

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



MARCH 27, 2002

OKLAHOMA WATER RESOURCES BOARD

### Statewide Precipitation & General Summary

Although last week's precipitation benefited much of the state, rainfall deficits continue throughout much of northwest Oklahoma.

According to preliminary Mesonet weather station data provided by the Oklahoma Climatological Survey and National Weather Service (see below), the area receiving the lowest percent of normal rainfall from October 1, 2001 through March 25, 2002 (the current water year) is the Northwest climate division (1.63 inches, only 29 percent of normal precipitation). In all, three regions have received less than one-half of their normals for the period. The current state-averaged precipitation total is 11.3 inches, 81 percent of normal for the period.

For the current growing season (March 1—25), six climate divisions report precipitation deficits, including the Northwest region at a paltry 3 percent of normal. In addition, the North Central and West Central climate divisions report only 20 and 25 percent of normal, respectively. The state-averaged total is 2.29 inches (91 percent of normal).



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	WATER YEAR OCTOBER 1, 2001—MARCH 25, 2002			WARM GROWING SEASON MARCH 1—25, 2002			RAINFALL SINCE MARCH 3
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	1.63	-4.09	29	0.03	-1.28	3	0.02
North Central (2)	4.38	-5.98	42	0.43	-1.74	20	0.39
Northeast (3)	14.17	-1.87	88	1.98	-0.98	67	1.70
West Central (4)	3.88	-5.51	41	0.48	-1.45	25	0.46
Central (5)	10.40	-3.92	73	1.95	-0.67	74	1.88
East Central (6)	19.87	0.47	102	4.63	1.33	140	4.34
Southwest (7)	6.51	-3.80	63	1.50	-0.32	82	1.42
South Central (8)	14.61	-2.24	87	3.42	0.55	119	3.24
Southeast (9)	28.07	4.41	119	6.88	3.26	190	6.55
STATE-AVERAGED	11.30	-2.63	81	2.29	-0.22	91	2.15

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 (March 23, below), drought conditions have generally improved in the central region, but have worsened in western Oklahoma. Three regions—the North Central, West Central, and Northwest climate divisions (all experiencing “moderate drought”)—are classified in a drought category. Four of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since March 2. The greatest decrease occurred in the Northwest climate division.

The latest monthly Standardized Precipitation Index (through February, below) indicates long-term dryness throughout the past 6 to 12 months, especially in northern Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), **the Northwest and North Central climate divisions report “extremely dry” conditions throughout the last 9-month period.** Also particularly dry are the West Central and North Central regions, which are “very dry” over the past 9 and 12 months, respectively. Among periods beyond one year, only the 15- and 18-month SPIs (North Central and Northeast, both “moderately dry”) report dry conditions for any area of Oklahoma.

The latest Keetch-Byram Drought Index (March 25, 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 throughout much of Oklahoma have improved slightly within the past week. Statewide, only one station is currently above 600, generally indicative of more severe drought conditions (one station also had a reading above 600 on February 25). Goodwell, in Northwest Oklahoma (663), retains the highest KBDI value, followed by Hooker (Northwest; 595), Beaver (Northwest; 590), and Buffalo (Northwest; 590). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). However, **very high to extreme fire danger persists throughout western Oklahoma.** A Red Flag Fire Alert, previously in effect for much of Oklahoma has been reduced to 15 western and Panhandle counties, including Texas County, which remains in the Governor’s Ban on Outdoor Burning.

Palmer Drought Severity Index					Standardized Precipitation Index Through February 2001			
CLIMATE DIVISION (#)	CURRENT STATUS 3/23/2002	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		3/23	3/2					
Northwest (1)	MODERATE DROUGHT	-2.19	-1.13	-1.06	NEAR NORMAL	MODERATELY DRY	EXTREMELY DRY	MODERATELY DRY
North Central (2)	MODERATE DROUGHT	-2.31	-1.68	-0.63	NEAR NORMAL	MODERATELY DRY	EXTREMELY DRY	VERY DRY
Northeast (3)	INCIPIENT DROUGHT	-0.80	-0.59	-0.21	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
West Central (4)	MODERATE DROUGHT	-2.07	-1.61	-0.46	NEAR NORMAL	MODERATELY DRY	VERY DRY	MODERATELY DRY
Central (5)	MOIST SPELL	1.07	1.03	0.04	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	UNUSUAL MOIST SPELL	2.00	1.57	0.43	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	NEAR NORMAL	-0.46	-0.88	0.42	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY
South Central (8)	UNUSUAL MOIST SPELL	2.30	1.85	0.45	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	VERY MOIST SPELL	3.20	2.01	1.19	MODERATELY WET	MODERATELY WET	NEAR NORMAL	NEAR NORMAL

Keetch-Byram Drought Fire Index				
MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 3/25/2002	ANTICIPATED IMPACT
Goodwell	Texas	Northwest	663	<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.
Hooker	Texas	Northwest	595	
Beaver	Beaver	Northwest	590	
Buffalo	Harper	Northwest	590	

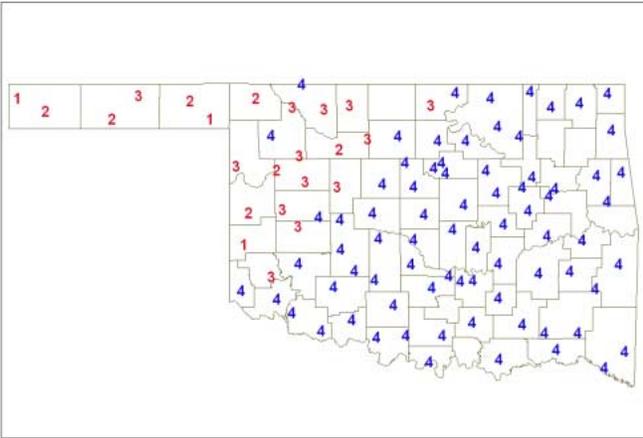
1 total station above 600

*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**  
**March 23, 2002**  
*(courtesy Oklahoma Climatological Survey)*

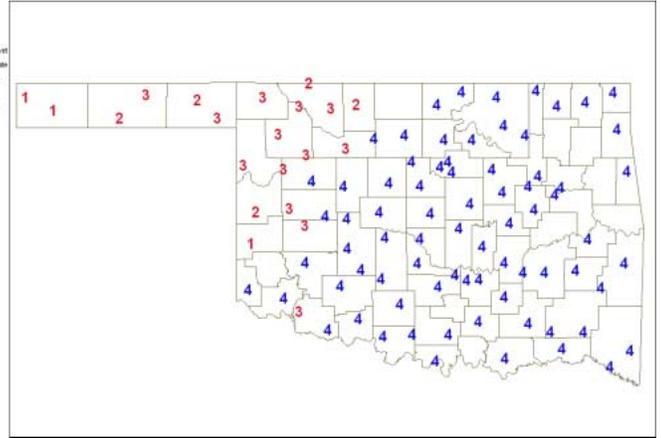
5 cm

Soil\_Mar\_23\_2002  
 0000 UTC  
 ## Soil Cat. 4 = Moist/Wet  
 ## Soil Cat. 3 = Adequate  
 ## Soil Cat. 2 = Limited  
 ## Soil Cat. 1 = Dry  
 --- County borders (OK)



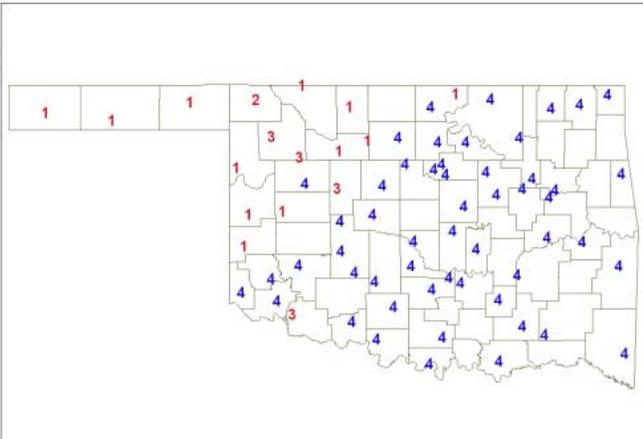
25 cm

Soil\_Mar\_23\_2002  
 0000 UTC  
 ## 25cm Cat. 4 = Moist/Wet  
 ## 25cm Cat. 3 = Adequate  
 ## 25cm Cat. 2 = Limited  
 ## 25cm Cat. 1 = Dry  
 --- County borders (OK)



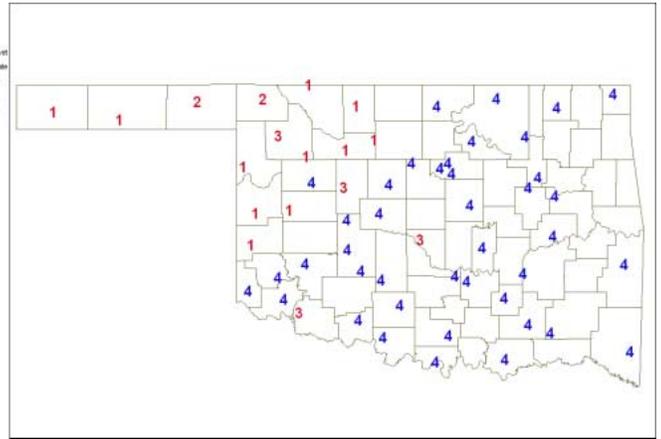
60 cm

Soil\_Mar\_23\_2002  
 0000 UTC  
 ## 60cm Cat. 4 = Moist/Wet  
 ## 60cm Cat. 3 = Adequate  
 ## 60cm Cat. 2 = Limited  
 ## 60cm Cat. 1 = Dry  
 --- County borders (OK)



75 cm

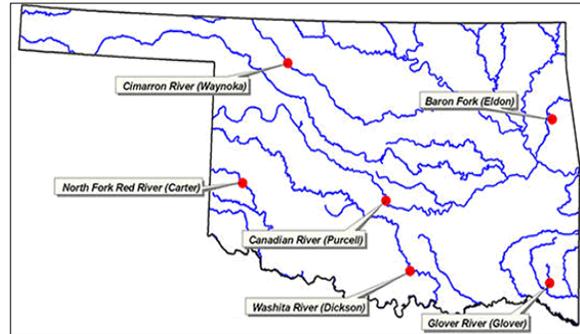
Soil\_Mar\_23\_2002  
 0000 UTC  
 ## 75cm Cat. 4 = Moist/Wet  
 ## 75cm Cat. 3 = Adequate  
 ## 75cm Cat. 2 = Limited  
 ## 75cm Cat. 1 = Dry  
 --- County borders (OK)



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, flows in state rivers and streams are generally about average across Oklahoma, although flows are spiked in some areas due to increased runoff from last week's storm event. Considering overall trends as well as current flows, the most recent data (March 25, 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, 2001 compared to long-term, normal/median daily discharges) indicate **below average flow** in *south central* (Washita River, Carter County) Oklahoma; and **near average flow** in the *southeast* (Glover River, McCurtain County), *northeast* (Baron Fork, Cherokee County), *northwest* (Cimarron River, Woods County), *southwest* (North Fork/Red River, Beckham County), and *central* (Canadian River, McClain County) regions.



### Weather Forecast

The National Weather Service 8- to 14-day outlook (April 2-8) calls for normal precipitation for Oklahoma. Normal temperatures are anticipated for generally all but the northwestern region of the state, where above normal temperatures should prevail.

Current models indicate that positive (warmer than normal) sub-surface temperature (SST) anomalies continue to arise in the equatorial Pacific Ocean and warm episode conditions are likely to develop over the next three months. The impacts that this warming, a potential El Niño event, will have on global temperature and precipitation patterns depend to a large degree on its intensity, although Climate Prediction Center officials predict it will most likely be weak or moderate. El Niños, warm water patterns that increase the chances for cooler, wetter conditions in the southern U.S. (including Oklahoma), generally occur every two to seven years.

### Crop Report

March 25—Although precipitation was recorded in all regions of Oklahoma last week, the Panhandle and north central areas received only minimal rainfall amounts and remain well behind the seasonal average. Topsoil moisture supplies showed some improvement with 60 percent rated short or very short this week compared with 76 percent the previous week. Subsoil moisture supplies also improved with 68 percent short or very short compared with 74 percent the previous week. Reports were a little more optimistic this week because of the rain, but the north central, west central, and Panhandle regions continue to be very dry. Some counties in north central and southwest Oklahoma are still battling army worms. Statewide, there were 3.6 days suitable for fieldwork.

Most areas reported some improvement or at least expected some improvement in wheat conditions. Statewide, 48 percent of the wheat was rated in poor or very poor condition compared with 55 percent the previous week. Wheat jointing increased 16 points to 28 percent of the crop last week, but was still well off the 5-year average pace of 54 percent. Row crop seedbed preparation made some progress but slowed while producers waited for fields to dry out. Corn seedbed preparation improved 12 points from the previous week to 37 percent complete with eastern districts leading the state. Corn planted was 6 percent complete compared to 5 percent last year at this time. Sorghum seedbed preparation was 18 percent complete, just ahead of the 5-year average of 15 percent. Cotton seedbed preparation was running well ahead of the average pace with 45 percent complete.

Livestock conditions stayed about the same as the previous week with 80 percent rated in fair to excellent condition compared with 78 percent the previous week. Cattle auctions reported marketings pulling back from the heavy marketings of the previous week. Statewide, range and pasture conditions were improved slightly with 61 percent rated as poor or very poor compared with 62 percent the previous week. The state remains divided with western areas reporting the lower conditions. Areas in north central Oklahoma will produce very little forage this year unless they receive rainfall soon.

### Reservoir Storage

Except for a few isolated areas, reservoir storage levels in Oklahoma remain steady. As of March 25, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 96.8 percent full, a 1.0 percent increase from that recorded on March 4, according to information from the U.S. Army Corps of Engineers (Tulsa District). Only six reservoirs have experienced lake level decreases since that time. Twelve reservoirs are currently operating at less than full capacity (compared to 18 three weeks ago); four reservoirs (including **Hula, only 32.5 percent**, and **Lugert-Altus, 46.5 percent**) remain below 80 percent capacity.

<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>				
<i>03/25/2002</i>				
<i>Climate Division</i>	<i>Conservation Storage</i>	<i>Present Storage</i>	<i>Percent of Storage</i>	
<i>Lake or Reservoir</i>	<i>(acre-feet)</i>	<i>(acre-feet)</i>	<i>conservation</i>	<i>flood</i>
<b>North Central</b>				
Fort Supply	13,900	13,900	100.0	1.51
Great Salt Plains	31,420	31,420	100.0	0.73
Kaw*	386,143	382,260	99.0	0.00
<b>Regional Totals/Averages</b>	<b>431,463</b>	<b>427,580</b>	<b>99.1</b>	<b>0.75</b>
<b>Northeast</b>				
Birch	19,225	15,780	82.1	0.00
Copan	43,400	31,321	72.2	0.00
Fort Gibson	365,200	365,200	100.0	1.28
Grand	1,672,000	1,537,000	91.9	0.00
Hudson	200,300	200,300	100.0	7.88
Hulah	31,160	10,136	32.5	0.00
Keystone	278,122	278,122	100.0	0.00
Oologah	552,210	552,210	100.0	0.97
Skiatook	322,700	268,642	83.2	0.00
<b>Regional Totals/Averages</b>	<b>3,484,317</b>	<b>3,258,711</b>	<b>93.5</b>	<b>1.13</b>
<b>West Central</b>				
Canton	111,310	93,942	84.4	0.00
Foss	165,480	153,033	92.5	0.00
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>246,975</b>	<b>89.2</b>	<b>0.00</b>
<b>Central</b>				
Arcadia	27,520	27,520	100.0	1.67
Heyburn	7,105	7,105	100.0	1.21
Thunderbird	119,600	119,600	100.0	4.30
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>154,225</b>	<b>100.0</b>	<b>2.39</b>
<b>East Central</b>				
Eufaula*	2,314,581	2,314,581	100.0	19.81
Tenkiller	654,100	654,100	100.0	11.73
<b>Regional Totals/Averages</b>	<b>2,968,681</b>	<b>2,968,681</b>	<b>100.0</b>	<b>15.77</b>
<b>Southwest</b>				
Fort Cobb	80,010	77,517	96.9	0.00
Lugert-Altus	132,830	61,816	46.5	0.00
Tom Steed	88,970	59,920	67.3	0.00
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>199,253</b>	<b>66.0</b>	<b>0.00</b>
<b>South Central</b>				
Arbuckle	72,400	72,400	100.0	4.96
McGee Creek	113,930	113,930	100.0	46.98
Texoma*	2,418,626	2,418,626	100.0	4.71
Waurika*	190,200	175,893	92.5	0.00
<b>Regional Totals/Averages</b>	<b>2,795,156</b>	<b>2,780,849</b>	<b>99.5</b>	<b>14.16</b>
<b>Southeast</b>				
Broken Bow*	918,070	918,070	100.0	41.27
Hugo*	182,287	182,287	100.0	39.86
Pine Creek*	59,278	59,278	100.0	40.10
Sardis	274,330	274,330	100.0	47.08
Wister	60,162	60,162	100.0	75.79
<b>Regional Totals/Averages</b>	<b>1,494,127</b>	<b>1,494,127</b>	<b>100.0</b>	<b>48.82</b>
<b>State Totals</b>	<b>11,906,569</b>	<b>11,530,401</b>	<b>96.8</b>	<b>11.35</b>

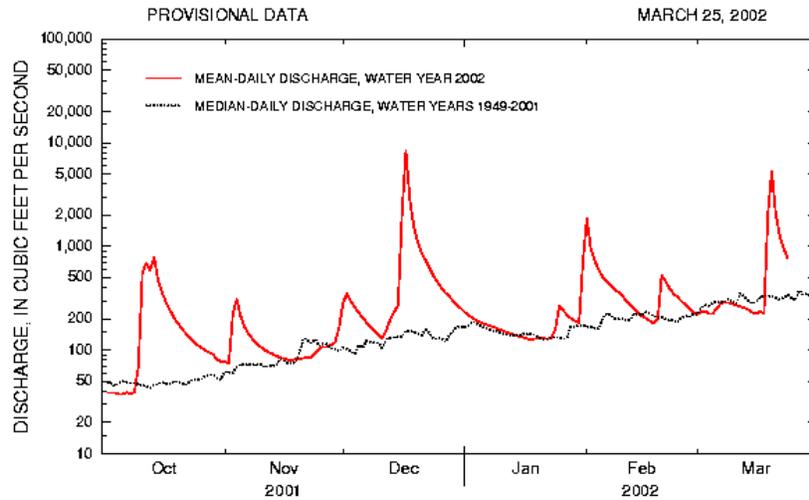
\* indicates seasonal pool operation; actual storage figures/percentages may vary.

### 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 2002 and period of record for Baron Fork at Eldon, Oklahoma.

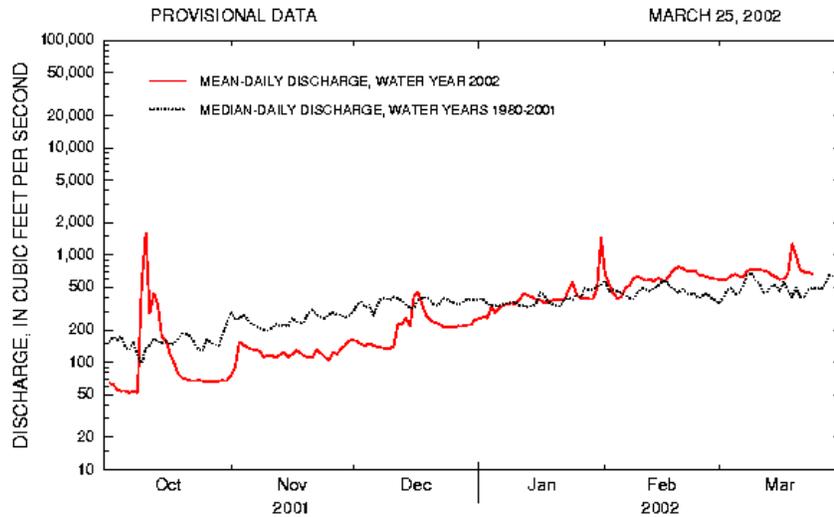
Data from U.S. Geological Survey

### 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 2002 and period of record for Canadian River at Purcell, Oklahoma.

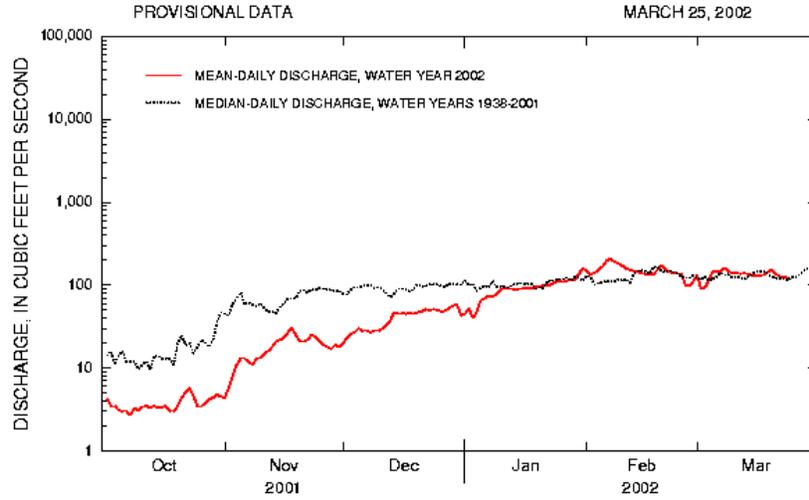
Data from U.S. Geological Survey

### 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 2002 and period of record for Cimarron River near Waynoka, Oklahoma.

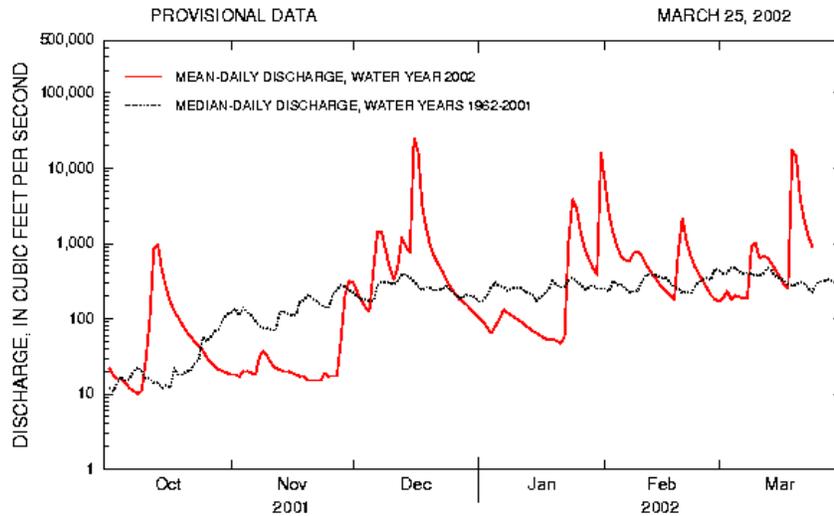
Data from U.S. Geological Survey

### 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 2002 and period of record for Glover River near Glover, Oklahoma.

Data from U.S. Geological Survey

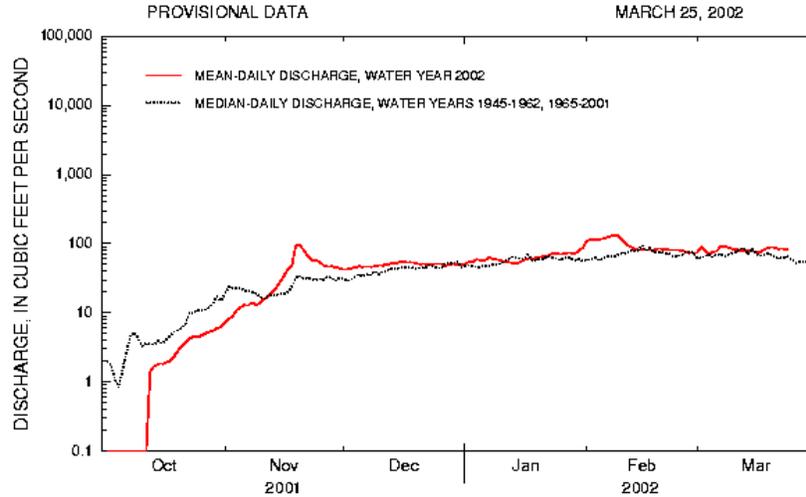
### North Fork of the Red River near Carter

*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 2002 and period of record for North Fork Red River near Carter, Oklahoma.

Data from U.S. Geological Survey

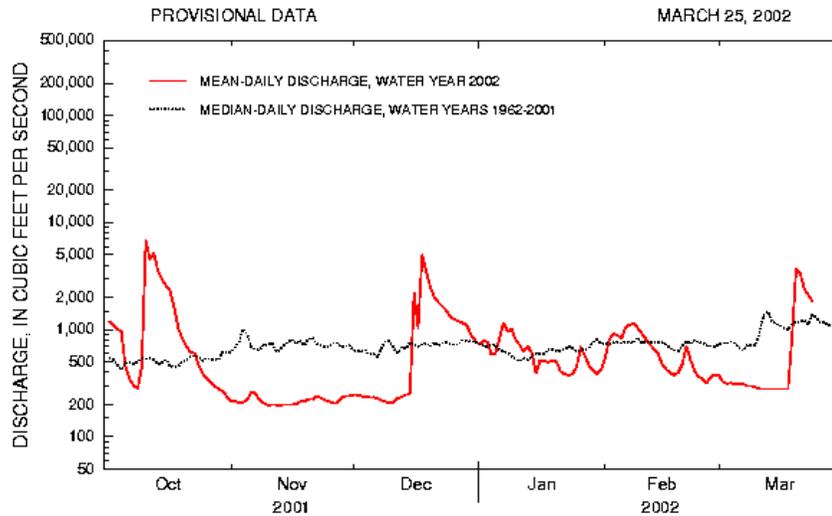
### Washita River near Dickson

*Washita River near Dickson, Oklahoma*

*Station No. 07331000*

*South-Central Oklahoma*

*Drainage Area 7,202 square miles*



Comparison of daily discharges for water year 2002 and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey