Drought Conditions in Central Oklahoma

Water Resources Division
Association of Central Oklahoma Governments
January 01, 2022
Temperature and Precipitation Plot for Oklahoma City, Oklahoma for 2021

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

<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>25.64&quot;</td>
<td>-2.82&quot;</td>
<td>90%</td>
<td>48th driest</td>
<td>14.18&quot; (1956-57)</td>
<td>43.12&quot; (1997-98)</td>
</tr>
<tr>
<td>Central</td>
<td>33.83&quot;</td>
<td>-3.89&quot;</td>
<td>90%</td>
<td>43rd driest</td>
<td>20.07&quot; (1954-55)</td>
<td>53.89&quot; (2007-08)</td>
</tr>
<tr>
<td>S. Central</td>
<td>35.28&quot;</td>
<td>-5.57&quot;</td>
<td>86%</td>
<td>38th driest</td>
<td>20.12&quot; (1963-64)</td>
<td>72.46&quot; (2015-16)</td>
</tr>
<tr>
<td>Statewide</td>
<td>33.16&quot;</td>
<td>-3.41&quot;</td>
<td>91%</td>
<td>40th driest</td>
<td>20.81&quot; (1956-57)</td>
<td>54.03&quot; (2015-16)</td>
</tr>
</tbody>
</table>

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.

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.
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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.
U.S. Drought Monitor

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</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>Current</td>
<td>2021-12-28</td>
<td>4.92</td>
<td>95.08</td>
<td>90.17</td>
<td>72.51</td>
<td>22.62</td>
<td>0.00</td>
</tr>
<tr>
<td>Last Week</td>
<td>2021-12-21</td>
<td>9.90</td>
<td>90.10</td>
<td>79.18</td>
<td>43.68</td>
<td>8.83</td>
<td>0.00</td>
</tr>
<tr>
<td>3 Months Ago</td>
<td>2021-09-28</td>
<td>6.45</td>
<td>93.55</td>
<td>73.23</td>
<td>23.72</td>
<td>2.65</td>
<td>0.00</td>
</tr>
<tr>
<td>Start of Calendar Year</td>
<td>2020-12-29</td>
<td>56.83</td>
<td>43.17</td>
<td>25.21</td>
<td>7.75</td>
<td>1.45</td>
<td>0.00</td>
</tr>
<tr>
<td>Start of Water Year</td>
<td>2021-09-28</td>
<td>6.45</td>
<td>93.55</td>
<td>73.23</td>
<td>23.72</td>
<td>2.65</td>
<td>0.00</td>
</tr>
<tr>
<td>One Year Ago</td>
<td>2020-12-29</td>
<td>56.83</td>
<td>43.17</td>
<td>25.21</td>
<td>7.75</td>
<td>1.45</td>
<td>0.00</td>
</tr>
</tbody>
</table>

U.S. Drought Monitor

Oklahoma

Abnormal dryness or drought are currently affecting approximately 1,817,374 people in Oklahoma.

U.S. Drought Monitor Nationwide Map

Map released: December 30, 2021
Data valid: December 28, 2021

United States and Puerto Rico Author(s):
Brad Pugh, NOAA/CPC

Pacific Islands and Virgin Islands Author(s):
Brad Rippey, U.S. Department of Agriculture

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

U.S. Monthly Drought Outlook
Drought Tendency During the Valid Period

Valid for January 2022
Released December 31, 2021

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short-lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 4-category improvement in the Drought Monitor intensity from the start of the period, although drought will remain. The green areas imply drought removal by the end of the period (D3 or none).

U.S. Drought Monitor
Seasonal Drought Outlook Map


http://go.usa.gov/3eZ73
USGS Streamflow Data

Monday, January 03, 2022 14:30ET

Below normal 28-day average streamflow

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

https://waterwatch.usgs.gov/index.php?id=pa28d_dry&sid=w_map1m_pa28d_dwc&r=ok
SOIL MOISTURE MAP

1-day Average 24-inch Fractional Water Index

January 2, 2022
Created 9:30:14 AM January 3, 2022 CST. © Copyright 2022

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
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.
Oklahoma Surface Water Resources
Reservoir Levels and Storage as of 12/28/2021

Reservoir Storage
(Percent of Normal Pool Storage as of 12/28/2021)
- > 100%
- 100% - 90%
- 89% - 80%
- 79% - 70%
- 69% - 60%
- 59% - 50%
- 49% - 40%
- 39% - 30%
- < 30%

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 gages maintained by the U.S. Army Corps of Engineers (http://www.hec.usace.army.mil/GIS/Real_Time_Reservoir_Report.pdf), and the U.S. Geological Survey (http://waterdata.usgs.gov/ok/wnr/current?hype=lake&group_key=Easi). For more information please visit the OWRB’s website at: (http://www.owrb.ok.gov/)

https://www.owrb.ok.gov/supply/drought/reservoirstorage.php
Groundwater Levels
Spencer Mesonet Station

http://www.mesonet.org/index.php/weather/groundwater
Recharge Map
Central Oklahoma Aquifer System

AQUIFER RECHARGE DEC 2021

Recharge in Inches
- 0.0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0

0 2.5 5 10 Miles

Central Oklahoma Aquifer System
Garber-Wellington Aquifer Limits

acog
ENSO Cycle
Recent Evolution, Current Status and Predictions

ENSO Alert System Status: La Niña Advisory

- La Niña is present.
- Equatorial sea surface temperatures (SSTs) are below average across the central and east-central Pacific Ocean.
- The tropical Pacific atmosphere is consistent with La Niña.
- La Niña is favored to continue through the Northern Hemisphere winter 2021-22 (~95% chance) and transition to ENSO-neutral during the spring 2022 (~60% chance during April-June).

Summary