.8	0.00
Foss	165,480	157,958	95.5	0.00
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>264,564</b>	<b>95.6</b>	<b>0.00</b>
<b>CENTRAL</b>				
Arcadia	27,520	26,772	97.3	0.00
Heyburn	7,105	6,728	94.7	0.00
Thunderbird	119,600	119,240	99.7	0.00
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>152,740</b>	<b>99.0</b>	<b>0.00</b>
<b>EAST CENTRAL</b>				
Eufaula*	2,368,223	2,140,742	90.4	0.00
Tenkiller	654,100	610,865	93.4	0.00
<b>Regional Totals/Averages</b>	<b>3,022,323</b>	<b>2,751,607</b>	<b>91.0</b>	<b>0.00</b>
<b>SOUTHWEST</b>				
Fort Cobb	80,010	77,704	97.1	0.00
Lugert-Altus	132,830	74,911	56.4	0.00
Tom Steed	88,970	78,624	88.4	0.00
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>231,239</b>	<b>76.6</b>	<b>0.00</b>
<b>SOUTH CENTRAL</b>				
Arbuckle	72,400	70,660	97.6	0.00
McGee Creek	113,930	113,930	100.0	0.43
Texoma*	2,669,354	2,312,555	86.6	0.00
Waurika*	190,200	186,753	98.2	0.00
<b>Regional Totals/Averages</b>	<b>3,045,884</b>	<b>2,683,898</b>	<b>88.1</b>	<b>0.11</b>
<b>SOUTHEAST</b>				
Broken Bow*	958,180	866,278	90.4	0.00
Hugo*	190,177	185,543	97.6	0.00
Pine Creek*	65,772	65,772	100.0	0.40
Sardis	274,330	274,196	100.0	0.00
Wister	60,162	52,137	86.7	0.00
<b>Regional Totals/Averages</b>	<b>1,548,621</b>	<b>1,443,926</b>	<b>93.2</b>	<b>0.08</b>
<b>STATE TOTALS</b>	<b>12,270,140</b>	<b>11,285,780</b>	<b>92.0</b>	<b>0.59</b>

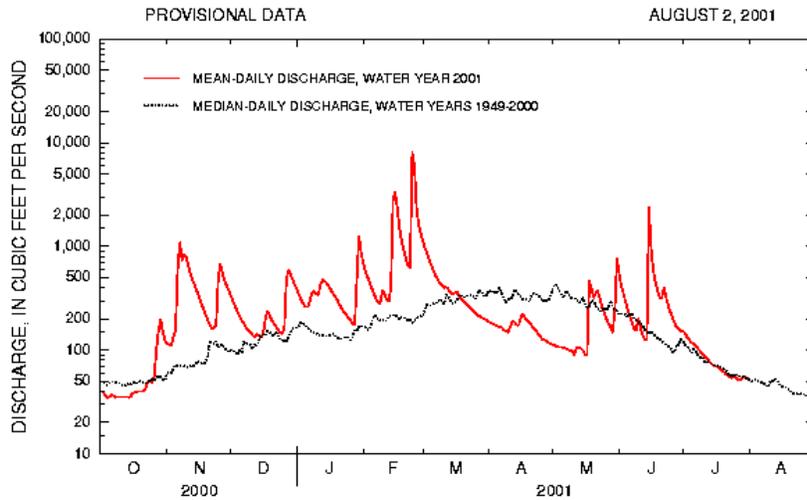
\* indicates seasonal pool operation; actual storage figures/percentages may vary.

### 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.

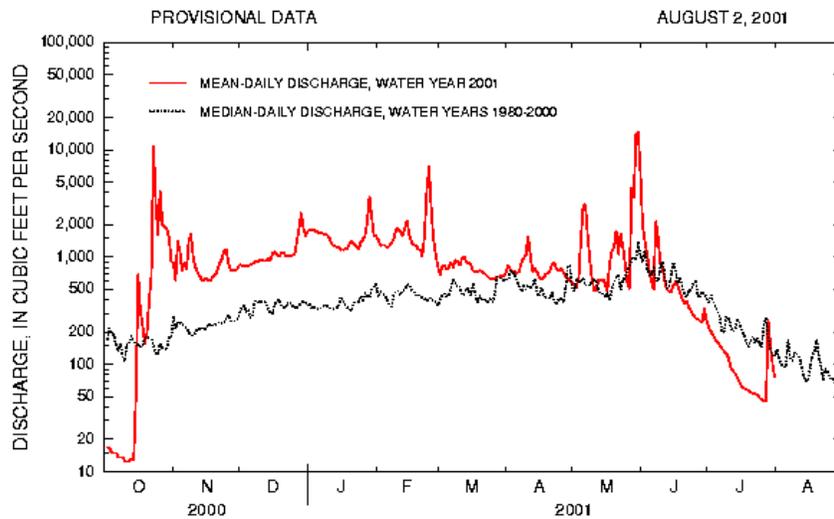
Data from U.S. Geological Survey

### 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.

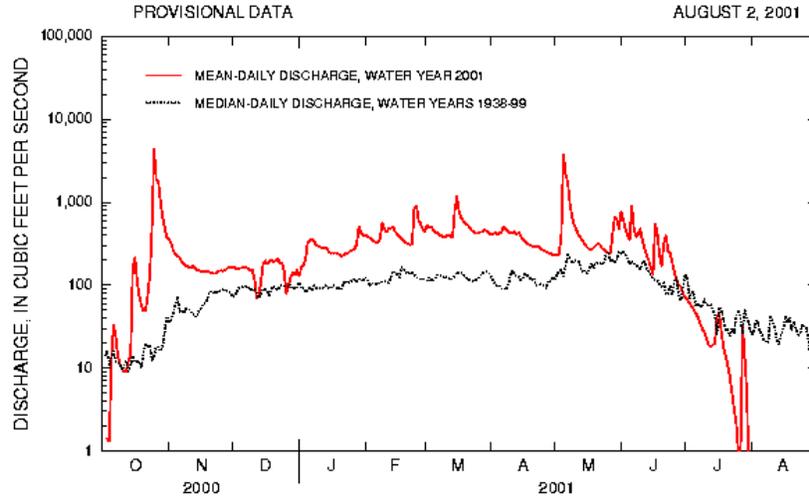
Data from U.S. Geological Survey

### 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.

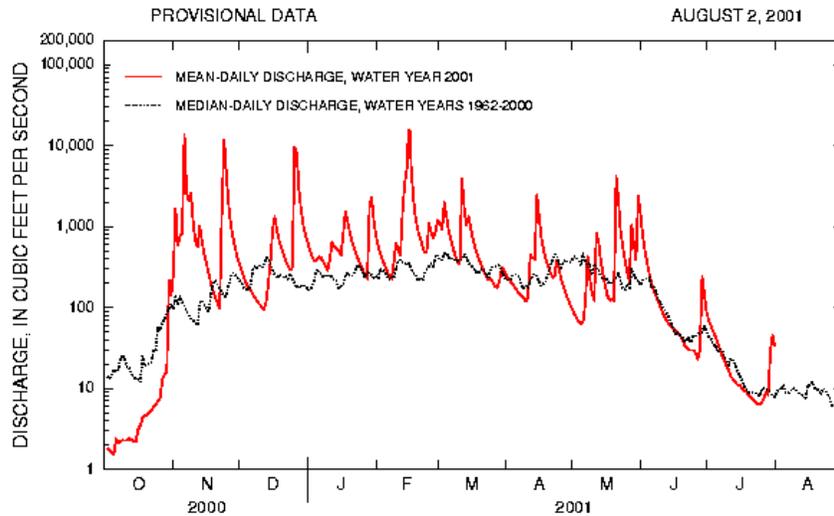
Data from U.S. Geological Survey

### 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.

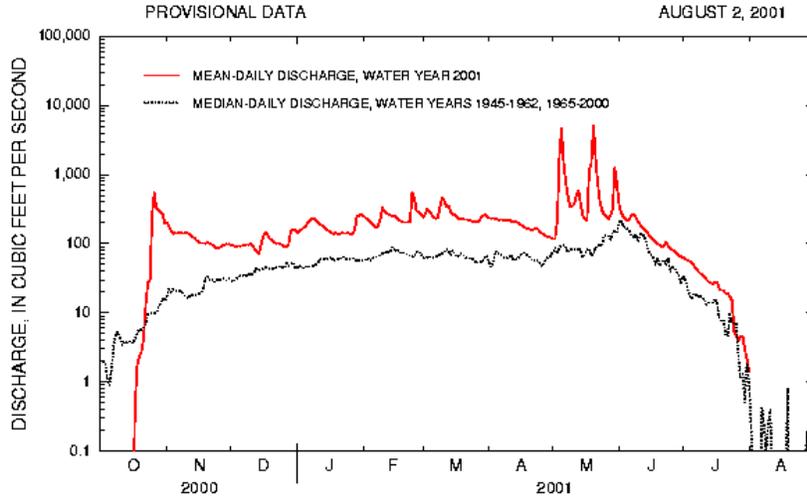
Data from U.S. Geological Survey

### 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.

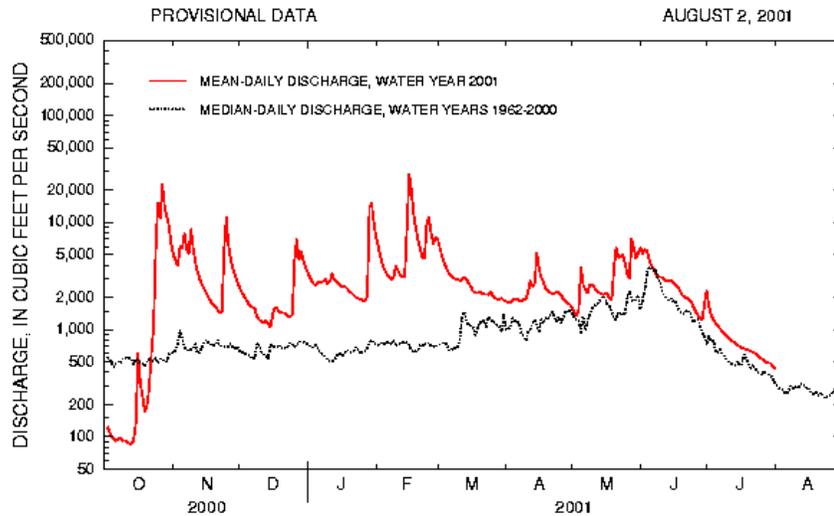
Data from U.S. Geological Survey

### 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