

Oklahoma Water Resources Bulletin & Summary of Current Conditions

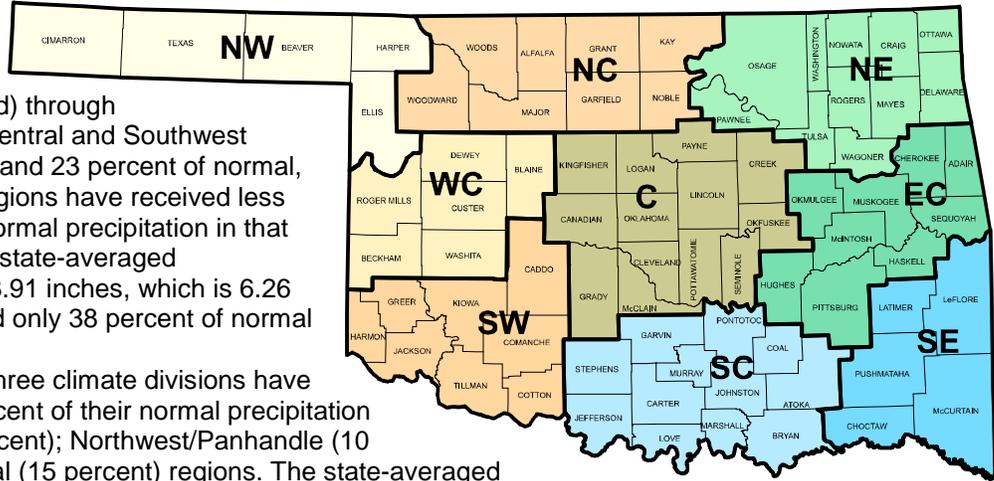


OCTOBER 11, 2000

OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Although rain fell in several regions of the state last week, amounts were insufficient to influence the extremely dry conditions in Oklahoma. 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 8 are the West Central and Southwest climate divisions (only 20 and 23 percent of normal, respectively). In all, six regions have received less than 40 percent of their normal precipitation in that span of time. The current state-averaged precipitation total is only 3.91 inches, which is 6.26 inches below average and only 38 percent of normal for the period.



Since September 1, three climate divisions have received less than 20 percent of their normal precipitation -- the West Central (1 percent); Northwest/Panhandle (10 percent) and North Central (15 percent) regions. The state-averaged total is only 27 percent of normal for the period.

PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION (IN INCHES)

DIVISION (#)	SEPTEMBER 1 – OCTOBER 8, 2000			JULY 1 – OCTOBER 8, 2000			RAINFALL SINCE OCTOBER 2
	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	
Northwest (1)	0.25	-2.14	10	2.66	-4.59	37	0.18
North Central (2)	0.58	-3.36	15	3.71	-6.01	38	0.52
Northeast (3)	1.35	-4.45	23	5.50	-6.36	46	0.12
West Central (4)	0.03	-3.89	1	1.76	-6.86	20	0.00
Central (5)	1.23	-3.81	24	4.86	-5.30	48	0.10
East Central (6)	2.99	-2.70	53	5.81	-5.53	51	0.56
Southwest (7)	0.88	-3.41	20	2.05	-6.70	23	0.04
South Central (8)	1.15	-4.42	21	3.28	-7.11	32	0.26
Southeast (9)	3.10	-2.89	52	4.86	-7.54	39	0.49
STATE-AVERAGED	1.26	-3.47	27	3.91	-6.26	38	0.25

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 7, 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 Northwest and South Central regions, which remain in the “severe drought” category.** The Southwest, Southeast and West Central climate divisions also continue to experience “moderate drought.” Eight of the nine climate divisions have undergone modest PDSI moisture decreases since September 30; the West Central climate division experienced the greatest decrease during the period.

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 9, 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 continue to be severe. Statewide, 20 of the more than 110 Mesonet stations in Oklahoma report KBDI values in excess of 700, indicating severe fire/drought conditions (19 stations had readings above 700 on October 2). In all, 74 stations (about two-thirds of the network) are above 600, the general threshold of severe drought. Ringling, in the South Central climate division, retains the highest KBDI value (779), followed by Mt. Herman (777; Southeast) and Grandfield (758; Southwest).

According to the Oklahoma Department of Agriculture (Forestry Services), [Statewide Wildfire Preparedness](#) has been upgraded to Level 3 (generally high fire danger). **However, a Burning Ban remains in effect for all of Oklahoma (not including gas/charcoal grilling).**

CLIMATE DIVISION (#)	PALMER DROUGHT SEVERITY INDEX				STANDARDIZED PRECIPITATION INDEX THROUGH SEPTEMBER			
	CURRENT STATUS 10/07/2000	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		10/07	09/30					
Northwest (1)	SEVERE DROUGHT	-3.11	-3.17	0.06	EXTREMELY DRY	VERY DRY	NEAR NORMAL	NEAR NORMAL
North Central (2)	INCIPIENT DROUGHT	-0.76	-0.72	-0.04	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MILD DROUGHT	-1.62	-1.49	-0.13	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
West Central (4)	MODERATE DROUGHT	-2.28	-2.13	-0.15	EXTREMELY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
Central (5)	MILD DROUGHT	-1.78	-1.65	-0.13	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT DROUGHT	-0.95	-0.94	-0.01	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MODERATE DROUGHT	-2.52	-2.41	-0.11	EXTREMELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	SEVERE DROUGHT	-3.04	-3.00	-0.04	EXTREMELY DRY	VERY DRY	MODERATELY DRY	VERY DRY
Southeast (9)	MODERATE DROUGHT	-2.33	-2.31	-0.02	EXTREMELY DRY	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY

KEETCH-BYRAM DROUGHT FIRE INDEX

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 10/9/2000	ANTICIPATED IMPACT
Ringling	Jefferson	South Central	779	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.
Mt. Herman	McCurtain	Southeast	777	
Grandfield	Tillman	Southwest	758	

20 stations with KBDI values above 700; 74 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. Considering overall trends as well as current flows, the most recent data (October 9, 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 *central* (Canadian River in McClain County), *southwest* (North Fork/Red River in Beckham County) and *south central* (Washita River in Carter County) Oklahoma; **below average flow** in the *southeast* (Glover River in McCurtain County) region; and **near average flow** in the *northwest* (Cimarron River in Beaver County) and *northeast* (Baron Fork in Cherokee County).

Weather Forecast

The National Weather Service [6- to 10-day outlook](#) (October 14-18) calls for above normal precipitation for the entire state. Above normal temperatures are expected for all of Oklahoma, except the Panhandle where normal temperatures are anticipated. The Climate Prediction Center forecasts a chance for above normal precipitation for the entire state for the October through December 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 10 - Most areas of Oklahoma experienced below freezing temperatures on Sunday, which should accelerate the harvest for many row crops. Light, scattered rainfall was received everywhere but the west central region, but more moisture is needed statewide. Fall planting continues to be slowed in most areas and many small grains continue to be dry seeded. However, those areas that received moisture from the rains could benefit and make good planting progress this week. Farmers had 6.4 days suitable for fieldwork during the week.

Planting of fall small grains remain slow as a result of the prolonged dry conditions. However, many growers are continuing to dust in their crops. Rain is particularly needed in the south and west before wheat planting can begin at full pace. Wheat seeding has progressed to 31 percent planted, well behind the five-year average of 54 percent. Farmers are hoping for future rains to properly emerge the fields that have been dusted in. Corn growers were busy last week trying to complete harvest. As of Sunday, only 5 percent remained unharvested, well ahead of the five-year average. Sorghum growers harvested an additional 4 percent of the crop, bringing the total to 52 percent. Sorghum conditions remain varied across the state, but is rated in mostly fair or poor condition overall. The soybean harvest progressed slowly last week and 57 percent of the crop has been harvested. Proper pod development remains a concern for soybean producers. Peanuts are in mostly fair condition but the recent frost and cooler nights are hampering the maturity process. Excellent progress was made on digging and combining of peanuts, totaling 38 and 19 percent, respectively, by weeks end. The majority of cotton has opened bolls and harvest was 32 percent complete by the end of the week. This blistering pace is 20 percent ahead of the five-year average. Cotton yields have been reported as highly variable. Both alfalfa and all other hay are in mostly fair condition. The fourth cutting of alfalfa continued last week and totaled 85 percent complete, while the fifth cutting of alfalfa was 46 percent cut by weeks end.

Recent rainfall has done little to rejuvenate pasture growth and conditions remain mostly poor. Pasture conditions in the south continue to be the most adversely affected by the dry conditions. Supplemental feeding continues and cattle are consuming hay that would not typically be fed until winter months. Livestock remain in mostly good to fair condition statewide. Water available for livestock continues to be insufficient and hauling water in critical areas has become necessary. Some cattle producers continue to liquidate portions of their herds and future culling remains a strong possibility given the current conditions and prospects for improvement. Cattle auctions report slightly above average marketings. Cooler temperatures have lowered insect activity on cattle.

Reservoir Storage

Reservoir storage levels throughout much of Oklahoma continue to decline. As of October 10, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 84.1 percent full, a 1.6 percent decrease over that measured on October 2, according to information from the [U.S. Army Corps of Engineers \(Tulsa District\)](#). Twenty-six reservoirs have experienced lake level decreases since that time. All 31 reservoirs continue to operate at less than full capacity. Eight reservoirs (Lugert-Altus, Keystone, Tom Steed, Waurika, Hulah, Great Salt Plains, Hugo and Heyburn) are now below 80 percent capacity, compared to seven last week. Lugert-Altus is at only 31.2 percent; Keystone, 34.6 percent.

Storage in Selected Oklahoma Lakes & Reservoirs				
as of October 10, 2000				
Climate Division	Conservation Storage	Present Storage	Percent of Storage	
Lake or Reservoir	(acre-feet)	(acre-feet)	conservation	flood
NORTH CENTRAL				
Fort Supply	13,900	12,400	89.2	0.00
Great Salt Plains	31,420	24,583	78.2	0.00
Kaw*	392,419	386,547	98.5	0.00
Regional Totals/Averages	437,739	423,530	96.8	0.00
NORTHEAST				
Birch	19,225	15,915	82.8	0.00
Copan	43,400	35,388	81.5	0.00
Fort Gibson	365,200	334,260	91.5	0.00
Grand	1,672,000	1,472,580	88.1	0.00
Hudson	200,300	198,479	99.1	0.00
Hulah	31,160	23,196	74.4	0.00
Keystone	278,122	96,328	34.6	0.00
Oologah	552,210	496,118	89.8	0.00
Skiatook	322,700	287,038	88.9	0.00
Regional Totals/Averages	3,484,317	2,959,302	84.9	0.00
WEST CENTRAL				
Canton	111,310	96,076	86.3	0.00
Foss	165,480	152,194	92.0	0.00
Regional Totals/Averages	276,790	248,270	89.7	0.00
CENTRAL				
Arcadia	27,520	23,622	85.8	0.00
Heyburn	7,105	5,677	79.9	0.00
Thunderbird	119,600	107,140	89.6	0.00
Regional Totals/Averages	154,225	136,439	88.5	0.00
EAST CENTRAL				
Eufaula*	2,368,223	1,897,384	80.1	0.00
Tenkiller	654,100	563,412	86.1	0.00
Regional Totals/Averages	3,022,323	2,460,796	81.4	0.00
SOUTHWEST				
Fort Cobb	80,010	73,382	91.7	0.00
Lugert-Altus	132,830	41,409	31.2	0.00
Tom Steed	88,970	61,056	68.6	0.00
Regional Totals/Averages	301,810	175,847	58.3	0.00
SOUTH CENTRAL				
Arbuckle	72,400	64,599	89.2	0.00
McGee Creek	113,930	99,199	87.1	0.00
Texoma*	2,588,474	2,212,077	85.5	0.00
Waurika*	199,440	146,082	73.2	0.00
Regional Totals/Averages	2,974,244	2,521,957	84.8	0.00
SOUTHEAST				
Broken Bow*	944,830	779,243	82.5	0.00
Hugo*	158,617	121,836	76.8	0.00
Pine Creek*	53,750	46,065	85.7	0.00
Sardis	274,330	253,820	92.5	0.00
Wister	60,162	49,122	81.6	0.00
Regional Totals/Averages	1,491,689	1,250,086	83.8	0.00
STATE TOTALS	12,143,137	10,176,227	83.8	0.00

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

Oklahoma Weather Modification Program

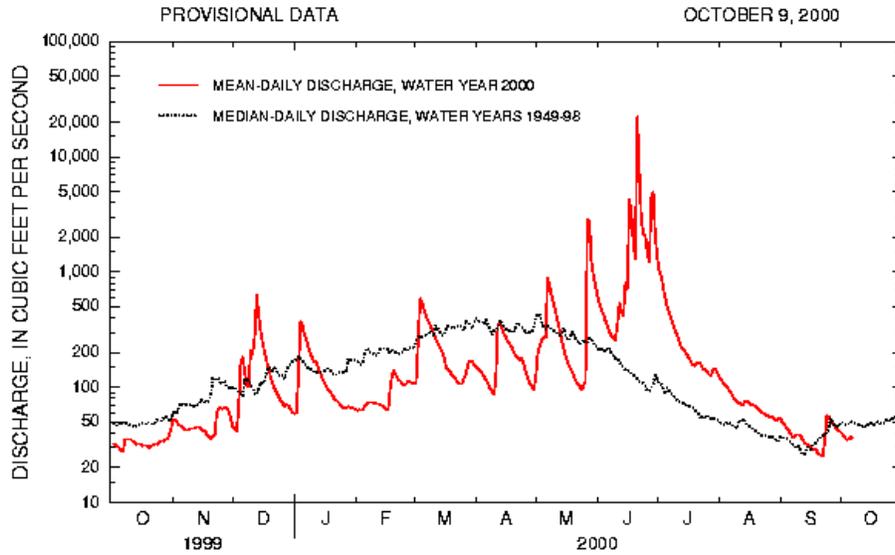
A brief summary/update of recent cloud seeding operations of the Oklahoma Weather Modification Program, including both hail suppression and rainfall enhancement, is presented below. Two seeding flight operations, both for rainfall enhancement, were conducted from October 3-9. The 2000 Program officially began operations on March 1, 2000.

<i>RECENT WEATHER MODIFICATION ACTIVITIES</i>					
<i>OCTOBER 3-9, 2000</i>					
<i>Date/ Flight(s)</i>	<i>County Location(s)</i>	<i>Texas</i>	<i>Kansas</i>	<i>Hail</i>	<i>Rain</i>
05-Oct	Payne, Osage, Washington, Tulsa, Rogers				x
06-Oct	Canadian, Caddo, Blaine, Oklahoma, Grady, Cleveland				x
* Information may not reflect the most recent operations.					

Baron Fork at Eldon, Oklahoma

*Station No. 07197000
Northeast Oklahoma*

Drainage Area 307 square miles

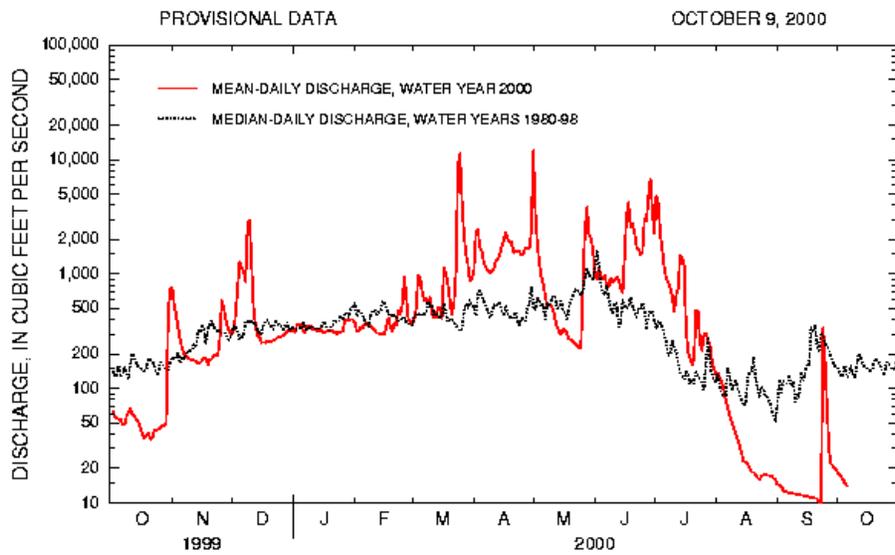


Comparison of daily discharges for water year 2000 and period of record for Baron Fork at Eldon, Oklahoma.

Data from U.S. Geological Survey
Canadian River at Purcell, Oklahoma

*Station No. 07229200
Central Oklahoma*

Drainage Area 25,939 square miles



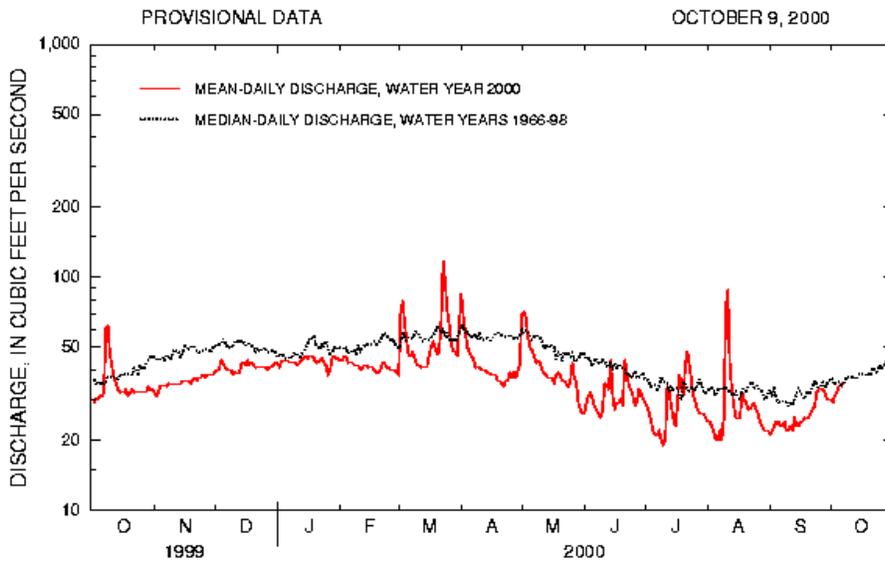
Comparison of daily discharges for water year 2000 and period of record for Canadian River at Purcell, Oklahoma.

Data from U.S. Geological Survey

Cimarron River near Forgan, Oklahoma

*Station No. 07156900
Northwest Oklahoma*

Drainage Area 8,536 square miles



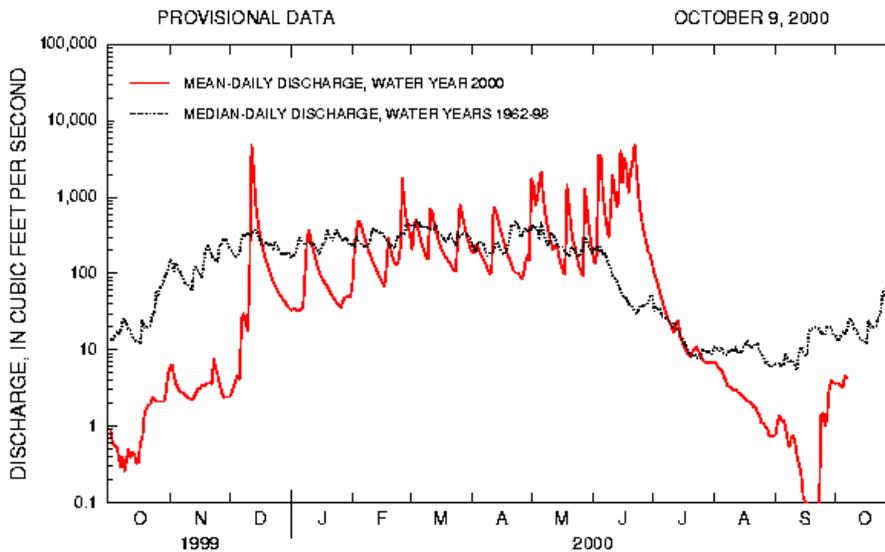
Comparison of daily discharges for water year 2000 and period of record for Cimarron River near Forgan, Oklahoma.

Data from U.S. Geological Survey

Glover River near Glover, Oklahoma

*Station No. 07337900
Southeast Oklahoma*

Drainage Area 315 square miles



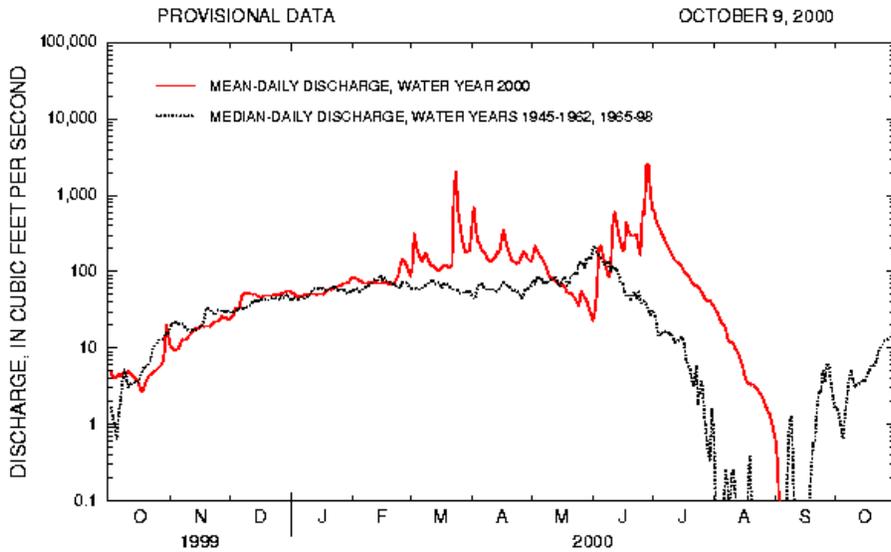
Comparison of daily discharges for water year 2000 and period of record for Glover River near Glover, Oklahoma.

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

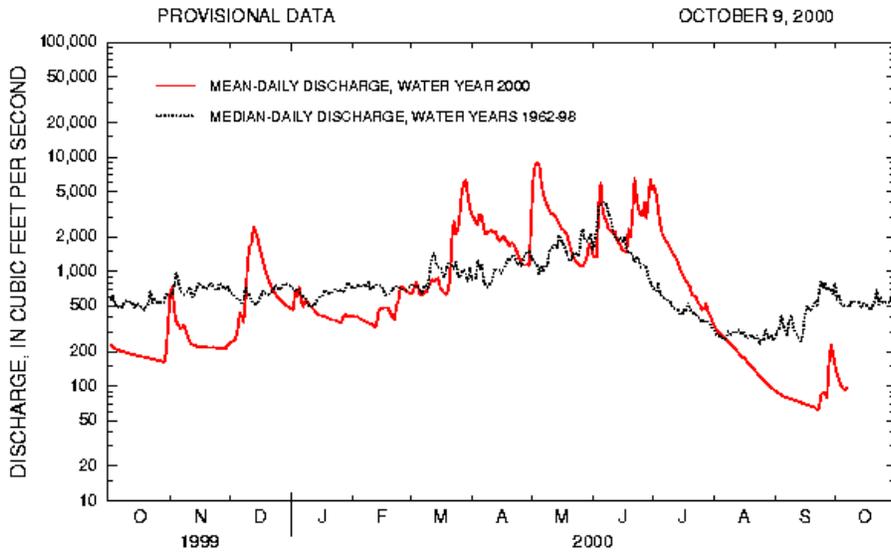


Comparison of daily discharges for water year 2000 and period of record for North Fork Red River near Carter, Oklahoma.

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