



# DROUGHT CONDITIONS

## IN CENTRAL OKLAHOMA

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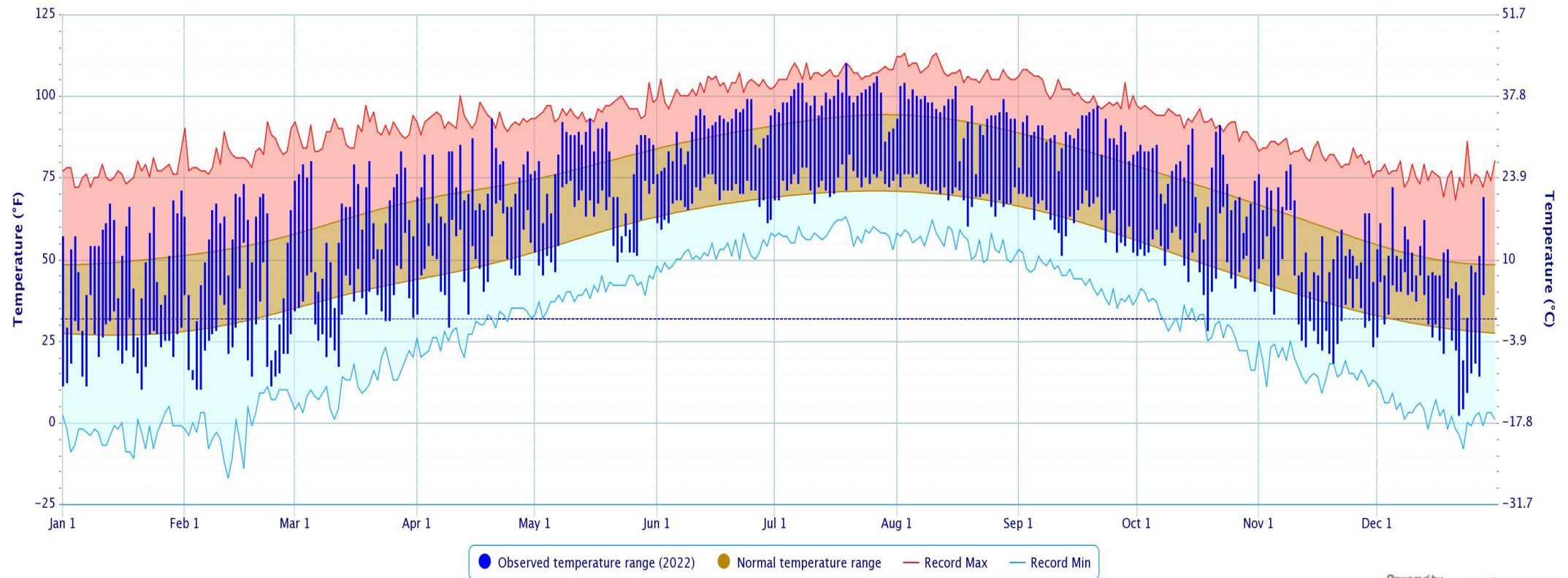
JANUARY 1, 2023

# TEMPERATURE PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2022



Daily Temperature Data – Oklahoma City Area, OK (ThreadEx)

Period of Record – 1890–11–01 to 2022–12–28. Normals period: 1991–2020. Click and drag to zoom chart.

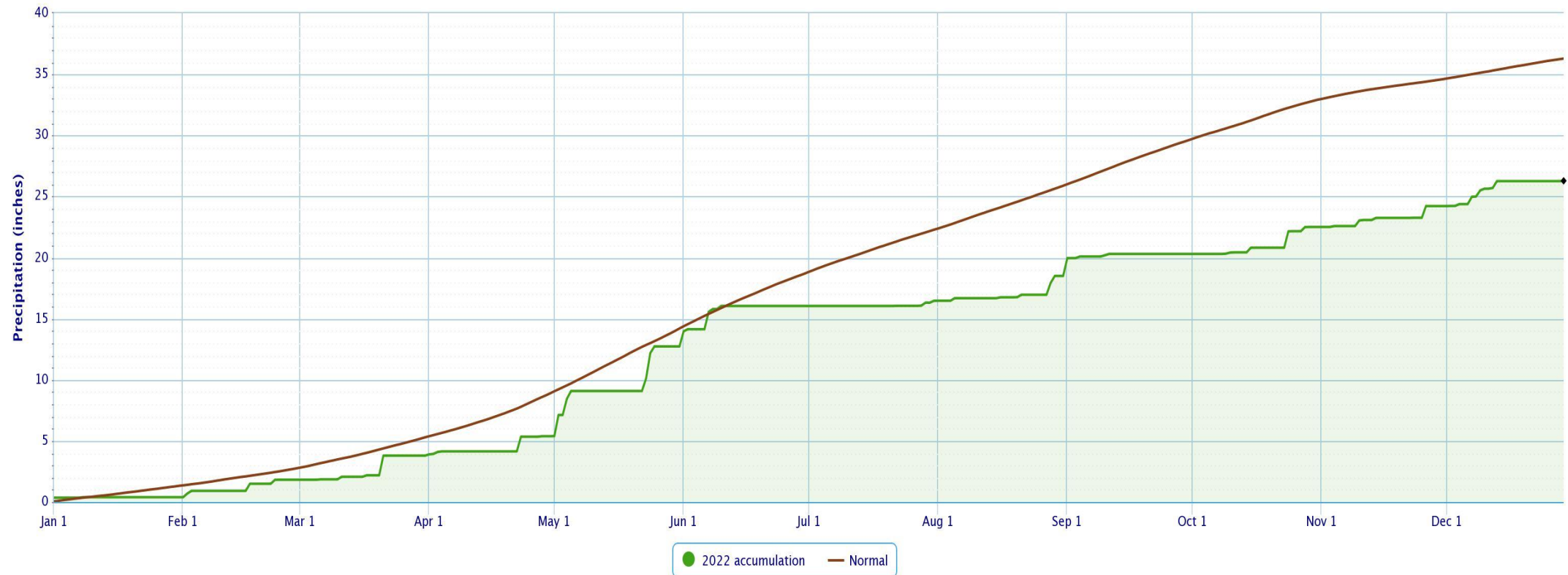


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**ACIS**  
NOAA Regional Climate Centers

# PRECIPITATION PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2022



Accumulated Precipitation – Oklahoma City Area, OK (ThreadEx)



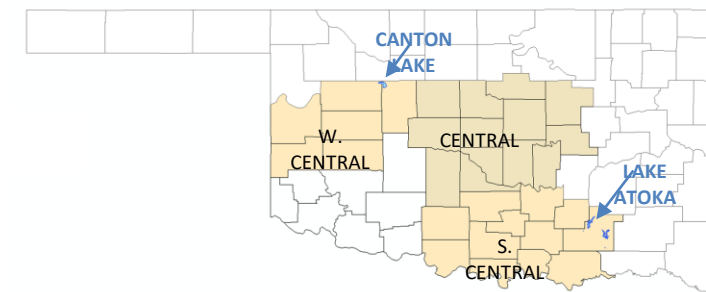
# RAINFALL SUMMARIES BY OKLAHOMA CLIMATE DIVISION



| Calendar Year 01-Jan-2022 through |                | 02-Jan-2023           |               |                              |                  |                   |
|-----------------------------------|----------------|-----------------------|---------------|------------------------------|------------------|-------------------|
| Climate Division                  | Total Rainfall | Departure from Normal | Pct of Normal | Rank since 1921 (88 periods) | Driest on Record | Wettest on Record |
| W. Central                        | 21.71"         | -6.75"                | 76%           | 18th driest                  | 14.18" (1956-57) | 43.12" (1997-98)  |
| Central                           | 31.33"         | -6.39"                | 83%           | 29th driest                  | 20.07" (1954-55) | 53.89" (2007-08)  |
| S. Central                        | 31.21"         | -9.64"                | 76%           | 19th driest                  | 20.12" (1963-64) | 72.46" (2015-16)  |
| Statewide                         | 29.48"         | -7.09"                | 81%           | 22nd driest                  | 20.81" (1956-57) | 54.03" (2015-16)  |

| Water Year: 01-Oct-2021 through |                | 02-Jan-2023           |               |                              |                  |                   |
|---------------------------------|----------------|-----------------------|---------------|------------------------------|------------------|-------------------|
| Climate Division                | Total Rainfall | Departure from Normal | Pct of Normal | Rank since 1921 (88 periods) | Driest on Record | Wettest on Record |
| W. Central                      | 5.13"          | -0.47"                | 92%           | 42nd wettest                 | 0.14" (1921-22)  | 11.99" (1986-87)  |
| Central                         | 6.95"          | -1.25"                | 85%           | 47th wettest                 | 0.92" (1945-46)  | 16.24" (1941-42)  |
| S. Central                      | 9.80"          | -0.03"                | 100%          | 40th wettest                 | 1.11" (1950-51)  | 21.86" (2015-16)  |
| Statewide                       | 7.54"          | -0.64"                | 92%           | 45th wettest                 | 1.46" (1950-51)  | 15.26" (2015-16)  |

| Winter Dec 01 through |                | 02-Jan-2023           |               |                              |                  |                   |
|-----------------------|----------------|-----------------------|---------------|------------------------------|------------------|-------------------|
| Climate Division      | Total Rainfall | Departure from Normal | Pct of Normal | Rank since 1921 (88 periods) | Driest on Record | Wettest on Record |
| W. Central            | 1.16"          | -0.12"                | 91%           | 34th wettest                 | 0.01" (1976-77)  | 4.37" (1984-85)   |
| Central               | 2.12"          | +0.04"                | 102%          | 32nd wettest                 | 0.11" (1945-46)  | 8.10" (1984-85)   |
| S. Central            | 2.00"          | -0.73"                | 73%           | 49th driest                  | 0.20" (1950-51)  | 7.15" (2015-16)   |
| Statewide             | 1.95"          | -0.22"                | 90%           | 43rd wettest                 | 0.26" (1955-56)  | 5.79" (2015-16)   |



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.

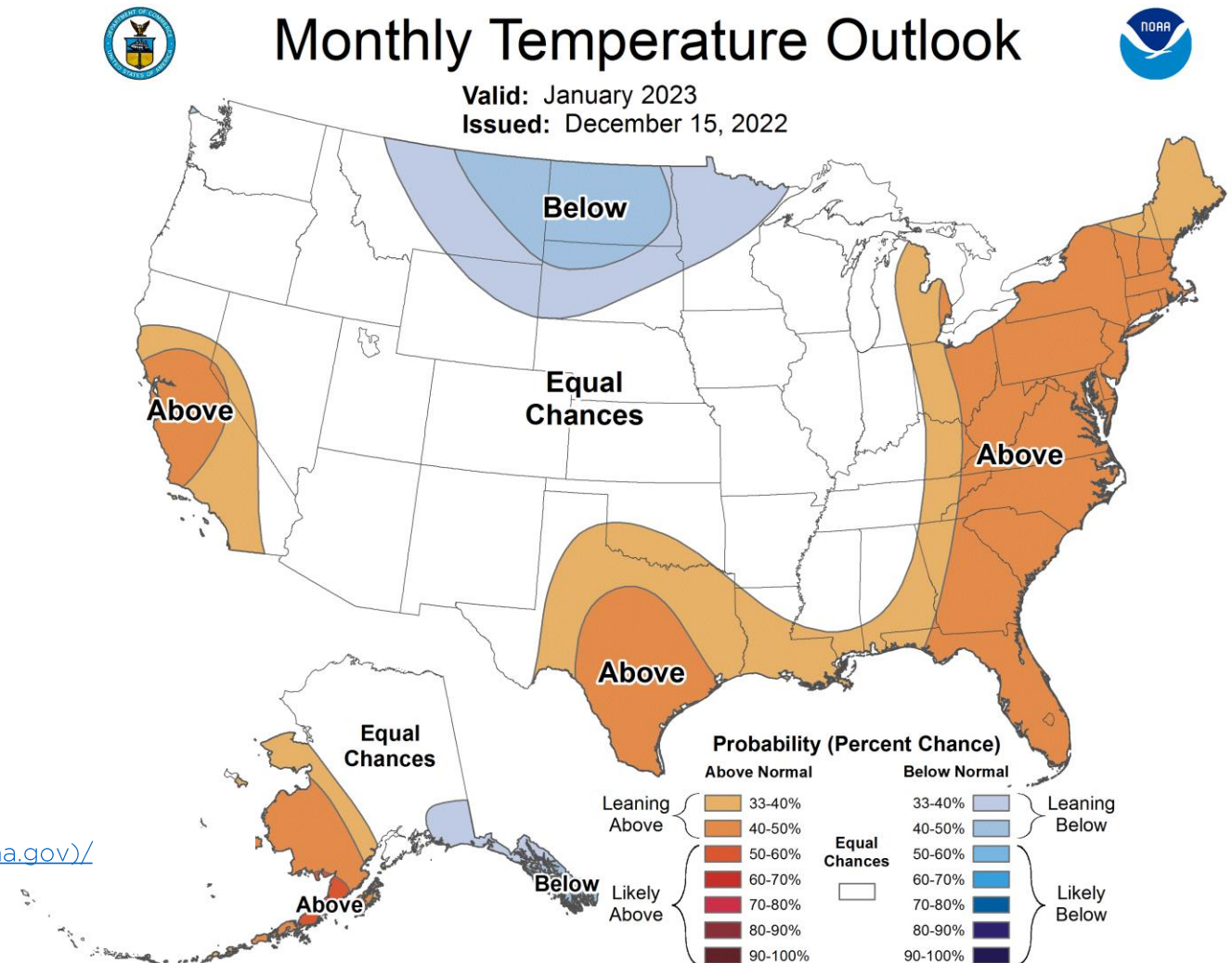
# NOAA ONE-MONTH TEMPERATURE OUTLOOK



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.

[Climate Prediction Center - Updated OFFICIAL 30-Day Forecasts \(noaa.gov\)/](https://climatepredictioncenter.noaa.gov/updated-official-30-day-forecasts)



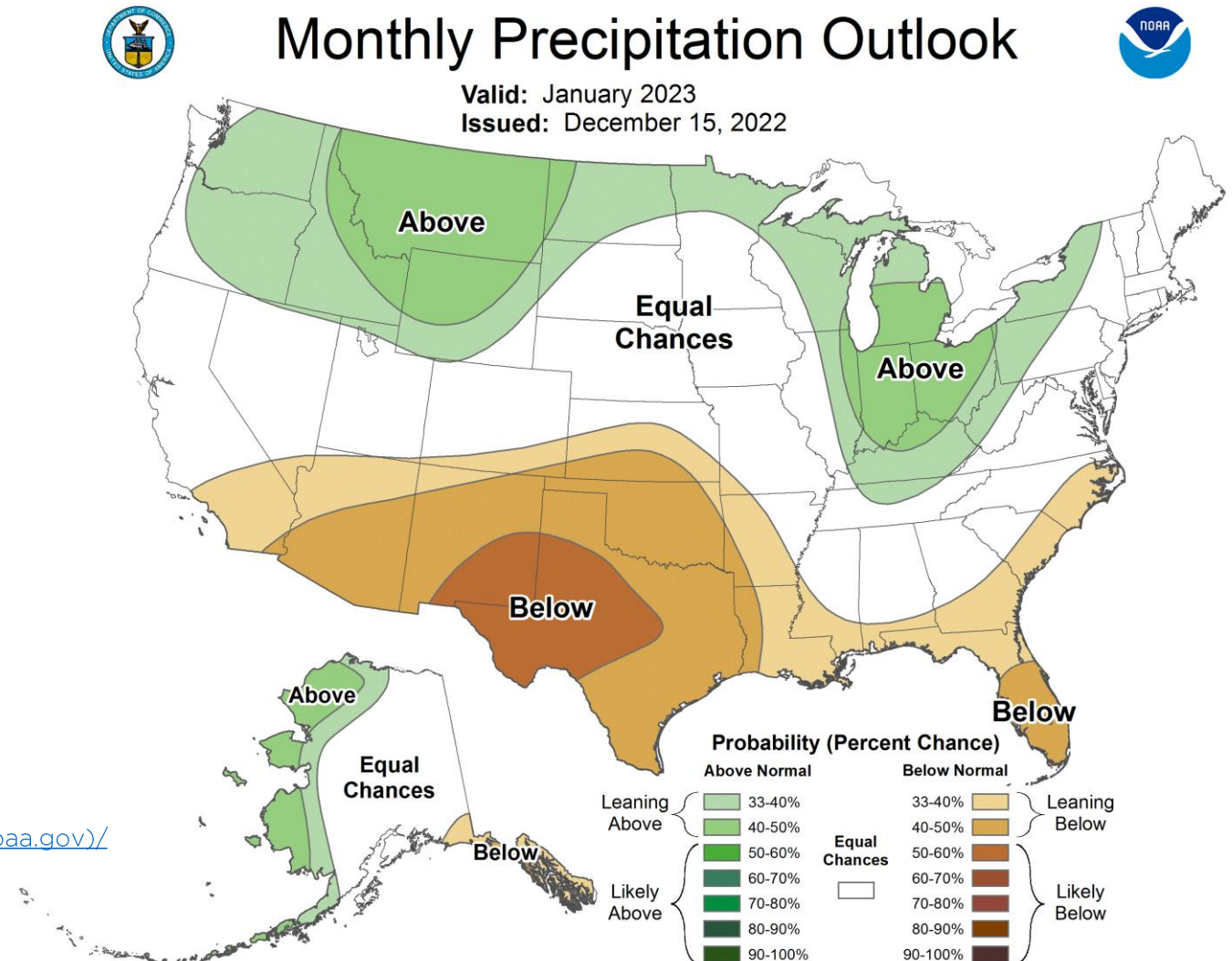
# NOAA ONE-MONTH PRECIPITATION OUTLOOK



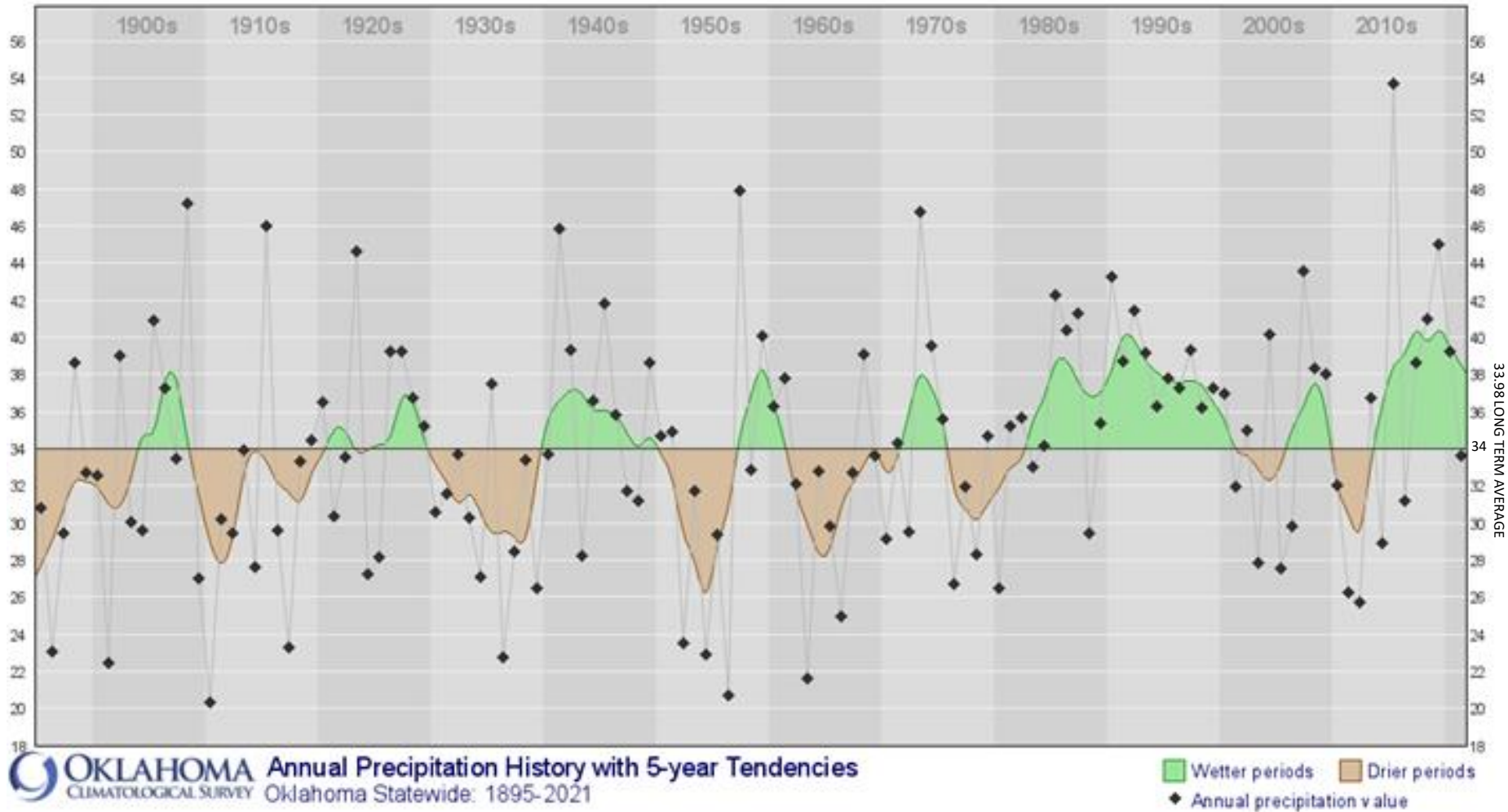
White areas are shown as EC (Equal Chance) on these maps represent areas where there are no strong climate signals from the climate tools to have skill in preferring one category over another.

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.

[Climate Prediction Center - Updated OFFICIAL 30-Day Forecasts \(noaa.gov\)/](https://www.noaa.gov/climate-prediction-center-30-day-forecasts)



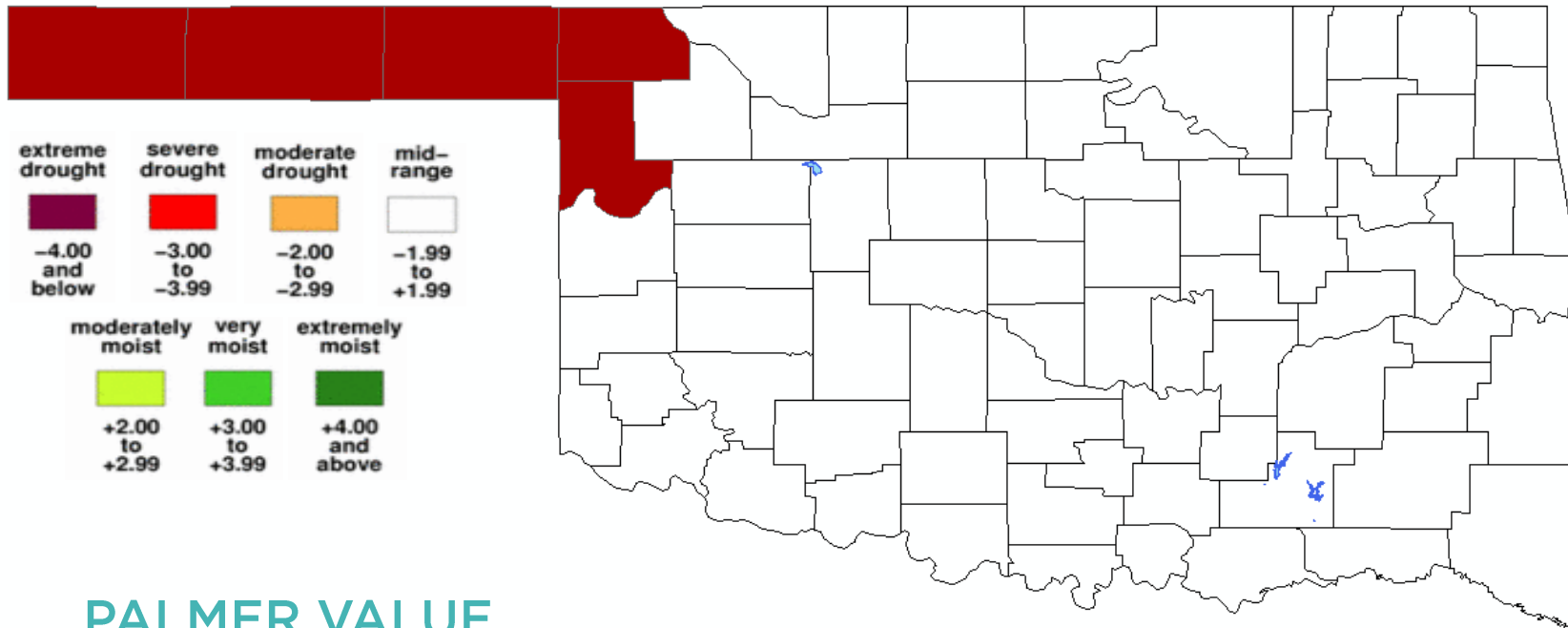
# Annual Precipitation History with 5-Year Tendencies



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



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 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.

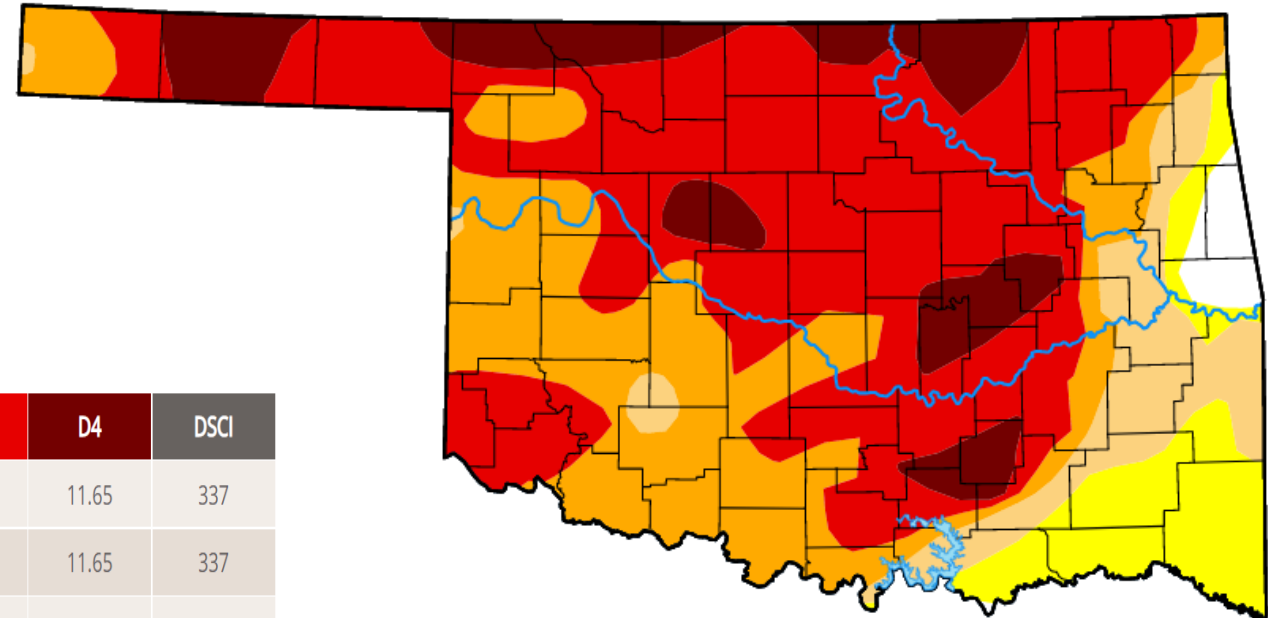
**PALMER VALUE**  
24 DEC 2022

# U.S. DROUGHT MONITOR - OKLAHOMA



Abnormal dryness or drought are currently affecting approximately 3,535,928 people in Oklahoma.

| Week                   | Date       | None | D0-D4  | D1-D4 | D2-D4 | D3-D4 | D4    | DSCI |
|------------------------|------------|------|--------|-------|-------|-------|-------|------|
| Current                | 2022-12-27 | 1.82 | 98.18  | 89.73 | 80.92 | 56.13 | 11.65 | 337  |
| Last Week              | 2022-12-20 | 1.82 | 98.18  | 89.73 | 80.92 | 56.13 | 11.65 | 337  |
| 3 Months Ago           | 2022-09-27 | 0.00 | 100.00 | 99.88 | 94.44 | 64.44 | 17.25 | 376  |
| Start of Calendar Year | 2021-12-28 | 4.92 | 95.08  | 90.17 | 72.51 | 22.62 | 0.00  | 280  |
| Start of Water Year    | 2022-09-27 | 0.00 | 100.00 | 99.88 | 94.44 | 64.44 | 17.25 | 376  |
| One Year Ago           | 2021-12-28 | 4.92 | 95.08  | 90.17 | 72.51 | 22.62 | 0.00  | 280  |



Intensity:

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

D3 - Extreme Drought  
 D4 - Exceptional Drought



# U.S. DROUGHT MONITOR NATIONWIDE MAP



Map released: December 29, 2022

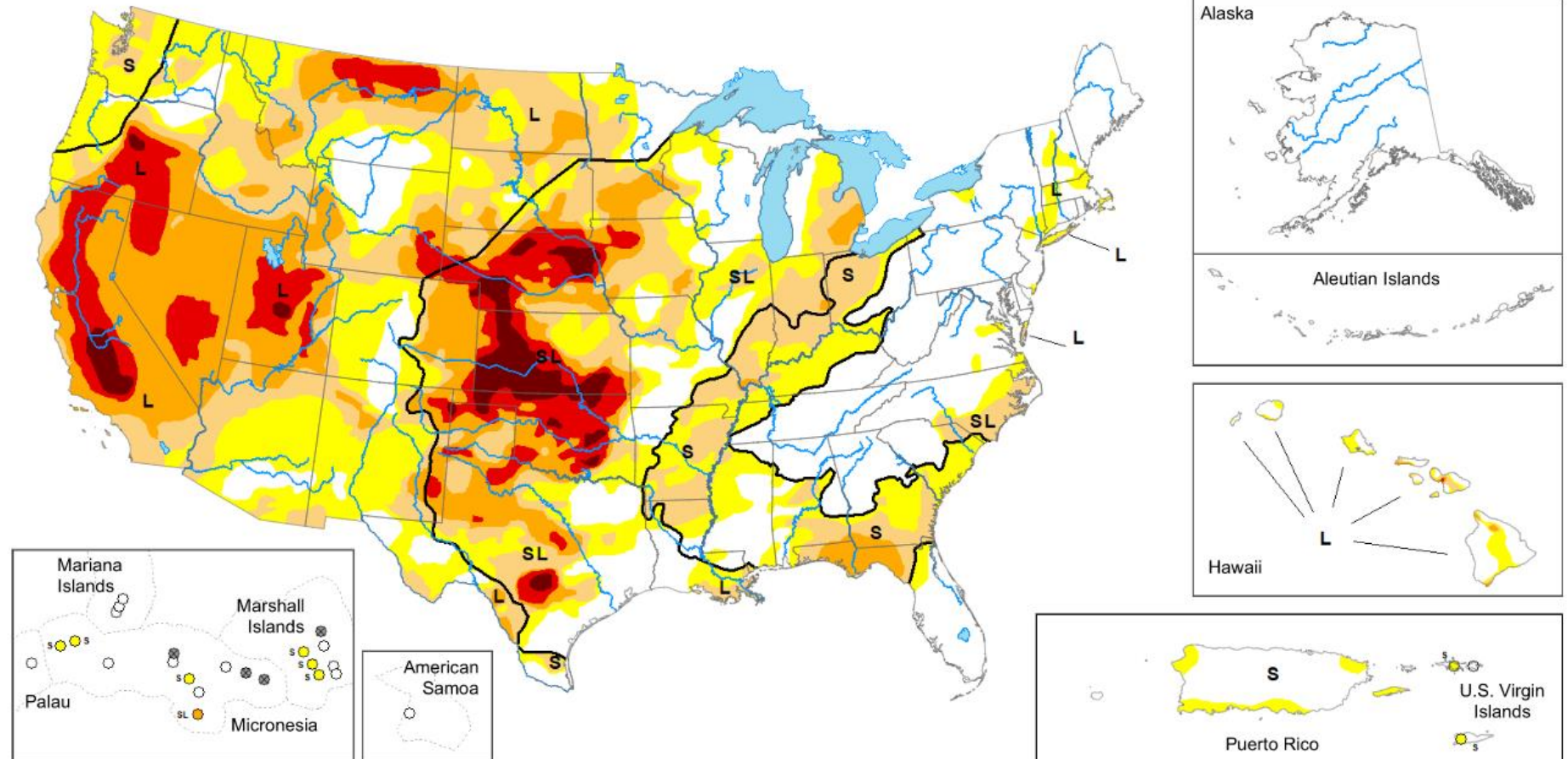
Data valid: December 27, 2022

## Intensity and Impacts



United States and Puerto Rico Author(s):  
*Deborah Bathke, National Drought Mitigation Center*

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

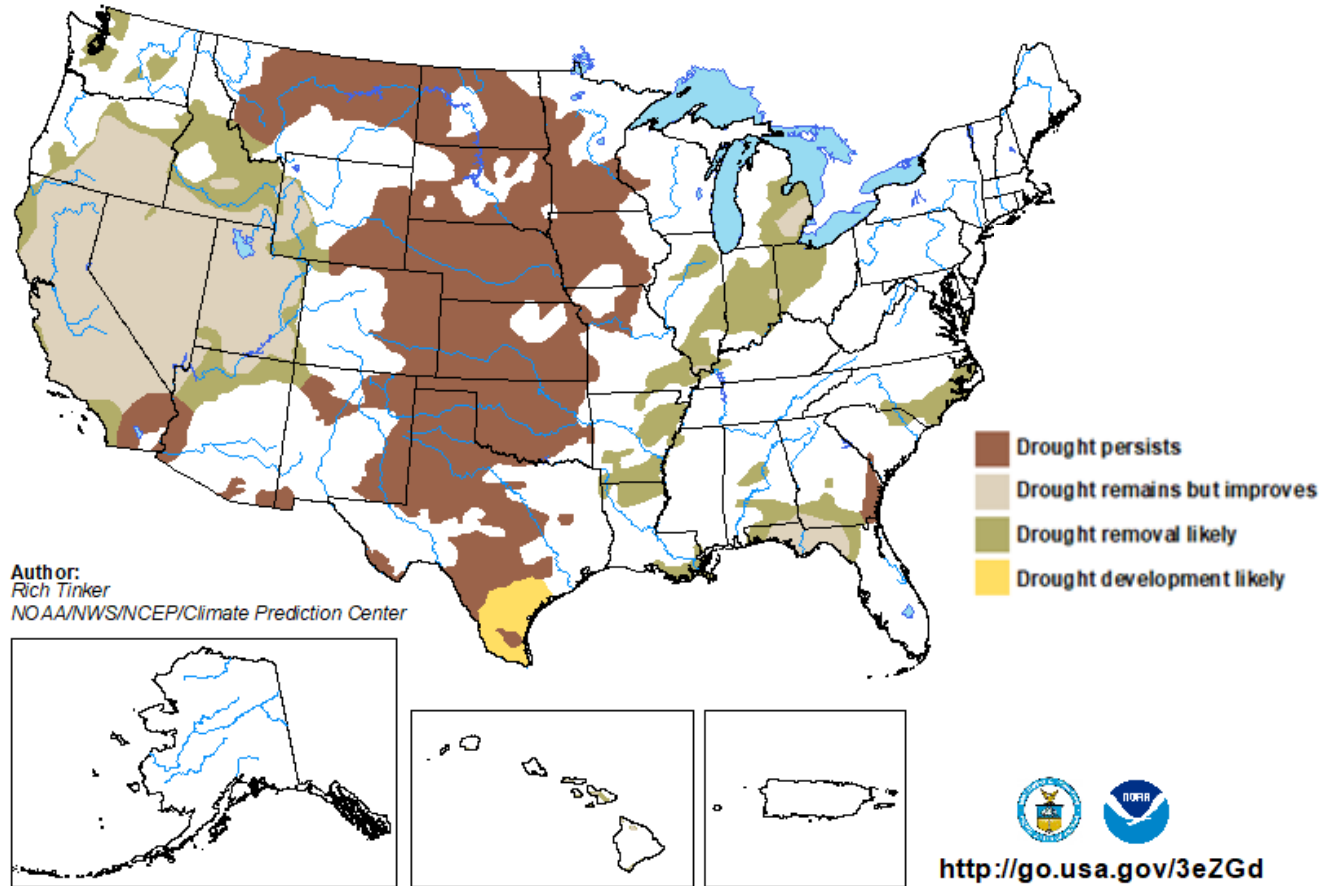


# U.S. DROUGHT MONITOR MONTHLY DROUGHT OUTLOOK MAP



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

Valid for January 2023  
Released December 31, 2022



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).

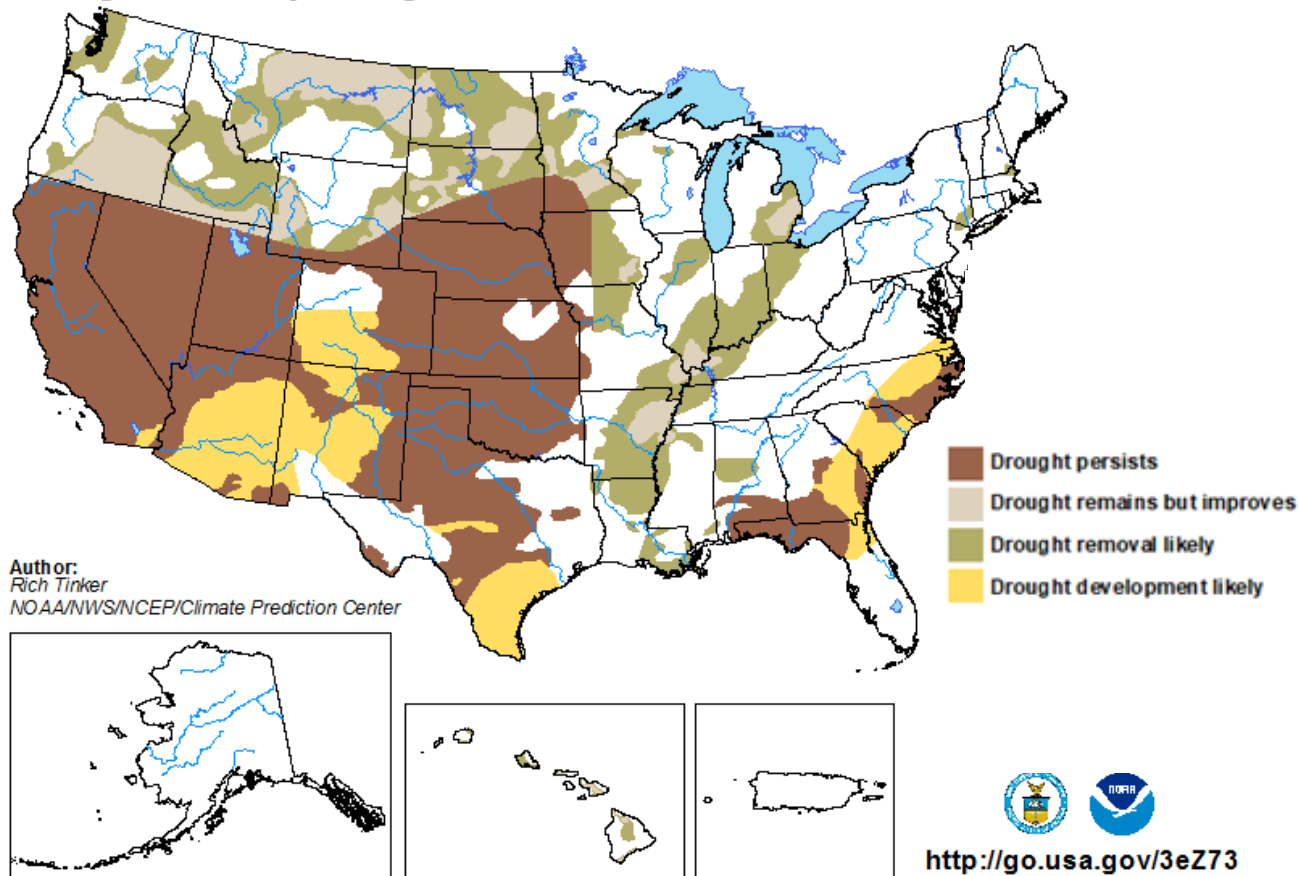
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

# U.S. DROUGHT MONITOR SEASONAL DROUGHT OUTLOOK MAP



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

Valid for December 15, 2022 - March 31, 2023  
Released December 15, 2022



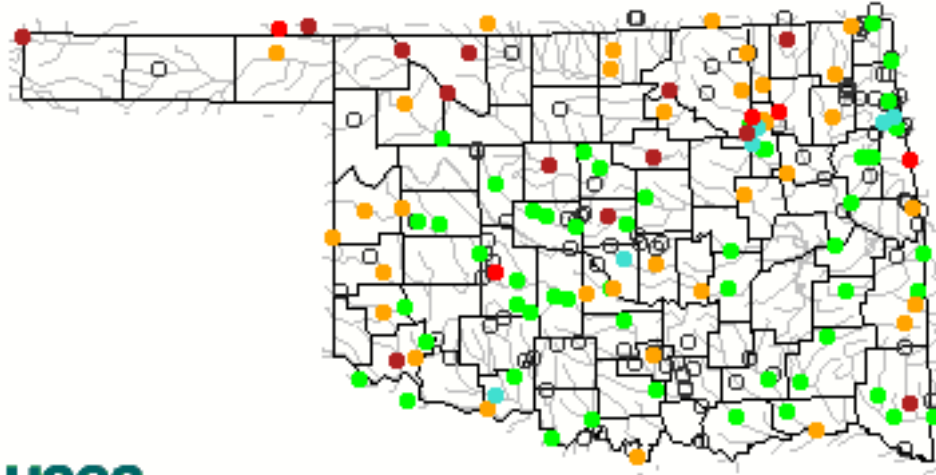
Depicts large-scale trends based on subjectively derived probabilities guided by short and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. “Ongoing” drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

# USGS STREAMFLOW DATA



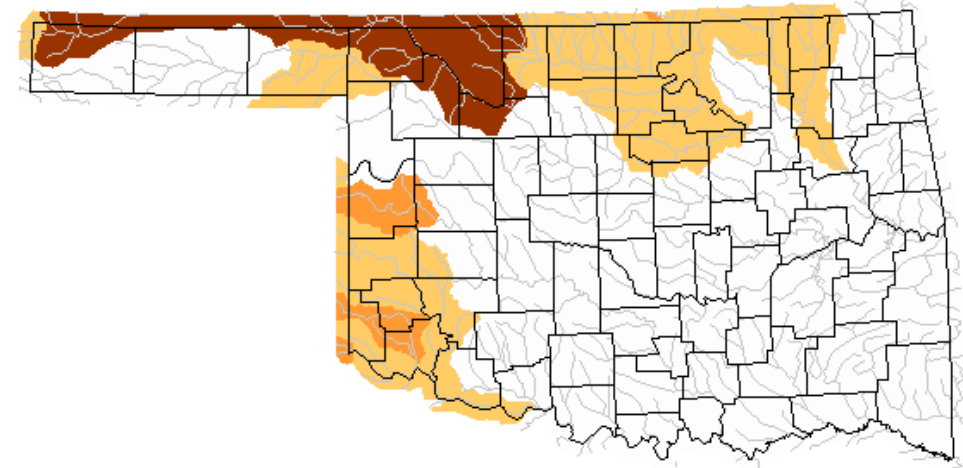
Thursday, December 29, 2022 14:30ET



| Explanation - Percentile classes   |                                    |                                       |                                      |                                     |                                     |                                      |                                     |
|------------------------------------|------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|
| <span style="color: red;">●</span> | <span style="color: red;">●</span> | <span style="color: orange;">●</span> | <span style="color: green;">●</span> | <span style="color: cyan;">●</span> | <span style="color: blue;">●</span> | <span style="color: black;">●</span> | <span style="color: gray;">○</span> |
| Low                                | <10                                | 10-24                                 | 25-75                                | 76-90                               | >90                                 | High                                 | Not-ranked                          |
|                                    | Much below normal                  | Below normal                          | Normal                               | Above normal                        | Much above normal                   |                                      |                                     |

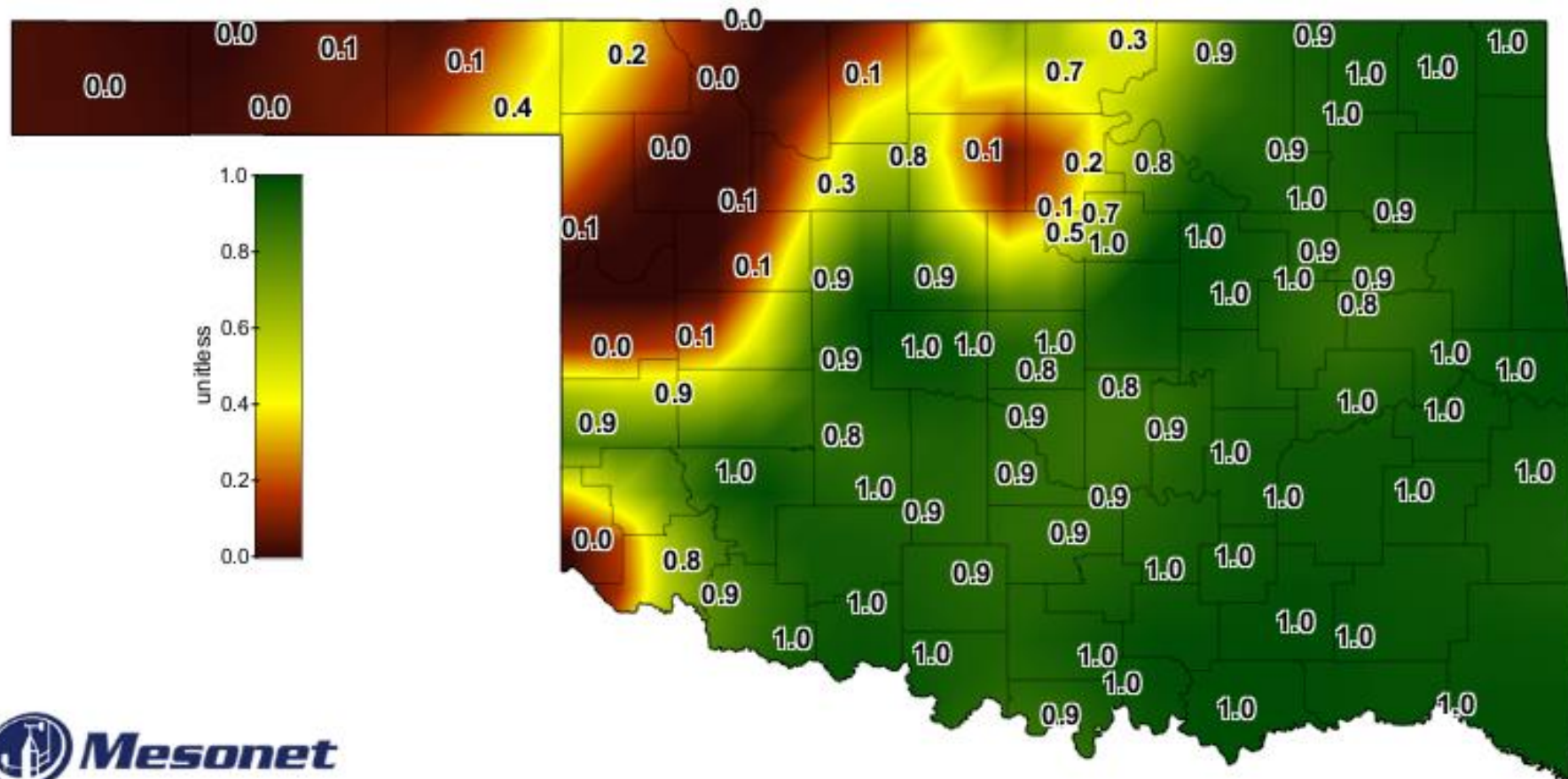
Below normal 28-day average streamflow

Wednesday, December 28, 2022



| Explanation - Percentile classes                            |   |  |  |  |
|---|---|--|--|--|
| <span style="background-color: red; color: black;"> </span> | <span style="background-color: brown; color: black;"> </span> | <span style="background-color: orange; color: black;"> </span> | <span style="background-color: yellow; color: black;"> </span> | <span style="background-color: gray; color: black;"> </span> |
| Low   | <=5   | 6-9  | 10-24  | Insufficient data for a hydrologic region                    |
| Extreme hydrologic drought                                  | Severe hydrologic drought                                     | Moderate hydrologic drought                                    | Below normal   |  |

# SOIL MOISTURE MAP



1-DAY AVERAGE  
24-INCH  
FRACTIONAL  
WATER INDEX

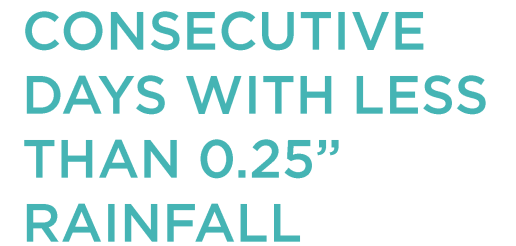


1-day Average 24-inch Fractional Water Index

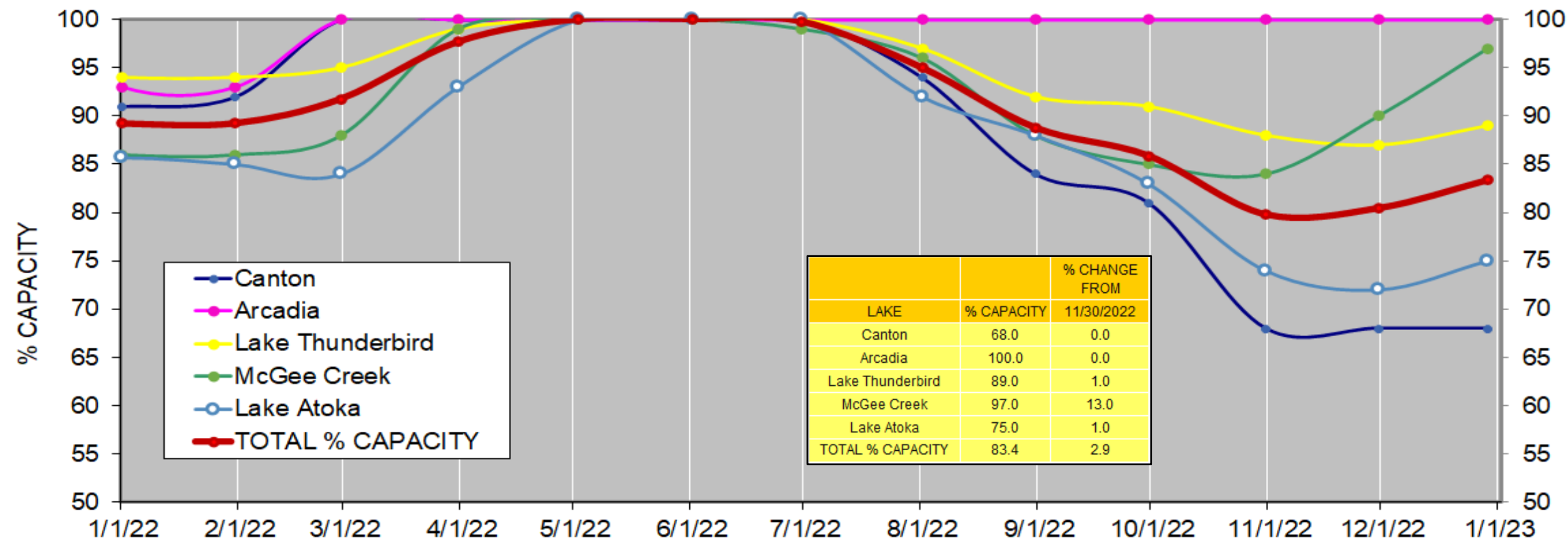
December 28, 2022

Created 6:30:14 AM December 29, 2022 CST. © Copyright 2022





# PERCENTAGE OF SURFACE WATER CONSERVATION CAPACITY IN CENTRAL OK RESERVOIRS

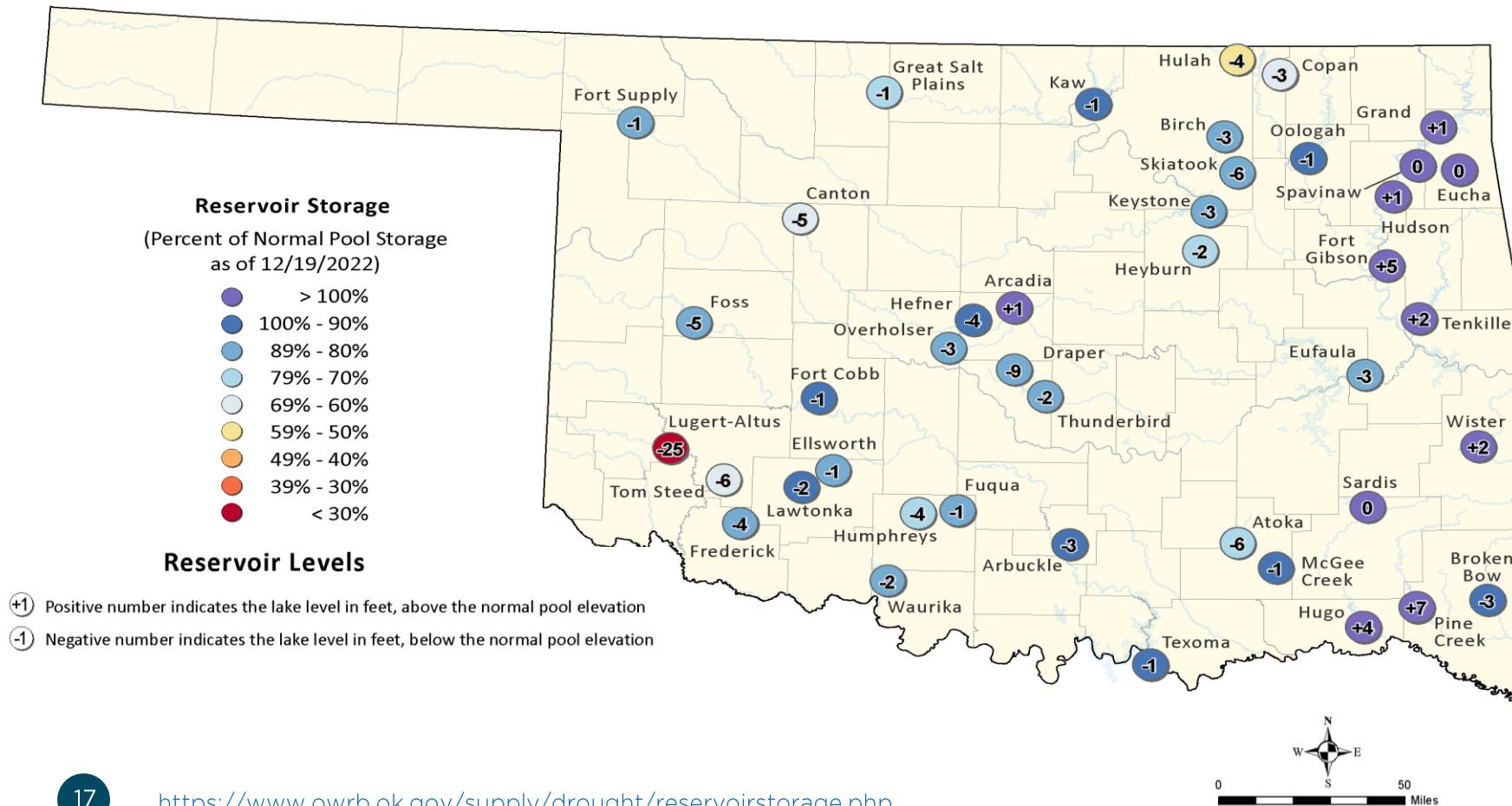


Lake Hefner and Lake Overholser are terminal storage for Canton Lake. Lake Draper is terminal storage for McGee Creek and Atoka Lakes.

# OKLAHOMA RESERVOIR LEVELS AND STORAGE



## Oklahoma Reservoir Levels and Storage as of 12/19/2022

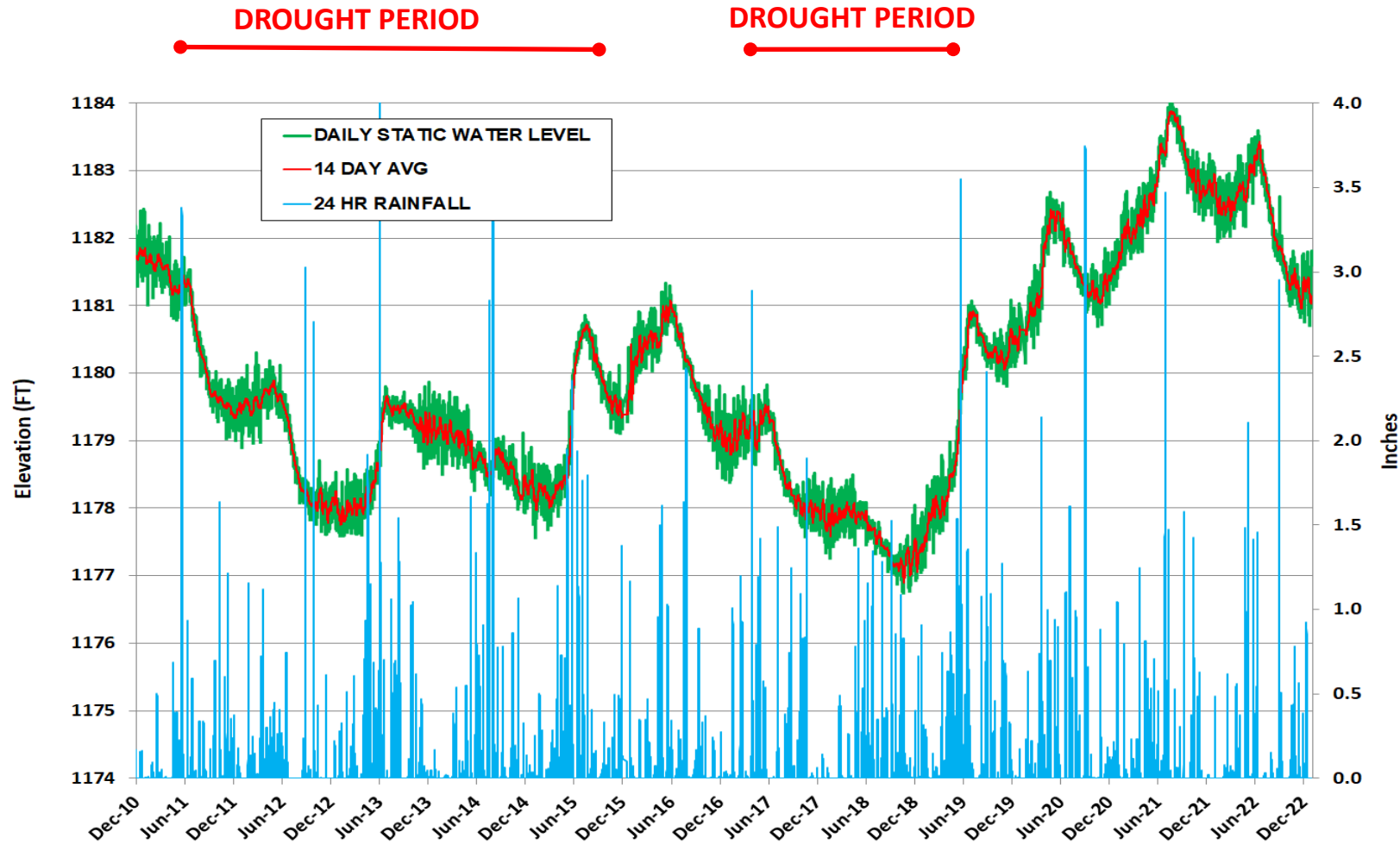


## OKLAHOMA RESERVOIR LEVELS AND STORAGE AS OF 12/19/2022

This map shows reservoir storage as a percentage of normal pool storage capacity. The source information was collected from real-time lake gages monitored by the U.S. Army Corps of Engineers ([https://www.swt-wc.usace.army.mil/Daily\\_Morning\\_Reservoir\\_Report.pdf](https://www.swt-wc.usace.army.mil/Daily_Morning_Reservoir_Report.pdf)), and the U.S. Geological Survey ([https://www.waterdata.usgs.gov/ok/nwis/current/?type=lake&group\\_key=basin\\_cd](https://www.waterdata.usgs.gov/ok/nwis/current/?type=lake&group_key=basin_cd)). For more information, please visit the OWRB's website: (<https://www.owrb.ok.gov>).



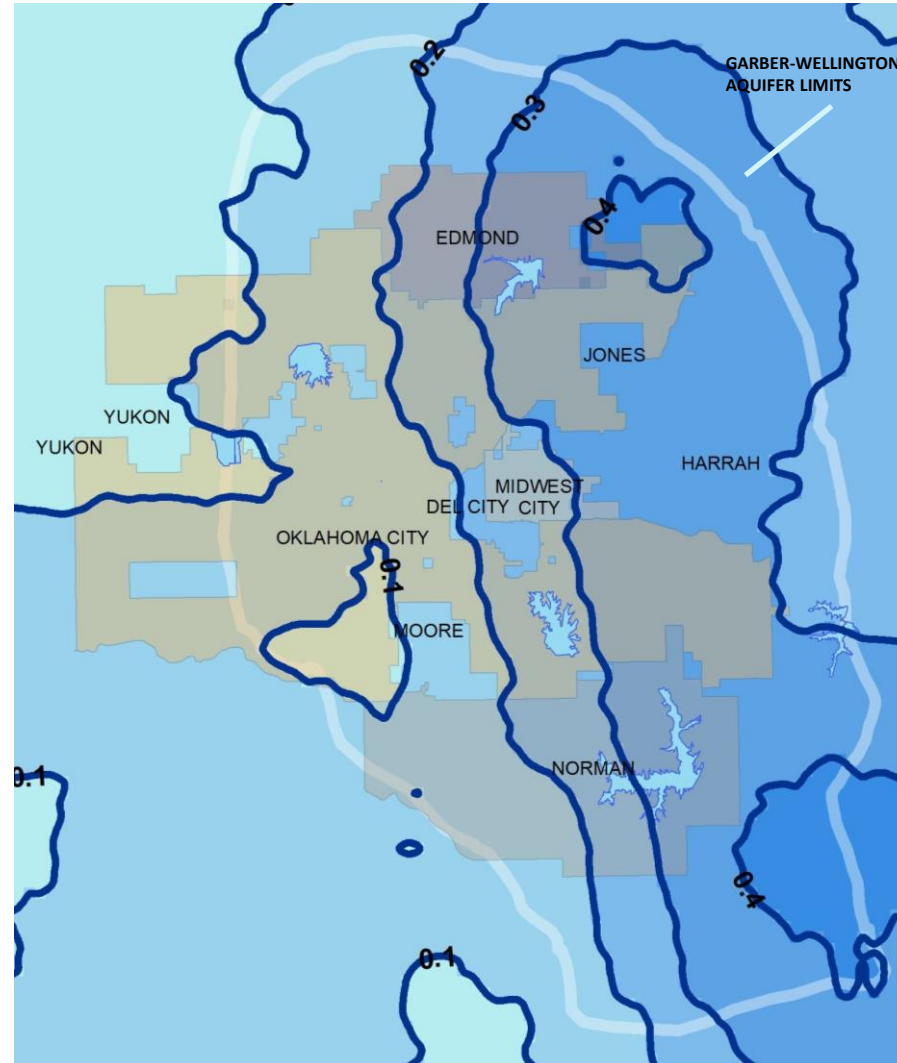
# GROUNDWATER LEVELS SPENCER MESONET STATION



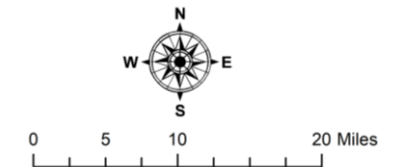
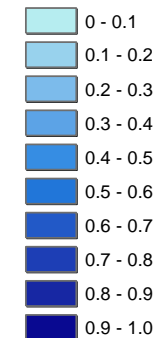
# AQUIFER RECHARGE – DECEMBER 2022



- Aquifer recharge in December 2022 was 0.21 inches.
- This is 16 percent more than the average December recharge.
- Recharge was focused along eastern Oklahoma and Cleveland counties.



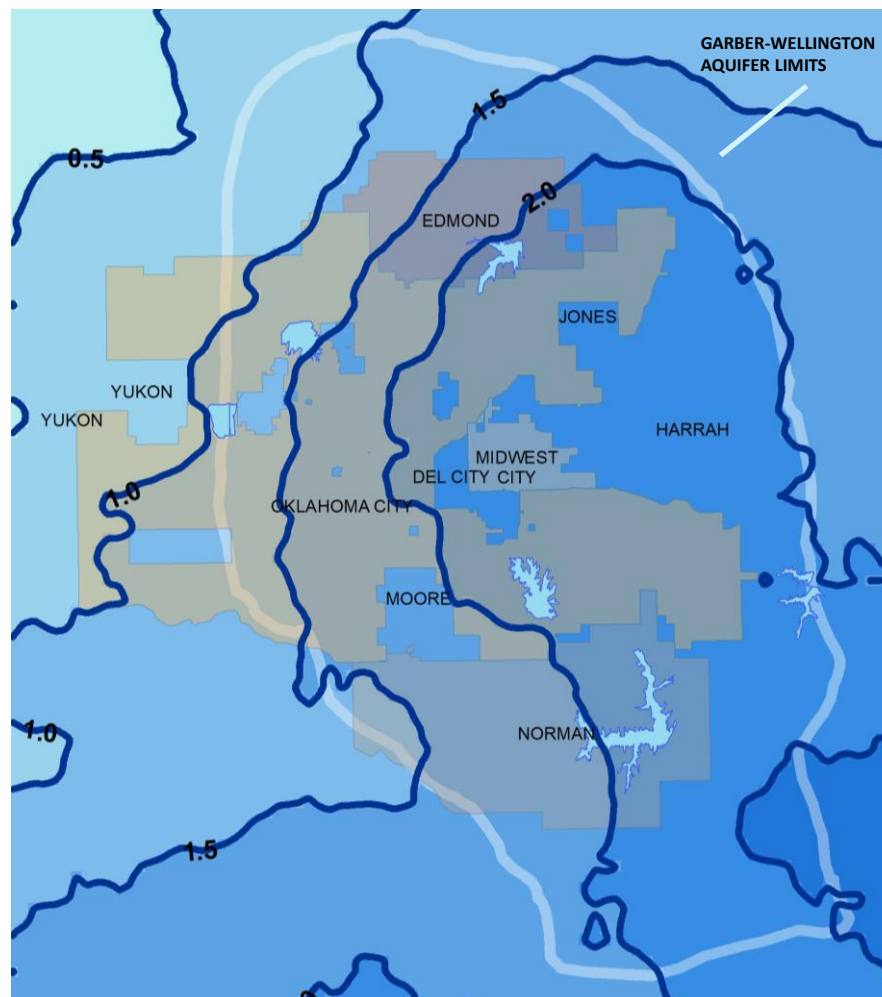
Recharge in Inches



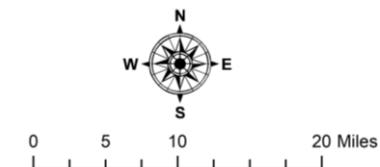
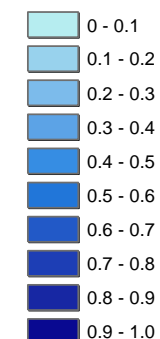
# AQUIFER RECHARGE – ANNUAL 2022



- Annual recharge for 2022 was 1.59 inches.
- Average annual recharge is 2.71 inches.
- Most of the recharge area on eastern side of the aquifer managed to get about 2-2.5 inches.



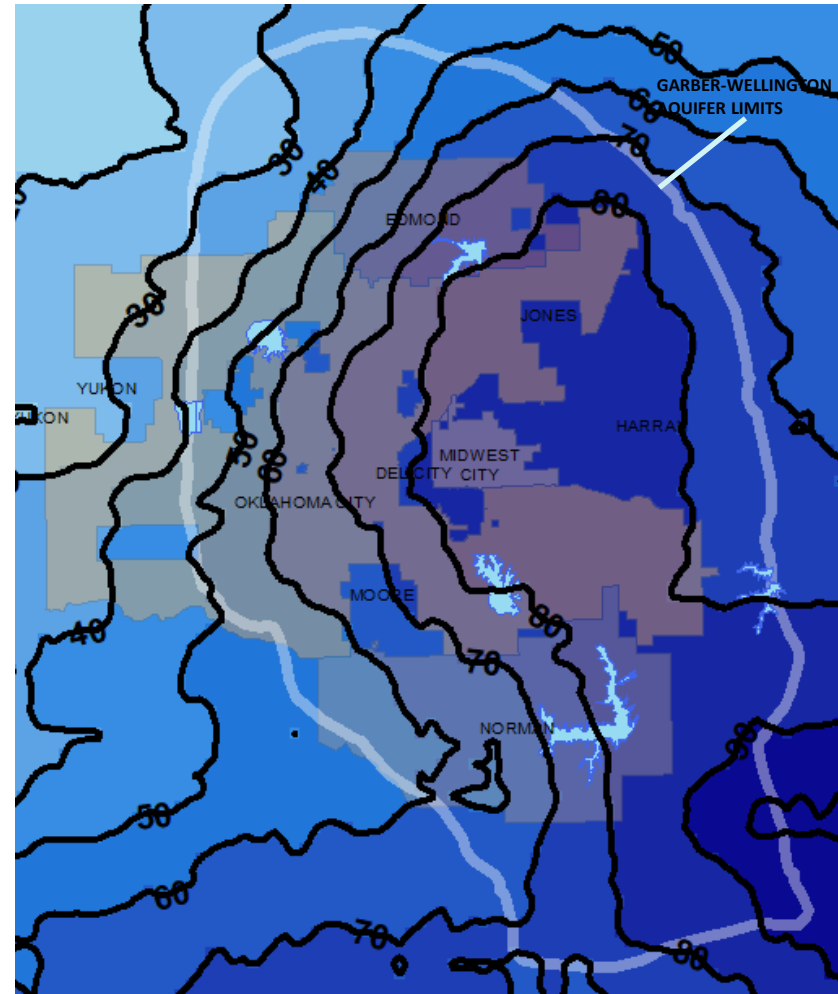
Recharge in Inches



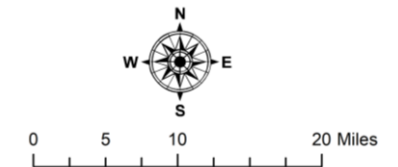
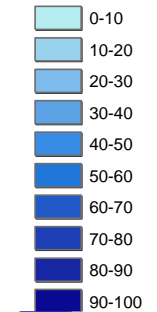
# AQUIFER RECHARGE – ANNUAL PERCENT 2022



- Overall recharge to the aquifer was about 57 percent of normal.
- Eastern Oklahoma and Cleveland counties got about 80 percent of normal.
- Areas west of I-35 got significantly less recharge.



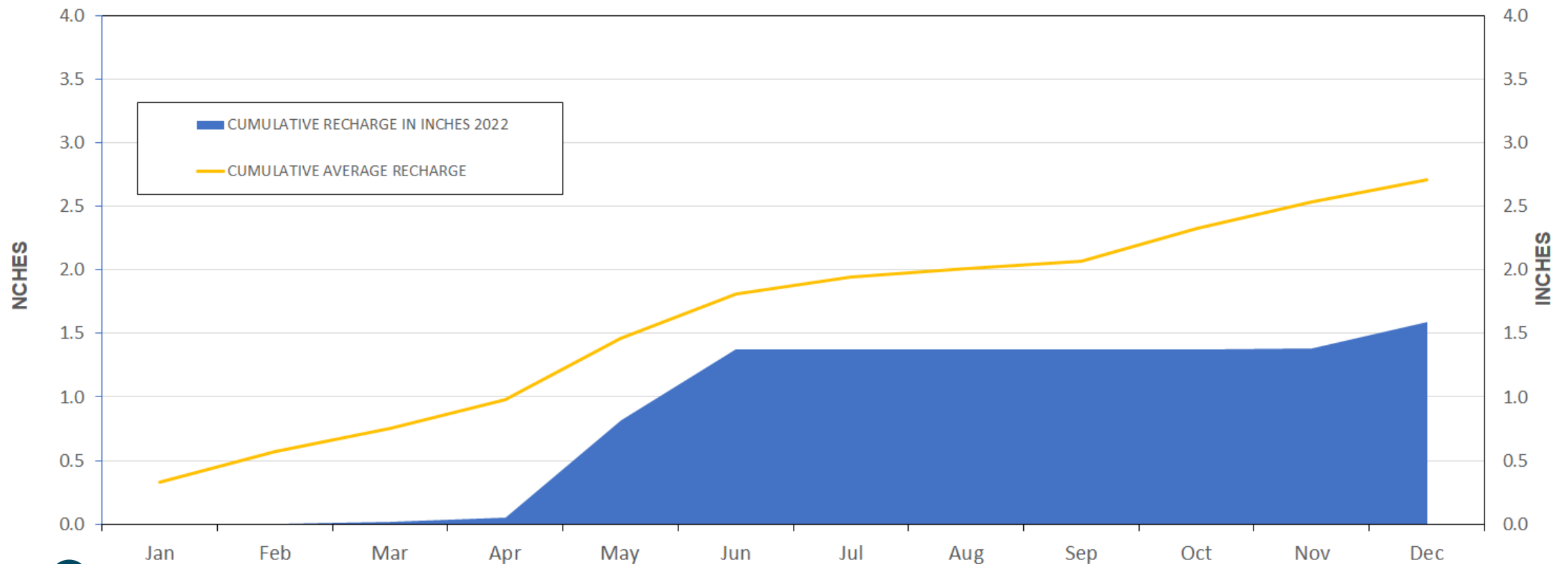
Recharge in Percent of Average Annual Recharge



# RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM



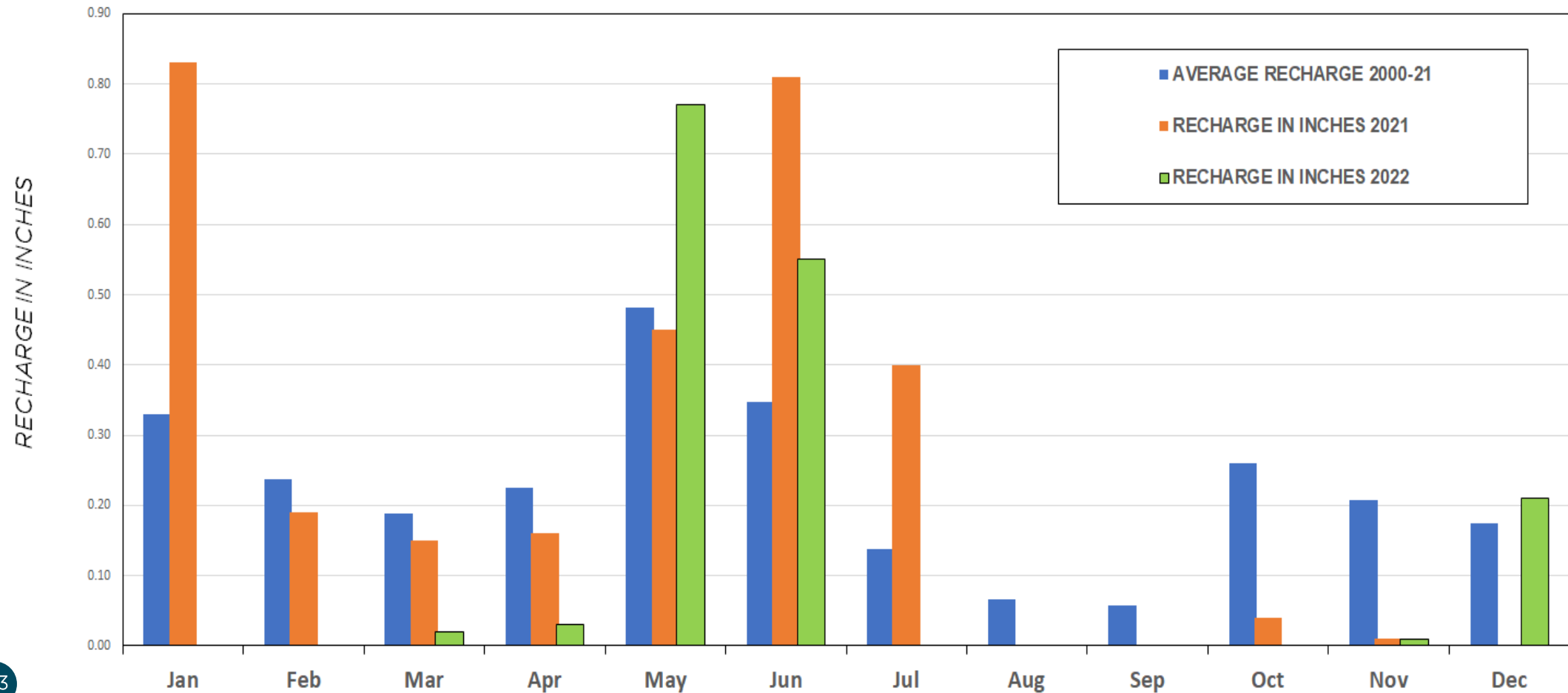
## ACCUMULATED CENTRAL OKLAHOMA AQUIFER SYSTEM RECHARGE 2022



# RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM CONTINUED



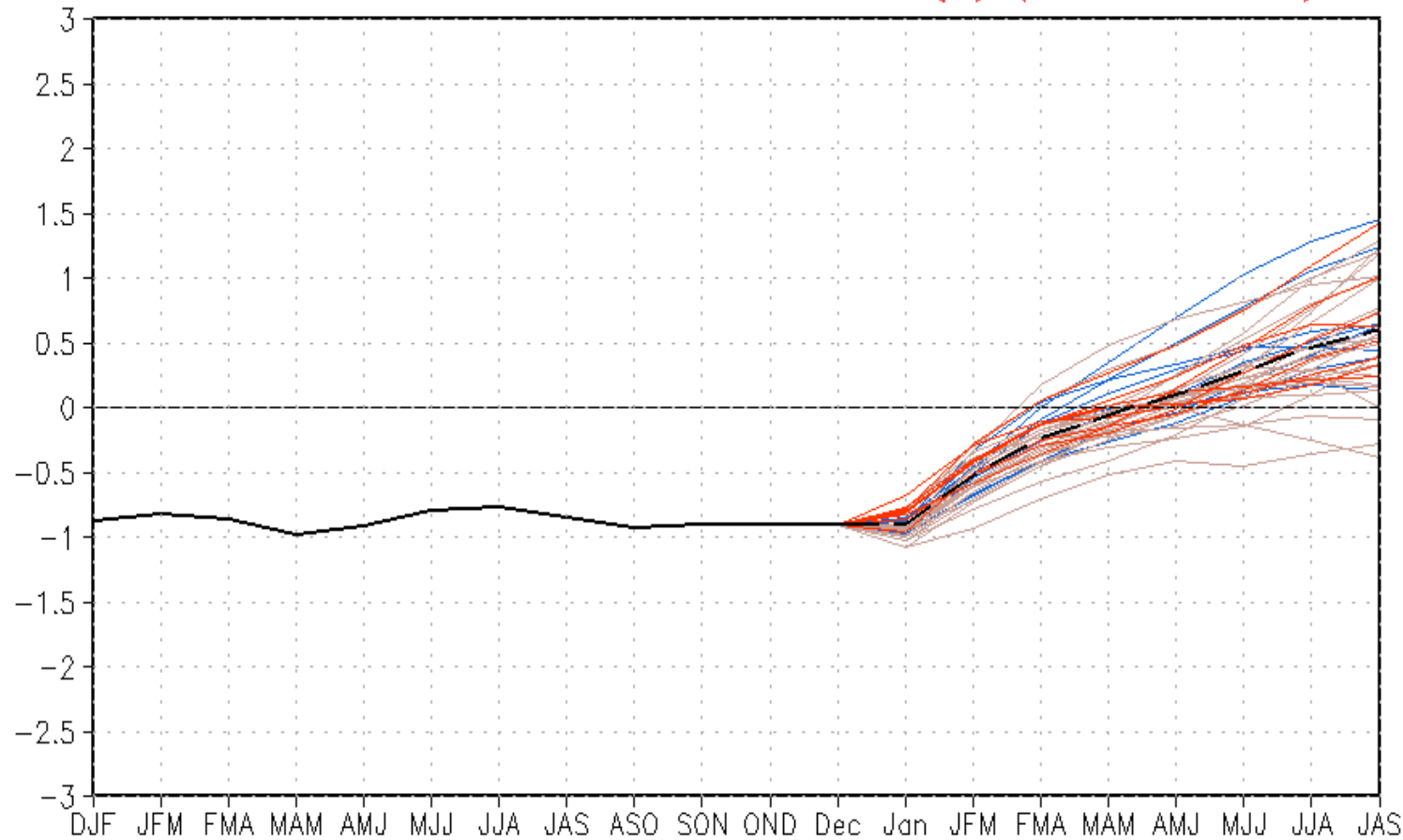
## MONTHLY AQUIFER RECHARGE



# ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



CFSv2 forecast Nino3.4 SST anomalies (K) (PDF corrected)



— Latest 8 forecast members  
— Earliest 8 forecast members  
— Other forecast members  
(Climatology base period: 1991–2020)

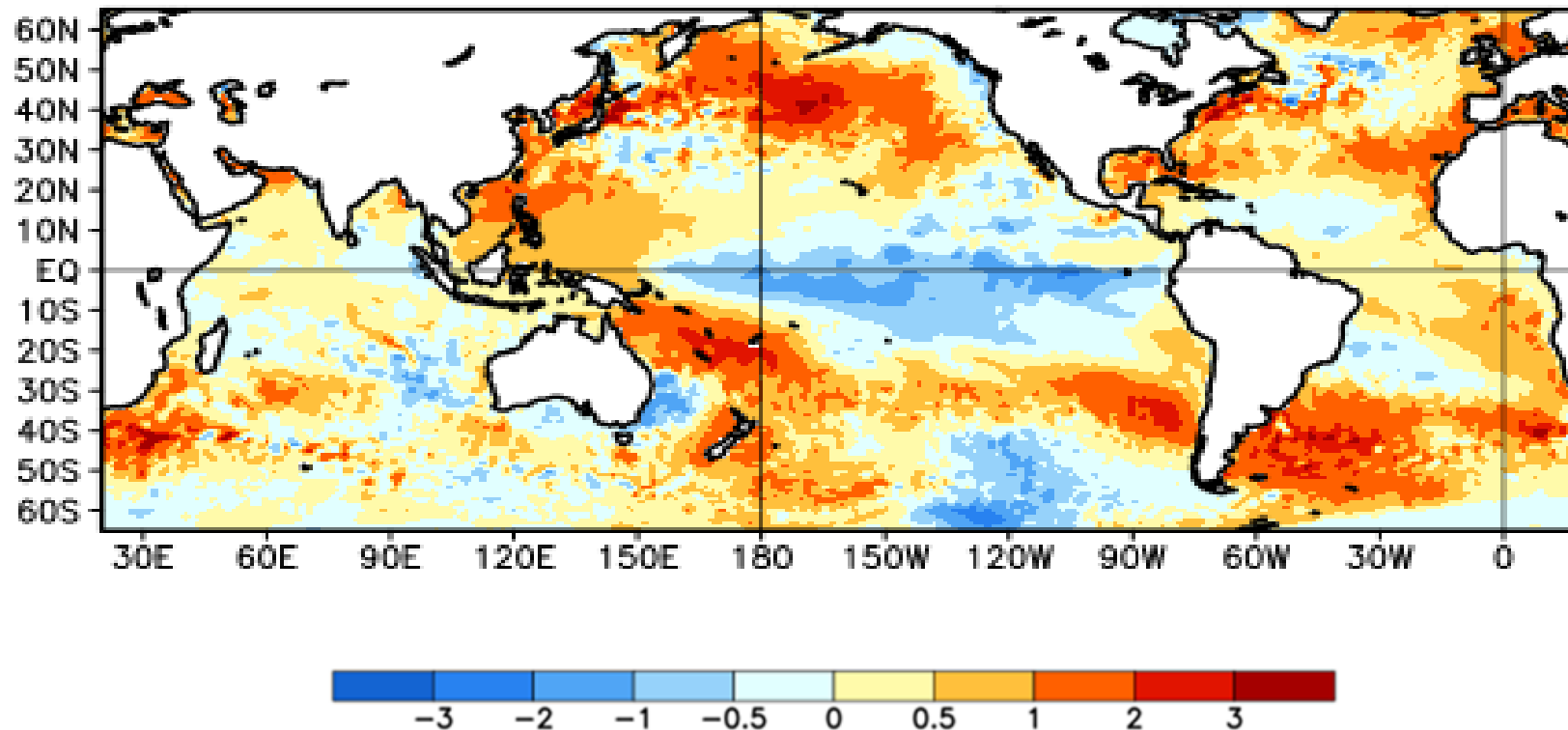
--- Forecast ensemble mean  
— NCEP OIv2.1 daily analysis



# ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



Average SST Anomalies  
27 NOV 2022 – 24 DEC 2022





## ENSO ALERT SYSTEM STATUS: LA NIÑA ADVISORY

- La Niña is present.
- Equatorial sea surface temperatures (SSTs) are below average across most of the Pacific Ocean.
- The tropical Pacific atmosphere is consistent with La Niña.
- La Niña is expected to continue into the winter, with equal chances of La Niña and ENSO-neutral during January-March 2023. In February-April 2023, there is a 71% chance of ENSO-neutral.



# QUESTIONS?

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ASSOCIATION OF  
CENTRAL OKLAHOMA  
GOVERNMENTS