

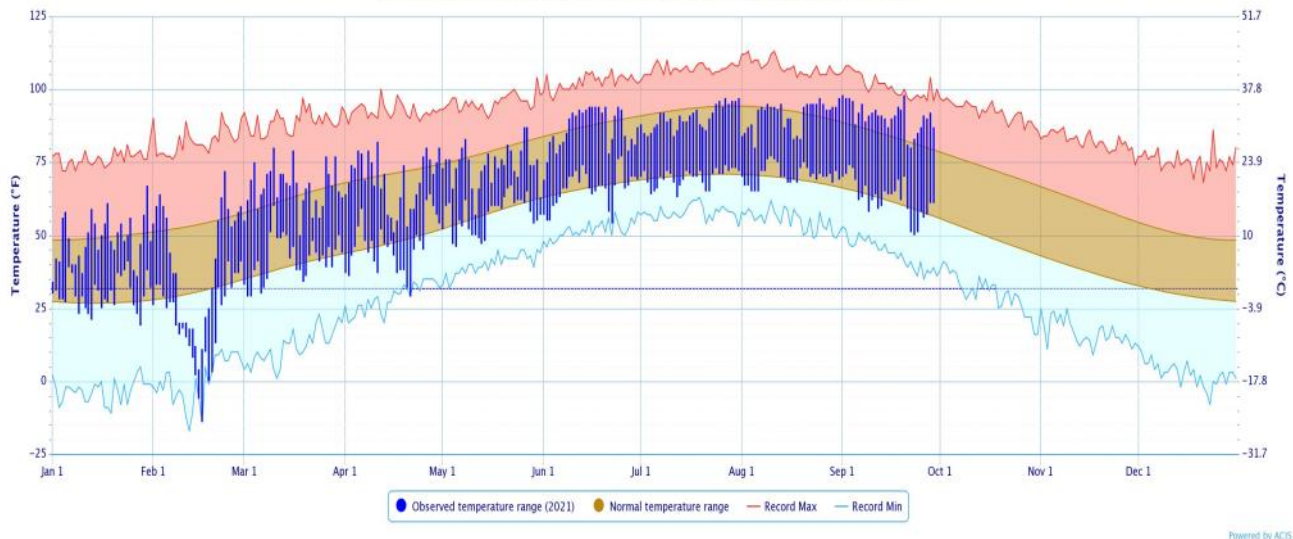


Drought Conditions in Central Oklahoma

**Water Resources Division
Association of Central Oklahoma Governments
October 1, 2021**

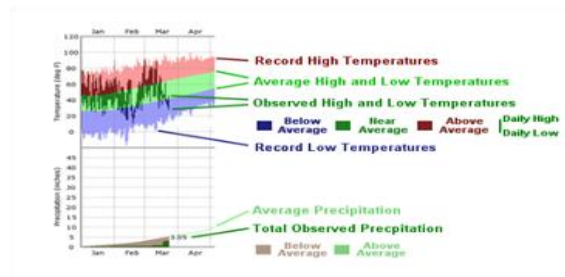
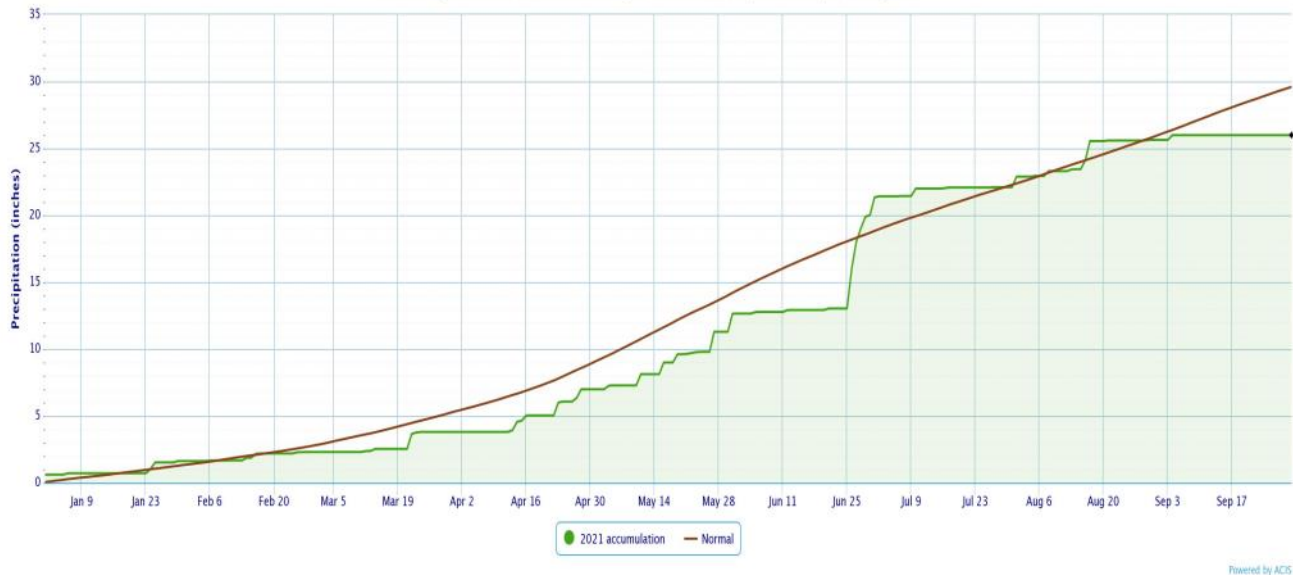
Temperature and Precipitation Plot for Oklahoma City, Oklahoma for 2021

Daily Temperature Data – Oklahoma City Area, OK



Accumulated Precipitation—Oklahoma City Area, OK

Click and drag to zoom to a shorter time interval, green/black diamonds represent subsequent/missing values



<http://xmacis.rcc-acis.org/>

Rainfall Summaries by Oklahoma Climate Division

Calendar Year 01-Jan-2021 through

29-Sep-2021

| Climate Division | Total Rainfall | Departure from Normal | Pct of Normal | Rank since 1921 (88 periods) | Driest on Record | Wettest on Record |
|------------------|----------------|-----------------------|---------------|------------------------------|------------------|-------------------|
| W. Central | 23.24" | +0.47" | 102% | 37th wettest | 8.26" (2011) | 35.74" (1997) |
| Central | 26.85" | -2.55" | 91% | 45th driest | 14.36" (1956) | 47.39" (2007) |
| S. Central | 28.64" | -2.27" | 93% | 42nd driest | 13.23" (2011) | 51.03" (1945) |
| Statewide | 26.66" | -1.62" | 94% | 44th driest | 14.87" (1956) | 41.25" (1957) |

Water Year: 01-Oct-2020 through

29-Sep-2021

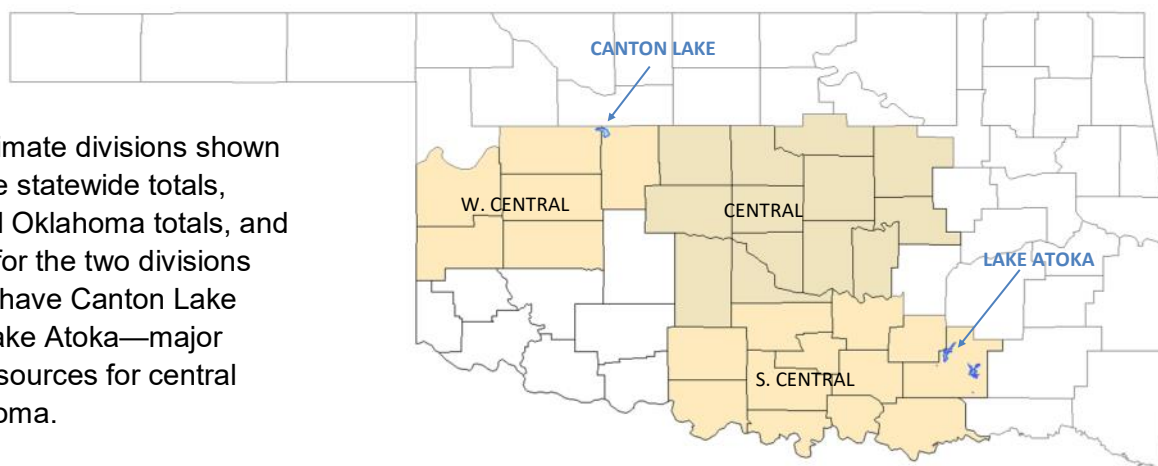
| Climate Division | Total Rainfall | Departure from Normal | Pct of Normal | Rank since 1921 (88 periods) | Driest on Record | Wettest on Record |
|------------------|----------------|-----------------------|---------------|------------------------------|------------------|-------------------|
| W. Central | 28.06" | -0.25" | 99% | 39th wettest | 12.80" (2010-11) | 43.13" (1994-95) |
| Central | 34.95" | -2.56" | 93% | 46th wettest | 19.58" (1955-56) | 54.39" (2006-07) |
| S. Central | 34.79" | -5.81" | 86% | 37th driest | 16.05" (1955-56) | 61.82" (1944-45) |
| Statewide | 33.99" | -2.37" | 93% | 50th wettest | 18.18" (1955-56) | 48.69" (1972-73) |

Autumn 01-Sep through

29-Sep-2021

| Climate Division | Total Rainfall | Departure from Normal | Pct of Normal | Rank since 1921 (88 periods) | Driest on Record | Wettest on Record |
|------------------|----------------|-----------------------|---------------|------------------------------|------------------|-------------------|
| W. Central | 0.80" | -1.91" | 30% | 12th driest | 0.05" (2000) | 7.94" (1923) |
| Central | 0.30" | -3.42" | 8% | 4th driest | 0.21" (1956) | 9.45" (1923) |
| S. Central | 0.63" | -3.23" | 16% | 8th driest | 0.15" (1956) | 10.81" (2018) |
| Statewide | 0.87" | -2.56" | 25% | 7th driest | 0.25" (1956) | 7.64" (1936) |

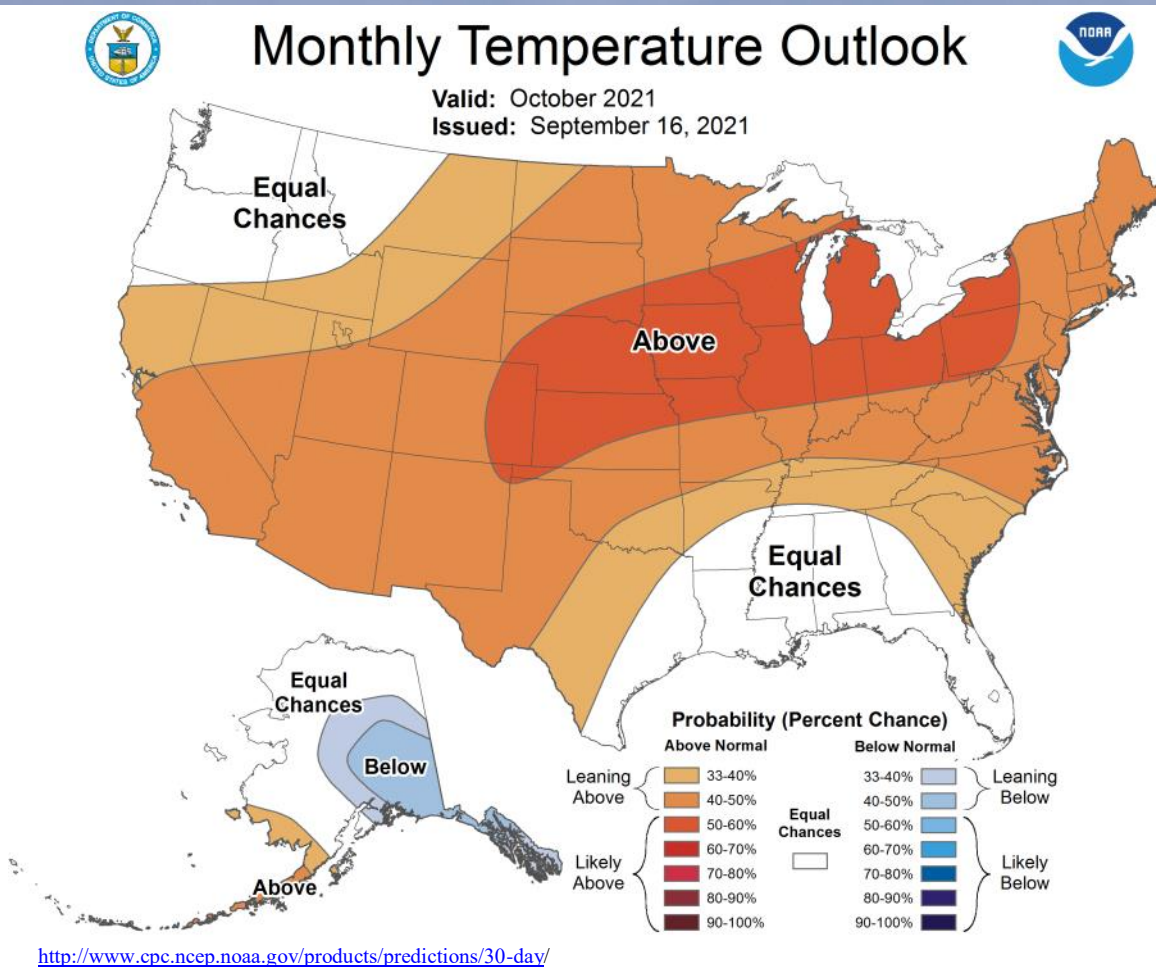
The climate divisions shown include statewide totals, central Oklahoma totals, and totals for the two divisions which have Canton Lake and Lake Atoka—major water sources for central Oklahoma.



http://climate.ok.gov/index.php/drought/last_30_days/

OKLAHOMA
CLIMATOLOGICAL SURVEY

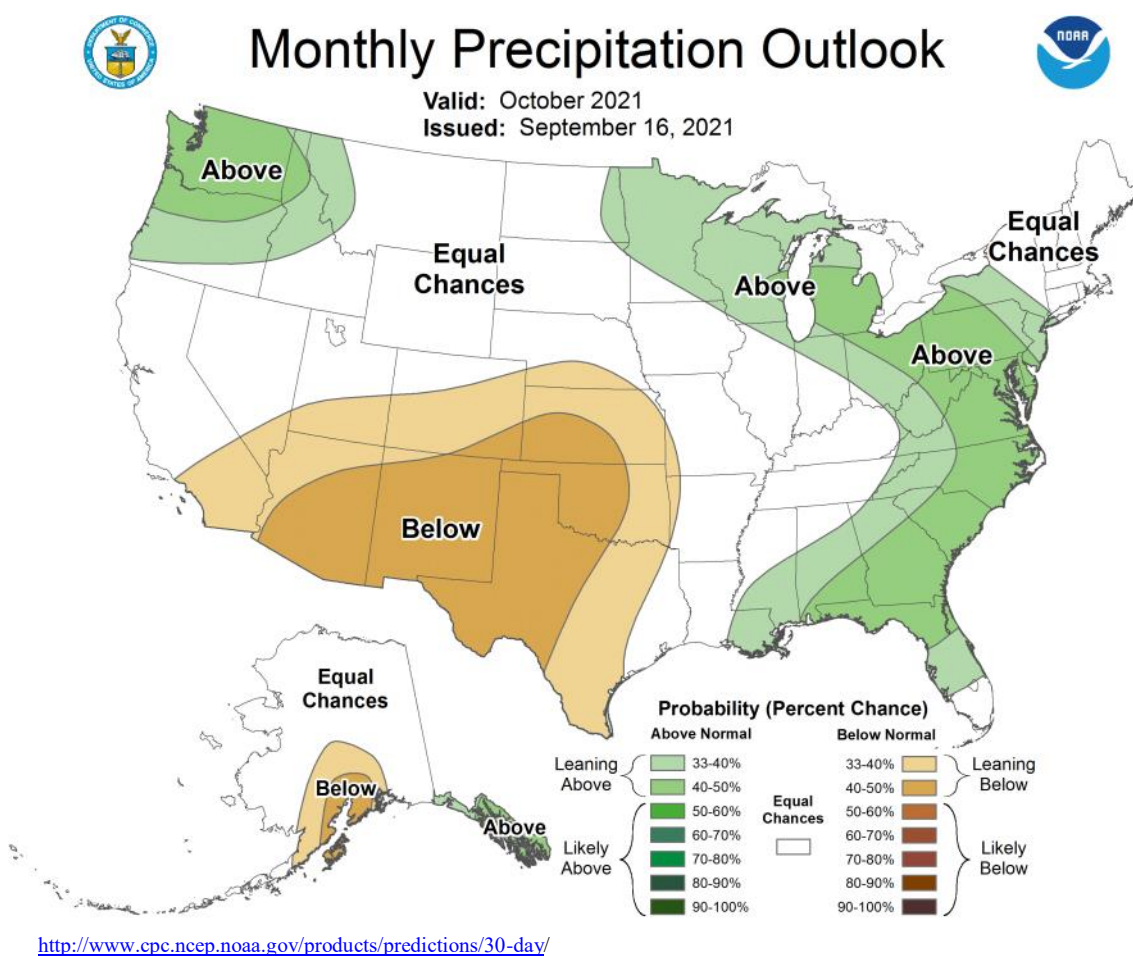
NOAA One-Month Outlook



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.

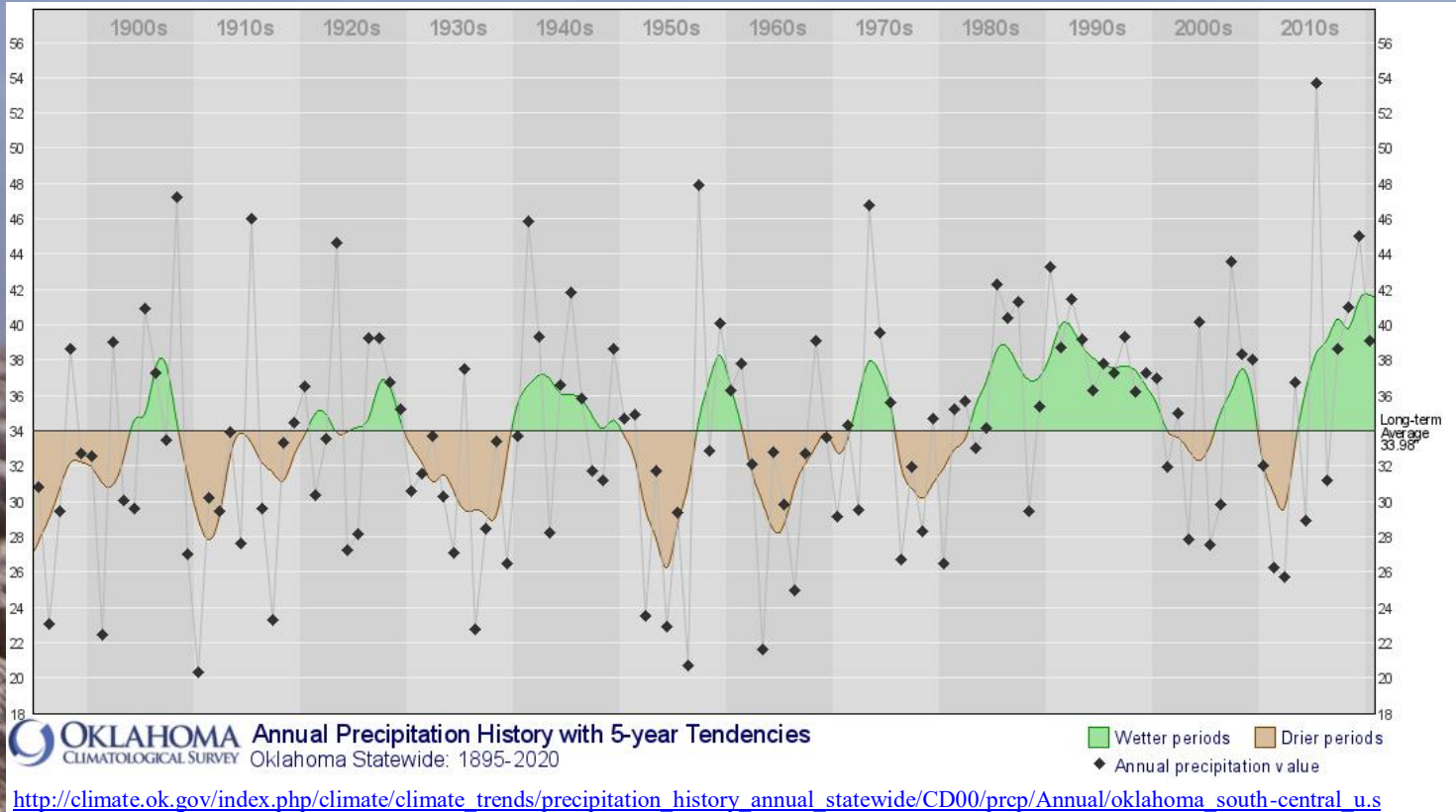
NOAA One-Month Outlook



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.

Annual Precipitation History with 5-Year Tendencies



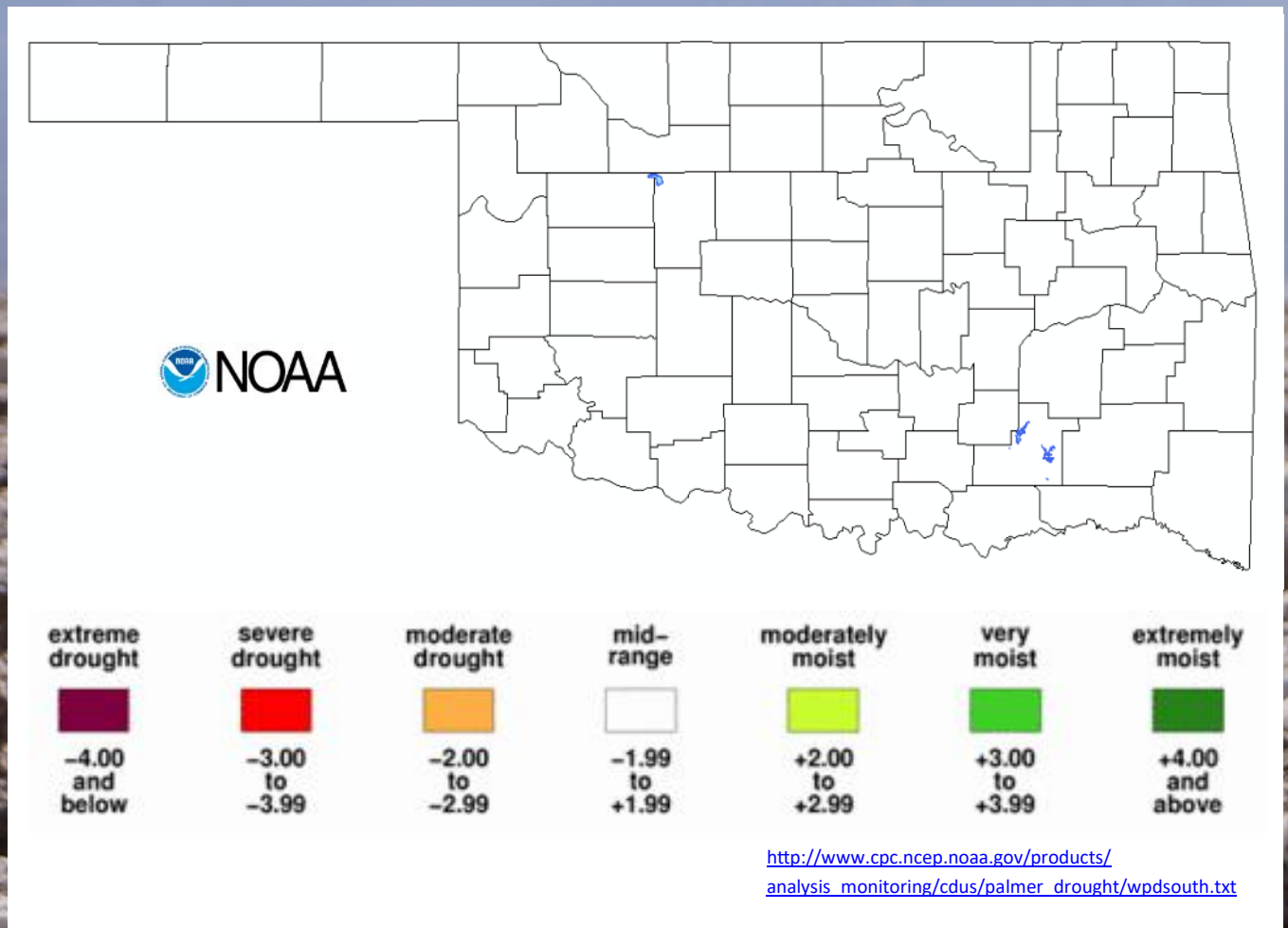
http://climate.ok.gov/index.php/climate/climate_trends/precipitation_history_annual_statewide/CD00/prcp/Annual/oklahoma_south-central_u.s

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.

Drought Severity Index by Climate Division

Palmer Value Ending 25 SEP 2021



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.

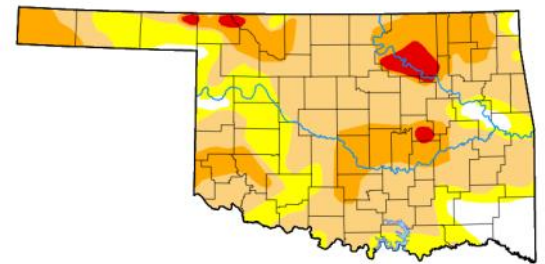
On these maps, the red shading denotes drought conditions while the green shading indicates wet conditions.

U.S. Drought Monitor

| Week | Date | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|------------------------|----------------------------|-------|-------|-------|-------|-------|------|
| Current | 2021-09-28 | 6.45 | 93.55 | 73.23 | 23.72 | 2.65 | 0.00 |
| Last Week | 2021-09-21 | 20.56 | 79.44 | 39.37 | 4.62 | 0.17 | 0.00 |
| 3 Months Ago | 2021-06-29 | 84.11 | 15.89 | 1.77 | 0.24 | 0.00 | 0.00 |
| Start of Calendar Year | 2020-12-29 | 56.83 | 43.17 | 25.21 | 7.75 | 1.45 | 0.00 |
| Start of Water Year | 2020-09-29 | 66.79 | 33.21 | 17.71 | 11.97 | 1.55 | 0.00 |
| One Year Ago | 2020-09-29 | 66.79 | 33.21 | 17.71 | 11.97 | 1.55 | 0.00 |

U.S. Drought Monitor Oklahoma

Abnormal dryness or drought are currently affecting approximately 3,265,835 people in Oklahoma.



Intensity:

■ D0 - Abnormally Dry
■ D1 - Moderate Drought
■ D2 - Severe Drought

■ D3 - Extreme Drought
■ D4 - Exceptional Drought

NATIONAL
INTEGRATED
DROUGHT
INFORMATION
SYSTEM



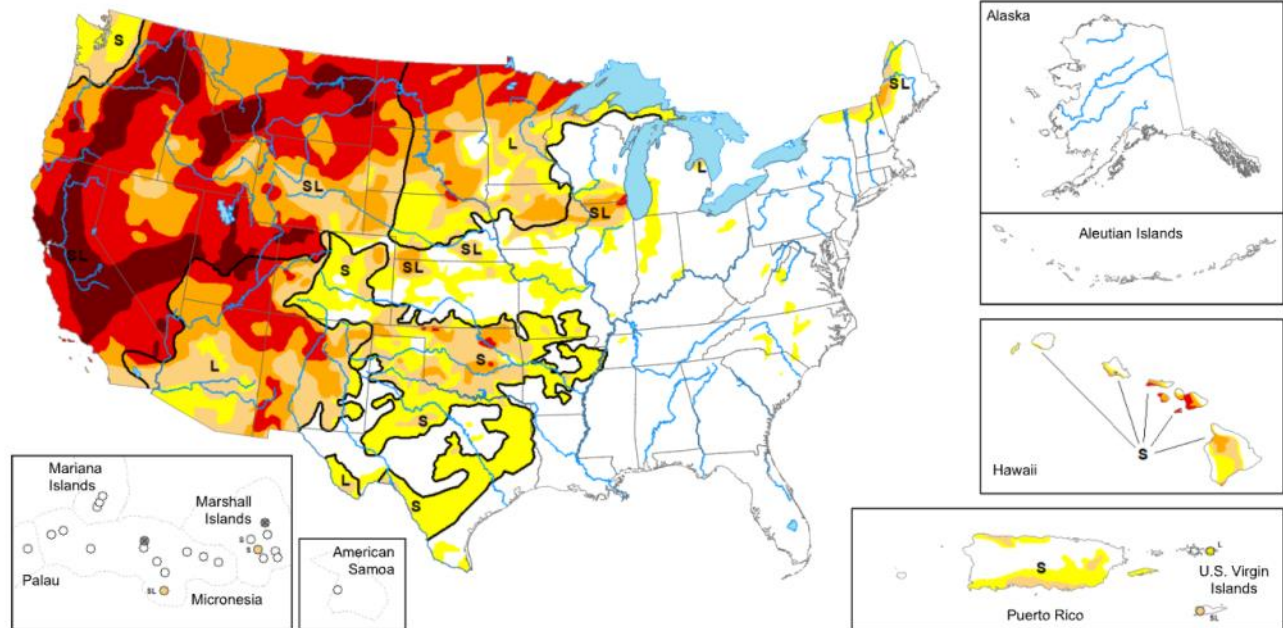
Drought.gov
U.S. Drought Portal

<https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?OK>

U.S. Drought Monitor Nationwide Map

Map released: September 30, 2021

Data valid: September 28, 2021



United States and Puerto Rico Author(s):
Brian Fuchs, National Drought Mitigation Center

Pacific Islands and Virgin Islands Author(s):
Ahira Sanchez-Lugo, NOAA/NCEI

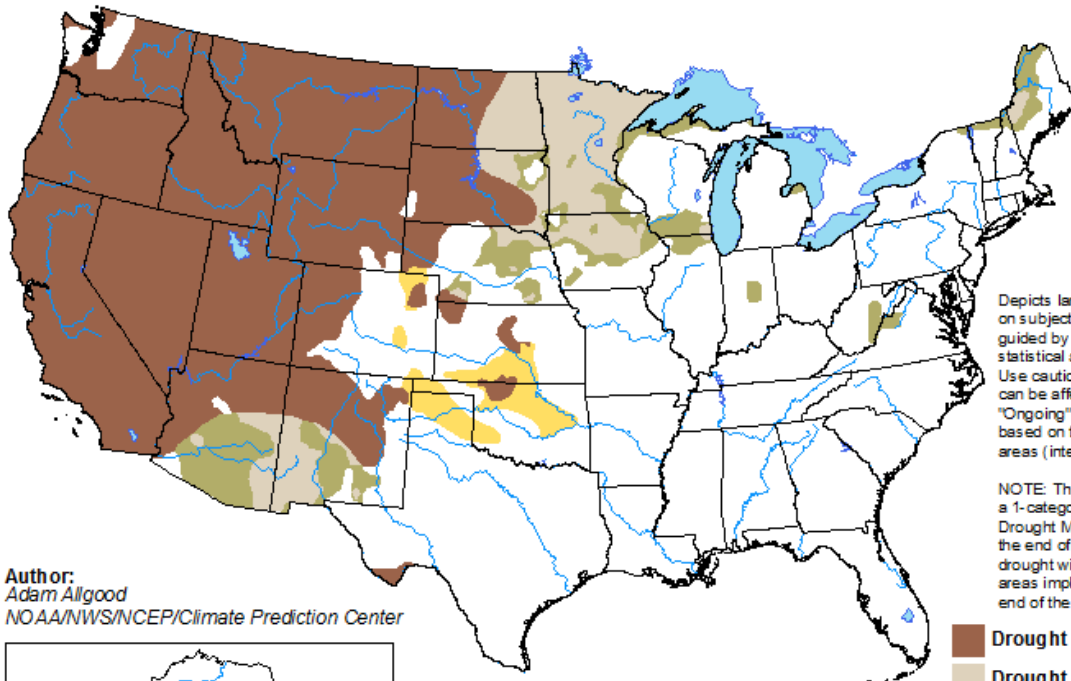
<http://droughtmonitor.unl.edu>

U.S. Drought Monitor

Monthly Drought Outlook Map

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

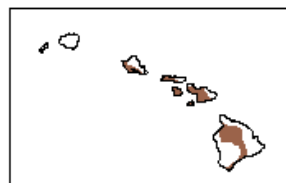
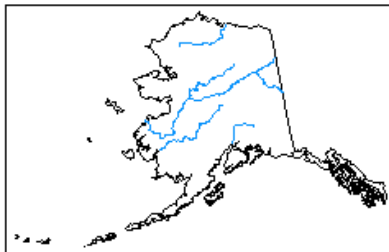
Valid for September 2021
Released August 31, 2021







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 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
Adam Allgood
NOAA/NWS/NCEP/Climate Prediction Center



-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



<http://go.usa.gov/3eZGd>

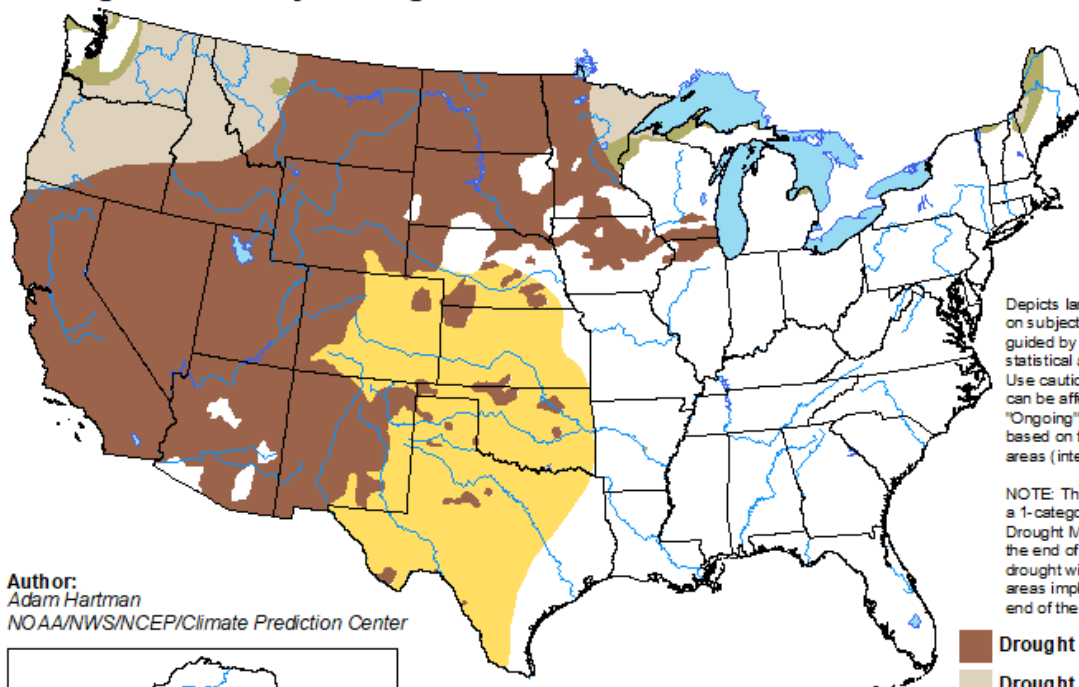
http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_summary.php

U.S. Drought Monitor

Seasonal Drought Outlook Map

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

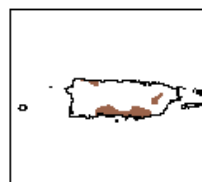
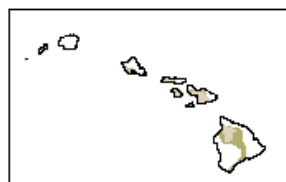
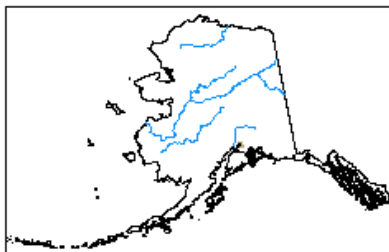
Valid for September 16 - December 31, 2021
Released September 16



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 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
Adam Hartman
NOAA/NWS/NCEP/Climate Prediction Center



- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely

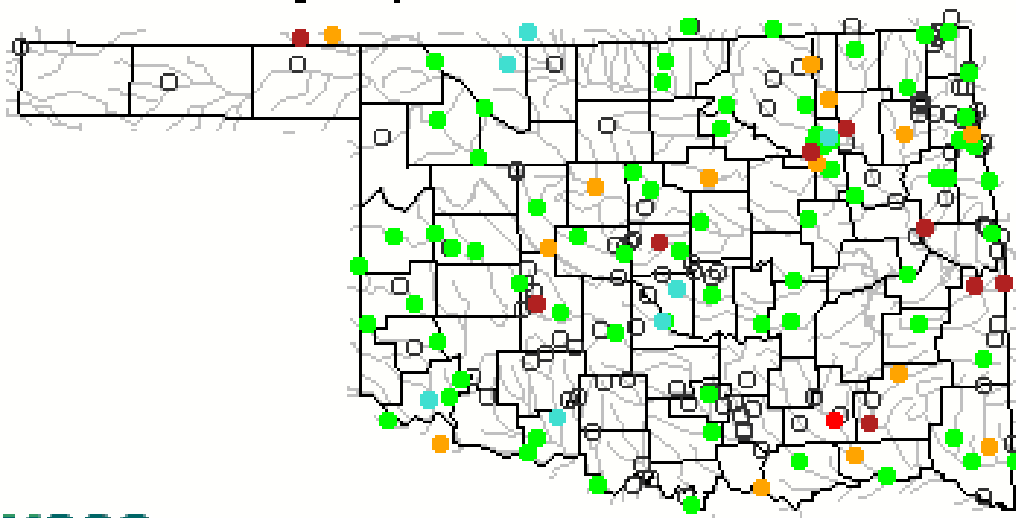


<http://go.usa.gov/3e273>

http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

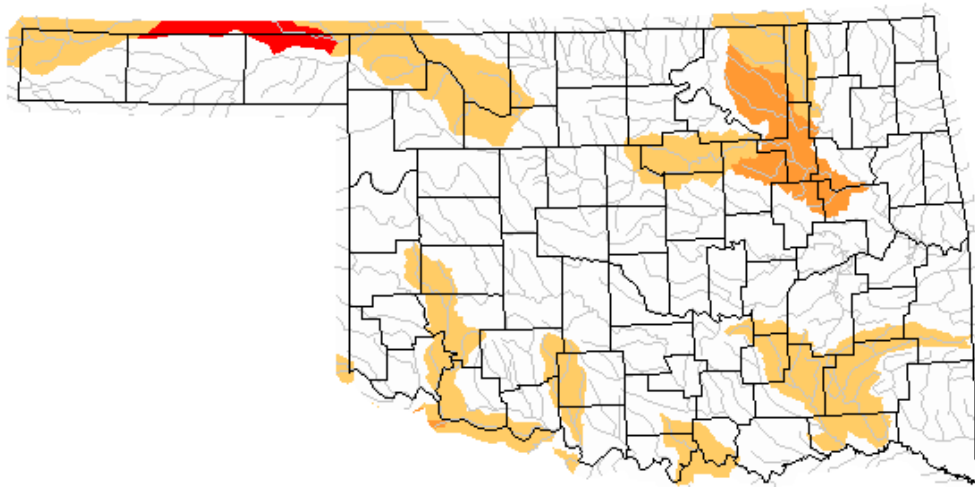
USGS Streamflow Data

Thursday, September 30, 2021 10:30ET



| Explanation - Percentile classes | | | | | | | |
|------------------------------------|------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| ● | ● | ● | ● | ● | ● | ● | ○ |
| Low | <10 Much below normal | 10-24 Below normal | 25-75 Normal | 76-90 Above normal | >90 Much above normal | High | Not-ranked |

Wednesday, September 29, 2021



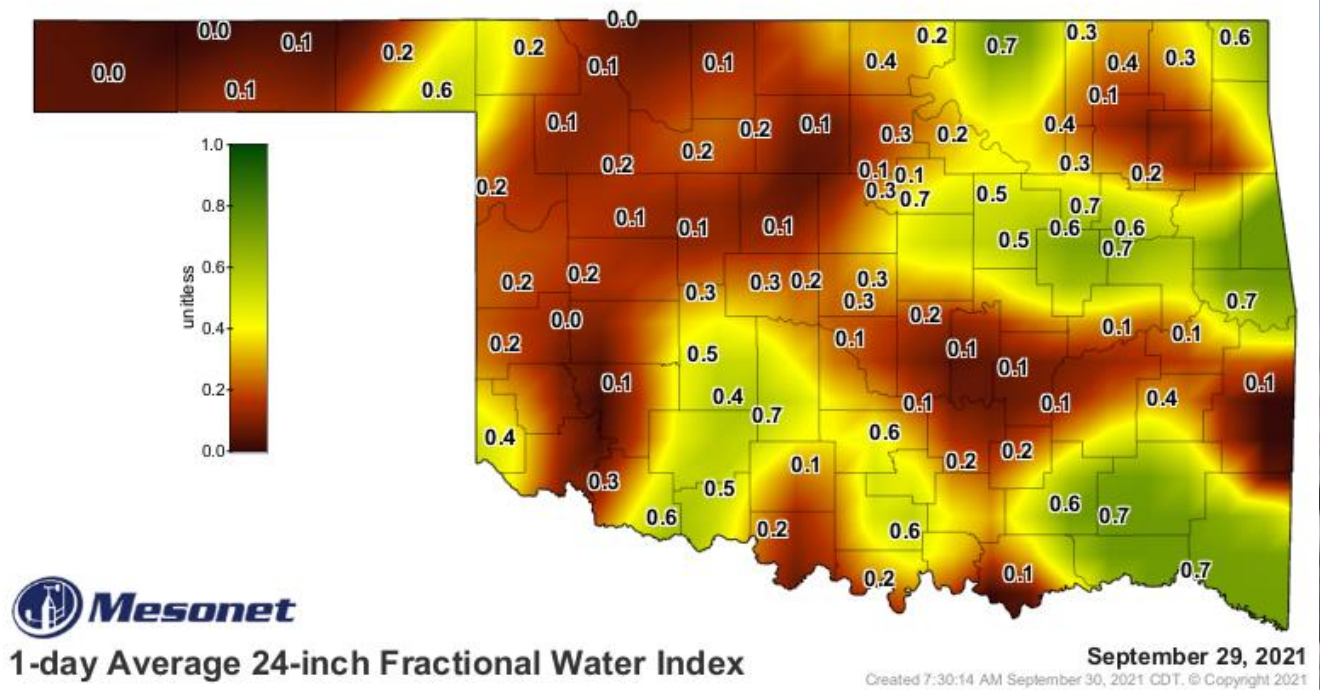
Below normal 28-day average streamflow

| Explanation - Percentile classes | | | | |
|---|---|--|--|---|
| | | | | |
| Low | <=5 | 6-9 | 10-24 | Insufficient data for a hydrologic region |
| Extreme hydrologic drought | Severe hydrologic drought | Moderate hydrologic drought | Below normal | |

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

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

SOIL MOISTURE MAP



http://www.mesonet.org/index.php/weather/map/24-inch_fractional_water_index/soil_moisture

CONSECUTIVE DAYS WITHOUT RAINFALL MAP

Mesonet

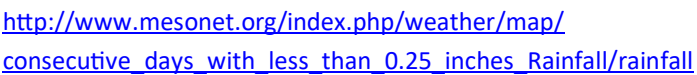
Consecutive Days With Less Than 0.25" Rainfall

September 29, 2021
Created 8:15:03 AM September 30, 2021 CDT. © Copyright 2021

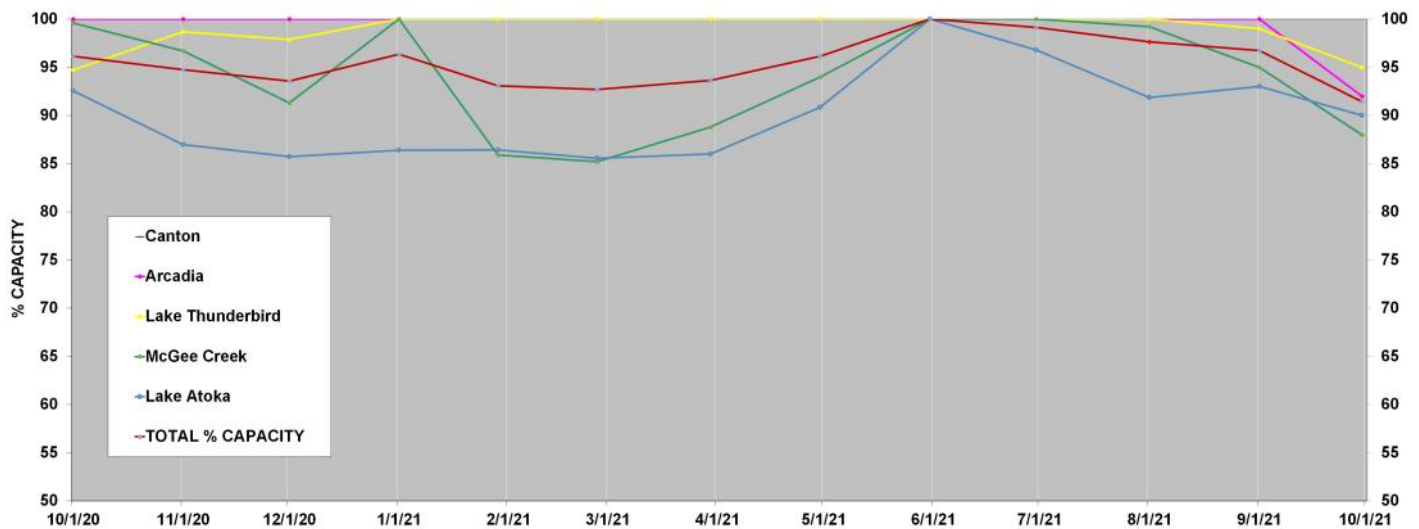
[http://www.mesonet.org/index.php/weather/map/
consecutive_days_with_less_than_0.25_inches_Rainfall/rainfall](http://www.mesonet.org/index.php/weather/map/consecutive_days_with_less_than_0.25_inches_Rainfall/rainfall)

acog

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Percent of Surface Water Conservation Storage Central OK Reservoirs



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

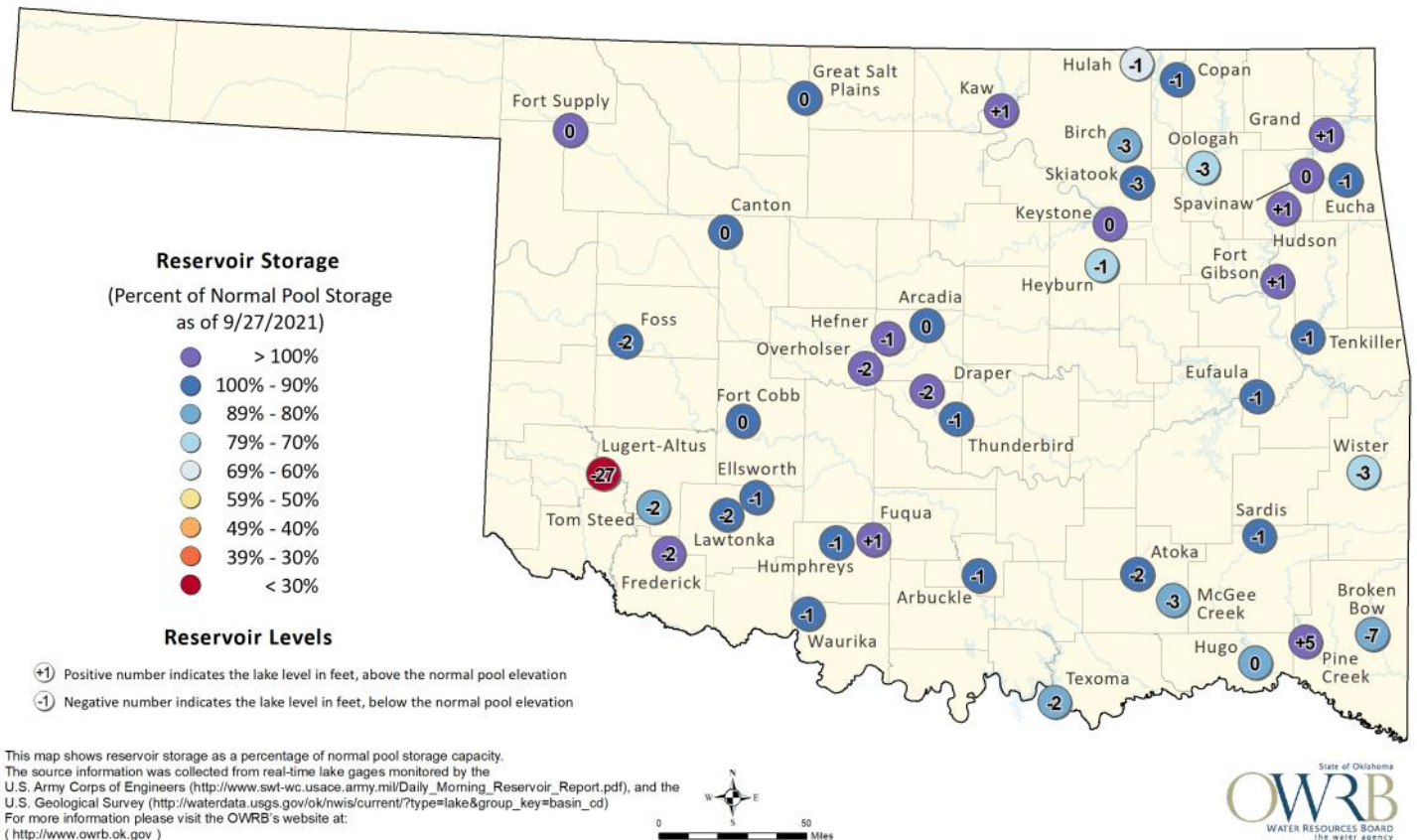
| LAKE | % CAPACITY | % CHANGE FROM 9/1/2021 |
|------------------|------------|---------------------------|
| Canton | 93.0 | -7.0 |
| Arcadia | 92.0 | -8.0 |
| Lake Thunderbird | 95.0 | -4.0 |
| McGee Creek | 88.0 | -7.0 |
| Lake Atoka | 86.4 | -3.0 |
| TOTAL % CAPACITY | 91.4 | -5.3 |

<https://www.owrb.ok.gov/supply/drought/reservoirstorage.php>

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.

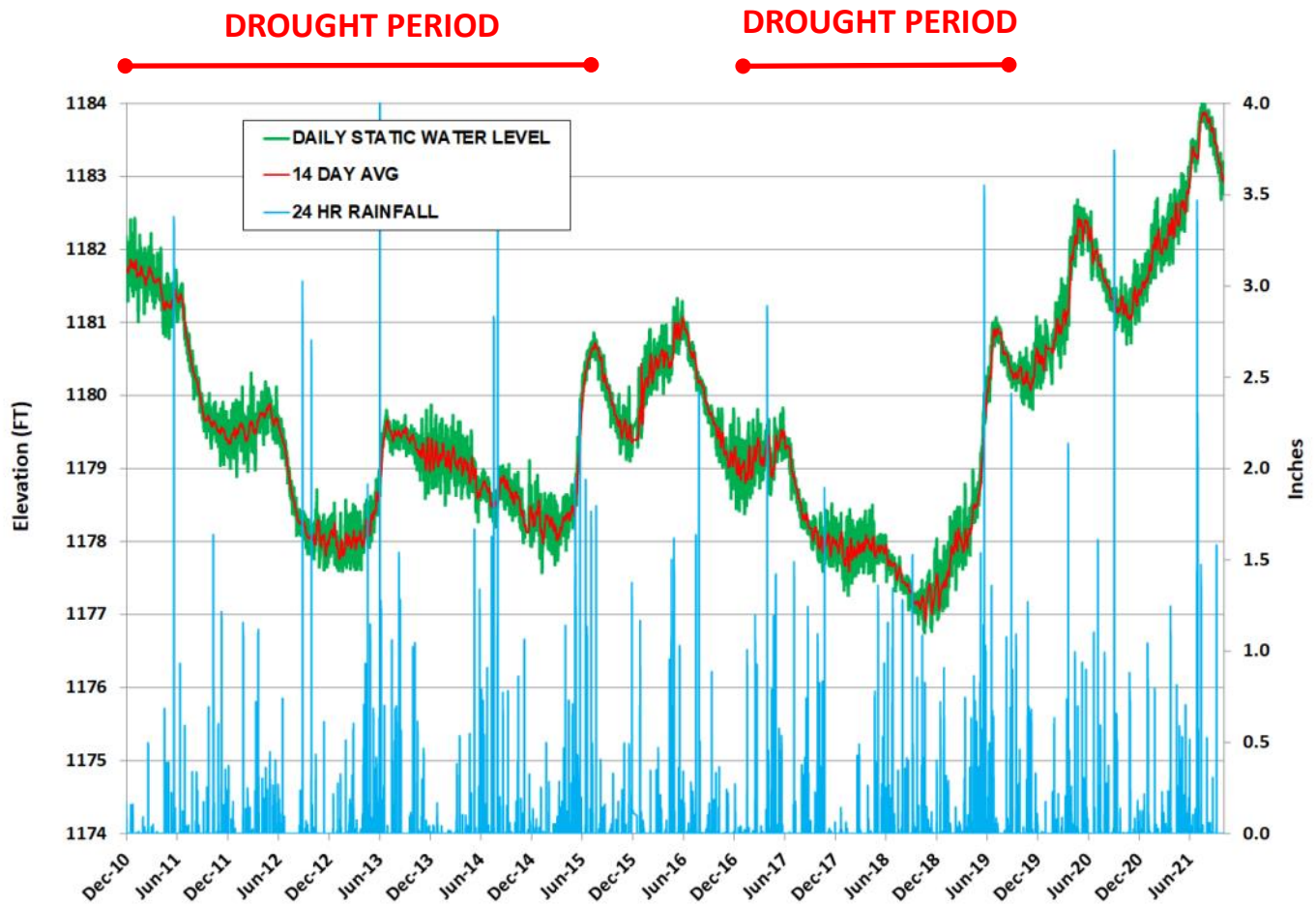
Oklahoma Surface Water Resources

Reservoir Levels and Storage as of 9/27/2021



<https://www.owrb.ok.gov/supply/drought/reservoirstorage.php>

Groundwater Levels Spencer Mesonet Station

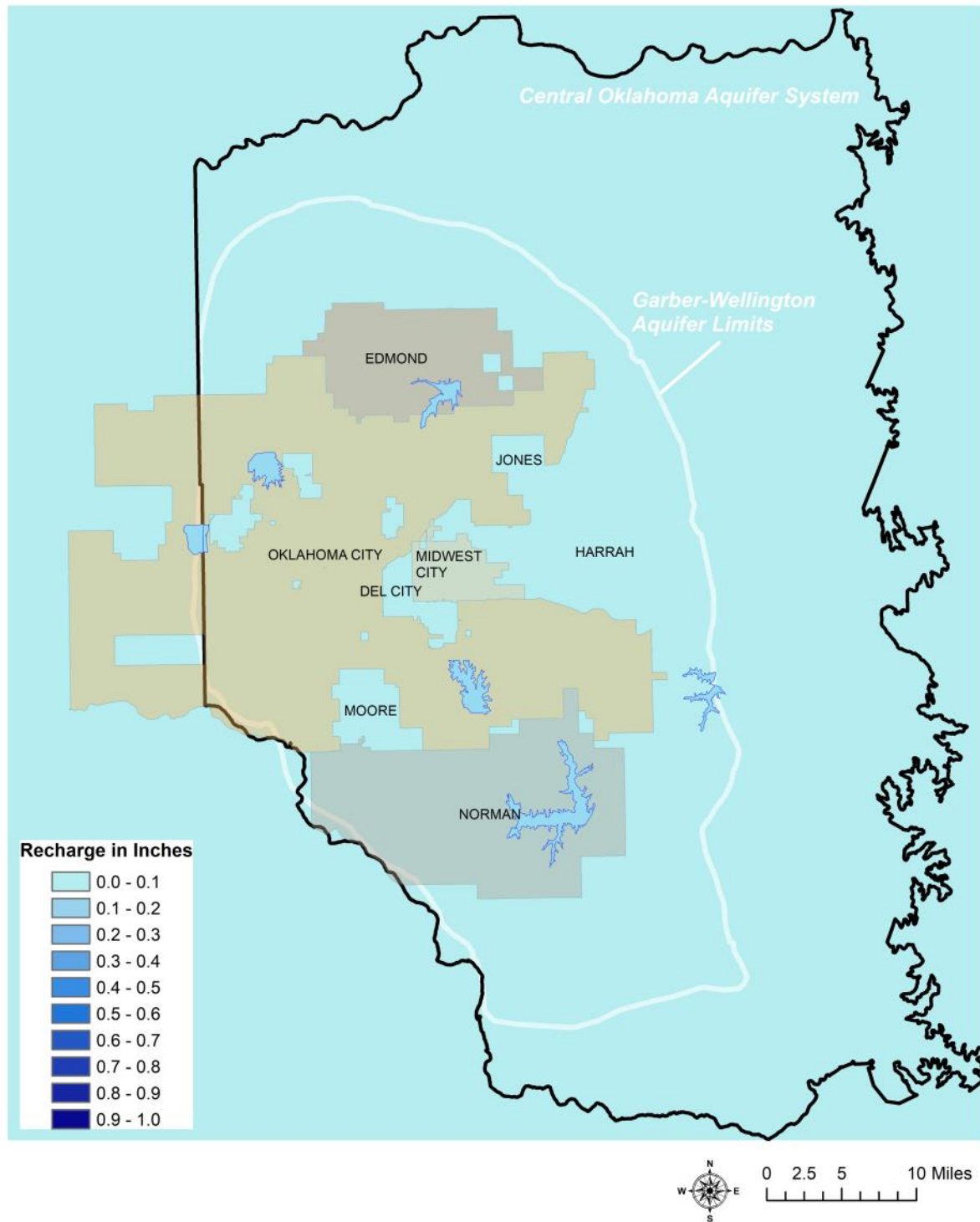


<http://www.mesonet.org/index.php/weather/groundwater>



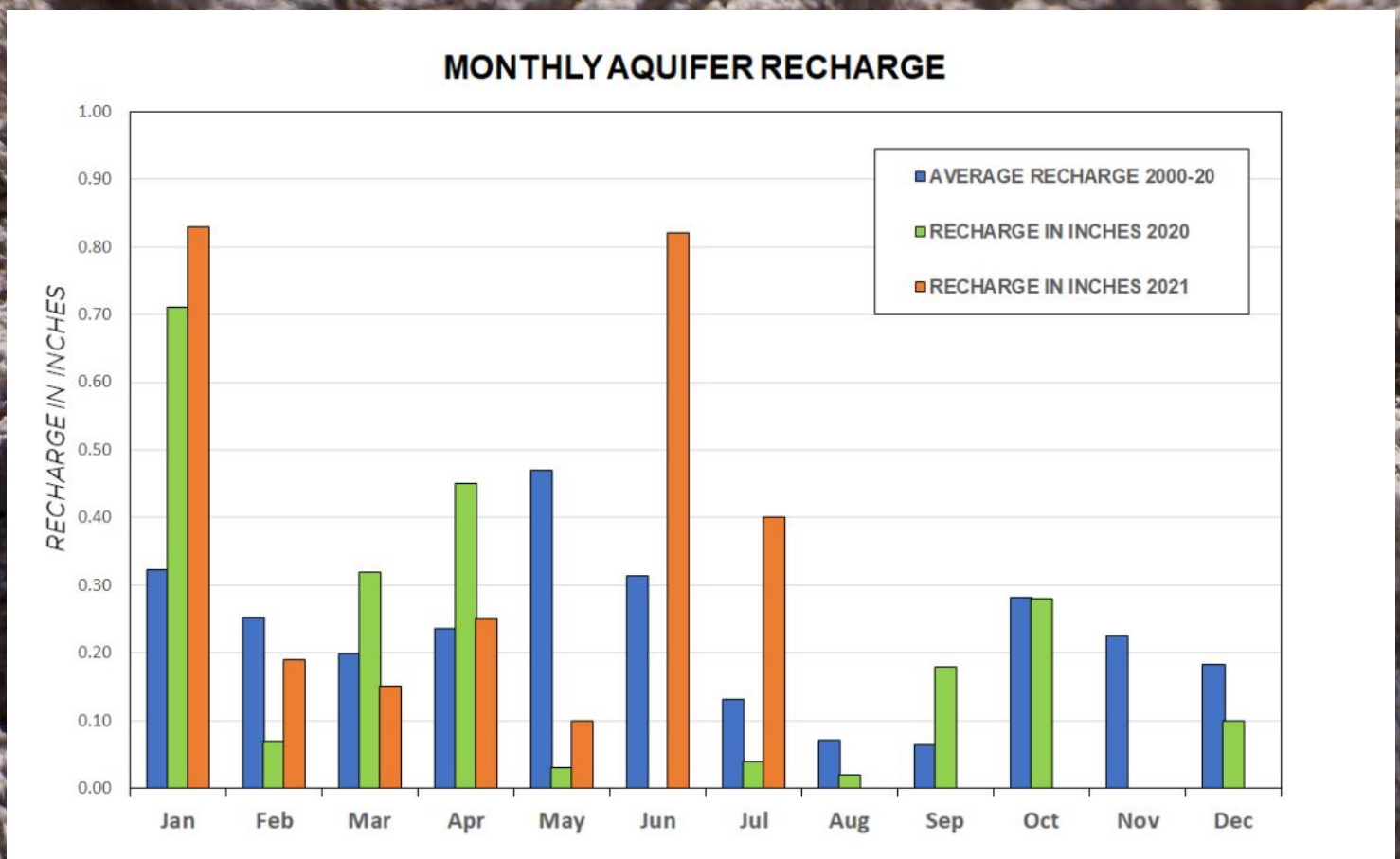
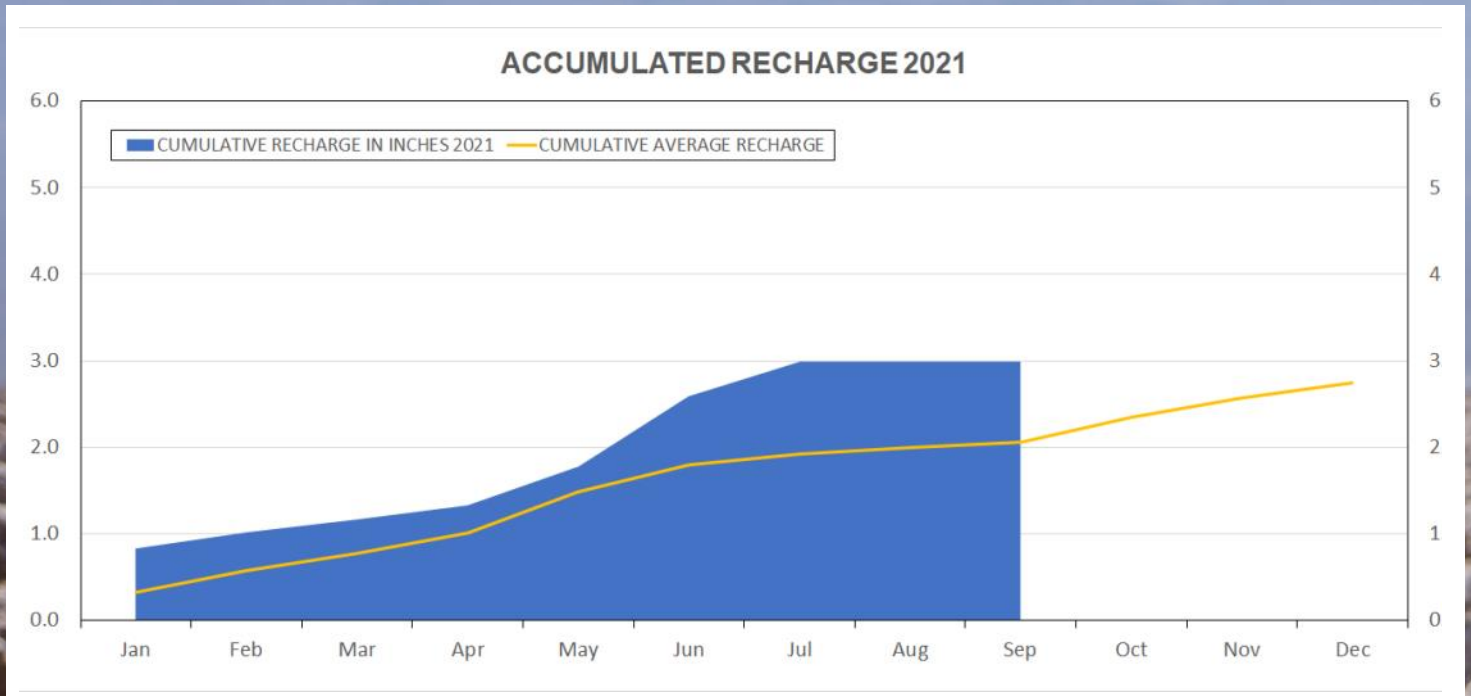
Recharge Map Central Oklahoma Aquifer System

AQUIFER RECHARGE SEP 2021



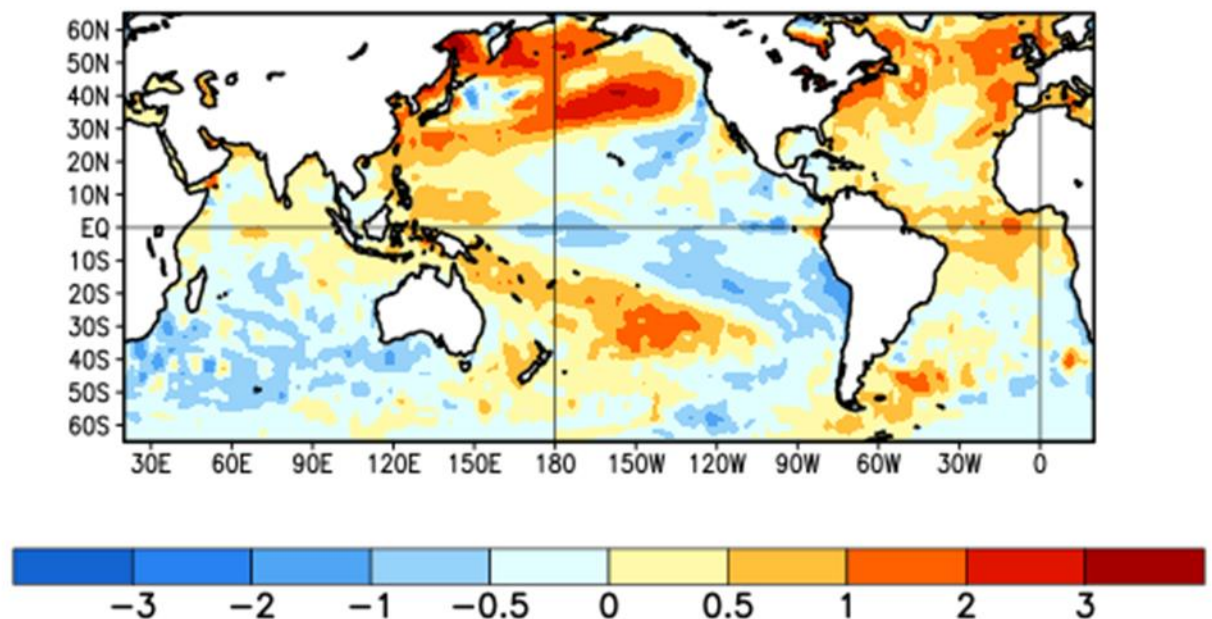
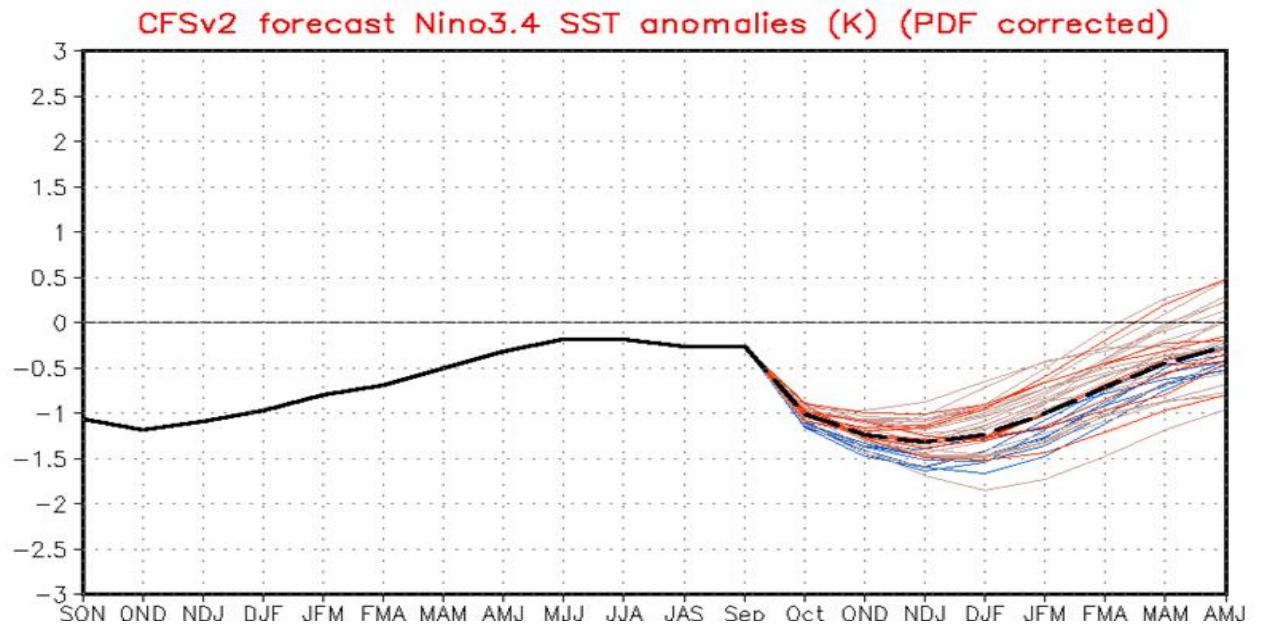
Recharge Charts

Central Oklahoma Aquifer System



ENSO Cycle

Recent Evolution, Current Status and Predictions



ENSO Alert System Status: La Niña Watch

- ENSO-neutral conditions are present.
- Equatorial sea surface temperatures (SSTs) are near-to-below average across most of the Pacific Ocean.
- A transition from ENSO-neutral to La Niña is favored in the next couple of months, with a 70-80% chance of La Niña during the Northern Hemisphere winter 2021-22.

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