DROUGHT CONDITIONS

IN CENTRAL OKLAHOMA

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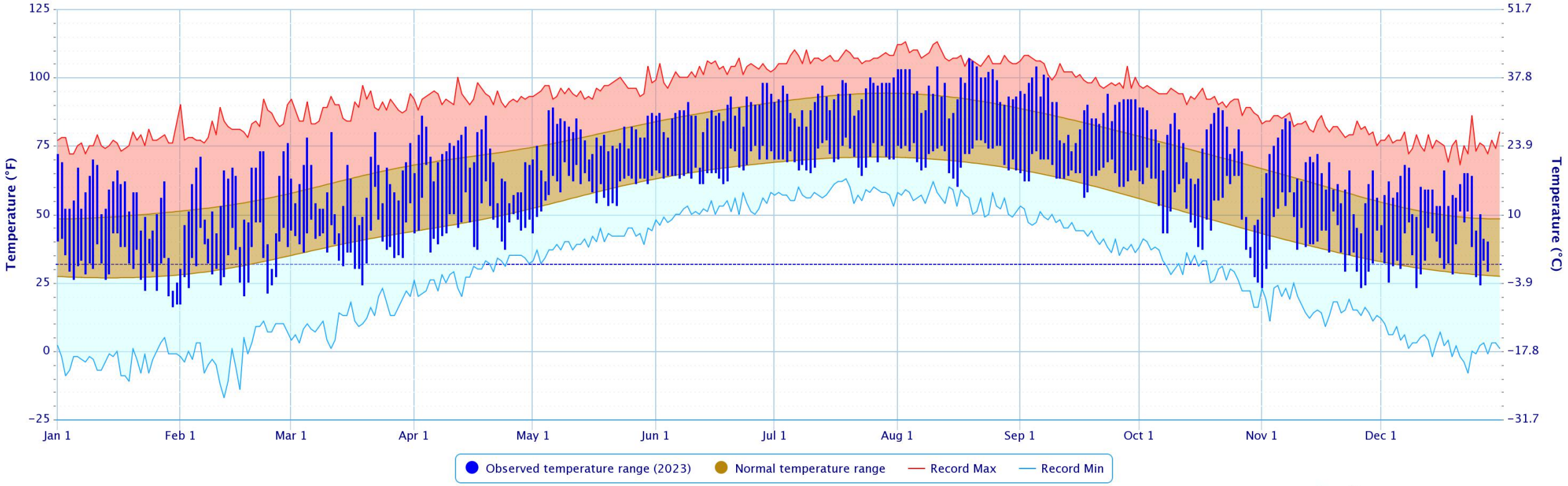
January 2, 2024

TEMPERATURE PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2023



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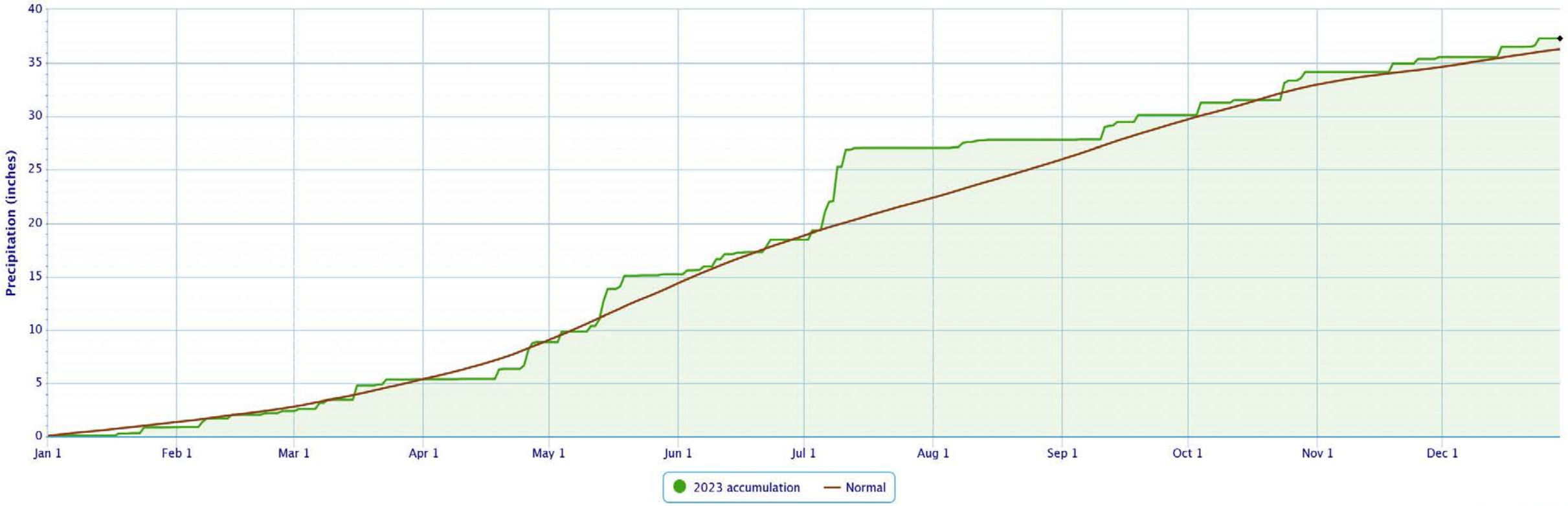
NOAA Regional Climate Centers

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

PRECIPITATION PLOT FOR OKLAHOMA CITY, OKLAHOMA FOR 2023



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

RAINFALL SUMMARIES BY OKLAHOMA CLIMATE DIVISION

Calendar Year 01-Jan-2023 though 28-Dec-2023

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	32.54"	+4.23"	115%	14th wettest	14.18" (1956)	43.09" (1997)
Central	36.23"	-1.24"	97%	47th wettest	19.58" (1954)	53.89" (2007)
S. Central	36.94"	-3.55"	91%	44th driest	20.11" (1963)	72.40" (2015)
Statewide	36.09"	-0.21"	99%	43rd wettest	20.81" (1956)	53.97" (2015)

Water Year: 01-Oct-2023 through 28-Dec-2023

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	6.79"	+1.34"	125%	26th wettest	0.14" (1921)	11.99" (1986)
Central	7.49"	-0.46"	94%	40th wettest	0.92" (1945)	16.20" (1941)
S. Central	10.77"	+1.30"	114%	24th wettest	0.94" (1950)	21.80" (2015)
Statewide	7.96"	+0.05"	101%	37th wettest	1.08" (1950)	15.19" (2015)

Winter Dec 01 through 28-Dec-2023

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	3.37"	+2.24"	298%	5th wettest	0.00" (1950)	4.02" (1932)
Central	2.36"	+0.53"	129%	19th wettest	0.04" (1978)	5.55" (1991)
S. Central	2.49"	+0.12"	105%	31st wettest	0.03" (1950)	7.10" (2015)
Statewide	2.61"	+0.71"	138%	20th wettest	0.06" (1950)	5.73" (2015)

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.

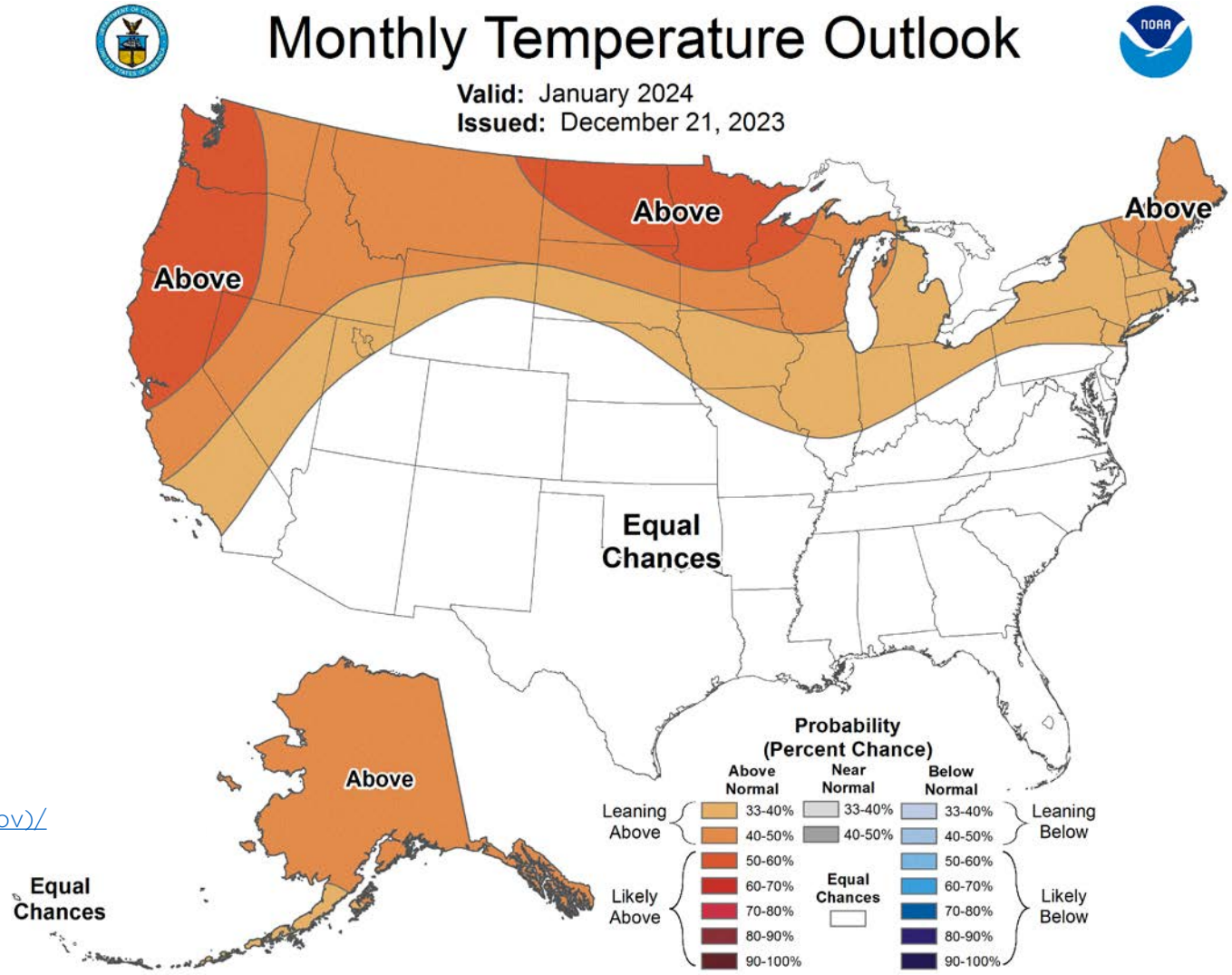
http://climate.ok.gov/index.php/drought/last_30_days/drought_wildfire

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)/](#)



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.

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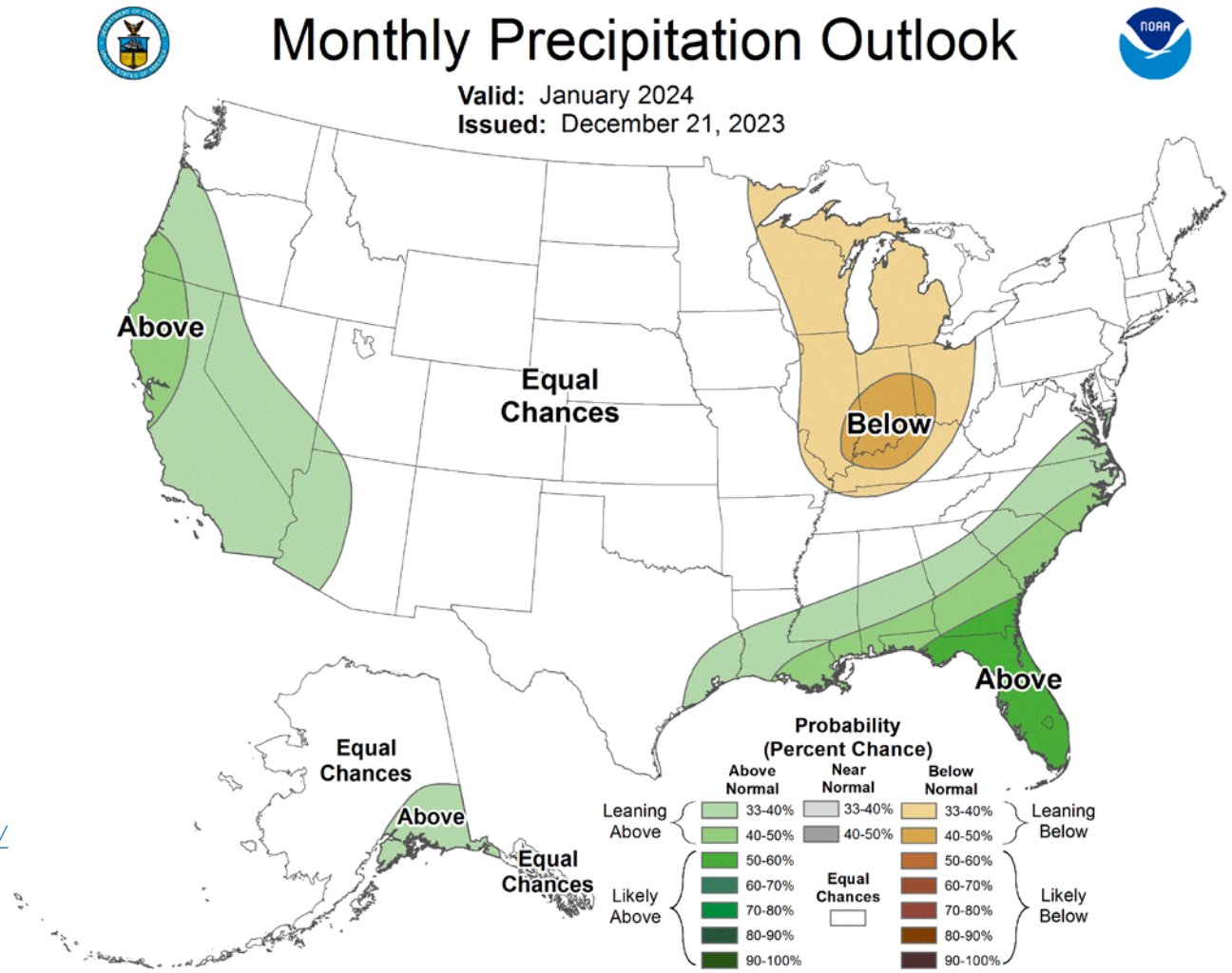
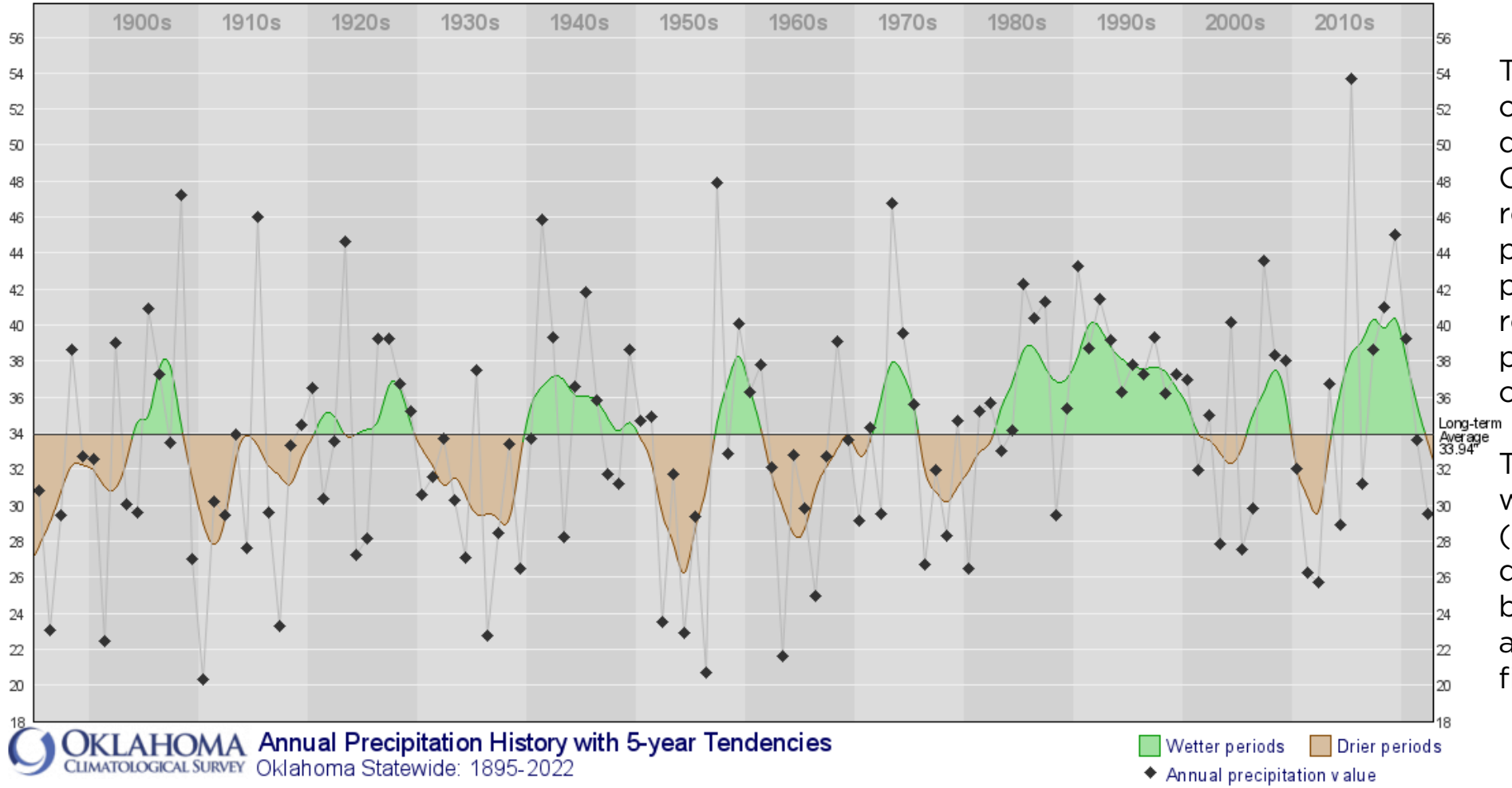


Annual Precipitation History with 5-Year Tendencies

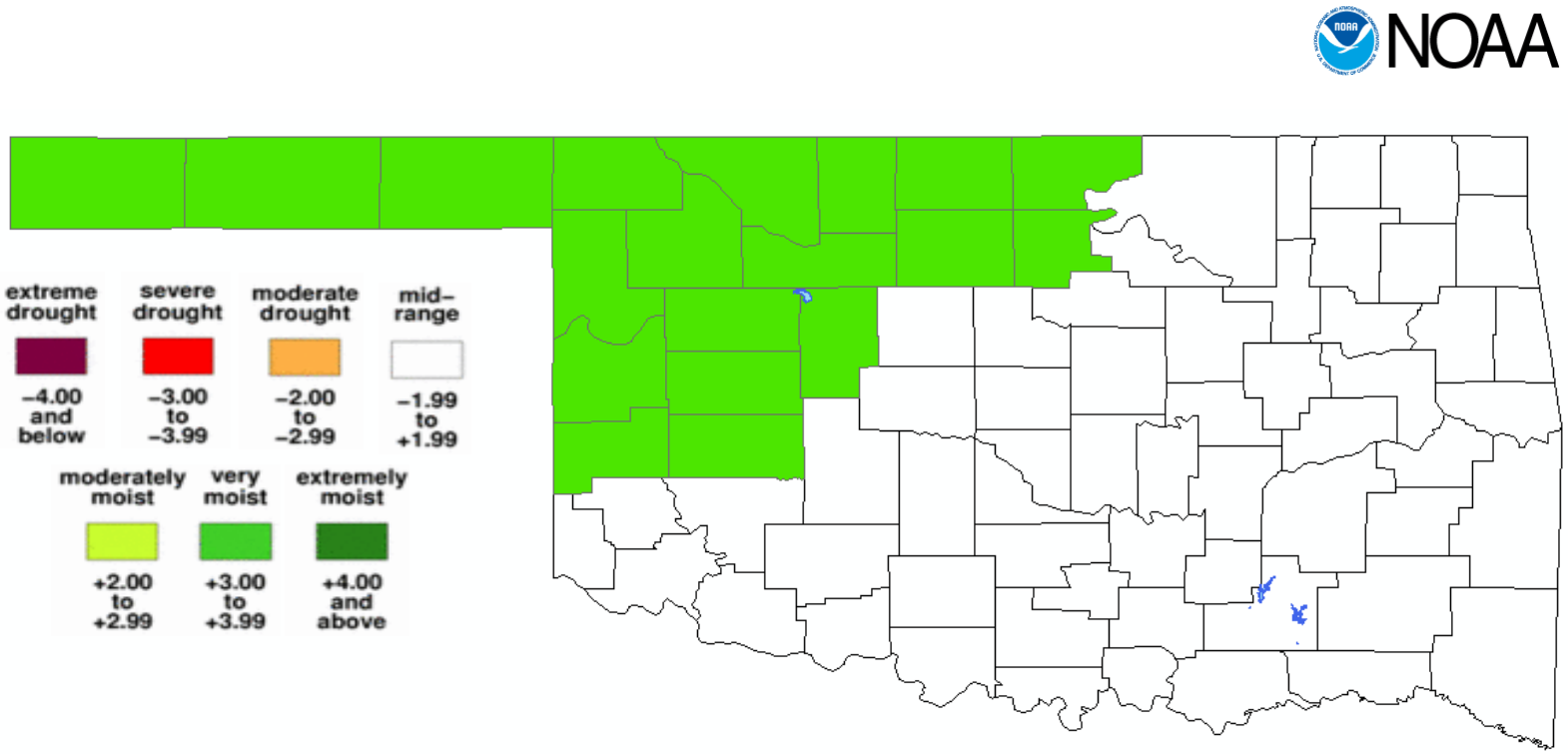


This graph shows the cyclical nature of wet and drought periods in Oklahoma. The black dots represent the annual precipitation for that particular year. The line represents the annual precipitation data smoothed over five years.

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.

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

DROUGHT SEVERITY INDEX BY CLIMATE DIVISION



PALMER VALUE

23 DEC 2023

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.

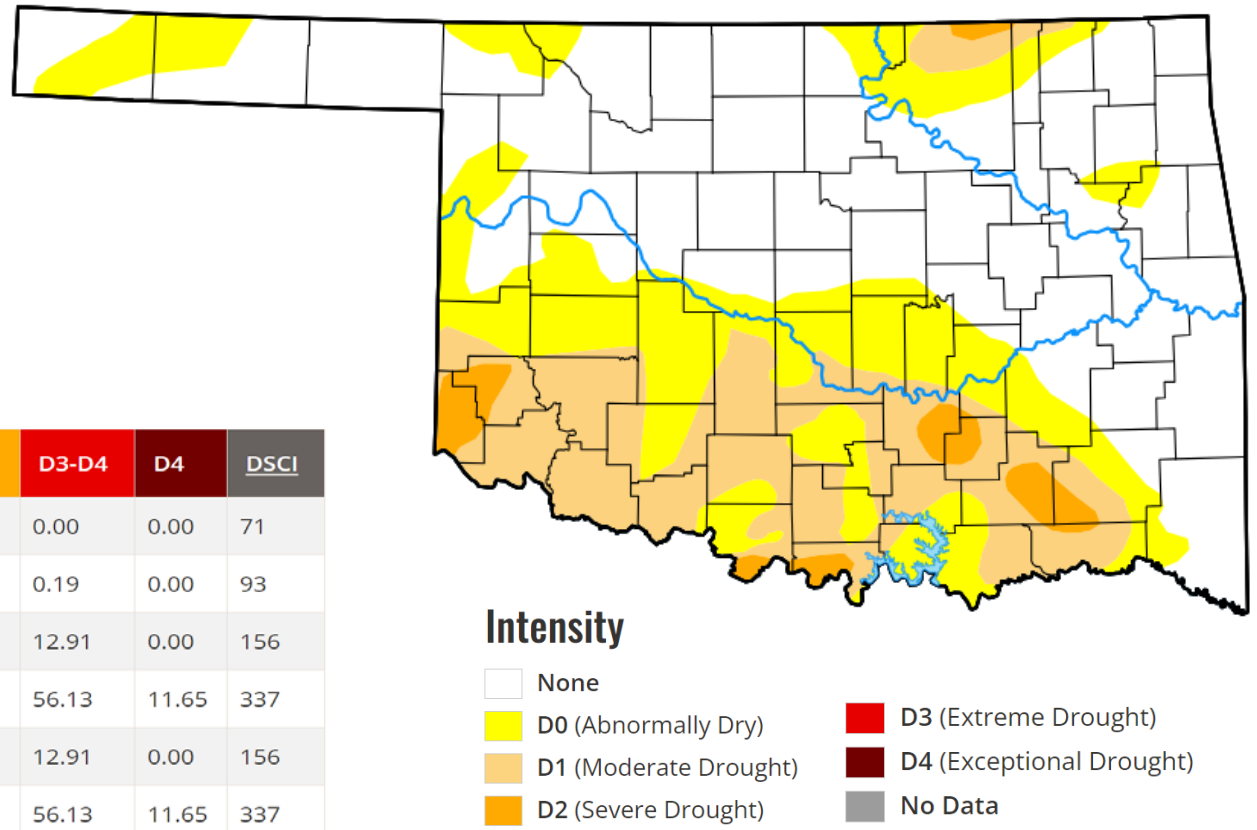
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/cdus/palmer_drought/wpdsouth.txt

U.S. DROUGHT MONITOR - OKLAHOMA

December 26, 2023

Abnormal dryness or drought are currently affecting approximately 510,358 people in Oklahoma.

Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2023-12-26	53.62	46.38	21.64	3.08	0.00	0.00	71
Last Week to Current	2023-12-19	38.19	61.81	26.15	4.49	0.19	0.00	93
3 Months Ago to Current	2023-09-26	34.29	65.71	46.76	30.93	12.91	0.00	156
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	2023-09-26	34.29	65.71	46.76	30.93	12.91	0.00	156
One Year Ago to Current	2022-12-27	1.82	98.18	89.73	80.92	56.13	11.65	337



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

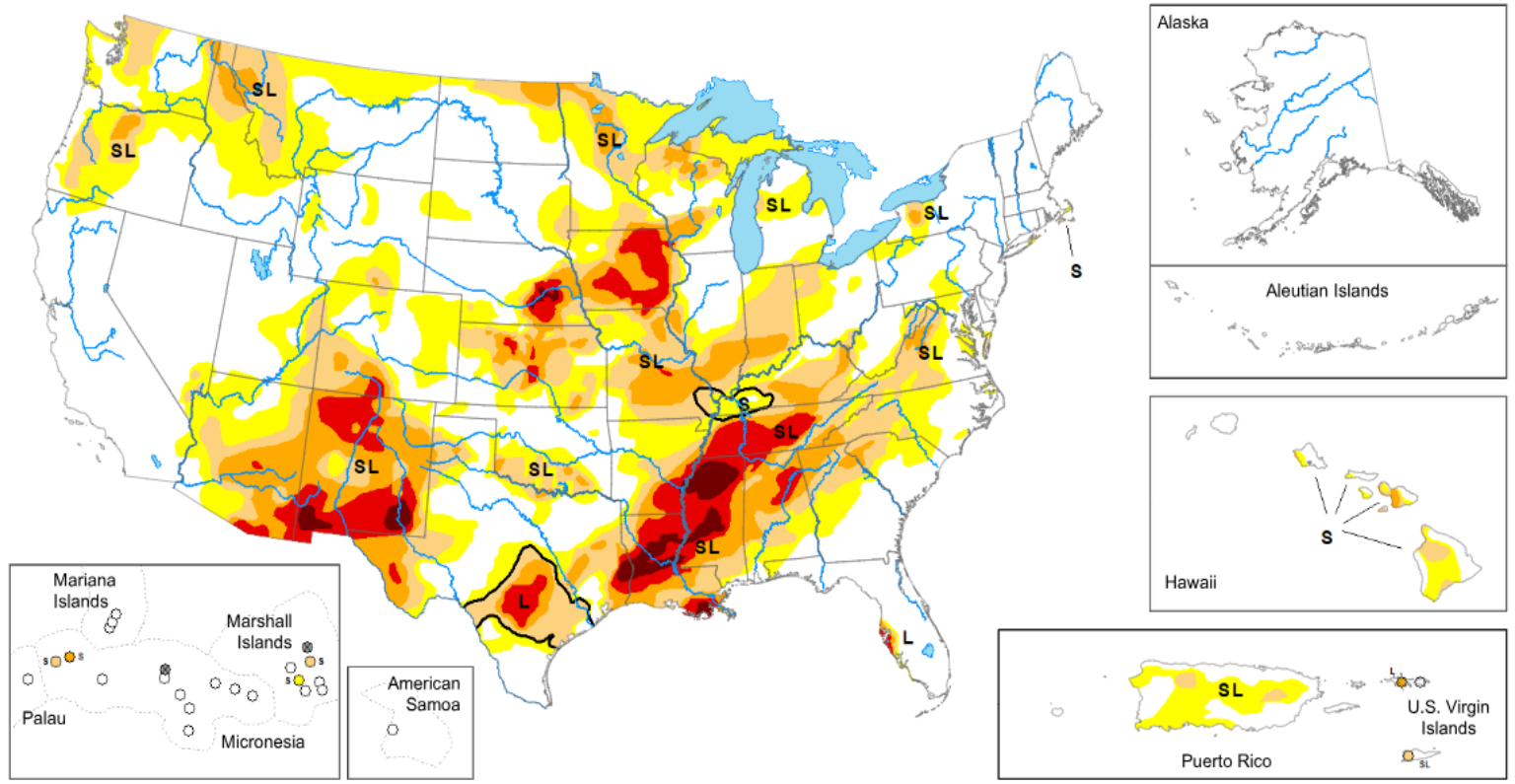
U.S. DROUGHT MONITOR NATIONWIDE MAP

Map released: December 28, 2023

Data valid: December 26, 2023

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

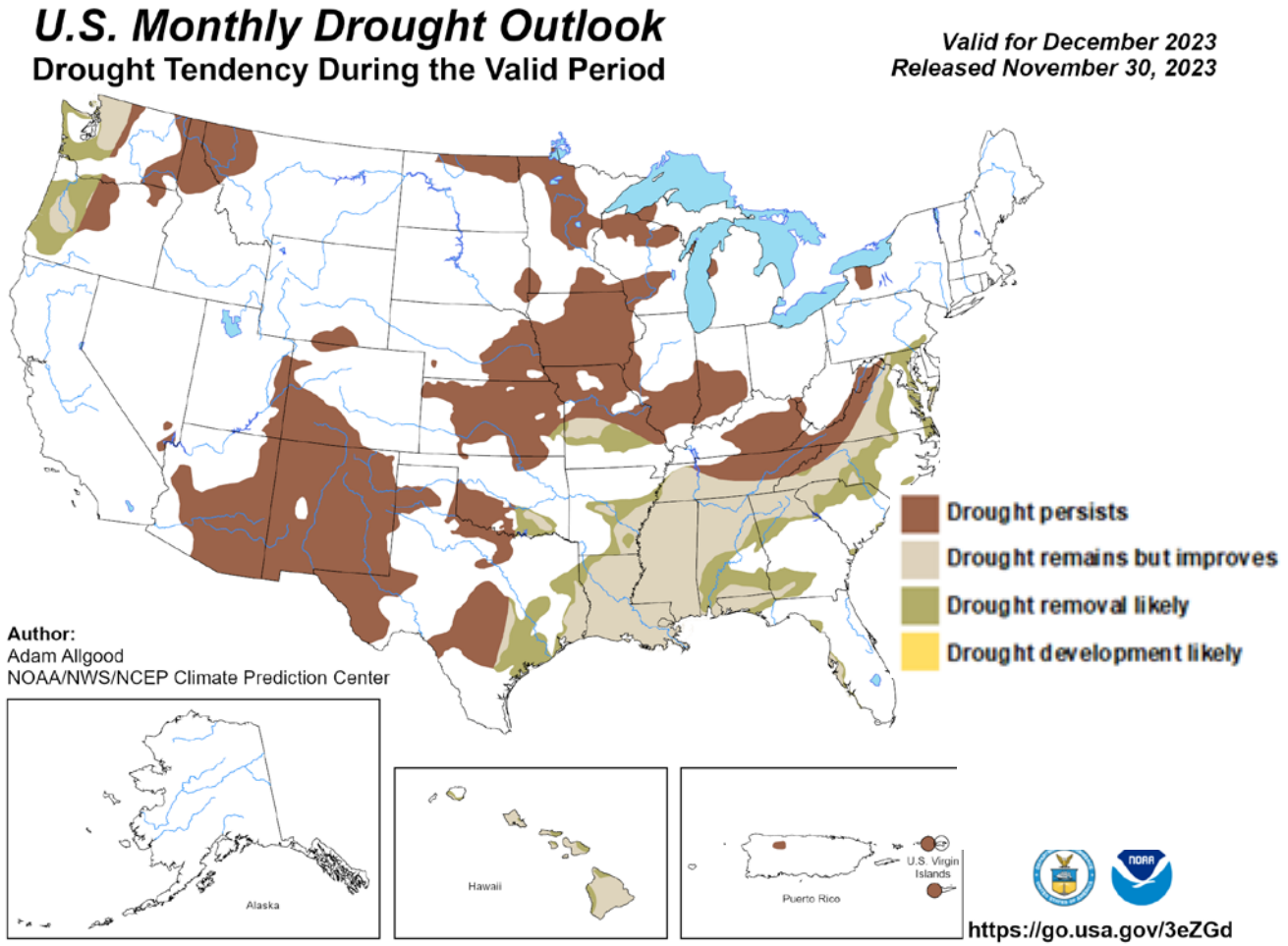


United States and Puerto Rico Author(s):
Rocky Bilotta, NOAA/NCEI

Pacific Islands and Virgin Islands Author(s):
Richard Heim, NOAA/NCEI

NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM | NIDIS | Drought.gov U.S. Drought Portal

U.S. DROUGHT MONITOR MONTHLY DROUGHT OUTLOOK MAP

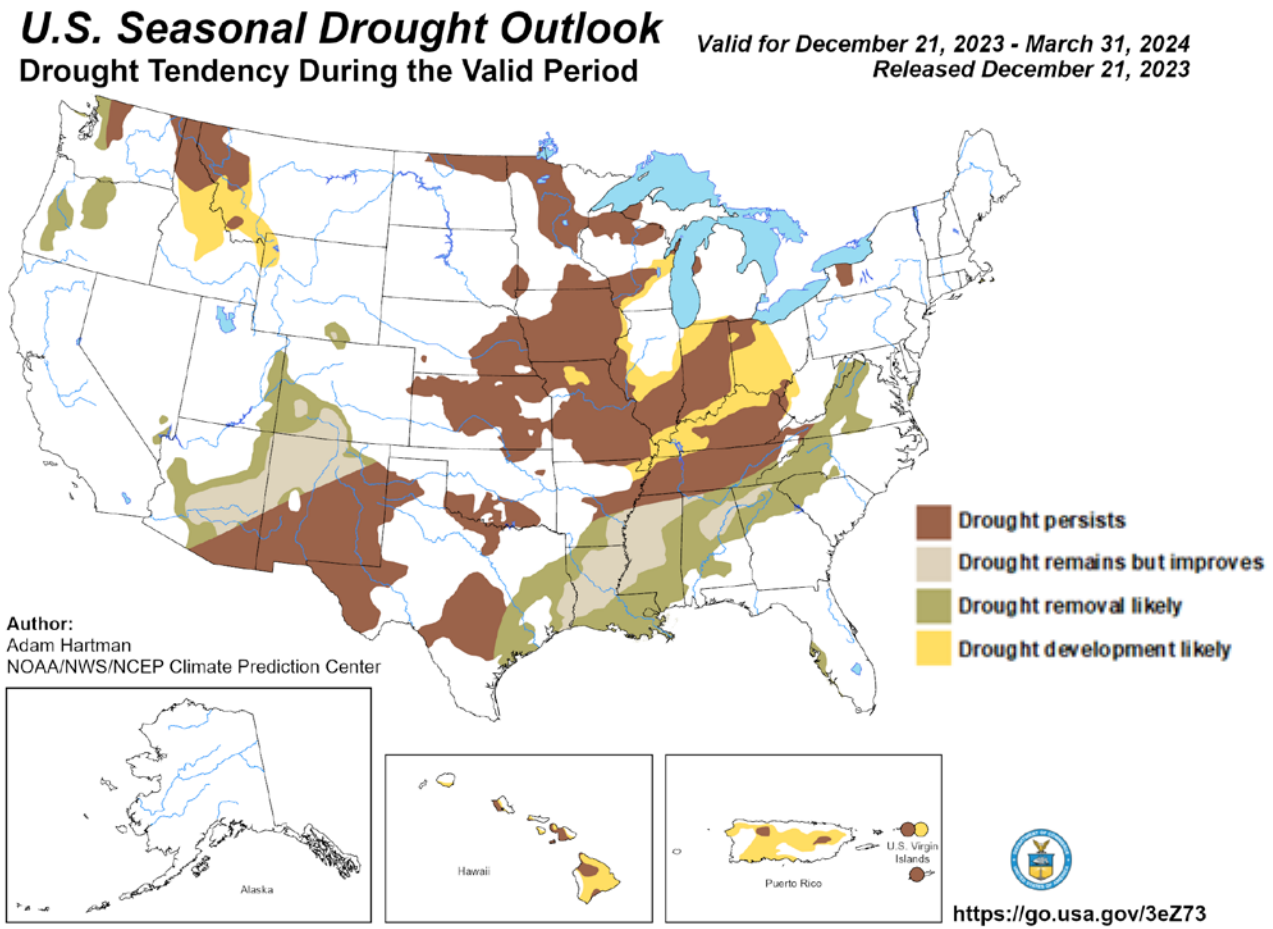


Depicts large-scale trends based on subjectively derived probabilities guided by short and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. “Ongoing” drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

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

U.S. DROUGHT MONITOR SEASONAL DROUGHT OUTLOOK MAP



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).

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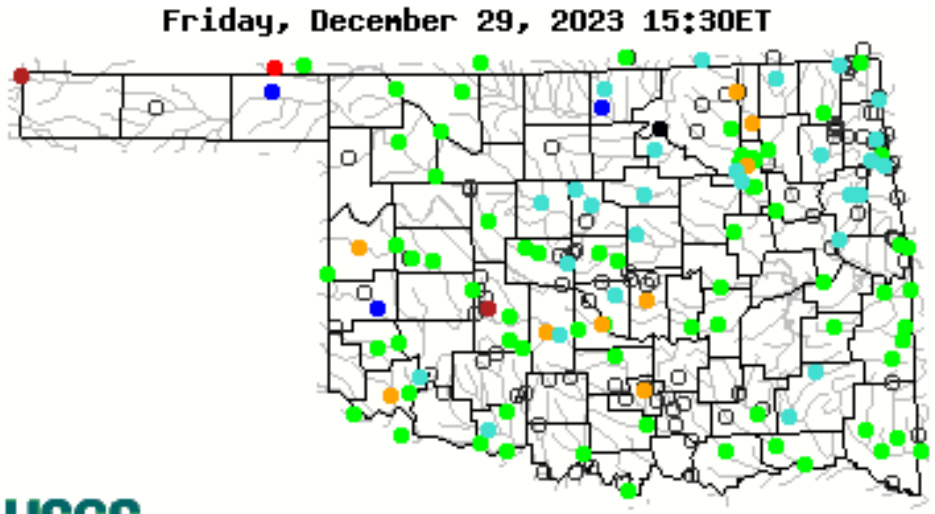
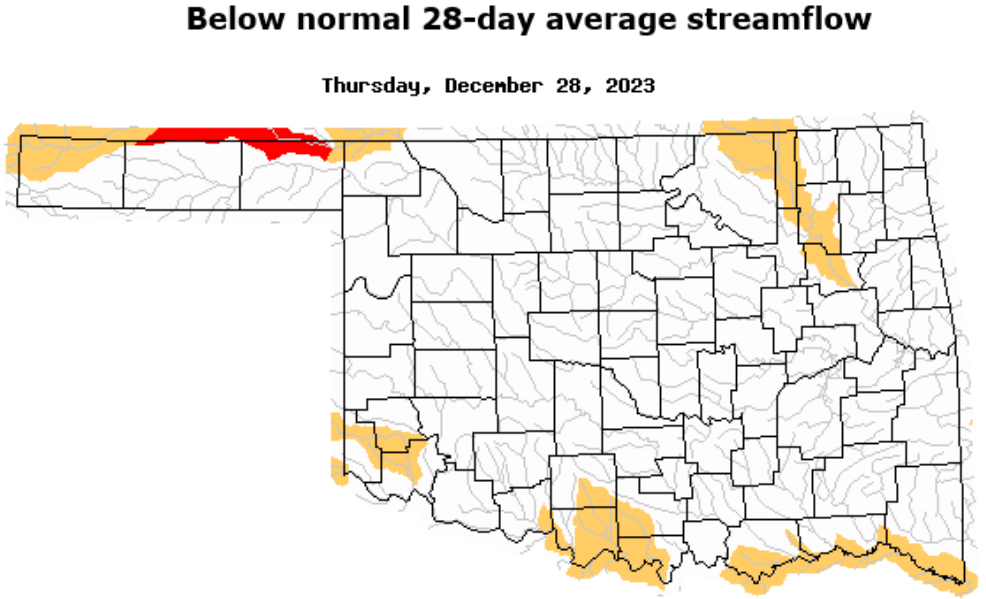
https://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

USGS STREAMFLOW DATA



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		

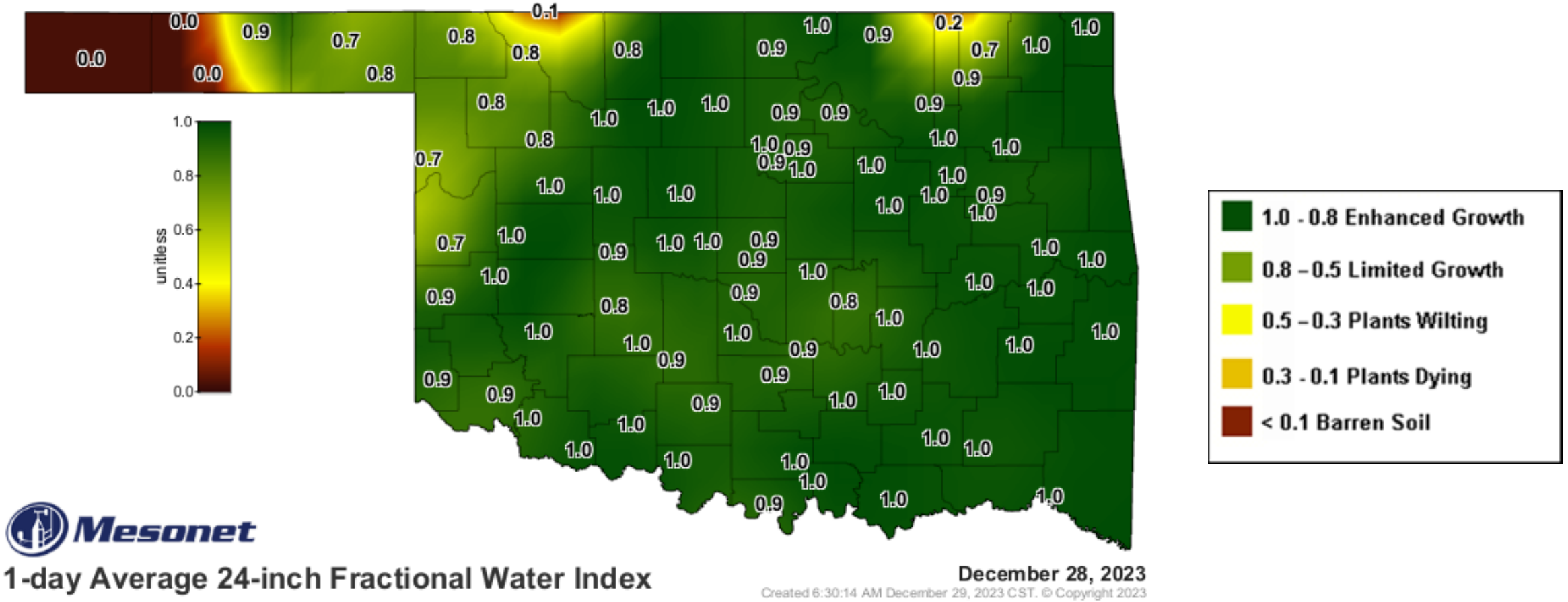


Explanation - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

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

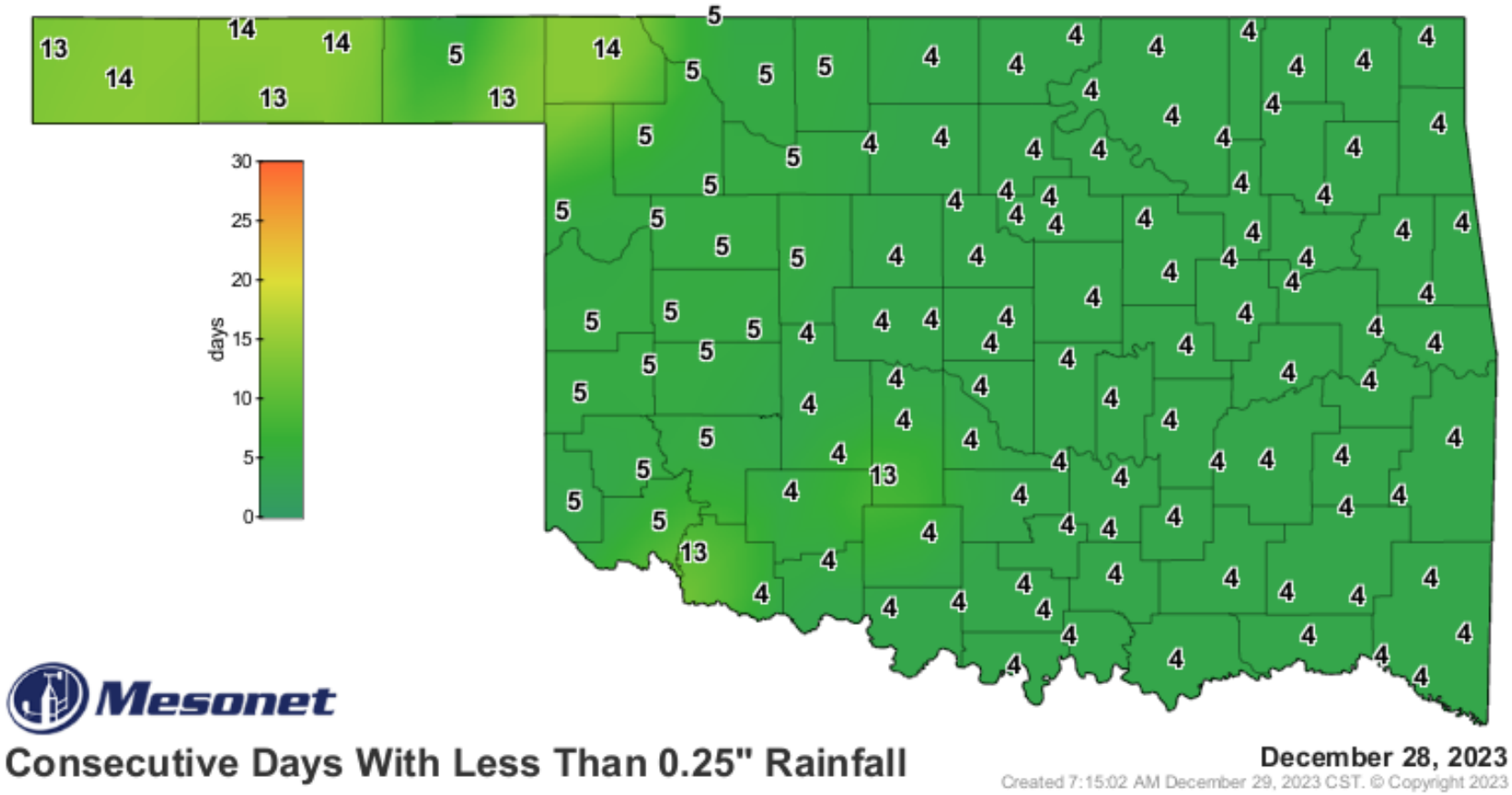
https://waterwatch.usgs.gov/index.php?id=pa28d_dry&sid=w__map|m__pa28d_dwc&r=o_

SOIL MOISTURE MAP



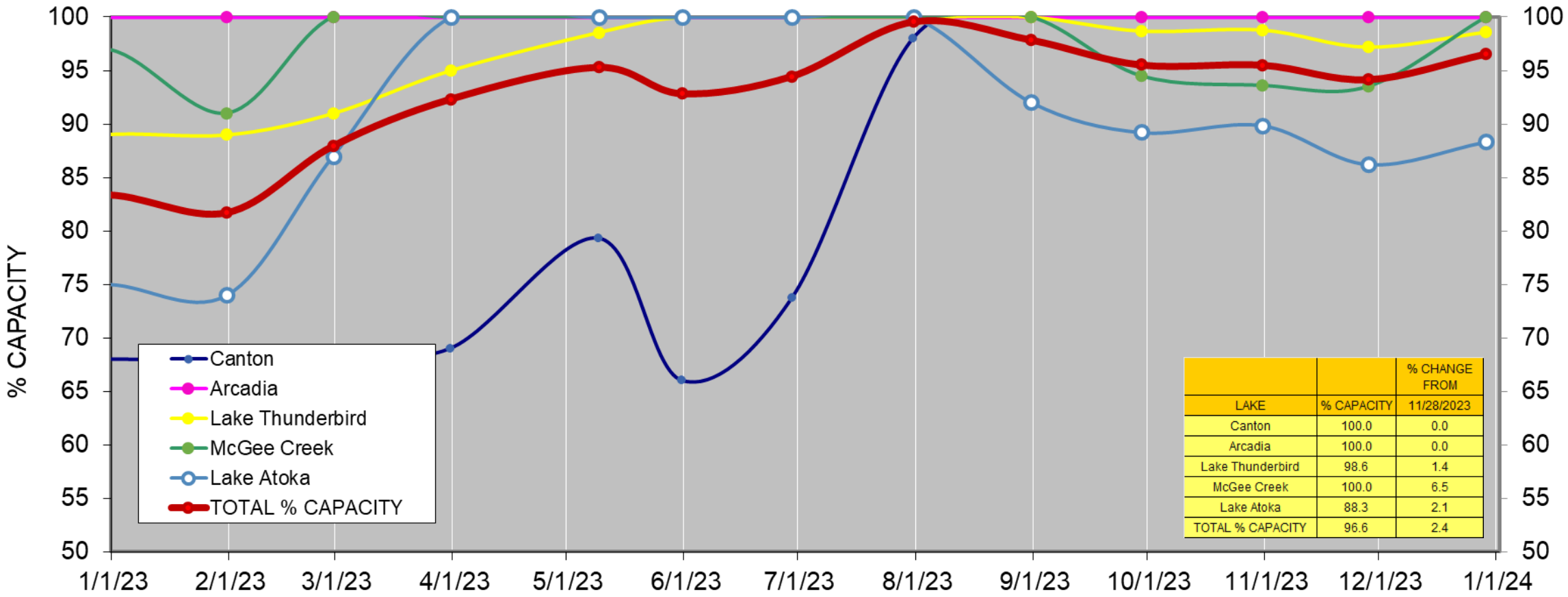
http://www.mesonet.org/index.php/weather/map/24-inch_fractional_water_index/soil_moisture

CONSECUTIVE DAYS WITHOUT RAINFALL MAP



Consecutive Days with Less Than 0.25 inches Rainfall | Mesonet

PERCENTAGE OF SURFACE WATER CONSERVATION CAPACITY IN CENTRAL OK RESERVOIRS

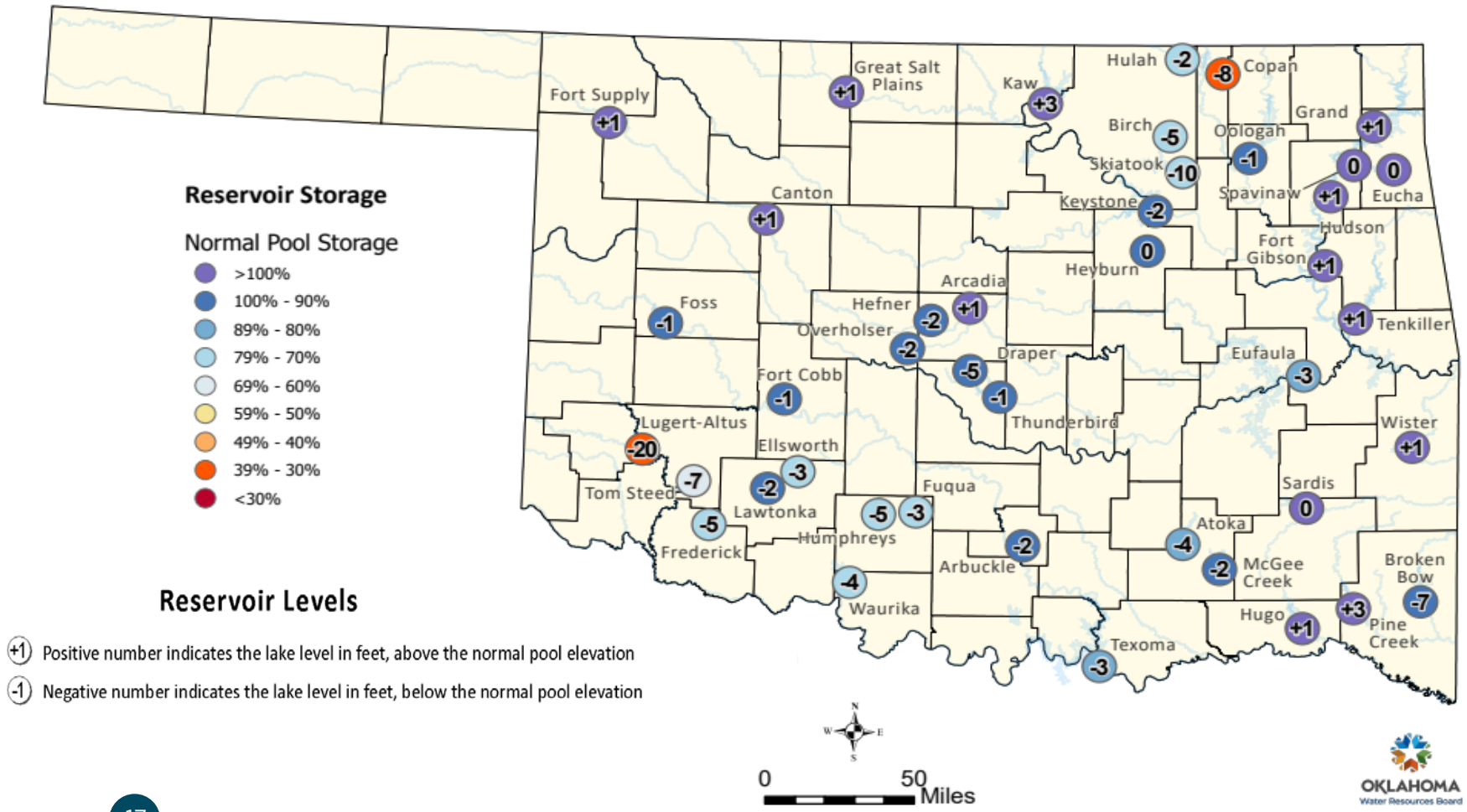


LAKE	% CAPACITY	% CHANGE FROM 11/28/2023
Canton	100.0	0.0
Arcadia	100.0	0.0
Lake Thunderbird	98.6	1.4
McGee Creek	100.0	6.5
Lake Atoka	88.3	2.1
TOTAL % CAPACITY	96.6	2.4

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

https://www.swt-wc.usace.army.mil/Daily_Morning_Reservoir_Report.pdf

OKLAHOMA RESERVOIR LEVELS AND STORAGE



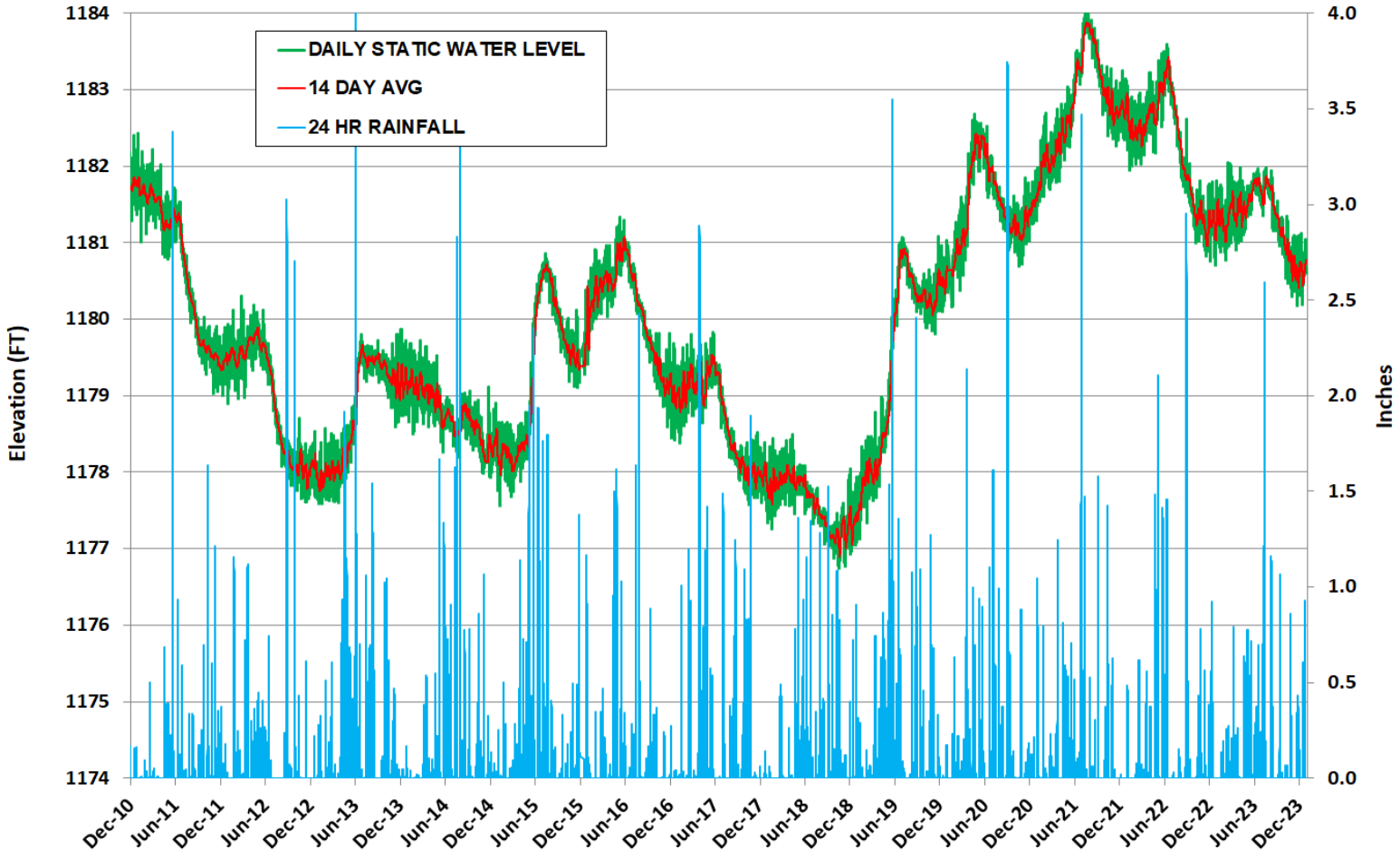
OKLAHOMA RESERVOIR LEVELS AND STORAGE AS OF 11/27/2023

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). For more information, please visit the OWRB's website: (https://www.owrb.ok.gov).

OKLAHOMA Water Resources Board

https://www.owrb.ok.gov/supply/drought/Lake_Levels_files/Monthly%20Reservoir%20Storage.pdf

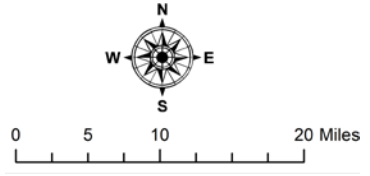
GROUNDWATER LEVELS SPENCER MESONET STATION



http://xwww.mesonet.org/index.php/weather/groundwater/

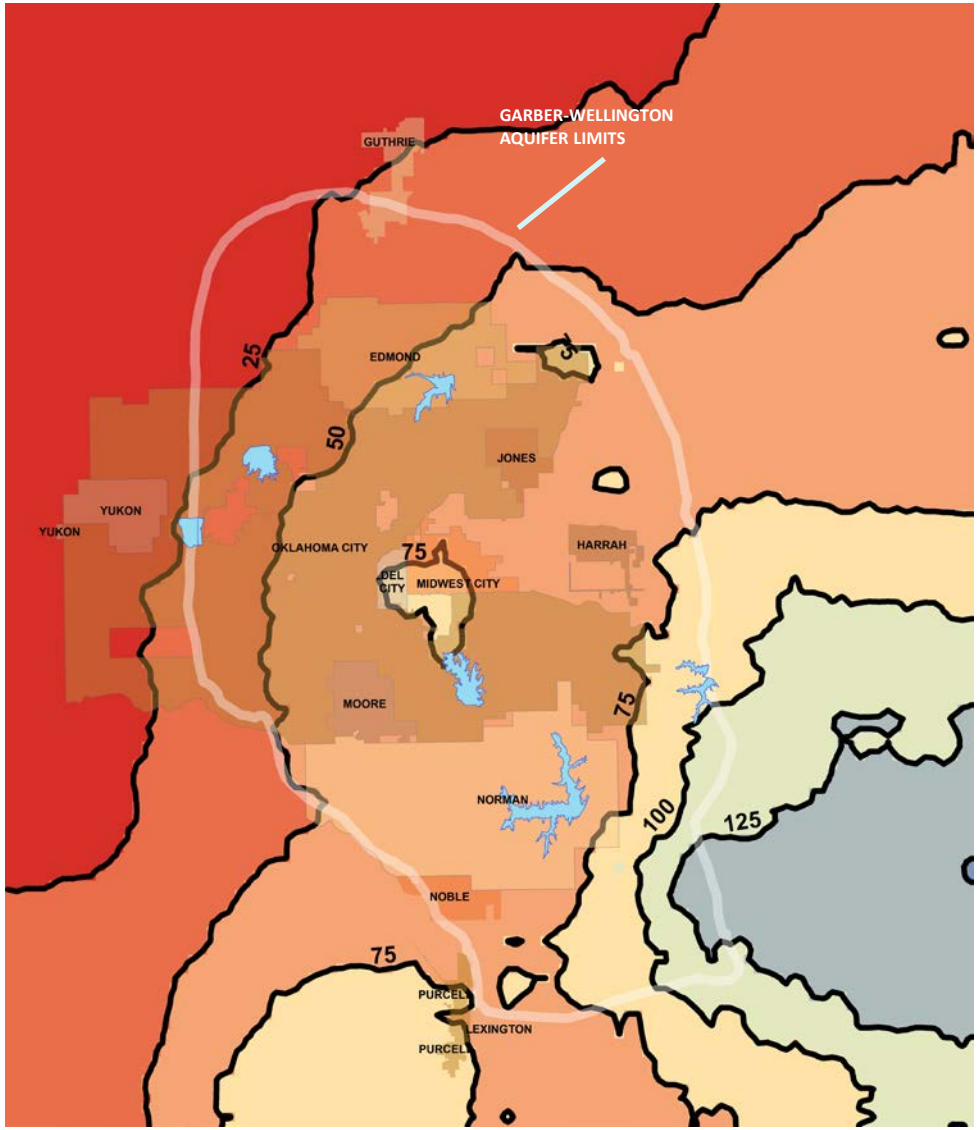
AQUIFER RECHARGE

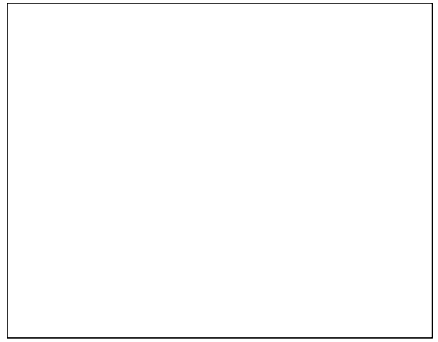
- Mean aquifer recharge in December 2023 was 0.06 inches.
- Normal average recharge for December is 0.18 inches.
- The 2023 cumulative yearly average is 1.17 inches. Normal recharge is 2.71.
- Recharge was 43% of normal.

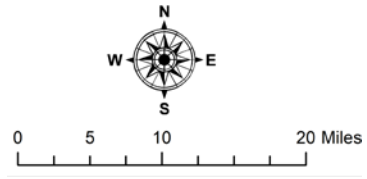


PERCENT TOTAL CUMULATIVE AQUIFER RECHARGE – Last 12 Months

- Most of the recharge for 2023 is south and east of Shawnee.
- There was 0.06 inches of recharge to the aquifer in the month of December 2023.
- Normal yearly average recharge is 2.65 inches.

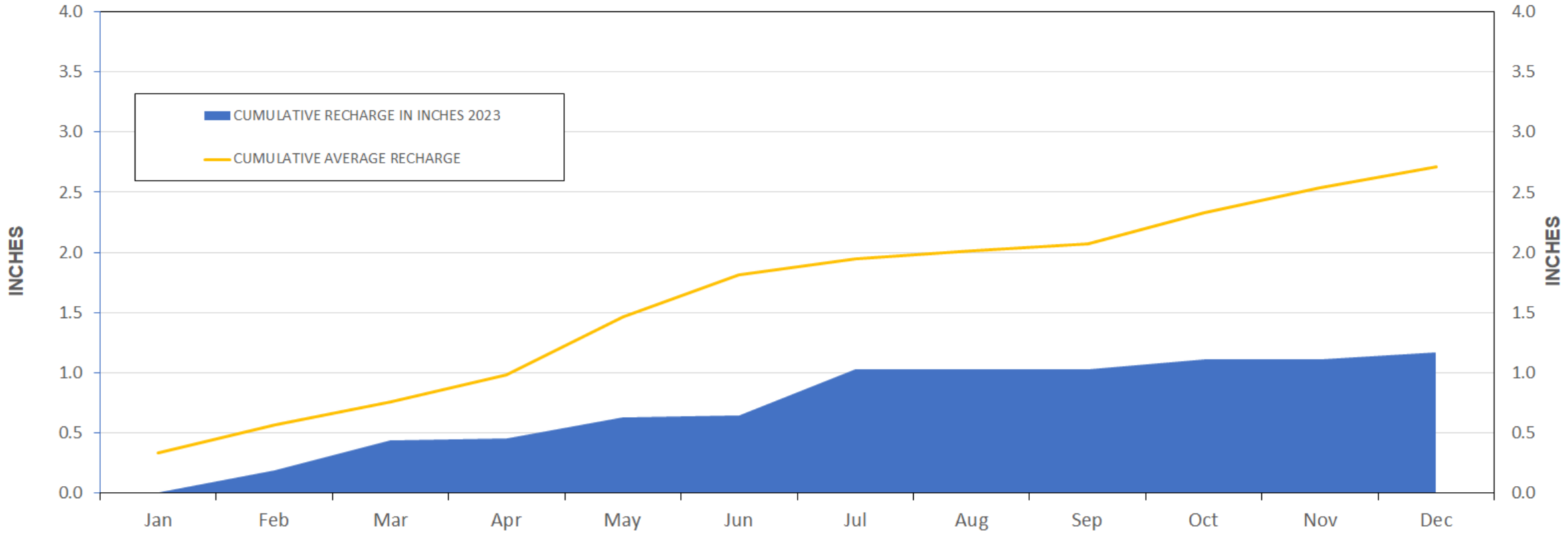






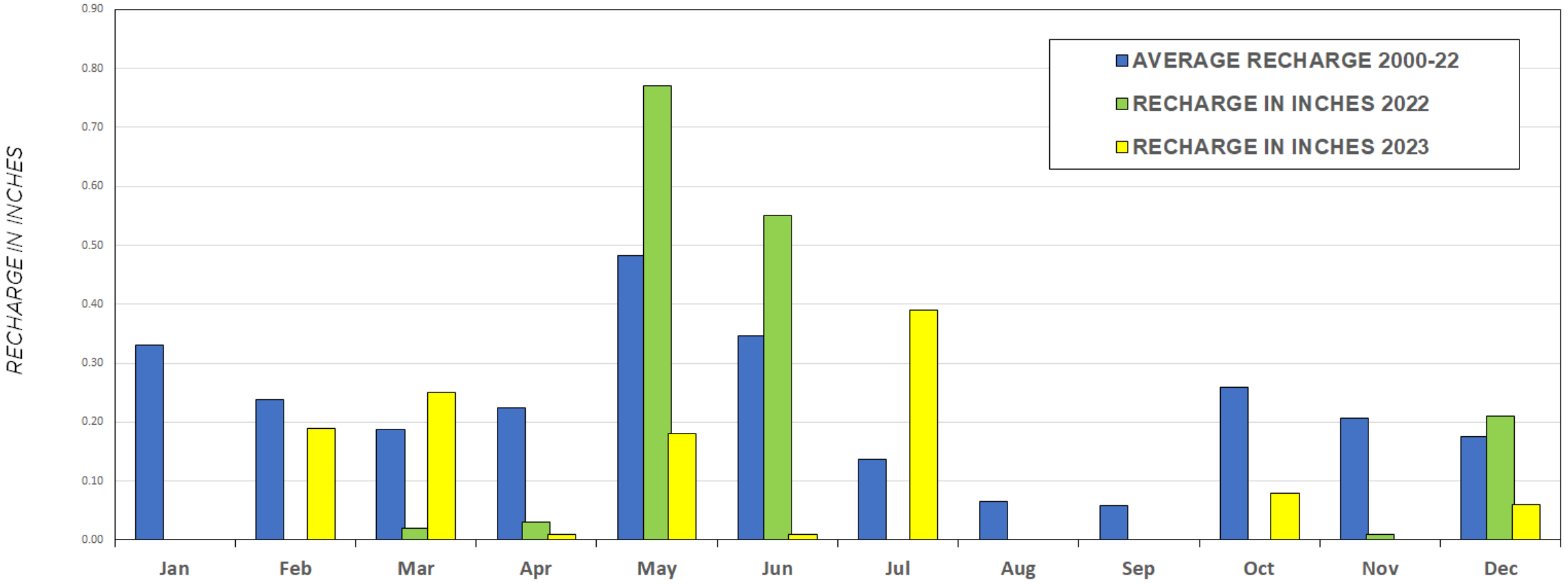
RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM

ACCUMULATED CENTRAL OKLAHOMA AQUIFER SYSTEM RECHARGE 2023

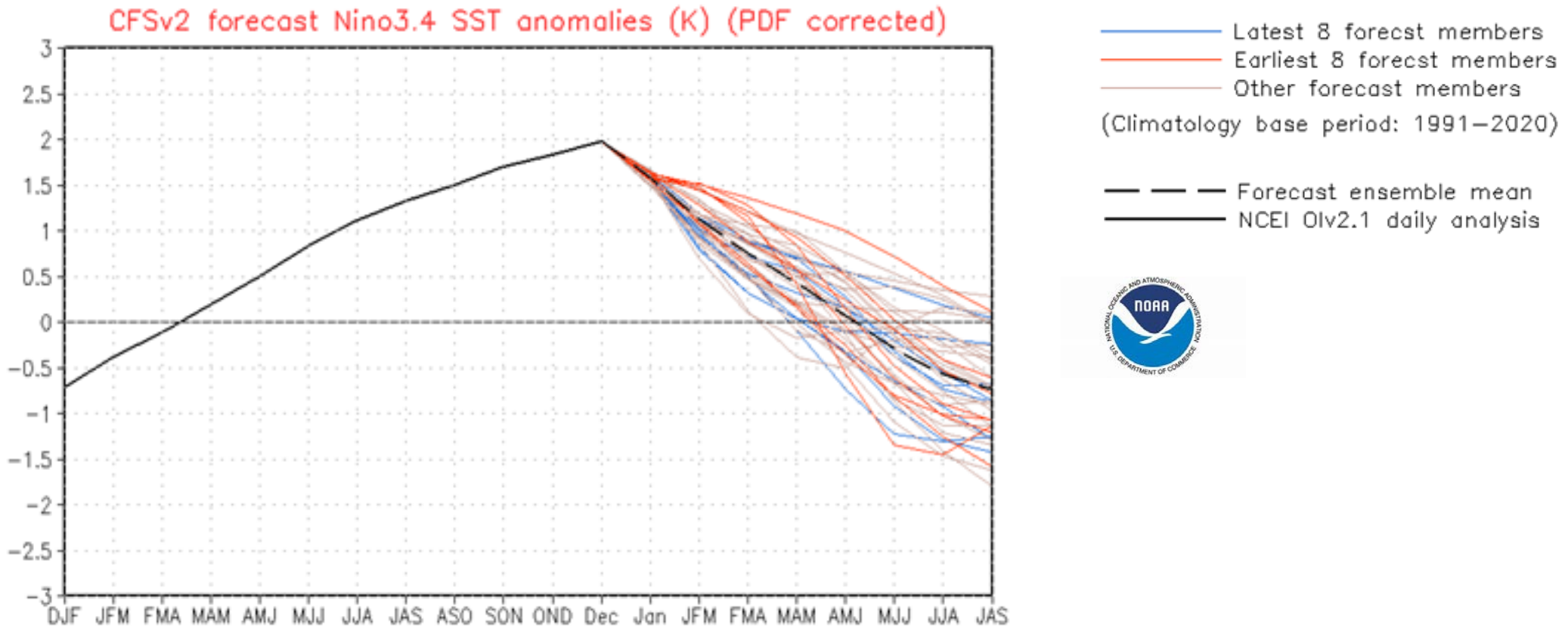


RECHARGE CHARTS CENTRAL OKLAHOMA AQUIFER SYSTEM CONTINUED

MONTHLY AQUIFER RECHARGE 2023

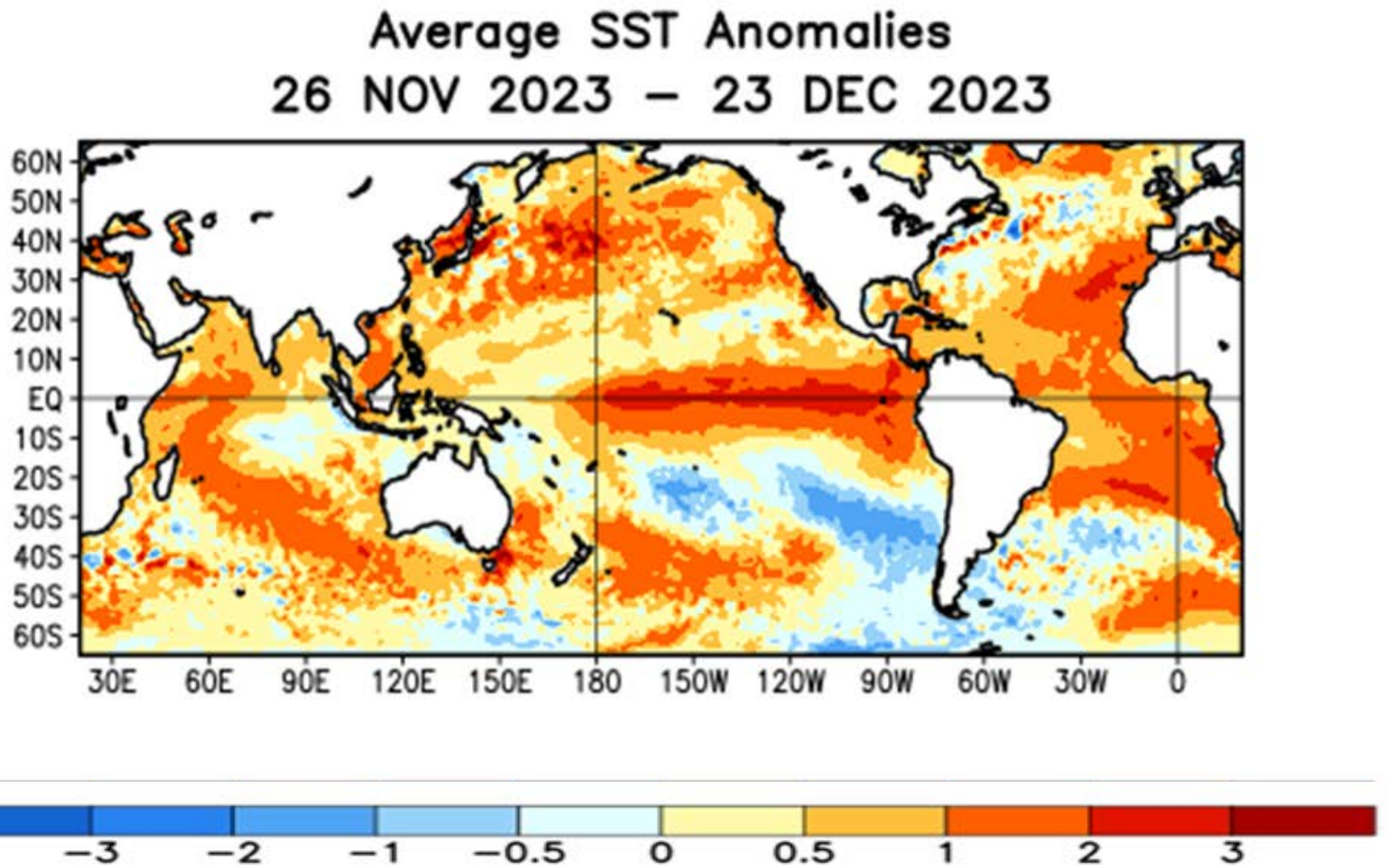


ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



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

ENSO CYCLE - RECENT EVOLUTION, CURRENT STATUS AND PREDICTIONS



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

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 expected to continue through the Northern Hemisphere winter, with a transition to ENSO-neutral favored during April-June 2024 (60% chance).

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

QUESTIONS?

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GOVERNMENTS