Drought Conditions in Central Oklahoma

Water Resources Division
Association of Central Oklahoma Governments
January 4, 2021
Temperature and Precipitation Plot for Oklahoma City, Oklahoma for 2020

http://xmacis.rcc-acis.org/
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/
NOAA One-Month Outlook

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.

http://www.cpc.ncep.noaa.gov/products/predictions/30-day/
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

Abnormal dryness or drought are currently affecting approximately 319,220 people in Oklahoma.

<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>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>Last Week</td>
<td>2020-12-22</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>3 Months Ago</td>
<td>2020-09-29</td>
<td>66.79</td>
<td>33.21</td>
<td>17.71</td>
<td>11.97</td>
<td>1.55</td>
<td>0.00</td>
</tr>
<tr>
<td>Start of Calendar Year</td>
<td>2019-12-31</td>
<td>76.45</td>
<td>23.55</td>
<td>10.47</td>
<td>3.64</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Start of Water Year</td>
<td>2020-09-29</td>
<td>66.79</td>
<td>33.21</td>
<td>17.71</td>
<td>11.97</td>
<td>1.55</td>
<td>0.00</td>
</tr>
<tr>
<td>One Year Ago</td>
<td>2019-12-31</td>
<td>76.45</td>
<td>23.55</td>
<td>10.47</td>
<td>3.64</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

### U.S. Drought Monitor

Oklahoma

U.S. Drought Monitor

Seasonal Drought Outlook Map
USGS Streamflow Data

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

https://waterwatch.usgs.gov/index.php?id=pa28d_dry&sid=w_map&m_pa28d_dwc&r=ok

Below normal 28-day average streamflow
SOIL MOISTURE MAP

1-day Average 24-inch Fractional Water Index

January 3, 2021

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 12/1/2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canton</td>
<td>100.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Arcadia</td>
<td>100.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Lake Thunderbird</td>
<td>100.0</td>
<td>2.1</td>
</tr>
<tr>
<td>McGee Creek</td>
<td>100.0</td>
<td>8.7</td>
</tr>
<tr>
<td>Lake Atoka</td>
<td>86.4</td>
<td>0.7</td>
</tr>
<tr>
<td>TOTAL % CAPACITY</td>
<td>96.4</td>
<td>2.8</td>
</tr>
</tbody>
</table>


http://waterdata.usgs.gov/ok/nwis/dv/?site_no=07333010&agency_cd=USGS&referred_module=sw
Oklahoma Surface Water Resources
Reservoir Levels and Storage as of 12/29/2020

Reservoir Storage
(Percent of Normal Pool Storage as of 12/29/2020)
- > 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://waterdata.usace.army.mil/Daily_Morning_Reservoir_Report.pdf) and the U.S. Geological Survey (http://waterdata.usgs.gov/ok/wholeres.php?key=basin_id). 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 JAN 2020 TO JAN 2021

Recharge in Inches

0 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5
4.5 - 5.0
5.0 - 5.5
5.5 - 6.0
6.0 - 6.5
6.5 - 7.0
7.0 - 7.5
7.5 - 8.0
**Summary**

ENSO Alert System Status: La Niña Advisory

- La Niña conditions are present.
- Equatorial sea surface temperatures (SSTs) are below average from the west-central to eastern Pacific Ocean.
- The tropical atmospheric circulation is consistent with La Niña.
- La Niña is likely to continue through the Northern Hemisphere winter 2020-21 (~95% chance during January-March), with a potential transition during the spring 2021 (~50% chance of Neutral during April-June).

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.ppt