

# Oklahoma Water Resources Bulletin & Summary of Current Conditions



SEPTEMBER 26, 2001

OKLAHOMA WATER RESOURCES BOARD

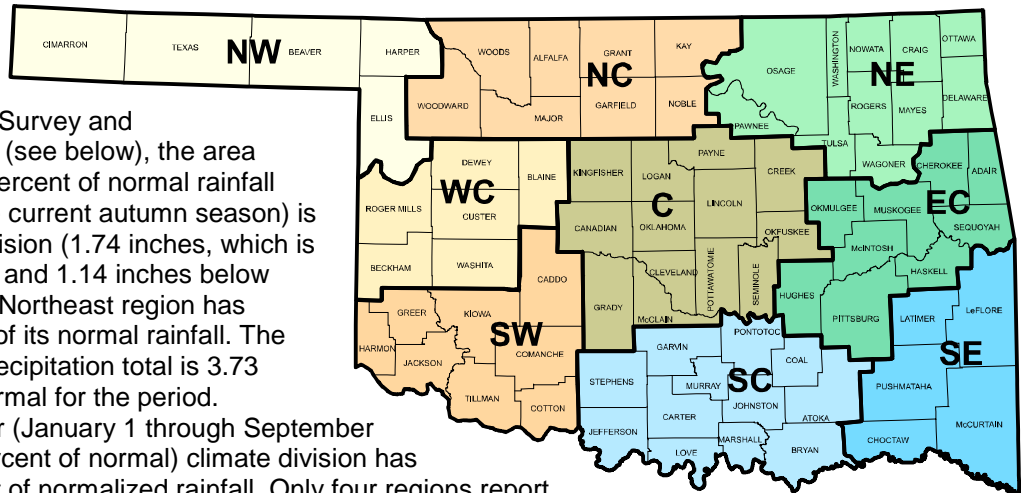
## Statewide Precipitation & General Summary

Much-needed rainfall continues to benefit much of Oklahoma. In less than two weeks, the South Central climate division has received more than five inches of precipitation.

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 September 1-24 (the current autumn season) is the Southwest climate division (1.74 inches, which is only 60 percent of normal and 1.14 inches below average). In addition, the Northeast region has received only 64 percent of its normal rainfall. The current state-averaged precipitation total is 3.73 inches, 118 percent of normal for the period.

For the calendar year (January 1 through September 24), the Northeast (85 percent of normal) climate division has received the least amount of normalized rainfall. Only four regions report precipitation deficits. The state-averaged total is 98 percent of normal.



### PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION

DIVISION (#)	CALENDAR YEAR			AUTUMN 2001			RAINFALL SINCE SEPTEMBER 12
	JANUARY 1 – SEPTEMBER 24, 2001			SEPTEMBER 1–24, 2001			
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	15.77	-0.71	96	1.51	-0.14	92	1.32
North Central (2)	21.24	-1.10	95	2.68	-0.01	100	2.17
Northeast (3)	25.79	-4.53	85	2.49	-1.41	64	1.57
West Central (4)	21.35	0.27	101	2.67	-0.00	100	1.78
Central (5)	26.28	-0.12	100	4.52	1.15	134	3.14
East Central (6)	34.09	2.32	107	4.18	0.53	114	1.63
Southwest (7)	19.40	-2.59	88	1.74	-1.14	60	0.78
South Central (8)	31.44	2.65	109	8.12	4.47	222	5.35
Southeast (9)	38.04	2.01	106	5.07	1.26	133	1.78
<b>STATE-AVERAGED</b>	<b>25.82</b>	<b>-0.47</b>	<b>98</b>	<b>3.73</b>	<b>0.58</b>	<b>118</b>	<b>2.26</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 (September 22 below), drought conditions have improved throughout Oklahoma. Only four regions remain in drought. The Northeast climate division is in the "moderate drought" category while the North Central, Southwest and West Central regions are in "mild drought." None of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since September 8; the Northeast climate division experienced the most modest increase during the period.

The latest monthly Standardized Precipitation Index (through August, below) indicates that much of Oklahoma is experiencing long-term dryness. Among the *selected* time periods (3-, 6-, 9- and 12-month SPI's), eight of nine climate divisions (all but the Southeast) report **moderately dry to very dry conditions** throughout the last 3 months; five regions indicate dryness during the past 6 months. The Northeast reports the most consistent dry period of any region throughout the past year.

The latest Keetch-Byram Drought Index (September 24, 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 improve. Statewide, only nine stations are currently above 600, generally indicative of more severe drought conditions (19 stations had a reading above 600 on September 13). Goodwell, in Northwest Oklahoma, reports the highest KBDI value (643), followed by Grandfield (Southwest; 642) and Hinton (Southwest; 633). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). However, effective September 20, Governor Keating has removed nine northwestern Oklahoma counties (Alfalfa, Beaver, Blaine, Dewey, Ellis, Garfield, Grant, Major and Woodward) from the Ban on Outdoor Burning. Only two counties (Harper and Texas) remain under the ban. Outdoor charcoal or gas grilling is permitted in a grill; organized fireworks displays permitted by a municipality or the State Fire Marshall's office are also allowed. Small grain stubble burning is allowed under certain conditions.

The Red Flag Fire Alert has been cancelled over a large part of northwest, north central and western Oklahoma. Only Beaver, Cimarron and Ellis Counties remain in the alert. Prolonged dry conditions have produced continued high fire danger across these counties and extra precautions are advised when burning anything outdoors. Avoid burning anything outdoors when winds exceed 20 mph.

PALMER DROUGHT SEVERITY INDEX					STANDARDIZED PRECIPITATION INDEX THROUGH AUGUST 2001			
CLIMATE DIVISION (#)	CURRENT STATUS 9/22/2001	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		9/22	9/8					
Northwest (1)	INCIPIENT MOIST SPELL	0.76	0.08	0.68	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	MODERATELY WET
North Central (2)	MILD DROUGHT	-1.70	-2.66	0.96	VERY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MODERATE DROUGHT	-2.66	-2.94	0.28	MODERATELY DRY	VERY DRY	MODERATELY DRY	MODERATELY DRY
West Central (4)	MILD DROUGHT	-1.39	-2.14	0.75	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	NEAR NORMAL	-0.32	-1.93	1.61	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
East Central (6)	NEAR NORMAL	0.05	-0.75	0.80	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MILD DROUGHT	-1.42	-1.59	0.17	VERY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
South Central (8)	MOIST SPELL	1.62	-1.21	2.83	MODERATELY DRY	VERY DRY	NEAR NORMAL	NEAR NORMAL
Southeast (9)	NEAR NORMAL	0.40	-0.06	0.46	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY WET

### KEETCH-BYRAM DROUGHT FIRE INDEX

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 9/24/2001	ANTICIPATED IMPACT
Goodwell	Texas	Northwest	643	<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.
Grandfield	Tillman	Southwest	642	
Hinton	Caddo	Southwest	633	

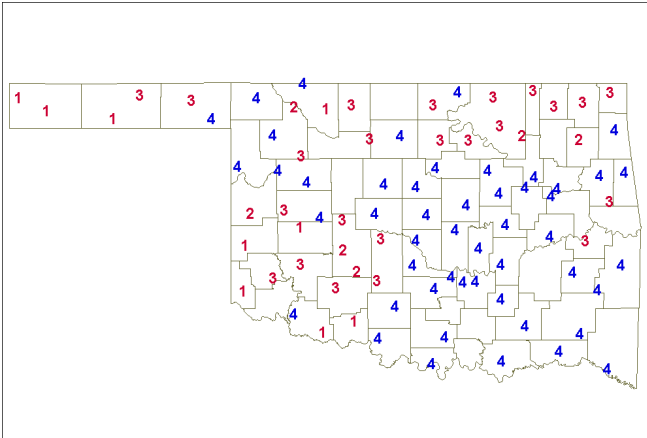
9 total stations above 600

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**  
**September 23, 2001**  
*(courtesy Oklahoma Climatological Survey)*

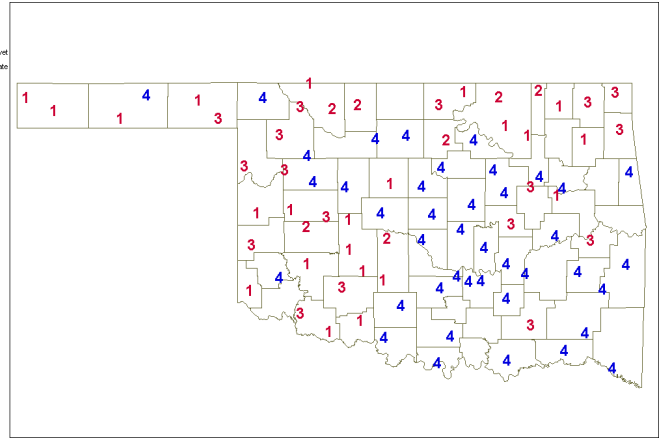
**5 cm**

Sun, Sep 23, 2001  
 0000 UTC  
 ## 5cm Cat. 4 = Moist/wet  
 ## 5cm Cat. 3 = Adequate  
 ## 5cm Cat. 2 = Limited  
 ## 5cm Cat. 1 = Dry  
 --- County borders (CR)



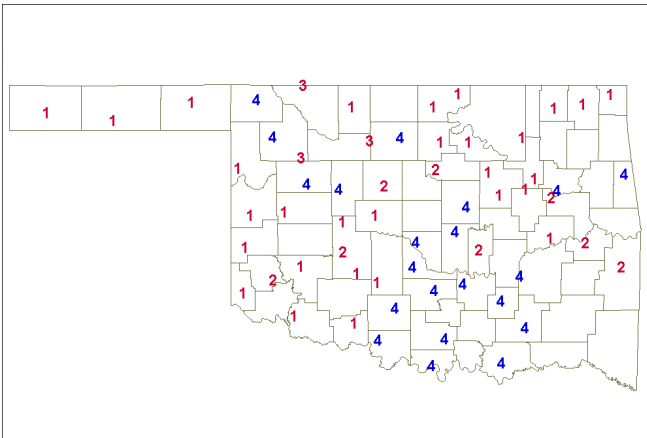
**25 cm**

Sun, Sep 23, 2001  
 0000 UTC  
 ## 25cm Cat. 4 = Moist/wet  
 ## 25cm Cat. 3 = Adequate  
 ## 25cm Cat. 2 = Limited  
 ## 25cm Cat. 1 = Dry  
 --- County borders (CR)



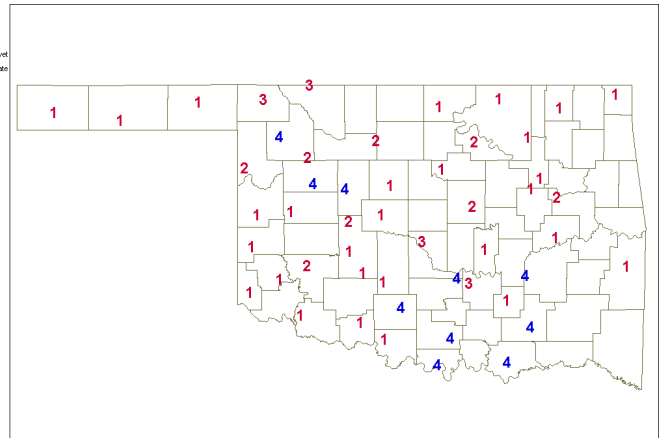
**60 cm**

Sun, Sep 23, 2001  
 0000 UTC  
 ## 60cm Cat. 4 = Moist/wet  
 ## 60cm Cat. 3 = Adequate  
 ## 60cm Cat. 2 = Limited  
 ## 60cm Cat. 1 = Dry  
 --- County borders (CR)



**75 cm**

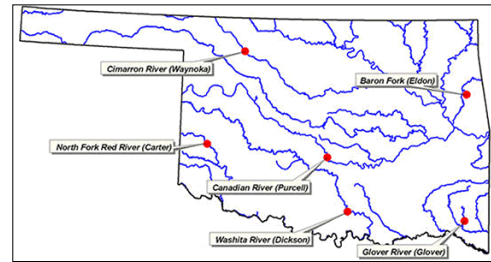
Sun, Sep 23, 2001  
 0000 UTC  
 ## 75cm Cat. 4 = Moist/wet  
 ## 75cm Cat. 3 = Adequate  
 ## 75cm Cat. 2 = Limited  
 ## 75cm Cat. 1 = Dry  
 --- County borders (CR)



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 near average (although flows remain spiked in many areas due to the recent rainfall). Considering overall trends as well as current flows, the most recent data (September 21, 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 Woods County); and **near average flow** in *southeast* (Glover River McCurtain County), *southwest* (North Fork/Red River Beckham County), *central* (Canadian River McClain County), *northeast* (Baron Fork Cherokee County) and *south central* (Washita River Carter County) Oklahoma.



### Weather Forecast

The National Weather Service 8- to 14-day outlook (October 2-8) calls for below normal precipitation for all but the general northwest and Panhandle regions of Oklahoma, where normal rainfall is expected. Normal temperatures are likely to prevail for all but the northwest, where above normal temperatures are anticipated.

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

September 24 -- Most of Oklahoma received additional rainfall last week which further replenished soil moisture supplies. Large amounts of precipitation were received in some areas. Field conditions were wet in many areas, slowing planting and harvesting. Some farmers were able to apply fertilizer to pastures and wheat fields during the week. Pastures continued to improve as growth and green-up was experienced. Insects and worms have caused problems in some areas. Farmers had 3.9 days suitable for fieldwork during the week.

Land preparation and planting advancement continued where conditions allowed. Some delays occurred where fields were too wet, but planting in most areas was expected to resume soon. As of Sunday, 92 percent of the wheat ground had been prepared for seeding, ahead of the five-year average. Thirty-eight percent of the state's intended wheat acreage had been planted by week's end. Some small grain fields were emerging in areas where moisture supplies were favorable. One-fifth of the intended wheat acreage had emerged by week's end. Harvest activities were interrupted by the wet weather with progress limited to areas that were dry enough to operate equipment. Corn harvest advanced primarily in the Panhandle and was 70 percent complete statewide.

Sorghum and soybeans stood at 33 and 46 percent harvested, respectively, both well ahead of normal pace. As of Sunday, half of the sorghum acreage had reached maturity, ahead of normal for this time of year. The cotton crop was rated in mostly fair to good condition. Forty-seven percent of the state's cotton was opening bolls with harvest not yet underway. Peanuts mature totaled 30 percent with only a few fields already dug. The additional precipitation has encouraged growth in many hay fields. Another hay cutting may be possible in some areas before winter arrives. Both alfalfa and all other hay conditions improved from the previous week and hay cutting and baling continued where possible. The fourth and fifth cuttings of alfalfa reached 67 and 28 percent cut, respectively. By week's end, the second cutting of all other hay was two-thirds complete.

Some producers were still supplementing feed to livestock, but less frequently with pasture conditions improving. Livestock conditions were rated mostly good to fair. Insect pressure on cattle was rated mostly moderate to light, but activity was heavy in the southwest. Cattle auctions reported average marketings for the week. Pastures continued to improve in many parts of the state and many producers have fertilized grasses for extra forage production this fall due to the shortage of hay. There are areas where moisture is still inadequate and pastures continue to suffer. Range and pasture conditions were rated mostly fair to poor statewide.

### Reservoir Storage

Reservoir storage levels continue to rebound from the summer dry period. As of September 25, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 91.9 percent full, a 2.2 percent increase from that recorded on September 12, according to information from the U.S. Army Corps of Engineers (Tulsa District). Only 12 reservoirs have experienced lake level decreases since that time. Twenty-three reservoirs are currently operating at less than full capacity (compared to 25 two weeks ago); four reservoirs (**Lugert-Altus, only 37.1 percent**; Hulah, 67 percent; Canton, 72.9 percent; and Birch, 77.8 percent) are below 80 percent capacity.

<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>				
<i>09/25/2001</i>				
<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	13,474	96.9	0.00
Great Salt Plains	31,420	26,805	85.3	0.00
Kaw*	386,143	378,119	97.9	0.00
<b>Regional Totals/Averages</b>	<b>431,463</b>	<b>418,398</b>	<b>97.0</b>	<b>0.00</b>
<b>NORTHEAST</b>				
Birch	19,225	14,952	77.8	0.00
Copan	43,400	35,477	81.7	0.00
Fort Gibson	365,200	365,200	100.0	0.29
Grand	1,672,000	1,521,090	91.0	0.00
Hudson	200,300	200,300	100.0	6.20
Hulah	31,160	20,886	67.0	0.00
Keystone	278,122	272,864	98.1	0.00
Oologah	552,210	547,678	99.2	0.00
Skiatook	322,700	286,075	88.7	0.00
<b>Regional Totals/Averages</b>	<b>3,484,317</b>	<b>3,264,522</b>	<b>93.7</b>	<b>0.72</b>
<b>WEST CENTRAL</b>				
Canton	111,310	81,132	72.9	0.00
Foss	165,480	152,773	92.3	0.00
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>233,905</b>	<b>84.5</b>	<b>0.00</b>
<b>CENTRAL</b>				
Arcadia	27,520	27,520	100.0	1.24
Heyburn	7,105	6,011	84.6	0.00
Thunderbird	119,600	119,120	99.6	0.00
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>152,651</b>	<b>99.0</b>	<b>0.41</b>
<b>EAST CENTRAL</b>				
Eufaula*	2,314,581	2,039,882	88.1	0.00
Tenkiller	654,100	571,184	87.3	0.00
<b>Regional Totals/Averages</b>	<b>2,968,681</b>	<b>2,611,066</b>	<b>88.0</b>	<b>0.00</b>
<b>SOUTHWEST</b>				
Fort Cobb	80,010	75,297	94.1	0.00
Lugert-Altus	132,830	49,312	37.1	0.00
Tom Steed	88,970	71,672	80.6	0.00
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>196,281</b>	<b>65.0</b>	<b>0.00</b>
<b>SOUTH CENTRAL</b>				
Arbuckle	72,400	72,400	100.0	20.17
McGee Creek	113,930	113,203	99.4	0.00
Texoma*	2,539,946	2,460,916	96.9	0.00
Waurika*	190,200	179,841	94.6	0.00
<b>Regional Totals/Averages</b>	<b>2,916,476</b>	<b>2,826,360</b>	<b>96.9</b>	<b>5.04</b>
<b>SOUTHEAST</b>				
Broken Bow*	958,180	808,525	84.4	0.00
Hugo*	158,617	158,617	100.0	0.86
Pine Creek*	56,986	56,986	100.0	0.00
Sardis	274,330	274,330	100.0	6.22
Wister	60,162	60,162	100.0	0.69
<b>Regional Totals/Averages</b>	<b>1,508,275</b>	<b>1,358,620</b>	<b>90.1</b>	<b>1.55</b>
<b>STATE TOTALS</b>	<b>12,042,037</b>	<b>11,061,803</b>	<b>91.9</b>	<b>1.15</b>
* indicates seasonal pool operation; actual storage figures/percentages may vary.				

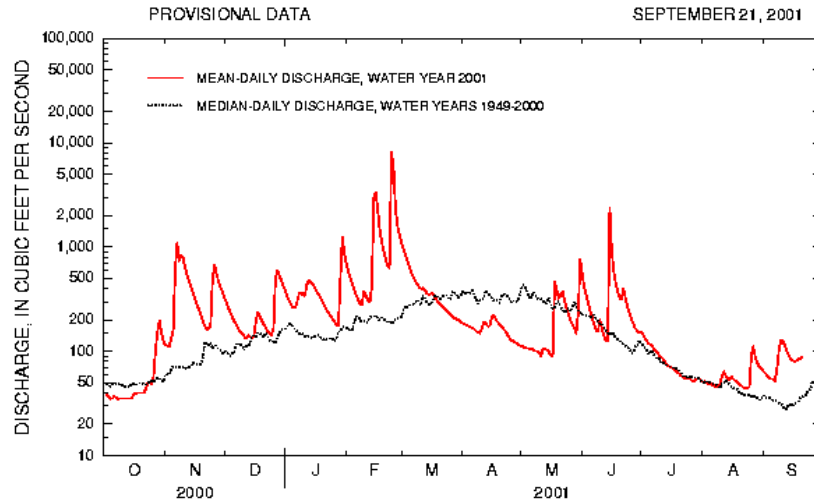
### Baron Fork at Eldon

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

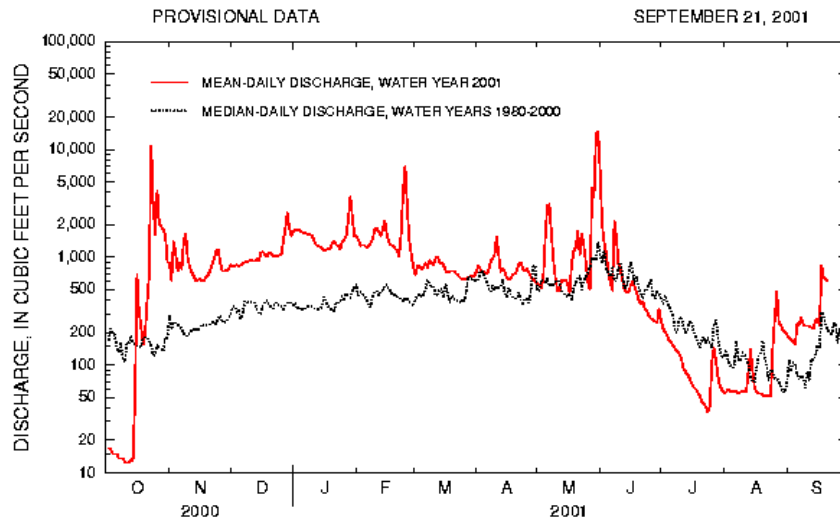
### Canadian River at Purcell

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.

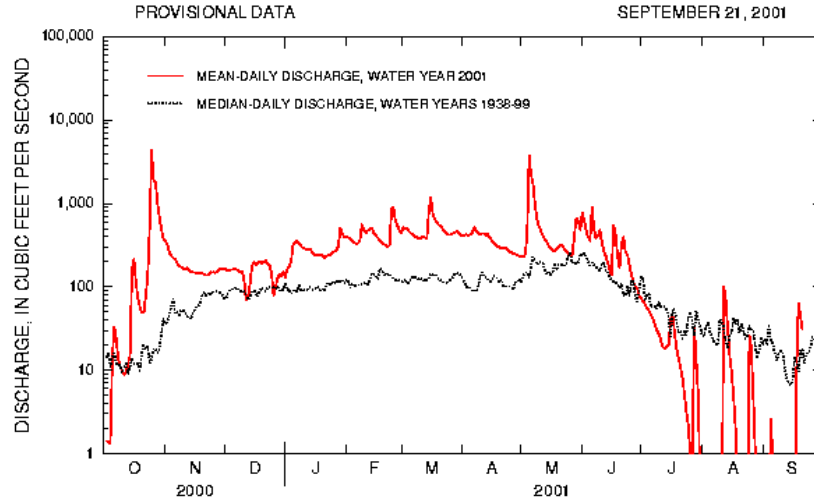
Data from U.S. Geological Survey

### 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.

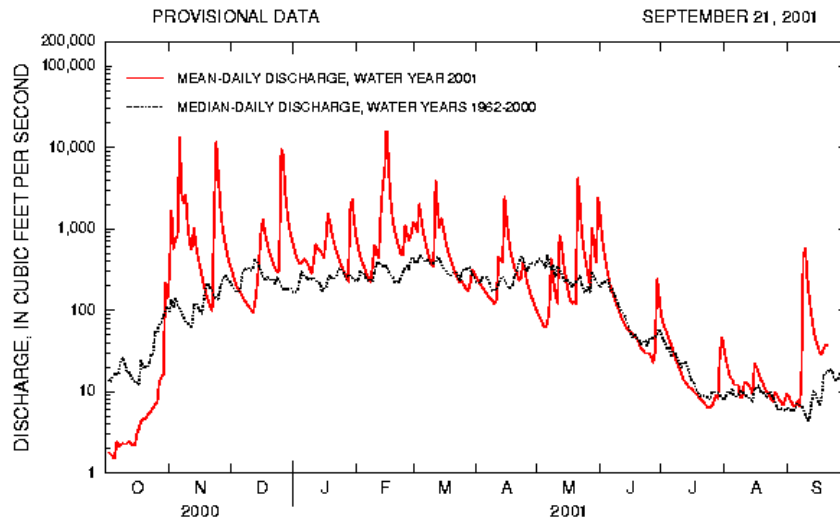
Data from U.S. Geological Survey

### 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

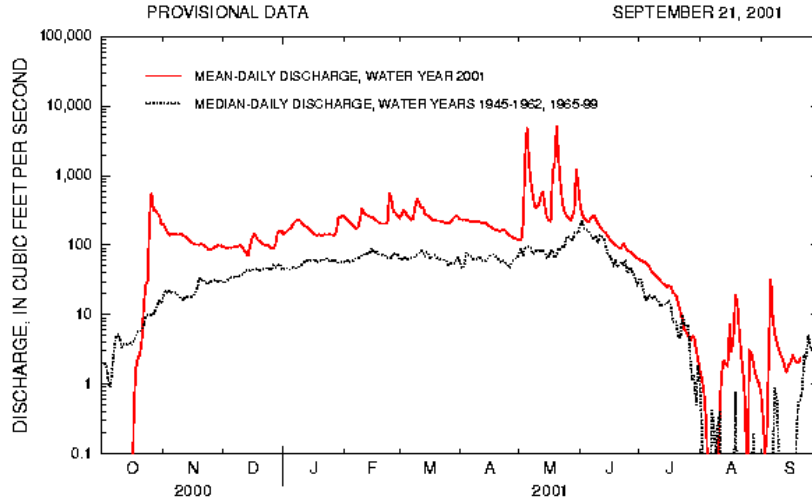


### North Fork of the Red River near Carter

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.

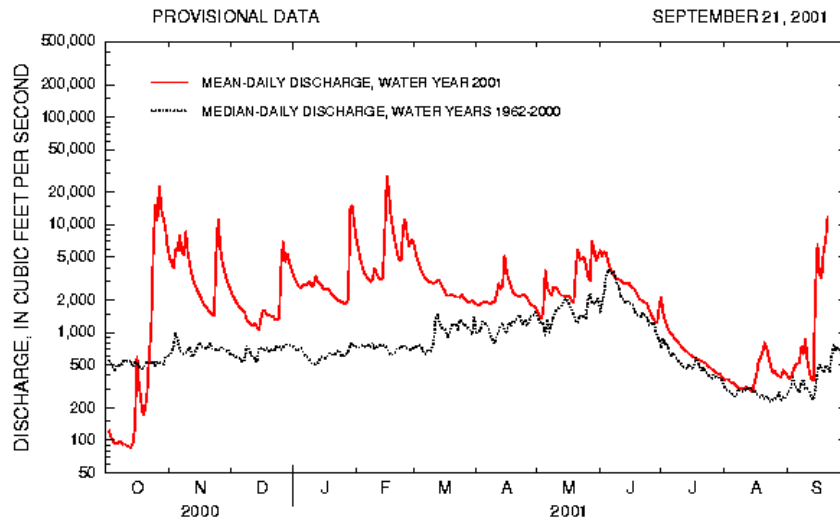
Data from U.S. Geological Survey

### 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