

# Oklahoma Water Resources Bulletin

## & Summary of Current Conditions



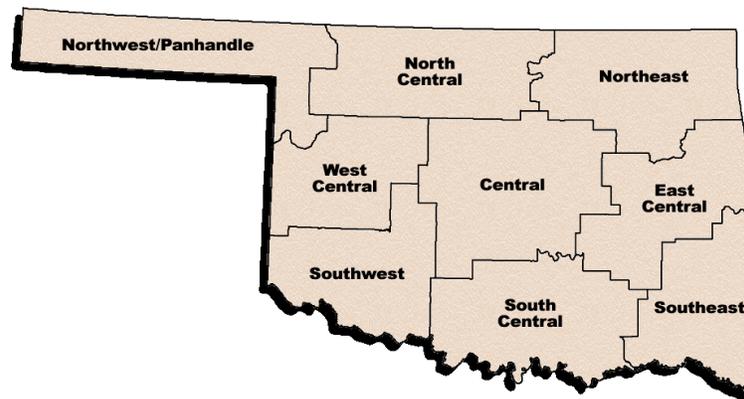
JANUARY 9, 2002

OKLAHOMA WATER RESOURCES BOARD

### Statewide Precipitation & General Summary

Dry conditions continue to proliferate in many areas of northern and western Oklahoma. According to preliminary Mesonet weather station data provided by the Oklahoma Climatological Survey and National Weather Service (see below), the areas receiving the lowest percent of normal rainfall from September 1 through January 7 (the current growing season) are the Northwest and Southwest climate divisions (both experiencing less than 50 percent of normal precipitation). The current state-averaged precipitation total is 9.87 inches, 87 percent of normal for the period.

For the extended calendar year (January 1, 2001 through January 7, 2002), the Southwest climate division (78 percent of normal) has also received the least amount of normalized rainfall. In all, six regions report precipitation deficits. The state-averaged total is 93 percent of normal.



### Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	CALENDAR YEAR JANUARY 1, 2001 – JANUARY 7, 2002			GROWING SEASON SEPTEMBER 1, 2001 – JANUARY 7, 2002			RAINFALL SINCE DECEMBER 9
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	16.58	-3.26	84	2.33	-2.69	46	0.18
North Central (2)	23.05	-5.37	81	4.49	-4.28	51	0.27
Northeast (3)	34.24	-6.44	84	10.94	-3.32	77	1.95
West Central (4)	22.91	-3.82	86	4.22	-4.10	51	0.20
Central (5)	31.64	-3.08	91	9.89	-1.81	85	1.60
East Central (6)	45.90	2.06	105	15.99	0.27	102	4.09
Southwest (7)	22.11	-6.23	78	4.45	-4.77	48	0.64
South Central (8)	40.10	1.60	104	16.91	3.55	127	4.06
Southeast (9)	52.69	2.68	105	19.72	1.93	111	6.97
<b>STATE-AVERAGED</b>	<b>31.94</b>	<b>-2.57</b>	<b>93</b>	<b>9.87</b>	<b>-1.51</b>	<b>87</b>	<b>2.16</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 (January 5, below), while conditions have improved in some areas, much of northern and western Oklahoma remain dry and drought lingers in five climate divisions. The North Central climate division is classified in the "severe drought" category, the West Central and Northeast regions are in "moderate drought," and Northwest and Southwest Oklahoma are in "mild drought." However, only three of Oklahoma's nine climate divisions have undergone PDSI moisture decreases (and of only a moderate degree) since December 8. The greatest decreases occurred in the North Central and West Central climate divisions.

The latest monthly Standardized Precipitation Index (through December, below) indicates that several regions, especially the **North Central climate division** (which indicates "**extremely dry**" conditions over the last 6-month period), are experiencing long-term dryness. Among the *selected* time periods (3-, 6-, 9- and 12-month SPI's), the West Central and Northwest climate divisions also report "moderately dry" to "very dry" conditions throughout the last nine months while the Northeast is "moderately dry" over the past 6 to 12 months. Also, the Southwest is "moderately dry" over the past 6 to 9 months. Among periods beyond one year, only the 18-month SPI (North Central and Northeast, both "moderately dry") reports dry conditions for any area of Oklahoma.

The latest Keetch-Byram Drought Index (January 8, 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 remain generally good. Statewide, only four stations are currently above 600, generally indicative of more severe drought conditions (five stations had a reading above 600 on December 10). Cherokee, in North Central Oklahoma (658), and Goodwell (Northwest; 658) report the highest KBDI values, followed by Buffalo (Northwest; 628) and Hinton (Southwest, 627). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). Only one county, Texas County, remains in the Governor's Ban on Outdoor Burning; nine additional counties in northwest/north central Oklahoma (Alfalfa, Beaver, Cimarron, Dewey, Ellis, Harper, Major, Woods, and Woodward) remain under a Red Flag Fire Alert. Prolonged dry conditions in these counties have resulted in high to very high fire danger. Under these conditions, wildfires are easily ignited and extra precautions are recommended with all use of fire outdoors.

Palmer Drought Severity Index					Standardized Precipitation Index Through December 2001			
CLIMATE DIVISION (#)	CURRENT STATUS 1/5/2002	VALUE 1/5	VALUE 12/8	CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
Northwest (1)	MILD DROUGHT	-1.85	-1.80	-0.05	MODERATELY DRY	VERY DRY	VERY DRY	NEAR NORMAL
North Central (2)	SEVERE DROUGHT	-3.05	-2.87	-0.18	VERY DRY	EXTREMELY DRY	VERY DRY	MODERATELY DRY
Northeast (3)	MODERATE DROUGHT	-2.43	-2.70	0.27	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	MODERATELY DRY
West Central (4)	MODERATE DROUGHT	-2.75	-2.58	-0.17	VERY DRY	VERY DRY	MODERATELY DRY	NEAR NORMAL
Central (5)	NEAR NORMAL	0.09	-0.60	0.69	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	MOIST SPELL	1.22	-0.12	1.34	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	MILD DROUGHT	-1.76	-1.78	0.02	NEAR NORMAL	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL
South Central	UNUSUAL MOIST SPELL	2.03	0.17	1.86	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	MOIST SPELL	1.66	0.14	1.52	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY WET

### Keetch-Byram Drought Fire Index

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 1/8/2002	ANTICIPATED IMPACT
Cherokee	Alfalfa	North Central	658	<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.
Goodwell	Texas	Northwest	658	
Buffalo	Harper	Northwest	627	
Hinton	Caddo	Southwest	627	

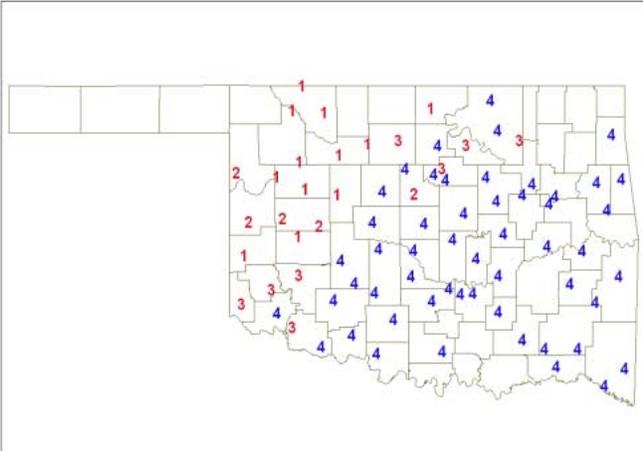
4 total stations above 600

*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*

**Soil Moisture**  
**January 6, 2002**  
*(courtesy Oklahoma Climatological Survey)*

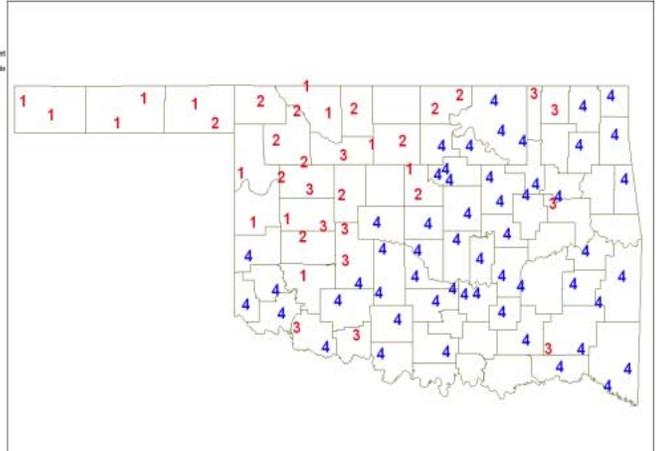
5 cm

Sun, Jan 6, 2002  
 0000 UTC  
 ## Soil Cat. 4 = Moist/Wet  
 ## Soil Cat. 3 = Adequate  
 ## Soil Cat. 2 = Limited  
 ## Soil Cat. 1 = Dry  
 --- County borders (OK)



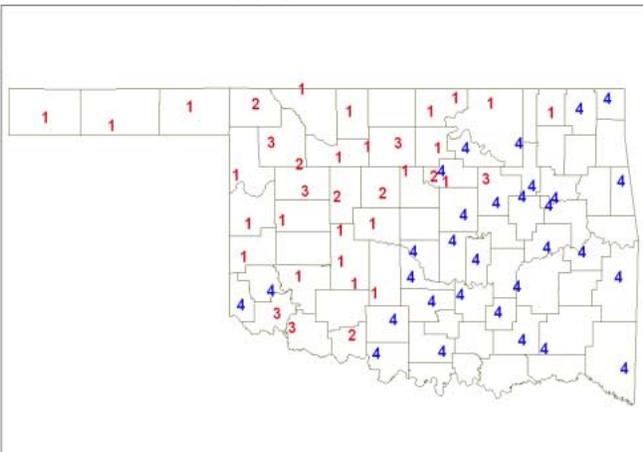
25 cm

Sun, Jan 6, 2002  
 0000 UTC  
 ## 25cm Soil Cat. 4 = Moist/Wet  
 ## 25cm Soil Cat. 3 = Adequate  
 ## 25cm Soil Cat. 2 = Limited  
 ## 25cm Soil Cat. 1 = Dry  
 --- County borders (OK)



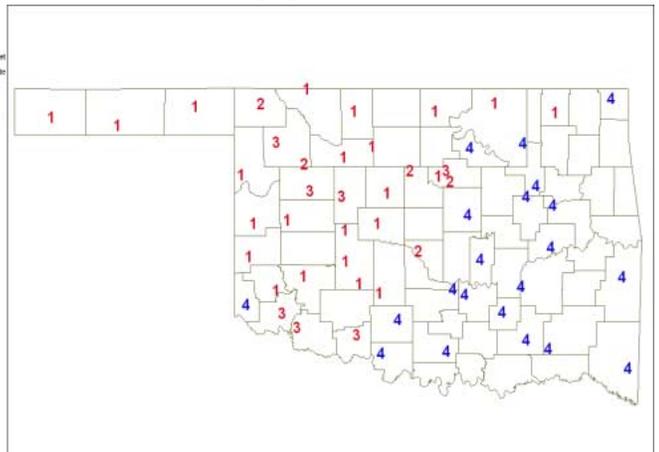
60 cm

Sun, Jan 6, 2002  
 0000 UTC  
 ## 60cm Soil Cat. 4 = Moist/Wet  
 ## 60cm Soil Cat. 3 = Adequate  
 ## 60cm Soil Cat. 2 = Limited  
 ## 60cm Soil Cat. 1 = Dry  
 --- County borders (OK)



75 cm

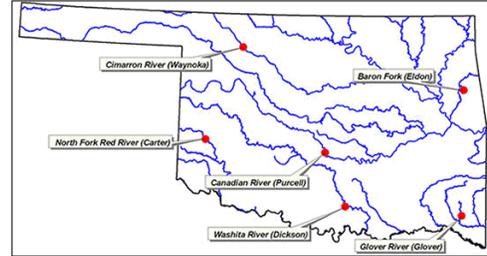
Sun, Jan 6, 2002  
 0000 UTC  
 ## 75cm Soil Cat. 4 = Moist/Wet  
 ## 75cm Soil Cat. 3 = Adequate  
 ## 75cm Soil Cat. 2 = Limited  
 ## 75cm Soil Cat. 1 = Dry  
 --- County borders (OK)



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 remain somewhat low to average across Oklahoma. Considering overall trends as well as current flows, the most recent data (January 7, 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 the *northwest* (Cimarron River, Woods County) and **near average flow** in *central* (Canadian River, McClain County), *southwest* (North Fork/Red River, Beckham County), *southeast* (Glover River, McCurtain County), *south central* (Washita River, Carter County), and *northeast* (Baron Fork, Cherokee County) Oklahoma.



### Weather Forecast

The National Weather Service 8- to 14-day outlook (January 15-21) calls for normal precipitation for all of Oklahoma. Above normal temperatures are predicted for much of southern Oklahoma while normal temperatures are anticipated elsewhere throughout the period.

Current models indicate that positive (warmer than normal) sub-surface temperature (SST) anomalies continue to arise in the equatorial Pacific Ocean. This warming trend is expected to continue throughout at least the next several 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

January 3 -- Many areas of Oklahoma received rainfall during the month of December, improving moisture conditions somewhat. However, most of the state remained dry and more rainfall is needed in many areas. Temperatures during the month were also warmer than normal. Wheat improved some during the month, but much of the state's acreage is showing stress from lack of sufficient moisture. Adequate hay supplies during the winter feeding season remained a major concern.

Areas that received adequate rainfall during the month exhibited some wheat improvement. However, wheat fields in many other areas remain stressed from lack of precipitation. Additional moisture is needed to stimulate growth and development. Wheat conditions varied across the state. Wheat in the Panhandle and west central regions was rated in mostly poor to very poor condition. By the end of December, one-third of the state's wheat was being grazed. Wheat grazing has yet to occur in many areas due to thin or uneven stands. Some wheat has still not attained a sufficient root system to secure plants in the ground during grazing. Greenbugs were damaging fields in many areas and some producers have elected to control the populations by spraying.

Mild temperatures have kept cattle in good to fair condition. Stocker gains have been fairly good during the first part of the grazing season. In the areas short of adequate pasture for grazing, producers were increasing the amounts of hay and protein fed to livestock. The warmer than normal weather has minimized calf deaths during the late calving season. Pastures in the areas where rains were adequate have benefited from the moisture and growth of winter forages were boosted. In other areas where rainfall was minimal, pasture stress continued. Statewide, range and pasture condition was rated mostly fair or poor.

### Reservoir Storage

Reservoir storage levels, previously low in some areas of the state, have begun to recover somewhat. As of January 8, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 95.8 percent full, a 5.1 percent increase from that recorded on December 10, according to information from the U.S. Army Corps of Engineers (Tulsa District). Only 12 reservoirs have experienced lake level decreases since that time, including seven of nine in the Northeast climate division. Seventeen reservoirs are currently operating at less than full capacity (compared to 22 last month); seven reservoirs (including **Lugert-Altus, only 38.3 percent**; and **Hulah, 41.1 percent**) remain below 80 percent capacity.

<b>Storage in Selected Oklahoma Lakes &amp; Reservoirs</b>				
<i>01/08/2002</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	0.56
Great Salt Plains	31,420	31,420	100.0	0.70
Kaw*	406,540	406,540	100.0	2.22
<b>Regional Totals/Averages</b>	<b>451,860</b>	<b>451,860</b>	<b>100.0</b>	<b>1.16</b>
<b>Northeast</b>				
Birch	19,225	14,033	73.0	0.00
Copan	43,400	31,527	72.6	0.00
Fort Gibson	365,200	365,200	100.0	0.44
Grand	1,672,000	1,537,000	91.9	0.00
Hudson	200,300	200,086	99.9	0.00
Hulah	31,160	12,793	41.1	0.00
Keystone	278,122	202,175	72.7	0.00
Oologah	552,210	545,866	98.9	0.00
Skiatook	322,700	264,689	82.0	0.00
<b>Regional Totals/Averages</b>	<b>3,484,317</b>	<b>3,173,369</b>	<b>91.1</b>	<b>0.05</b>
<b>West Central</b>				
Canton	111,310	82,621	74.2	0.00
Foss	165,480	148,724	89.9	0.00
<b>Regional Totals/Averages</b>	<b>276,790</b>	<b>231,345</b>	<b>83.6</b>	<b>0.00</b>
<b>Central</b>				
Arcadia	27,520	27,520	100.0	0.03
Heyburn	7,105	6,754	95.1	0.00
Thunderbird	119,600	117,740	98.4	0.00
<b>Regional Totals/Averages</b>	<b>154,225</b>	<b>152,014</b>	<b>98.6</b>	<b>0.01</b>
<b>East Central</b>				
Eufaula*	2,314,581	2,301,087	99.4	0.00
Tenkiller	654,100	654,100	100.0	0.07
<b>Regional Totals/Averages</b>	<b>2,968,681</b>	<b>2,955,187</b>	<b>99.5</b>	<b>0.04</b>
<b>Southwest</b>				
Fort Cobb	80,010	73,914	92.4	0.00
Lugert-Altus	132,830	50,876	38.3	0.00
Tom Steed	88,970	62,686	70.5	0.00
<b>Regional Totals/Averages</b>	<b>301,810</b>	<b>187,476</b>	<b>62.1</b>	<b>0.00</b>
<b>South Central</b>				
Arbuckle	72,400	72,400	100.0	1.44
McGee Creek	113,930	113,930	100.0	2.03
Texoma*	2,556,122	2,556,122	100.0	0.07
Waurika*	190,200	173,767	91.4	0.00
<b>Regional Totals/Averages</b>	<b>2,932,652</b>	<b>2,916,219</b>	<b>99.4</b>	<b>0.89</b>
<b>Southeast</b>				
Broken Bow*	918,070	918,070	100.0	9.99
Hugo*	184,917	184,917	100.0	0.65
Pine Creek*	53,750	53,750	100.0	0.81
Sardis	274,330	274,330	100.0	0.68
Wister	60,162	60,162	100.0	1.86
<b>Regional Totals/Averages</b>	<b>1,491,229</b>	<b>1,491,229</b>	<b>100.0</b>	<b>2.80</b>
<b>State Totals</b>	<b>12,061,564</b>	<b>11,558,699</b>	<b>95.8</b>	<b>0.70</b>

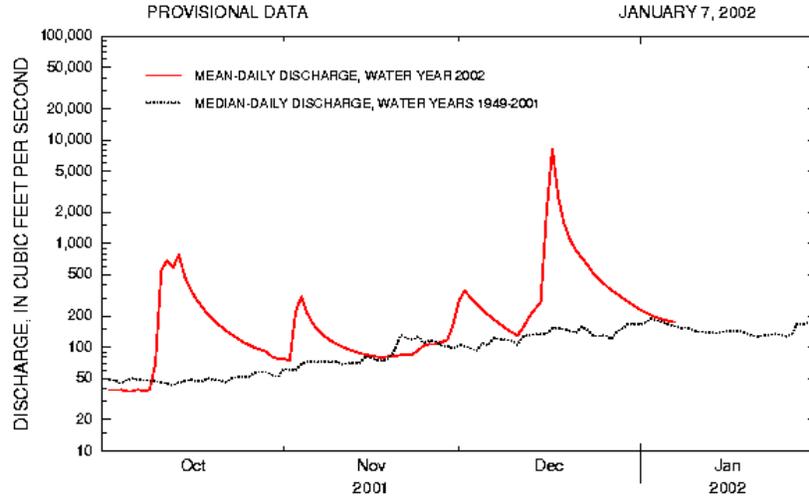
\* indicates seasonal pool operation; actual storage figures/percentages may vary.

### 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.

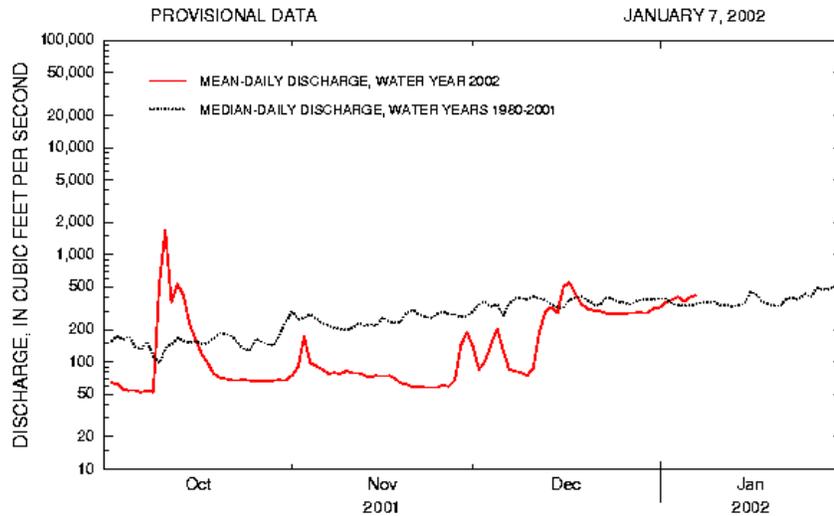
Data from U.S. Geological Survey

### 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

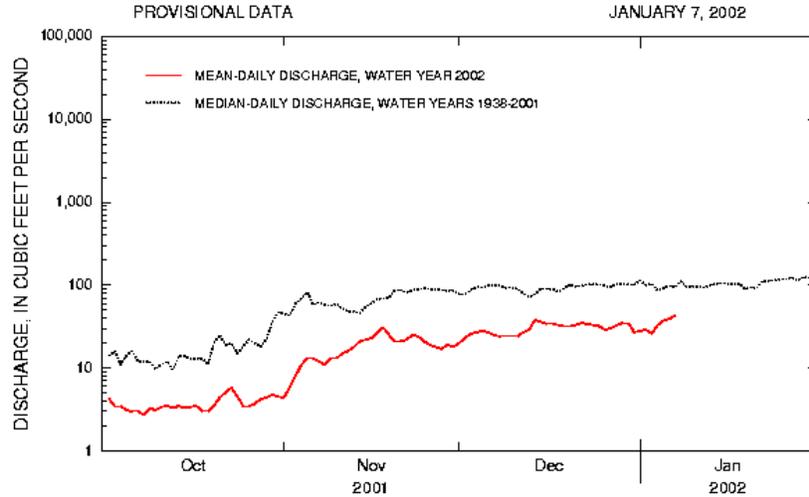
### Cimarron River near Waynoka

*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

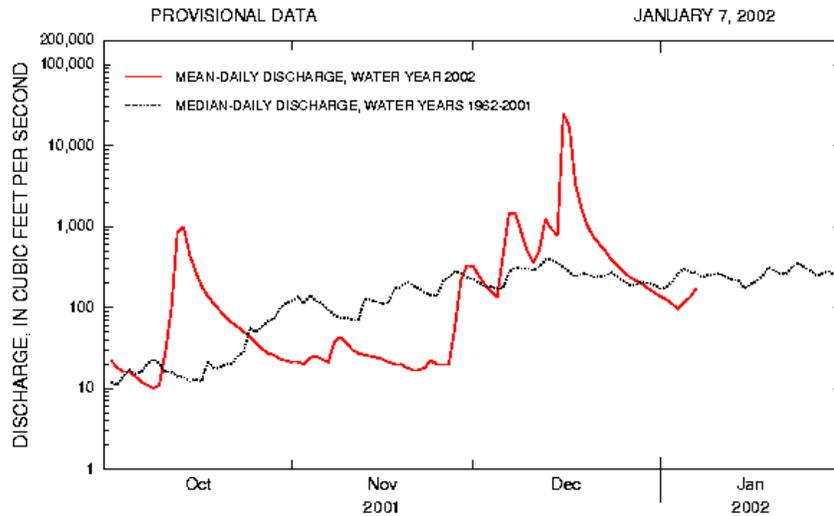
### Glover River near Glover

*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

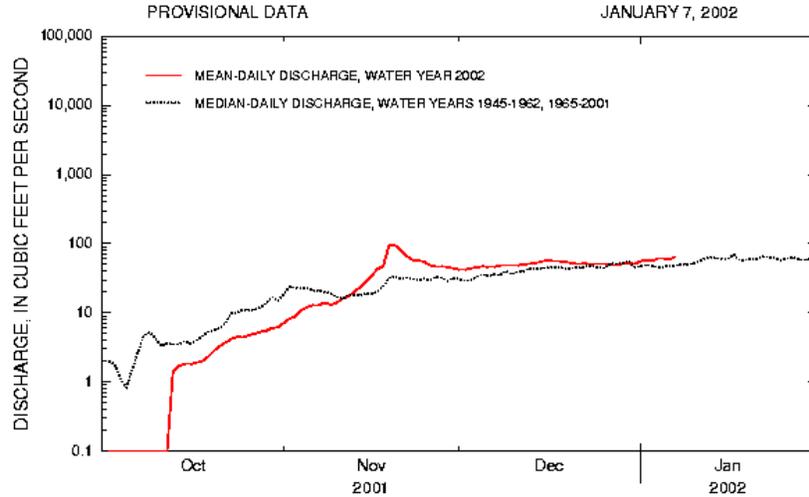
### North Fork of the Red River near Carter

*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

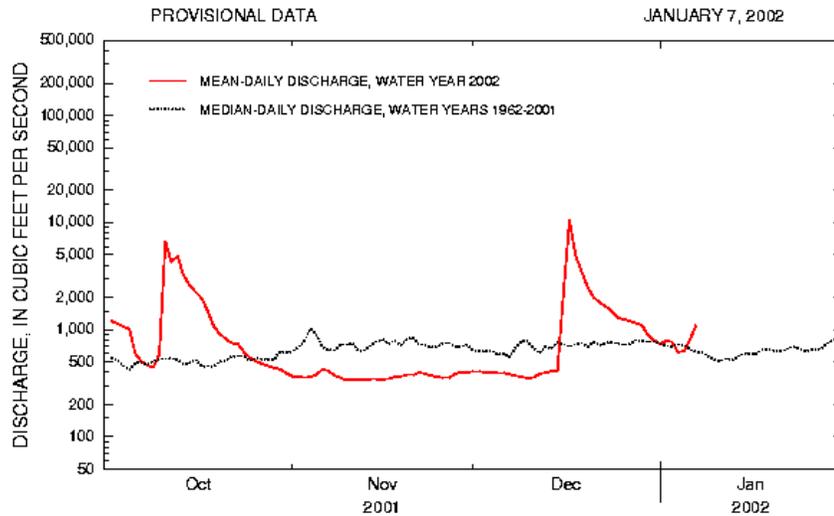
### Washita River near Dickson

*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