

Oklahoma Water Resources Bulletin

& Summary of Current Conditions



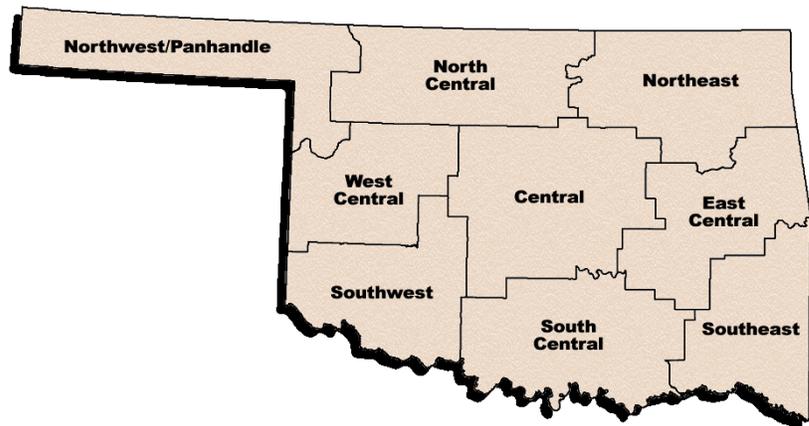
JULY 2, 2003

OKLAHOMA WATER RESOURCES BOARD

Statewide Precipitation & General Summary

Although portions of the south and east remain somewhat dry, moderate rains continue to improve Oklahoma's moisture situation. 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 March 1 through June 30 (the current growing season) remains the Southeast climate division (13.17 inches, 66 percent of normal precipitation and 6.86 inches below normal). The South Central region (69 percent of normal, a rainfall deficit of 5.52 inches) is also quite dry throughout the period. The current state-averaged rainfall total is 12.64 inches, 79 percent of normal.

For the current water year (October 1, 2002 through June 30, 2003), seven regions report precipitation deficits, although all are above 70 percent of normal. The state-averaged rainfall total is 22.72 inches, 83 percent of normal.



Preliminary Statewide Precipitation By Climate Division

| DIVISION (#) | GROWING SEASON MARCH 1—JUNE 30, 2003 | | | WATER YEAR OCTOBER 1, 2002—JUNE 30, 2003 | | |
|------------------|---|--------------------------------|-------------------|---|--------------------------------|-------------------|
| | TOTAL RAINFALL (INCHES) | DEPARTURE FROM NORMAL (INCHES) | PERCENT OF NORMAL | TOTAL RAINFALL (INCHES) | DEPARTURE FROM NORMAL (INCHES) | PERCENT OF NORMAL |
| Panhandle | 9.89 | +0.11 | 101 | 15.44 | +1.25 | 109 |
| North Central | 12.31 | -1.99 | 86 | 22.25 | -0.24 | 99 |
| Northeast | 16.58 | -1.19 | 93 | 24.77 | -6.08 | 80 |
| West Central | 10.28 | -3.48 | 75 | 19.17 | -2.04 | 90 |
| Central | 12.63 | -4.34 | 74 | 22.18 | -6.50 | 77 |
| East Central | 13.74 | -5.43 | 72 | 25.81 | -9.47 | 73 |
| Southwest | 12.64 | -1.42 | 90 | 22.48 | -0.06 | 100 |
| South Central | 12.03 | -5.52 | 69 | 24.42 | -7.12 | 77 |
| Southeast | 13.17 | -6.86 | 66 | 28.51 | -11.57 | 71 |
| Statewide | 12.64 | -3.30 | 79 | 22.72 | -4.65 | 83 |

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.owrb.state.ok.us/features/drought.html>.

Drought Indices

According to the latest Palmer Drought Severity Index (June 28, below), two regions in Oklahoma (Southeast and East Central, both in "mild drought") are currently experiencing drought conditions. Six of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since June 14. The greatest decrease occurred in the Northeast climate division.

The latest monthly Standardized Precipitation Index (through May, below) continues to indicate both short- and long-term dryness in southern and eastern Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), "very dry" conditions are indicated in the South Central and Southeast climate divisions throughout the last 3 months and in East Central Oklahoma over the past 9- and 12-month periods. Considering longer periods (through six years), the Northwest/Panhandle climate division indicates "very dry" conditions throughout the past 24 months. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (June 30, 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 remain good. Statewide, no Mesonet stations are currently above or even near 600, generally indicative of more severe drought conditions (no stations had a reading above 600 on June 16). Clayton, in Southeast Oklahoma, has the highest KBDI value (354). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness remains at Level 1 (low fire danger). Although conditions have improved, long periods of hot, dry, and windy weather could result in a return to dangerous wildfire conditions. Outdoor burning should be avoided when winds exceed 20 miles per hour.

| Palmer Drought Severity Index | | | | | Standardized Precipitation Index Through May 2003 | | | |
|-------------------------------|-----------------------------|-------|-------|--------------------|--|----------------|----------------|----------------|
| CLIMATE DIVISION (#) | CURRENT STATUS 6/28/2003 | VALUE | | CHANGE IN VALUE | 3-MONTH | 6-MONTH | 9-MONTH | 12-MONTH |
| | | 6/28 | 6/14 | | | | | |
| Northwest (1) | MOIST SPELL | 1.41 | 0.60 | 0.81 | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| North Central (2) | MOIST SPELL | 1.62 | 2.14 | -0.52 | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | MODERATELY WET |
| Northeast (3) | NEAR NORMAL | -0.41 | 0.53 | -0.94 | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| West Central (4) | NEAR NORMAL | 0.49 | 0.63 | -0.14 | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| Central (5) | INCIPIENT DROUGHT | -0.67 | -0.54 | -0.13 | MODERATELY DRY | MODERATELY DRY | NEAR NORMAL | NEAR NORMAL |
| East Central (6) | MILD DROUGHT | -1.06 | -0.66 | -0.40 | MODERATELY DRY | NEAR NORMAL | VERY DRY | VERY DRY |
| Southwest (7) | INCIPIENT MOIST SPELL | 0.71 | 0.54 | 0.17 | MODERATELY DRY | MODERATELY DRY | NEAR NORMAL | NEAR NORMAL |
| South Central (8) | INCIPIENT DROUGHT | -0.68 | -0.63 | -0.05 | VERY DRY | MODERATELY DRY | MODERATELY DRY | NEAR NORMAL |
| Southeast (9) | MILD DROUGHT | -1.19 | -1.45 | 0.26 | VERY DRY | MODERATELY DRY | MODERATELY DRY | MODERATELY DRY |

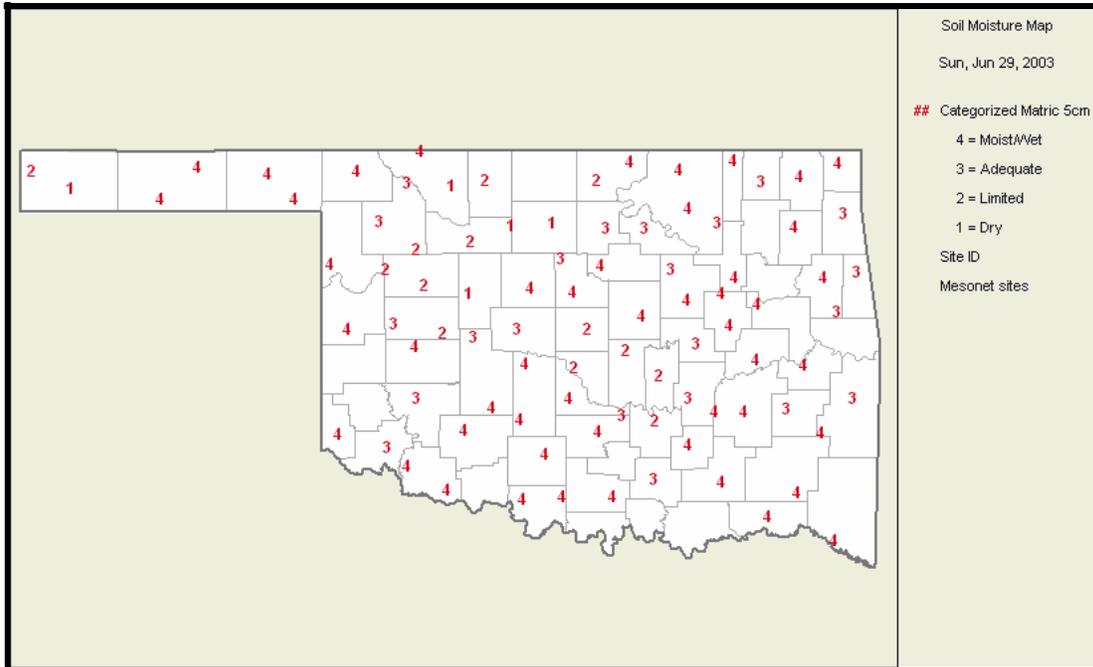
| Keetch-Byram Drought Fire Index | | | | |
|------------------------------------|------------|------------------|----------------------------|---|
| MESONET STATION | COUNTY | CLIMATE DIVISION | CURRENT VALUE 6/30/2003 | ANTICIPATED IMPACT |
| Clayton | Pushmataha | Southeast | 354 | 600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively. 400-600: lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall. |
| Tahlequah | Cherokee | East Central | 331 | |
| Talihina | LeFlore | Southeast | 296 | |

Total stations above 600 = 0

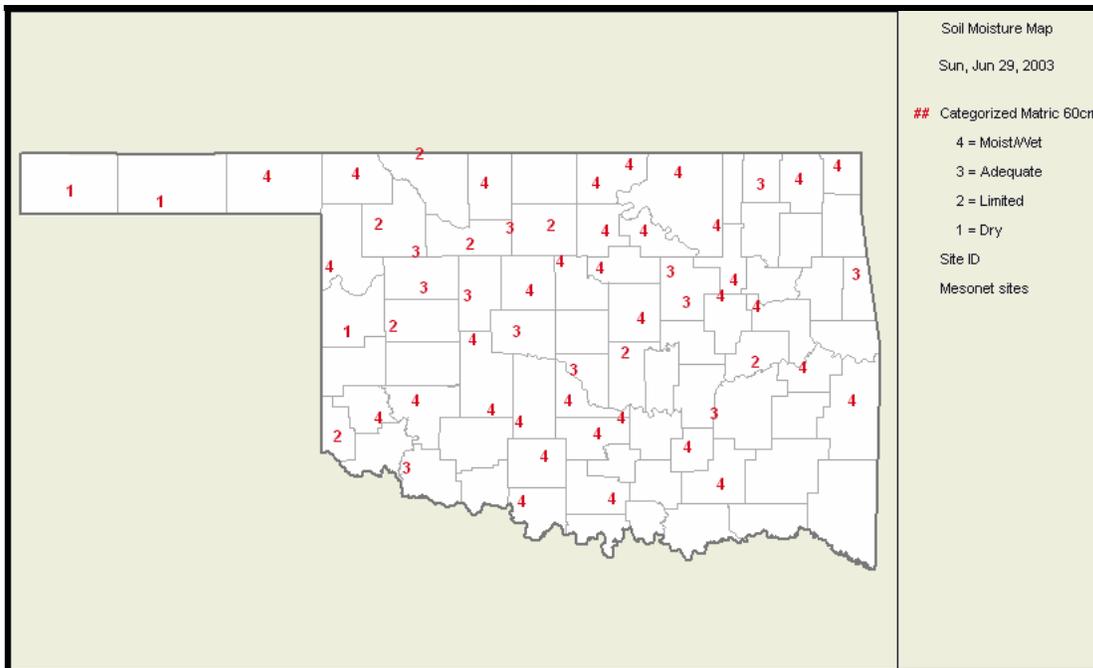
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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
June 29, 2003
 (Courtesy Oklahoma Climatological Survey)

5 cm



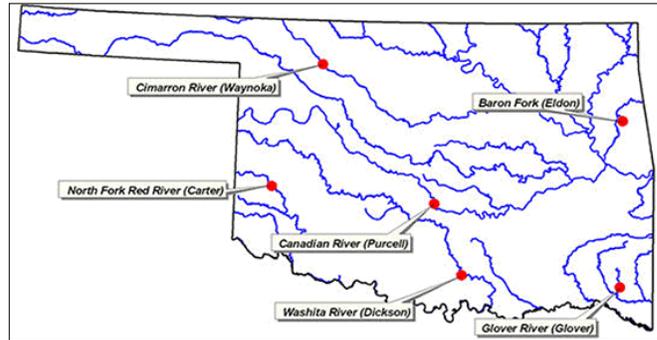
60 cm



| Category Description | | Depth -- Metric Conversion |
|----------------------|-----------|--|
| Category 4 | Moist/wet | 5 centimeters = 2 inches |
| Category 3 | Adequate | *corresponds to the approximate depth of grass roots |
| Category 2 | Limited | 60 centimeters = 23.6 inches |
| Category 1 | Dry | *corresponds to the approximate root depth of the majority of Oklahoma crops |

Streamflow Conditions

Flows in state rivers and streams are generally near average. Considering overall trends as well as current flows, the most recent data (June 30, 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, 2002, compared to long-term, normal/median daily discharges) indicate **near average flow** in *northeast* (Baron Fork, Cherokee County), *northwest* (Cimarron River, Woods County), *southwest* (North Fork/Red River, Beckham County), and *central* (Canadian River, McClain County) Oklahoma; and **above average flow** in the *southeast* (Glover River, McCurtain County) and *south central* (Washita River, Carter County) regions.



Weather Forecast

The National Weather Service 8- to 14-day outlook (July 8-14) calls for below normal precipitation for all but far northeast Oklahoma, where normal rainfall is anticipated. Above normal temperatures are generally expected for the entire state throughout the period.

Observed trends in oceanic and atmospheric variables indicate that the recent El Niño episode continues to rapidly dissipate and a transition to La Niña is underway with more pronounced conditions likely to develop over the next few months. El Niños, warm water anomalies in the equatorial regions that increase the chances for generally cooler, wetter conditions in the southern U.S. (including Oklahoma), occur about every two to seven years. La Niña episodes, cold-water phenomena, are generally believed to cause temporary warmer and drier conditions throughout most of the southern U.S.

Crop Report

June 29 – The winter wheat harvest continued to move rapidly in northern Oklahoma while much of the southwest is nearly completed. Soil moisture supplies continued to remain steady and were rated as mostly adequate. Farmers had 4.9 days suitable for fieldwork during the week

The wheat harvest jumped 21 percentage points from last week and totaled 93 percent. This total is 4 percentage points ahead of the five-year average of 89 percent. Most of the wheat acres remaining to be harvested were in the Panhandle and north central Oklahoma. Many of the producers who were finished with the harvest were able to plow their fields with 32 percent of the acres plowed across the state. Oat harvest advanced 25 percentage points and was 70 percent complete.

All row crops were rated in mostly good condition, however additional moisture is needed heading into the summer to prevent stress. Sorghum and soybean planting advanced during the week with both at 87 percent completed. Thirty percent of the corn was silking, on pace for this time of the year. At week's end, 8 percent of the corn had entered the dough stage of development. Soybeans had begun to bloom in isolated areas. Peanut pegging gained 20 percentage points from last week to reach 64 percent. Cotton squaring advanced to 35 percent and one percent of the crop had begun to set bolls.

Both alfalfa and other hay were rated in mostly fair to good condition. Alfalfa cutting made good progress with 89 percent of the second cutting completed. A third alfalfa cutting had begun in isolated areas. Other hay first cutting advanced with the first cutting 76 percent completed and hay fields in a few areas have been cut for a second time.

Peaches were rated in mostly poor to good condition. Most areas reported an average fruit crop. Watermelons setting fruit reached 82 percent, ahead of both last year and the five year-average of 75 and 61 percent complete, respectively. Harvest was 6 percent complete, ahead of the normal pace.

Pasture and range conditions were rated mostly fair to excellent. Grasshopper infestations continued to increase during the week and were taking a toll on many pastures in the south. Livestock conditions were rated as mostly fair to excellent. Livestock insect activities were rated as light to moderate with flies being the major problem. Cattle auctions reported an average increase in marketings for the week.

Reservoir Storage

Reservoir storage remains good in most areas of Oklahoma. As of July 1, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 96.9 percent full, a 0.4 percent decrease from that recorded on June 14, according to information from the U.S. Army Corps of Engineers (Tulsa District). Nineteen reservoirs have experienced lake level decreases since that time. Eleven reservoirs are currently operating at less than full capacity (compared to 10 two weeks ago). Two reservoirs in southwest Oklahoma—Lugert-Altus, only 54.7 percent, and Tom Steed, only 70.9 percent—remain well below 80 percent capacity.

| Storage in Selected Oklahoma Lakes & Reservoirs | | | |
|--|-----------------------------|------------------------|-----------------------------|
| <i>07/01/2003</i> | | | |
| <i>Climate Division</i> | <i>Conservation Storage</i> | <i>Present Storage</i> | <i>Percent of</i> |
| <i>Lake or Reservoir</i> | <i>(acre-feet)</i> | <i>(acre-feet)</i> | <i>Conservation Storage</i> |
| North Central | | | |
| Fort Supply | 13,900 | 13,900 | 100.0 |
| Great Salt Plains | 31,420 | 31,420 | 100.0 |
| Kaw* | 459,850 | 459,850 | 100.0 |
| Regional Totals/Averages | 505,170 | 505,170 | 100.0 |
| Northeast | | | |
| Birch | 19,225 | 17,709 | 92.1 |
| Copan | 43,400 | 43,400 | 100.0 |
| Fort Gibson | 365,200 | 365,200 | 100.0 |
| Grand | 1,672,000 | 1,654,520 | 99.0 |
| Hudson | 200,300 | 200,300 | 100.0 |
| Hulah | 25,100 | 25,100 | 100.0 |
| Keystone | 510,059 | 510,059 | 100.0 |
| Oologah | 552,210 | 552,210 | 100.0 |
| Skiatook | 322,700 | 292,241 | 90.6 |
| Regional Totals/Averages | 3,710,194 | 3,660,739 | 98.7 |
| West Central | | | |
| Canton | 111,310 | 111,310 | 100.0 |
| Foss | 165,480 | 165,480 | 100.0 |
| Regional Totals/Averages | 276,790 | 276,790 | 100.0 |
| Central | | | |
| Arcadia | 27,520 | 27,520 | 100.0 |
| Heyburn | 7,105 | 7,105 | 100.0 |
| Thunderbird | 119,600 | 119,060 | 99.5 |
| Regional Totals/Averages | 154,225 | 153,685 | 99.6 |
| East Central | | | |
| Eufaula* | 2,529,143 | 2,301,593 | 91.0 |
| Tenkiller | 654,100 | 654,100 | 100.0 |
| Regional Totals/Averages | 3,183,243 | 2,955,693 | 92.9 |
| Southwest | | | |
| Fort Cobb | 80,010 | 80,010 | 100.0 |
| Lugert-Altus | 132,830 | 72,672 | 54.7 |
| Tom Steed | 88,970 | 63,107 | 70.9 |
| Regional Totals/Averages | 301,810 | 215,789 | 71.5 |
| South Central | | | |
| Arbuckle | 72,400 | 72,400 | 100.0 |
| McGee Creek | 113,930 | 111,384 | 97.8 |
| Texoma* | 2,742,146 | 2,742,146 | 100.0 |
| Waurika* | 190,200 | 185,272 | 97.4 |
| Regional Totals/Averages | 3,118,676 | 3,111,202 | 99.8 |
| Southeast | | | |
| Broken Bow* | 958,180 | 934,958 | 97.6 |
| Hugo* | 198,067 | 198,067 | 100.0 |
| Pine Creek* | 71,120 | 71,120 | 100.0 |
| Sardis | 274,330 | 273,795 | 99.8 |
| Wister | 60,162 | 60,162 | 100.0 |
| Regional Totals/Averages | 1,561,859 | 1,538,102 | 98.5 |
| State Totals | 12,811,967 | 12,417,170 | 96.9 |

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

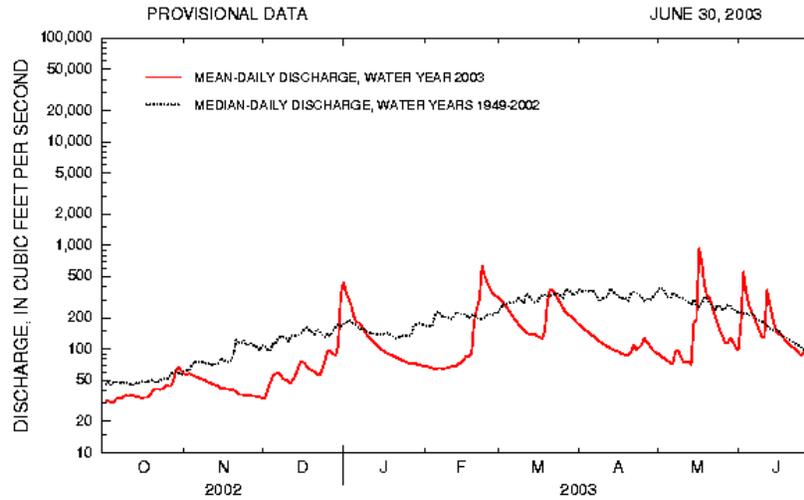
Baron Fork at Eldon

Baron Fork at Eldon, Oklahoma

Station No. 07197000

Northeast Oklahoma

Drainage Area 307 square miles



Comparison of daily discharges for water year 2003 and period of record for Baron Fork at Eldon, Oklahoma.

Data from U.S. Geological Survey

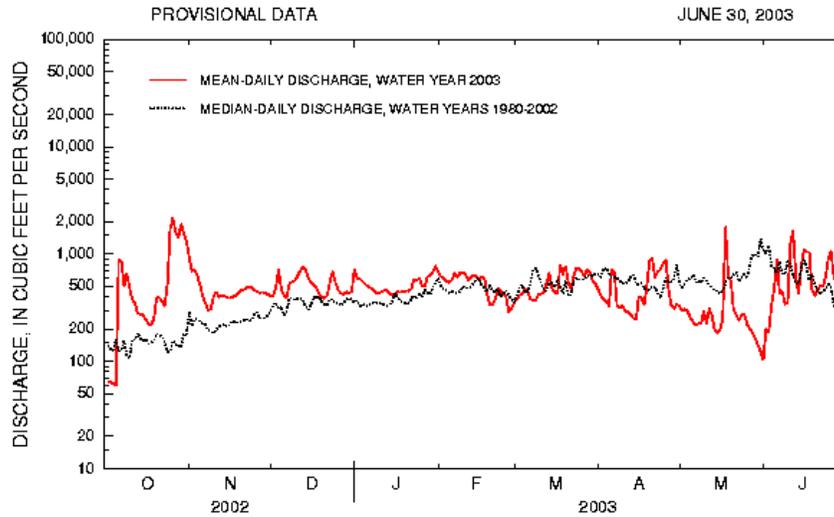
Canadian River at Purcell

Canadian River at Purcell, Oklahoma

Station No. 07229200

Central Oklahoma

Drainage Area 25,939 square miles



Comparison of daily discharges for water year 2003 and period of record for Canadian River at Purcell, Oklahoma.

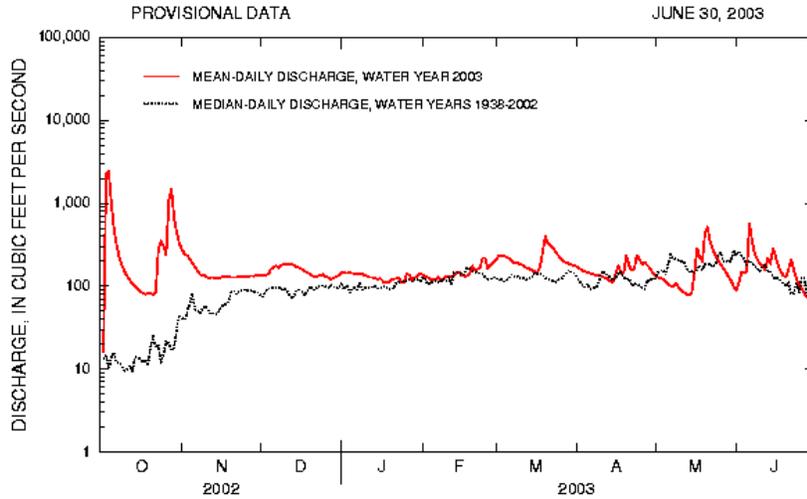
Data from U.S. Geological Survey

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 2003 and period of record for Cimarron River near Waynoka, Oklahoma.

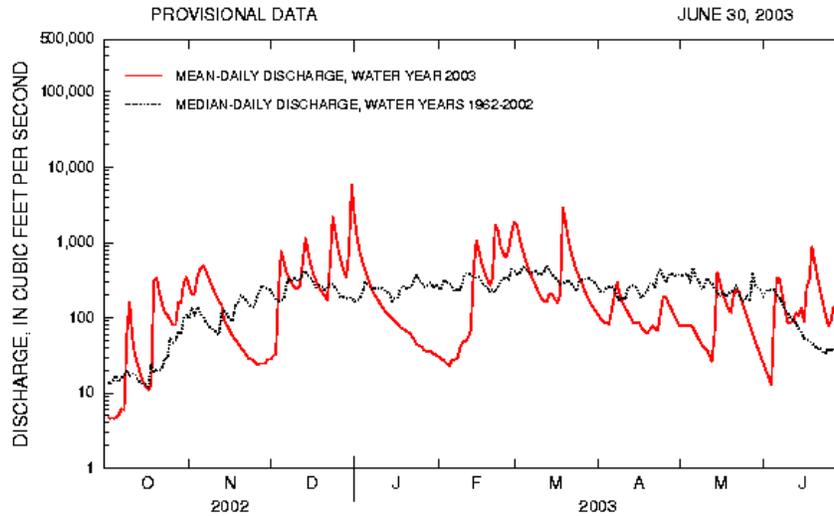
Data from U.S. Geological Survey

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 2003 and period of record for Glover River near Glover, Oklahoma.

Data from U.S. Geological Survey

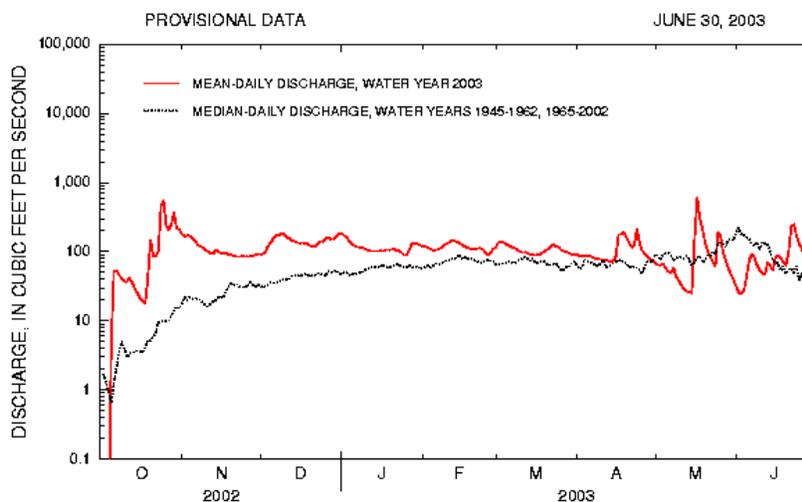
North Fork of the Red River near Carter

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 2003 and period of record for North Fork Red River near Carter, Oklahoma.

Data from U.S. Geological Survey

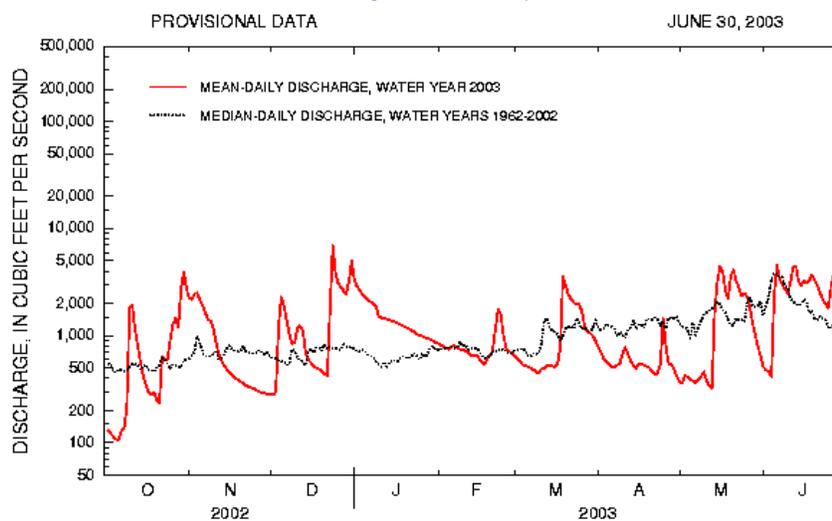
Washita River near Dickson

Washita River near Dickson, Oklahoma

Station No. 07331000

South-Central Oklahoma

Drainage Area 7,202 square miles



Comparison of daily discharges for water year 2003 and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey