

Oklahoma Water Resources Bulletin & Summary of Current Conditions



OCTOBER 3, 2000

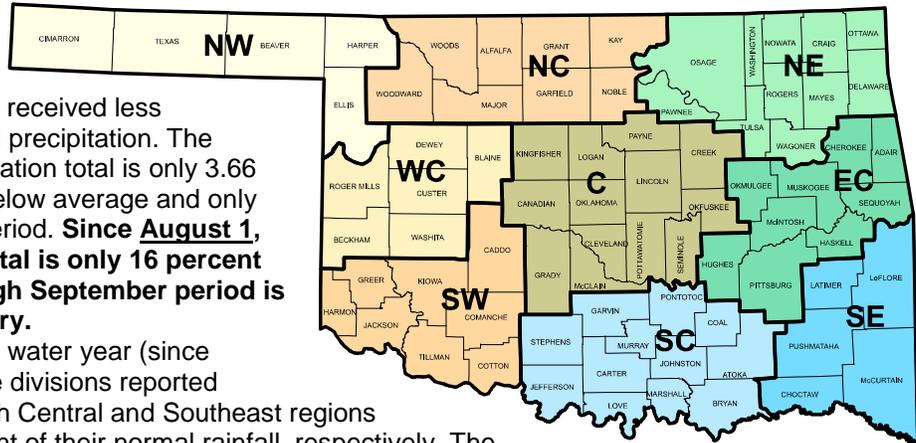
OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Oklahoma remains extremely dry in virtually all areas of 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 through October 2 are the West Central and Southwest

climate divisions (only 22 and 24 percent of normal, respectively). Six regions have received less than 40 percent of their normal precipitation. The current state-averaged precipitation total is only 3.66 inches, which is 5.91 inches below average and only 38 percent of normal for the period. **Since August 1, the state averaged rainfall total is only 16 percent of normal; the August through September period is the driest in the state's history.**

For the recently concluded water year (since October 1, 1999), eight climate divisions reported precipitation deficits. The South Central and Southeast regions received only 69 and 74 percent of their normal rainfall, respectively. The state averaged total was 88 percent of normal for the period.



PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION

(IN INCHES)

DIVISION (#)	WATER YEAR			JULY 1 – OCTOBER 2, 2000			RAINFALL SINCE SEPTEMBER 24
	OCTOBER 1, 1999 – OCTOBER 2, 2000 TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	TOTAL RAINFALL	DEPARTURE FROM NORMAL	PERCENT OF NORMAL	
Northwest (1)	16.07	-3.76	81	2.48	-4.52	35	0.00
North Central (2)	28.43	0.05	100	3.19	-6.08	34	0.00
Northeast (3)	40.34	-0.21	99	5.38	-5.79	48	0.00
West Central (4)	26.22	-0.49	98	1.76	-6.43	22	0.00
Central (5)	32.06	-2.59	93	4.76	-4.78	50	0.00
East Central (6)	39.52	-4.16	90	5.25	-5.25	50	0.02
Southwest (7)	26.25	-2.03	93	2.01	-6.21	24	0.00
South Central (8)	26.47	-11.92	69	3.02	-6.62	31	0.00
Southeast (9)	37.03	-12.73	74	4.37	-7.11	38	0.03
STATE-AVERAGED	30.27	-4.16	88	3.66	-5.91	38	0.00

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](#) (September 30, below), moisture/drought conditions in Oklahoma continue to generally deteriorate. **However, all nine climate divisions are now 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.” Seven of the nine climate divisions have undergone PDSI moisture decreases since September 23; for the third straight week, the North Central (“incipient drought”) climate division experienced the greatest decrease during the period.

The latest monthly [Standardized Precipitation Index](#) (through August, below) indicates that the South Central and Southeast climate divisions are experiencing long-term dryness, at least over the last 12 months. Although no other regions are experiencing long-term moisture deficits, virtually all areas are experiencing very dry to extremely dry SPI conditions throughout the past two months. The 6-, 9- and 12-month SPI time periods reflect “moderately dry” conditions in the South Central region and the 12-month SPI indicates “moderately dry” conditions in the Southeast. No other regions experienced a dry SPI reading among the selected time periods.

The latest [Keetch-Byram Drought Index](#) (October 2, 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, 19 of the more than 110 Mesonet stations in Oklahoma report KBDI values in excess of 700, indicating severe fire/drought conditions (14 stations had readings above 700 on September 25). In all, 76 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 (776), followed by Mt. Herman (773; Southeast) and Grandfield (754; Southwest).

According to the Oklahoma Department of Agriculture (Forestry Services), [Statewide Wildfire Preparedness](#) remains at Level 4 (very high to extreme fire danger). Although widespread fires have persisted in many areas during the last few weeks, all are generally contained, according to the Oklahoma Department of Civil Emergency Management. **A Burn Ban remains in effect for all of Oklahoma and includes all outdoor burning.**

CLIMATE DIVISION (#)	PALMER DROUGHT SEVERITY INDEX				STANDARDIZED PRECIPITATION INDEX THROUGH AUGUST			
	CURRENT STATUS 09/30/2000	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
Northwest (1)	SEVERE DROUGHT	-3.17	-3.08	-0.09	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central (2)	INCIPIENT DROUGHT	-0.72	-0.39	-0.33	NEAR NORMAL	MODERATELY WET	MODERATELY WET	MODERATELY WET
Northeast (3)	MILD DROUGHT	-1.49	-1.20	-0.29	NEAR NORMAL	MODERATELY WET	MODERATELY WET	NEAR NORMAL
West Central (4)	MODERATE DROUGHT	-2.13	-2.06	-0.07	NEAR NORMAL	NEAR NORMAL	MODERATELY WET	NEAR NORMAL
Central (5)	MILD DROUGHT	-1.65	-1.44	-0.21	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT DROUGHT	-0.94	-0.80	-0.14	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MODERATE DROUGHT	-2.41	-2.22	-0.19	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	SEVERE DROUGHT	-3.00	-3.00	0.00	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY
Southeast (9)	MODERATE DROUGHT	-2.31	-2.45	0.14	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY

KEETCH-BYRAM DROUGHT FIRE INDEX

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 10/2/2000	ANTICIPATED IMPACT
Ringling	Jefferson	South Central	776	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	773	
Grandfield	Tillman	Southwest	754	

19 stations with KBDI values above 700; 76 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 critically low due to persistent below normal precipitation and runoff. Considering overall trends as well as current flows, the most recent data (September 29, 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 *southeast* (Glover River in McCurtain County), *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 *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 8-12) calls for below normal precipitation for the entire state. Normal temperatures are expected for all of Oklahoma during the period. 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.

Crop Report

October 1 - Corn and sorghum producers made major progress harvesting their crops last week. This feverish pace has allowed the crops to be ahead of the five-year averages by 13 and 36 percent, respectively. While cooler temperatures were experienced in many areas, no measurable rainfall was reported. Most row crops and pastures showed little if any improvements due to the previous week's thunderstorms. More rainfall is desperately needed to replenish diminishing topsoil and subsoil moisture. Planting of fall small grains remains slow in most areas, although some producers have dusted in their crop in hopes of future rainfall. Farmers had 6.6 days suitable for fieldwork last week.

Dry planting of wheat, rye and oats continues in many locations. However, many producers have elected to wait for more adequate rainfall before planting. Wheat seeding progressed last week and is now at 23 percent planted, behind the five-year average of 35 percent. Wheat fields that have been dusted in will need future rains to provide good emergence of the crop. The corn crop is 88 percent harvested and sorghum 48 percent harvested. Sorghum conditions were varied, but the crop in the southwest has been the most adversely affected by the persistently dry conditions. The soybean harvest jumped ahead last week where maturity was reached and an additional 18 percent of the crop was harvested. Soybeans are in mostly poor condition. Digging and combining of peanuts continues on a limited scale and the crop is rated in mostly fair condition. The cotton harvest continues on a much wider scale with 18 percent of the crop harvested. Both alfalfa and all other hay are in mostly fair condition. The fourth cutting of alfalfa continues slowly and is 77 percent complete; the fifth cutting of alfalfa is 34 percent cut, as of late last week.

Livestock remain in mostly good to fair condition statewide. However, pond levels continue to decline statewide, requiring water to be hauled in critical areas. Herd reduction is occurring in some areas and future culling remains a good possibility if current conditions continue. Cattle auctions reported slightly above average marketings last week. Prices for all feeder steers less than 800 pounds averaged \$1 to nearly \$2 per cwt. higher than the preceding week. Insect pressures on cattle are light to moderate statewide. The moisture from the previous week brought improvement to some areas, although pasture conditions generally remain in mostly poor condition. Pasture conditions in the south continue to be the most unfavorable. Supplemental feeding continues in critical areas and prospects for winter pasture remains a major concern for producers.

Reservoir Storage

Reservoir storage levels throughout much of Oklahoma continue to decline. As of October 2, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 85.7 percent full, a 0.8 percent decrease over that measured on September 25, according to information from the [U.S. Army Corps of Engineers \(Tulsa District\)](#). Twenty-seven reservoirs have experienced lake level decreases since that time. In addition, all 31 reservoirs continue to operate at less than full capacity. Seven reservoirs (Lugert-Altus, Keystone, Tom Steed, Waurika, Great Salt Plains, Hulah and Hugo) are now below 80 percent capacity, compared to only three last week.

Storage in Selected Oklahoma Lakes & Reservoirs as of October 2, 2000				
Climate Division Lake or Reservoir	Conservation Storage (acre-feet)	Present Storage (acre-feet)	Percent of Storage conservation	flood
NORTH CENTRAL				
Fort Supply	13,900	12,314	88.6	0.00
Great Salt Plains	31,420	24,175	76.9	0.00
Kaw*	389,281	383,414	98.5	0.00
Keystone	505,381	347,511	68.8	0.00
Regional Totals/Averages	939,982	767,414	81.6	0.00
NORTHEAST				
Birch	19,225	16,307	84.8	0.00
Copan	43,400	36,050	83.1	0.00
Fort Gibson	365,200	341,640	93.5	0.00
Grand	1,672,000	1,486,440	88.9	0.00
Hudson	200,300	191,625	95.7	0.00
Hulah	31,160	24,223	77.7	0.00
Oologah	552,210	509,203	92.2	0.00
Skiatook	322,700	290,700	90.1	0.00
Regional Totals/Averages	3,206,195	2,896,188	90.3	0.00
WEST CENTRAL				
Canton	111,310	97,326	87.4	0.00
Foss	165,480	153,357	92.7	0.00
Regional Totals/Averages	276,790	250,683	90.6	0.00
CENTRAL				
Arcadia	27,520	24,089	87.5	0.00
Heyburn	7,105	5,834	82.1	0.00
Thunderbird	119,600	108,670	90.9	0.00
Regional Totals/Averages	154,225	138,593	89.9	0.00
EAST CENTRAL				
Eufaula*	2,368,223	1,952,083	82.4	0.00
Tenkiller	654,100	572,112	87.5	0.00
Regional Totals/Averages	3,022,323	2,524,195	83.5	0.00
SOUTHWEST				
Fort Cobb	80,010	74,162	92.7	0.00
Lugert-Altus	132,830	41,865	31.5	0.00
Tom Steed	88,970	62,108	69.8	0.00
Regional Totals/Averages	301,810	178,135	59.0	0.00
SOUTH CENTRAL				
Arbuckle	72,400	65,297	90.2	0.00
McGee Creek	113,930	100,098	87.9	0.00
Texoma*	2,548,034	2,238,132	87.8	0.00
Waurika*	199,440	145,998	73.2	0.00
Regional Totals/Averages	2,933,804	2,549,525	86.9	0.00
SOUTHEAST				
Broken Bow*	955,510	789,627	82.6	0.00
Hugo*	158,617	125,085	78.9	0.00
Pine Creek*	53,750	47,651	88.7	0.00
Sardis	274,330	255,114	93.0	0.00
Wister	60,162	50,529	84.0	0.00
Regional Totals/Averages	1,502,369	1,268,006	84.4	0.00
STATE TOTALS	12,337,498	10,572,739	85.7	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. No seeding flight operations were conducted from September 27 through October 2. The 2000 Program officially began operations on March 1, 2000.

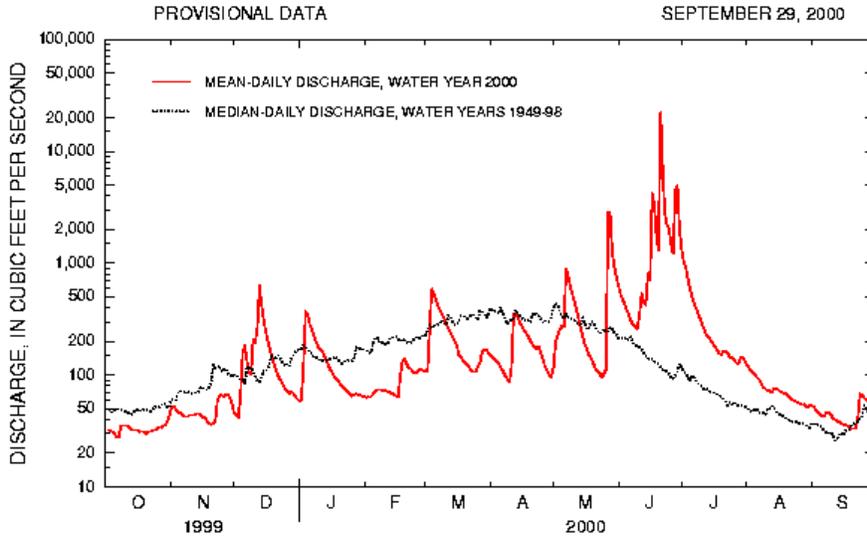
RECENT WEATHER MODIFICATION ACTIVITIES SEPTEMBER 27-OCTOBER 2, 2000					
Date/ Flight(s)	County Location(s)	Texas	Kansas	Hail	Rain
none					

* Information may not reflect the most recent operations.

Baron Fork at Eldon, Oklahoma

Station No. 07197000
Northeast Oklahoma

Drainage Area 307 square miles



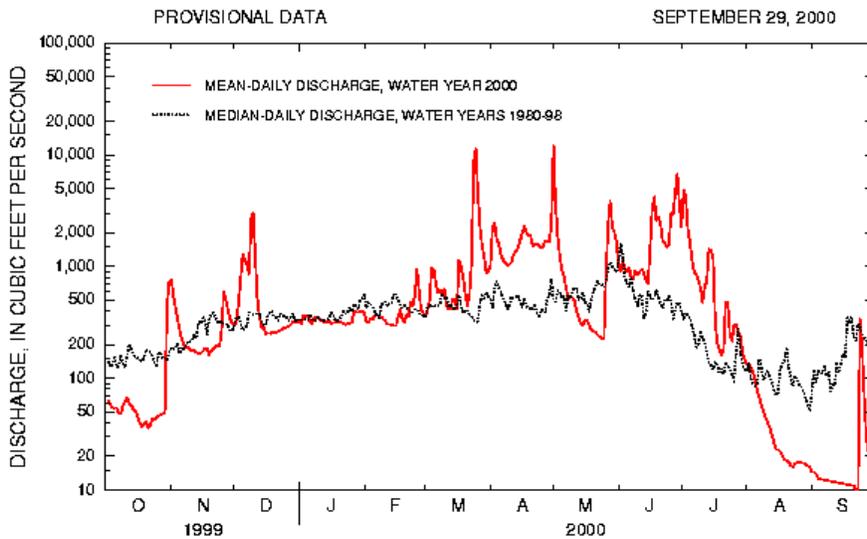
Comparison of daily discharges for water year 2000 and period of record for Baron Fork at Eldon, Oklahoma.

Data from U.S. Geological Survey

Canadian River at Purcell, Oklahoma

Station No. 07229200
Central Oklahoma

Drainage Area 25,939 square miles



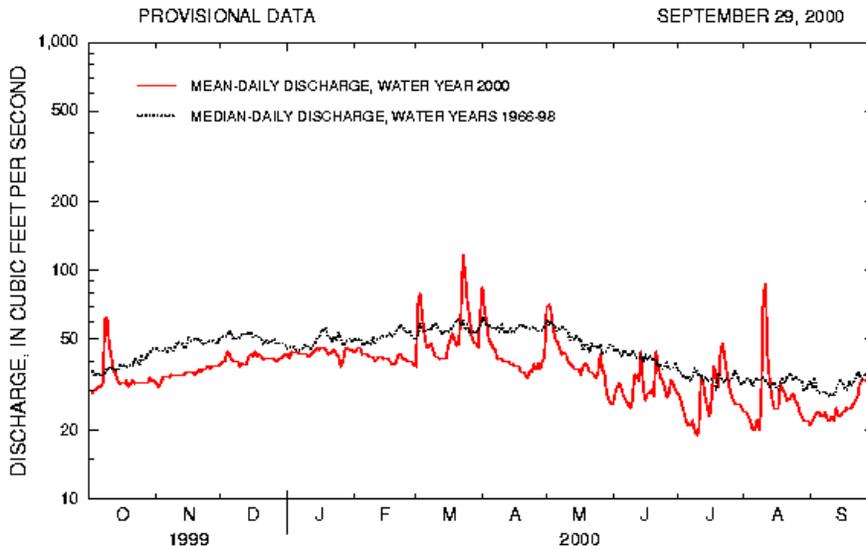
Comparison of daily discharges for water year 2000 and period of record for Canadian River at Purcell, Oklahoma.

Data from U.S. Geological Survey

Cimarron River near Forgan, Oklahoma

*Station No. 07156900
Northwest Oklahoma*

Drainage Area 8,536 square miles



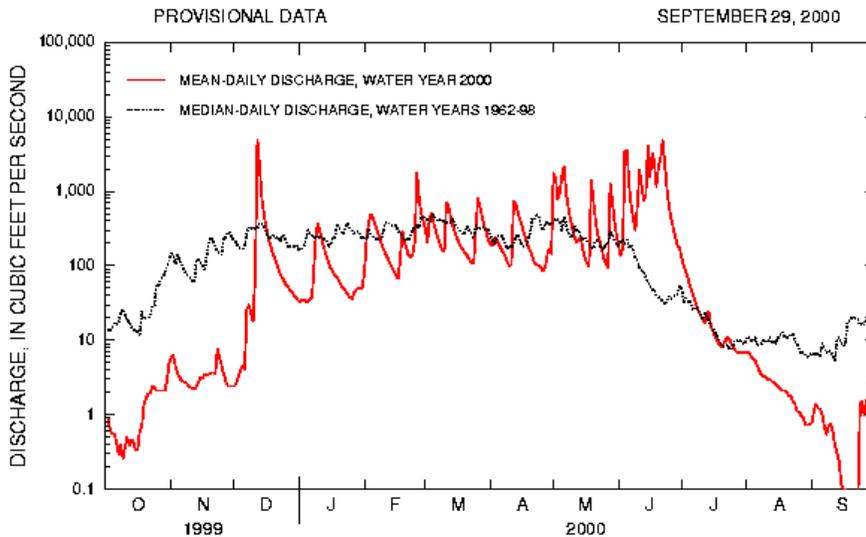
Comparison of daily discharges for water year 2000 and period of record for Cimarron River near Forgan, Oklahoma.

Data from U.S. Geological Survey

Glover River near Glover, Oklahoma

*Station No. 07337900
Southeast Oklahoma*

Drainage Area 315 square miles



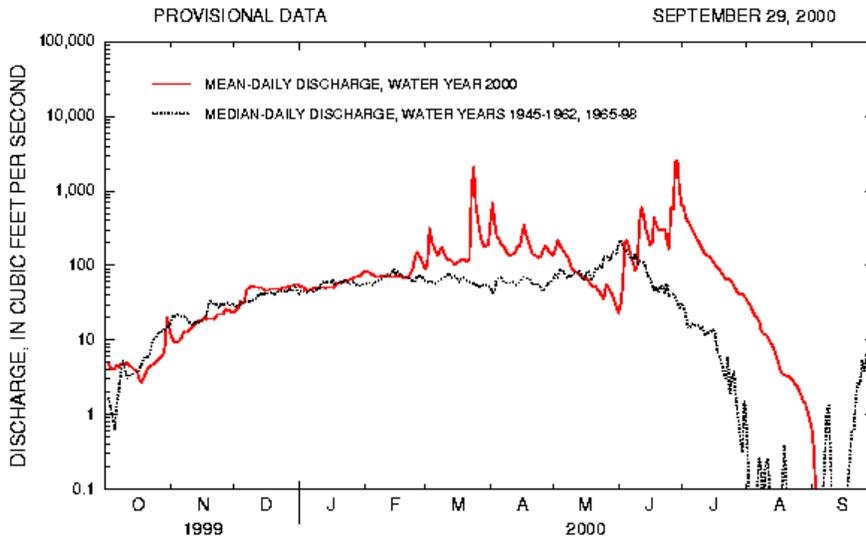
Comparison of daily discharges for water year 2000 and period of record for Glover River near Glover, Oklahoma.

Data from U.S. Geological Survey

North Fork Red River near Carter, Oklahoma

*Station No. 07301500
Southwest Oklahoma*

Drainage Area 2,337 square miles

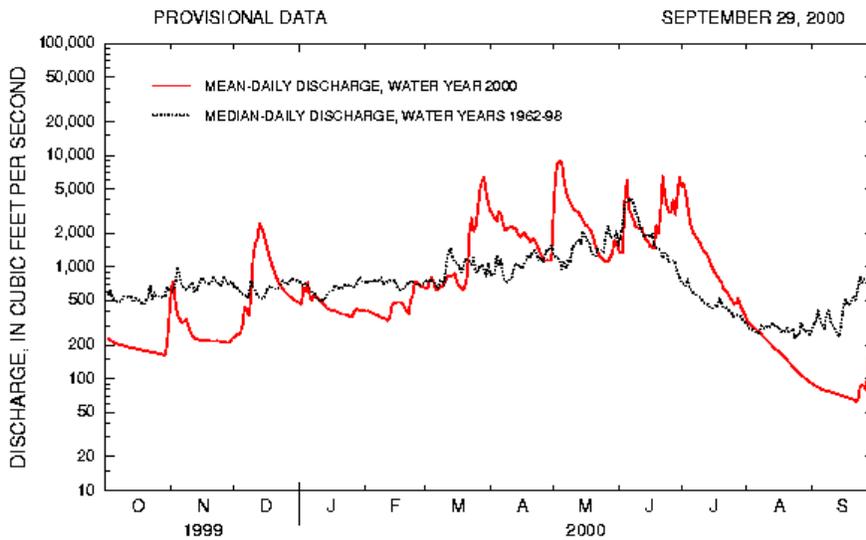


Comparison of daily discharges for water year 2000 and period of record for North Fork Red River near Carter, Oklahoma.

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

*Station No. 07331000
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