



# DROUGHT CONDITIONS

## IN CENTRAL OKLAHOMA

John Harrington

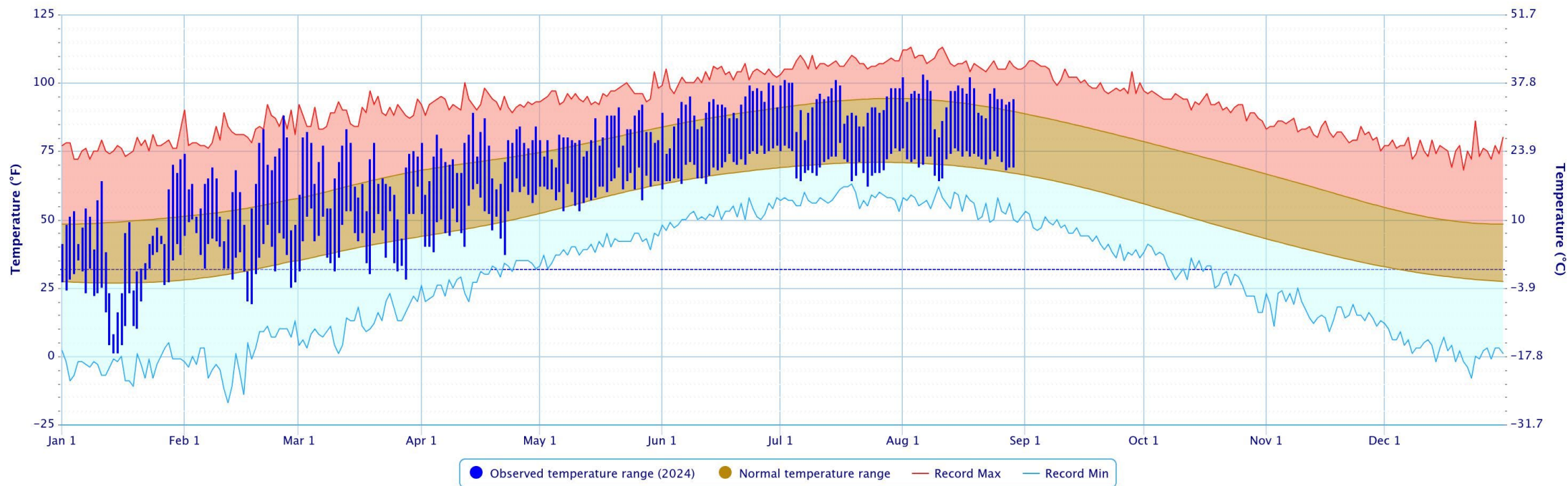
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September 1, 2024

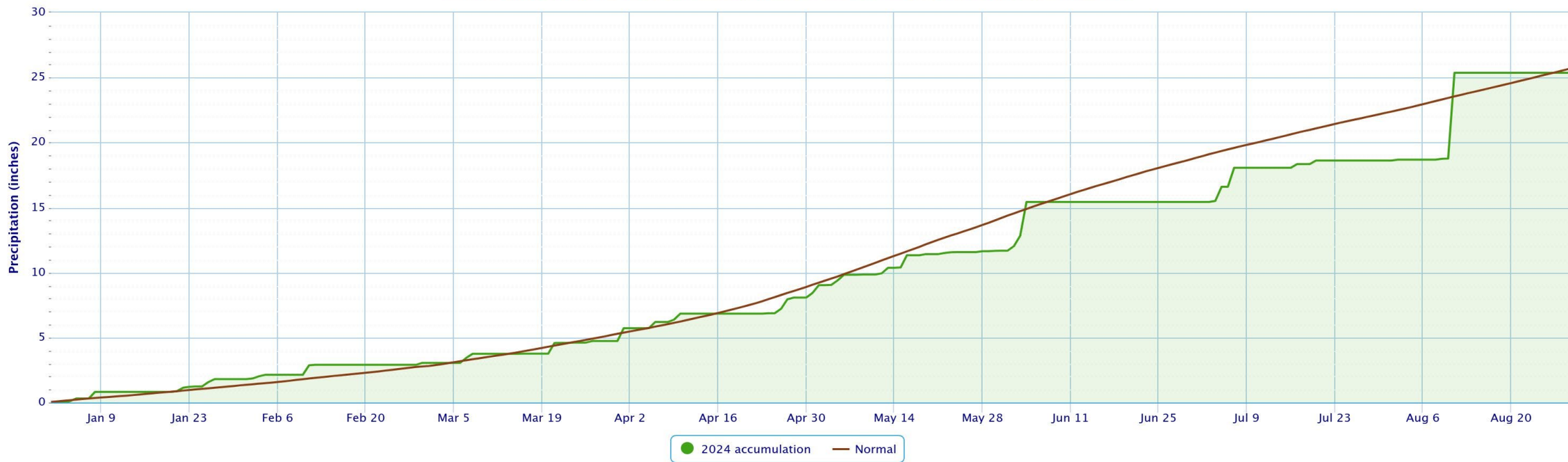
# TEMPERATURE PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2024



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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 29-Aug-2024

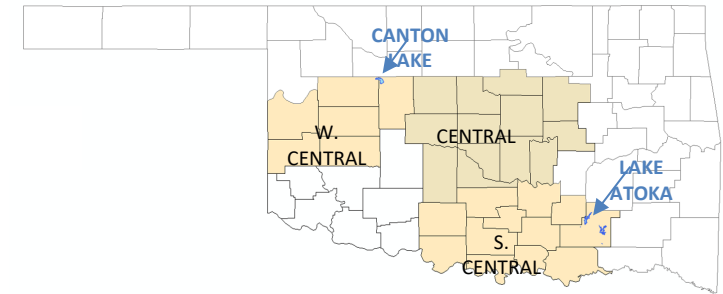
Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	15.58"	-4.29"	78%	29th driest	7.15" (2011)	32.17" (2007)
Central	23.61"	-1.86"	93%	51st driest	8.65" (1936)	44.35" (2007)
S. Central	28.99"	+2.15"	108%	30th wettest	11.94" (2011)	48.47" (2015)
Statewide	23.75"	-0.89"	96%	52nd driest	10.00" (1936)	36.67" (2015)

Water Year: 01-Oct-2023 through 29-Aug-2024

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	22.37"	-3.04"	88%	45th driest	11.69" (2010–11)	38.32" (2006–07)
Central	31.10"	-2.48"	93%	49th wettest	15.93" (1935–36)	51.35" (2006–07)
S. Central	39.77"	+3.24"	109%	24th wettest	16.00" (1955–56)	57.29" (2014–15)
Statewide	31.78"	-0.94"	97%	50th wettest	17.81" (1935–36)	44.39" (2006–07)

Summer June 01 through 29-Aug-2024

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	6.74"	-2.32"	74%	33rd driest	2.58" (1980)	15.95" (1995)
Central	8.84"	-1.82"	83%	46th driest	2.15" (1936)	24.03" (2007)
S. Central	8.41"	-1.56"	84%	46th driest	1.69" (2011)	18.99" (1945)
Statewide	8.88"	-1.27"	88%	40th driest	2.93" (1936)	17.63" (2007)



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.

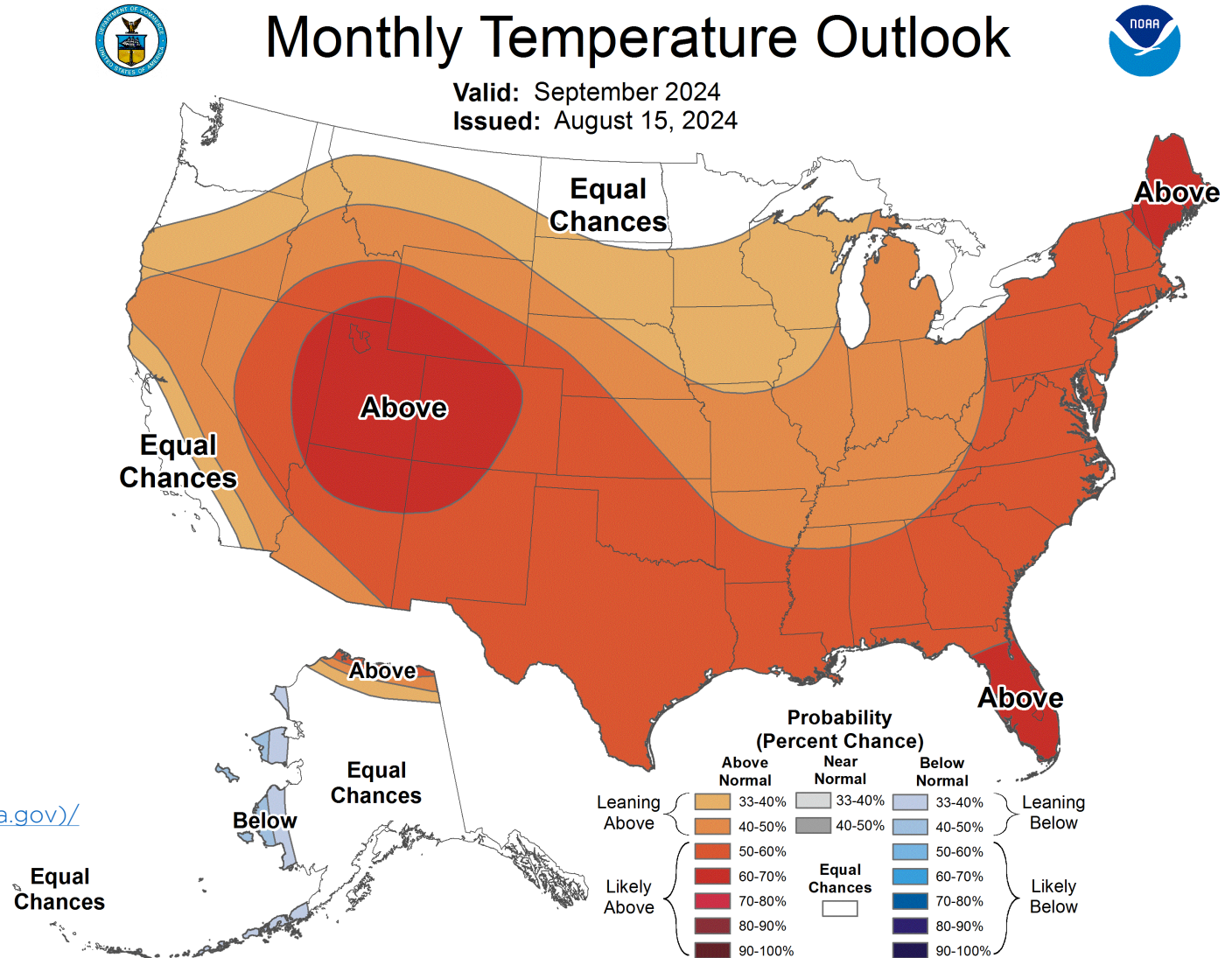
# NOAA ONE-MONTH TEMPERATURE OUTLOOK



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)



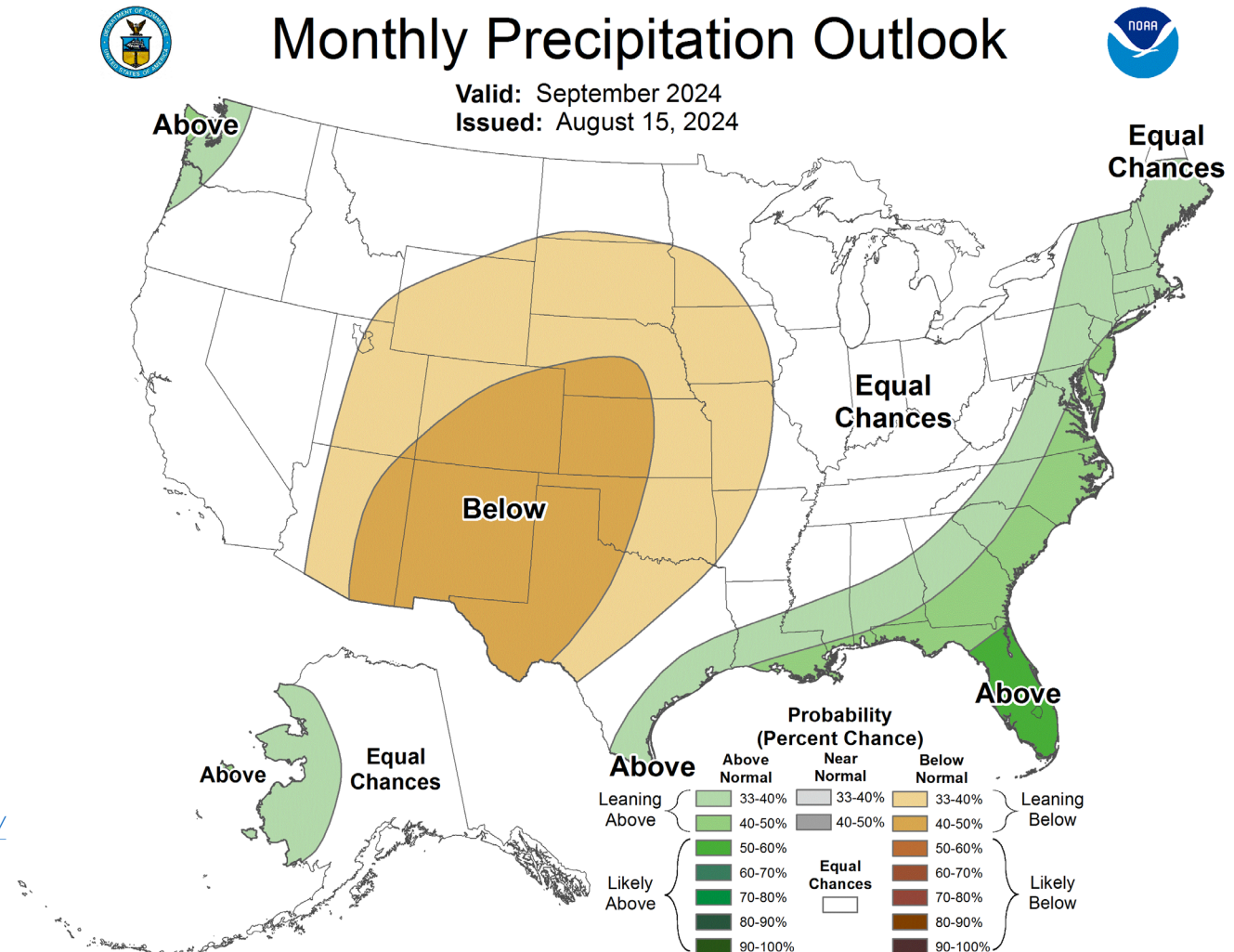
# NOAA ONE-MONTH PRECIPITATION OUTLOOK



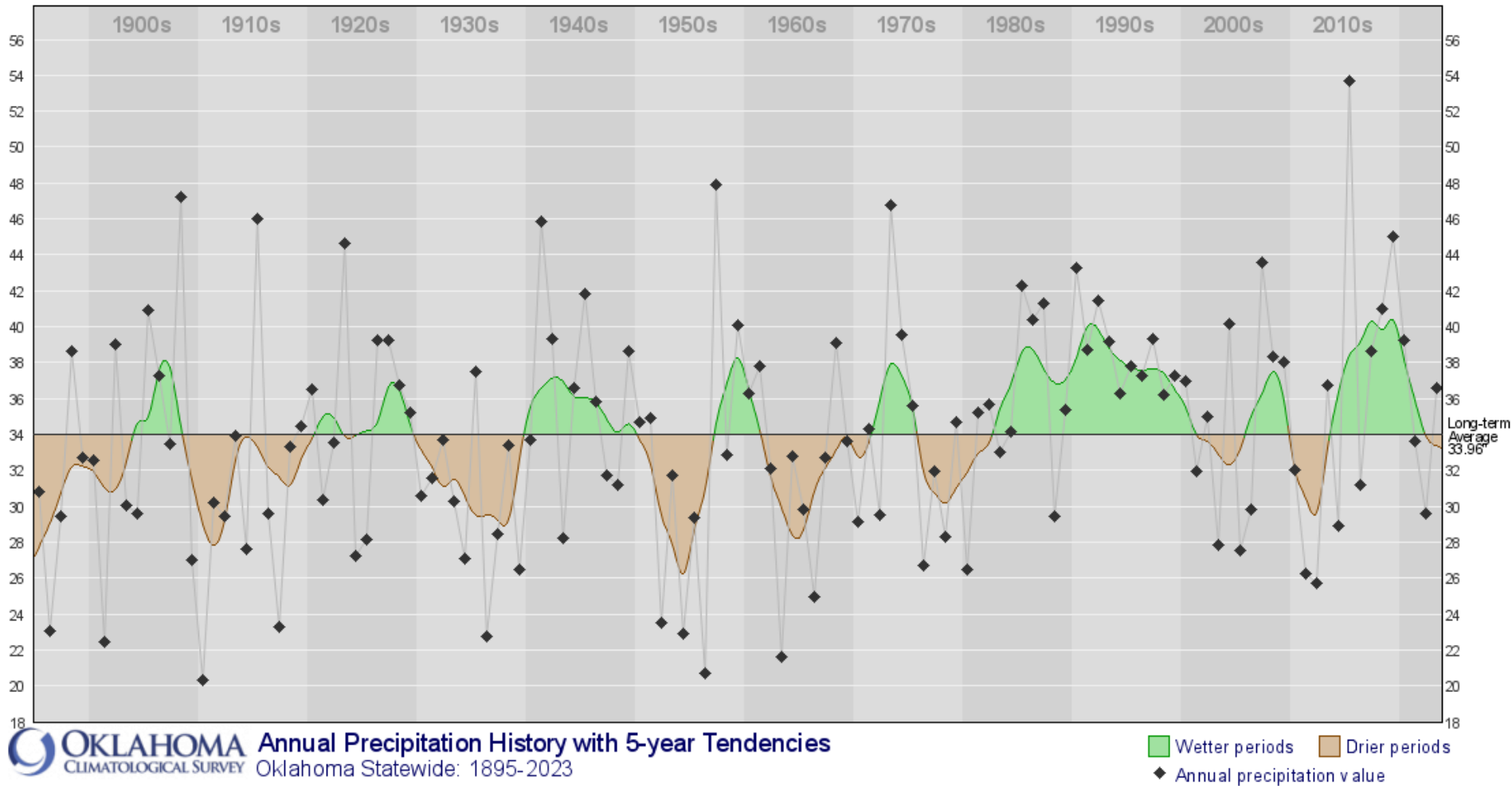
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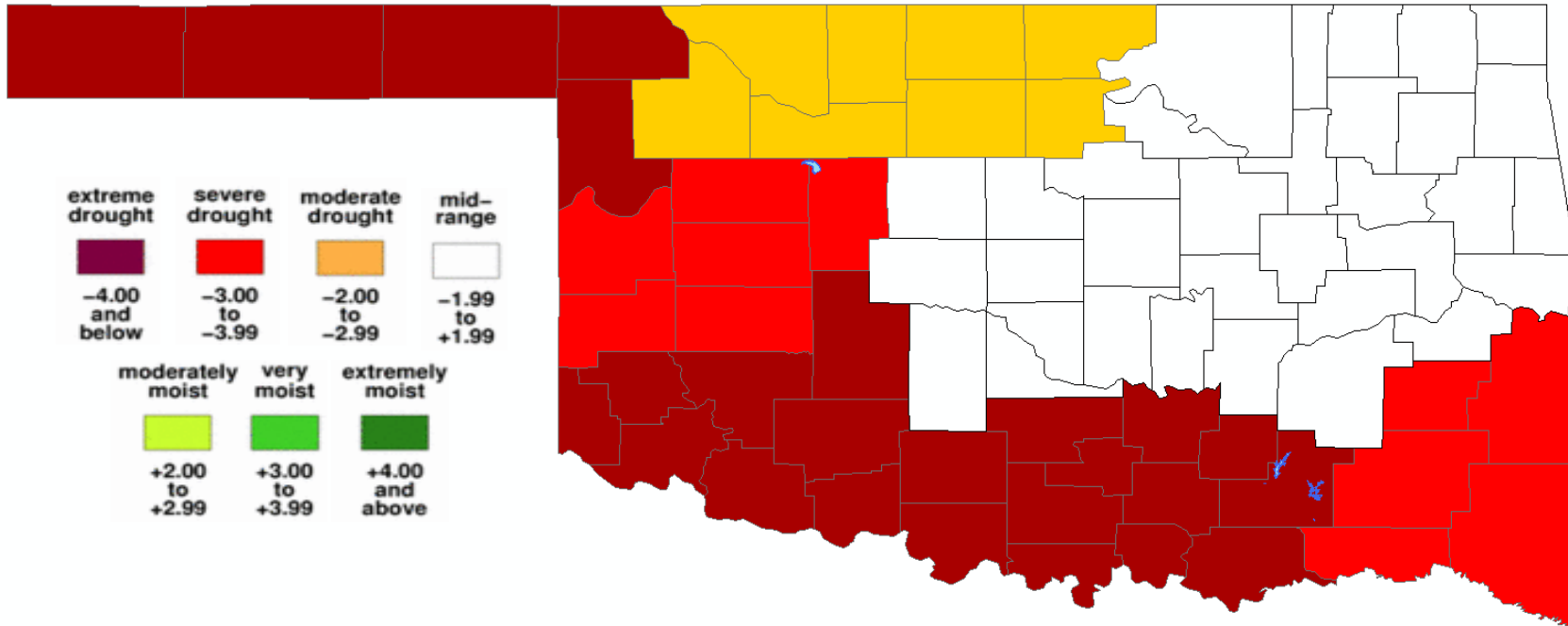
# Annual Precipitation History with 5-Year Tendencies



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

27 JUL 2024

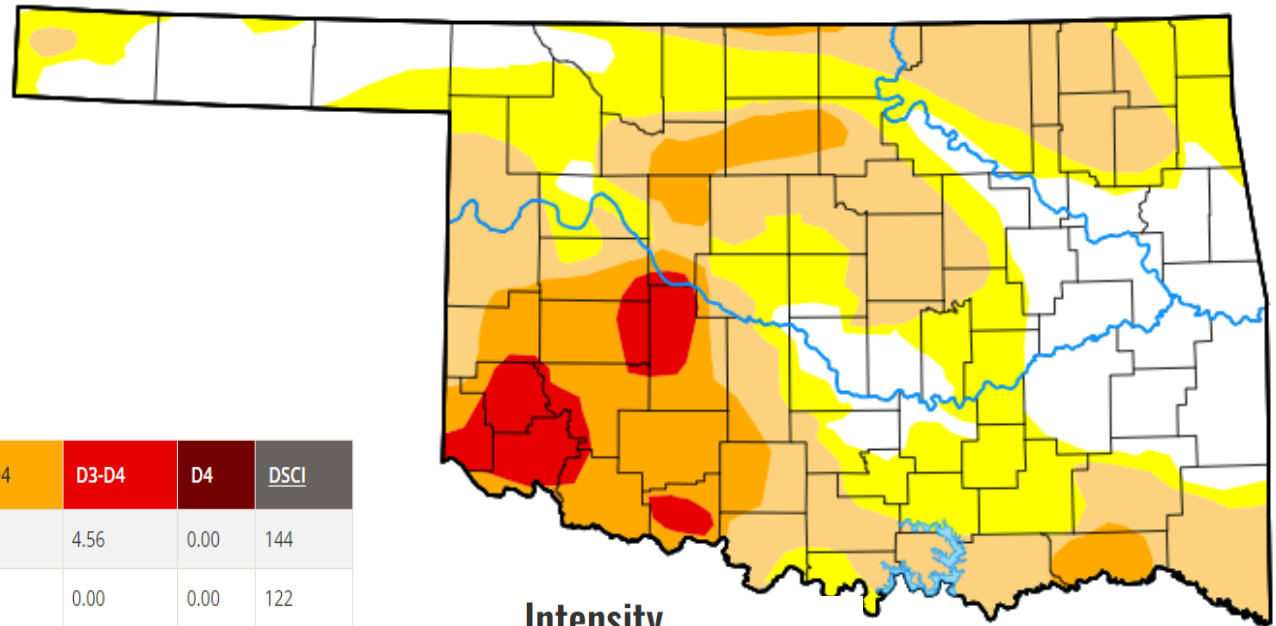


# U.S. DROUGHT MONITOR - OKLAHOMA



September 1, 2024

Abnormal dryness or drought is currently affecting approximately 1,341,295 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="#">2024-08-27</a>	25.64	74.36	47.55	17.52	4.56	0.00	144
Last Week to Current	<a href="#">2024-08-20</a>	27.83	72.17	39.66	10.24	0.00	0.00	122
3 Months Ago to Current	<a href="#">2024-05-28</a>	70.40	29.60	14.68	6.72	0.00	0.00	51
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="#">2023-08-29</a>	41.73	58.27	35.98	19.70	1.97	0.00	116



# U.S. DROUGHT MONITOR NATIONWIDE MAP



Map released: August 29, 2024

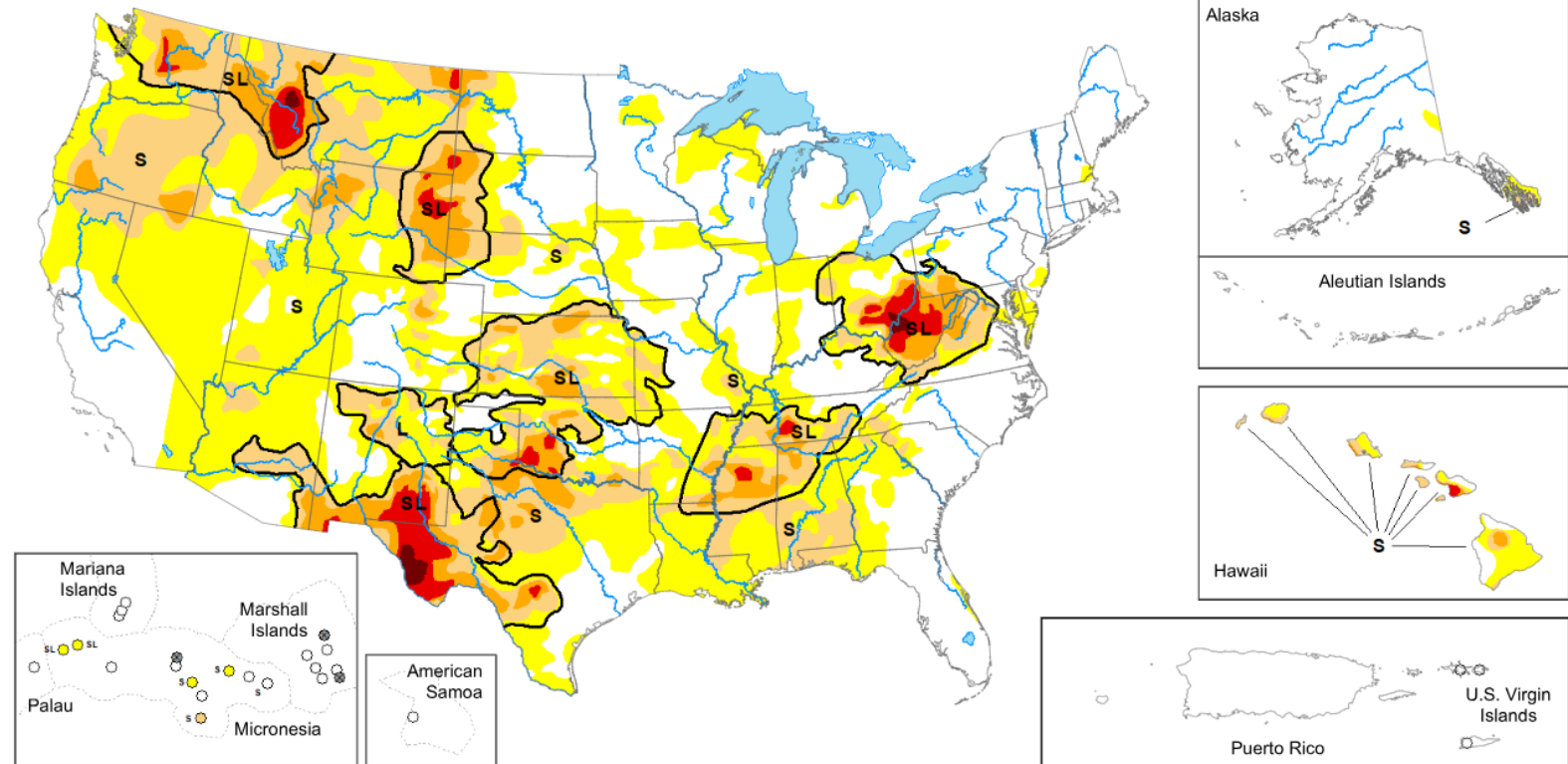
Data valid: August 27, 2024

## 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



United States and Puerto Rico Author(s):  
**Richard Heim**, NOAA/NCEI

Pacific Islands and Virgin Islands Author(s):  
**Curtis Riganti**, National Drought Mitigation Center

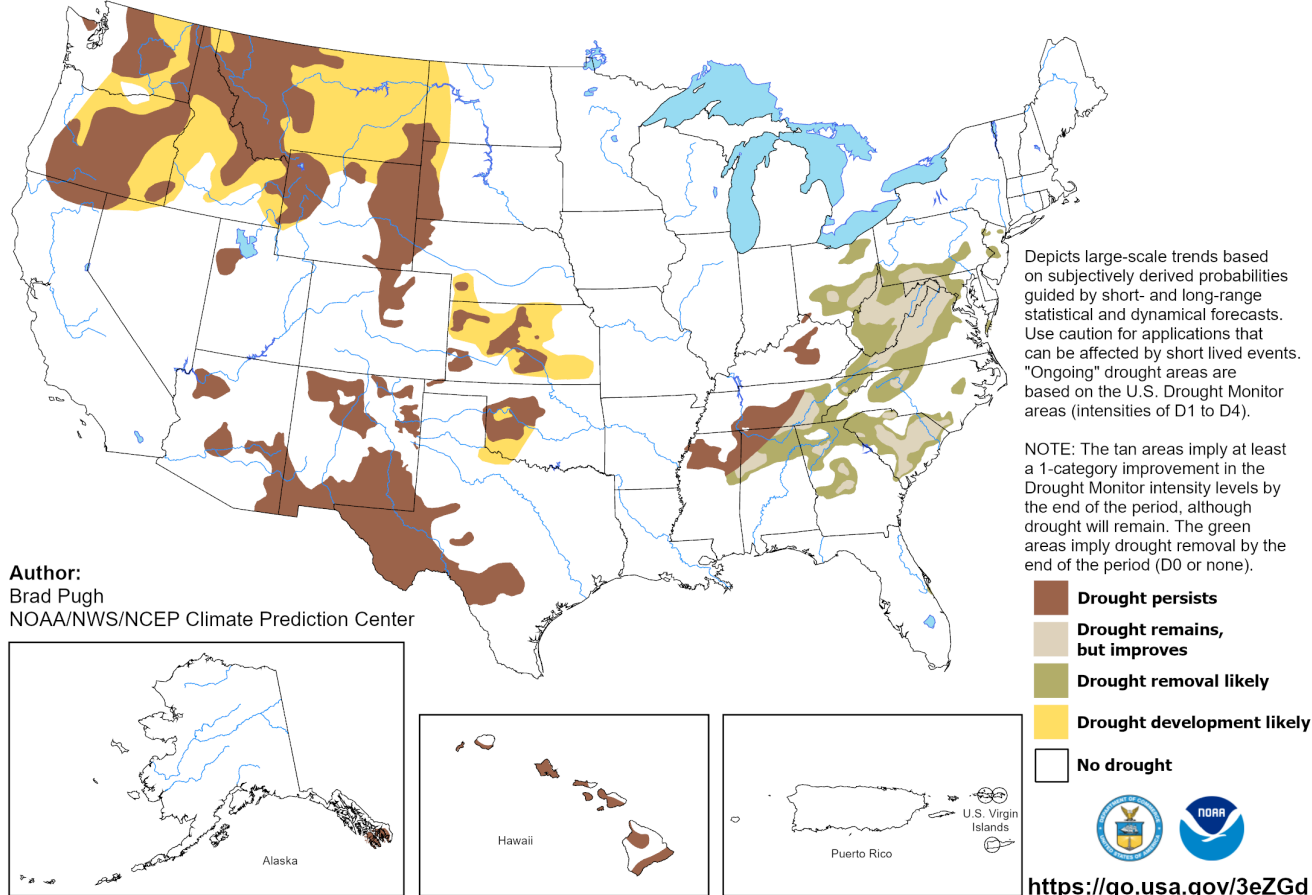


# U.S. DROUGHT MONITOR MONTHLY DROUGHT OUTLOOK MAP



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

Valid for August 2024  
Released July 31, 2024



Author:  
Brad Pugh  
NOAA/NWS/NCEP Climate Prediction Center

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).

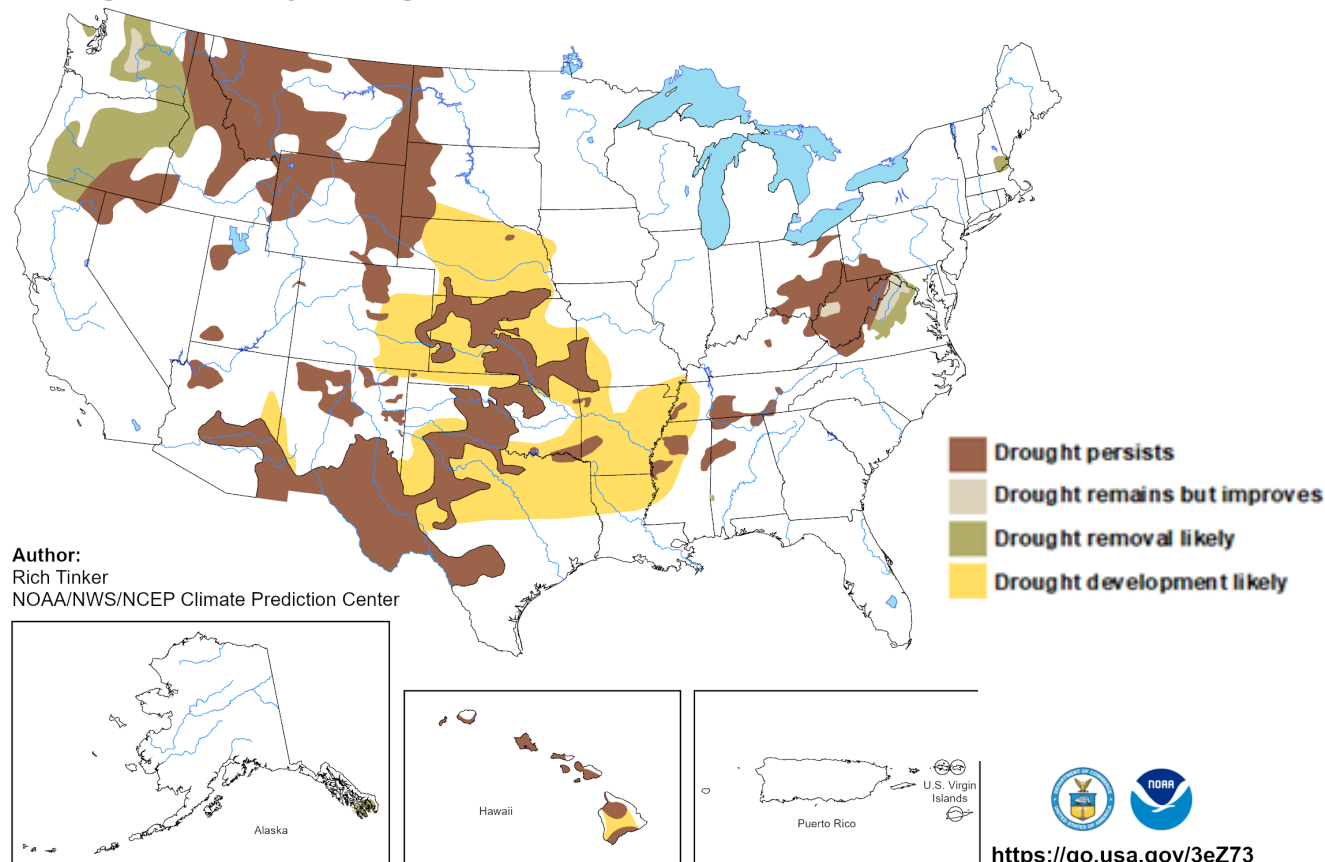
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

# U.S. DROUGHT MONITOR SEASONAL DROUGHT OUTLOOK MAP



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

Valid for August 15 - November 30, 2024  
Released August 15, 2024



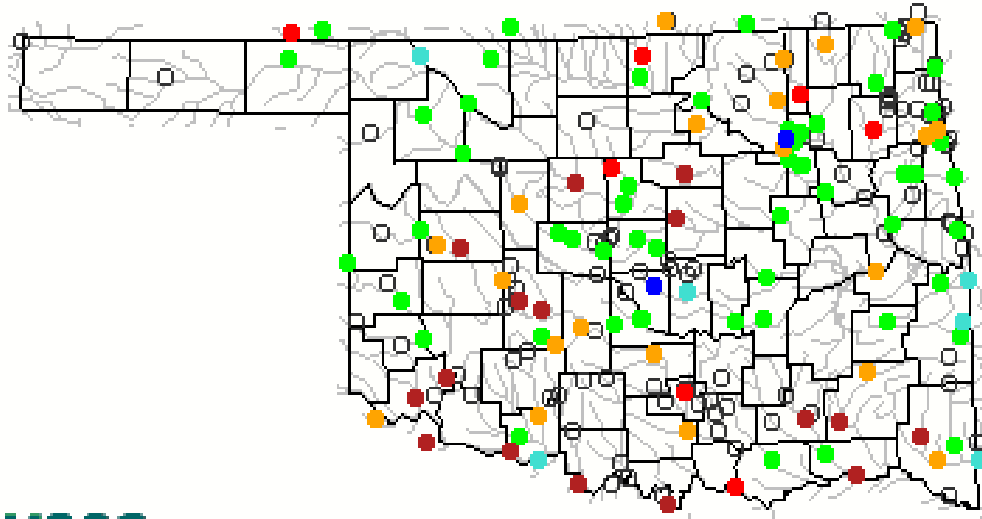
Depicts large-scale trends based on subjectively derived probabilities guided by short and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. “Ongoing” drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

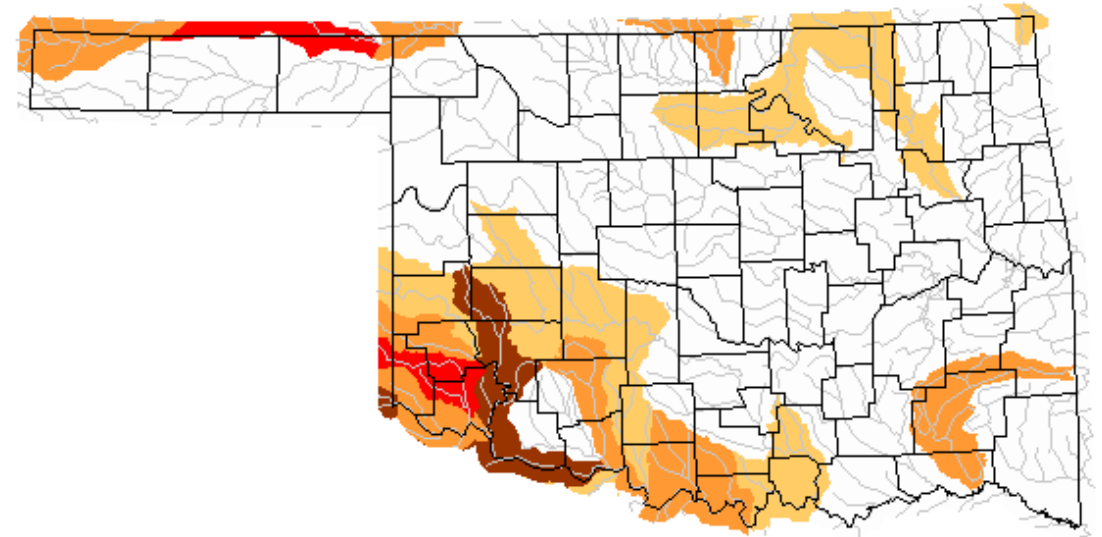


Friday, August 30, 2024 10:30ET



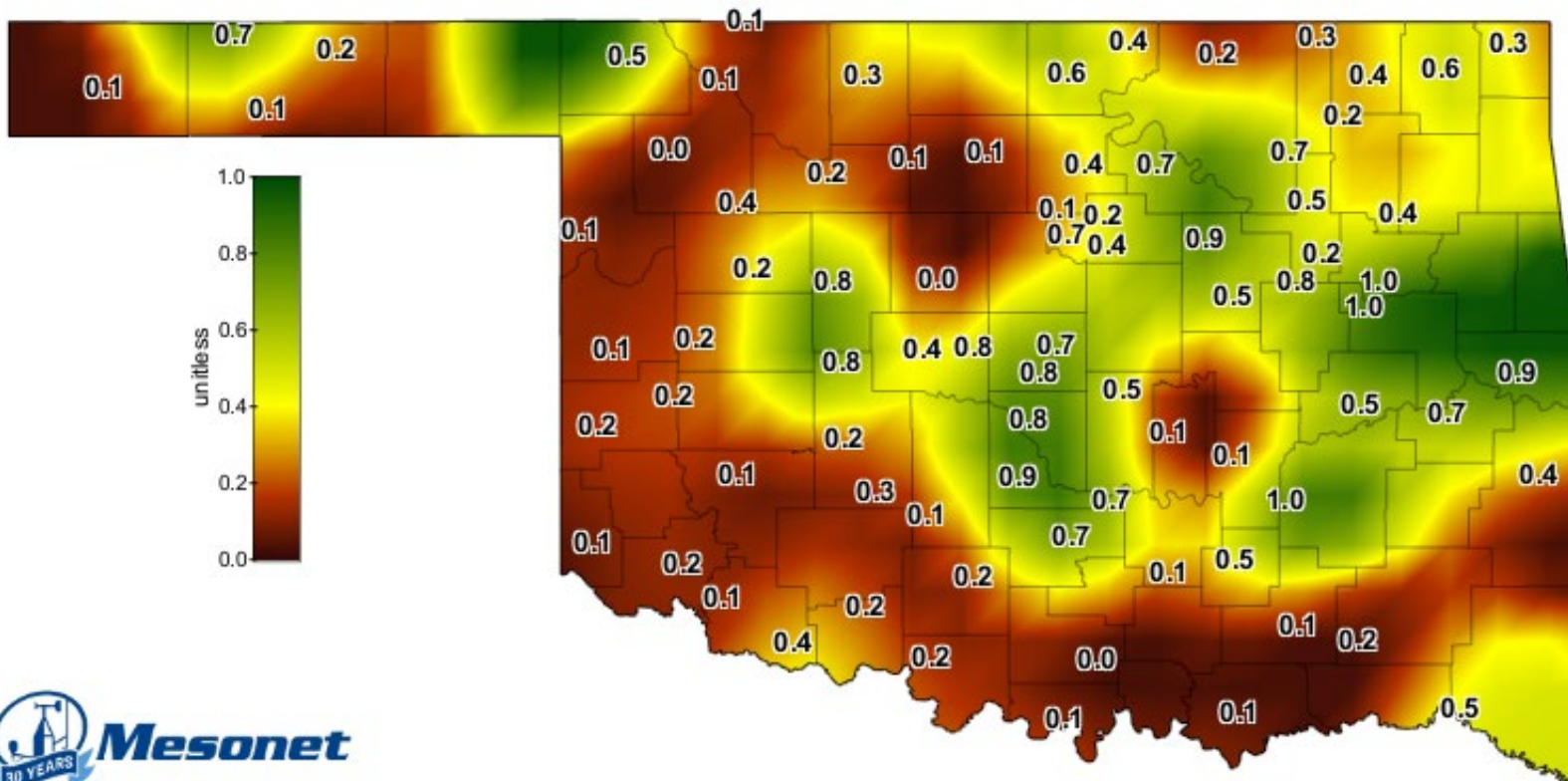
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

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	

# SOIL MOISTURE MAP



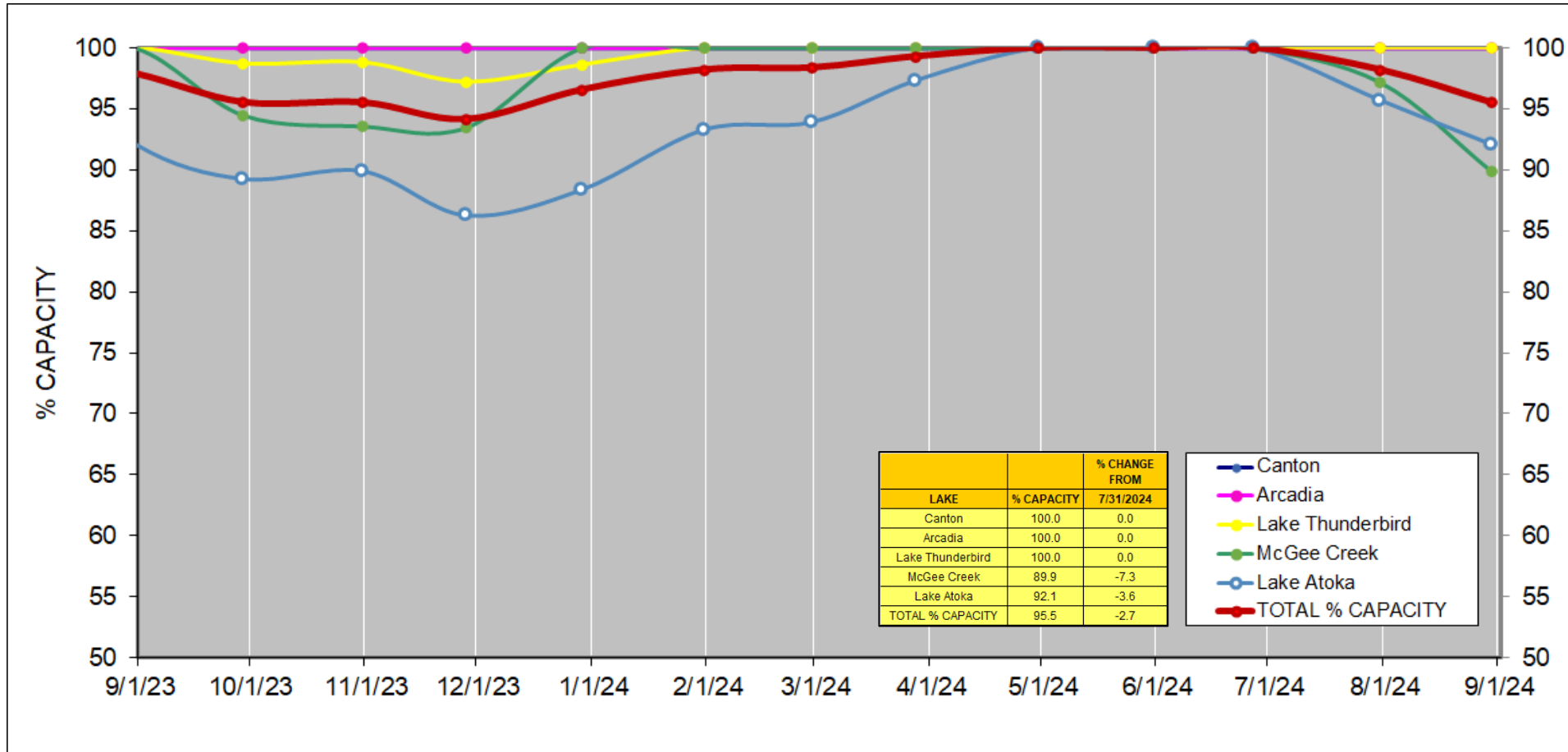
1-day Average 24-inch Fractional Water Index

August 29, 2024

Created 7:30:14 AM August 30, 2024 CDT. © Copyright 2024



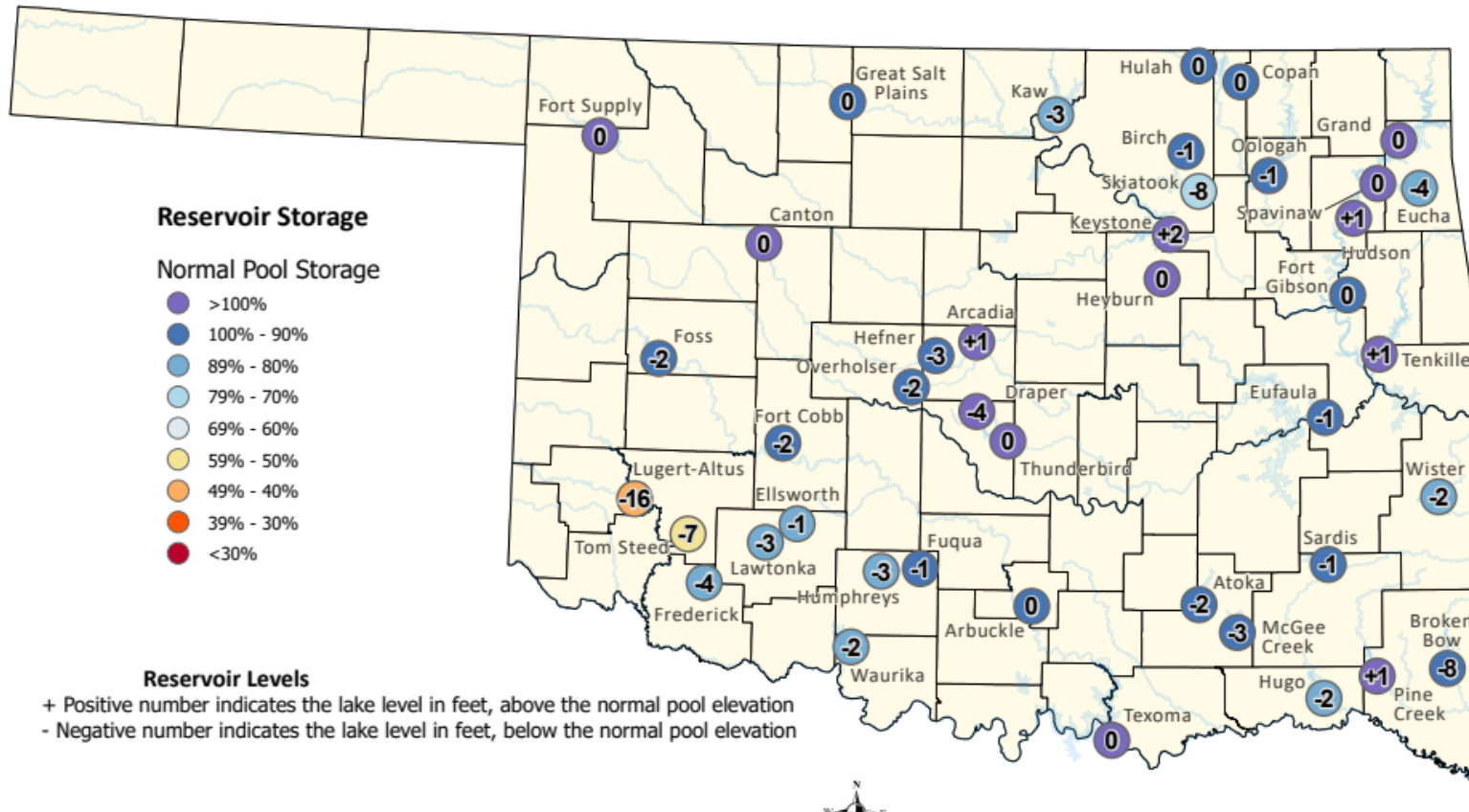
# PERCENTAGE OF SURFACE WATER CONSERVATION CAPACITY IN CENTRAL OK RESERVOIRS



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

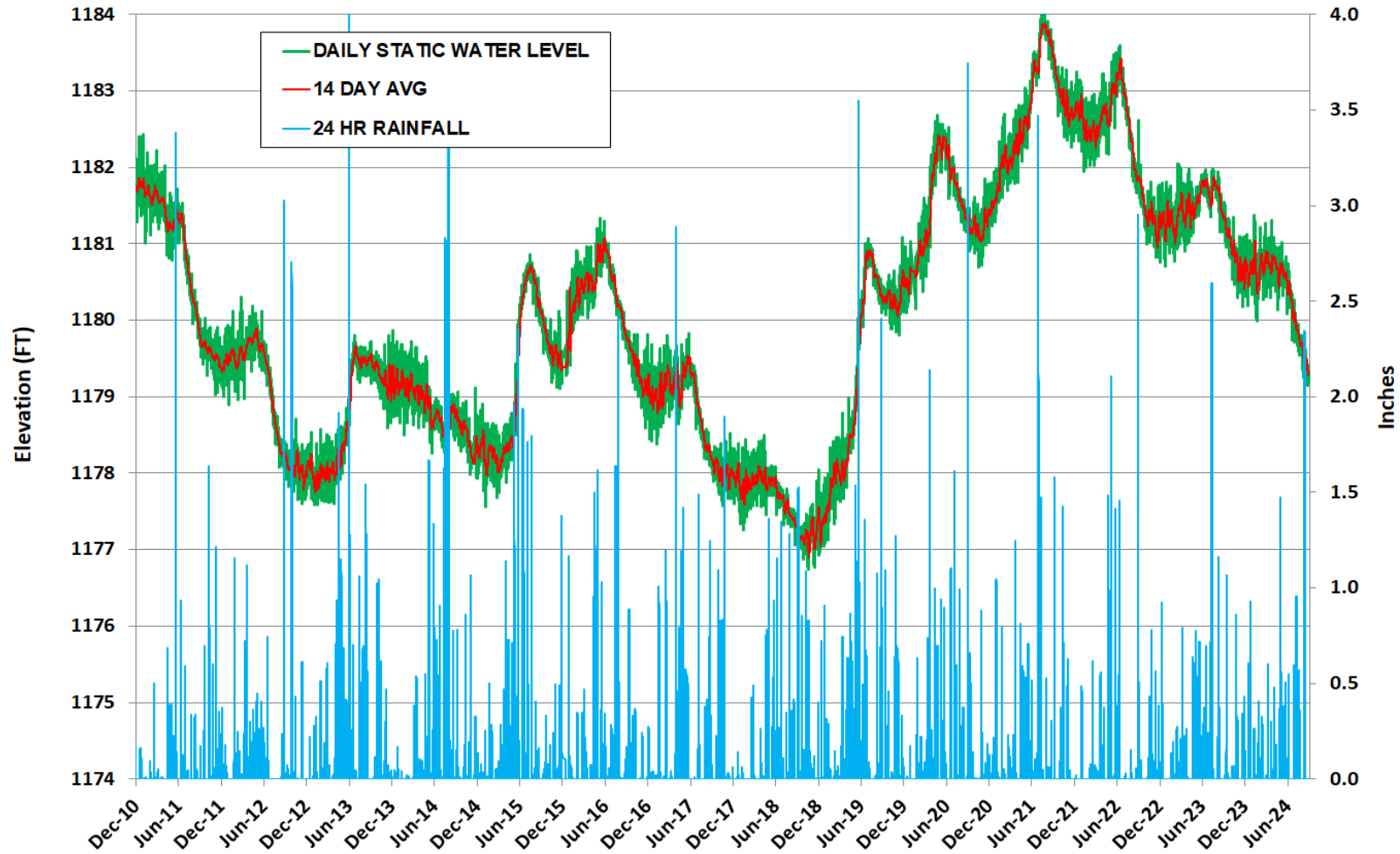


## OKLAHOMA RESERVOIR LEVELS AND STORAGE AS OF 8/26/2024

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/monitoring/products-reports/07333010)). For more information, please visit the OWRB's website: (<https://www.owrb.ok.gov>).



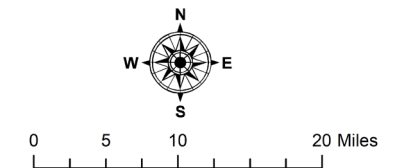
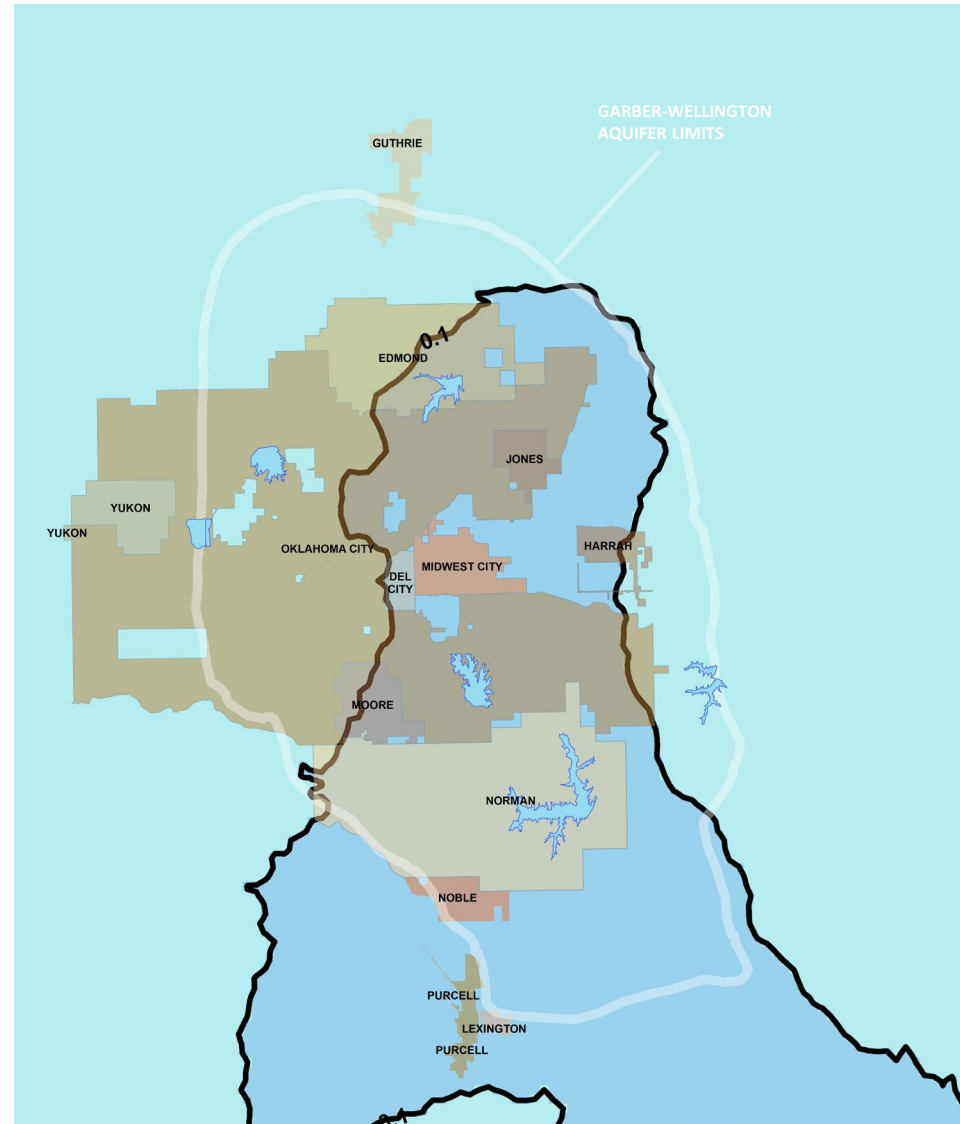
# GROUNDWATER LEVELS SPENCER MESONET STATION



# MONTHLY AQUIFER RECHARGE



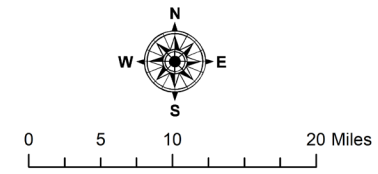
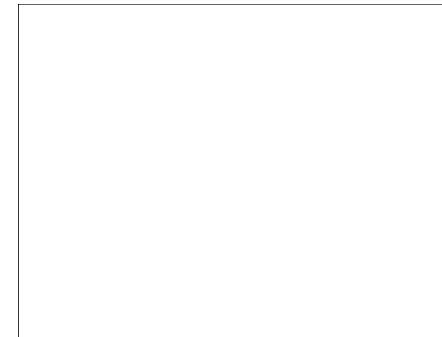
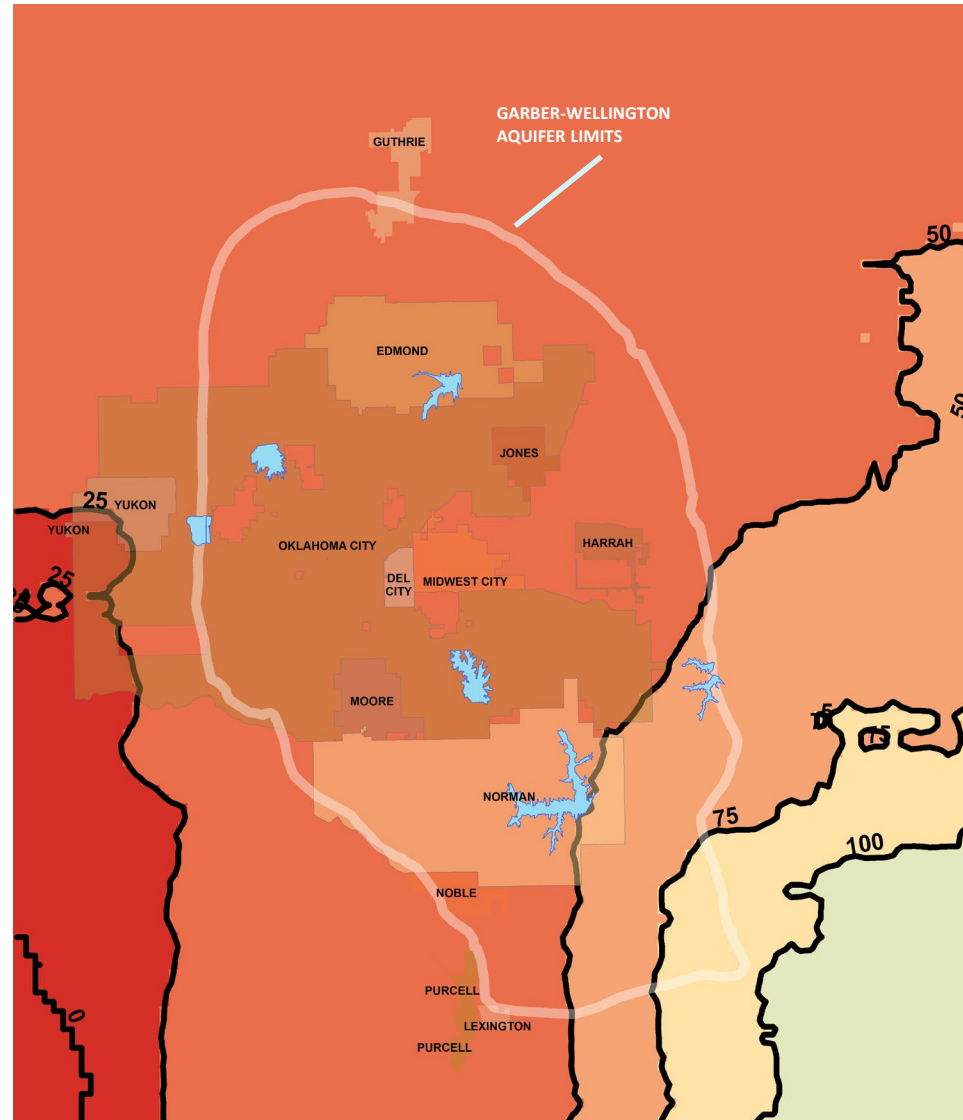
- Mean aquifer recharge in August 2024 was 0.06 inches.
- Normal mean recharge for August is 0.06 inches.
- We are -0.44 inches below normal for 2024.



# PERCENT TOTAL CUMULATIVE AQUIFER RECHARGE – Last 12 Months



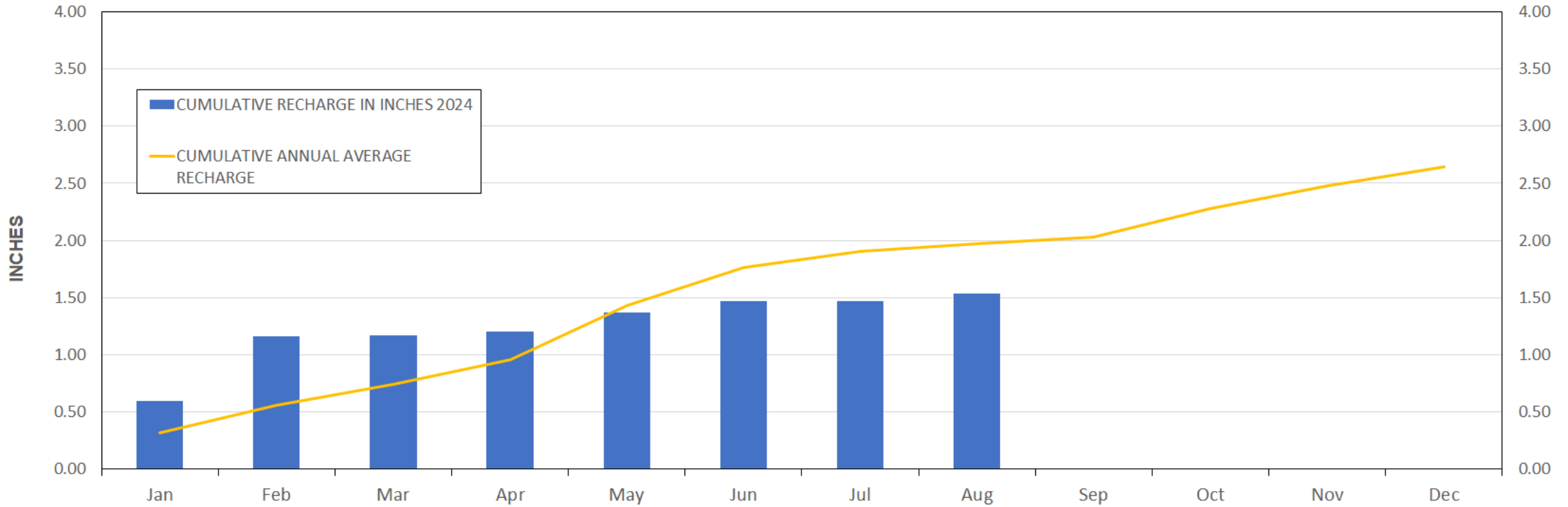
- Most of the recharge in the past 12 months was south and east of the metropolitan area.
- August 2024 had 0.06 inches of recharge, the average for August.
- Over the past 12 months the metropolitan area has received less than 50% of normal recharge.



# RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM



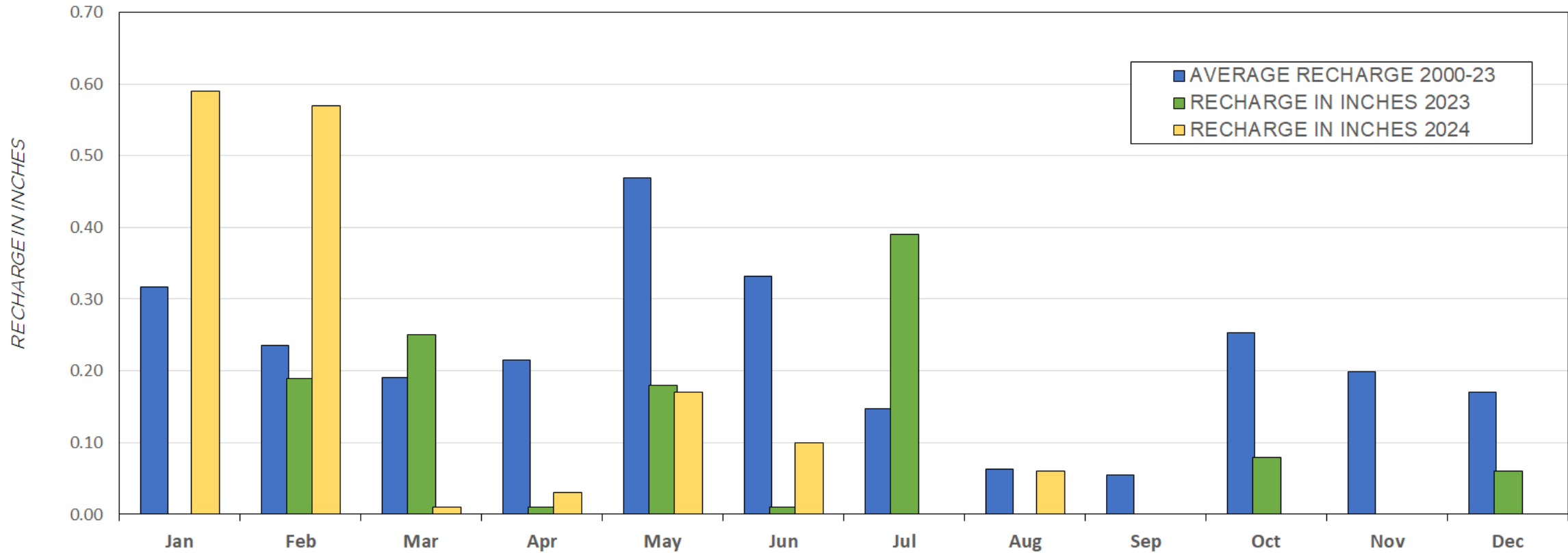
## ACCUMULATED CENTRAL OKLAHOMA AQUIFER SYSTEM RECHARGE 2024



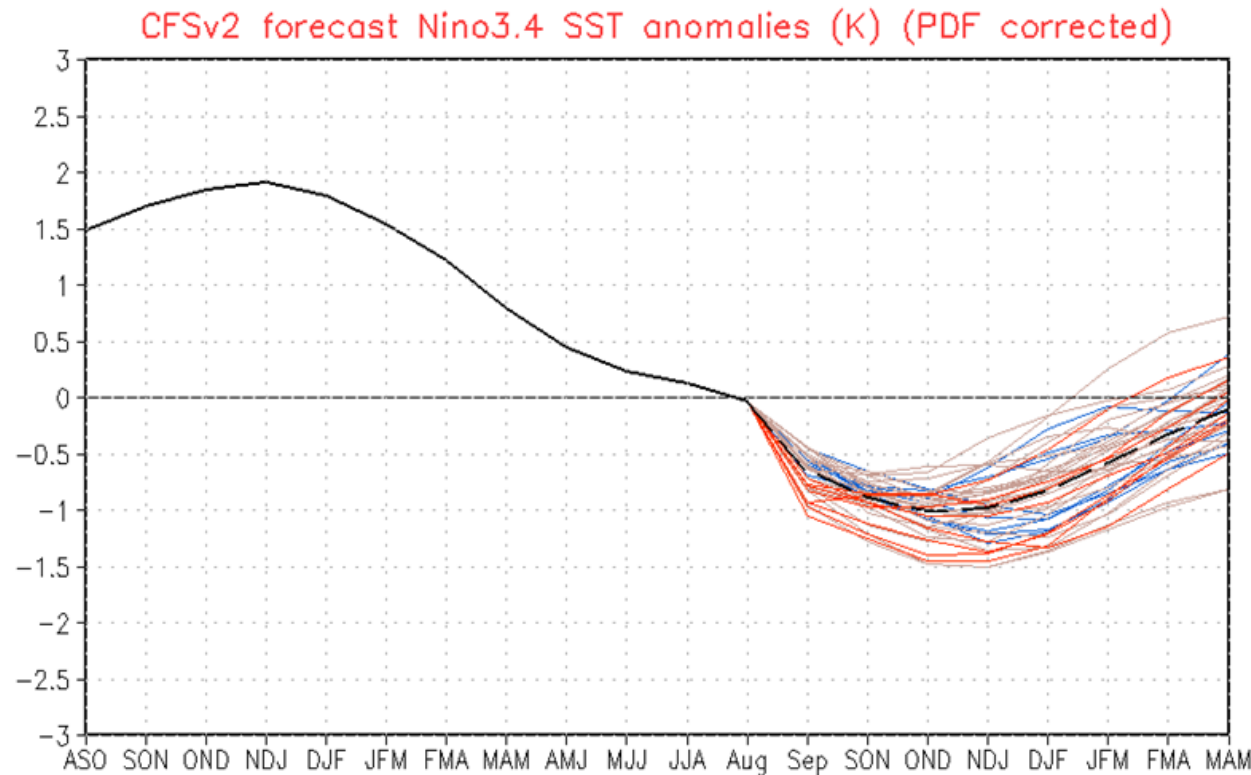
# RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM CONTINUED



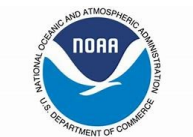
## MONTHLY AQUIFER RECHARGE 2024



# ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



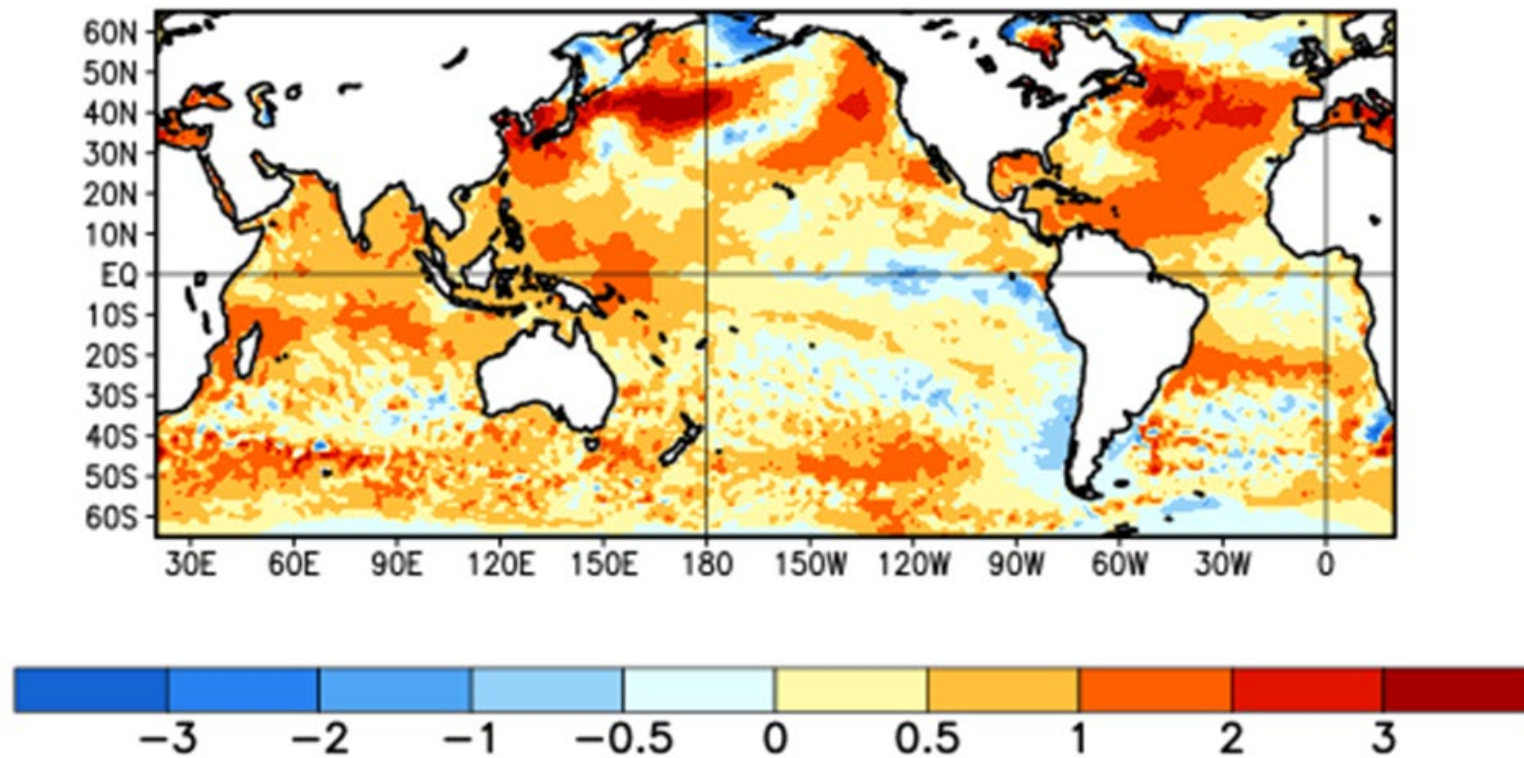
- Latest 8 forecast members
- Earliest 8 forecast members
- Other forecast members
- (Climatology base period: 1991–2020)
- Forecast ensemble mean
- NCEI Olv2.1 daily analysis



# ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



Average SST Anomalies  
28 JUL 2024 – 24 AUG 2024







## ENSO Alert System Status: La Niña Watch

- ENSO-neutral conditions are present.
- Equatorial sea surface temperatures (SSTs) are above average in the western Pacific and near-to-below-average in the eastern Pacific Ocean.
- ENSO-neutral is expected to continue for the next several months, with La Niña favored to emerge during September-November (66% chance) and persist through the Northern Hemisphere winter 2024-25 (74% chance during November-January).



# QUESTIONS?

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Water Resources Director

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ASSOCIATION OF  
CENTRAL OKLAHOMA  
GOVERNMENTS