



# DROUGHT CONDITIONS

## IN CENTRAL OKLAHOMA

John Harrington

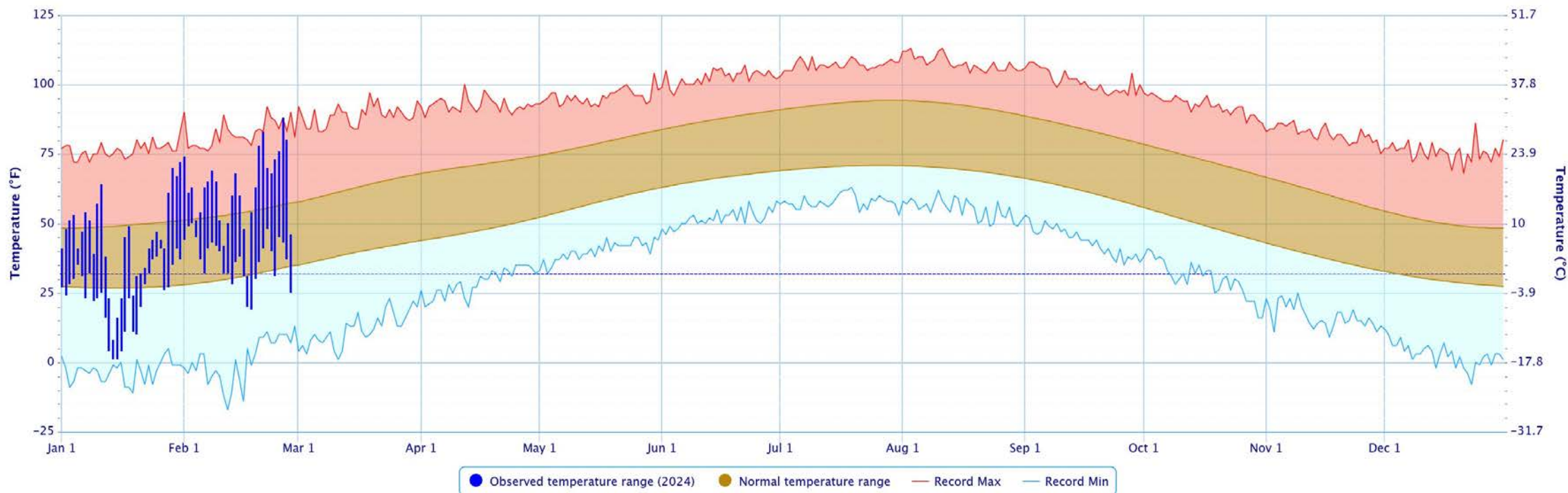
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February 1, 2024

# TEMPERATURE PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2024

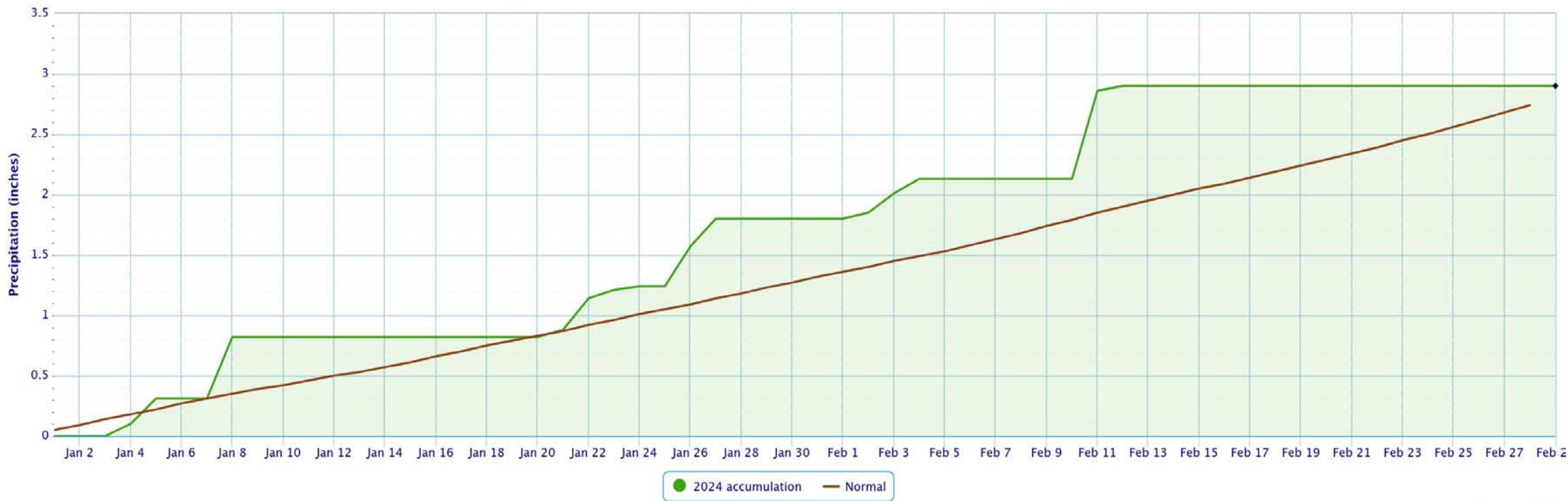


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# PRECIPITATION PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2024



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# RAINFALL SUMMARIES BY OKLAHOMA CLIMATE DIVISION



Calendar Year 01-Jan-2024 through		28-Feb-2024				
Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	2.52"	+0.45"	122%	27th wettest	0.13" (1970)	5.06" (1949)
Central	3.72"	+0.49"	115%	26th wettest	0.44" (1963)	7.75" (1949)
S. Central	4.13"	-0.21"	95%	48th wettest	0.49" (1963)	11.02" (1932)
Statewide	3.43"	+0.04"	101%	42nd wettest	0.59" (1976)	7.58" (1949)

Water Year: 01-Oct-2023 through		28-Feb-2024				
Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	9.31"	+1.70"	122%	23rd wettest	1.48" (1966-67)	15.98" (1986-87)
Central	11.22"	-0.12"	99%	33rd wettest	3.05" (2005-06)	22.09" (1984-85)
S. Central	14.90"	+0.87"	106%	32nd wettest	3.74" (1966-67)	26.25" (2000-01)
Statewide	11.40"	-0.07"	99%	36th wettest	3.57" (1966-67)	18.94" (1984-85)

Winter Dec 01 through		28-Feb-2024				
Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	5.89"	+2.60"	179%	5th wettest	0.54" (2005-06)	8.01" (1959-60)
Central	6.09"	+0.87"	117%	22nd wettest	0.90" (2005-06)	14.02" (1984-85)
S. Central	6.63"	-0.30"	96%	45th wettest	1.99" (1966-67)	13.14" (1937-38)
Statewide	6.05"	+0.59"	111%	27th wettest	1.51" (2005-06)	10.39" (1984-85)



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.

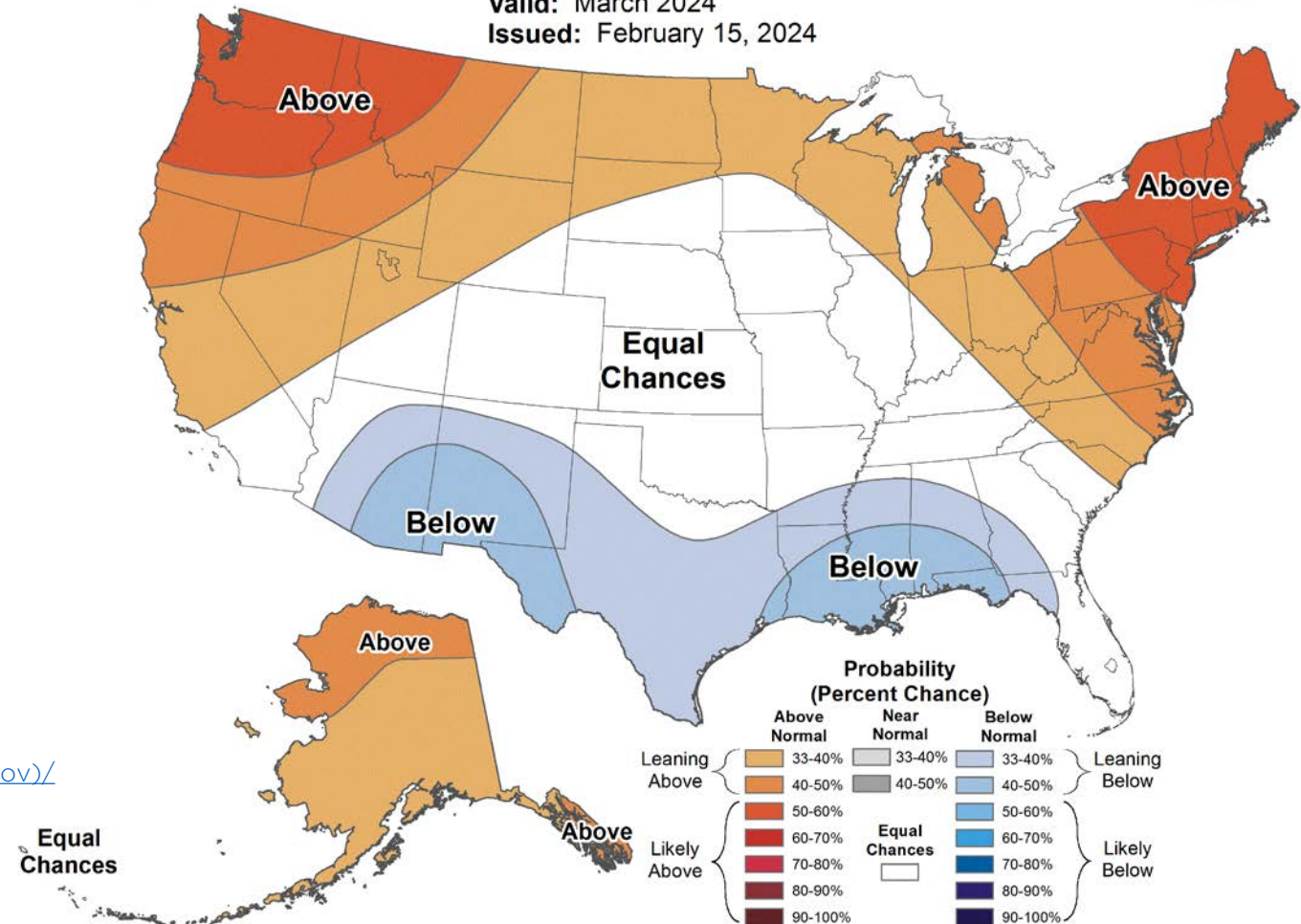
[Climate Prediction Center - Updated OFFICIAL 30-Day Forecasts \(noaa.gov\)/](https://www.noaa.gov/climate-prediction-center/updated-official-30-day-forecasts)



## Monthly Temperature Outlook



Valid: March 2024  
Issued: February 15, 2024



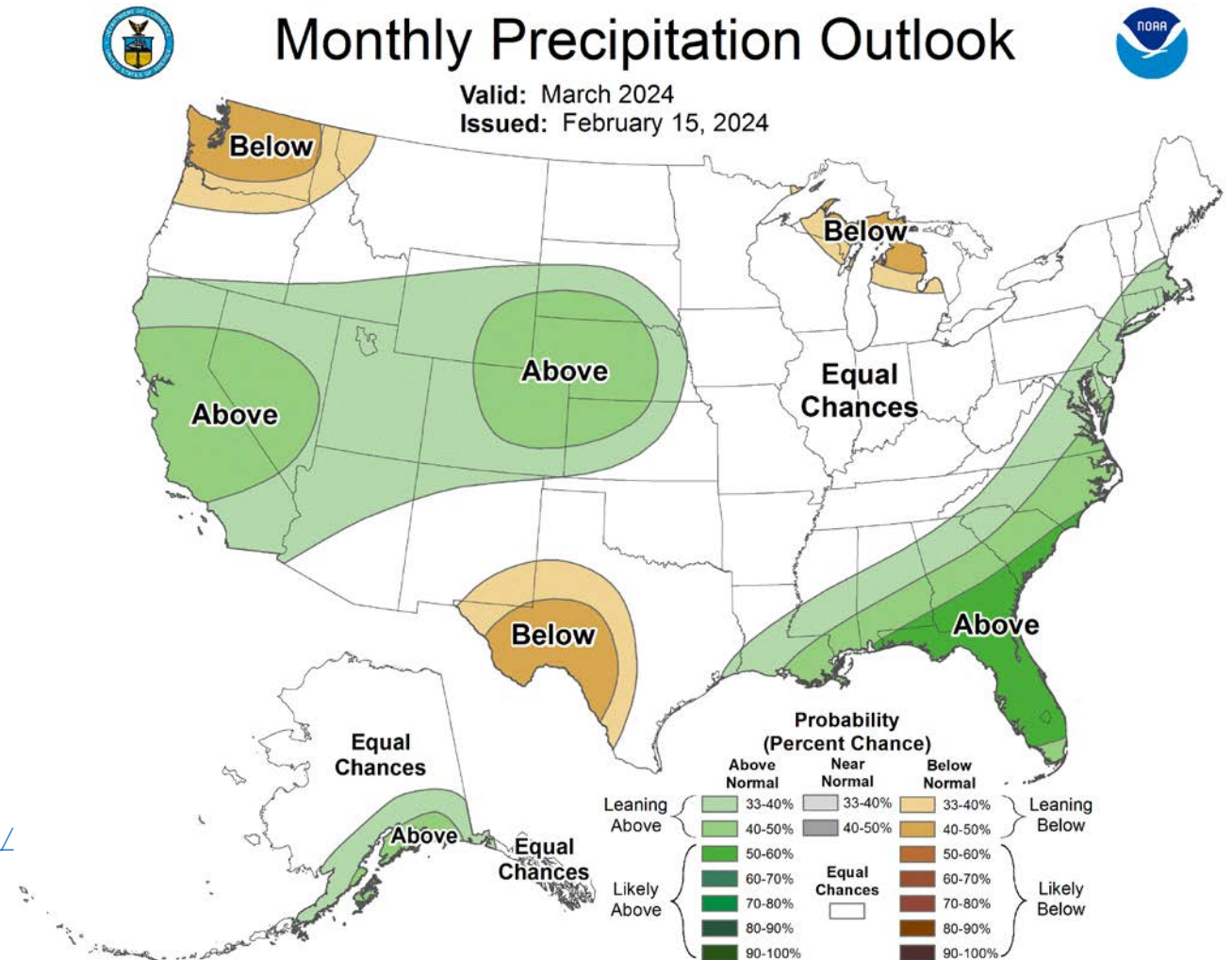
# NOAA ONE-MONTH PRECIPITATION OUTLOOK



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.

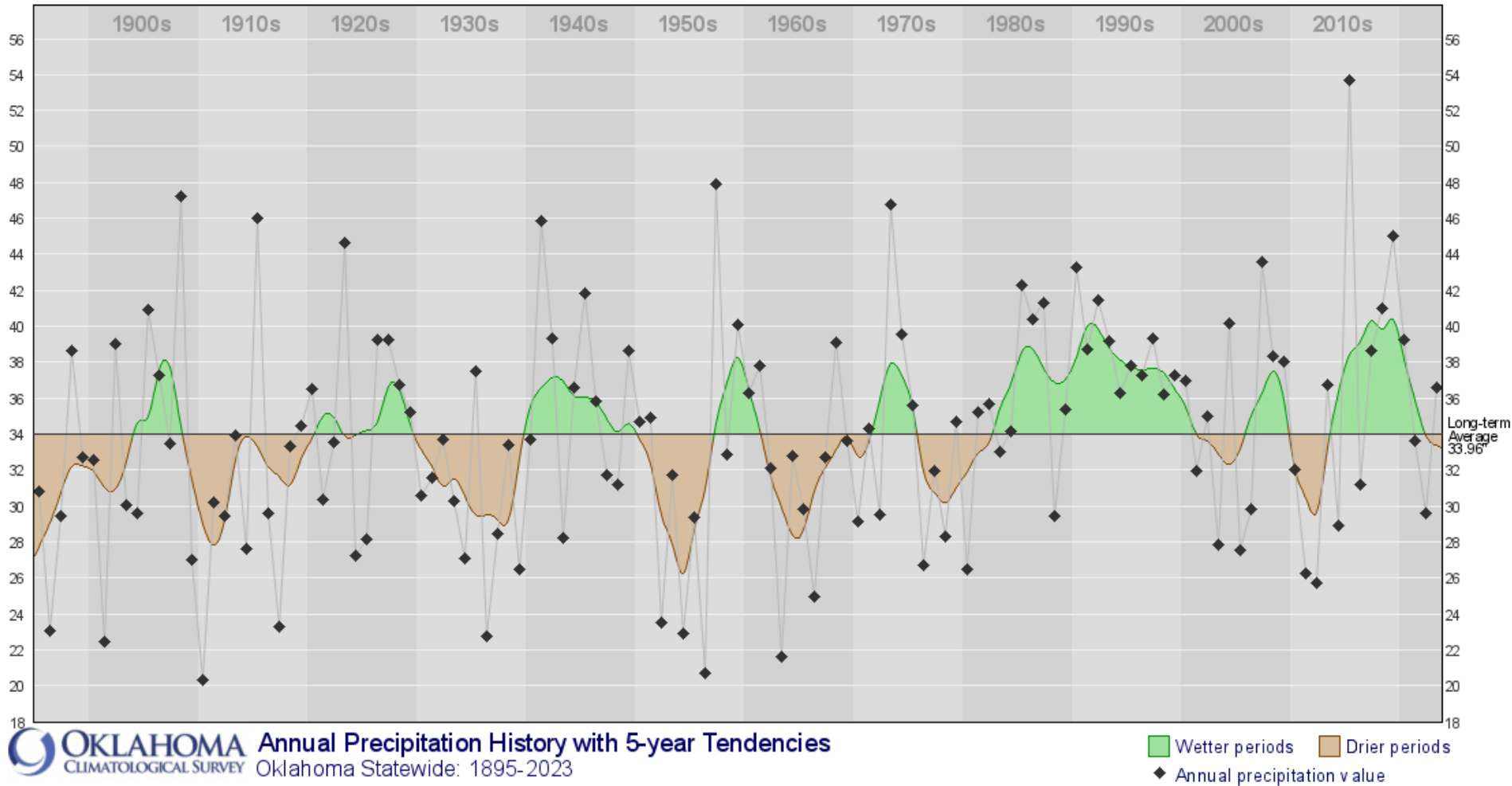
That doesn't mean that there are equal chances of each of the categories occurring - it means that currently there is no skill in identifying the most likely category. In these areas, it is best to be prepared for all possibilities.

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





# Annual Precipitation History with 5-Year Tendencies



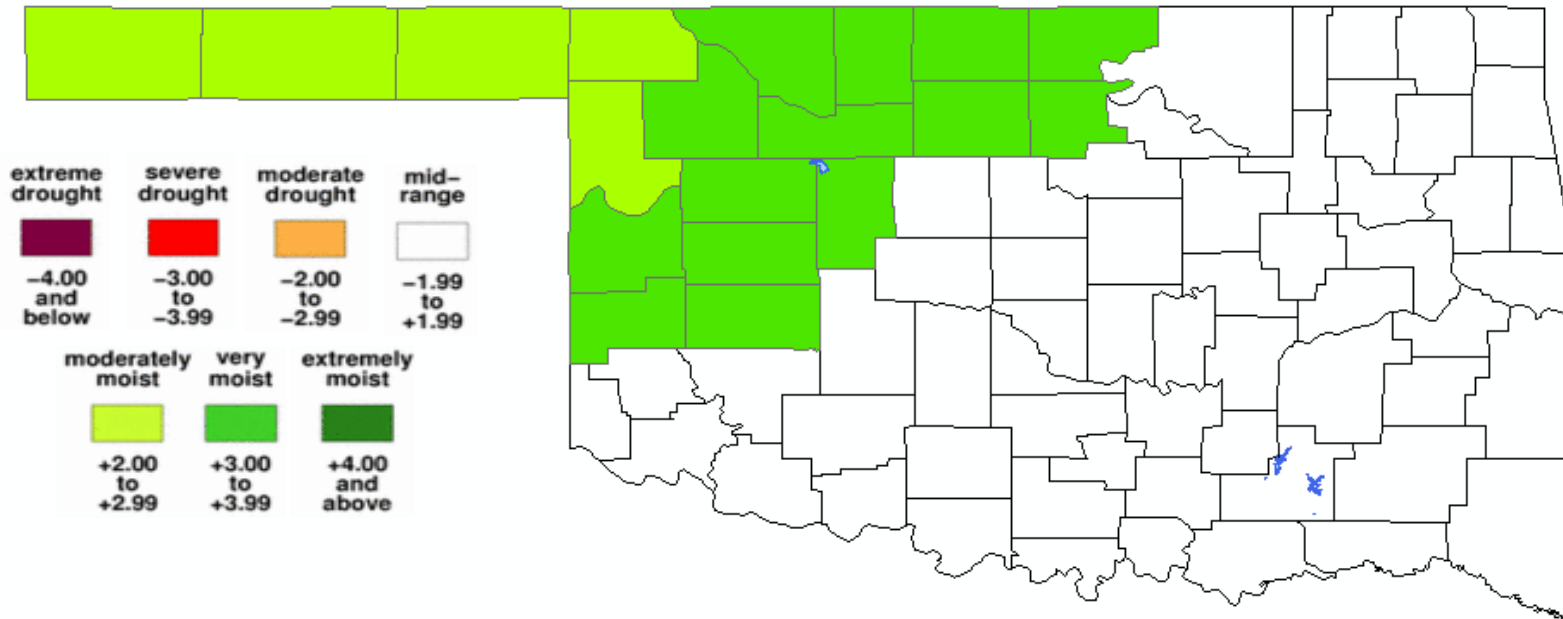
This graph shows the cyclical nature of wet and drought periods in Oklahoma. The black dots represent the annual precipitation for that particular year. The line represents the annual precipitation data smoothed over five years.

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.

**OKLAHOMA** Annual Precipitation History with 5-year Tendencies  
CLIMATOLOGICAL SURVEY Oklahoma Statewide: 1895-2023

Wetter periods    Drier periods  
◆ Annual precipitation value

# 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 FEB 2024

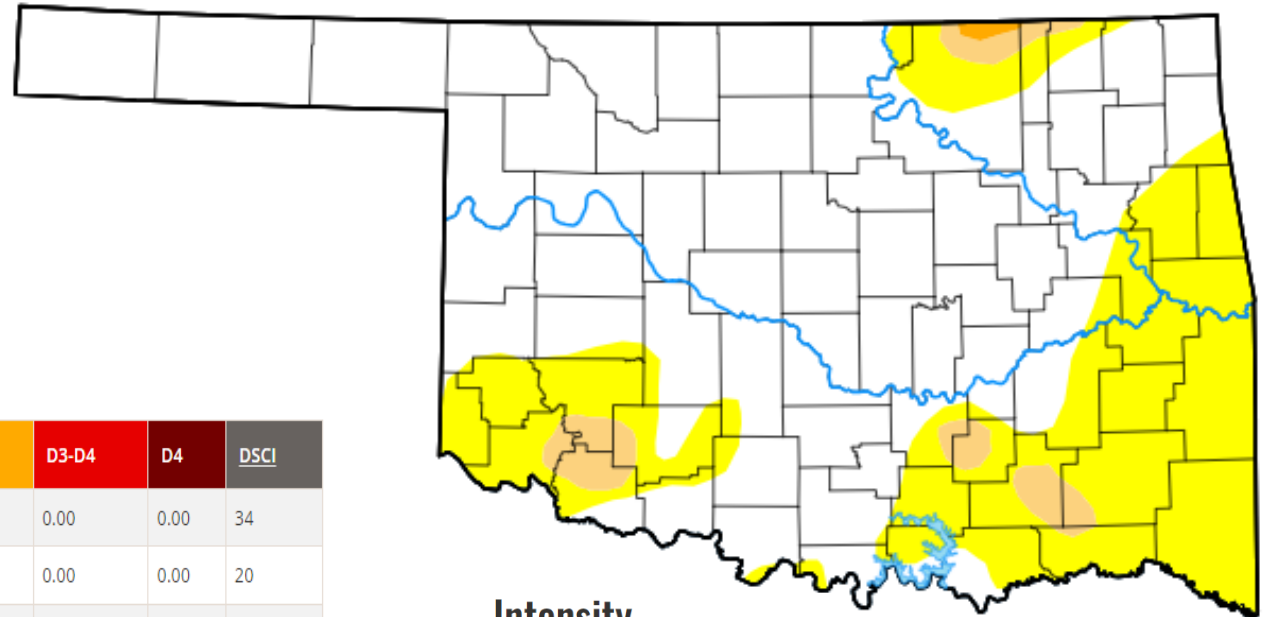


# U.S. DROUGHT MONITOR - OKLAHOMA



February 29, 2024

Abnormal dryness or drought are currently affecting approximately 61,032 people in Oklahoma.



### Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	<a href="#">2024-02-27</a>	69.20	30.80	3.23	0.19	0.00	0.00	34
Last Week to Current	<a href="#">2024-02-20</a>	83.39	16.61	3.23	0.19	0.00	0.00	20
3 Months Ago to Current	<a href="#">2023-11-28</a>	48.05	51.95	33.99	11.38	1.16	0.00	98
Start of Calendar Year to Current	<a href="#">2023-12-26</a>	53.62	46.38	21.64	3.08	0.00	0.00	71
Start of Water Year to Current	<a href="#">2023-09-26</a>	34.29	65.71	46.76	30.93	12.91	0.00	156
One Year Ago to Current	<a href="#">2023-02-28</a>	22.85	77.15	66.88	53.52	36.64	8.86	243



# U.S. DROUGHT MONITOR NATIONWIDE MAP



Map released: February 29, 2024

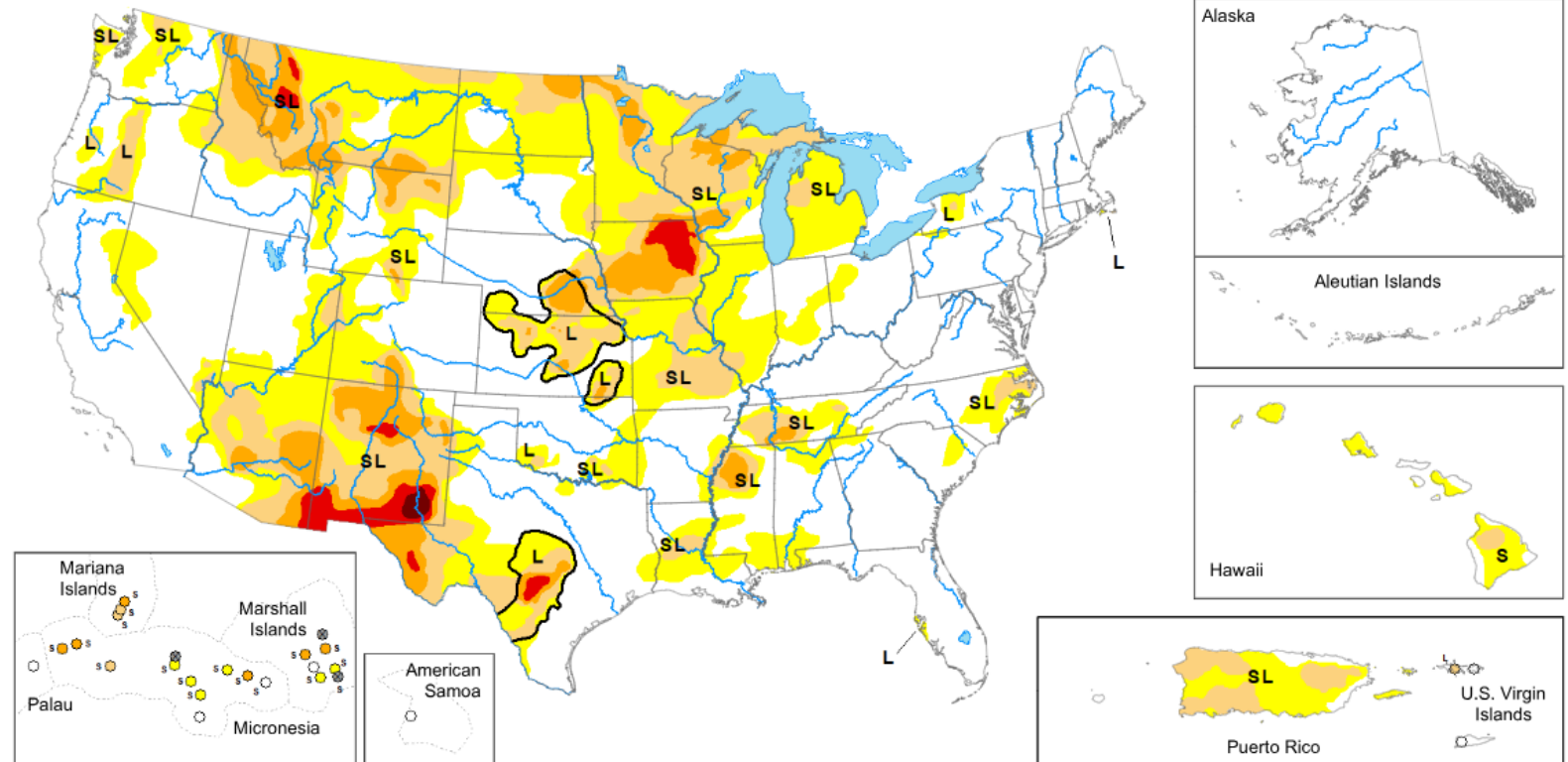
Data valid: February 27, 2024

## 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

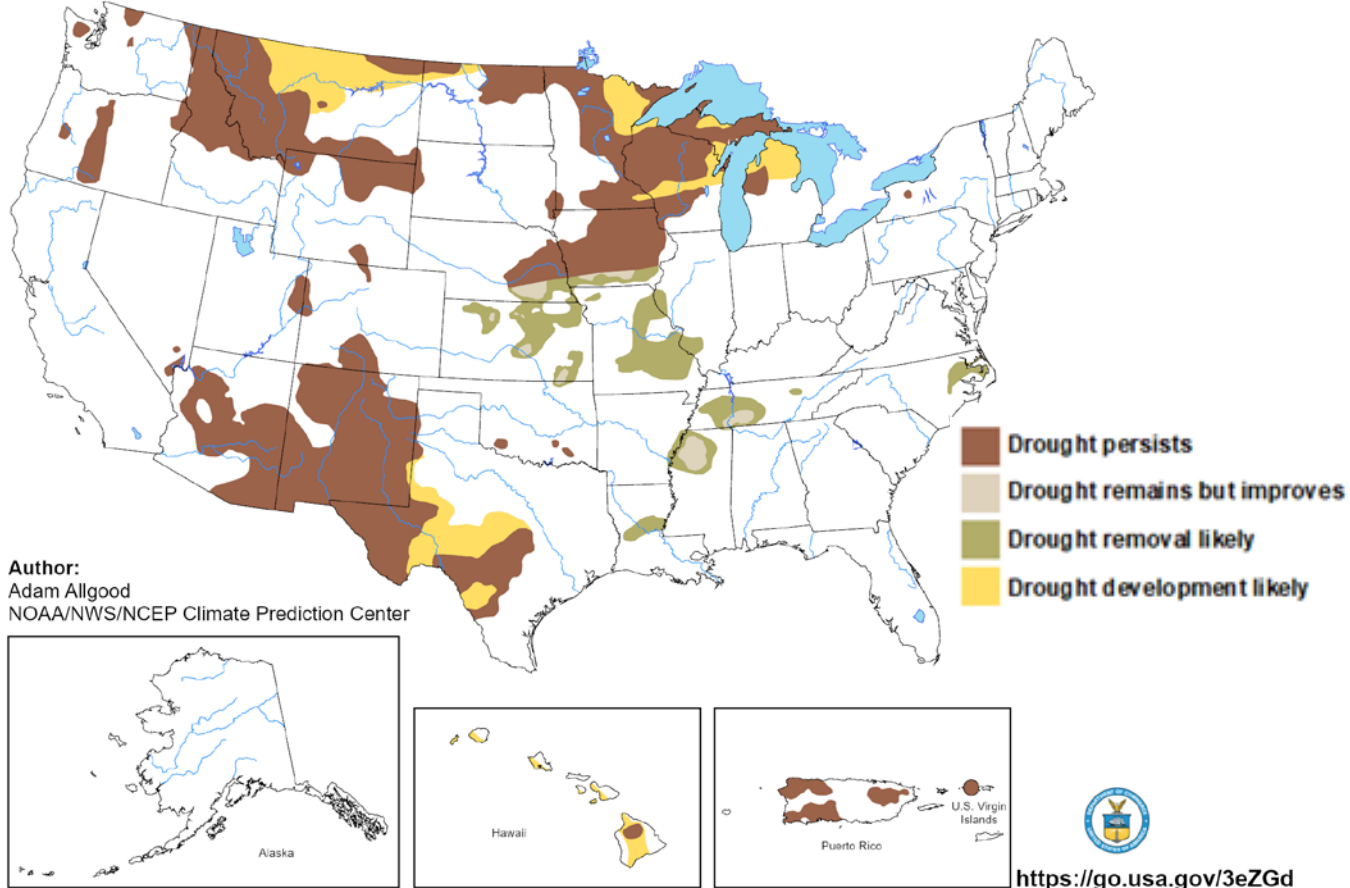


# U.S. DROUGHT MONITOR MONTHLY DROUGHT OUTLOOK MAP



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

Valid for March 2024  
Released February 29, 2024



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).

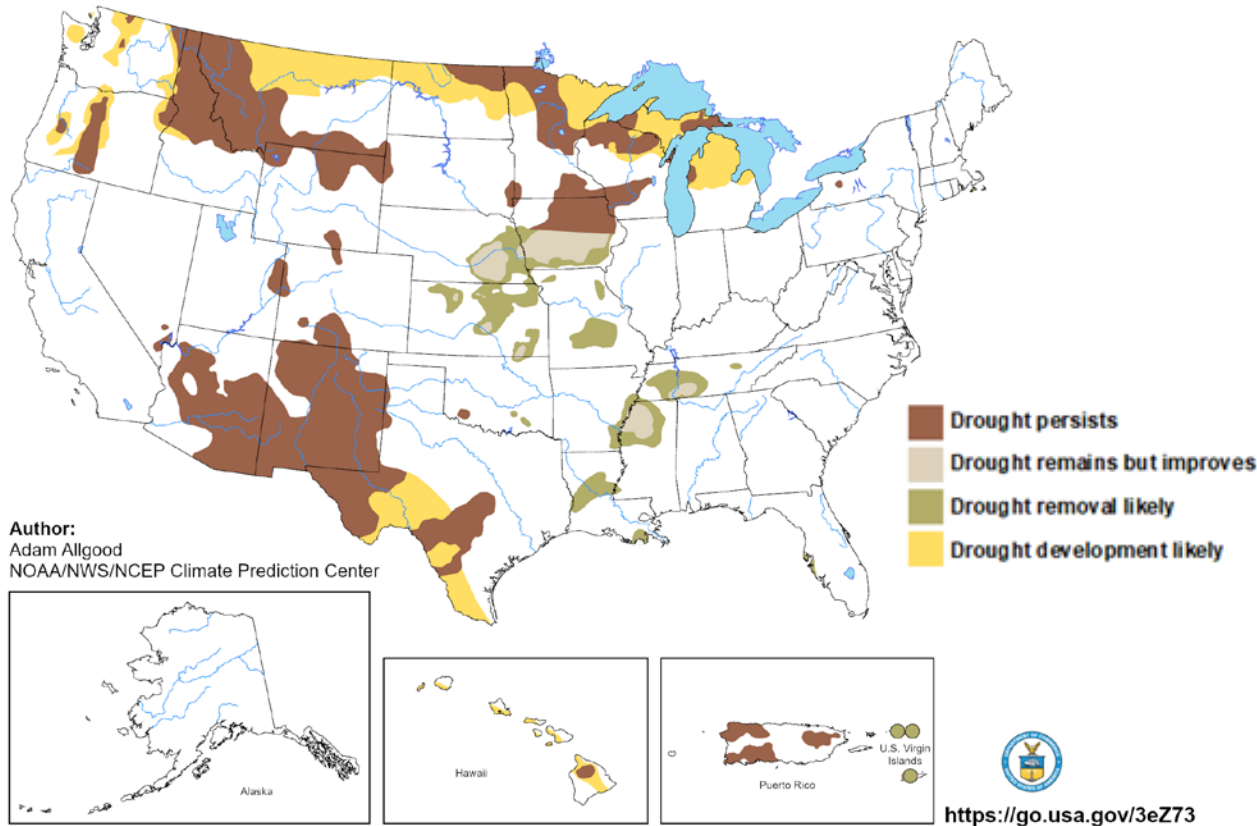


# U.S. DROUGHT MONITOR SEASONAL DROUGHT OUTLOOK MAP



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

Valid for February 15 - May 31, 2024  
Released February 15, 2024



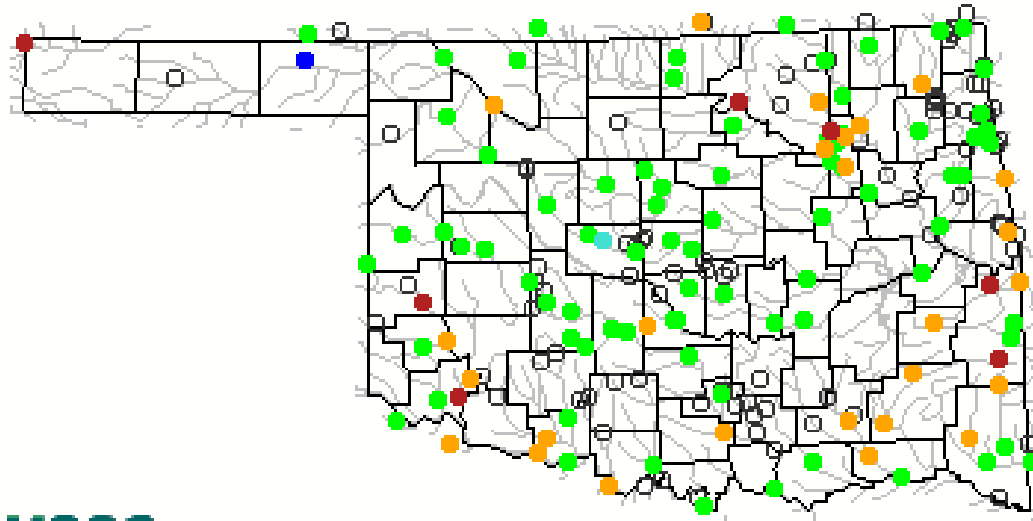
Depicts large-scale trends based on subjectively derived probabilities guided by short and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. “Ongoing” drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

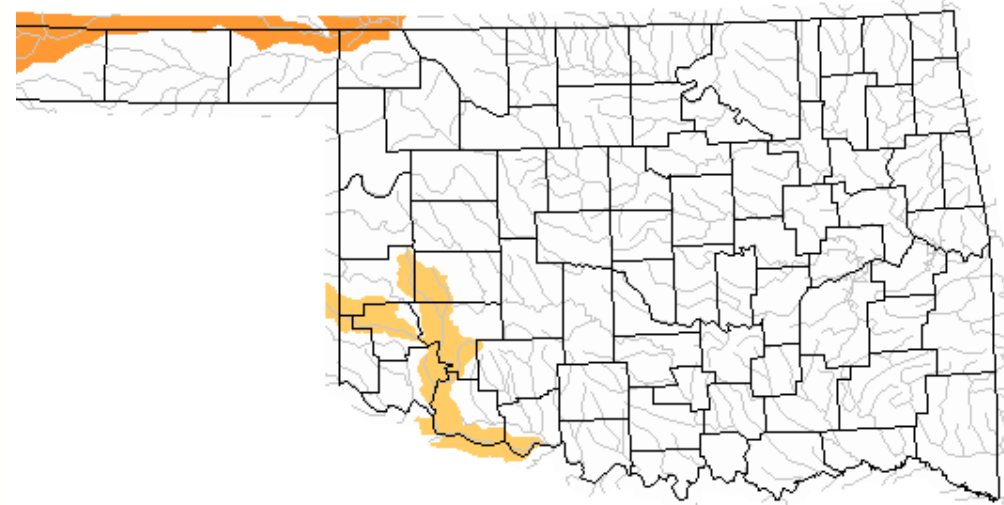


Friday, March 01, 2024 11:30ET



Below normal 28-day average streamflow

Thursday, February 29, 2024

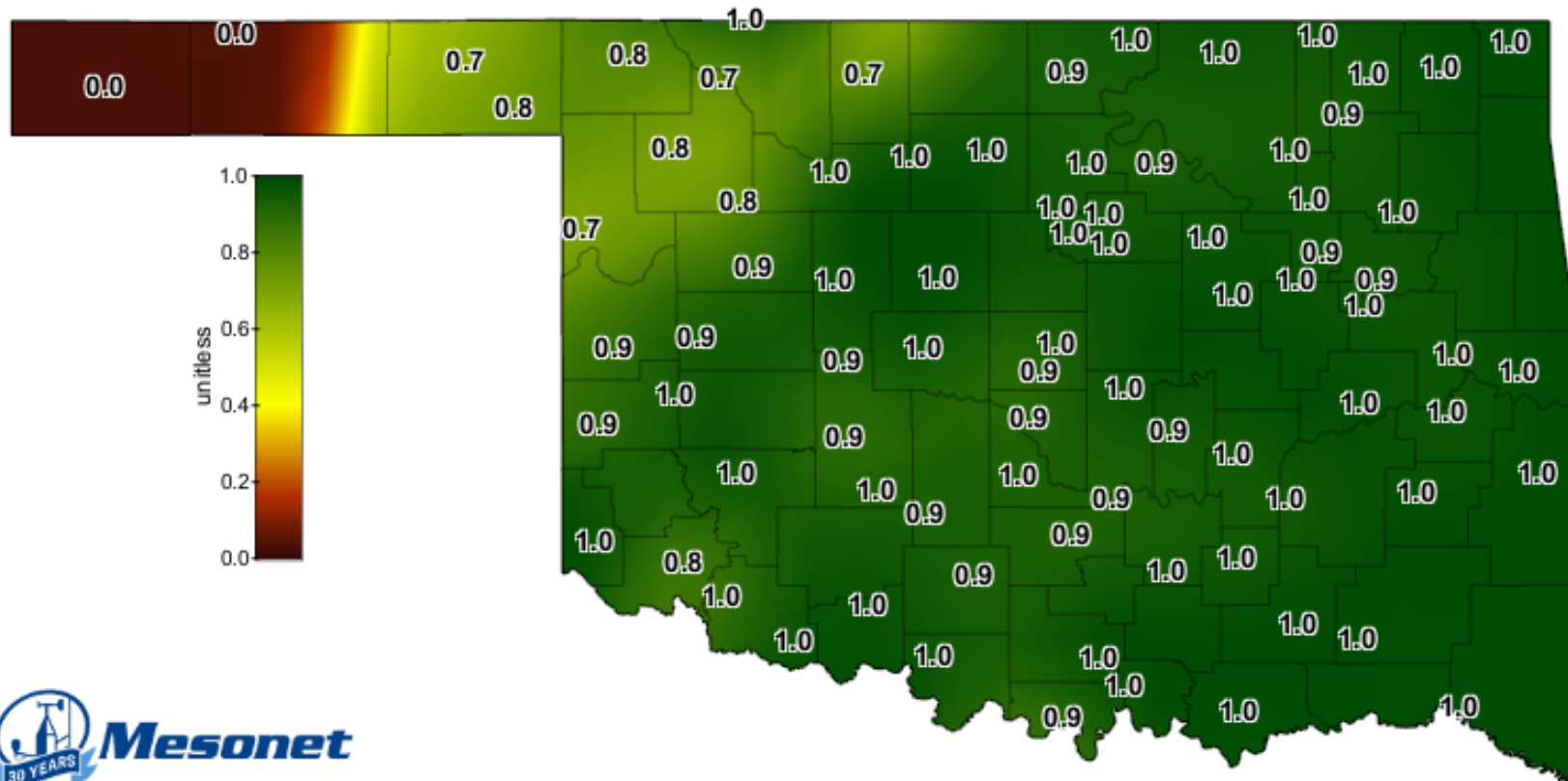


Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		



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	

# SOIL MOISTURE MAP



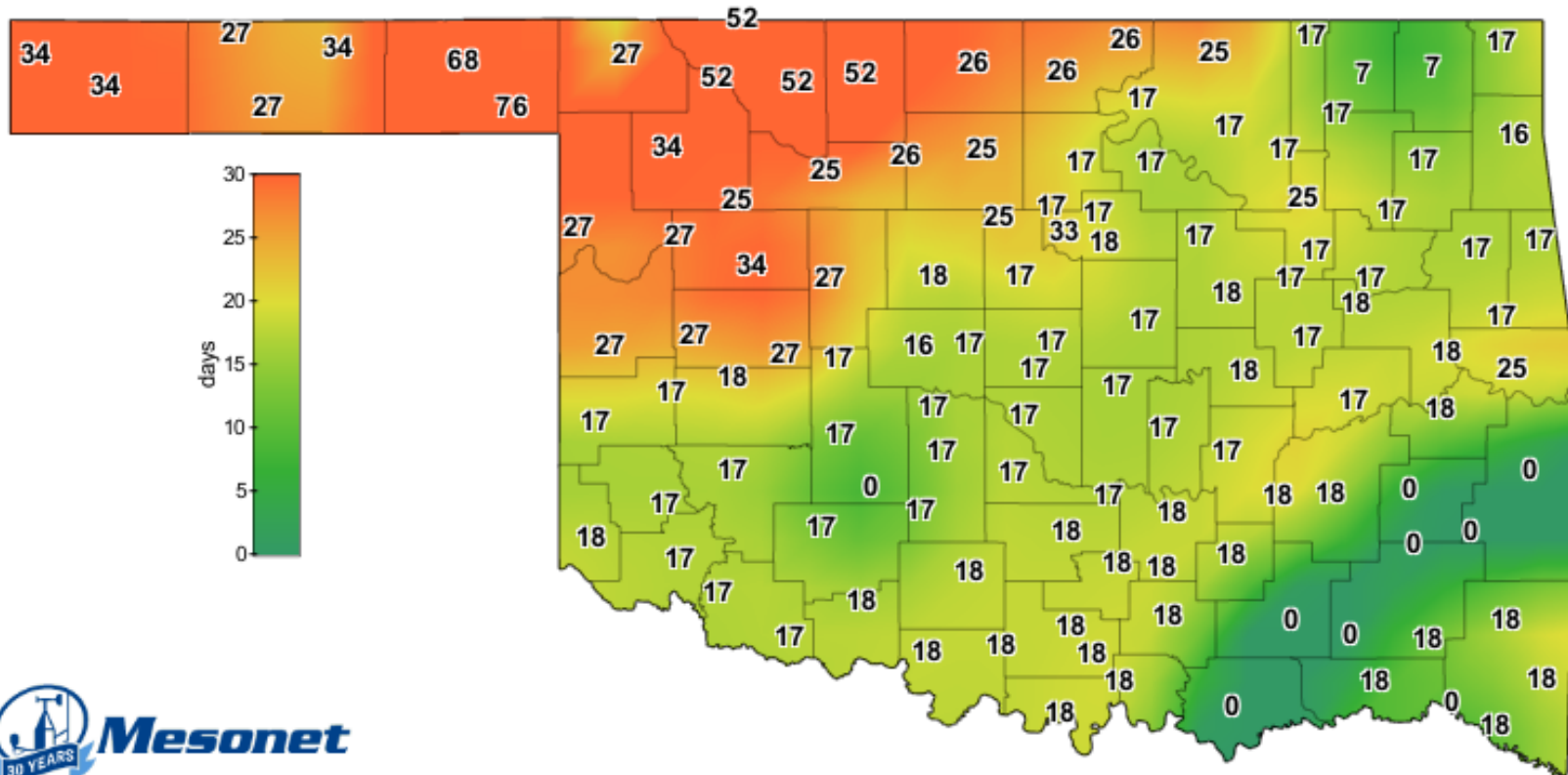
1-day Average 24-inch Fractional Water Index

February 28, 2024

Created 6:30:14 AM February 29, 2024 CST. © Copyright 2024



# CONSECUTIVE DAYS WITHOUT RAINFALL MAP

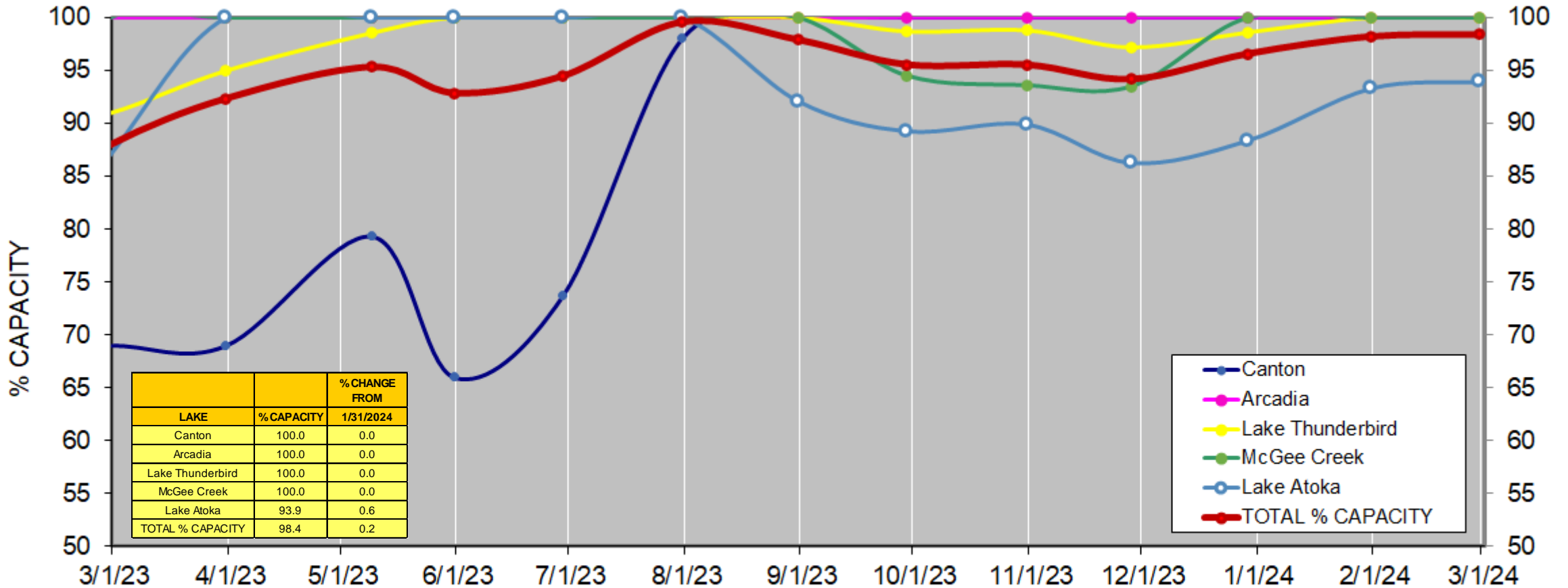


Consecutive Days With Less Than 0.25" Rainfall

February 29, 2024

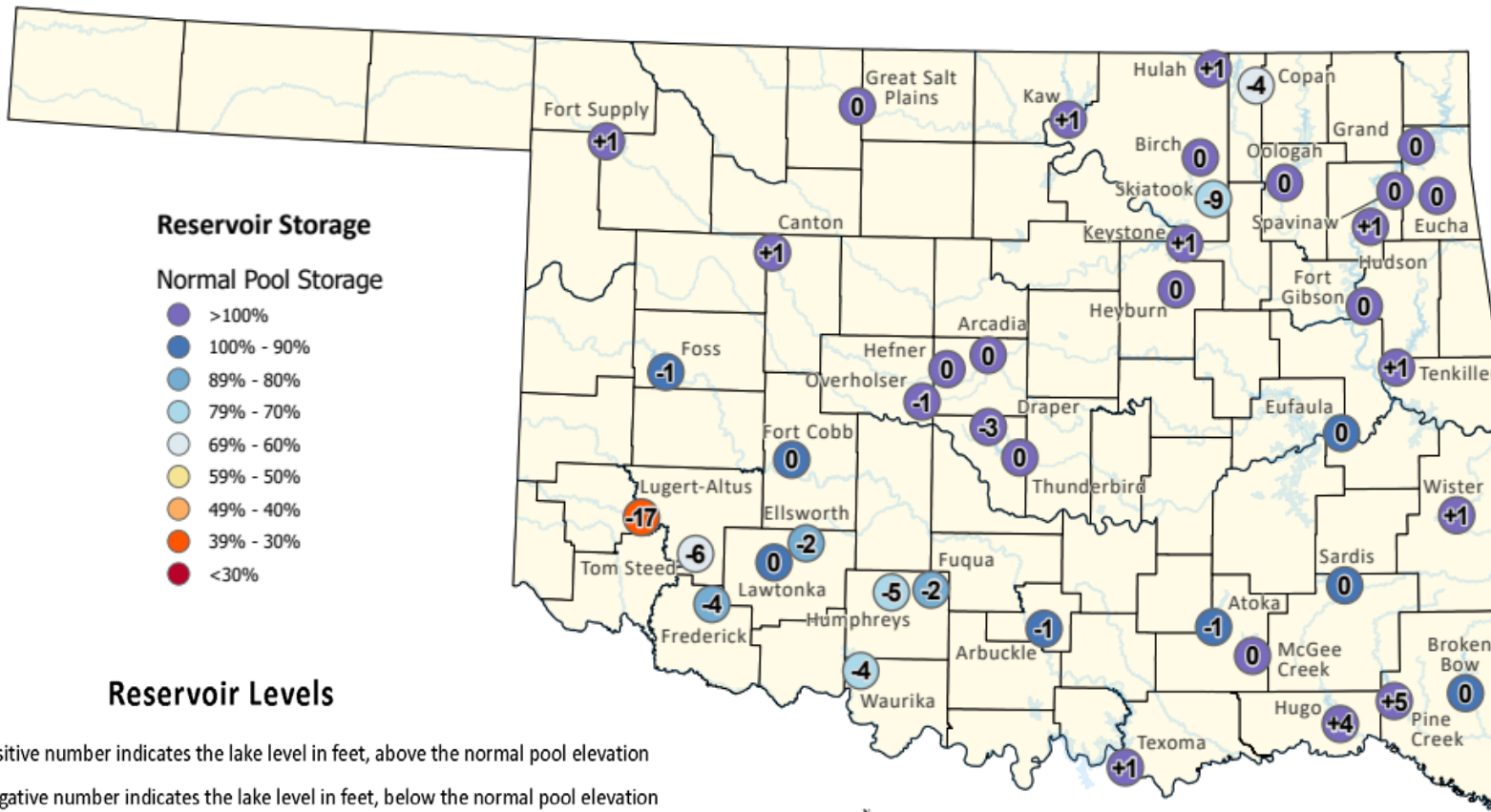
Created 7:15:02 AM March 1, 2024 CST. © Copyright 2024

# 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



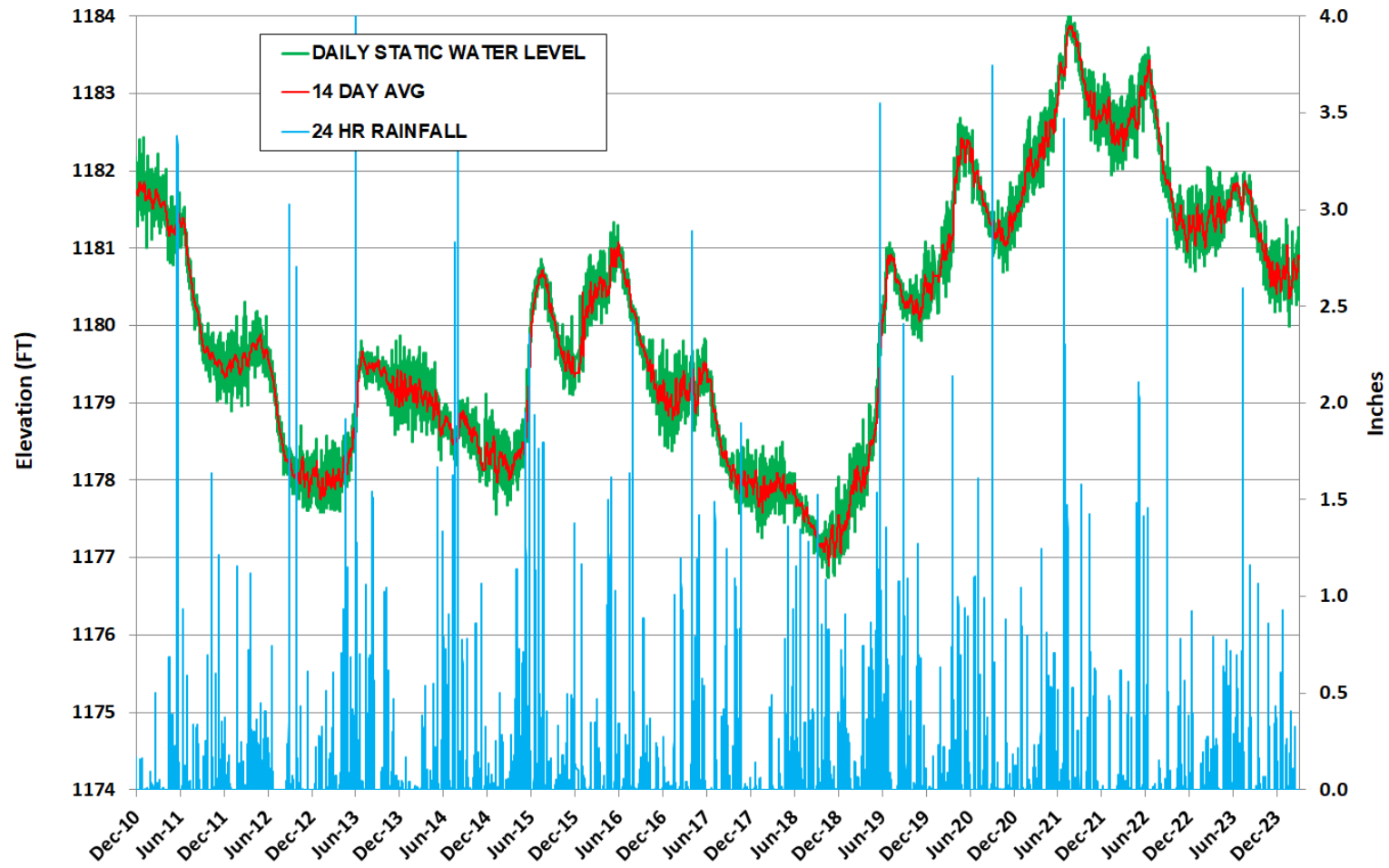
## OKLAHOMA RESERVOIR LEVELS AND STORAGE AS OF 2/26/2024

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 ([USGS Current Conditions for USGS 07333010 Atoka Reservoir near Stringtown, OK](https://www.usgs.gov/conditions/07333010-Atoka-Reservoir-near-Stringtown-OK)). For more information, please visit the OWRB's website: (<https://www.owrb.ok.gov>).





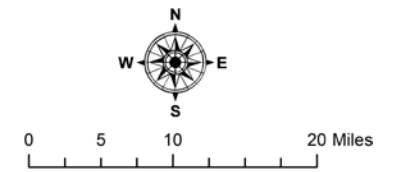
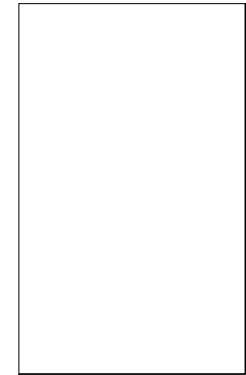
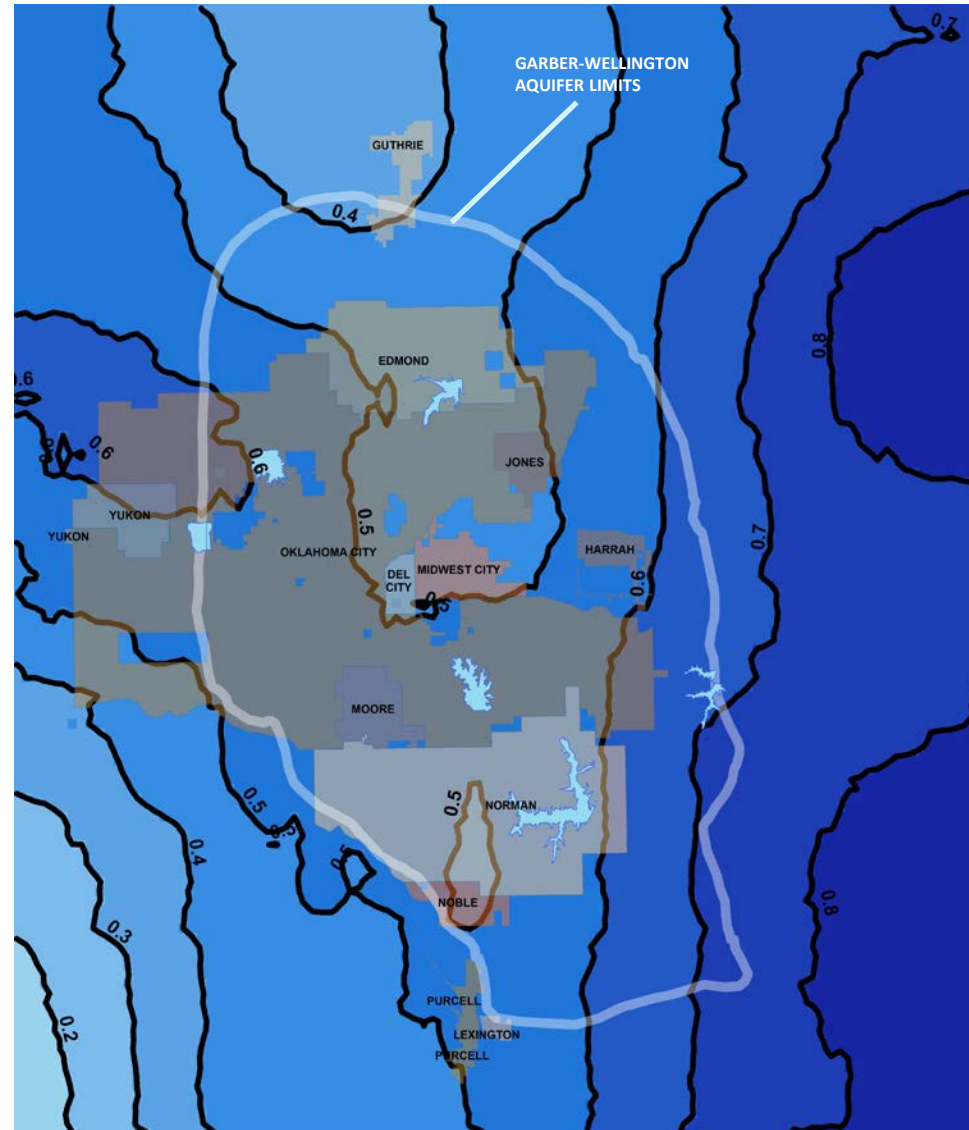
# GROUNDWATER LEVELS SPENCER MESONET STATION



# MONTHLY AQUIFER RECHARGE



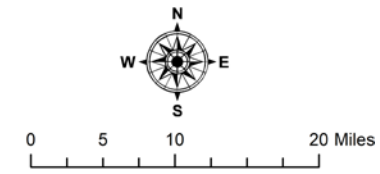
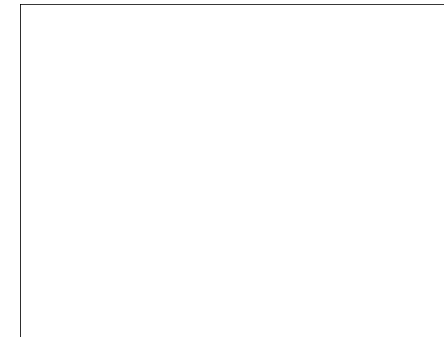
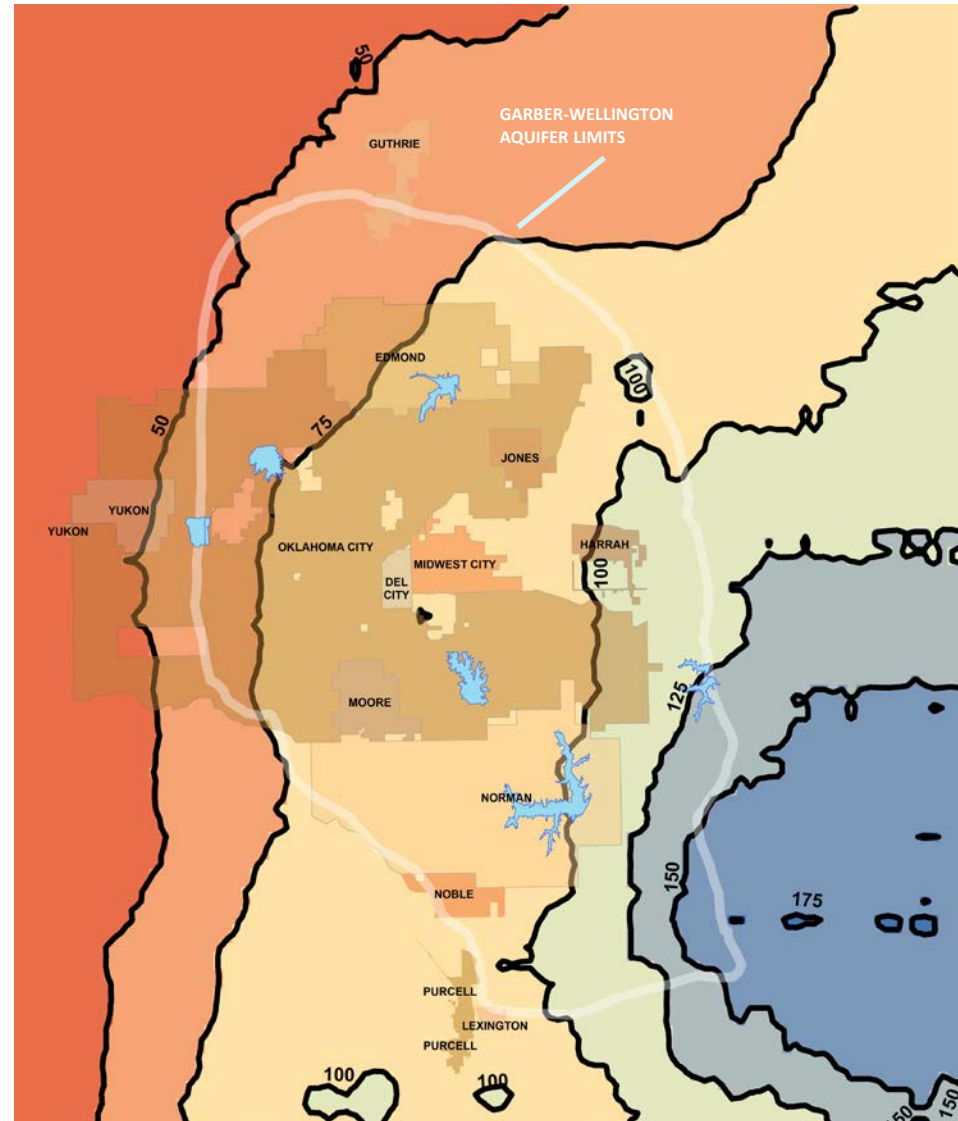
- Mean aquifer recharge in February 2024 was 0.58 inches.
- Normal mean recharge for February is 0.24 inches.
- We have received as much recharge in the past two months as in all of 2023!



# PERCENT TOTAL CUMULATIVE AQUIFER RECHARGE – Last 12 Months



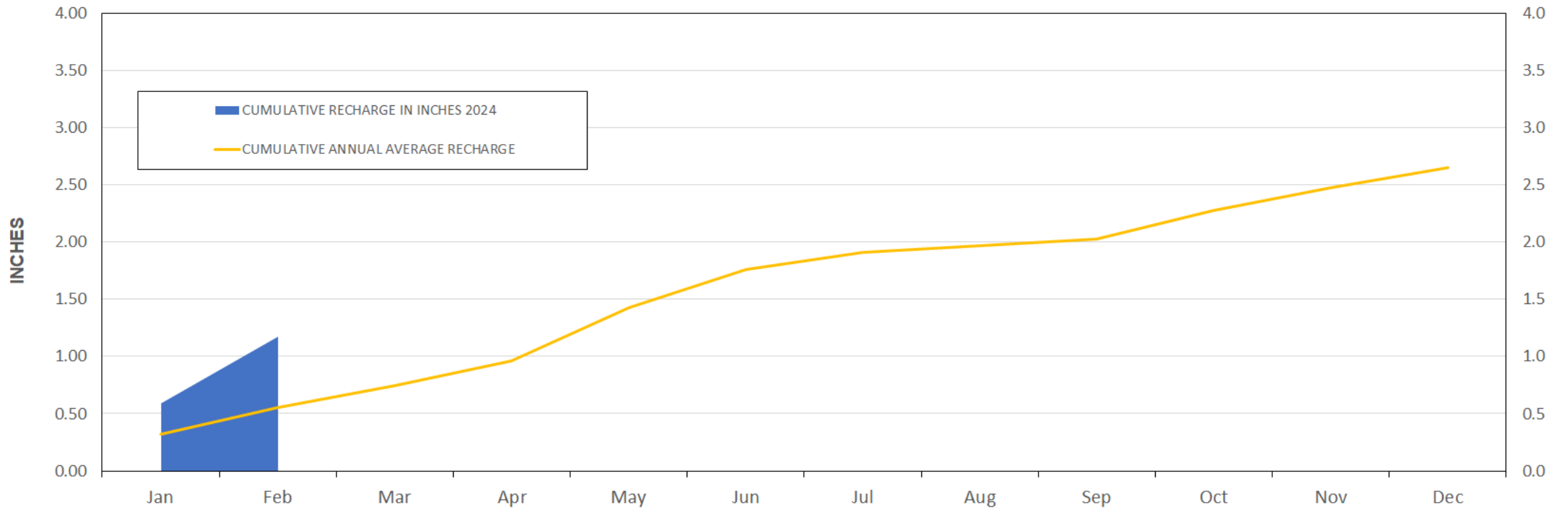
- Most of the recharge in the past year was south and east of the metropolitan area.
- February 2024 recharge was significant over the Yukon area.
- Much of the east side of the metropolitan area has received at least 75% of median recharge over the past 12 months.



# RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM



## ACCUMULATED CENTRAL OKLAHOMA AQUIFER SYSTEM RECHARGE 2024

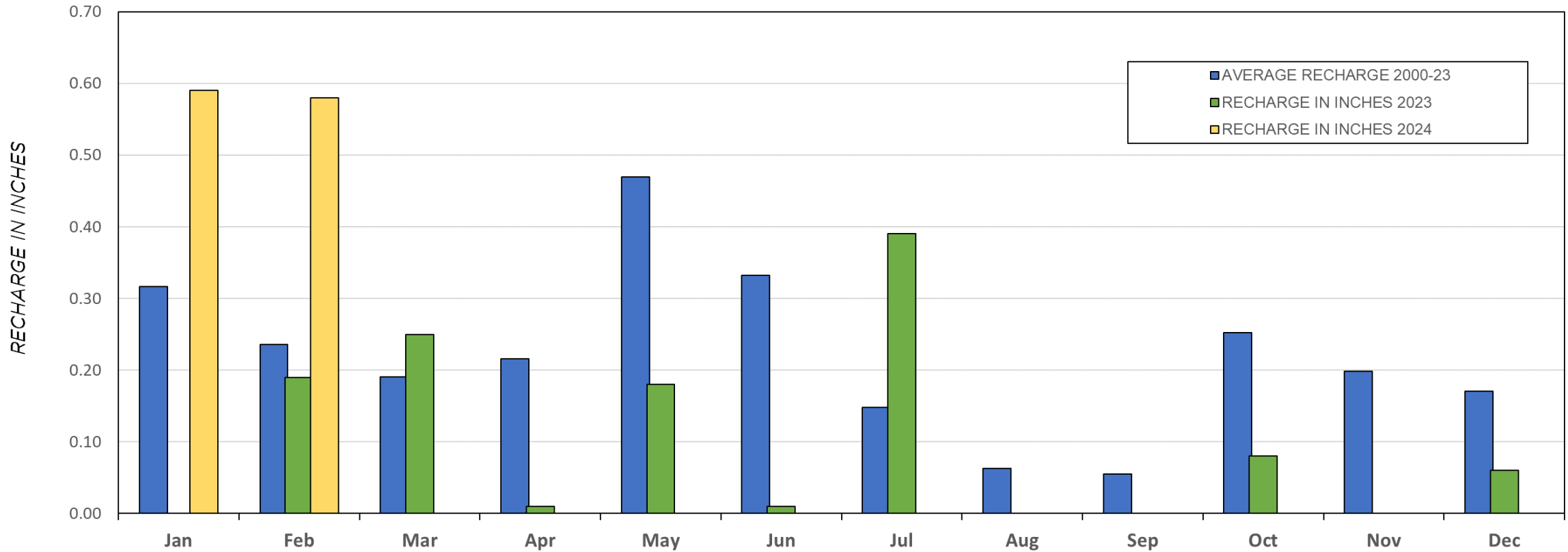




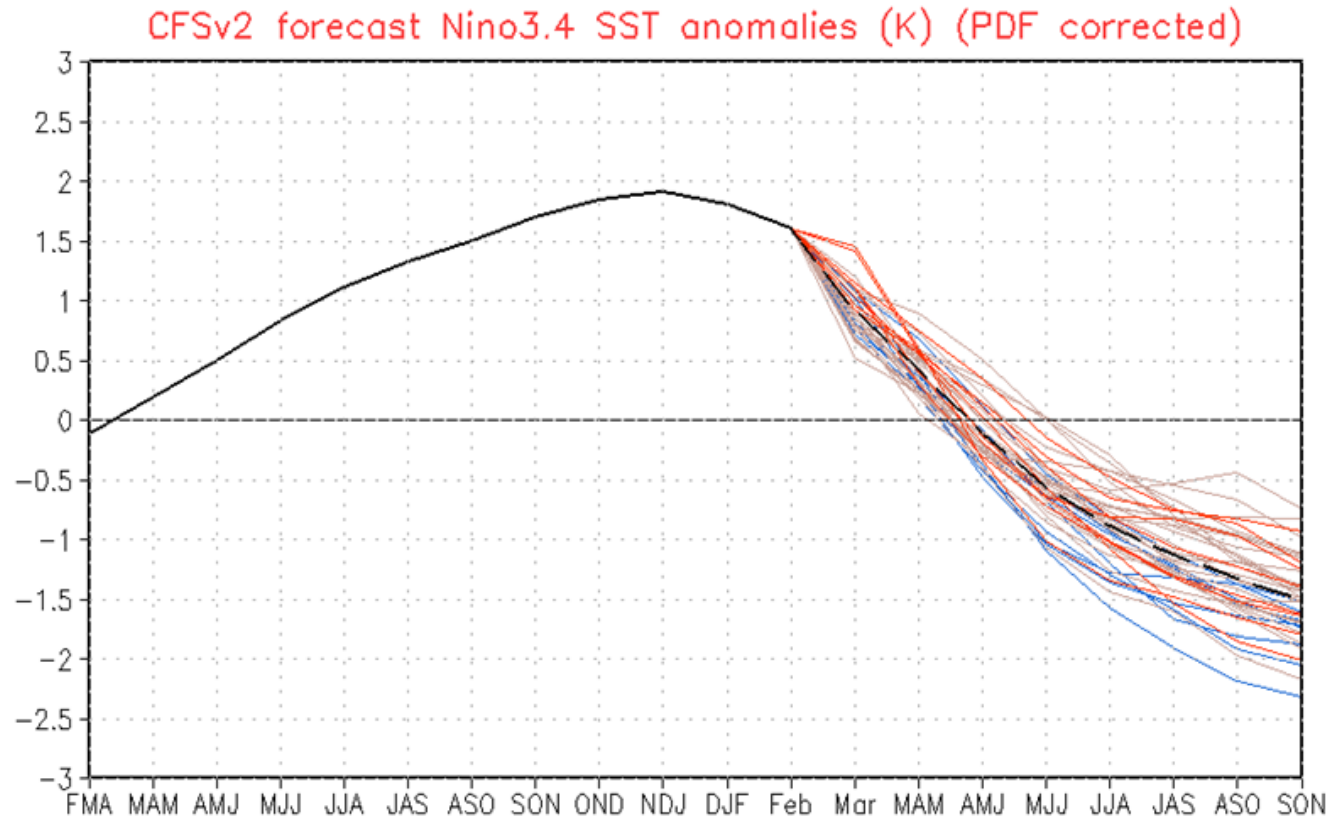
# RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM CONTINUED



## MONTHLY AQUIFER RECHARGE 2024



# ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



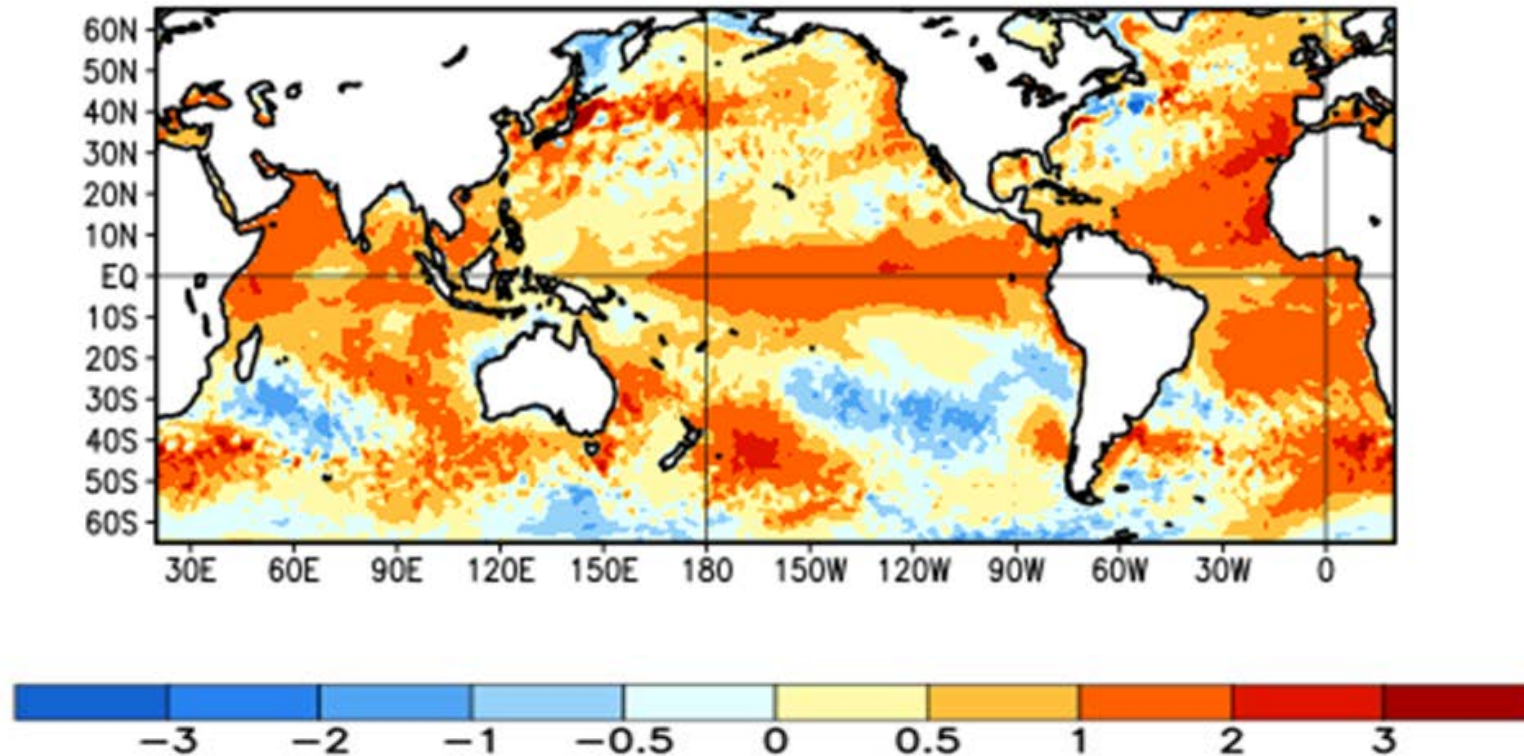
- Latest 8 forecast members
  - Earliest 8 forecast members
  - Other forecast members
- (Climatology base period: 1991–2020)
- - - Forecast ensemble mean
  - NCEI Olv2.1 daily analysis



# ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



Average SST Anomalies  
28 JAN 2024 – 24 FEB 2024





## ENSO ALERT SYSTEM STATUS: El Niño Advisory / La Niña Watch

- El Niño conditions are observed.
- Equatorial sea surface temperatures (SSTs) are above average across the central and eastern Pacific Ocean.
- The tropical Pacific atmospheric anomalies are consistent with El Niño.
- A transition from El Niño to ENSO-neutral is likely by April-June 2024 (79% chance), with increasing odds of La Niña developing in June-August 2024 (55% chance).





# QUESTIONS?

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ASSOCIATION OF  
CENTRAL OKLAHOMA  
GOVERNMENTS