

Oklahoma Water Resources Bulletin

& Summary of Current Conditions



December 21, 2005

Statewide Precipitation & General Summary

Much of Oklahoma remains very dry. 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 for the calendar year continues to be the Southeast climate division (21.12 inches below normal and only 57 percent of the average). The current state-averaged rainfall total is 26.74 inches—a deficit of 9.1 inches and 75 percent of normal.

Over the last 30 days (from November 19 through December 18), the state has experienced very little rainfall. Six climate divisions have received less than one-tenth of their expected normal rainfall over the period. The state-averaged rainfall total for the period is only 0.2 inches—a deficit of 2.1 inches and 9 percent of normal.



Preliminary Statewide Precipitation BY CLIMATE DIVISION

| DIVISION (#) | Calendar Year JANUARY 1—NOVEMBER 27, 2005 | | | LAST 30 DAYS NOVEMBER 19—DECEMBER 18, 2005 | | |
|------------------|--|--------------------------------|-------------------|---|--------------------------------|-------------------|
| | TOTAL RAINFALL (INCHES) | DEPARTURE FROM NORMAL (INCHES) | PERCENT OF NORMAL | TOTAL RAINFALL (INCHES) | DEPARTURE FROM NORMAL (INCHES) | PERCENT OF NORMAL |
| Panhandle | 18.74 | -2.07 | 90 | 0.30 | -0.52 | 37 |
| North Central | 26.57 | -4.54 | 85 | 0.29 | -1.30 | 18 |
| Northeast | 29.78 | -11.23 | 73 | 0.15 | -2.63 | 5 |
| West Central | 26.06 | -2.56 | 91 | 0.21 | -1.15 | 15 |
| Central | 28.54 | -8.60 | 77 | 0.10 | -2.19 | 4 |
| East Central | 29.70 | -15.14 | 66 | 0.15 | -3.30 | 4 |
| Southwest | 24.56 | -5.67 | 81 | 0.11 | -1.38 | 8 |
| South Central | 28.05 | -11.85 | 70 | 0.21 | -2.50 | 8 |
| Southeast | 28.11 | -21.12 | 57 | 0.37 | -4.02 | 8 |
| Statewide | 26.74 | -9.10 | 75 | 0.20 | -2.10 | 9 |

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> and <http://climate.ocs.ou.edu/drought/>.**

Drought Indices

According to the latest Palmer Drought Severity Index (December 17, below), state drought conditions continue to worsen. Both the Southeast and East Central climate divisions are now in “severe drought” while the Northeast region is in “moderate drought.” In addition, South Central and Central Oklahoma are now in the “mild drought” category. Eight of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since November 26.

The latest monthly Standardized Precipitation Index (through November, below) reflects increasingly dry conditions throughout much of Oklahoma, especially in the east. In particular, among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), **“extremely dry” conditions are present in East Central (3- and 6-month periods) and Southeast (6, 9 and 12 months) Oklahoma.** “Very dry” conditions also persist in those regions as well as in the Northeast, Central, and South Central climate divisions over various time periods within the past 12 months. Considering longer periods (through six years), the Southeast and East Central climate divisions report long-term “very dry” and “moderately dry” conditions over multiple time periods during the past 48 months. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (December 21, 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 continue to be of concern, especially in eastern Oklahoma. Statewide, 9 Mesonet stations are currently at or above 600, generally indicative of more severe drought conditions (9 stations had a reading above 600 on November 28). Webbers Falls, in east central Oklahoma, retains the highest KBDI value (647). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness remains at Level 4 (high fire danger). **On November 15, Gov. Henry issued a Burning Ban for all counties in Oklahoma.** Extended dry conditions and high winds have increased the fire danger throughout the state. Dry vegetation will ignite easily and burn with surprising intensity.

| Palmer Drought Severity Index | | | | | Standardized Precipitation Index Through November 2005 | | | |
|-------------------------------|---------------------------|-------------|-------------|-----------------|---|----------------|----------------|----------------|
| CLIMATE DIVISION (#) | CURRENT STATUS 12/17/2005 | VALUE 12/17 | VALUE 11/26 | CHANGE IN VALUE | 3-MONTH | 6-MONTH | 9-MONTH | 12-MONTH |
| Northwest (1) | INCIPIENT MOIST SPELL | 0.60 | 0.12 | 0.48 | MODERATELY DRY | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| North Central (2) | NEAR NORMAL | 0.45 | 0.80 | -0.35 | NEAR NORMAL | MODERATELY WET | NEAR NORMAL | NEAR NORMAL |
| Northeast (3) | MODERATE DROUGHT | -2.19 | -2.02 | -0.17 | VERY DRY | NEAR NORMAL | VERY DRY | MODERATELY DRY |
| West Central (4) | NEAR NORMAL | 0.21 | 0.95 | -0.74 | NEAR NORMAL | MODERATELY WET | NEAR NORMAL | NEAR NORMAL |
| Central (5) | MILD DROUGHT | -1.19 | -0.98 | -0.21 | VERY DRY | NEAR NORMAL | MODERATELY DRY | NEAR NORMAL |
| East Central (6) | SEVERE DROUGHT | -3.13 | -2.85 | -0.28 | EXTREMELY DRY | VERY DRY | EXTREMELY DRY | VERY DRY |
| Southwest (7) | INCIPIENT DROUGHT | -0.66 | -0.13 | -0.53 | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL | NEAR NORMAL |
| South Central (8) | MILD DROUGHT | -1.93 | -1.70 | -0.23 | VERY DRY | NEAR NORMAL | VERY DRY | MODERATELY DRY |
| Southeast (9) | SEVERE DROUGHT | -3.58 | -3.25 | -0.33 | VERY DRY | EXTREMELY DRY | EXTREMELY DRY | EXTREMELY DRY |

Keetch-Byram DROUGHT FIRE INDEX

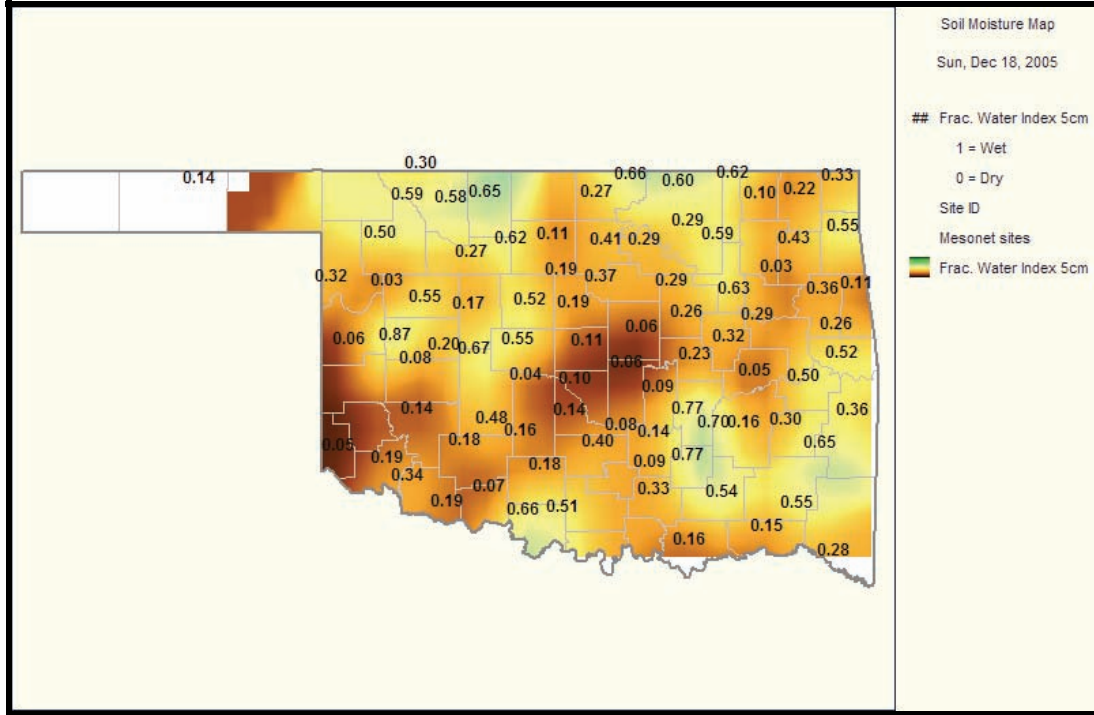
| MESONET STATION | COUNTY | CLIMATE DIVISION | CURRENT VALUE 12/19/2005 | ANTICIPATED IMPACT |
|-----------------|-----------|------------------|--------------------------|---|
| Webbers Falls | Muskogee | East Central | 647 | 600-800: often associated with more severe drought; increased wildfire occurrence; 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. |
| Eufaula | McIntosh | East Central | 643 | |
| McAlester | Pittsburg | East Central | 642 | |

Total stations above 600 = 9

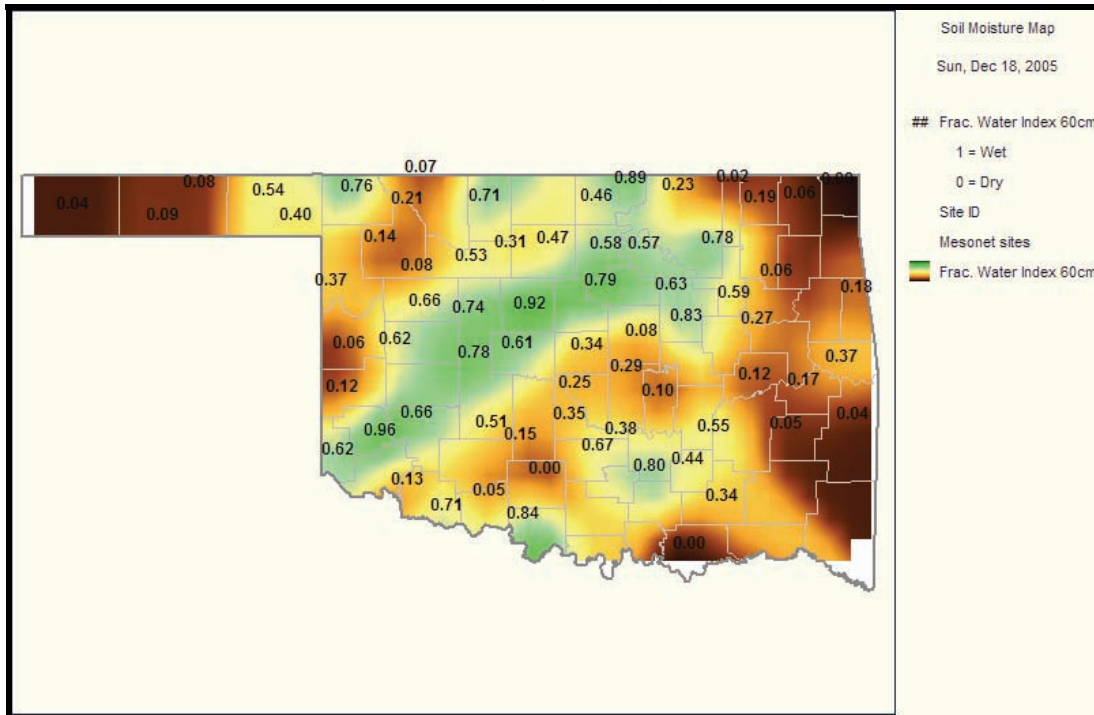
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides 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
Fractional Water Index**
December 18, 2005
(Courtesy Oklahoma Climatological Survey)

5 CM (~2 INCHES)



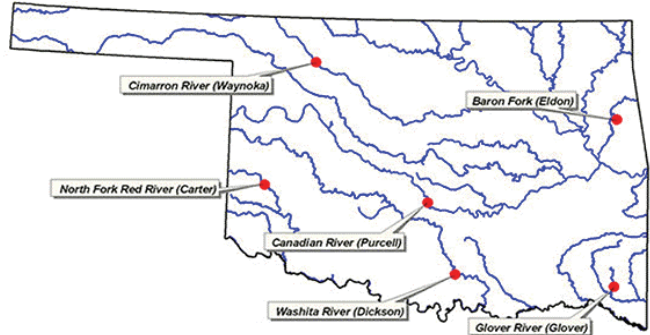
60 CM (~2 FEET)



| FWI Value Soil Wetness Conditions | | | |
|-----------------------------------|-----------------------------------|-----------|--------------|
| 1.0 – 0.8 | Enhanced Growth (~Field Capacity) | 0.5 – 0.3 | Plants Dying |
| 0.8 – 0.5 | Limited Growth | < 0.1 | Barren Soil |

Streamflow Conditions

Flows in many state rivers and streams are generally below normal due to the recent dry conditions. Considering overall trends as well as current flows, the most recent data (December 19, 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, 2004, compared to long-term, normal/median daily discharges) indicate **much below average flow** in *southeast* (Glover River, McCurtain County) and *northeast* (Baron Fork, Cherokee County) Oklahoma; **below average flow** in the *south central* (Washita River, Carter County) and *central* (Canadian River, McClain County) regions; and **near average flow** in *southwest* (North Fork/Red River, Beckham County) and *northwest* (Cimarron River, Woods County) Oklahoma.



Weather Forecast

The National Weather Service 8- to 14-day outlook (December 26–January 1) calls for below normal precipitation. Above normal temperatures are expected for the northwestern half of Oklahoma while normal temperatures should prevail in the southeast throughout the period.

Although much uncertainty exists, a majority of the statistical and coupled model forecasts indicate either continuation of near neutral El Niño Southern Oscillation (ENSO) conditions or development of weak La Niña conditions in the near future. El Niños, warm water patterns that increase the chances for cooler, wetter conditions in the southern U.S. (including Oklahoma), occur about every two to seven years. La Niña is a cold-water phenomenon that is generally believed to cause drier conditions throughout the western U.S.

Crop Report

November 28 – Ninety-one percent of the state reported topsoil moisture as very short to short last week, leaving a mere 9 percent of the state reporting adequate moisture conditions. Subsoil moisture was also extremely low as three-quarters of the state was reported to be very short to short. The excessively dry conditions and the multitude of wind advisories across Oklahoma over the weekend led to a large number of native pasture acres being lost to wildfires. There were 6.5 days suitable for field work last week.

The wheat condition dropped to mostly fair over the week joining rye and oats that have remained in that category for more than three weeks now. Wheat emergence inched even closer to completion while oat emergence increased 1 point to 62 percent complete. Oats seedbeds prepared and planted struggled to progress at only 94 and 67 percent completed, respectively.

Row crop harvest continued to advance in the dry conditions. Sorghum and soybean harvest were virtually complete at 93 and 97 percent, respectively. Cotton harvest jumped 5 points to 71 percent complete. Although cotton harvest was slightly behind normal, it was 15 points ahead of this time last year.

Alfalfa conditions were rated as mostly good to fair. The sixth cutting of alfalfa reached 70 percent, with progress slowed due to the extremely dry conditions.

Pastures conditions were mostly fair to good. Statewide, hay supplies for the rest of the season remained mostly average. However, east central and southeast Oklahoma reported hay supplies at 84 and 86 percent below average, respectively.

Livestock conditions were mostly good. Livestock marketings were rated as average. Death loss of cattle was mostly light. Livestock insect activity was none to light.

Reservoir Storage

Lake storage continues to decrease in many areas of Oklahoma, especially in the east. As of December 19, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 84.5 percent full, a 1.2 percent decrease from that recorded on November 28, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-four reservoirs have experienced lake level decreases since that time; 28 reservoirs are currently operating at less than full capacity (compared to 28 three weeks ago). Eleven reservoirs—including Lugert-Altus, only 37.6 percent full—are now below 80 percent capacity.

| Storage in Selected Oklahoma Lakes & Reservoirs | | | |
|--|---|--|--|
| 12/19/2005 | | | |
| Climate Division Lake or Reservoir | Conservation Storage (acre-feet) | Present Storage (acre-feet) | Percent of Conservation Storage |
| North Central | | | |
| Fort Supply | 13,900 | 13,712 | 98.6 |
| Great Salt Plains | 31,420 | 31,420 | 100.0 |
| Kaw* | 408,317 | 408,317 | 100.0 |
| Regional Totals/Averages | 453,637 | 453,449 | 100.0 |
| Northeast | | | |
| Birch | 19,225 | 13,668 | 71.1 |
| Copan | 43,713 | 33,195 | 75.9 |
| Fort Gibson | 365,200 | 360,338 | 98.7 |
| Grand | 1,672,000 | 1,486,861 | 88.9 |
| Hudson | 200,300 | 167,900 | 83.8 |
| Hulah | 32,430 | 21,403 | 66.0 |
| Keystone | 510,059 | 398,282 | 78.1 |
| Oologah | 603,559 | 535,909 | 88.8 |
| Skiatook | 322,700 | 270,664 | 83.9 |
| Regional Totals/Averages | 3,769,186 | 3,288,220 | 87.2 |
| West Central | | | |
| Canton | 111,310 | 108,058 | 97.1 |
| Foss | 165,480 | 151,500 | 91.6 |
| Regional Totals/Averages | 276,790 | 259,558 | 93.8 |
| Central | | | |
| Arcadia | 27,520 | 26,737 | 97.2 |
| Heyburn | 7,105 | 6,255 | 88.0 |
| Thunderbird | 119,600 | 102,190 | 85.4 |
| Regional Totals/Averages | 154,225 | 135,182 | 87.7 |
| East Central | | | |
| Eufaula* | 2,314,583 | 1,715,760 | 74.1 |
| Tenkiller | 654,100 | 508,503 | 77.7 |
| Regional Totals/Averages | 2,968,683 | 2,224,263 | 74.9 |
| Southwest | | | |
| Fort Cobb | 80,010 | 80,010 | 100.0 |
| Lugert-Altus | 132,830 | 49,992 | 37.6 |
| Tom Steed | 88,970 | 62,896 | 70.7 |
| Regional Totals/Averages | 301,810 | 192,898 | 63.9 |
| South Central | | | |
| Arbuckle | 72,400 | 69,442 | 95.9 |
| McGee Creek | 113,930 | 102,120 | 89.6 |
| Texoma* | 2,637,002 | 2,435,946 | 92.4 |
| Waurika* | 190,200 | 177,417 | 93.3 |
| Regional Totals/Averages | 3,013,532 | 2,784,925 | 92.4 |
| Southeast | | | |
| Broken Bow* | 918,070 | 711,477 | 77.5 |
| Hugo* | 184,917 | 122,998 | 66.5 |
| Pine Creek* | 53,750 | 43,338 | 80.6 |
| Sardis | 274,330 | 247,120 | 90.1 |
| Wister | 60,162 | 37,648 | 62.6 |
| Regional Totals/Averages | 1,491,229 | 1,162,581 | 78.0 |
| State Totals | 12,429,092 | 10,501,076 | 84.5 |

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

Baron Fork at Eldon

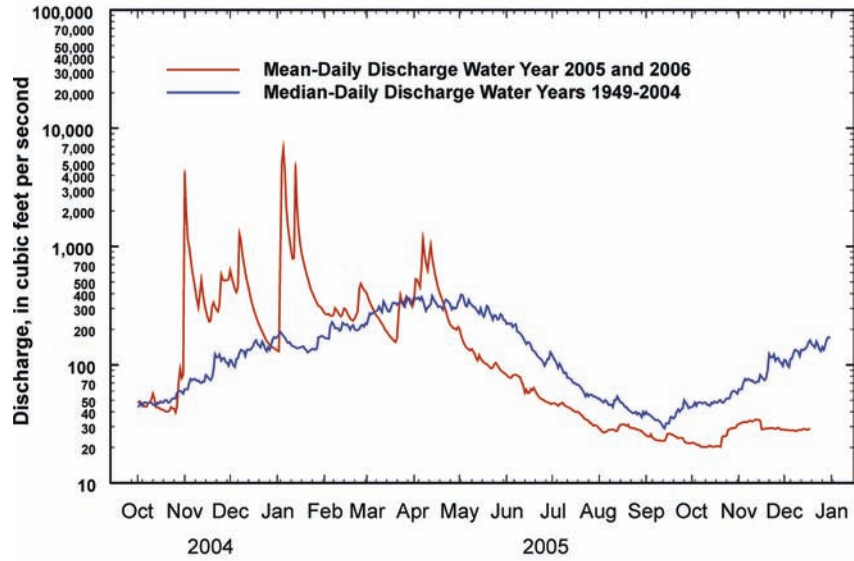
Baron Fork at Eldon, Oklahoma

Station No. 07197000 Northeast Oklahoma

Drainage Area 307 square miles

PROVISIONAL DATA

DECEMBER 19, 2005



Comparison of daily discharges for water year 2005 and 2006 and period of record

Data from U.S. Geological Survey

Canadian River at Purcell

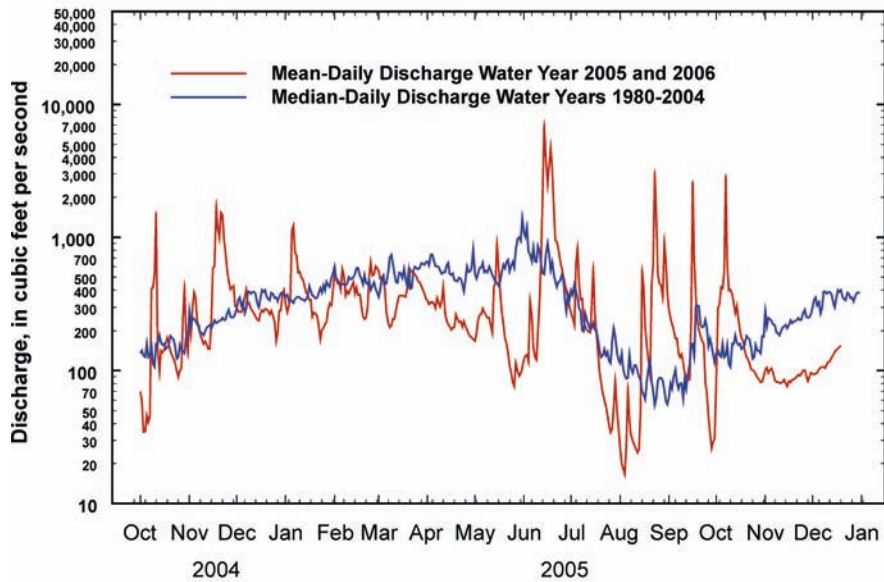
Canadian River at Purcell, Oklahoma

Station No. 07229200 Central Oklahoma

Drainage Area 25,939 square miles

PROVISIONAL DATA

DECEMBER 19, 2005

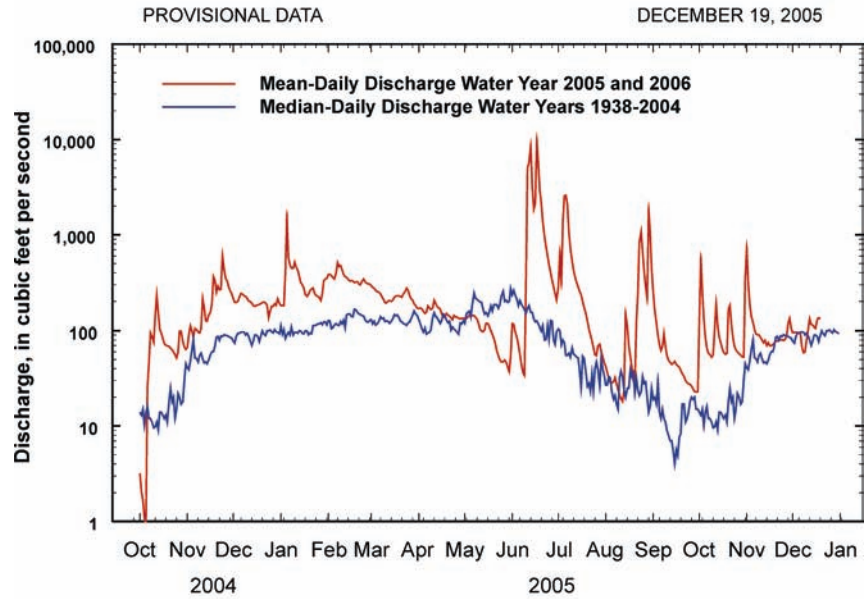


Comparison of daily discharges for water year 2005 and 2006 and period of record

Data from U.S. Geological Survey

Cimarron River near Waynoka

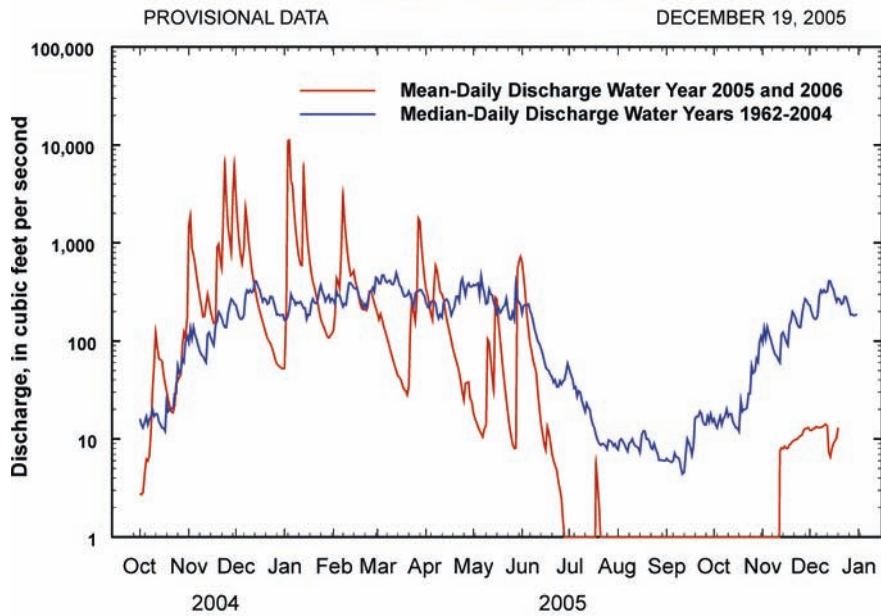
Cimarron River near Waynoka, Oklahoma
 Station No. 07158000 Northwest Oklahoma
 Drainage Area 13,334 square miles



Comparison of daily discharges for water year 2005 and 2006 and period of record
 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 2005 and 2006 and period of record
 Data from U.S. Geological Survey

North Fork of the Red River near Carter

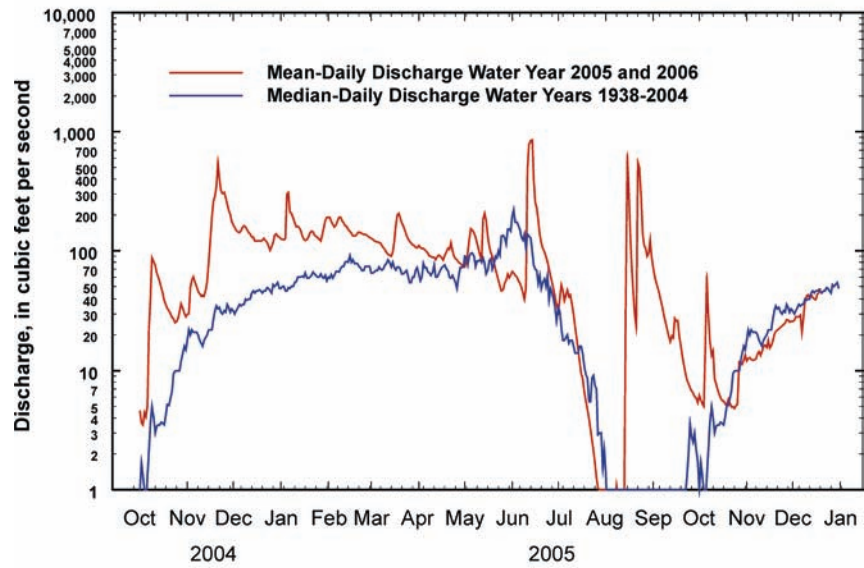
North Fork of the Red River near Carter, Oklahoma

Station No. 07301500 Southwest Oklahoma

Drainage Area 2,337 square miles

PROVISIONAL DATA

DECEMBER 19, 2005



Comparison of daily discharges for water year 2005 and 2006 and period of record

Data from U.S. Geological Survey

Washita River near Dickson

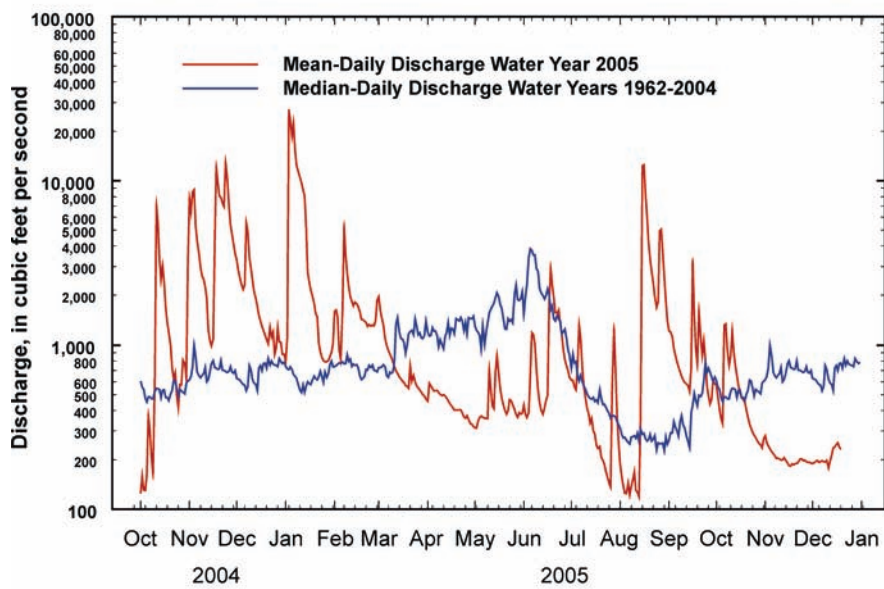
Washita River near Dickson, Oklahoma

Station No. 07331000 South-Central Oklahoma

Drainage Area 7,202 square miles

PROVISIONAL DATA

DECEMBER 19, 2005



Comparison of daily discharges for water year 2005 and 2006 and period of record

Data from U.S. Geological Survey