



¿Se Comporto el Nino?

¿Se Comportó El Niño?

John Nielsen-Gammon
Texas State Climatologist



U.S. Drought Monitor Texas

October 17, 2023

(Released Thursday, Oct. 19, 2023)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	11.24	88.76	74.43	53.45	26.75	7.02
Last Week 10-10-2023	9.67	90.33	74.95	55.96	28.28	6.27
3 Months Ago 07-18-2023	24.65	75.35	43.06	11.71	4.49	1.06
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-26-2023	3.03	96.97	80.64	59.66	38.06	12.68
One Year Ago 10-18-2022	6.59	93.41	71.77	43.11	12.80	1.40

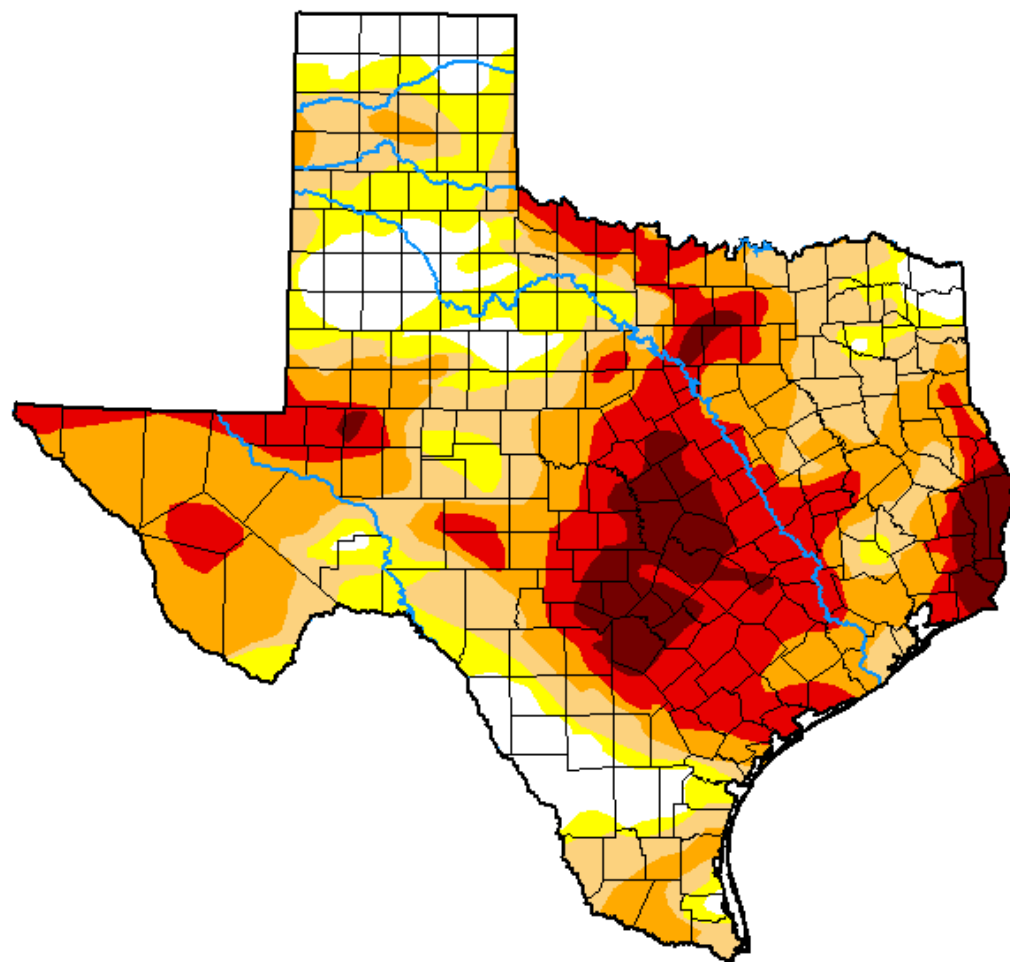
Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

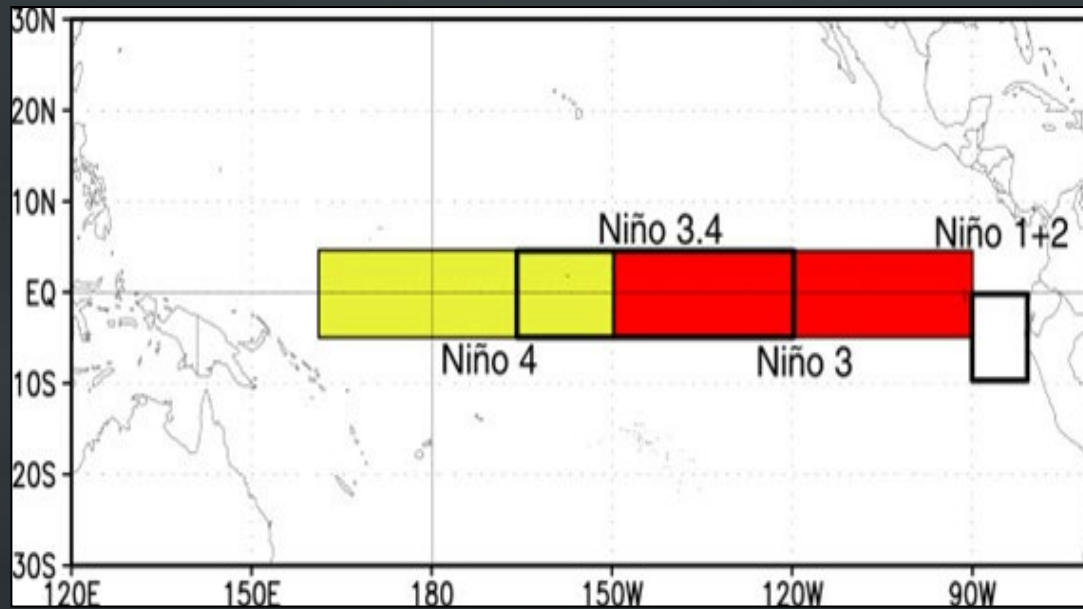
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Author:

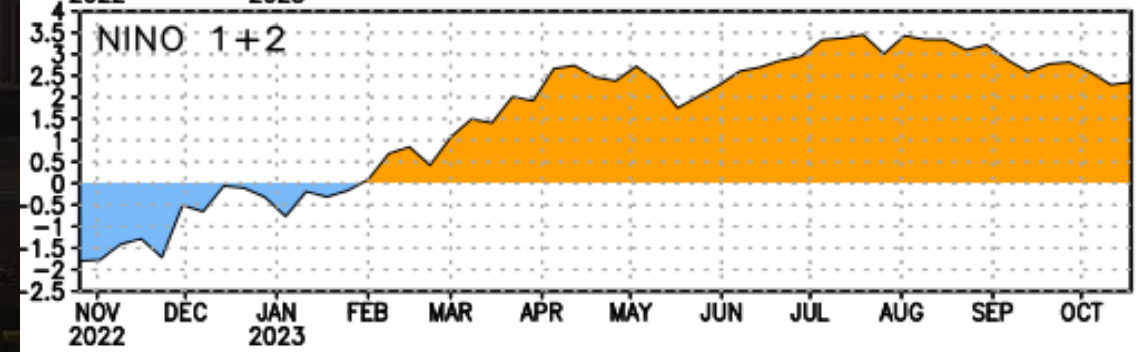
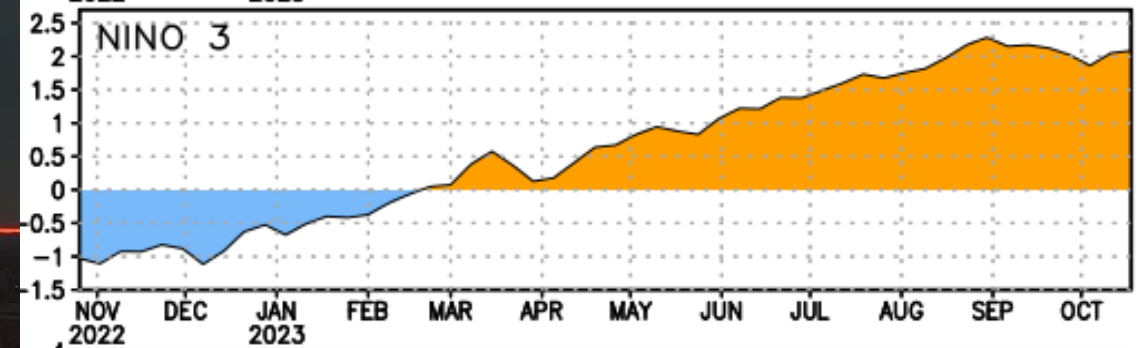
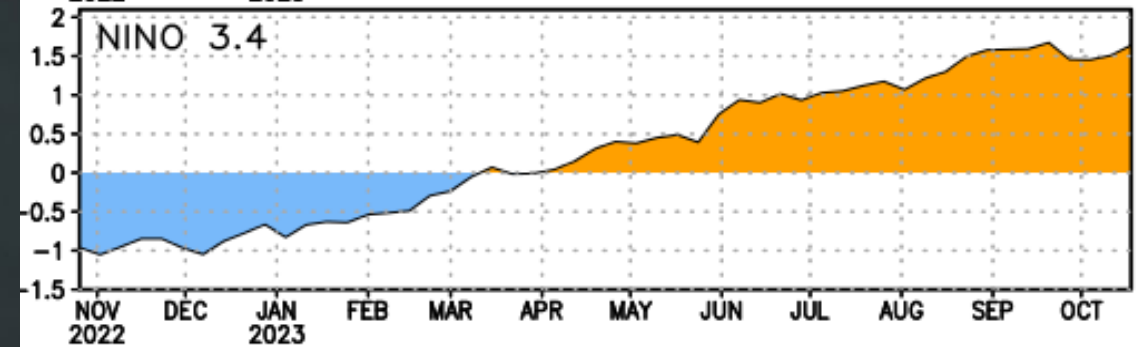
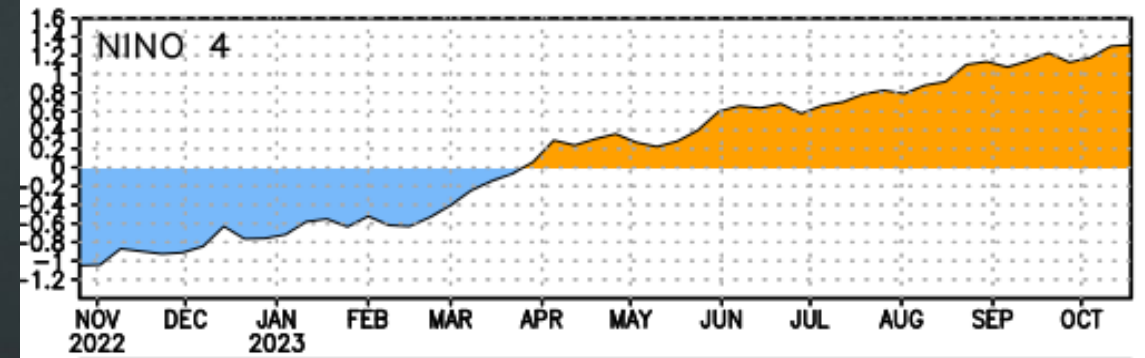
Rocky Bilotta
NCEI/NOAA



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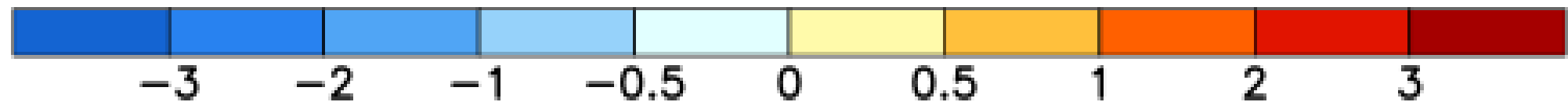
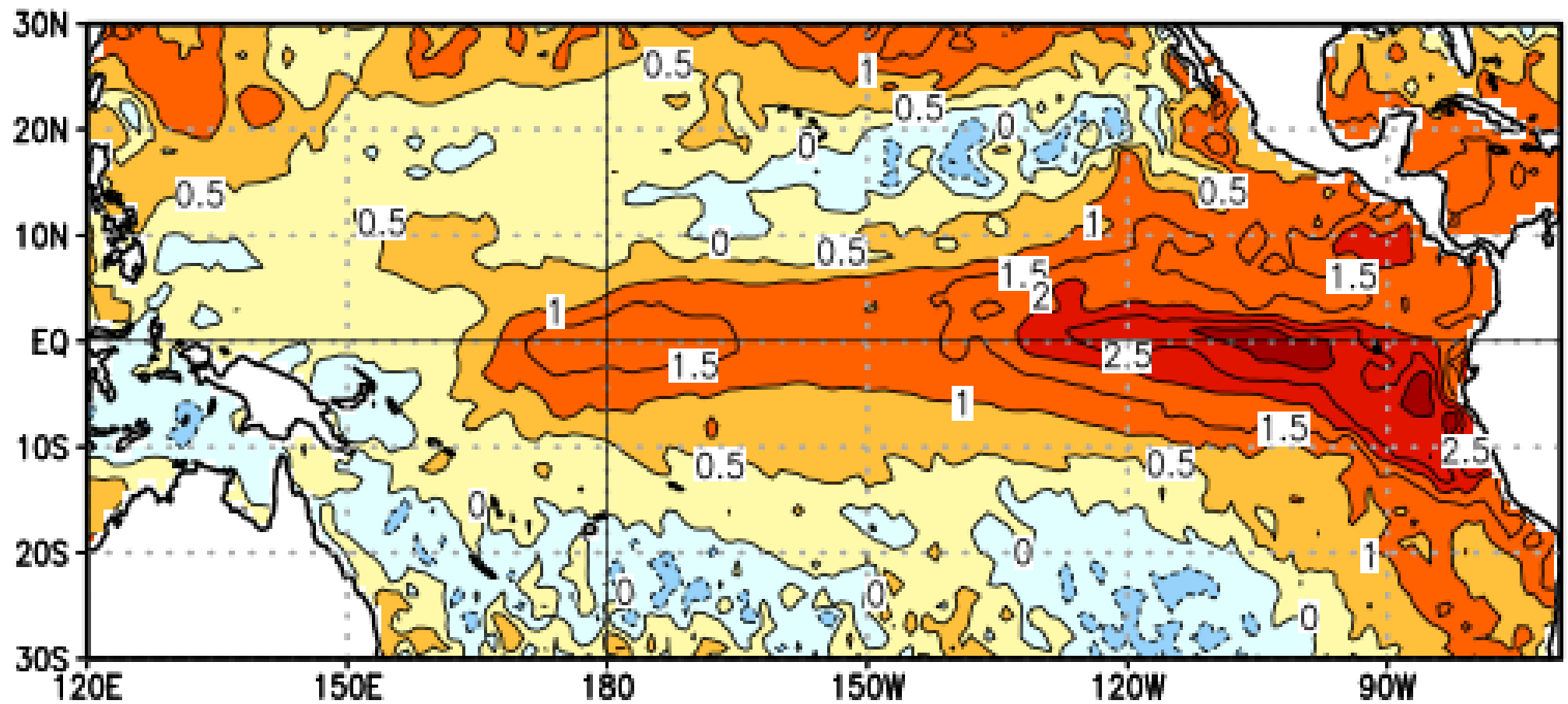


SST Anomalies



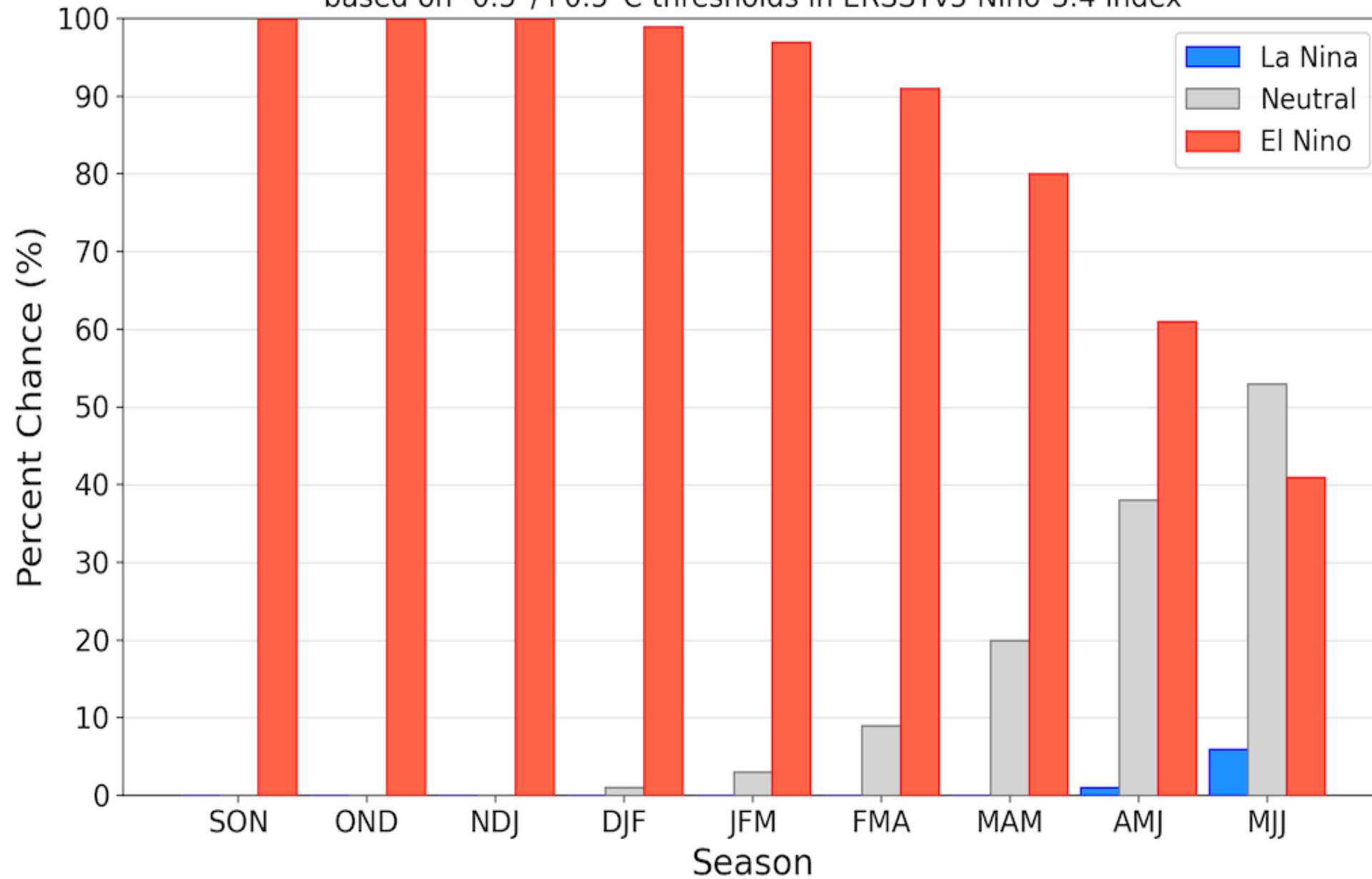
Average SST Anomalies

24 SEP 2023 – 21 OCT 2023



Official NOAA CPC ENSO Probabilities (issued Oct. 2023)

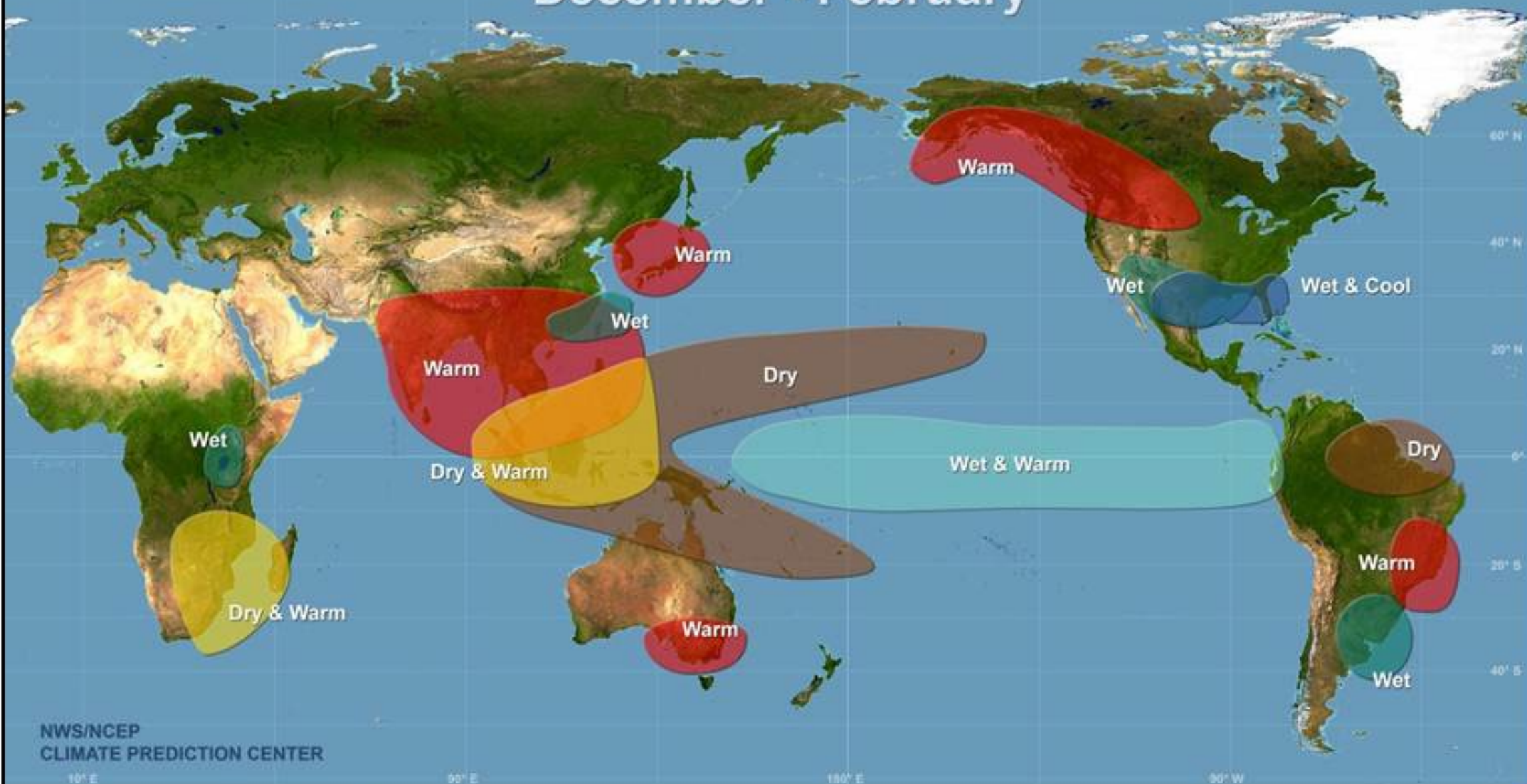
based on $-0.5^{\circ}/+0.5^{\circ}\text{C}$ thresholds in ERSSTv5 Niño-3.4 index





Warm Episode Relationships

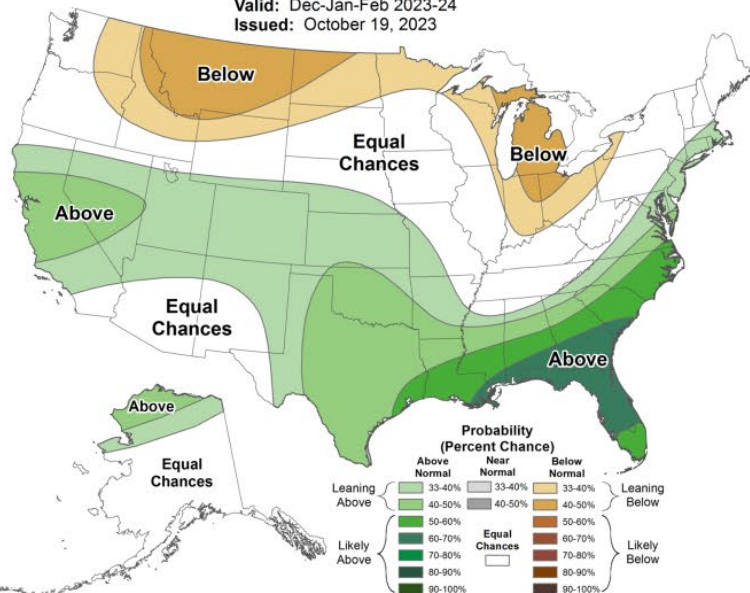
December - February





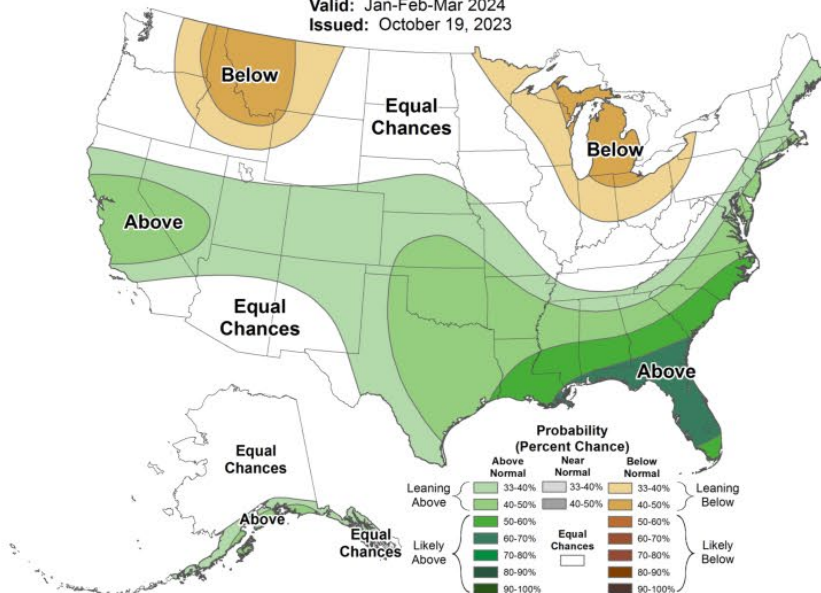
Seasonal Precipitation Outlook

Valid: Dec-Jan-Feb 2023-24
Issued: October 19, 2023



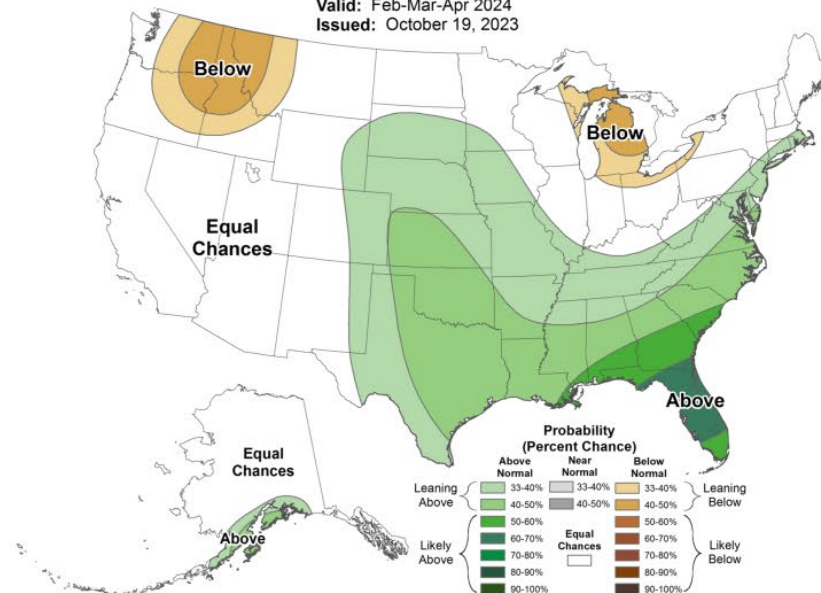
Seasonal Precipitation Outlook

Valid: Jan-Feb-Mar 2024
Issued: October 19, 2023



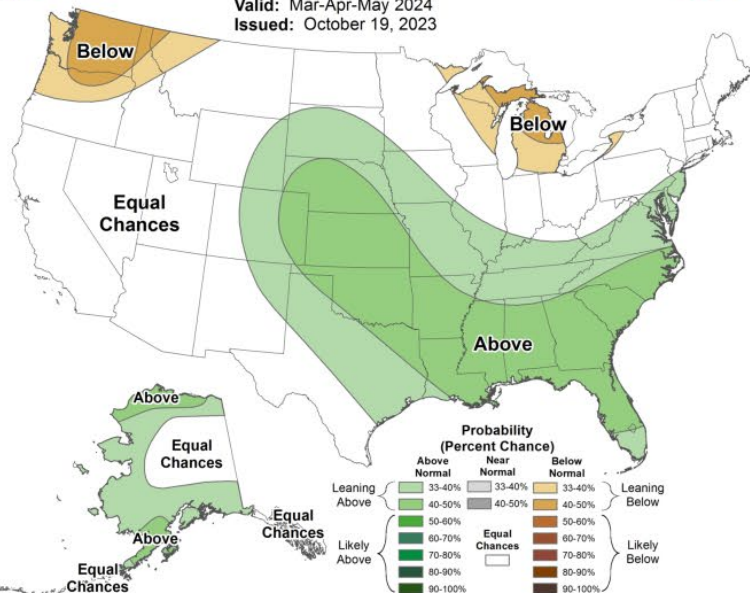
Seasonal Precipitation Outlook

Valid: Feb-Mar-Apr 2024
Issued: October 19, 2023



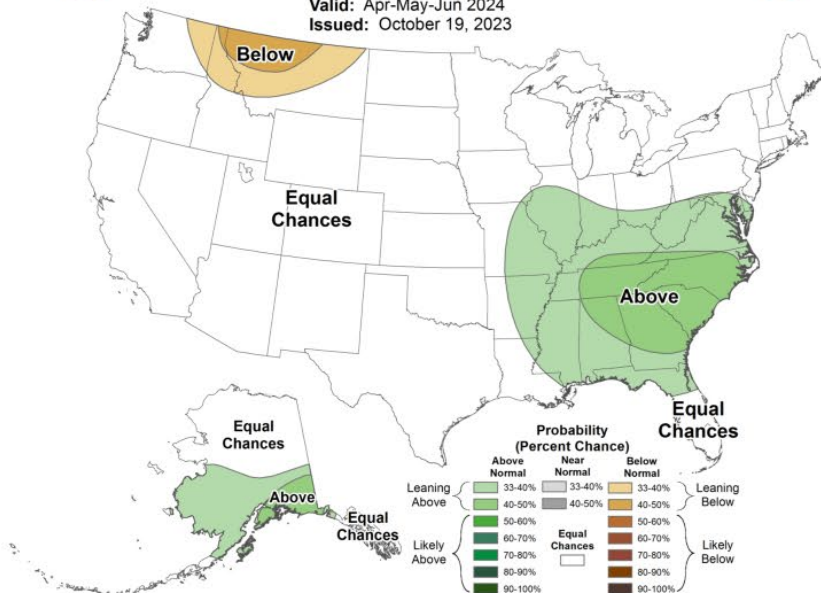
Seasonal Precipitation Outlook

Valid: Mar-Apr-May 2024
Issued: October 19, 2023



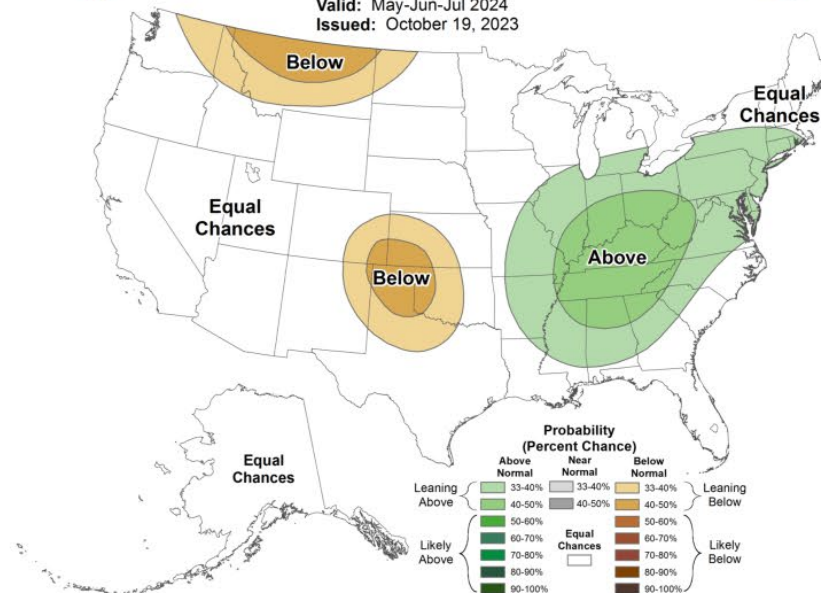
Seasonal Precipitation Outlook

Valid: Apr-May-Jun 2024
Issued: October 19, 2023



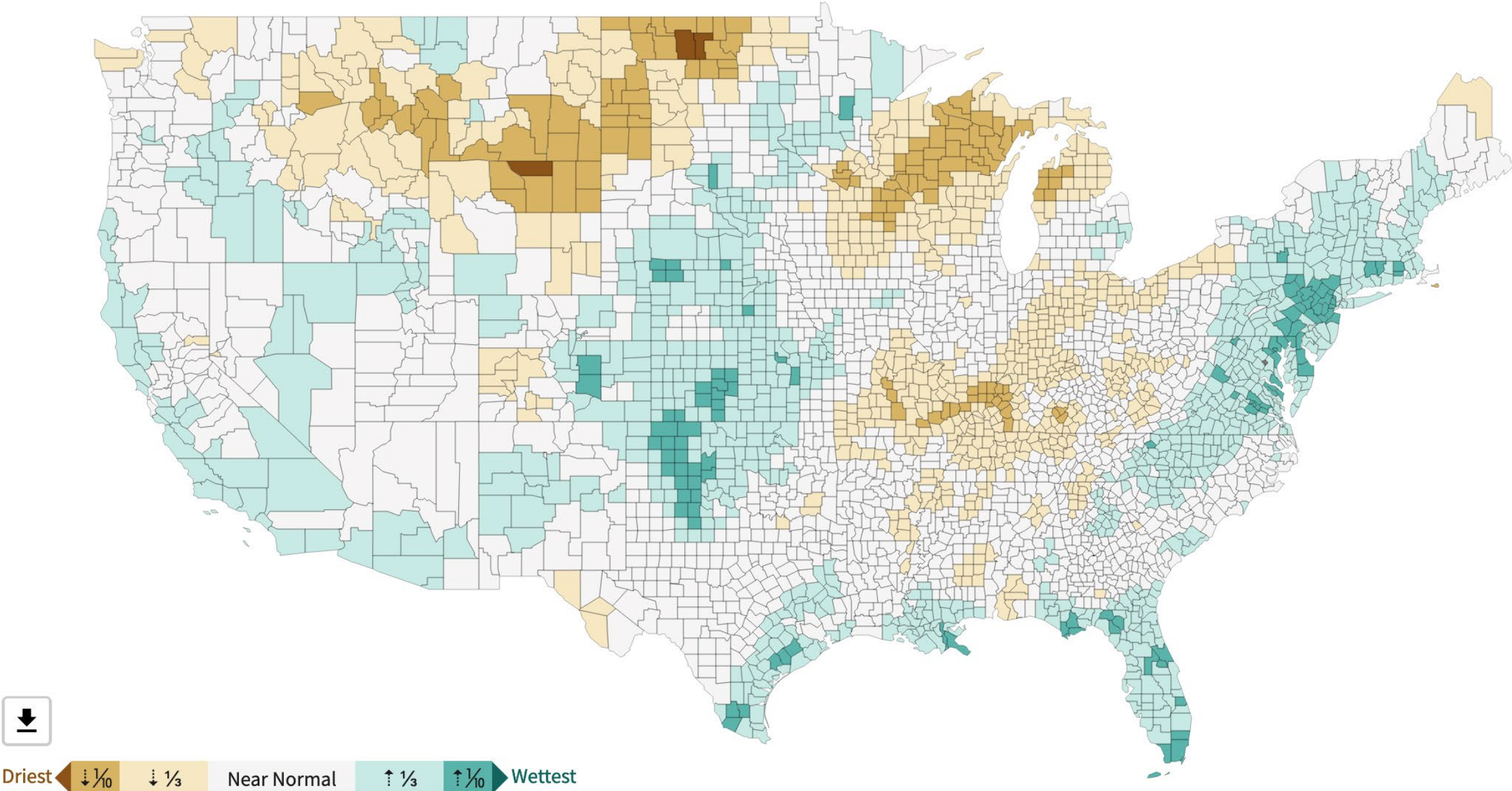
Seasonal Precipitation Outlook

Valid: May-Jun-Jul 2024
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County Precipitation Rank (129 years)

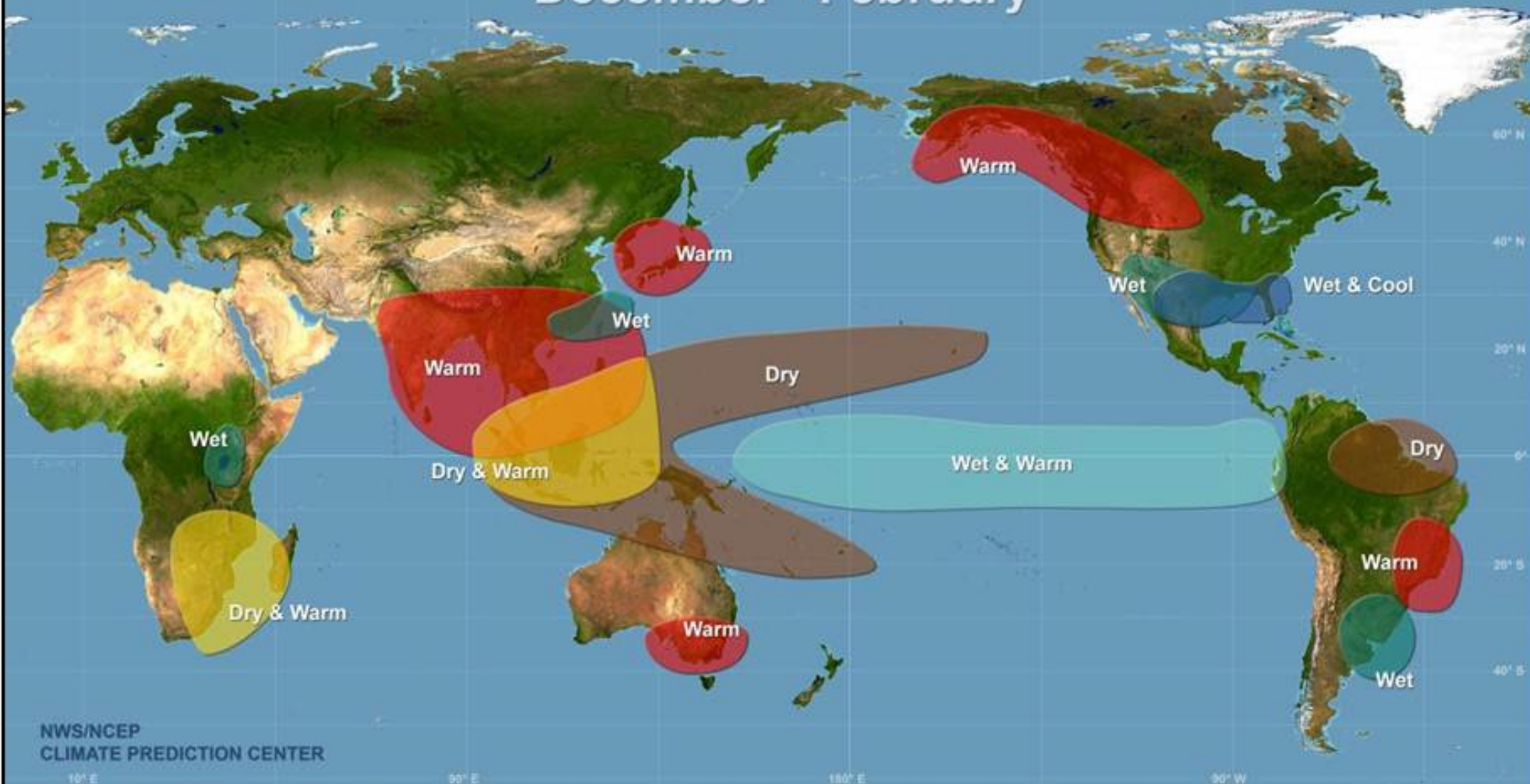
November 2023 - February 2024





Warm Episode Relationships

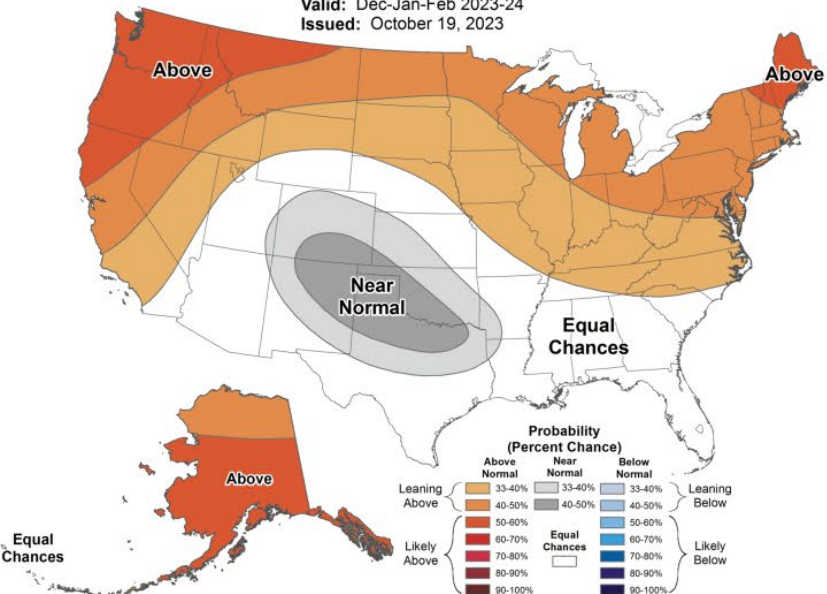
December - February





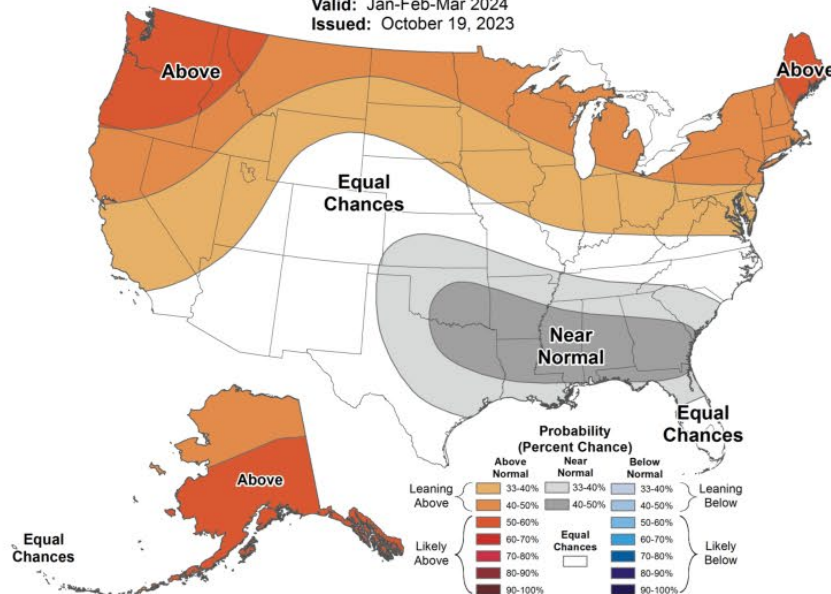
Seasonal Temperature Outlook

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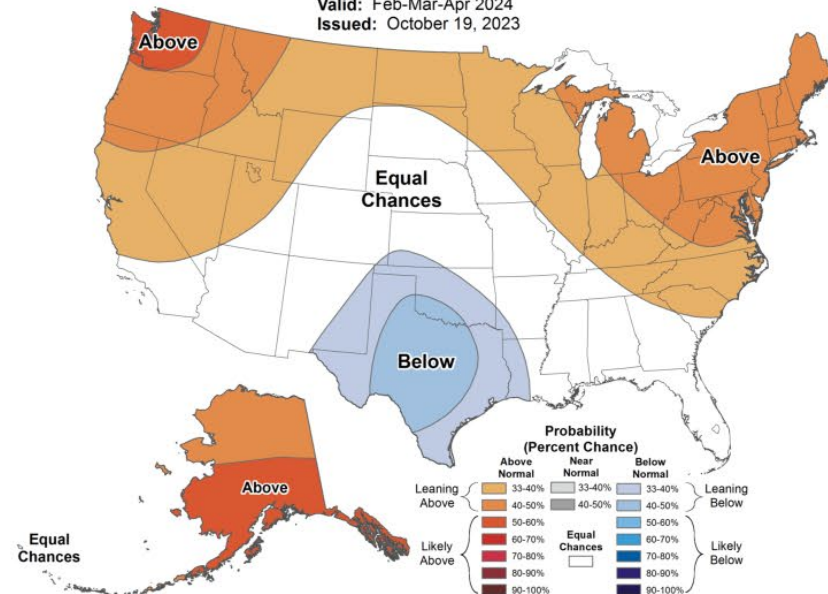
Seasonal Temperature Outlook

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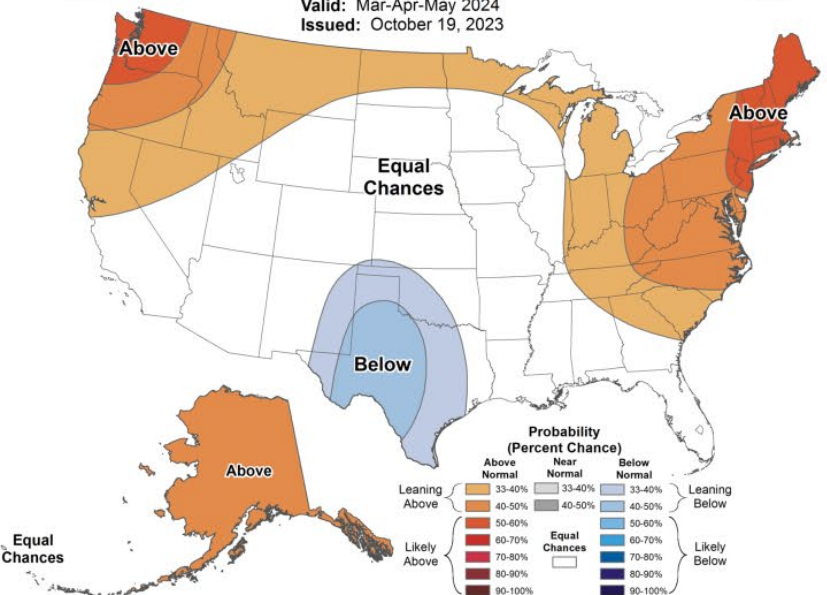
Seasonal Temperature Outlook

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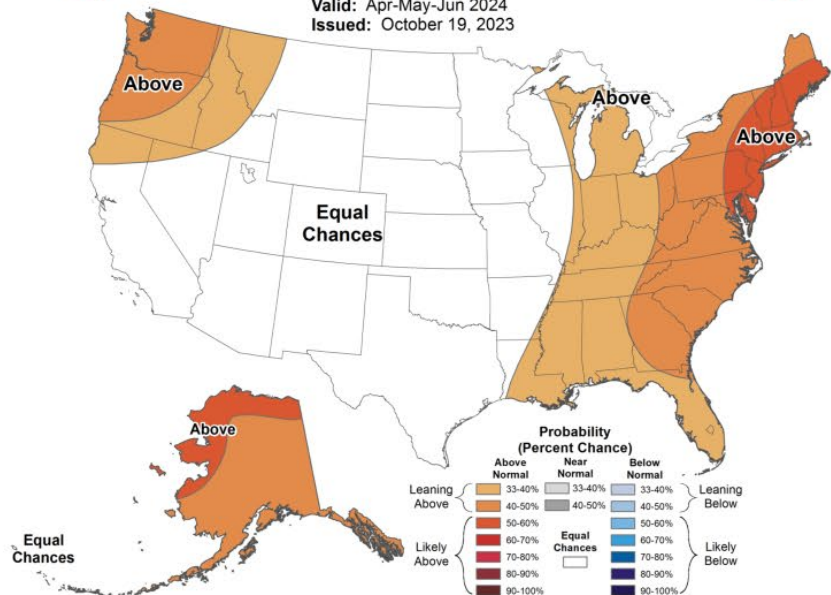
Seasonal Temperature Outlook

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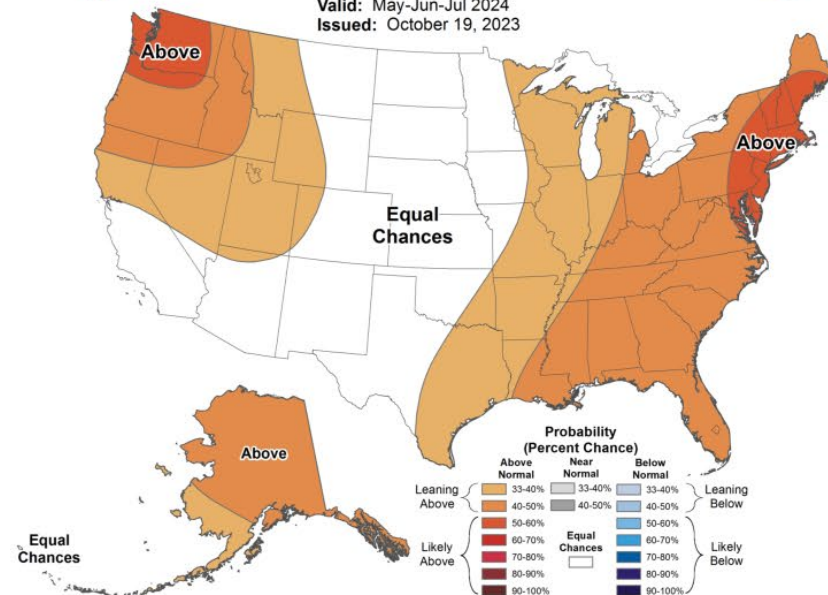
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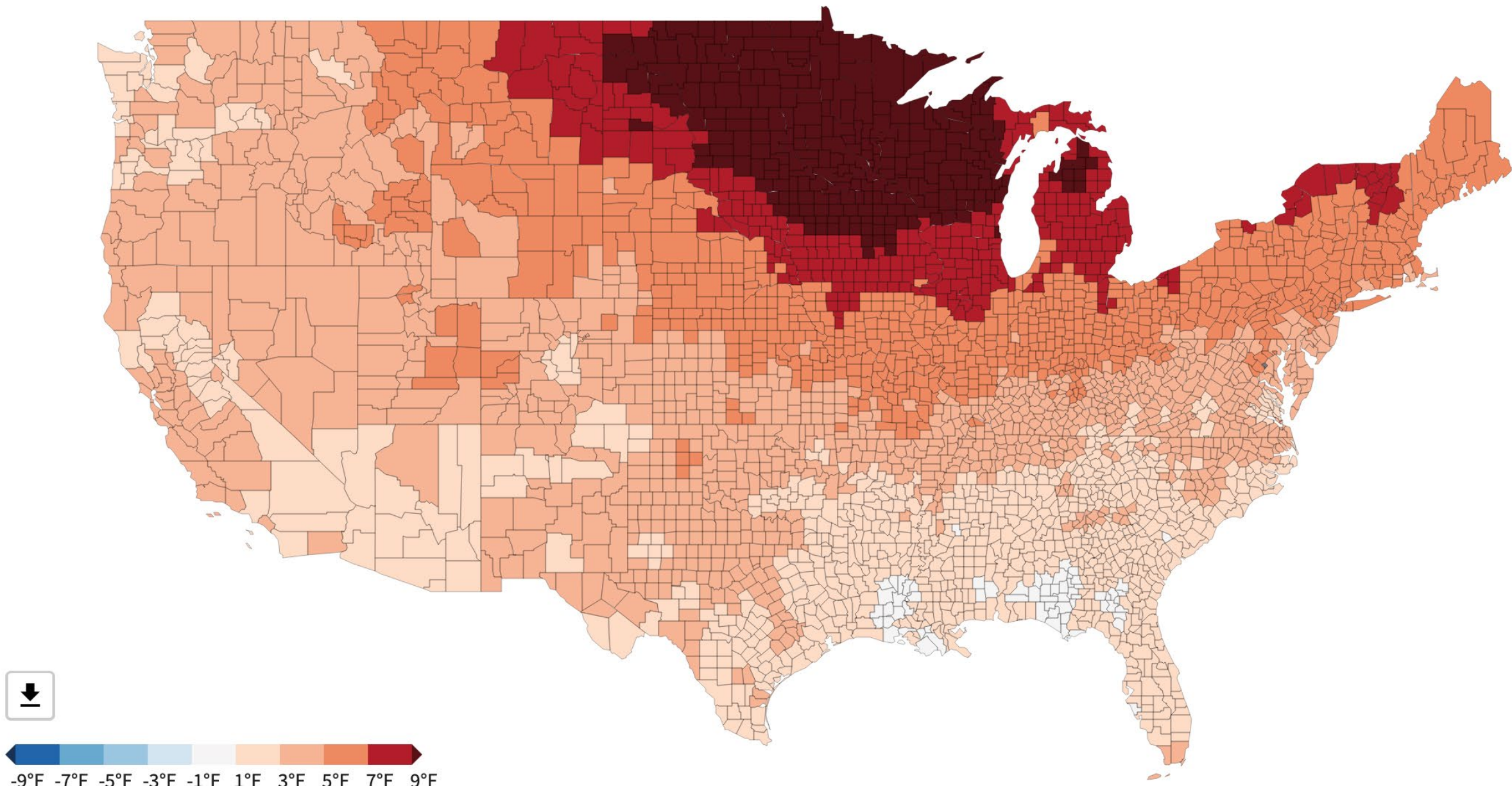
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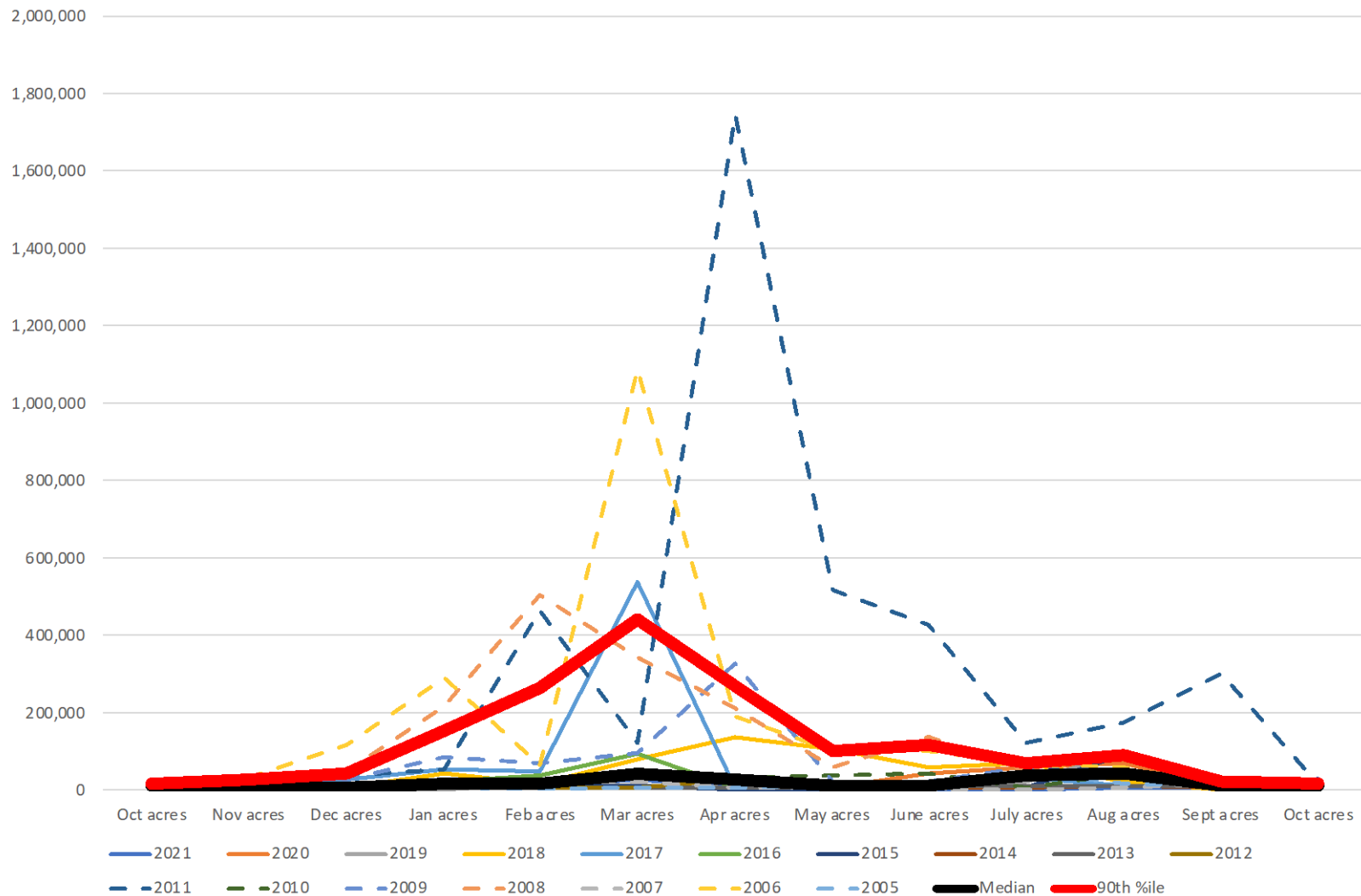


County Average Temperature Anomaly

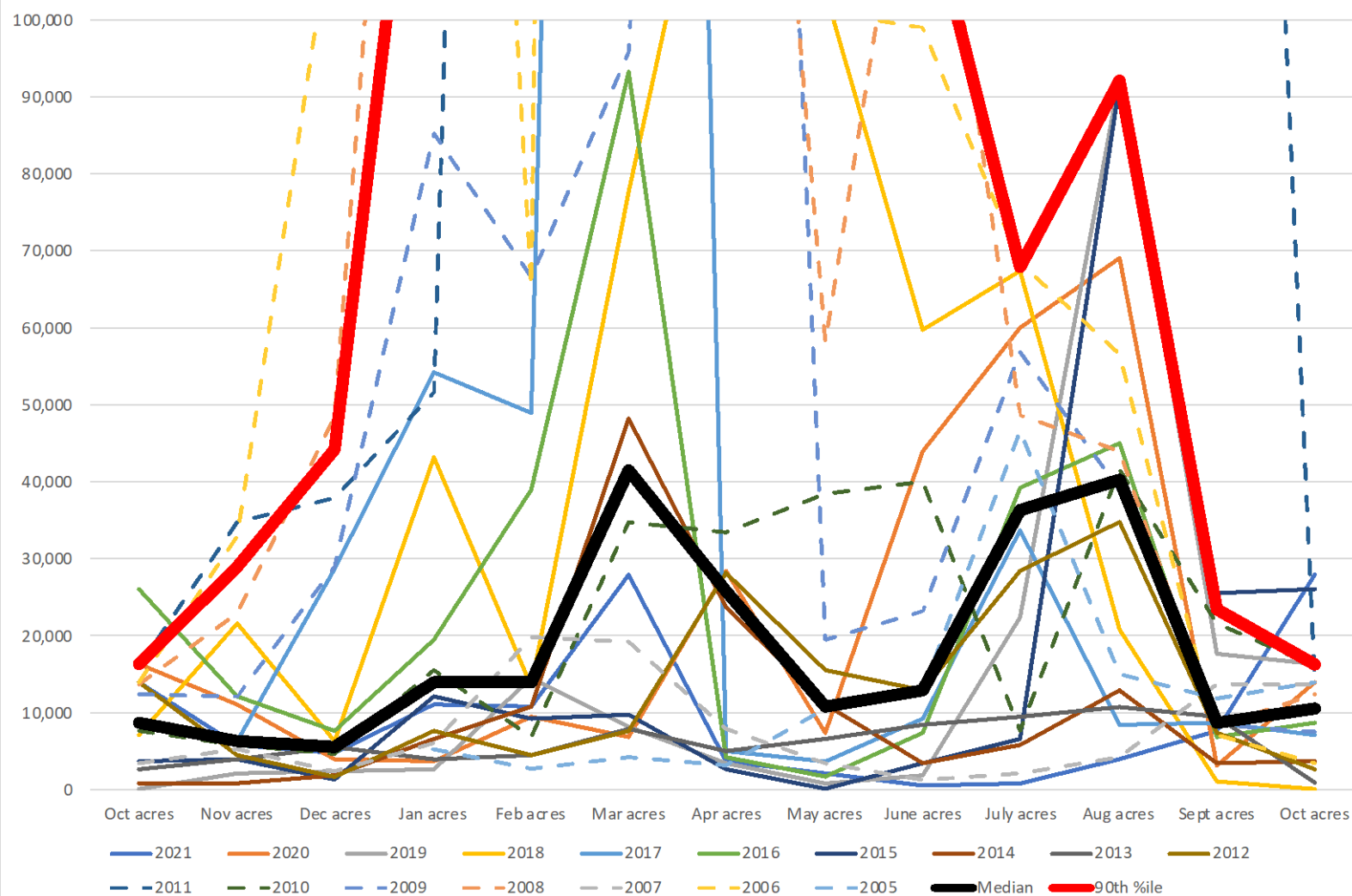
November 2023 - February 2024



Acres Burned in Texas, 2005-2021
Data: Texas Forest Service

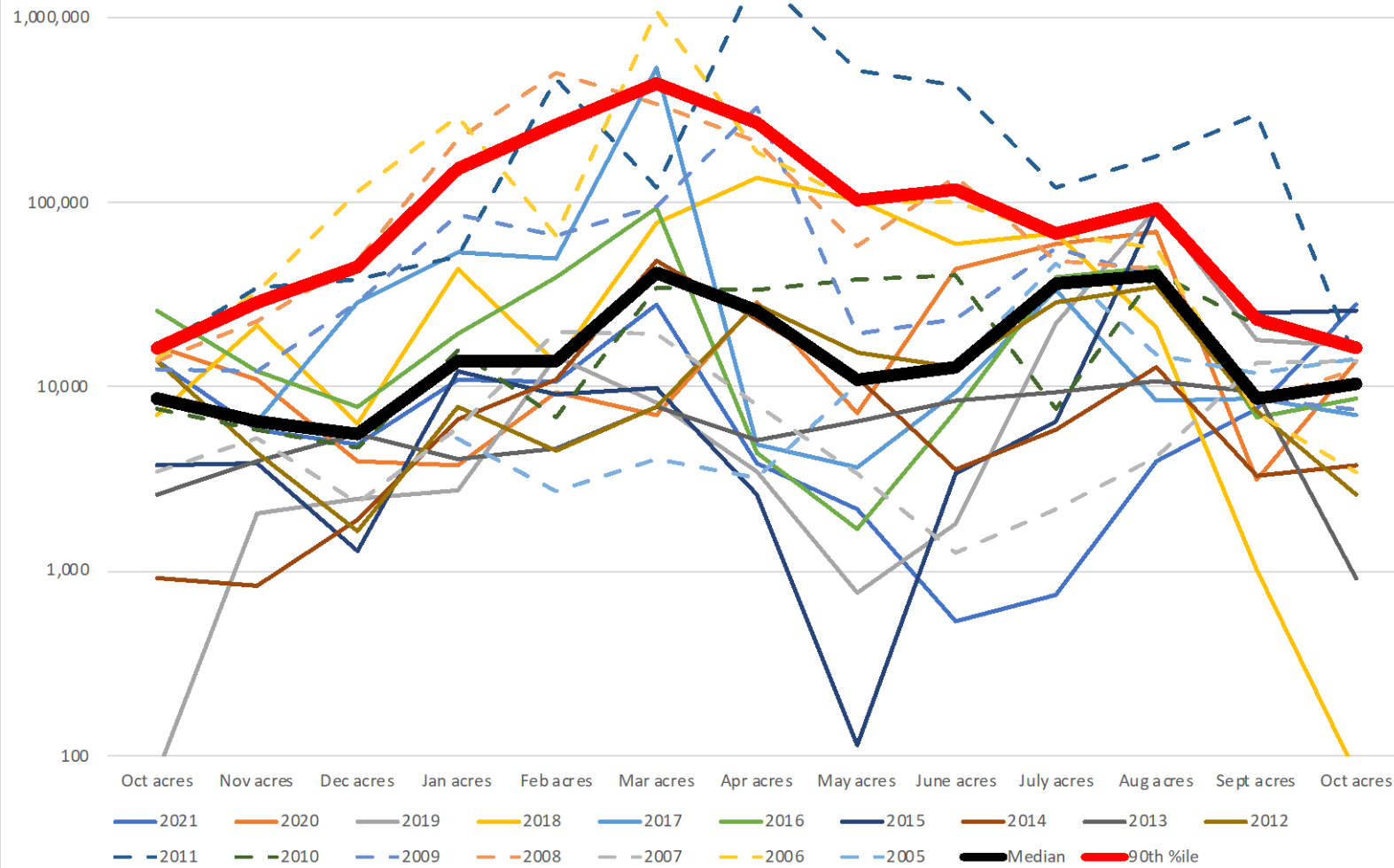


Data: Texas Forest Service



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U.S. Drought Monitor Texas

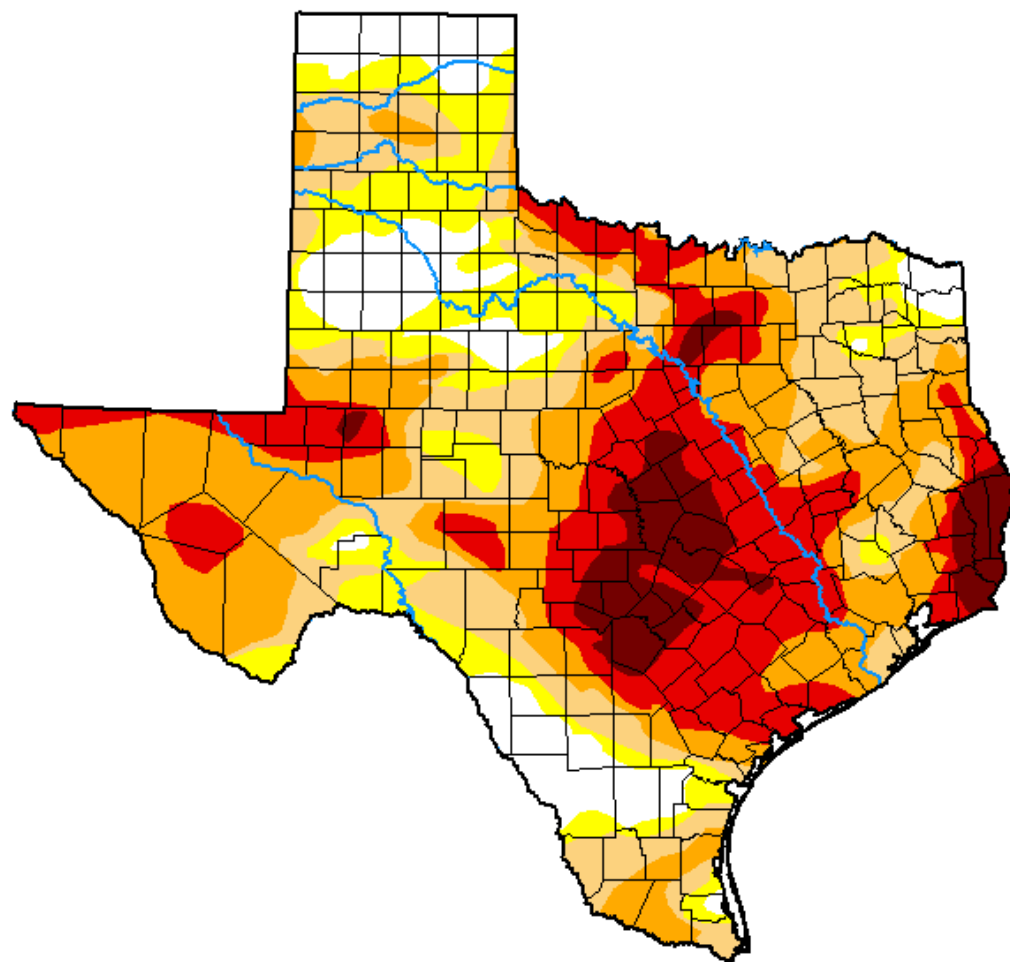
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Rocky Bilotta
NCEI/NOAA



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U.S. Drought Monitor Texas

March 5, 2024

(Released Thursday, Mar. 7, 2024)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	55.96	44.04	22.67	8.94	1.97	0.00
Last Week 02-27-2024	57.31	42.69	22.67	8.94	1.97	0.00
3 Months Ago 12-05-2023	33.88	66.12	42.99	18.14	6.38	0.86
Start of Calendar Year 01-02-2024	39.60	60.40	39.47	17.78	5.68	0.68
Start of Water Year 09-26-2023	3.03	96.97	80.64	59.66	38.06	12.68
One Year Ago 03-07-2023	20.52	79.48	64.01	35.54	13.41	1.84

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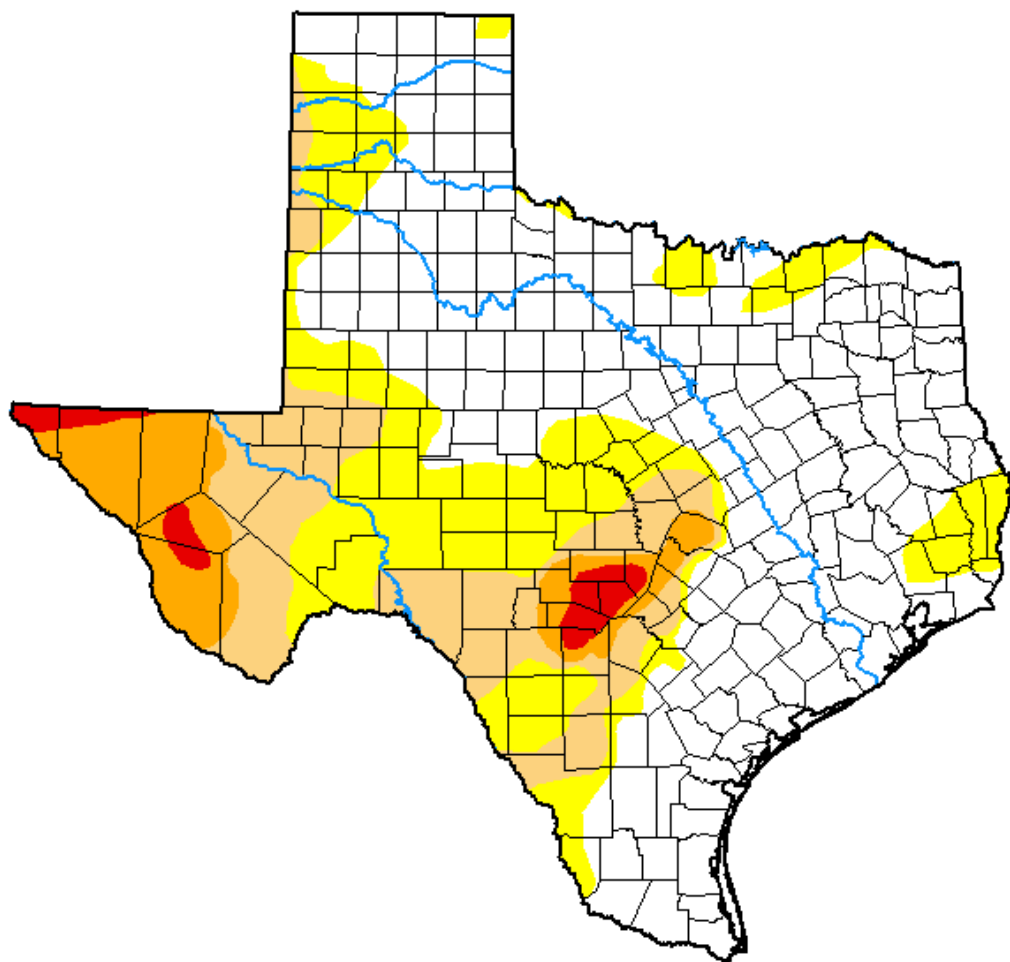
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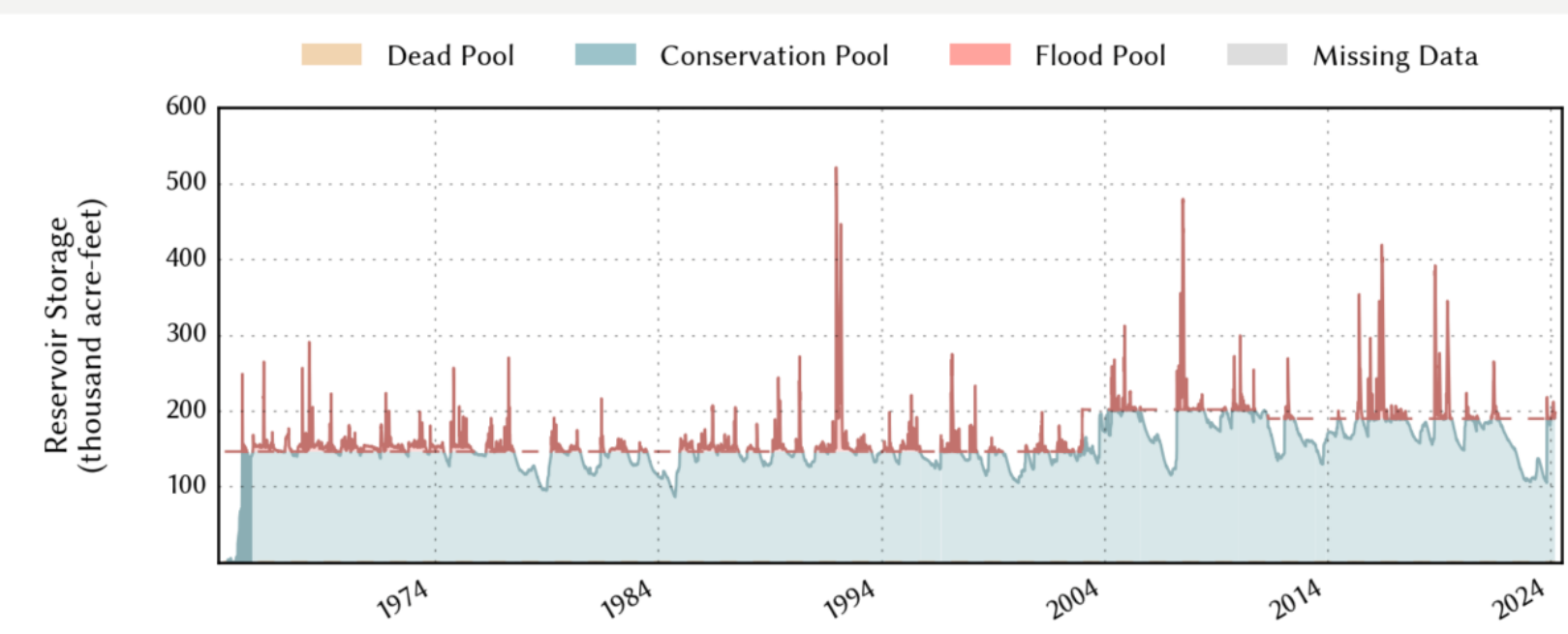
Curtis Riganti
National Drought Mitigation Center



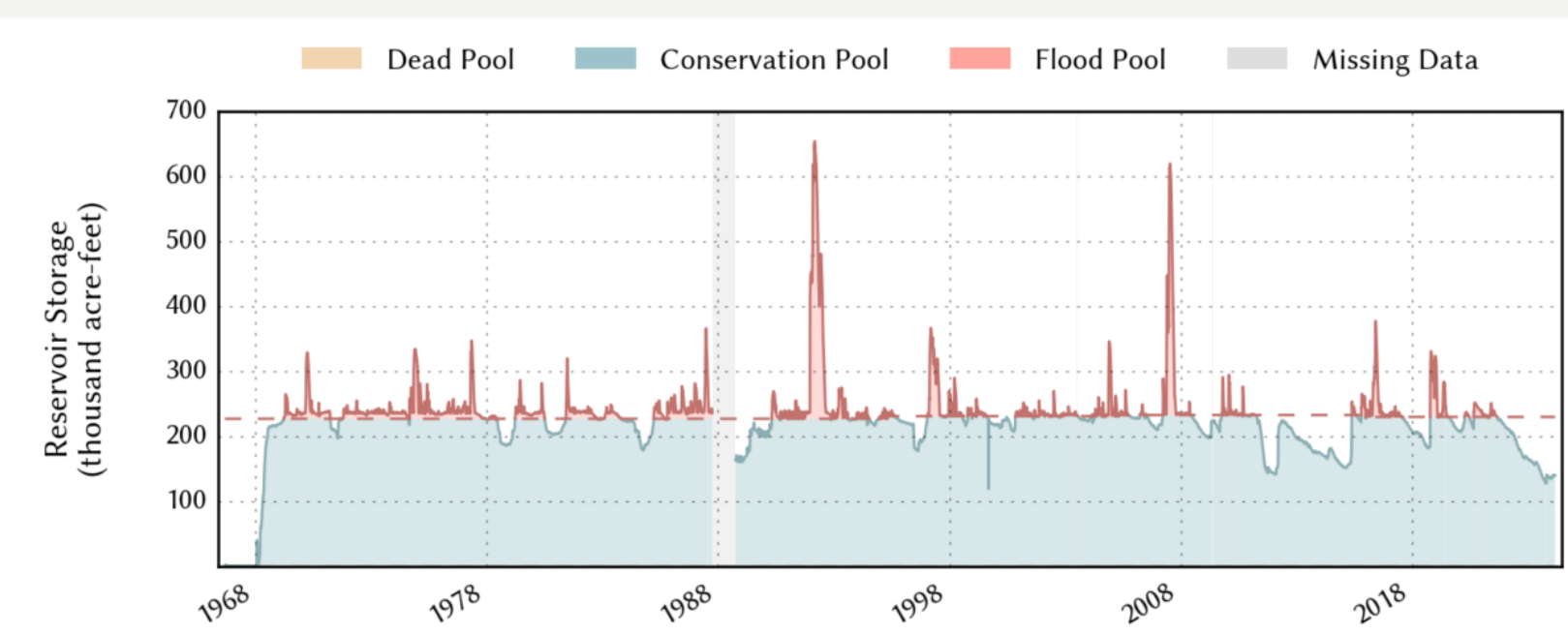
droughtmonitor.unl.edu



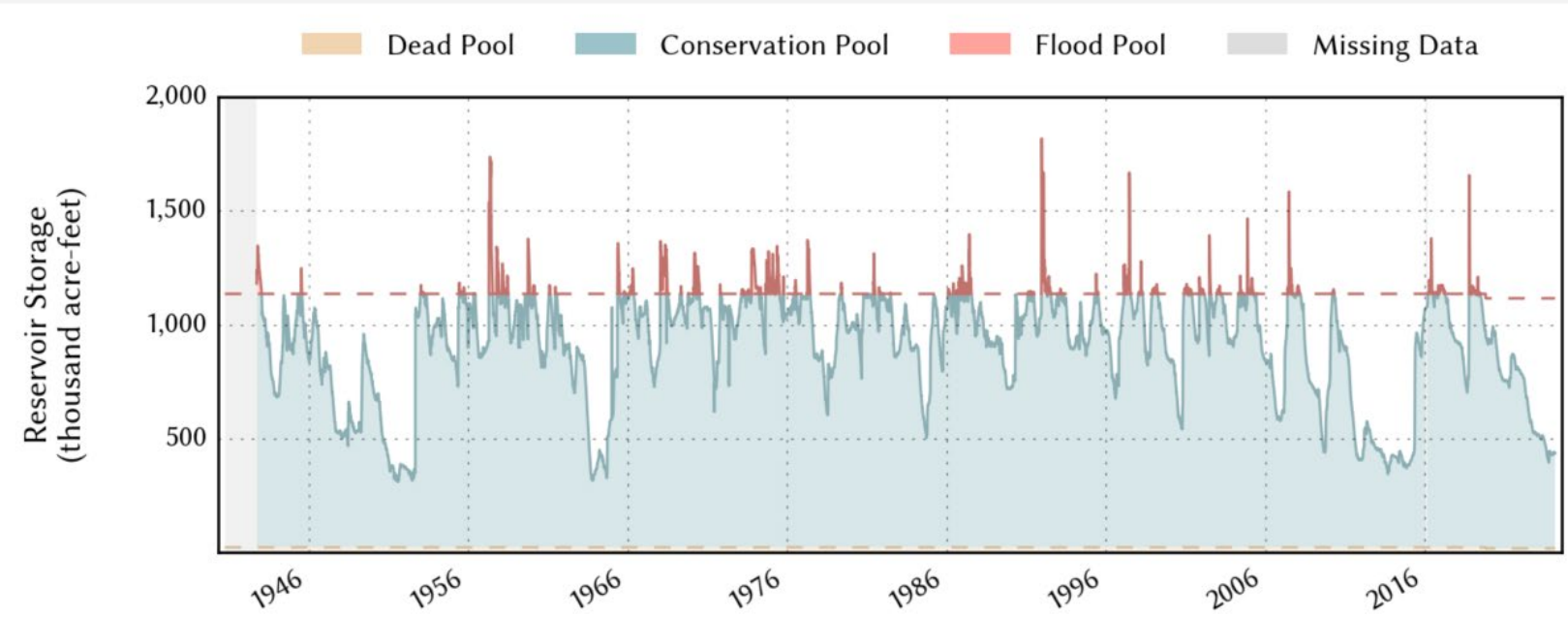
Waco Lake: 100.0% full as of 2024-03-12



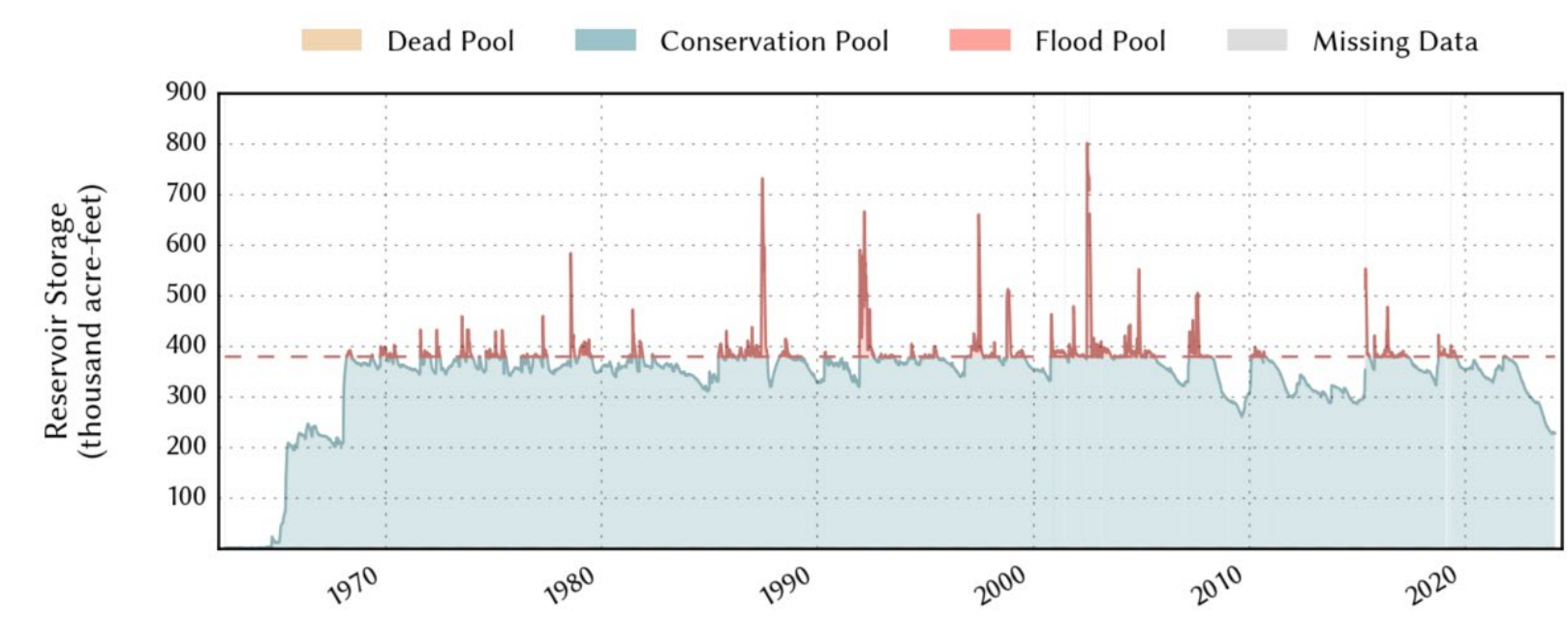
Stillhouse Hollow Lake: 60.7% full as of 2024-03-12



Lake Travis: 38.1% full as of 2024-03-12



Canyon Lake: 60.0% full as of 2024-03-12



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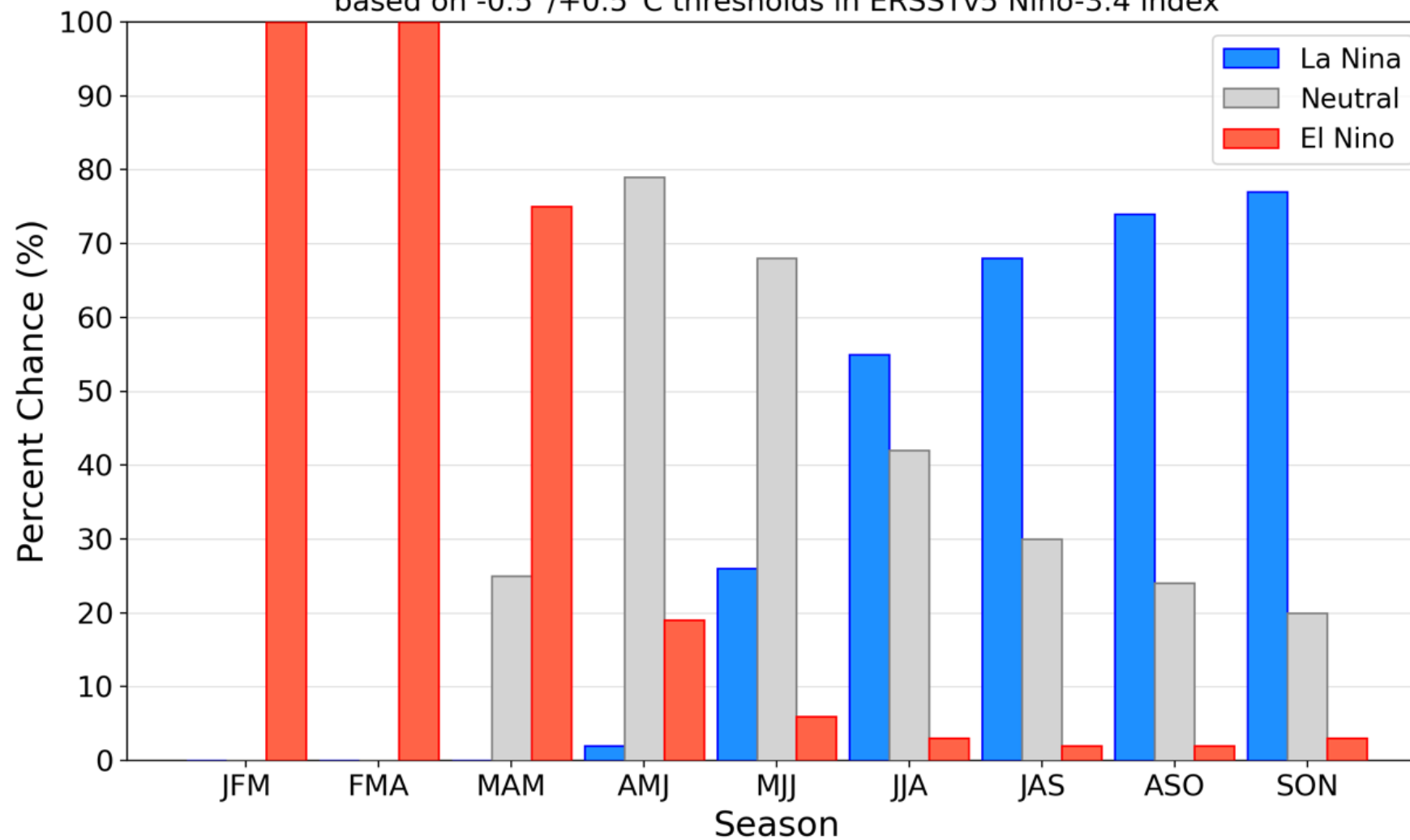
Curtis Riganti
National Drought Mitigation Center

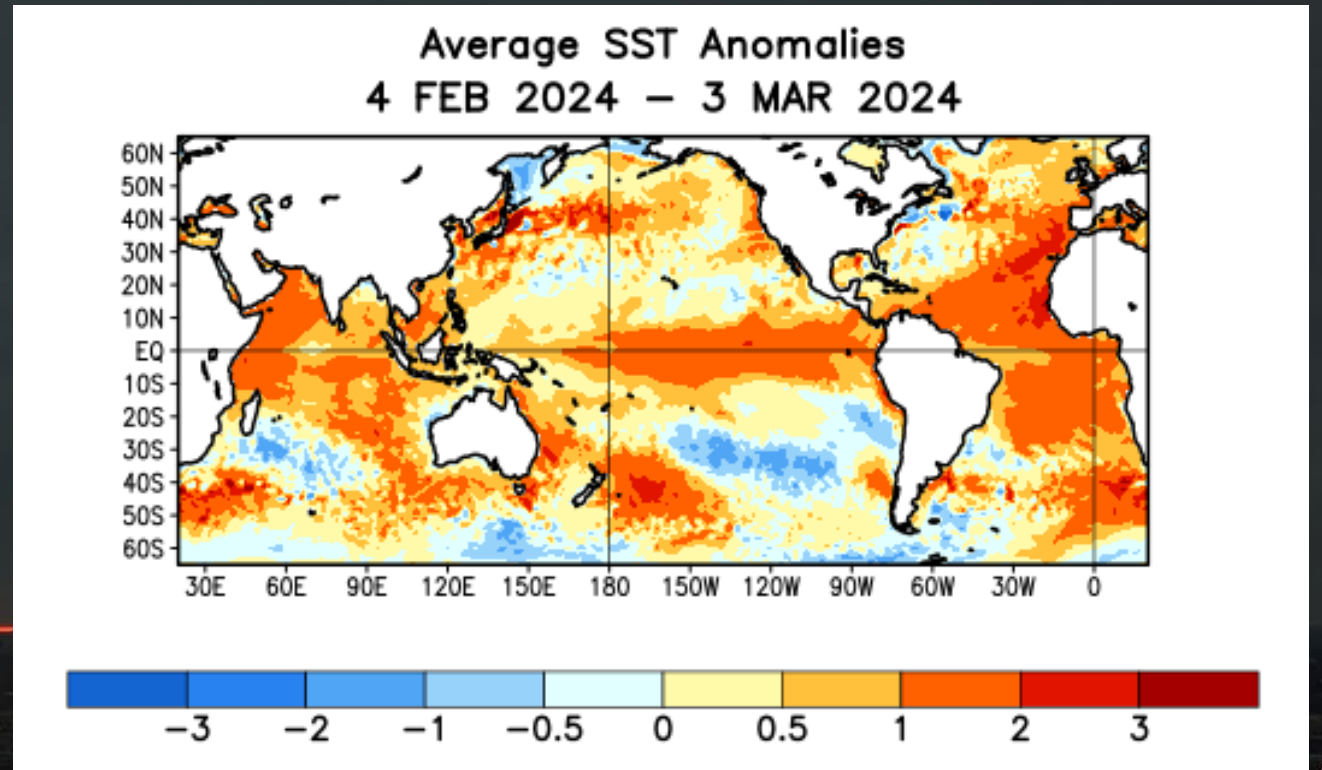
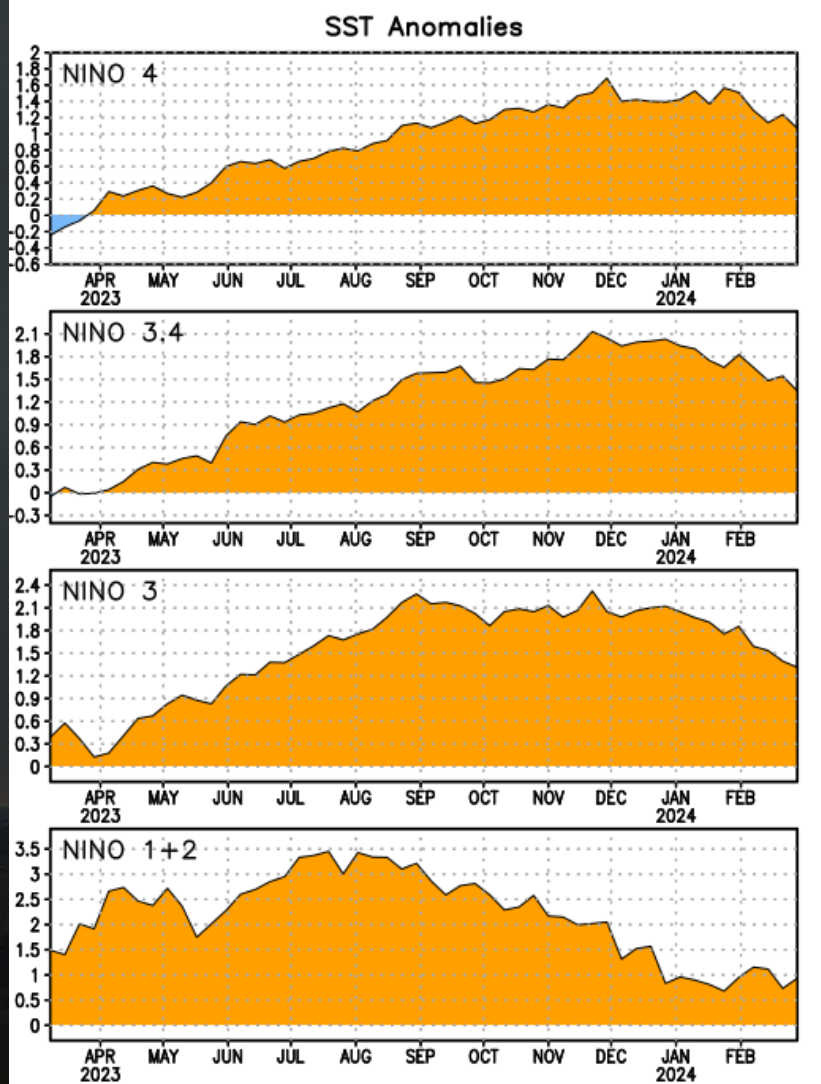


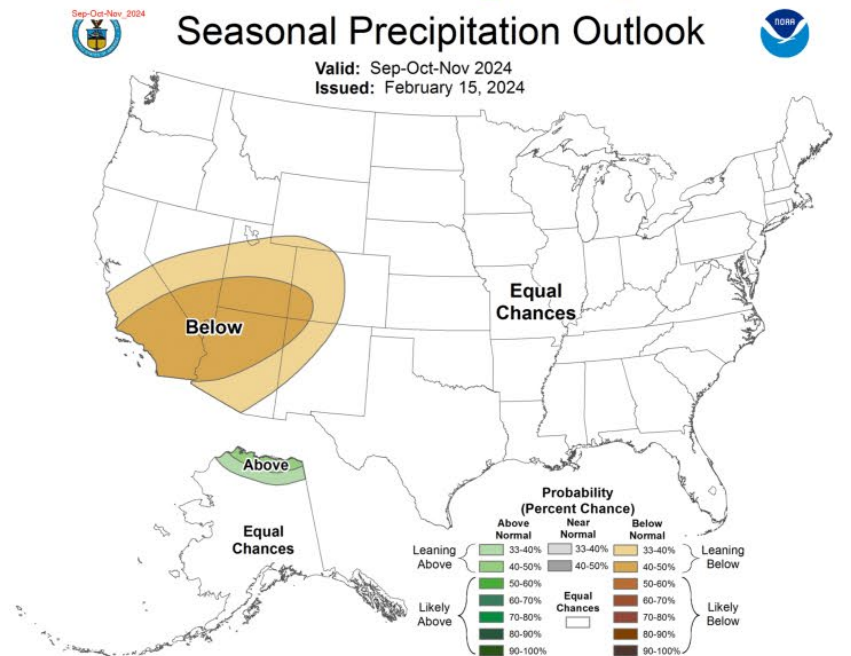
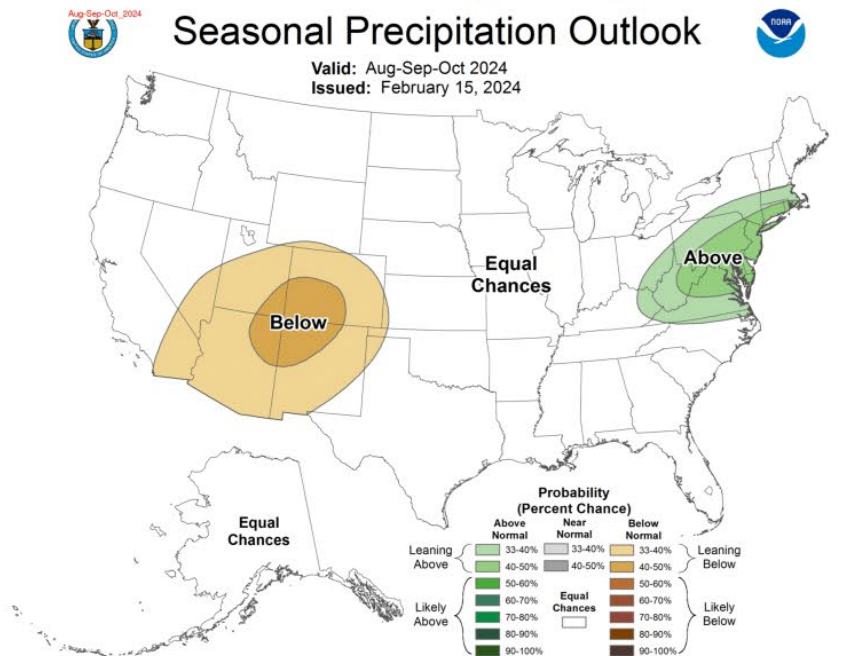
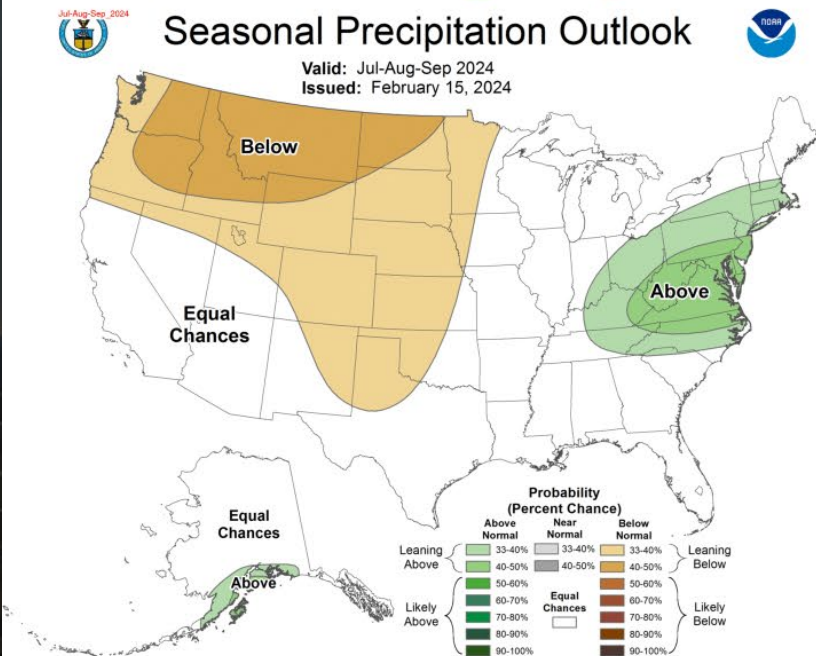
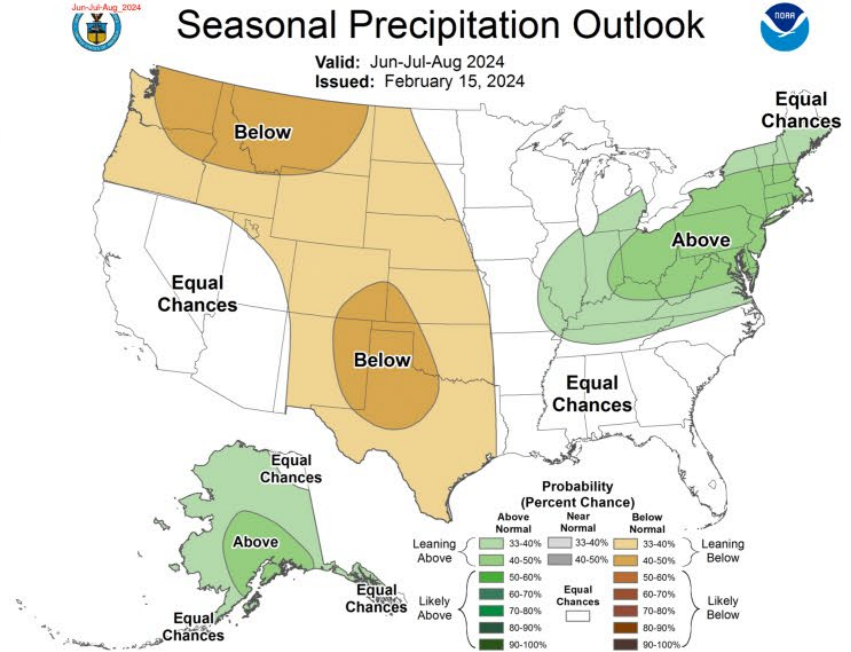
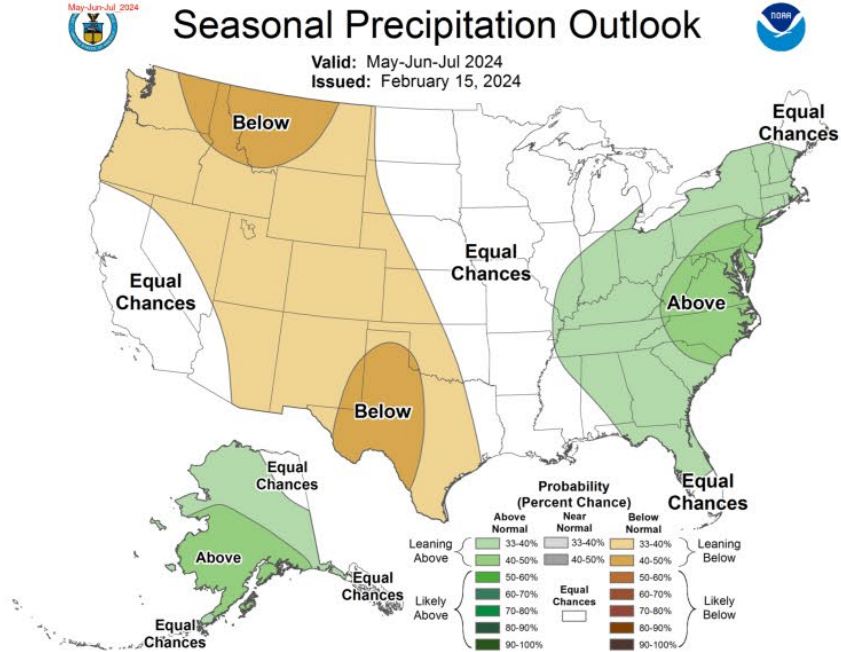
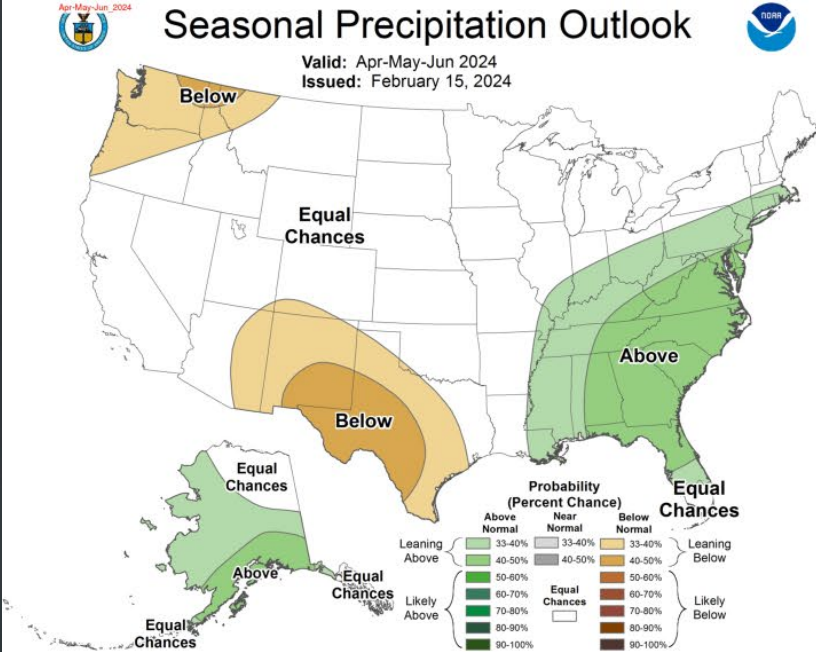
droughtmonitor.unl.edu

Official NOAA CPC ENSO Probabilities (issued Feb. 2024)

based on $-0.5^{\circ}/+0.5^{\circ}\text{C}$ thresholds in ERSSTv5 Niño-3.4 index





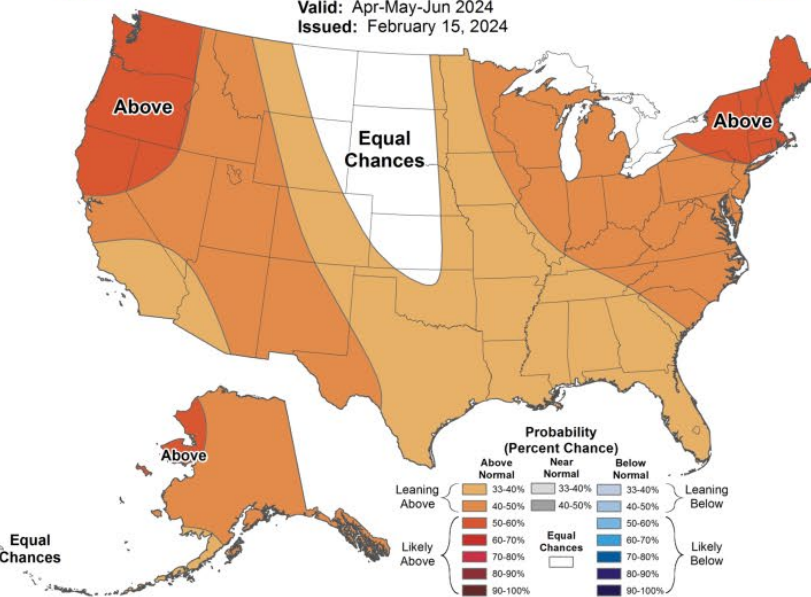




Seasonal Temperature Outlook



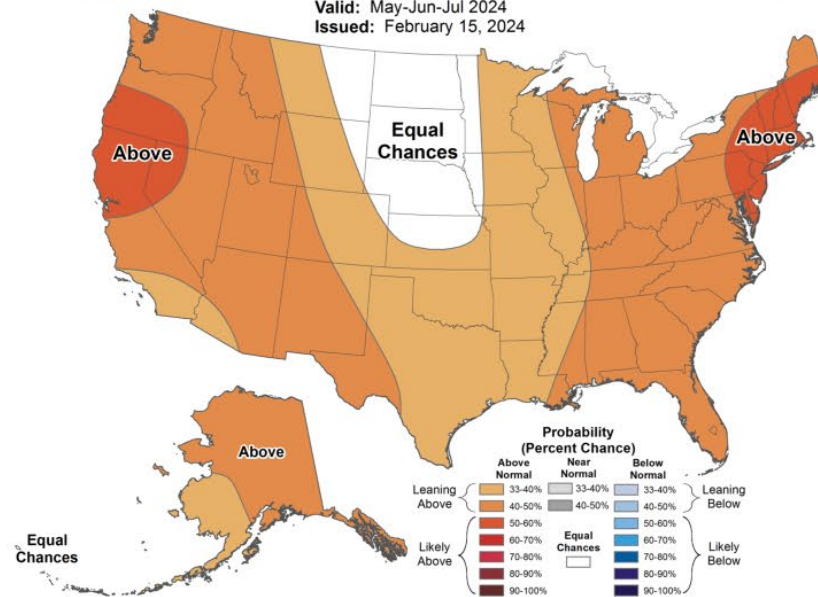
Valid: Apr-May-Jun 2024
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Seasonal Temperature Outlook



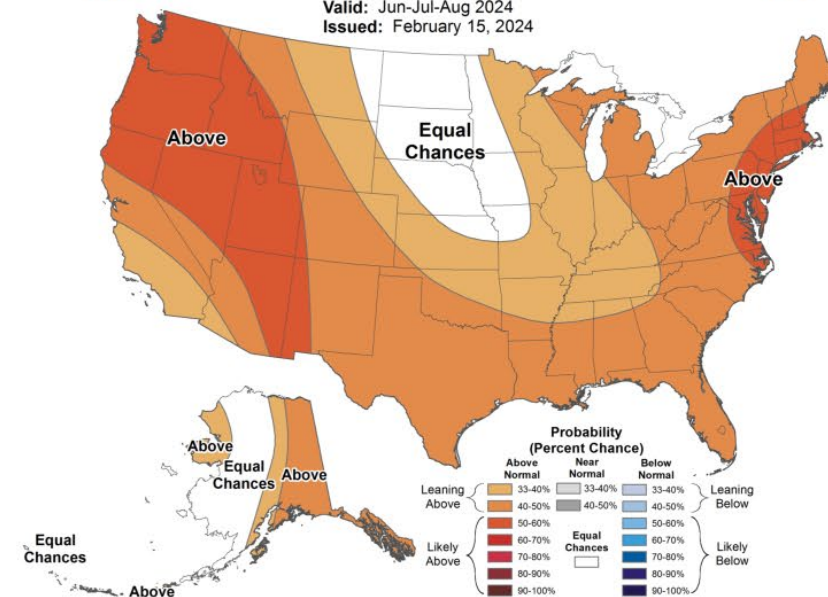
Valid: May-Jun-Jul 2024
Issued: February 15, 2024



Seasonal Temperature Outlook



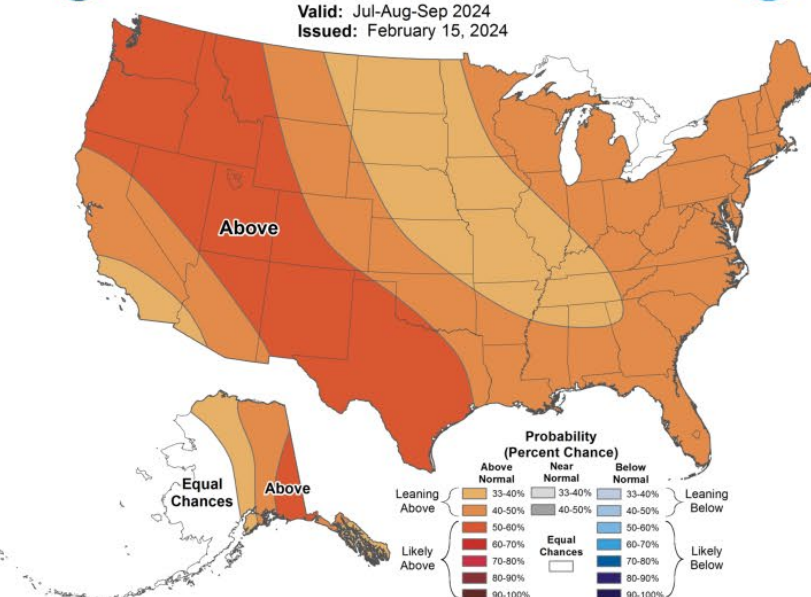
Valid: Jun-Jul-Aug 2024
Issued: February 15, 2024



Seasonal Temperature Outlook



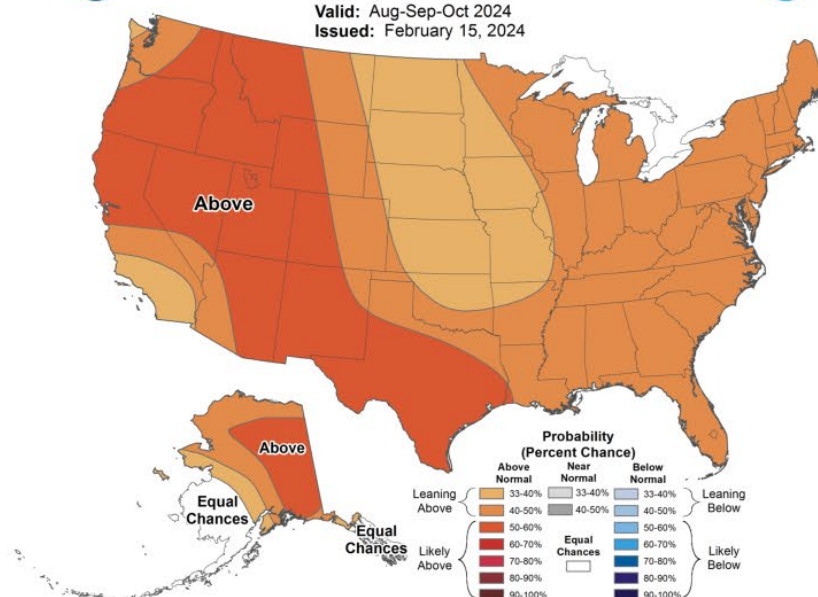
Valid: Jul-Aug-Sep 2024
Issued: February 15, 2024



Seasonal Temperature Outlook



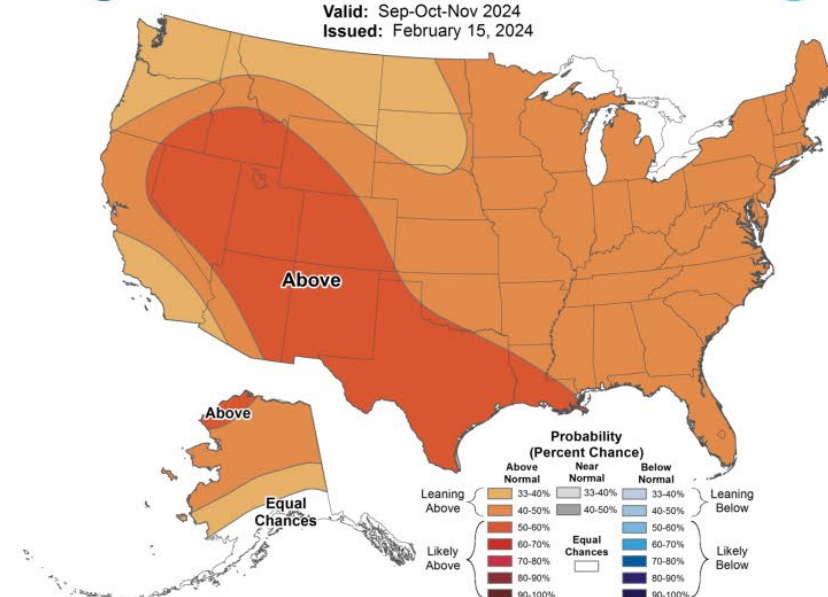
Valid: Aug-Sep-Oct 2024
Issued: February 15, 2024



Seasonal Temperature Outlook



Valid: Sep-Oct-Nov 2024
Issued: February 15, 2024



Summary

- El Niño se comportó bien, pero...
- ...superficial drought recovery for central Texas
- Most likely outlook: warm, dry spring; hot, dry summer (again), La Niña by late summer so warm, dry winter likely too.

• n-g@tamu.edu



Summary

- El Niño se comportó bien, pero...
 - ...superficial drought recovery for central Texas
 - Most likely outlook: warm, dry spring; hot, dry summer (again), La Niña by late summer so warm, dry winter likely too...
 - ...a menos que La Niña se comporta mal
-
- n-g@tamu.edu



Earth's Future

RESEARCH ARTICLE

10.1029/2021EF002019

Special Section:

CMIP6: Trends, Interactions,
and Impacts.

Key Points:

- Coupled Model Intercomparison Project models project changes to the annual cycle of many hydroclimate variables, many of which are more significant than annual mean changes
- In the continental United States, there are significant earlier shifts in the annual cycle in a high emissions scenario
- Significant changes to the annual cycle are largely avoided in the lowest-emissions scenario

Supporting Information:

Supporting Information may be found in the online version of this article.

Projected Changes to Hydroclimate Seasonality in the Continental United States

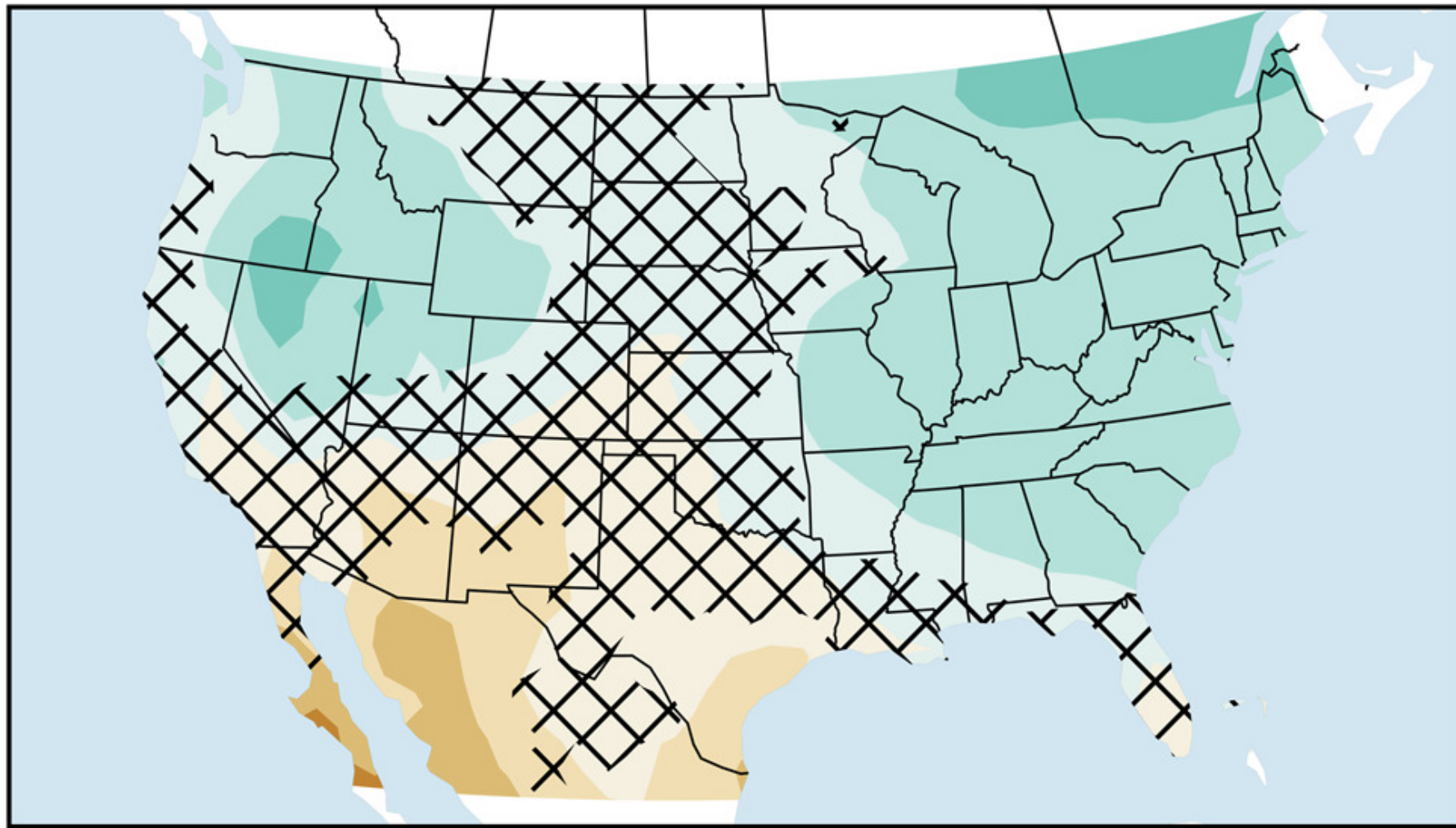
Kate Marvel^{1,2} , Benjamin I. Cook¹, Céline Bonfils³, Jason E. Smerdon⁴ ,
A. Park Williams^{4,5} , and Haibo Liu⁴ 

¹NASA Goddard Institute for Space Studies, New York, NY, USA, ²Center for Climate Systems Research, Columbia University, New York, NY, USA, ³Lawrence Livermore National Laboratory, Livermore, CA, USA, ⁴Lamont-Doherty Earth Observatory, Palisades, NY, USA, ⁵Now at Department of Geography, University of California, Los Angeles, Los Angeles, CA, USA

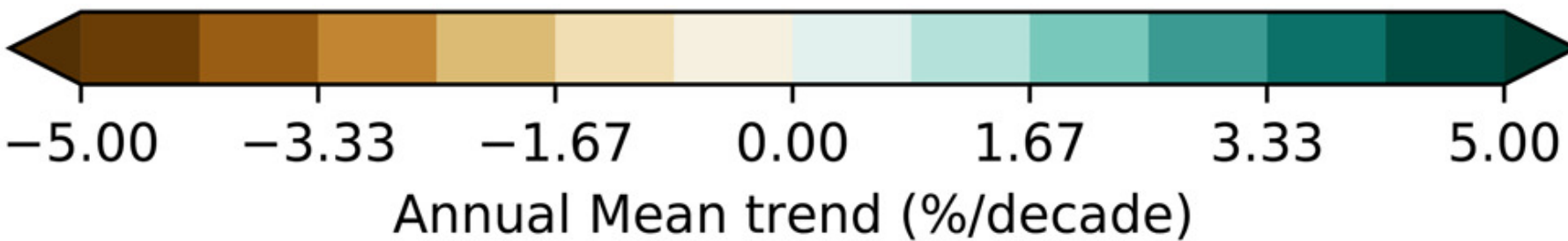
Abstract Future changes to the hydrological cycle are projected in a warming world, and any shifts in drought risk may prove extremely consequential for natural and human systems. In addition to long-term moistening, drying, or warming trends, perturbations to the annual cycle of regional hydroclimate variables may also have substantial impacts. We analyze projected changes in several hydroclimate variables across the continental United States, along with shifts in the amplitude and phase of their annual cycles. We find that even in regions where no robust change in the annual mean is expected, coherent changes to the annual cycle are projected. In particular, we identify robust regional phase shifts toward earlier arrival of peak evaporation in the northern regions, and peak runoff and total soil moisture in the western regions. Changes in the amplitude of the annual cycle of total and surface soil moisture are also projected, and reflect changes to the annual cycle in surface water supply and demand. Whether



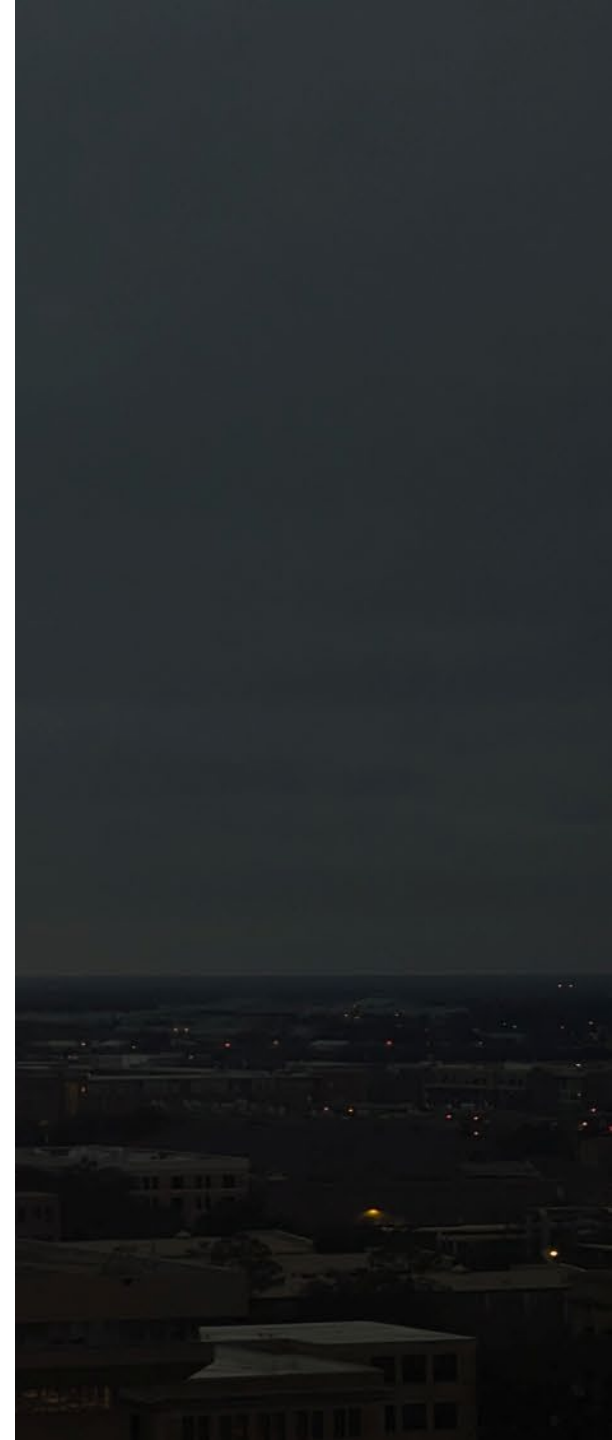
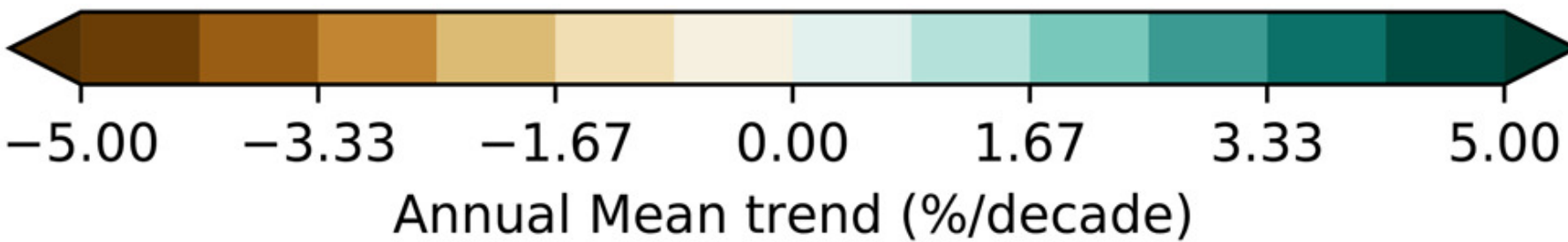
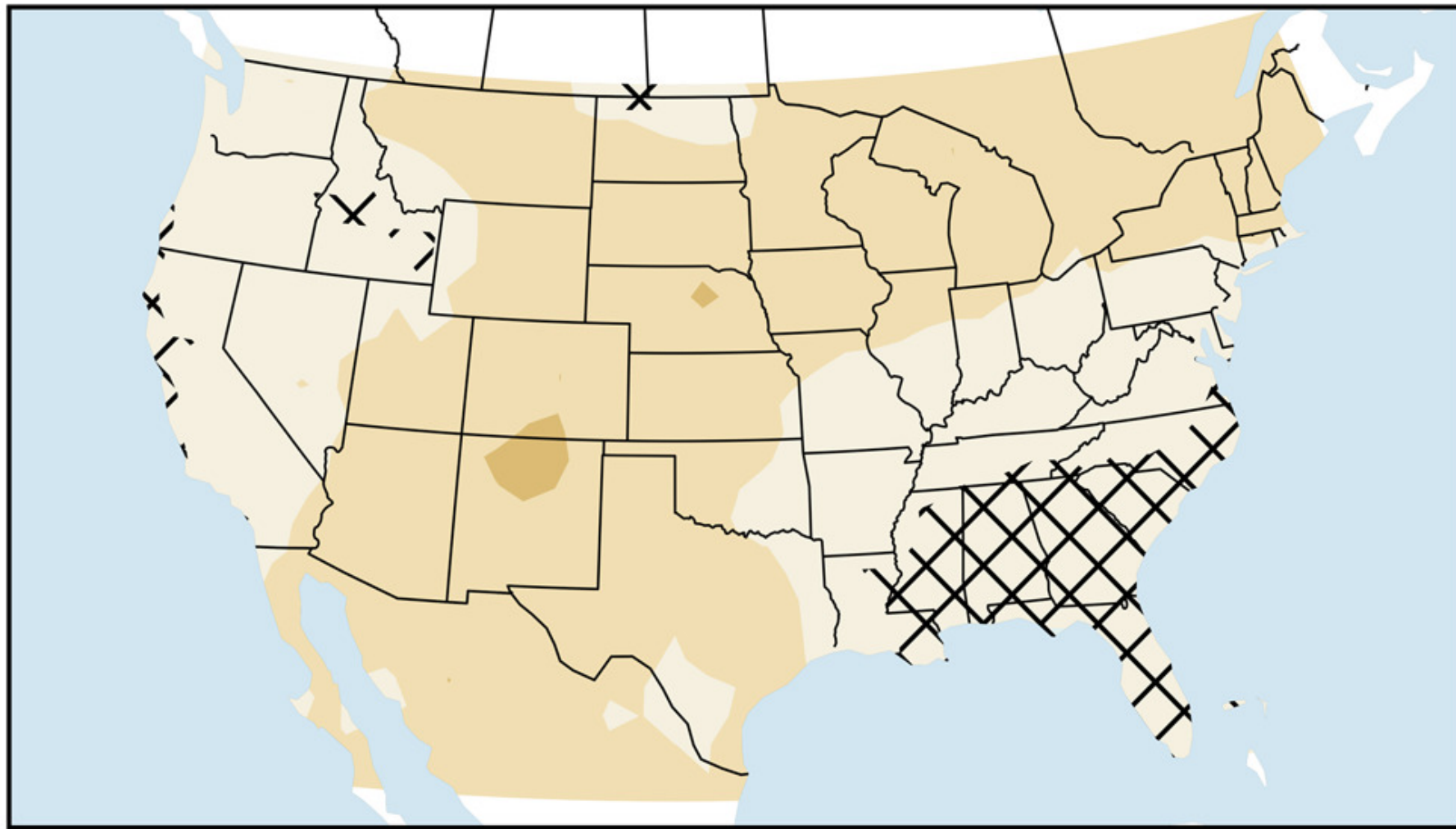
(a) Precipitation Annual Mean



Hatching: at least
25% of models say
wetter, at least 25%
say drier

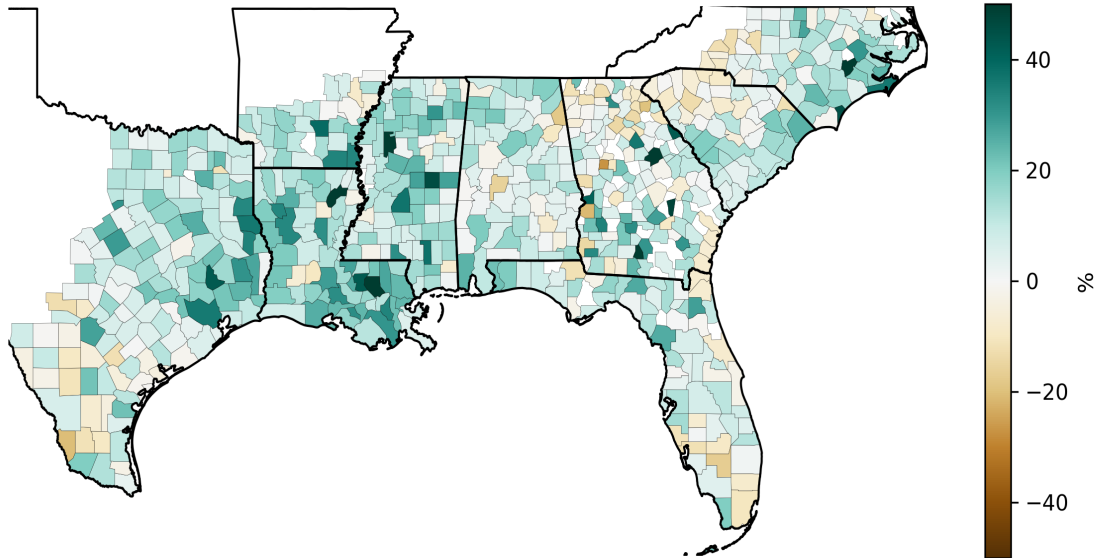


(a) Surface Soil Moisture Annual Mean

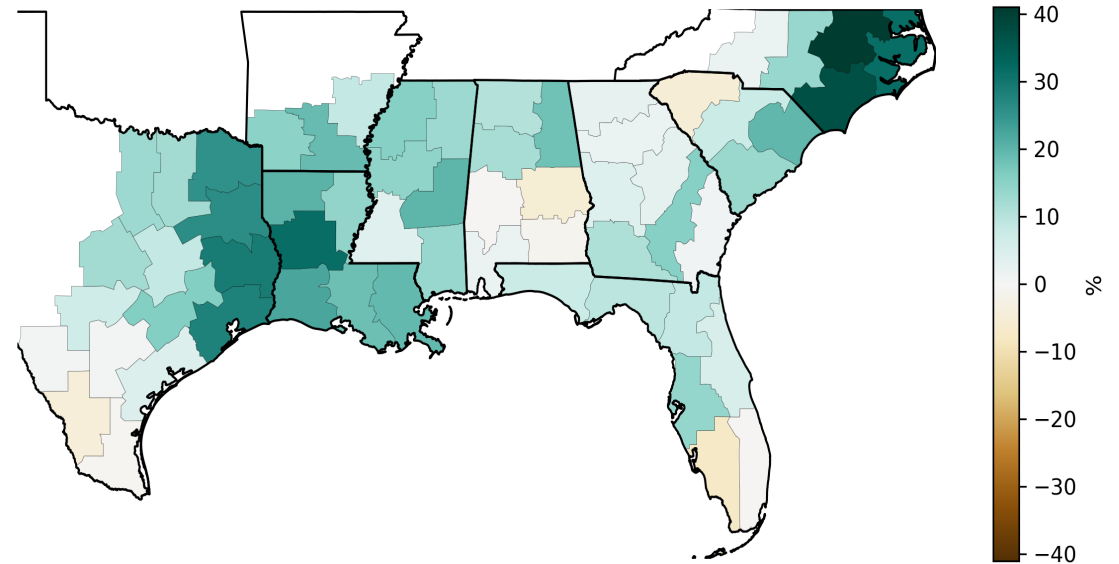


Extreme rainfall trends: 2020 vs. 1980

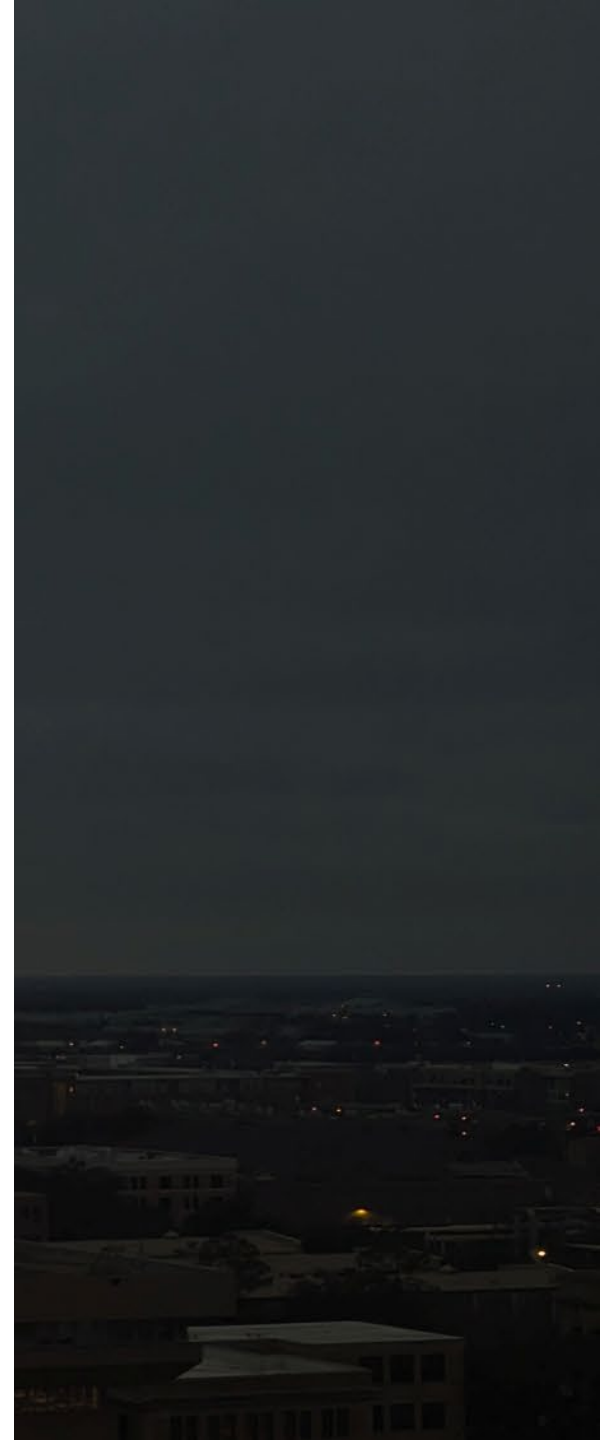
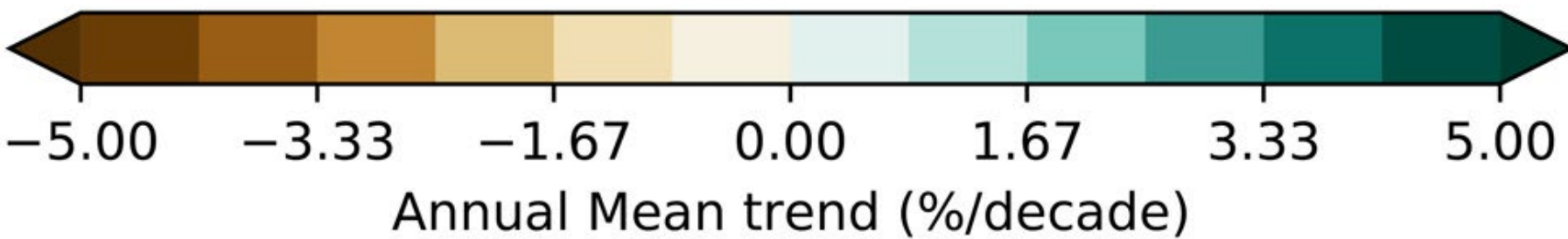
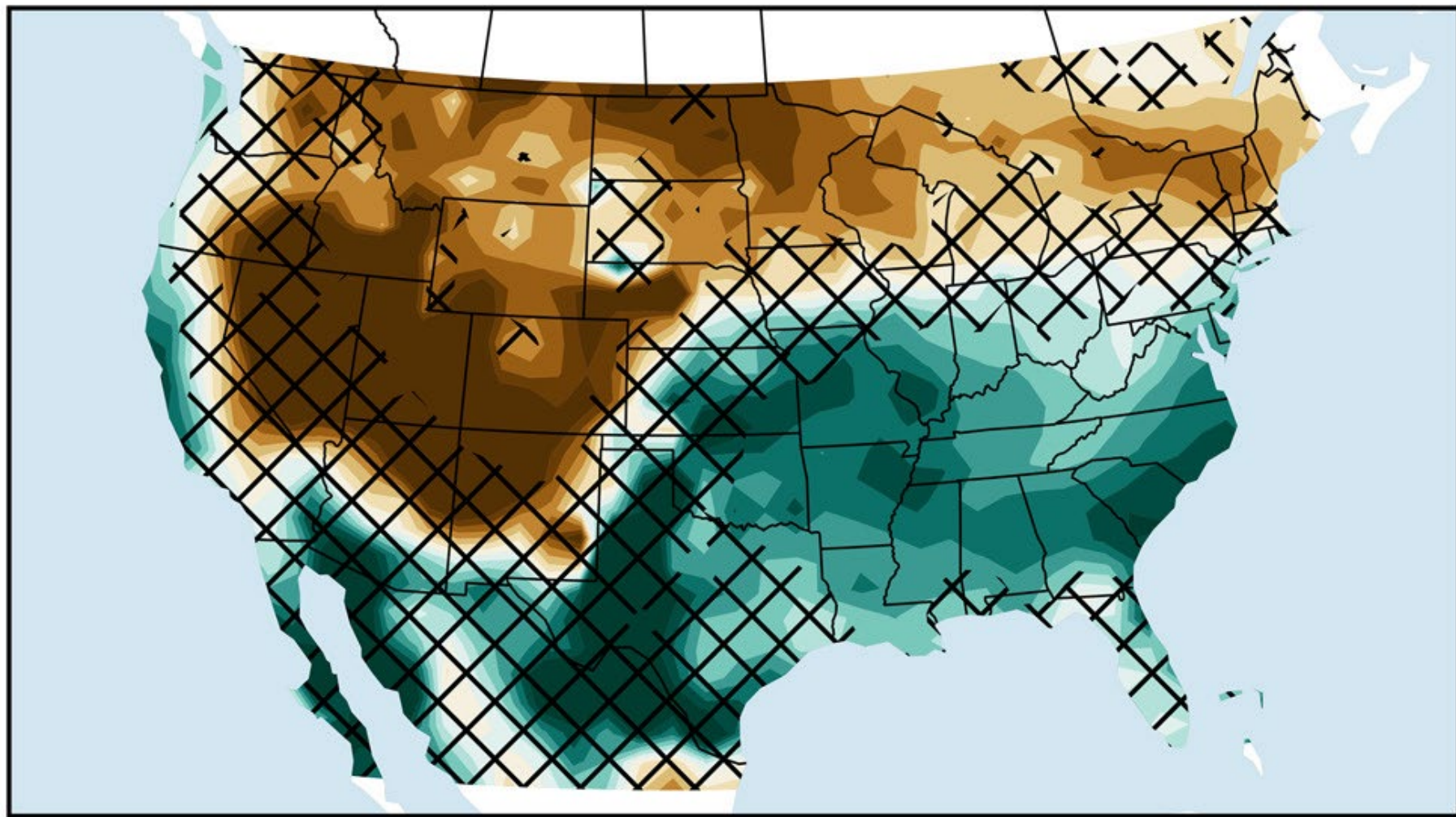
Percent Intensity Change 1980-2020 of Single-Day Rainfall:
2019 Dataset



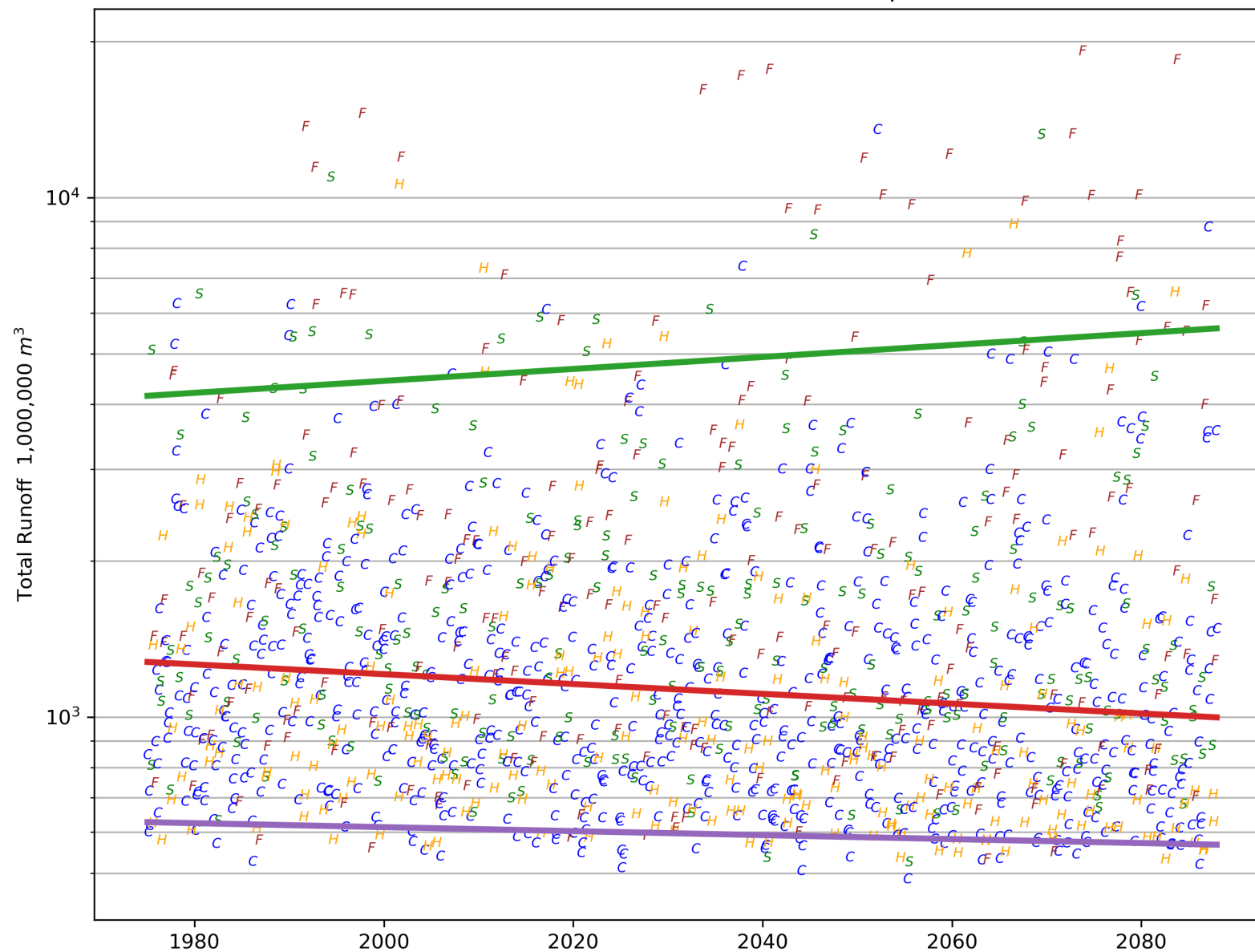
Percent Intensity Change 1980-2020 of the 100-yr
Single-Day Rainfall: Pooled 2019 Dataset



(a) Surface Runoff Annual Mean



Colorado Total Runoff bcc-csm1-1.1.rcp85





¿Se Comporto el Nino?