

# Oklahoma Water Resources Bulletin & Summary of Current Conditions



OCTOBER 18, 2000

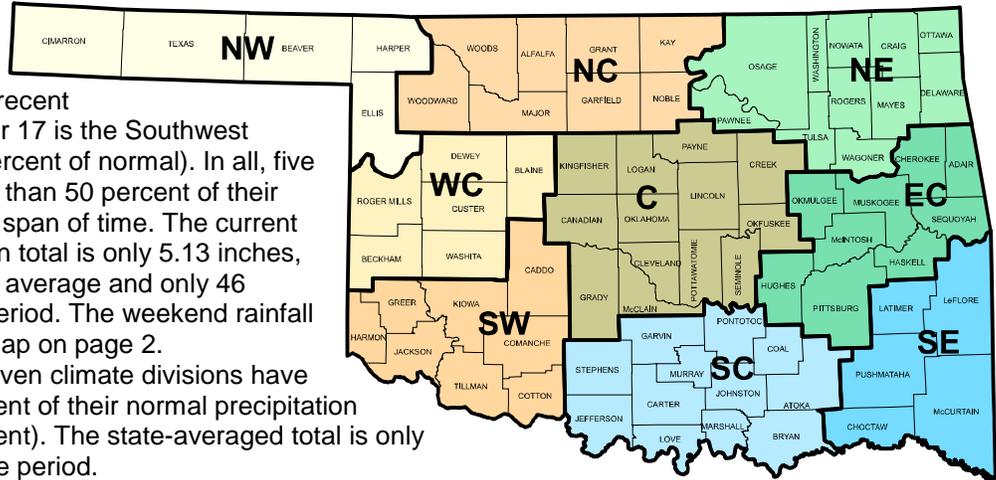
OKLAHOMA WATER RESOURCES BOARD

## Statewide Precipitation & General Summary

The rain that fell throughout much of Oklahoma over the weekend benefited many areas, but will provide only temporary relief to the extended dry conditions in the state. According to preliminary Mesonet weather station data provided by the [Oklahoma Climatological Survey](#) and National Weather Service (see below), the areas experiencing the lowest percent of normal rainfall from July 1 (the

general onset of this most recent dry period) through October 17 is the Southwest climate division (only 30 percent of normal). In all, five regions have received less than 50 percent of their normal precipitation in that span of time. The current state-averaged precipitation total is only 5.13 inches, which is 5.93 inches below average and only 46 percent of normal for the period. The weekend rainfall totals are included in the map on page 2.

Since September 1, seven climate divisions have received less than 50 percent of their normal precipitation (four are less than 40 percent). The state-averaged total is only 44 percent of normal for the period.



### PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION (IN INCHES)

DIVISION (#)	SEPTEMBER 1 – OCTOBER 17, 2000			JULY 1 – OCTOBER 17, 2000			RAINFALL SINCE OCTOBER 8
	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	
Northwest (1)	0.93	-1.82	34	3.35	-4.27	44	0.69
North Central (2)	2.21	-2.39	48	5.33	-5.03	51	1.62
Northeast (3)	3.09	-3.75	45	7.24	-5.66	56	1.74
West Central (4)	1.55	-3.03	34	3.28	-6.00	35	1.52
Central (5)	2.81	-3.17	47	6.44	-4.66	58	1.58
East Central (6)	3.93	-3.03	56	6.75	-5.86	53	0.94
Southwest (7)	1.67	-3.41	33	2.84	-6.70	30	0.79
South Central (8)	2.14	-4.57	32	4.26	-7.26	37	0.98
Southeast (9)	3.98	-3.38	54	5.74	-8.04	42	0.88
<b>STATE-AVERAGED</b>	<b>2.48</b>	<b>-3.15</b>	<b>44</b>	<b>5.13</b>	<b>-5.93</b>	<b>46</b>	<b>1.22</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](#) (October 14, below), moisture/drought conditions in Oklahoma continue to be generally moderate to severe. **All nine climate divisions remain in various stages of drought, including the South Central and Northwest regions, which remain in the “severe drought” category.** The Southeast, Southwest and West Central climate divisions also continue to experience “moderate drought.” Four of the nine climate divisions have undergone modest PDSI moisture decreases since October 7; the Southeast climate division experienced the greatest decrease during the period. (Note: This assessment does not include all the rainfall which fell throughout Oklahoma over the weekend.)

The latest monthly [Standardized Precipitation Index](#) (through September, below) indicates that the South Central and Southeast climate divisions continue to experience long-term dryness of at least one year, with shorter-term dryness (6 months) in the Northwest and West Central regions. The 3-month SPI time period reflects “extremely dry” conditions in six separate climate divisions. Among other time periods, the SPI also indicates at least a 30-month period of dryness throughout southern Oklahoma.

The latest [Keetch-Byram Drought Index](#) (October 15, 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 improved only slightly. Statewide, 13 of the more than 110 Mesonet stations in Oklahoma report KBDI values in excess of 700, indicating severe fire/drought conditions (20 stations had readings above 700 on October 9). In all, 67 stations (almost two-thirds of the network) are above 600, the general threshold of severe drought. Mt. Herman, in the Southeast climate division, has the highest KBDI value (777), followed by Tishomingo (729; South Central) and Ketchum Ranch (758; South Central).

According to the Oklahoma Department of Agriculture (Forestry Services), as of October 16, [Statewide Wildfire Preparedness](#) has been upgraded to Level 2 (moderate fire danger). **The Burning Ban has been rescinded, although a Red Flag Fire Alert is now in effect for 34 counties in northwest, southwest, far south central, southeast and far east central/northeast Oklahoma.**

CLIMATE DIVISION (#)	PALMER DROUGHT SEVERITY INDEX				STANDARDIZED PRECIPITATION INDEX THROUGH SEPTEMBER			
	CURRENT STATUS 10/014/2000	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
Northwest (1)	SEVERE DROUGHT	-3.00	-3.11	0.11	EXTREMELY DRY	VERY DRY	NEAR NORMAL	NEAR NORMAL
North Central (2)	INCIPIENT DROUGHT	-0.63	-0.76	0.13	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MILD DROUGHT	-1.61	-1.62	0.01	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	MODERATE DROUGHT	-2.23	-2.28	0.05	EXTREMELY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
Central (5)	MILD DROUGHT	-1.84	-1.78	-0.06	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MILD DROUGHT	-1.11	-0.95	-0.16	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MODERATE DROUGHT	-2.48	-2.52	0.04	EXTREMELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	SEVERE DROUGHT	-3.10	-3.04	-0.06	EXTREMELY DRY	VERY DRY	MODERATELY DRY	VERY DRY
Southeast (9)	MODERATE DROUGHT	-2.53	-2.33	-0.20	EXTREMELY DRY	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY

### KEETCH-BYRAM DROUGHT FIRE INDEX

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 10/15/2000	ANTICIPATED IMPACT
Mt. Herman	McCurtain	Southeast	777	600-800: associated with severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.
Tishomingo	Johnston	South Central	729	
Ketchum Ranch	Stephens	South Central	723	

13 stations with KBDI values above 700; 67 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.*

### **Streamflow Conditions**

For the current water year (beginning October 1, 1999), flows in many state rivers and streams remain very low due to persistent below normal precipitation and runoff, although flows are currently spiked from the weekend's rainfall. Considering overall trends as well as current flows, the most recent data (October 16, 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, 1999 compared to long-term, normal/median daily discharges) indicate **much below average flow** in *southwest* (North Fork/Red River in Beckham County), *central* (Canadian River in McClain County), *south central* (Washita River in Carter County) and *southeast* (Glover River in McCurtain County) Oklahoma; **below average flow** in the *northwest* (Cimarron River in Beaver County) region; and **near average flow** in the *northeast* (Baron Fork in Cherokee County).

### **Weather Forecast**

The National Weather Service [6- to 10-day outlook](#) (October 23-27) calls for above normal precipitation for the entire state. Above normal temperatures are expected for the eastern two-thirds of Oklahoma; normal temperatures are anticipated in the west. The Climate Prediction Center forecasts a chance for above normal precipitation for the entire state for the November through January 2001 period.

Current models indicate that the persistent cold water phenomenon in the equatorial Pacific Ocean, referred to as La Niña, has virtually disappeared and tropical Pacific sea levels, which indicate how much heat is stored in the ocean, have returned to near normal after three years of dramatic fluctuations. However, many scientists believe that a larger, longer lasting climate situation, the Pacific Decadal Oscillation, will persist for some time. This long-term pattern of ocean temperature fluctuations that waxes and wanes approximately every 10 to 20 years, has significant implications for global climate, especially over North America.

### **Crop Report**

October 15 - Beneficial rainfall was received over the weekend throughout most of the state. The moisture should allow Oklahoma farmers to make good planting progress this week for fall small grains. However, more rainfall is needed statewide. Farmers had 5.9 days suitable for fieldwork during the week.

After the weekend rains, small grain planting should rapidly pick up as soon as producers can get in their fields. Areas where wheat fields had previously been dusted in should also benefit from the rainfall and show emergence. Wheat seeding progressed to 45 percent planted, well behind the five-year average of 73 percent. Wheat that has emerged was at 9 percent last week, well below the normal of 36 percent. Earlier than normal frost that occurred last week had a major impact on most row crops. The freezing temperatures has finished or hampered future growth and harvest quickly accelerated. Sorghum growers harvested an additional 14 percent of the crop, bringing the total to 68 percent. Soybean harvest continued ahead last week and 66 percent of the crop has been harvested. Adequate and consistent pod size and counts remain a concern for soybean producers. As a result of last week's freeze, which accelerated maturity, tremendous progress was made on digging and combining of peanuts. An additional 29 percent of the crop has been dug, while an additional 25 percent has been combined. Cotton growers also made good progress harvesting their crop and the harvest totaled 53 percent by the end of the week. This swift pace is 32 points ahead of the five-year average. Alfalfa hay is rated in mostly poor condition, while all other hay is in mostly fair condition. The fourth cutting of alfalfa continues and totaled 89 percent complete by week's end. The fifth cutting of alfalfa made little progress last week but 47 percent has been cut.

Livestock is rated in mostly fair to good condition statewide. Water levels in stock ponds remain a concern. Cattle auctions report slightly above average marketings. Insect pressures on cattle are mostly light statewide. Pastures showed slight improvement last week, but are still rated in mostly poor condition statewide. Pastures in the southwest remain the most unfavorable with 80 percent rated in very poor condition. However, the recent rainfall should improve future ratings. Producers in many areas continue to supplement feed to their herds.

### Reservoir Storage

Reservoir storage levels throughout much of Oklahoma continue to decline, although the weekend rainfall augmented supply somewhat in several areas. As of October 16, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 83.6 percent full, a 0.5 percent decrease over that measured on October 10, according to information from the [U.S. Army Corps of Engineers \(Tulsa District\)](#). Twelve reservoirs have experienced lake level decreases since that time. All 31 reservoirs continue to operate at less than full capacity. Seven reservoirs (Lugert-Altus, Keystone, Tom Steed, Waurika, Hulah, Hugo and Wister) are now below 80 percent capacity, compared to eight last week. Lugert-Altus is at only 31.2 percent; Keystone, 35.8 percent.

<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>				
<b>as of October 16, 2000</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	13,116	94.4	0.00
Great Salt Plains	31,420	25,966	82.6	0.00
Kaw*	395,557	391,957	99.1	0.00
<b>Regional Totals/Averages</b>	<b>440,877</b>	<b>431,039</b>	<b>97.8</b>	<b>0.00</b>
<b>NORTHEAST</b>				
Birch	19,225	15,935	82.9	0.00
Copan	43,400	35,874	82.7	0.00
Fort Gibson	365,200	335,520	91.9	0.00
Grand	1,672,000	1,474,679	88.2	0.00
Hudson	200,300	196,445	98.1	0.00
Hulah	31,160	23,166	74.3	0.00
Keystone	278,122	99,663	35.8	0.00
Oologah	552,210	497,825	90.2	0.00
Skiatook	322,700	286,557	88.8	0.00
<b>Regional Totals/Averages</b>	<b>3,484,317</b>	<b>2,965,664</b>	<b>85.1</b>	<b>0.00</b>
<b>WEST CENTRAL</b>				
Canton	111,310	98,063	88.1	0.00
Foss	165,480	152,385	92.1	0.00
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>250,448</b>	<b>90.5</b>	<b>0.00</b>
<b>CENTRAL</b>				
Arcadia	27,520	24,072	87.5	0.00
Heyburn	7,105	5,727	80.6	0.00
Thunderbird	119,600	108,206	90.5	0.00
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>138,005</b>	<b>89.5</b>	<b>0.00</b>
<b>EAST CENTRAL</b>				
Eufaula*	2,368,223	1,895,623	80.0	0.00
Tenkiller	654,100	562,484	86.0	0.00
<b>Regional Totals/Averages</b>	<b>3,022,323</b>	<b>2,458,107</b>	<b>81.3</b>	<b>0.00</b>
<b>SOUTHWEST</b>				
Fort Cobb	80,010	73,382	91.7	0.00
Lugert-Altus	132,830	41,470	31.2	0.00
Tom Steed	88,970	60,846	68.4	0.00
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>175,698</b>	<b>58.2</b>	<b>0.00</b>
<b>SOUTH CENTRAL</b>				
Arbuckle	72,400	65,691	90.7	0.00
McGee Creek	113,930	98,750	86.7	0.00
Texoma*	2,620,826	2,200,931	84.0	0.00
Waurika*	199,440	146,586	73.5	0.00
<b>Regional Totals/Averages</b>	<b>3,006,596</b>	<b>2,511,958</b>	<b>83.5</b>	<b>0.00</b>
<b>SOUTHEAST</b>				
Broken Bow*	938,155	777,241	82.8	0.00
Hugo*	158,617	120,908	76.2	0.00
Pine Creek*	53,750	45,415	84.5	0.00
Sardis	274,330	252,396	92.0	0.00
Wister	60,162	47,848	79.5	0.00
<b>Regional Totals/Averages</b>	<b>1,485,014</b>	<b>1,243,808</b>	<b>83.8</b>	<b>0.00</b>
<b>STATE TOTALS</b>	<b>12,171,952</b>	<b>10,174,727</b>	<b>83.6</b>	<b>0.00</b>

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

### **Oklahoma Weather Modification Program**

A brief summary/update of recent cloud seeding operations of the Oklahoma Weather Modification Program, including both hail suppression and rainfall enhancement, is presented below. Nine seeding flight operations, seven for rainfall enhancement and two for hail suppression, were conducted from October 10-17. The 2000 Program officially began operations on March 1, 2000.

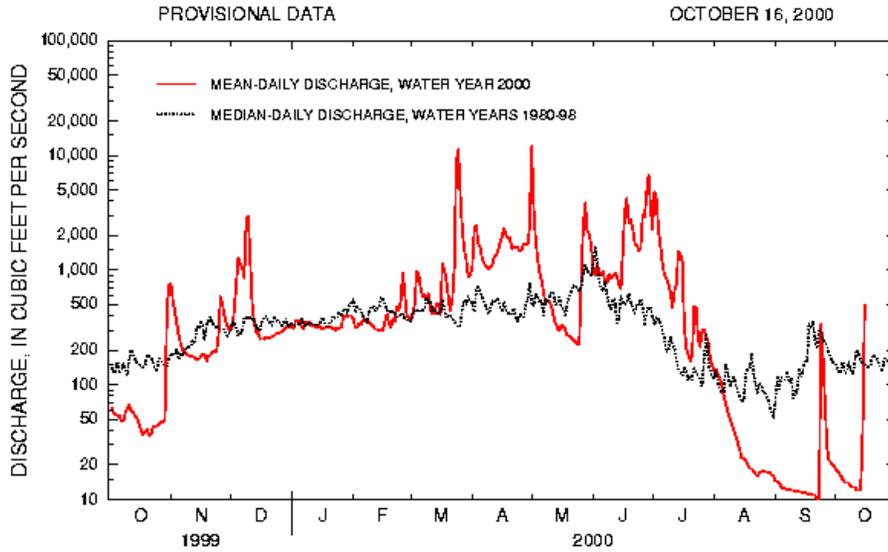
<b>RECENT WEATHER MODIFICATION ACTIVITIES</b>					
<b>OCTOBER 10-17, 2000</b>					
<b>Date/ Flight(s)</b>	<b>County Location(s)</b>	<b>Texas</b>	<b>Kansas</b>	<b>Hail</b>	<b>Rain</b>
13-Oct	Grady, McClain				<b>x</b>
13-Oct	Roger Mills, Custer				<b>x</b>
14-Oct	Garfield, Kingfisher				<b>x</b>
14-Oct	Ellis, Woods, Woodward, Beaver, Major			<b>x</b>	
14-Oct	Jackson, Tillman, Kiowa, Comanche				<b>x</b>
15-Oct	Kiowa, Beckham, Roger Mills, Jackson, Harmon				<b>x</b>
15-Oct	Kingfisher, Blaine, Logan, Noble, Payne				<b>x</b>
15-Oct	Ellis, Woodward			<b>x</b>	
15-Oct	Latimer				<b>x</b>

\* Information may not reflect the most recent operations.

*Canadian River at Purcell, Oklahoma*

*Station No. 07229200  
Central Oklahoma*

*Drainage Area 25,939 square miles*

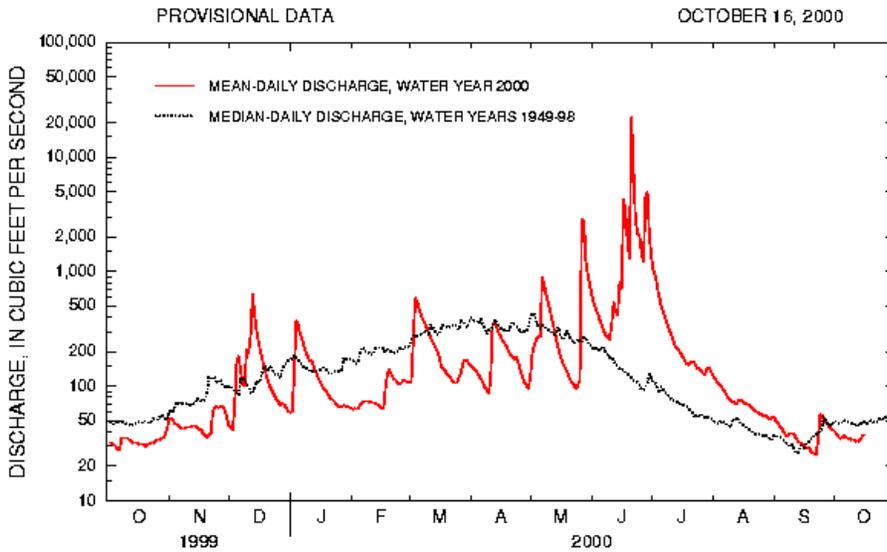


Comparison of daily discharges for water year 2000 and period of record for Canadian River at Purcell, Oklahoma.

Data from U.S. Geological Survey  
*Baron Fork at Eldon, Oklahoma*

*Station No. 07197000  
Northeast Oklahoma*

*Drainage Area 307 square miles*



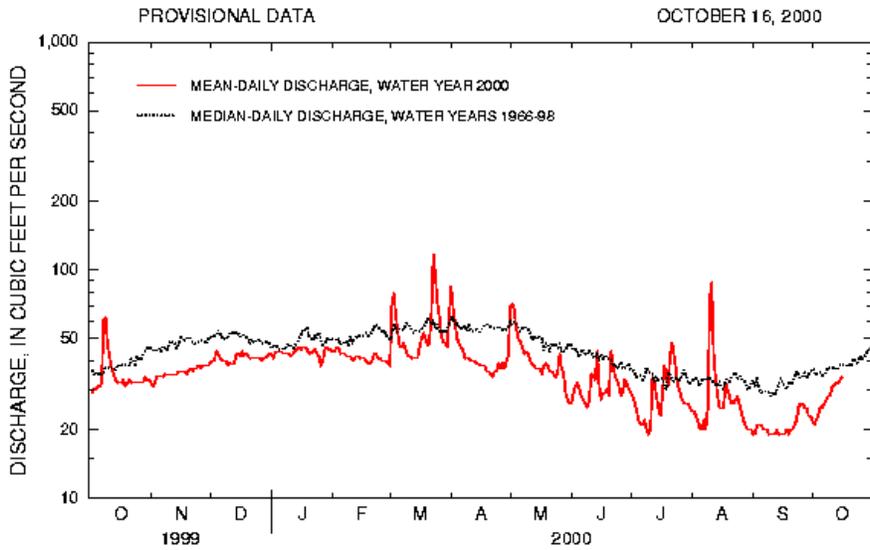
Comparison of daily discharges for water year 2000 and period of record for Baron Fork at Eldon, Oklahoma.

Data from U.S. Geological Survey

*Cimarron River near Forgan, Oklahoma*

*Station No. 07156900  
Northwest Oklahoma*

*Drainage Area 8,536 square miles*



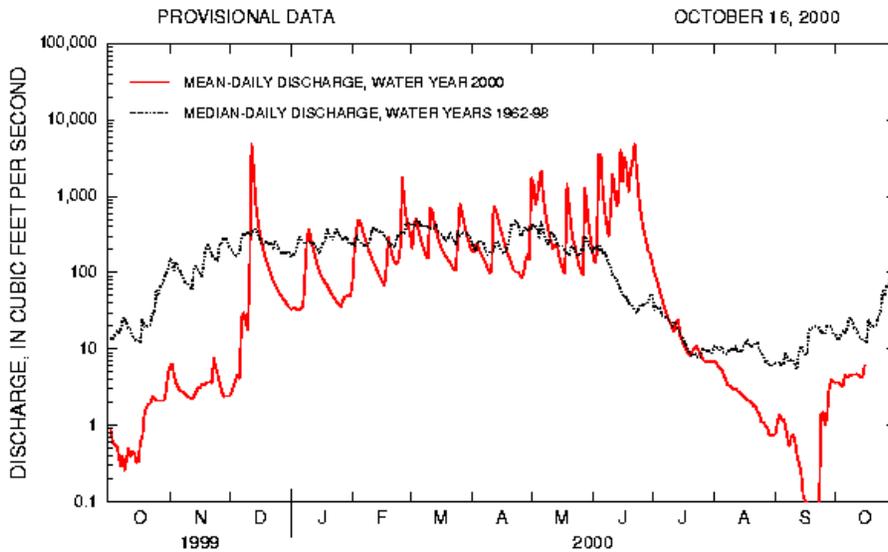
Comparison of daily discharges for water year 2000 and period of record for Cimarron River near Forgan, Oklahoma.

Data from U.S. Geological Survey

*Glover River near Glover, Oklahoma*

*Station No. 07337900  
Southeast Oklahoma*

*Drainage Area 315 square miles*



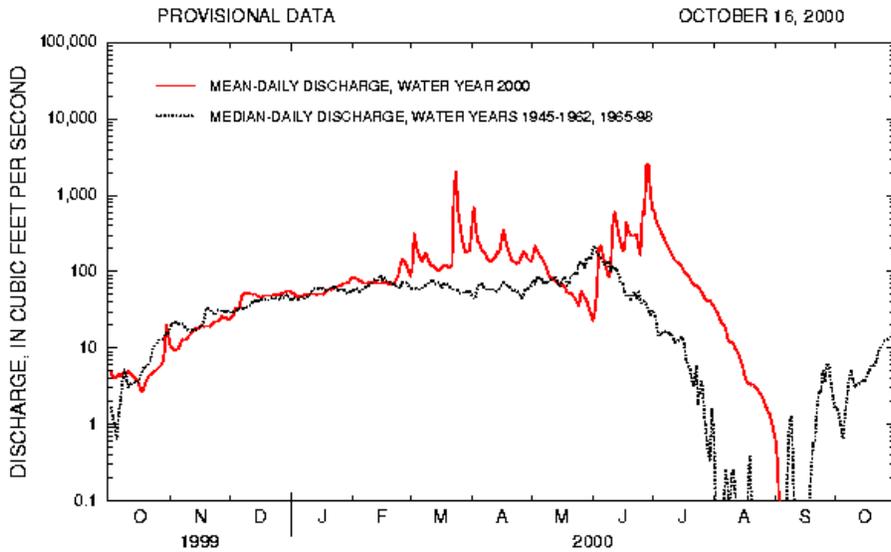
Comparison of daily discharges for water year 2000 and period of record for Glover River near Glover, Oklahoma.

Data from U.S. Geological Survey

*North Fork Red River near Carter, Oklahoma*

*Station No. 07301 500  
Southwest Oklahoma*

*Drainage Area 2,337 square miles*

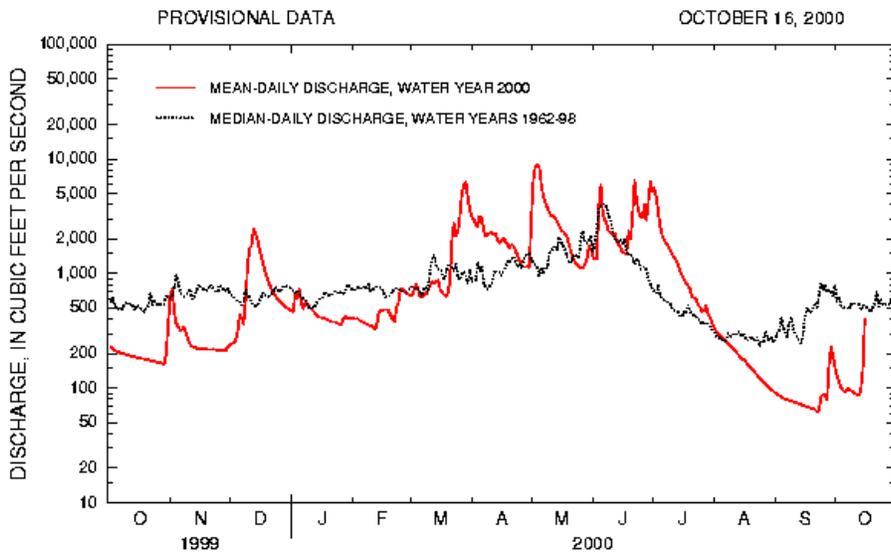


Comparison of daily discharges for water year 2000 and period of record for North Fork Red River near Carter, Oklahoma.

Data from U.S. Geological Survey  
*Washita River near Dickson, Oklahoma*

*Station No. 07331 000  
South-Central Oklahoma*

*Drainage Area 7,202 square miles*



Comparison of daily discharges for water year 2000 and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey