



DROUGHT CONDITIONS

IN CENTRAL OKLAHOMA

John Harrington

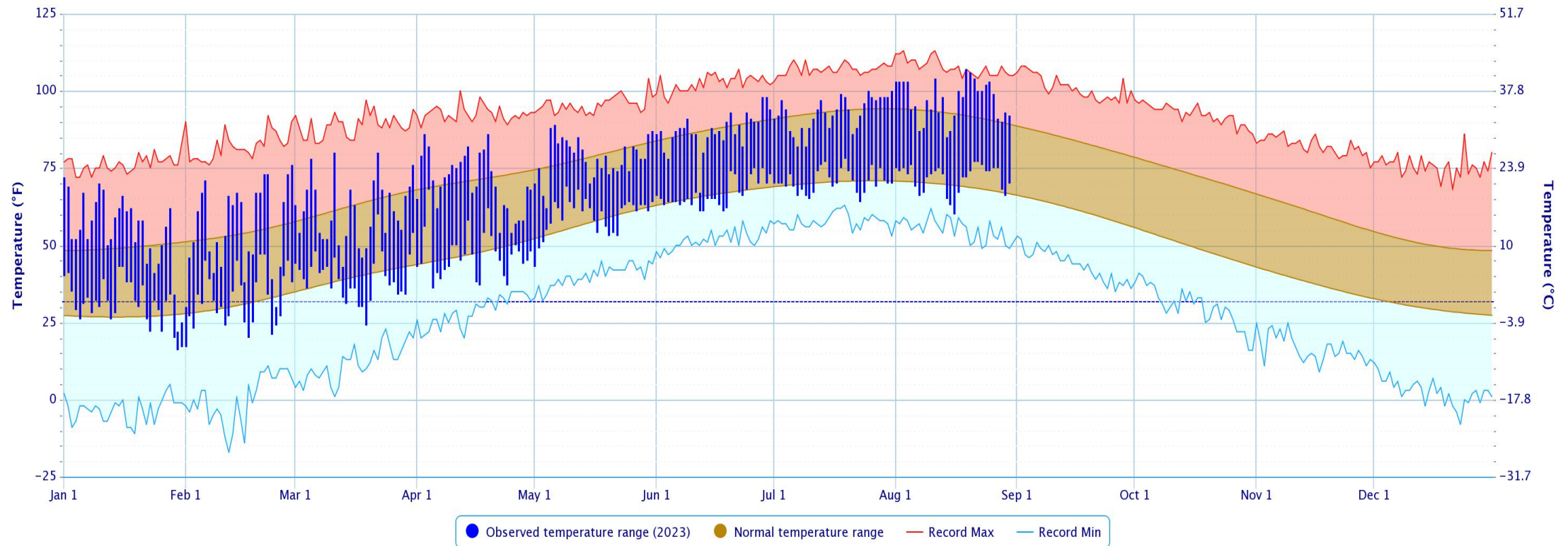
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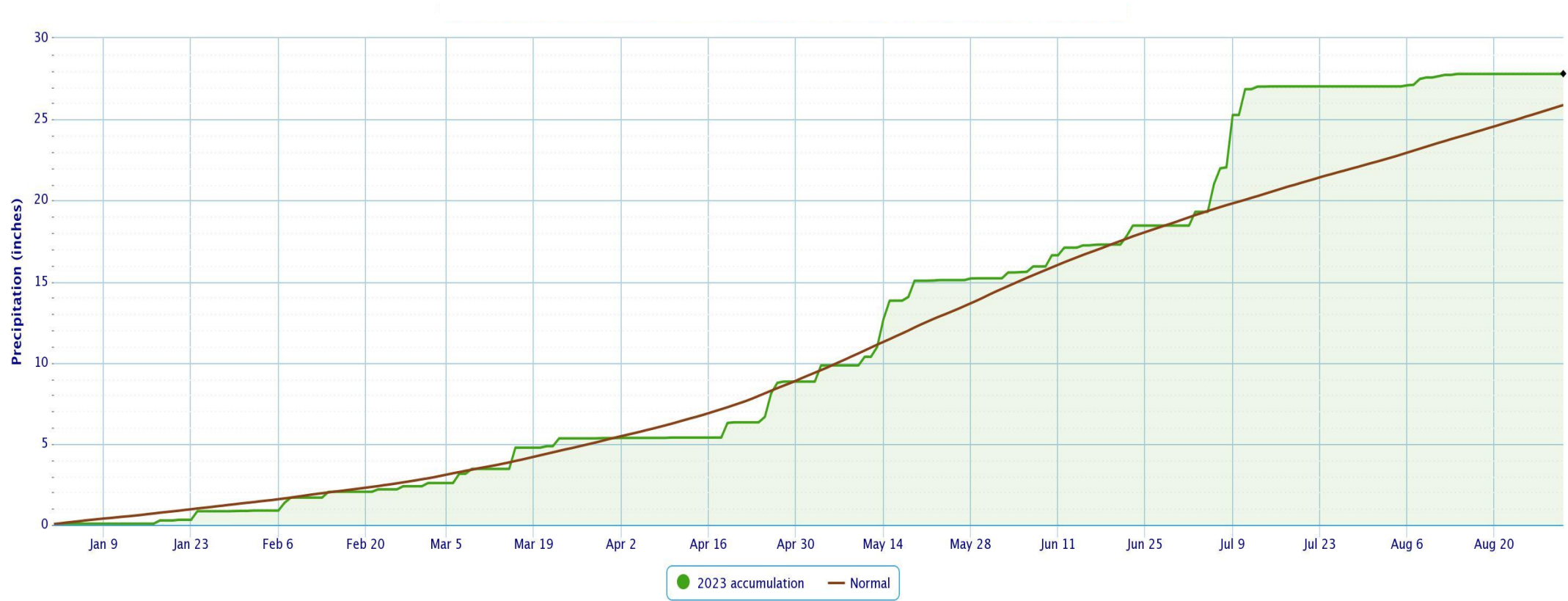
September 1, 2023

TEMPERATURE PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2023



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NOAA Regional Climate Centers

PRECIPITATION PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2023



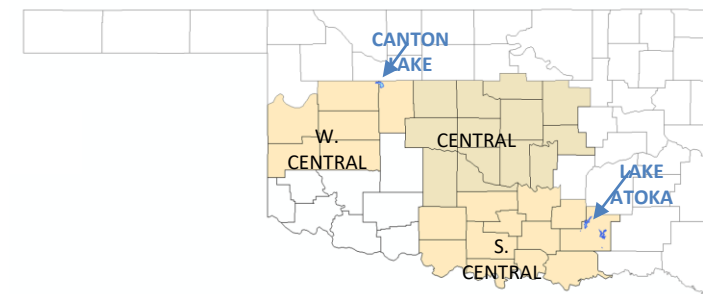
RAINFALL SUMMARIES BY OKLAHOMA CLIMATE DIVISION



Calendar Year 01-Jan-2022 through		30-Aug-2023				
Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	24.10"	+4.14"	121%	13th wettest	7.15" (2011)	32.23" (2007)
Central	26.61"	+1.03"	104%	36th wettest	8.59" (1936)	44.43" (2007)
S. Central	24.32"	-2.62"	90%	44th driest	11.94" (2011)	48.47" (2015)
Statewide	25.18"	+0.44"	102%	41st wettest	9.90" (1936)	36.67" (2015)

Water Year: 01-Oct-2021 through		30-Aug-2023				
Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	29.23"	+3.73"	115%	17th wettest	11.69" (2010-11)	38.38" (2006-07)
Central	33.56"	-0.13"	100%	37th wettest	15.93" (1935-36)	51.43" (2006-07)
S. Central	34.11"	-2.52"	93%	49th wettest	15.79" (1955-56)	57.29" (2014-15)
Statewide	32.63"	-0.19"	99%	41st wettest	17.81" (1935-36)	44.82" (2018-19)

Summer Jun 01 through		30-Aug-2023				
Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	16.43"	+7.28"	180%	1st wettest	2.58" (1980)	15.95" (1995)
Central	13.35"	+2.58"	124%	20th wettest	2.15" (1936)	24.11" (2007)
S. Central	9.17"	-0.90"	91%	52nd wettest	1.69" (2011)	19.00" (1945)
Statewide	12.05"	+1.80"	118%	26th wettest	2.93" (1936)	17.72" (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.

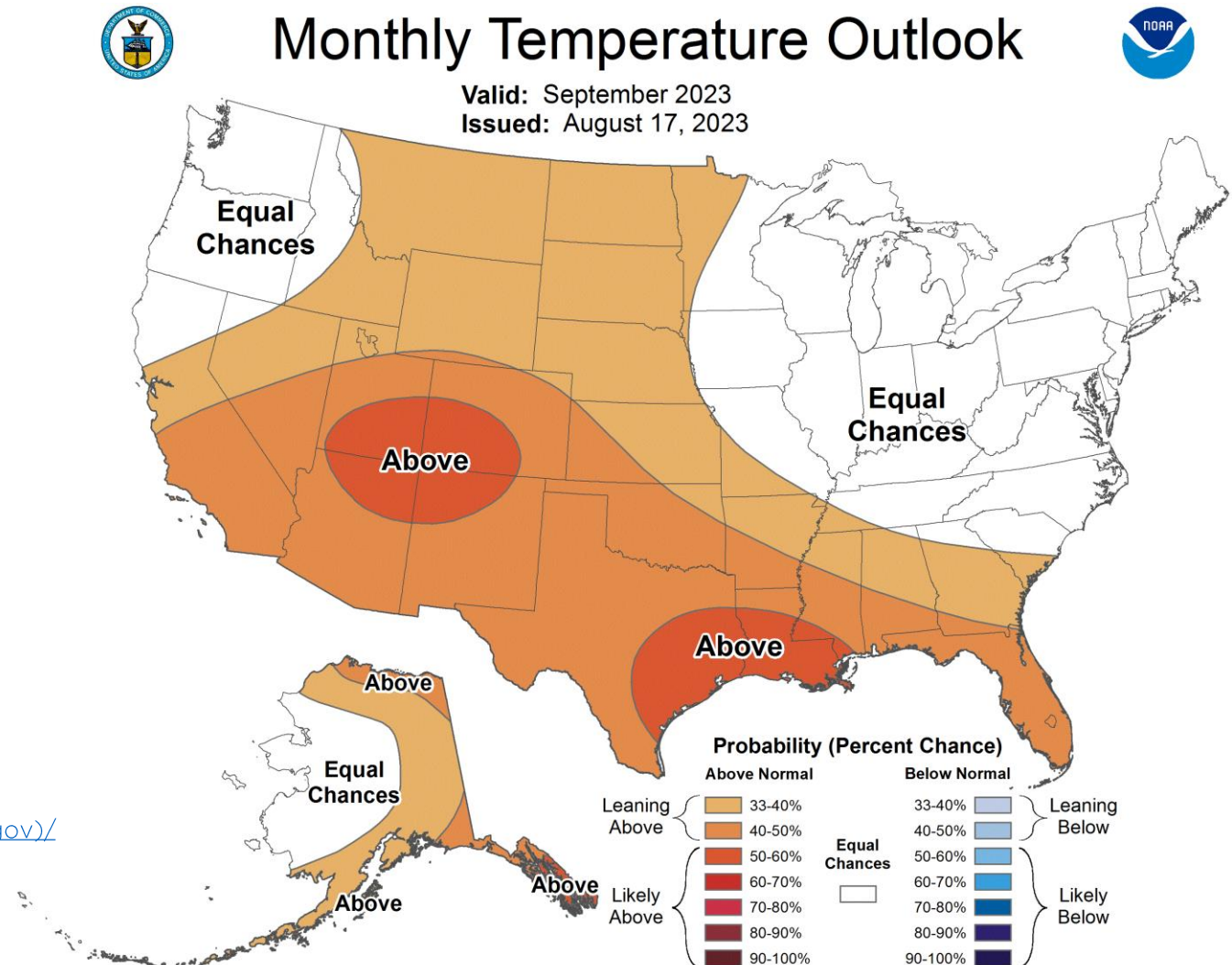
NOAA ONE-MONTH TEMPERATURE OUTLOOK



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-30-day-forecasts)



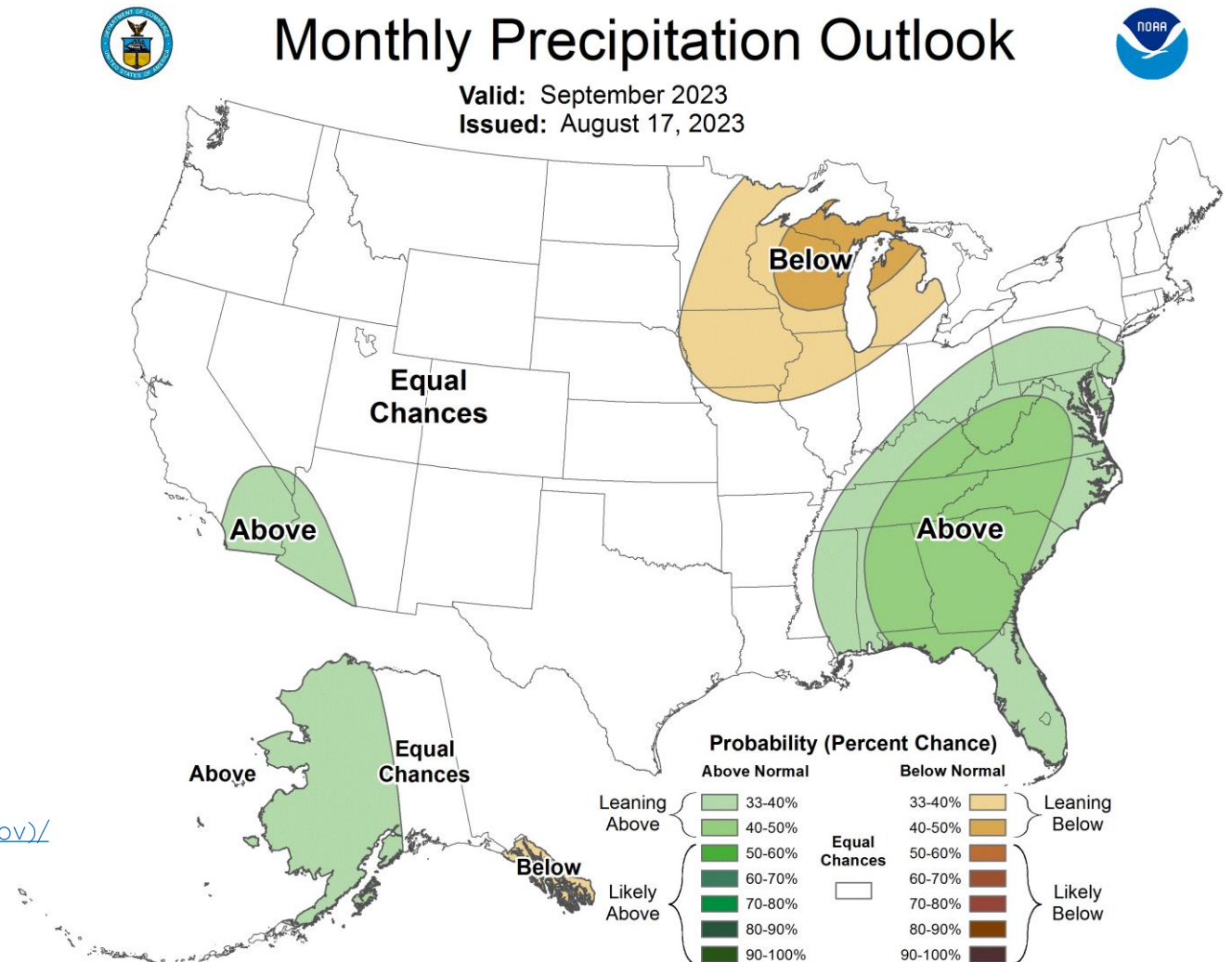
NOAA ONE-MONTH PRECIPITATION OUTLOOK



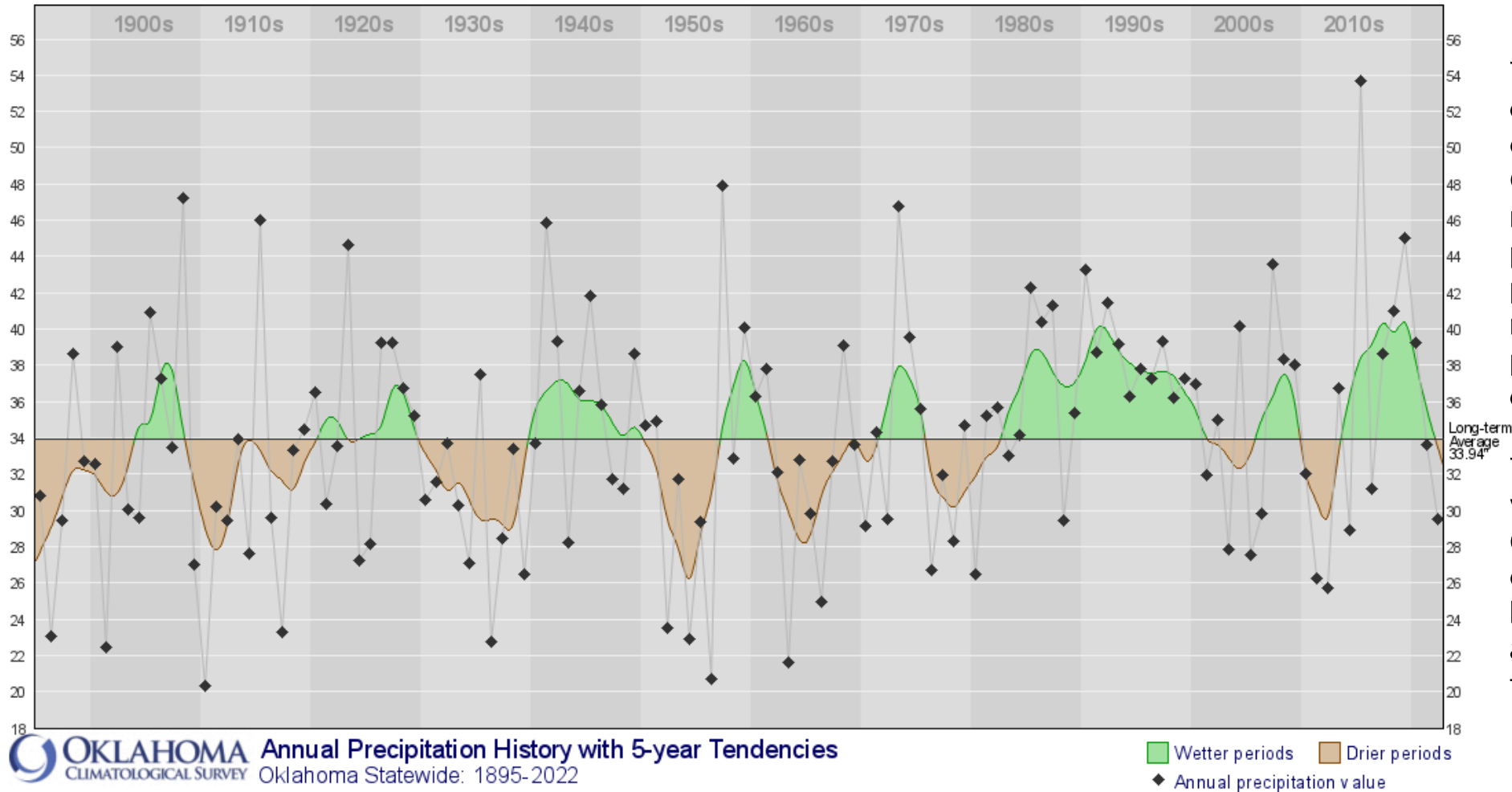
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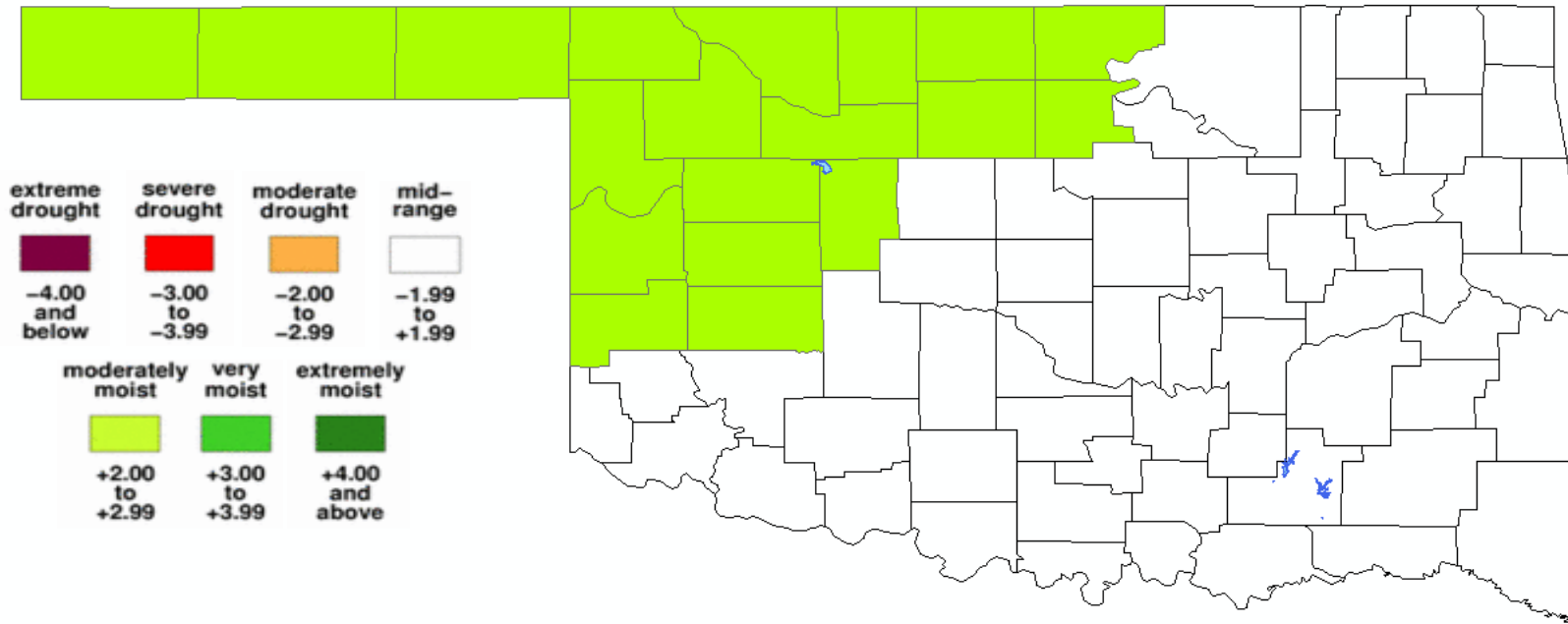
Annual Precipitation History with 5-Year Tendencies



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

26 AUG 2023

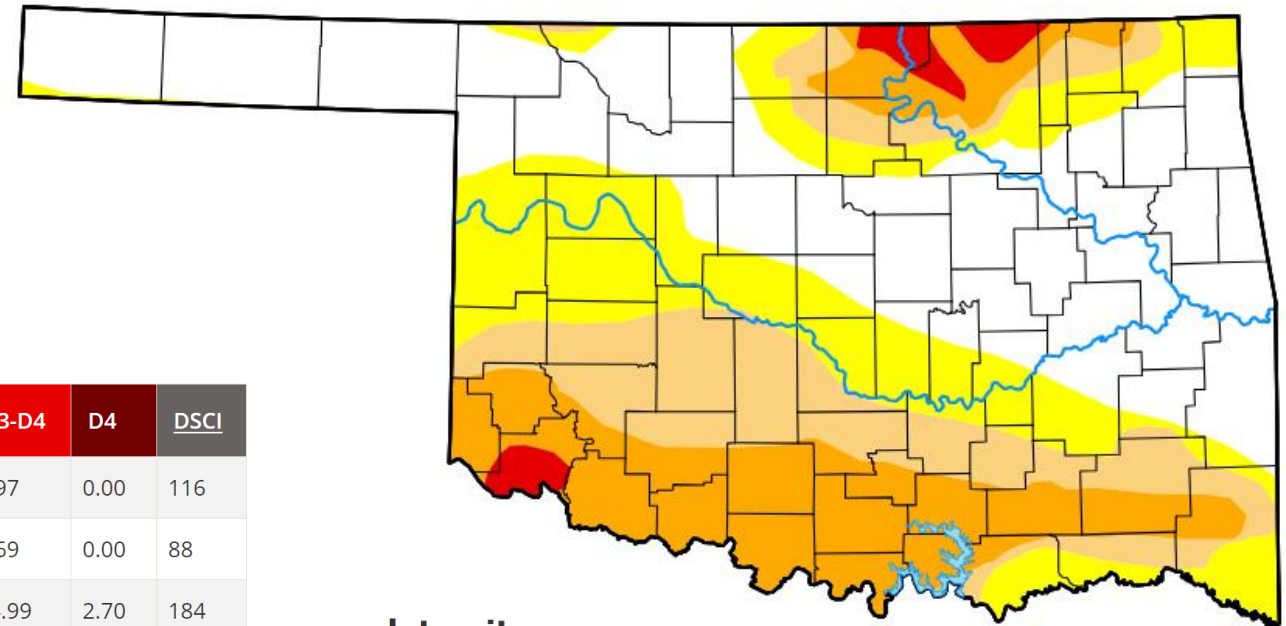
U.S. DROUGHT MONITOR - OKLAHOMA



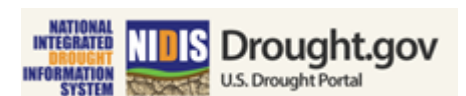
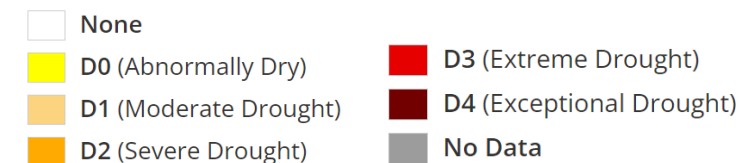
August 31, 2023

Abnormal dryness or drought are currently affecting approximately 750,352 people in Oklahoma.

Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2023-08-29	41.73	58.27	35.98	19.70	1.97	0.00	116
Last Week to Current	2023-08-22	49.68	50.32	28.14	8.28	1.69	0.00	88
3 Months Ago to Current	2023-05-30	37.13	62.87	50.44	43.18	24.99	2.70	184
Start of Calendar Year to Current	2022-12-27	1.82	98.18	89.73	80.92	56.13	11.65	337
Start of Water Year to Current	2022-09-27	0.00	100.00	99.88	94.44	64.44	17.25	376
One Year Ago to Current	2022-08-30	0.02	99.98	98.98	88.22	47.13	2.19	336



Intensity



U.S. DROUGHT MONITOR NATIONWIDE MAP



Map released: July 27, 2023

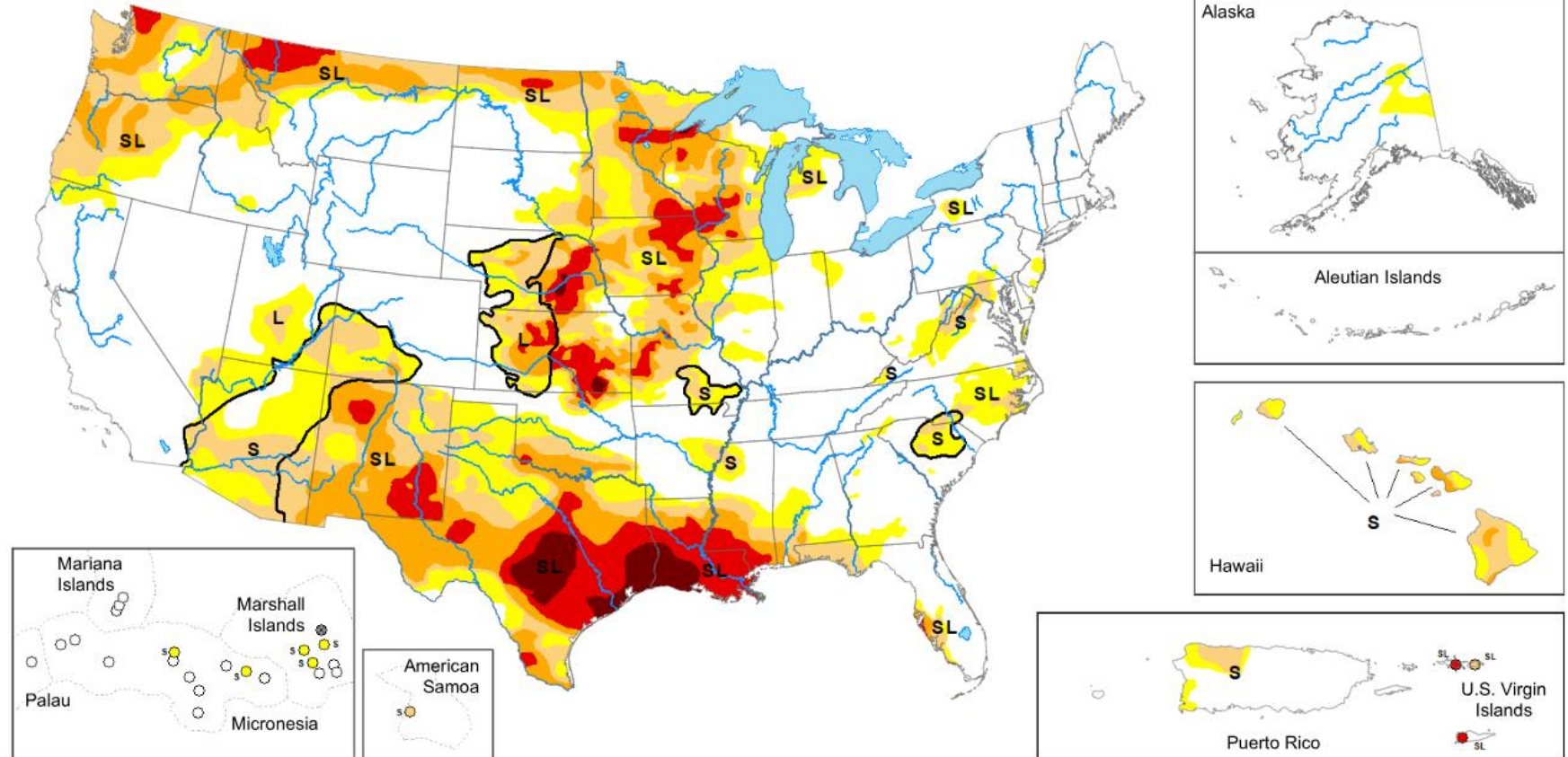
Data valid: July 25, 2023

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):
David Simera, Western Regional Climate Center

Pacific Islands and Virgin Islands Author(s):
Rocky Bilotta, NOAA/NCEI

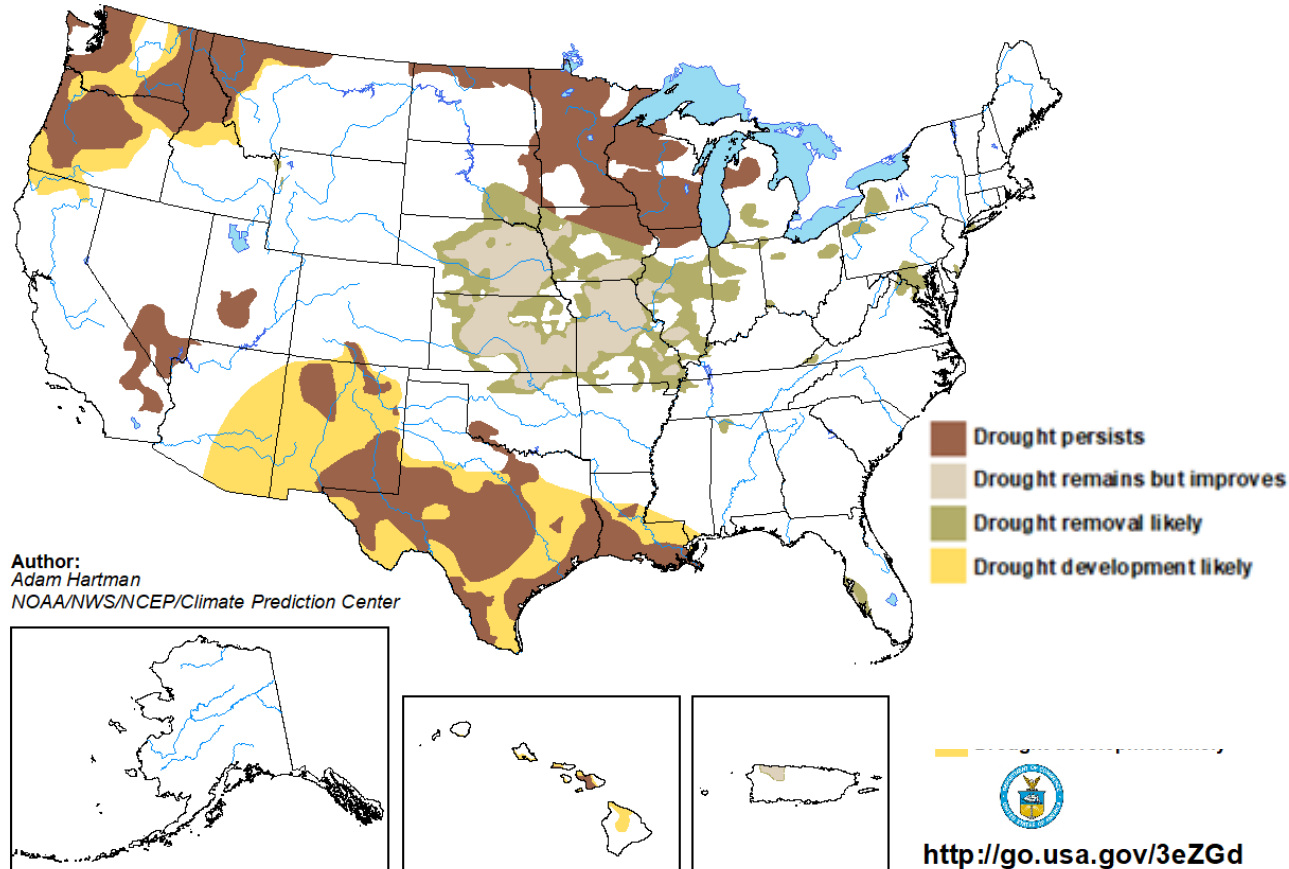


U.S. DROUGHT MONITOR MONTHLY DROUGHT OUTLOOK MAP



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

Valid for August 2023
Released July 31, 2023



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).

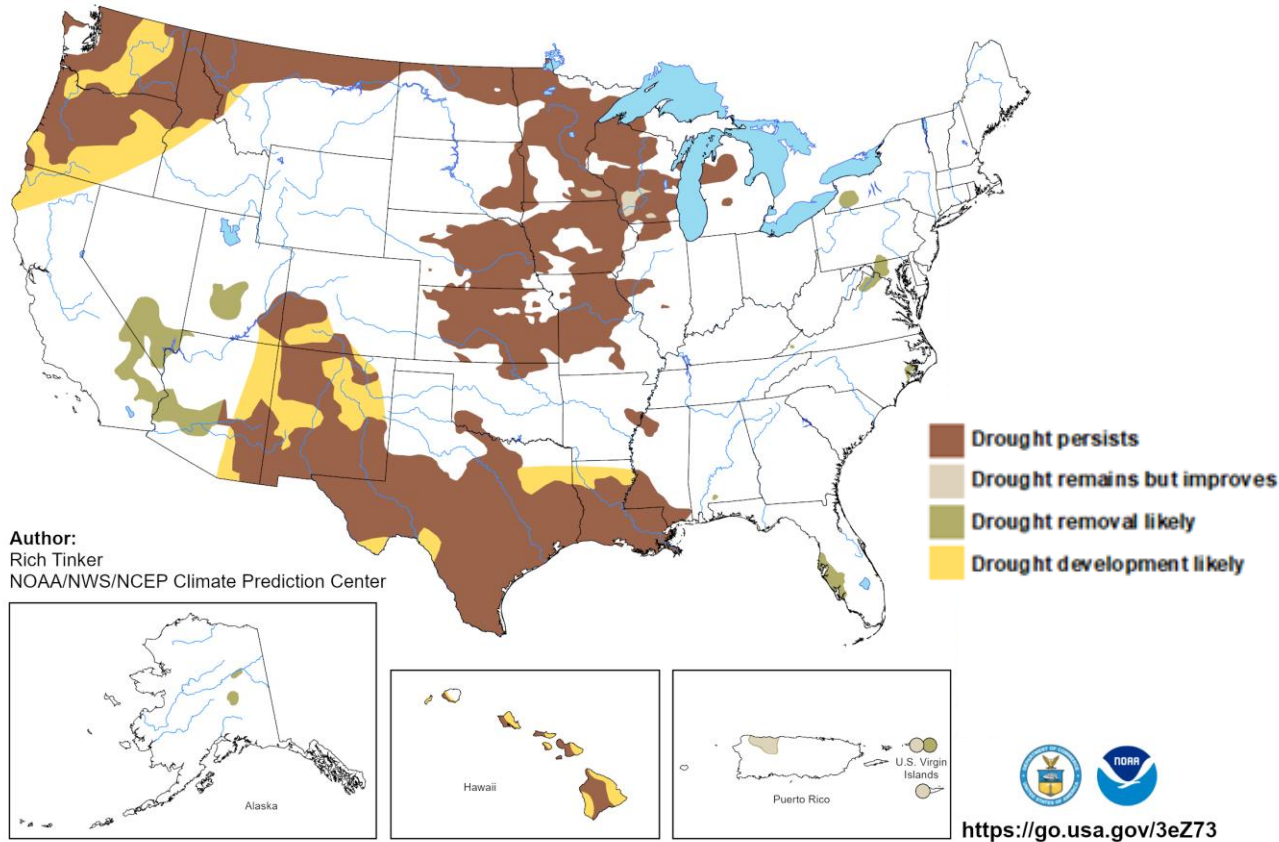
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

U.S. DROUGHT MONITOR SEASONAL DROUGHT OUTLOOK MAP



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

Valid for August 17 - November 30, 2023
Released August 17, 2023



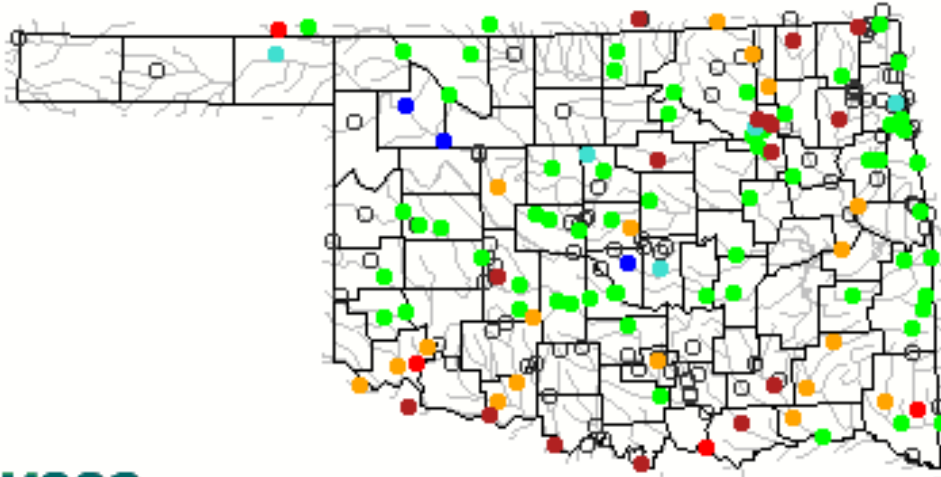
Depicts large-scale trends based on subjectively derived probabilities guided by short and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. “Ongoing” drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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



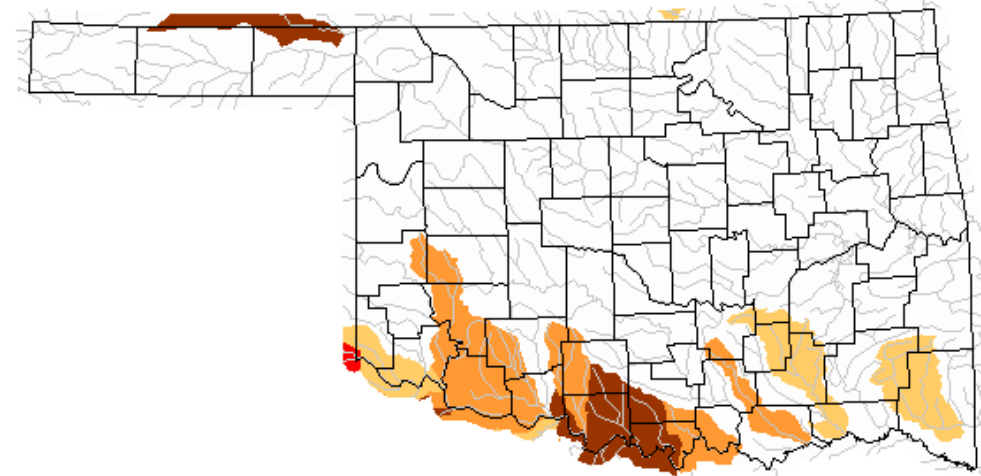
Thursday, August 31, 2023 10:30ET



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		

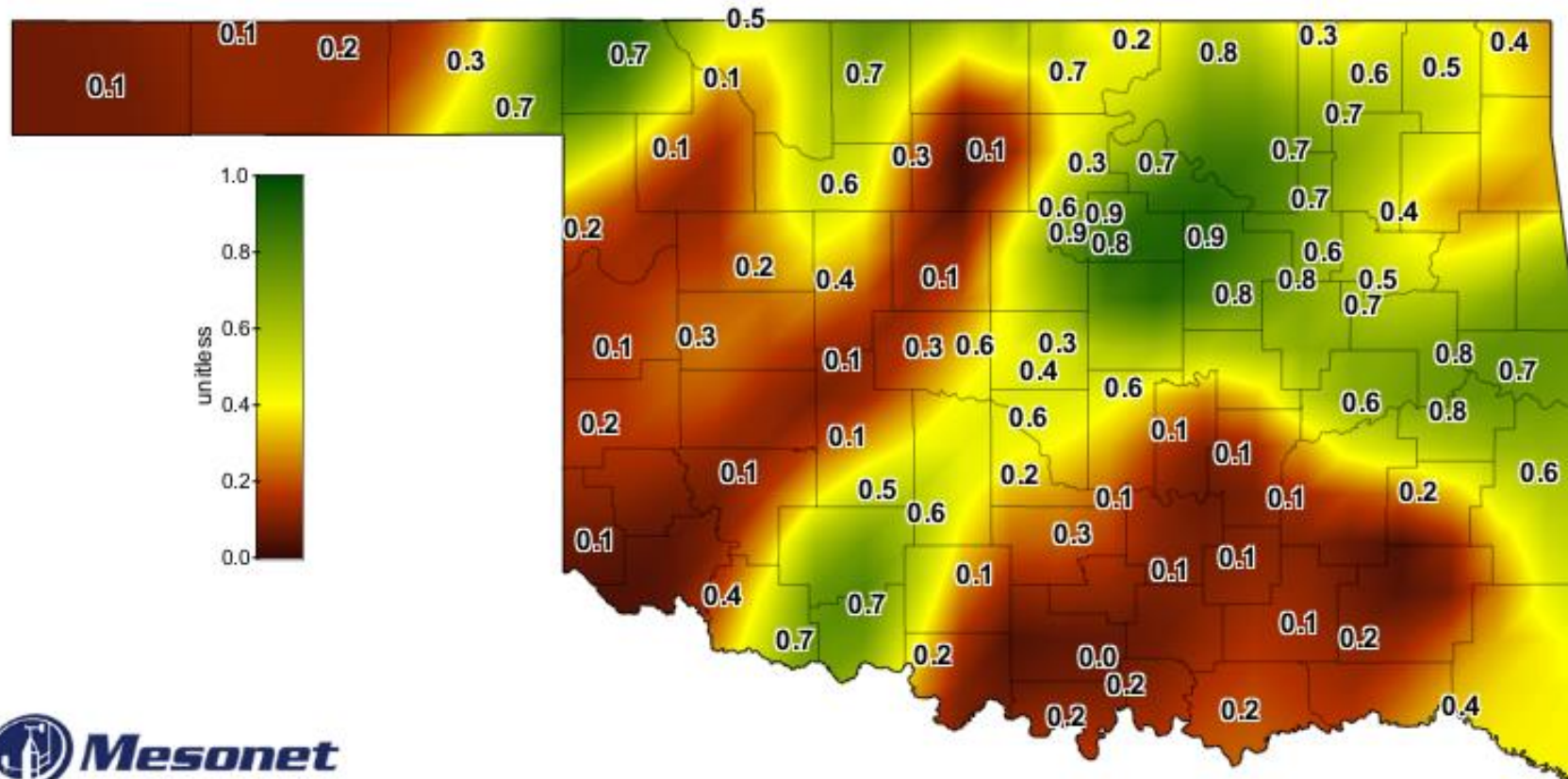
Below normal 28-day average streamflow

Wednesday, August 30, 2023



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



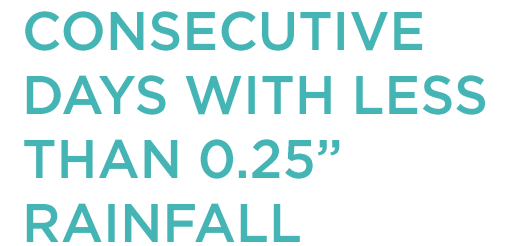
1-DAY AVERAGE 24-INCH FRACTIONAL WATER INDEX



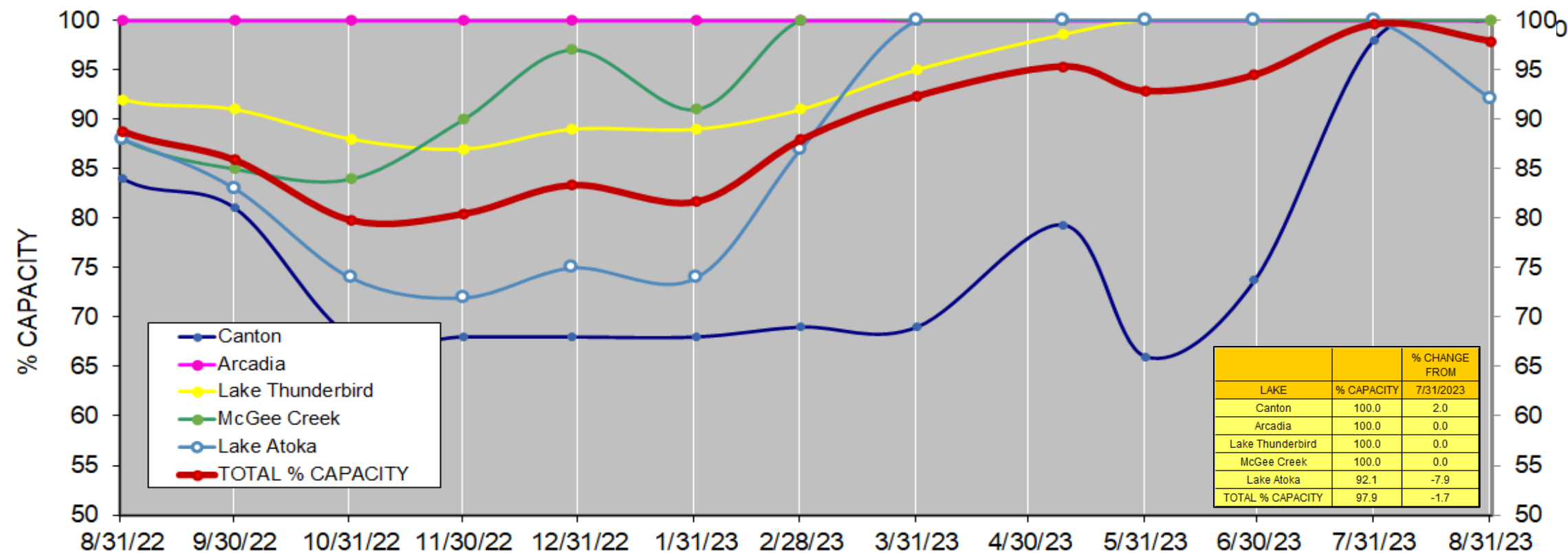
1-day Average 24-inch Fractional Water Index

August 30, 2023

Created 7:30:14 AM August 31, 2023 CDT. © Copyright 2023

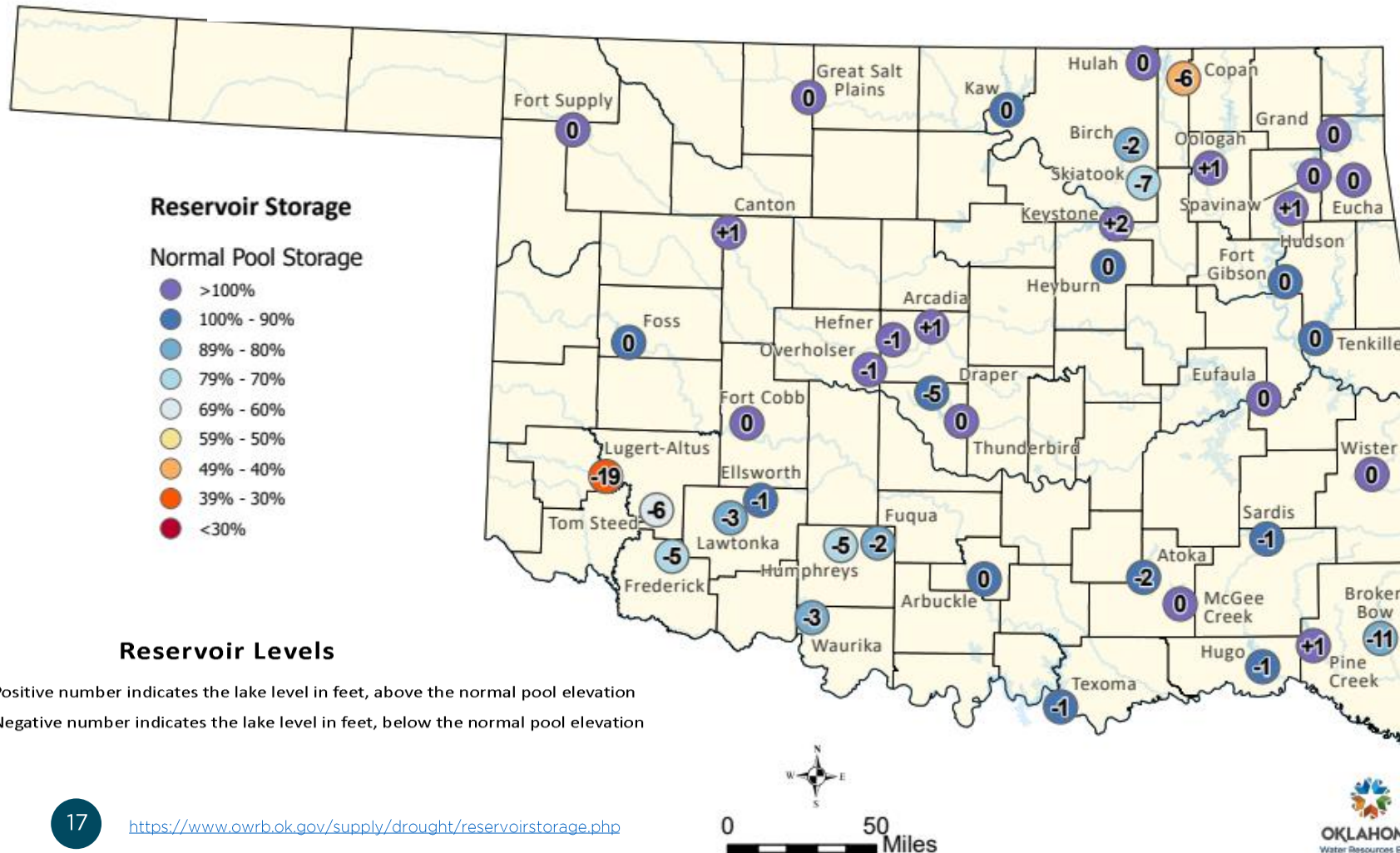


PERCENTAGE OF SURFACE WATER CONSERVATION CAPACITY IN CENTRAL OK RESERVOIRS



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

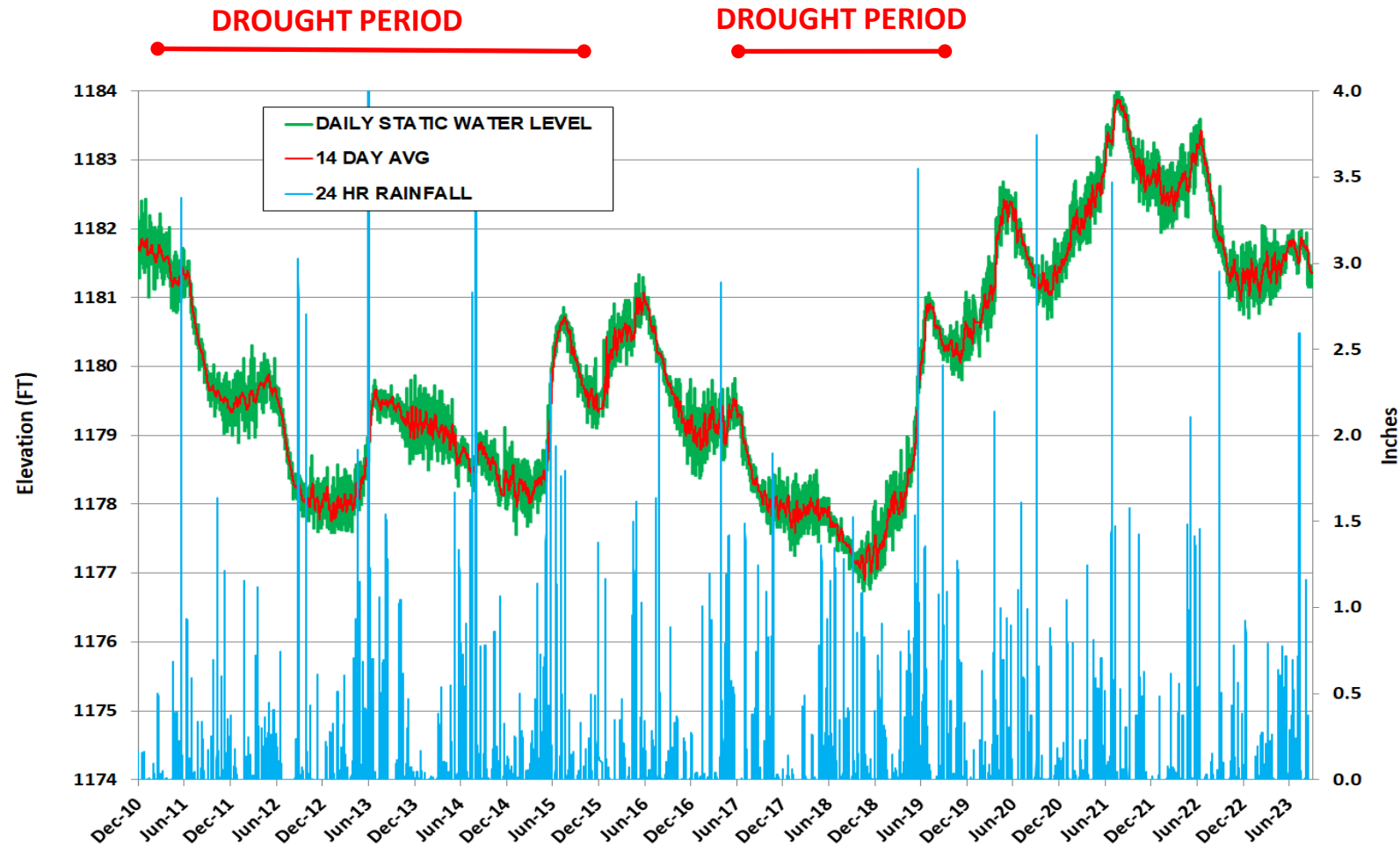


OKLAHOMA RESERVOIR LEVELS AND STORAGE AS OF 08/28/2023

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), and the U.S. Geological Survey ([USGS Current Conditions for USGS 07333010 Atoka Reservoir near Stringtown, OK](https://www.usgs.gov/monitoring/products-reports/real-time/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



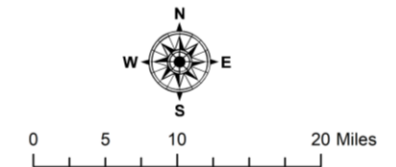
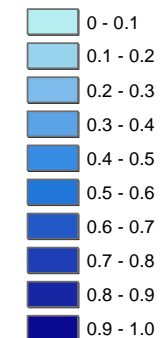
AQUIFER RECHARGE – Aug 2023



- Mean aquifer recharge in August 2023 was 0.00 inches.
- Normal recharge for August is 0.07 inches.
- The 2023 cumulative yearly average is 0.98 inches less than normal at this time.



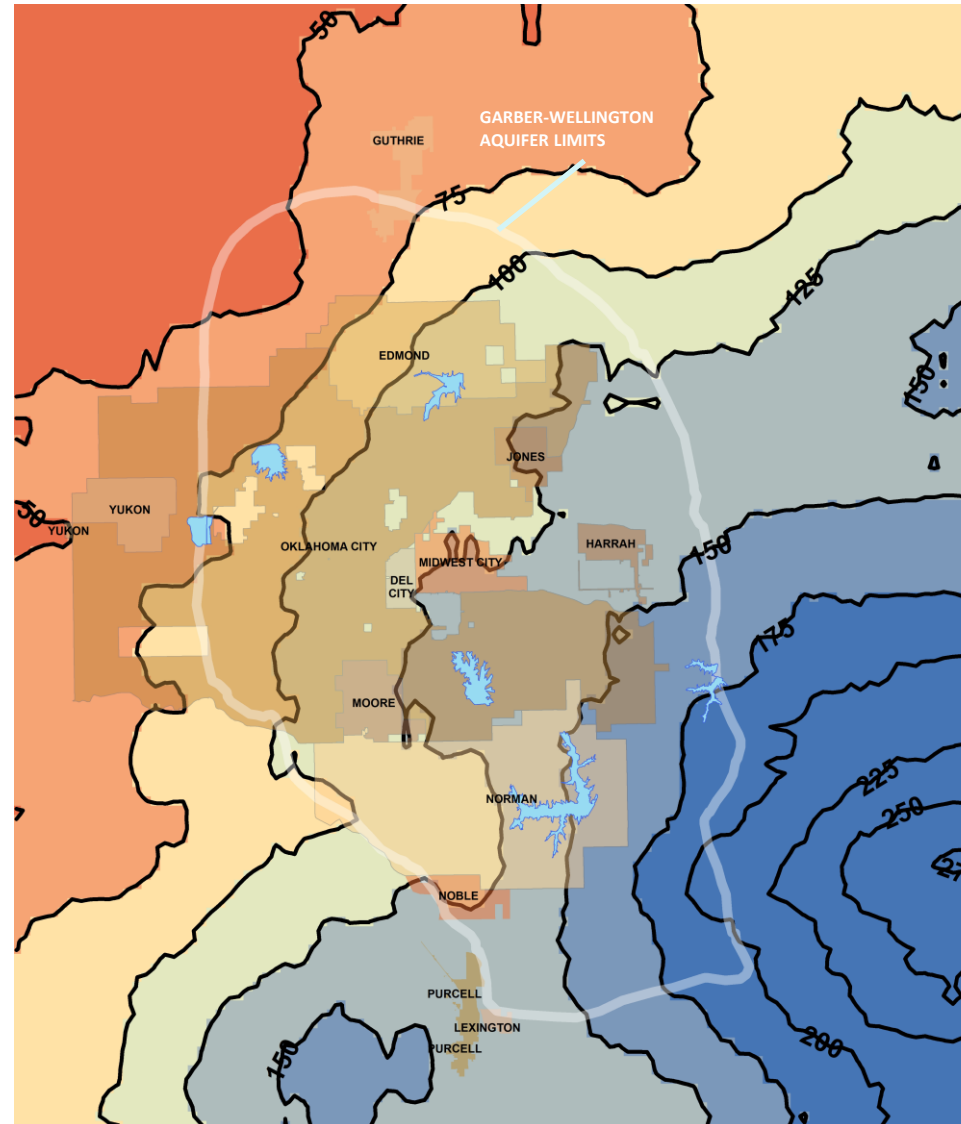
Recharge in Inches



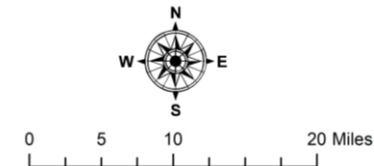
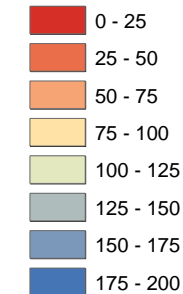
PERCENT TOTAL CUMULATIVE AQUIFER RECHARGE – Jan-Aug 2023



- Most of the recharge for 2023 so far this year is south and east of Shawnee.
- There was no recharge to the aquifer in the month of August 2023.
- Normal cumulative recharge for Jan-Aug is 2.01 inches.



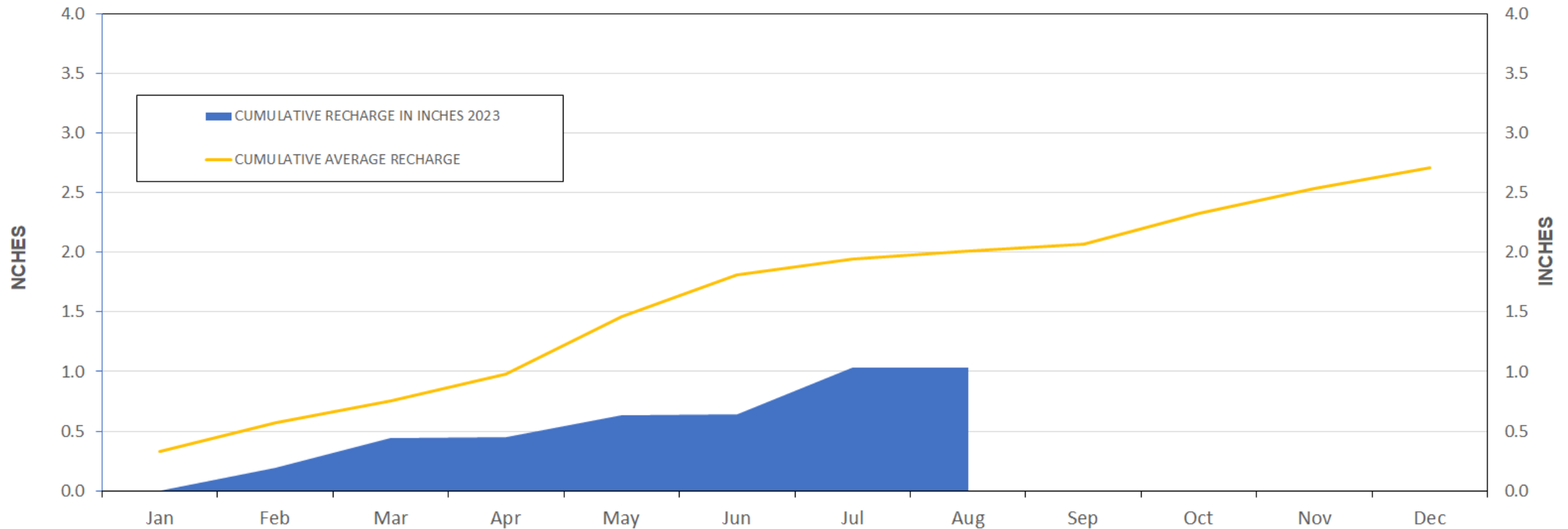
Percent of Cumulative Recharge



RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM



ACCUMULATED CENTRAL OKLAHOMA AQUIFER SYSTEM RECHARGE 2023

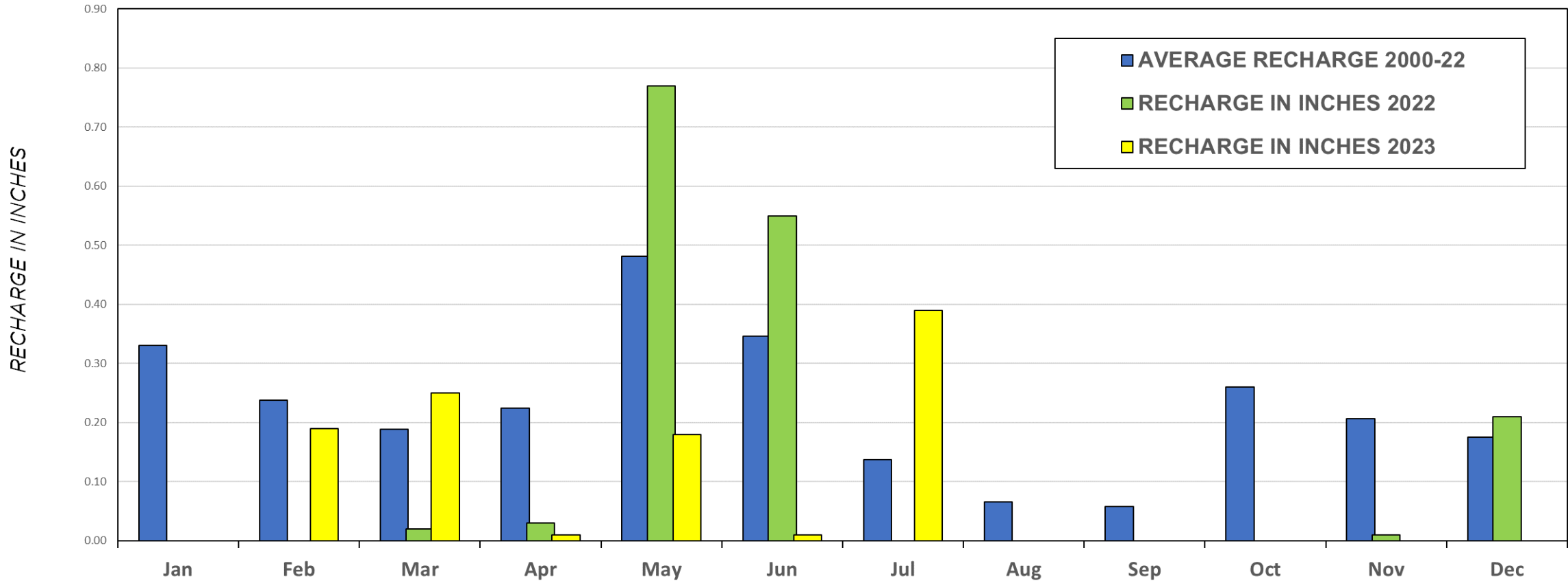


RECHARGE CHARTS CENTRAL OKLAHOMA

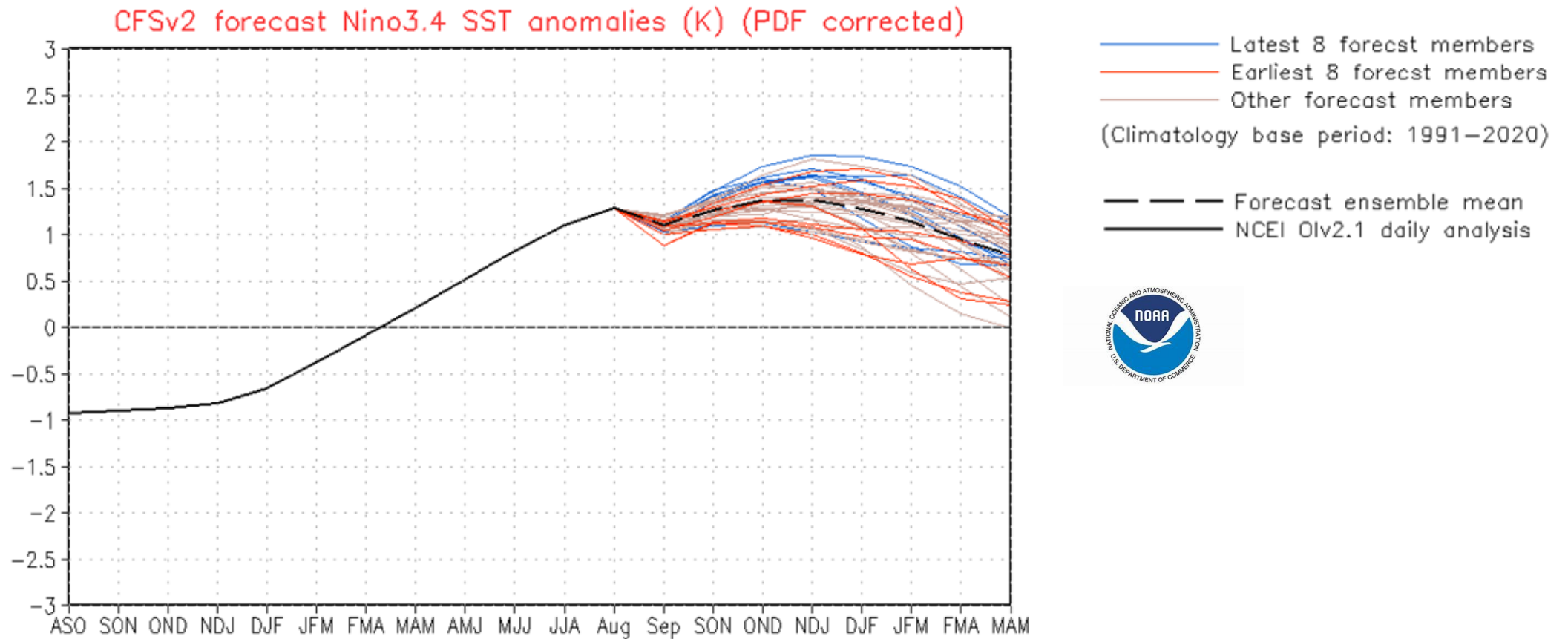
AQUIFER SYSTEM CONTINUED



MONTHLY AQUIFER RECHARGE 2023



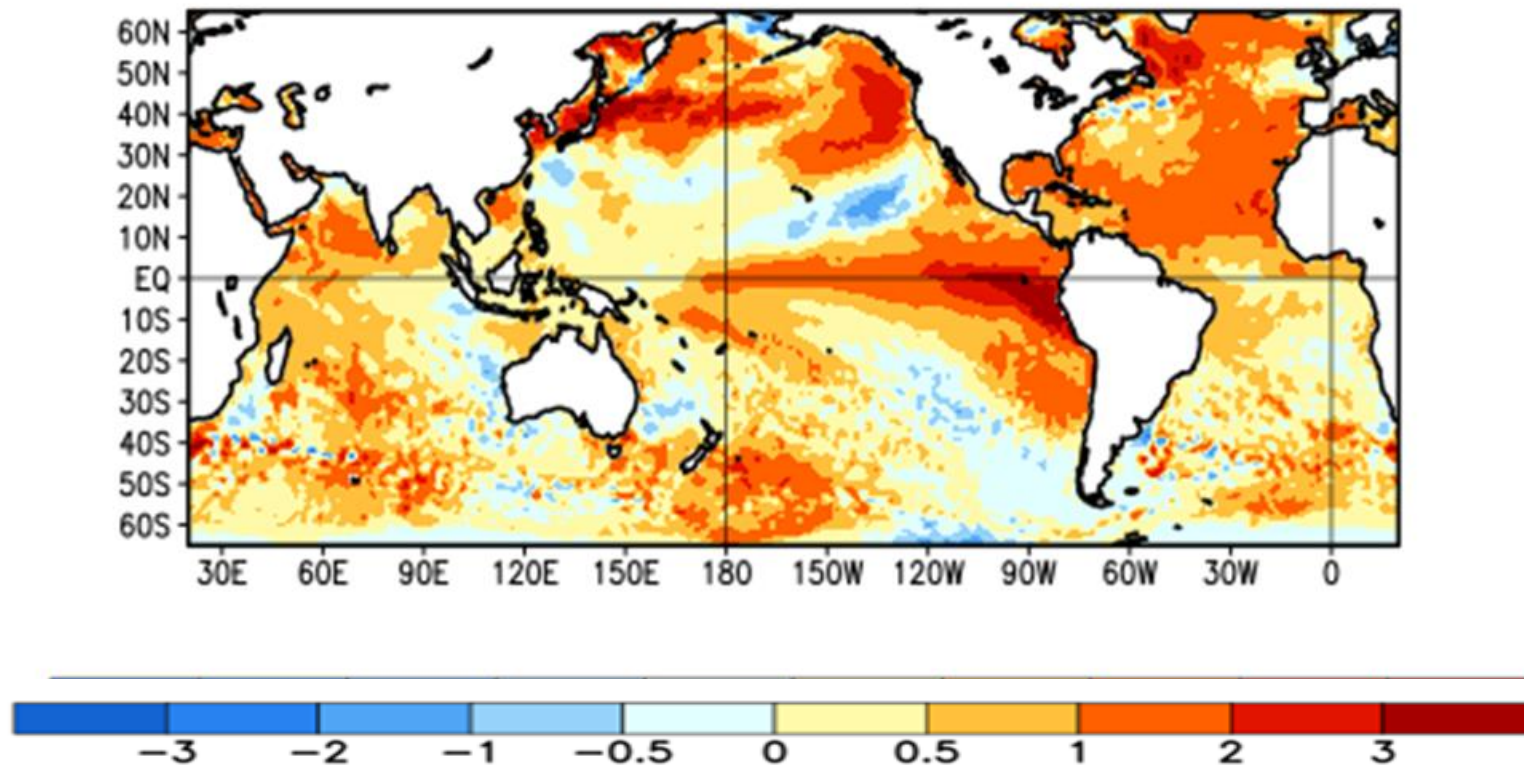
ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



Average SST Anomalies
30 JUL 2023 – 26 AUG 2023





ENSO ALERT SYSTEM STATUS: El Niño Advisory

- 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.
- El Niño is anticipated to continue through the Northern Hemisphere winter (with greater than a 95% chance through December 2023-February 2024).



QUESTIONS?

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ASSOCIATION OF
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GOVERNMENTS