Drought Conditions in Central Oklahoma

Water Resources Division
Association of Central Oklahoma Governments
January 27, 2017
Temperature and Precipitation Plot for Oklahoma City, Oklahoma for 2017

http://xmacis.rcc-acis.org/
Rainfall Summaries by Oklahoma Climate Division

The climate divisions shown include statewide totals, central Oklahoma totals, and totals for the two divisions which have Canton Lake and Lake Atoka—major water sources for central Oklahoma.

![Map of Oklahoma Climate Divisions](http://climate.ok.gov/index.php/drought/last_30_days/)

### Calendar Year 01-Jan-2017 through 26-Jan-2017

<table>
<thead>
<tr>
<th>Climate Division</th>
<th>Total Rainfall</th>
<th>Departure from Normal</th>
<th>Pct of Normal</th>
<th>Rank since 1921 (88 periods)</th>
<th>Driest on Record</th>
<th>Wettest on Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. Central</td>
<td>2.68&quot;</td>
<td>+1.91&quot;</td>
<td>349%</td>
<td>2nd wettest</td>
<td>0.00&quot; (1986)</td>
<td>3.62&quot; (1949)</td>
</tr>
<tr>
<td>Central</td>
<td>2.17&quot;</td>
<td>+1.00&quot;</td>
<td>186%</td>
<td>11th wettest</td>
<td>0.00&quot; (1986)</td>
<td>5.34&quot; (1949)</td>
</tr>
<tr>
<td>S. Central</td>
<td>2.85&quot;</td>
<td>+1.17&quot;</td>
<td>170%</td>
<td>14th wettest</td>
<td>0.02&quot; (2003)</td>
<td>6.85&quot; (1932)</td>
</tr>
<tr>
<td>Statewide</td>
<td>2.52&quot;</td>
<td>+1.22&quot;</td>
<td>194%</td>
<td>8th wettest</td>
<td>0.04&quot; (1986)</td>
<td>4.96&quot; (1932)</td>
</tr>
</tbody>
</table>

### Water Year: 01-Oct-2016 through 26-Jan-2017

<table>
<thead>
<tr>
<th>Climate Division</th>
<th>Total Rainfall</th>
<th>Departure from Normal</th>
<th>Pct of Normal</th>
<th>Rank since 1921 (88 periods)</th>
<th>Driest on Record</th>
<th>Wettest on Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. Central</td>
<td>5.06&quot;</td>
<td>-1.25&quot;</td>
<td>80%</td>
<td>48th wettest</td>
<td>1.10&quot; (1950-51)</td>
<td>13.40&quot; (1986-87)</td>
</tr>
<tr>
<td>Central</td>
<td>5.39&quot;</td>
<td>-3.89&quot;</td>
<td>58%</td>
<td>23rd driest</td>
<td>2.26&quot; (1921-22)</td>
<td>16.68&quot; (1931-32)</td>
</tr>
<tr>
<td>S. Central</td>
<td>7.79&quot;</td>
<td>-3.58&quot;</td>
<td>69%</td>
<td>29th driest</td>
<td>2.10&quot; (1950-51)</td>
<td>22.55&quot; (2015-16)</td>
</tr>
<tr>
<td>Statewide</td>
<td>6.44&quot;</td>
<td>-2.94&quot;</td>
<td>69%</td>
<td>23rd driest</td>
<td>2.43&quot; (1950-51)</td>
<td>15.88&quot; (2015-16)</td>
</tr>
</tbody>
</table>

### Winter: 01-Dec-2016 through 26-Jan-2017

<table>
<thead>
<tr>
<th>Climate Division</th>
<th>Total Rainfall</th>
<th>Departure from Normal</th>
<th>Pct of Normal</th>
<th>Rank since 1921 (88 periods)</th>
<th>Driest on Record</th>
<th>Wettest on Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. Central</td>
<td>3.54&quot;</td>
<td>+1.55&quot;</td>
<td>178%</td>
<td>11th wettest</td>
<td>0.22&quot; (1981-82)</td>
<td>4.89&quot; (1959-60)</td>
</tr>
<tr>
<td>Central</td>
<td>2.85&quot;</td>
<td>-0.31&quot;</td>
<td>90%</td>
<td>35th wettest</td>
<td>0.38&quot; (2005-06)</td>
<td>8.47&quot; (1984-85)</td>
</tr>
<tr>
<td>S. Central</td>
<td>3.73&quot;</td>
<td>-0.54&quot;</td>
<td>87%</td>
<td>47th wettest</td>
<td>0.69&quot; (1922-23)</td>
<td>10.94&quot; (1997-98)</td>
</tr>
<tr>
<td>Statewide</td>
<td>3.34&quot;</td>
<td>-0.03&quot;</td>
<td>99%</td>
<td>32nd wettest</td>
<td>0.74&quot; (2005-06)</td>
<td>7.43&quot; (1997-98)</td>
</tr>
</tbody>
</table>

[http://climate.ok.gov/index.php/drought/last_30_days/]
White areas are shown as EC (Equal Chance) on these maps represent areas where there are no strong climate signals from the climate tools to have skill in preferring one category over another. That doesn’t mean that there are equal chances of each of the categories occurring – it means that currently there is no skill in identifying the most likely category. In these areas, it is best to be prepared for all possibilities.
Statewide Precipitation Monthly Totals vs. Normal

This graph shows the cyclical nature of wet and drought periods in Oklahoma. The black dots represent the annual precipitation for that particular year. The line represents the annual precipitation data smoothed over five years. This smoothed line shows well the wet periods (shaded green) and the drought periods (shaded brown). The drought cycles appear to average about five to eight years in length.
The Palmer Drought Index (PDI) maps show long-term (cumulative) meteorological drought and wet conditions. The maps show how the geographical pattern of the long-term (meteorological) moisture conditions has changed over the last 12 months. On these maps, the red shading denotes drought conditions while the green shading indicates wet conditions.

For an animated gif of the long term PDI see http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html.
# U.S. Drought Monitor

## Regional Map Week of 24 JAN 2017

<table>
<thead>
<tr>
<th>Week</th>
<th>None</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current</strong> 2017-01-24</td>
<td>4.49</td>
<td>95.51</td>
<td>79.90</td>
<td>30.95</td>
<td>3.90</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Last Week</strong> 2017-01-17</td>
<td>4.08</td>
<td>95.92</td>
<td>81.05</td>
<td>31.71</td>
<td>4.17</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>3 Months Ago</strong> 2016-10-25</td>
<td>47.43</td>
<td>52.57</td>
<td>25.04</td>
<td>4.26</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Start of Calendar Year</strong>  2016-12-27</td>
<td>5.63</td>
<td>94.37</td>
<td>72.32</td>
<td>46.73</td>
<td>3.14</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Start of Water Year</strong>     2016-09-27</td>
<td>57.82</td>
<td>42.18</td>
<td>19.04</td>
<td>3.05</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>One Year Ago</strong> 2016-01-26</td>
<td>100.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

---

## U.S. Drought Monitor

**Oklahoma**

Estimated Population in Drought Areas: 3,426,240

---

U.S. Drought Monitor Nationwide Map

January 24, 2017
(Released Thursday, Jan. 26, 2017)
Valid 7 a.m. EST

Drought Impact Types:
- Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g., agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g., hydrology, ecology)

Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu
U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for January 2017
Released December 31, 2016

Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center


http://go.usa.gov/3eZGd
U.S. Drought Monitor
Seasonal Drought Outlook Map

USGS Streamflow Data

https://waterdata.usgs.gov/ok/nwis/rt

http://ok.water.usgs.gov/drought/
SOIL MOISTURE MAP

1-day Average 24-inch Fractional Water Index

1.0 - 0.8 Enhanced Growth
0.8 - 0.5 Limited Growth
0.5 - 0.3 Plants Wilting
0.3 - 0.1 Plants Dying
< 0.1 Barren Soil

http://www.mesonet.org/index.php/weather/map/24-inch_fractional_water_index/soil_moisture
CONSECUTIVE DAYS WITHOUT RAINFALL MAP

http://www.mesonet.org/index.php/weather/map/consecutive_days_with_less_than_0.25_inches_Rainfall/rainfall
Percent of Surface Water Conservation Storage
Central OK Reservoirs

The graph is the amount of water stored in five major lakes that supply water to central Oklahoma as a percent of capacity over the past year.

Lake Hefner and Lake Overholser are terminal storage for Canton Lake. Lake Draper is terminal storage for McGee Creek and Atoka Lakes.

<table>
<thead>
<tr>
<th>LAKE</th>
<th>% CAPACITY</th>
<th>% CHANGE FROM 12/31/2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canton</td>
<td>100.0</td>
<td>2.6</td>
</tr>
<tr>
<td>Arcadia</td>
<td>100.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Lake Thunderbird</td>
<td>89.1</td>
<td>0.2</td>
</tr>
<tr>
<td>McGee Creek</td>
<td>80.3</td>
<td>-3.8</td>
</tr>
<tr>
<td>Lake Atoka</td>
<td>70.7</td>
<td>-2.3</td>
</tr>
<tr>
<td>TOTAL % CAPACITY</td>
<td>85.1</td>
<td>-0.8</td>
</tr>
</tbody>
</table>

Oklahoma Surface Water Resources
Reservoir Levels and Storage as of 1/24/2017

Reservoir Storage
(Percent of Normal Pool Storage as of 1/24/2017)

- > 100%
- 100% - 90%
- 90% - 80%
- 80% - 70%
- 70% - 60%
- 60% - 50%
- 50% - 40%
- 40% - 30%
- 30% - 20%
- < 20%

Reservoir Levels
Positive number indicates the lake level in feet, above the normal pool elevation.
Negative number indicates the lake level in feet, below the normal pool elevation.

This map shows reservoir storage as a percentage of normal pool storage capacity.
The source information was collected from real-time lake gauges monitored by the
U.S. Army Corps of Engineers (http://www.srce.usace.army.mil), and the
U.S. Geological Survey (http://waterdata.usgs.gov/ok/nwis). For more information please visit the OWRB’s website at
( http://www.owrb.ok.gov/).

Groundwater Levels
Spencer Mesonet Station

http://www.mesonet.org/index.php/weather/groundwater
La Niña conditions are present.

Equatorial sea surface temperatures (SSTs) are near-to-below average in the central and east-central Pacific Ocean. They are above-average in the far eastern Pacific Ocean.

A transition to ENSO-neutral is expected to occur by February 2017, with ENSO-neutral then continuing through the first half of 2017.