NOAA Climate Science and Services Monthly Climate Update

Karin Gleason
Climatologist, Monitoring Section Chief, NOAA National Centers for Environmental Information (NCEI)

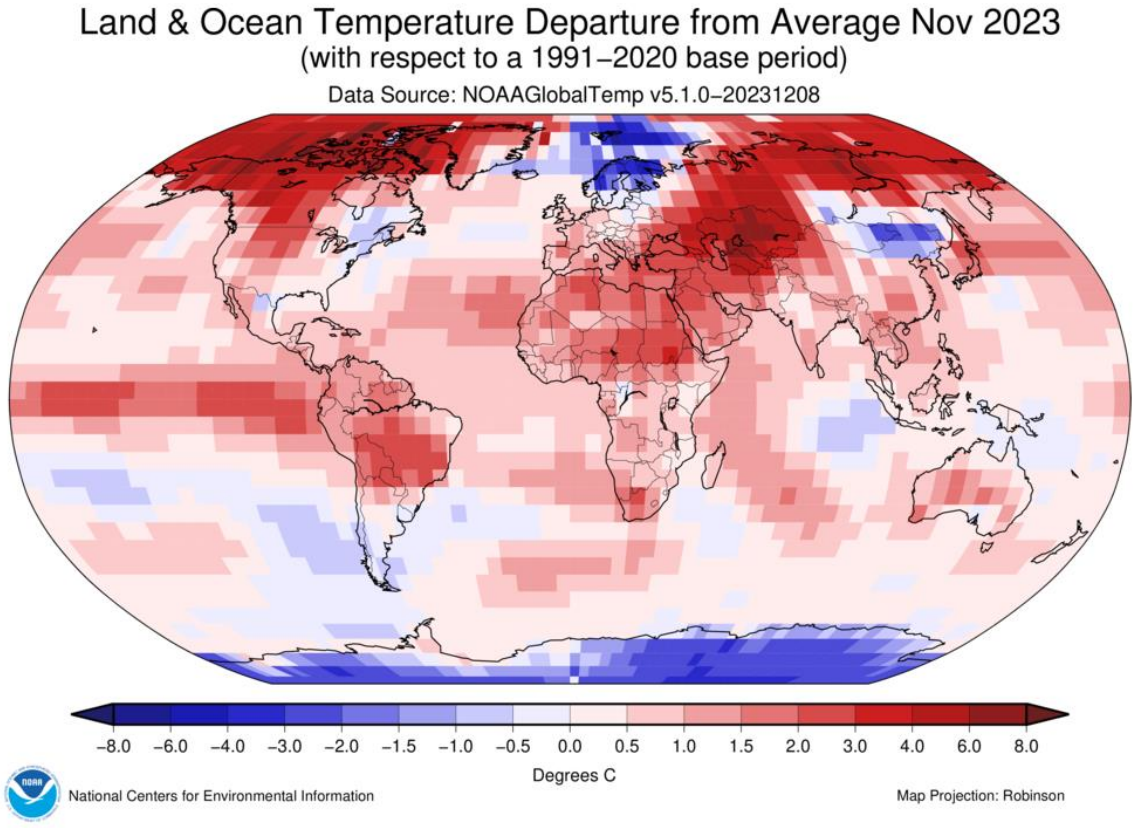
Matt Rosencrans
Meteorologist, NOAA Climate Prediction Center (CPC)

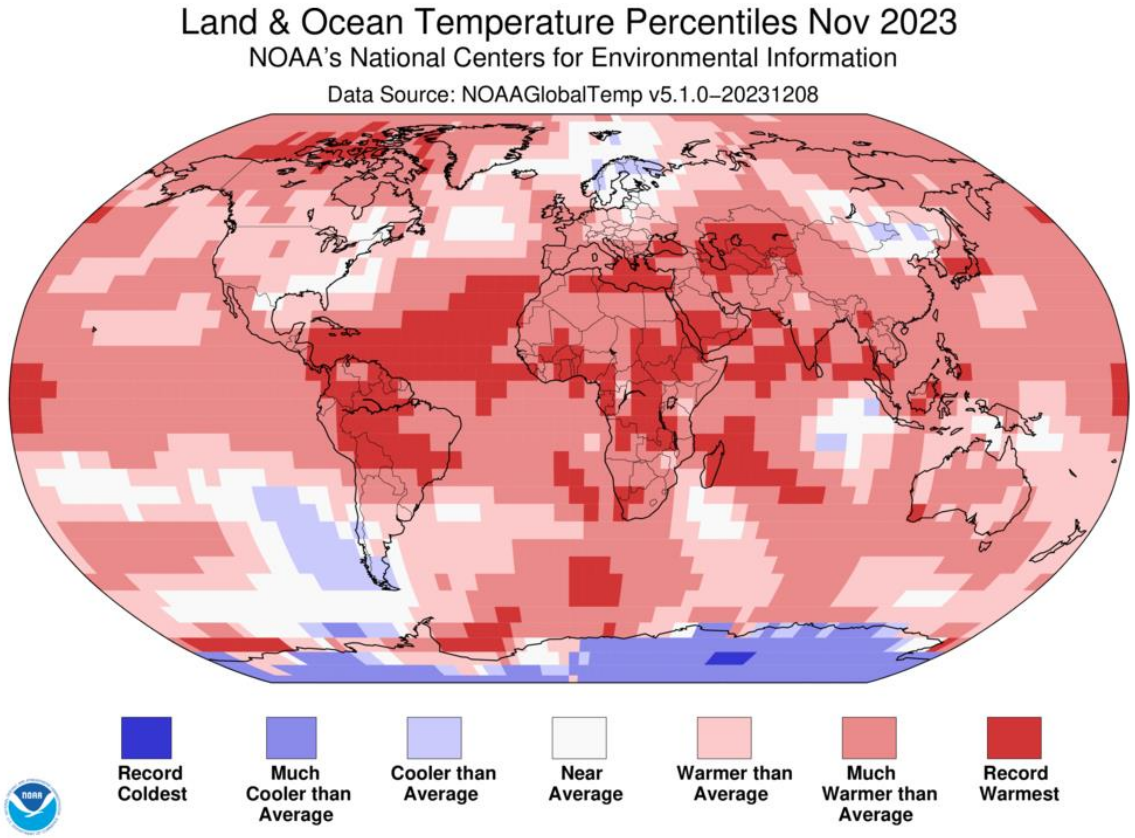
National Oceanic and Atmospheric Administration

November 2023

November 2023 Global Temperature

The global temperature record dates back to 1850 (174 years)

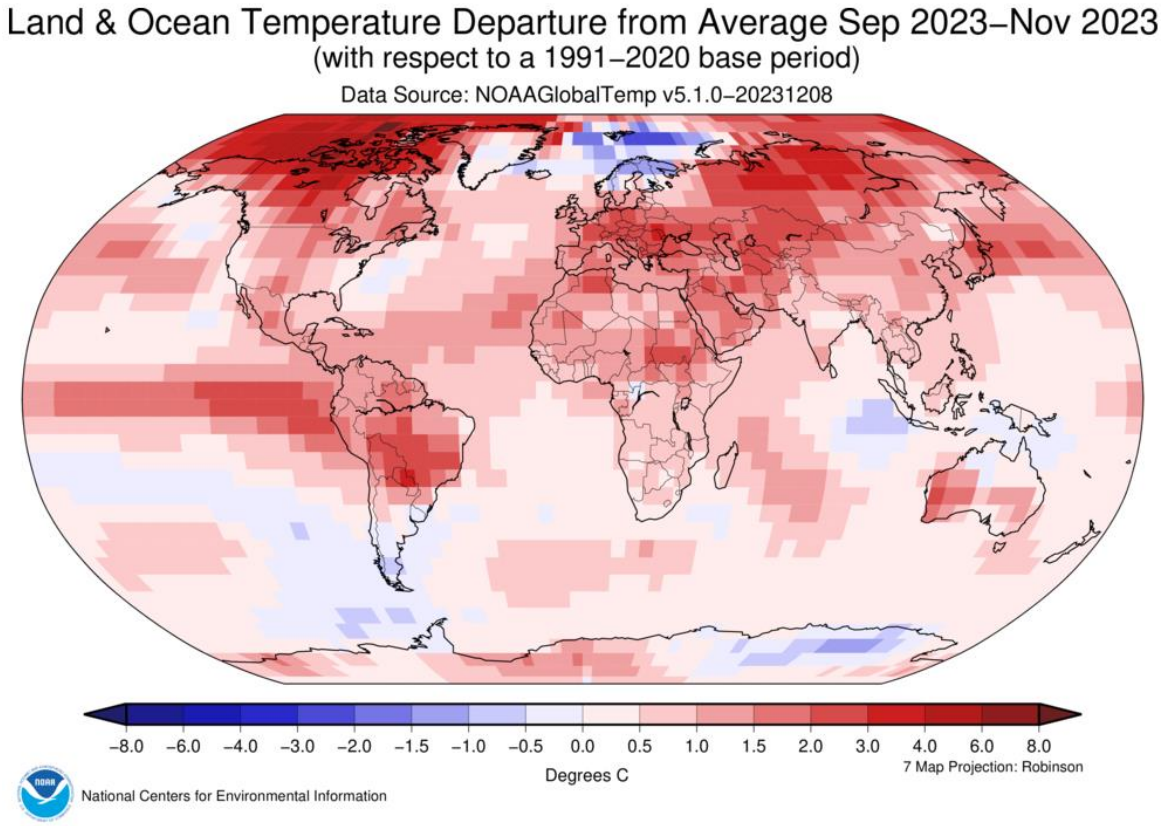


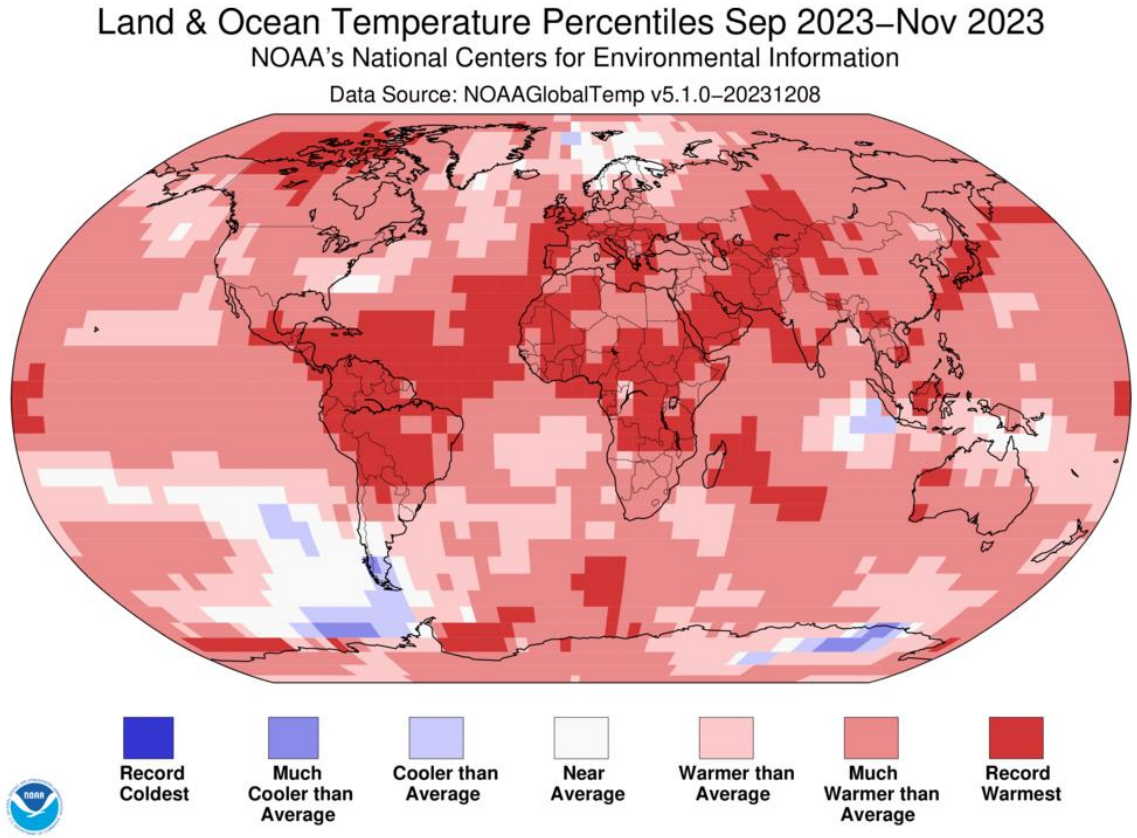


- **Global Land & Ocean:** +1.44°C/ +2.59°F; **warmest** for November on record
- **Global Land-only:** +2.42°C / +4.36°F; **warmest** for November on record
- **Global Ocean-only:** +1.00°C / +1.80°F; **warmest** for November on record

September-November 2023 Global Temperature

The global temperature record dates back to 1850 (174 years)

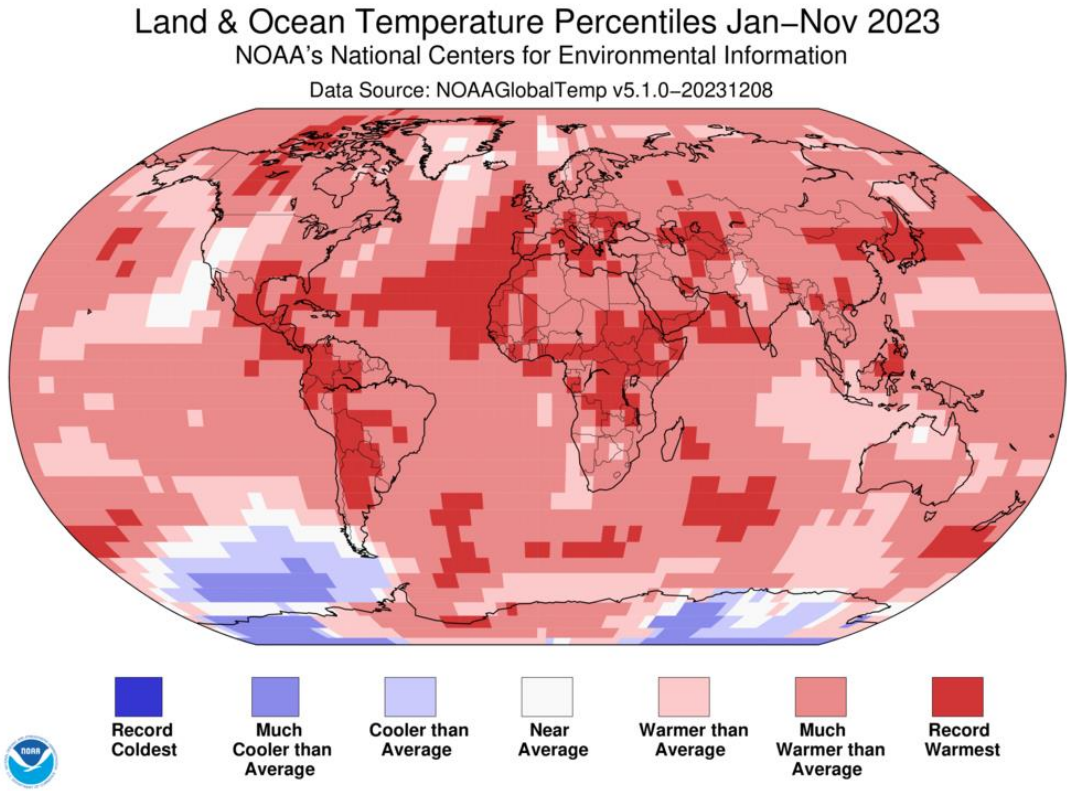


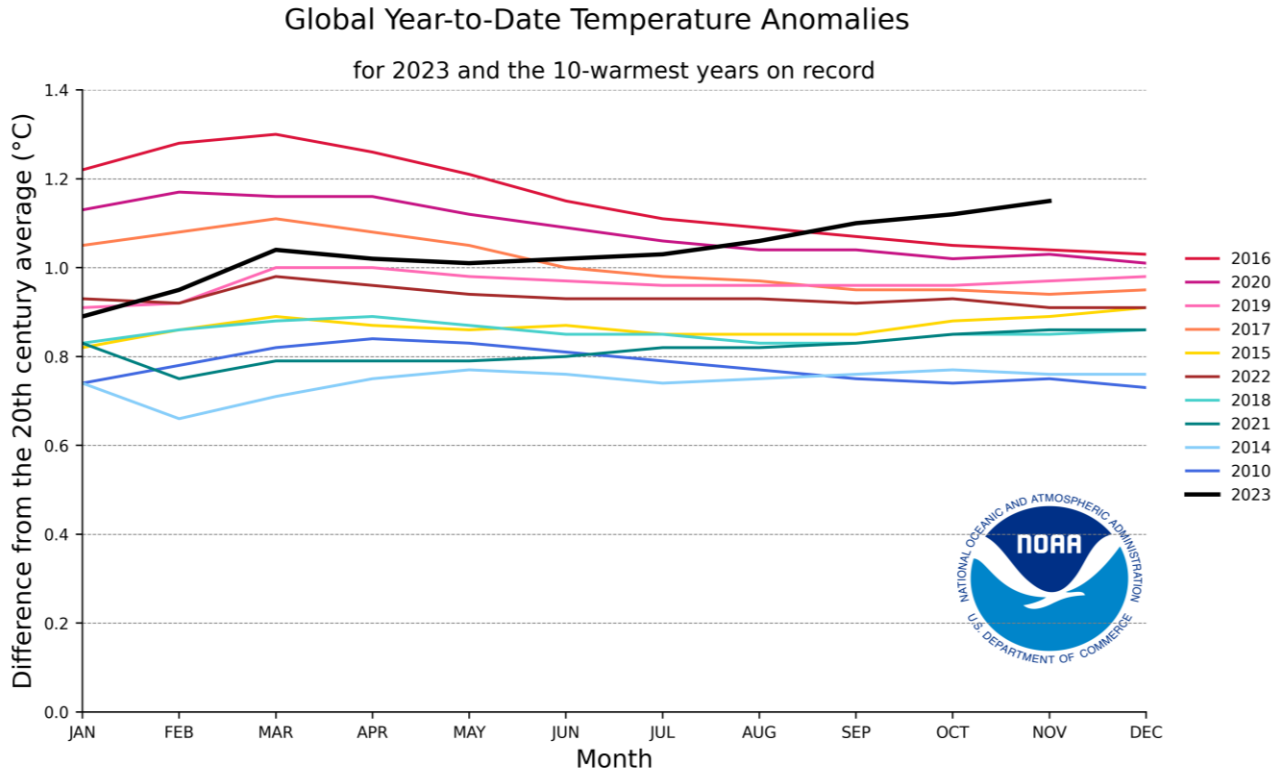


- **Global Land & Ocean:** +1.41°C/ +2.54°F; **warmest** for November on record
- **Global Land-only:** +2.29°C / +4.12°F; **warmest** for November on record
- **Global Ocean-only:** +1.02°C / +1.84°F; **warmest** for November on record

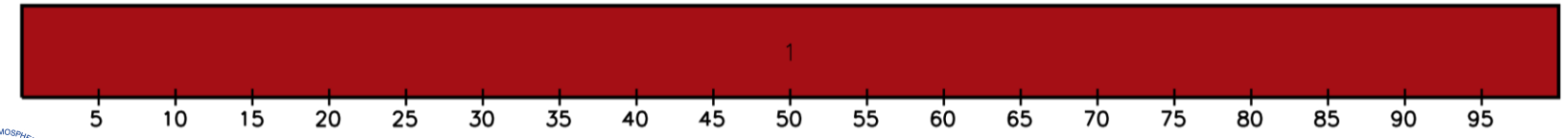
January-November Global Temperature

The global temperature record dates back to 1850 (174 years)





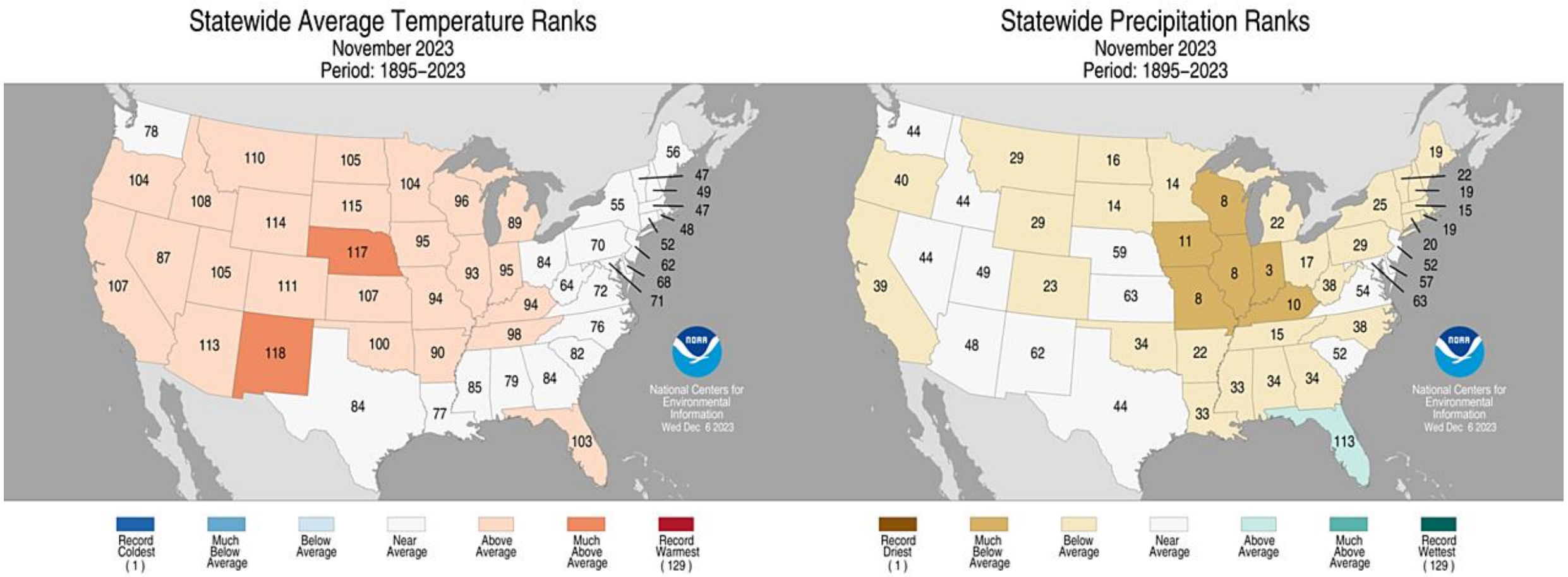
Global Land & Ocean: +1.15°C (2.07°F); the ***warmest*** January-November on record



Virtually certain 2023 will be warmest year on record

Contiguous U.S. November 2023

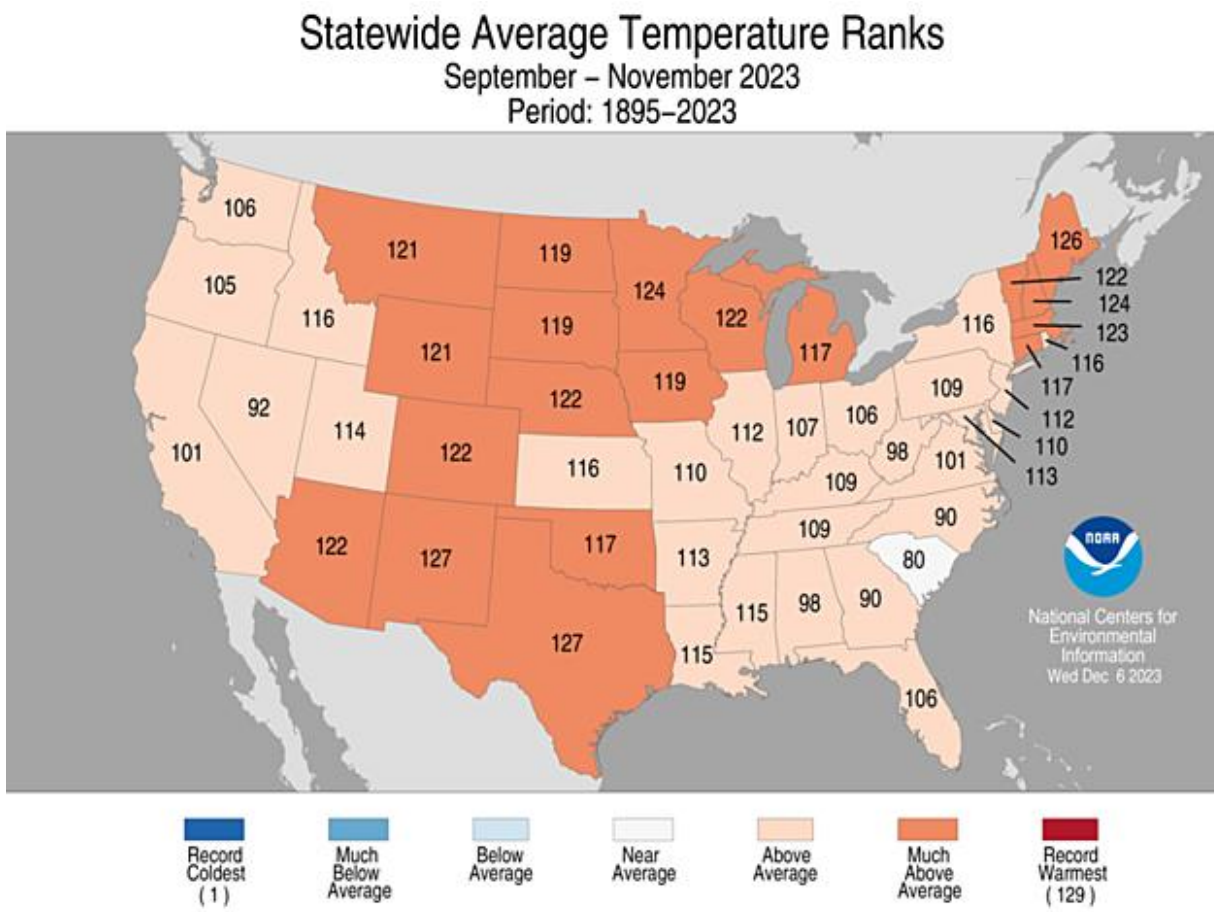
The U.S. temperature record dates back to 1895 (129 years)

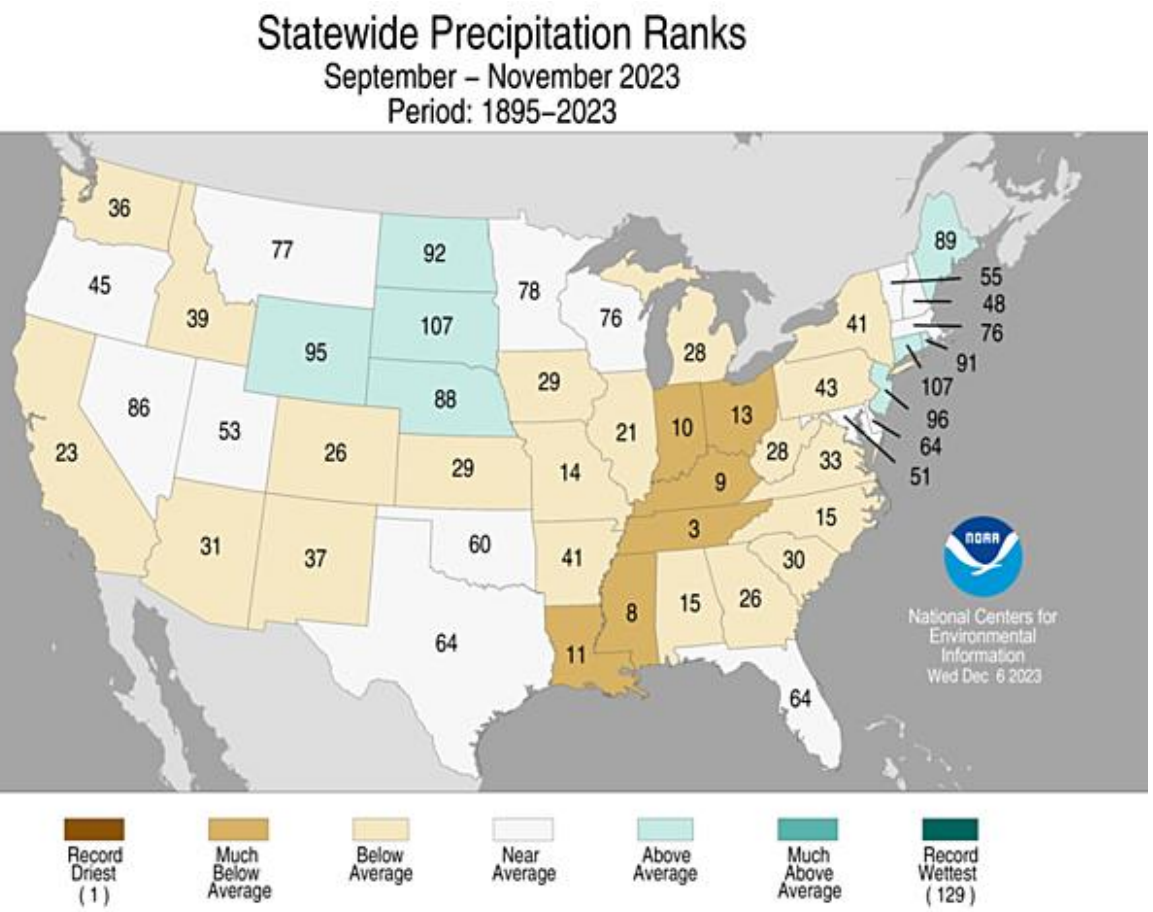


- **Temperature:** 44.4°F, +2.7°F; **19th warmest**
- **Precipitation:** 1.38 inches, -0.85 inch; **12th driest**

Contiguous U.S. September-November 2023

The U.S. temperature record dates back to 1895 (129 years)

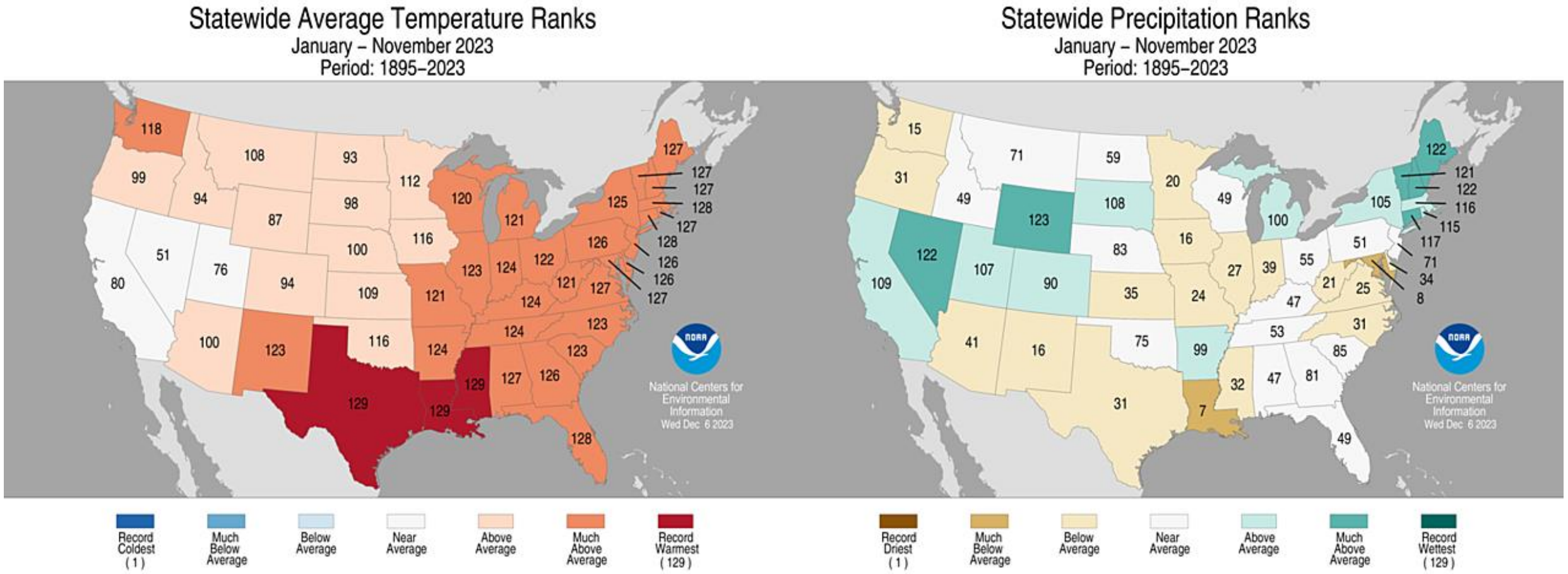




- **Temperature:** 56.1°F, +2.5°F; **6th warmest**
- **Precipitation:** 5.66 inches, -1.22 inch; **15th driest**

Contiguous U.S. January-November 2023

The U.S. temperature record dates back to 1895 (129 years)

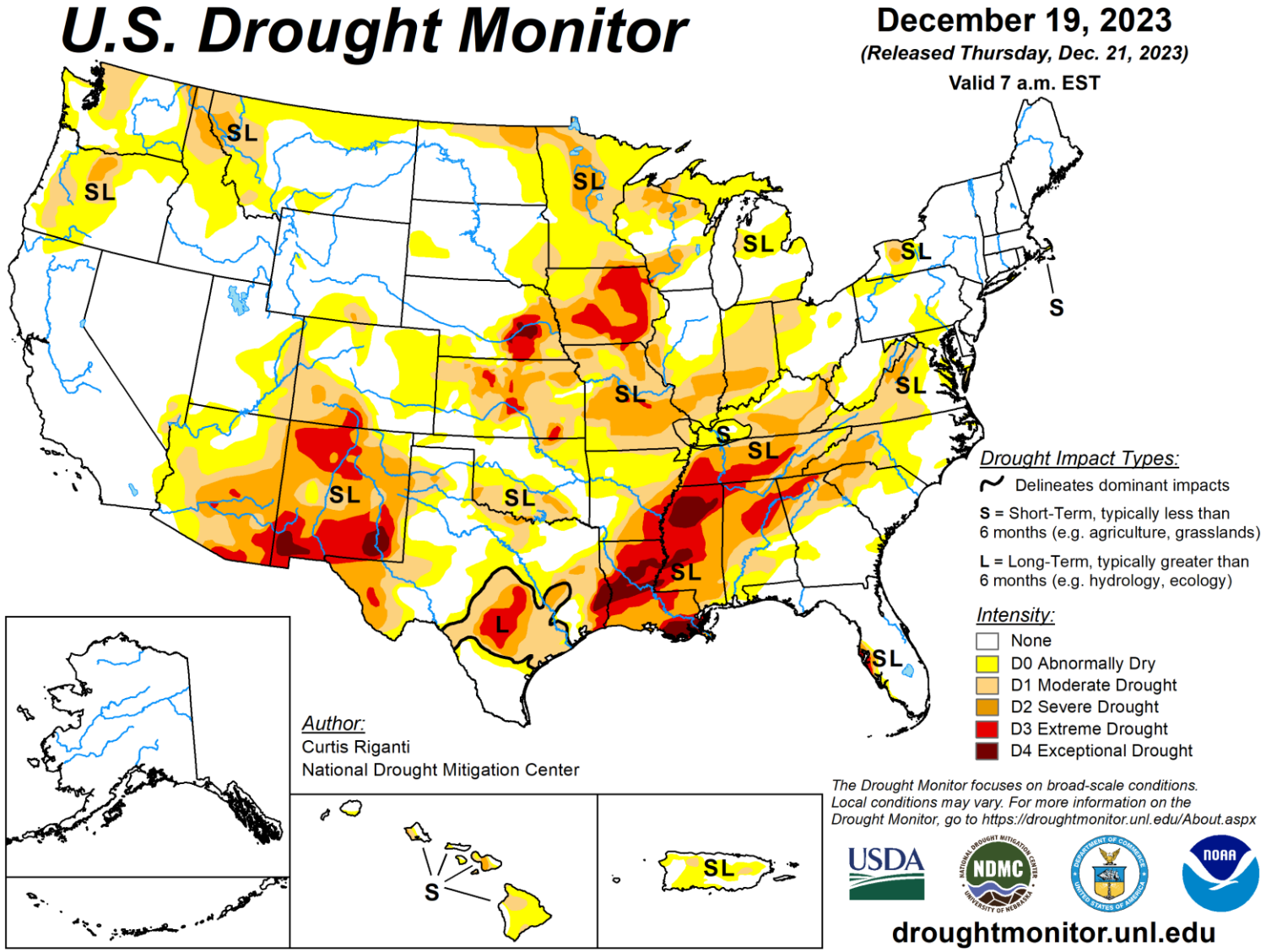


- **Temperature:** 55.8°F, +2.0°F; **10th warmest**
- **Precipitation:** 25.89 inches, -0.70 inch; **below average**

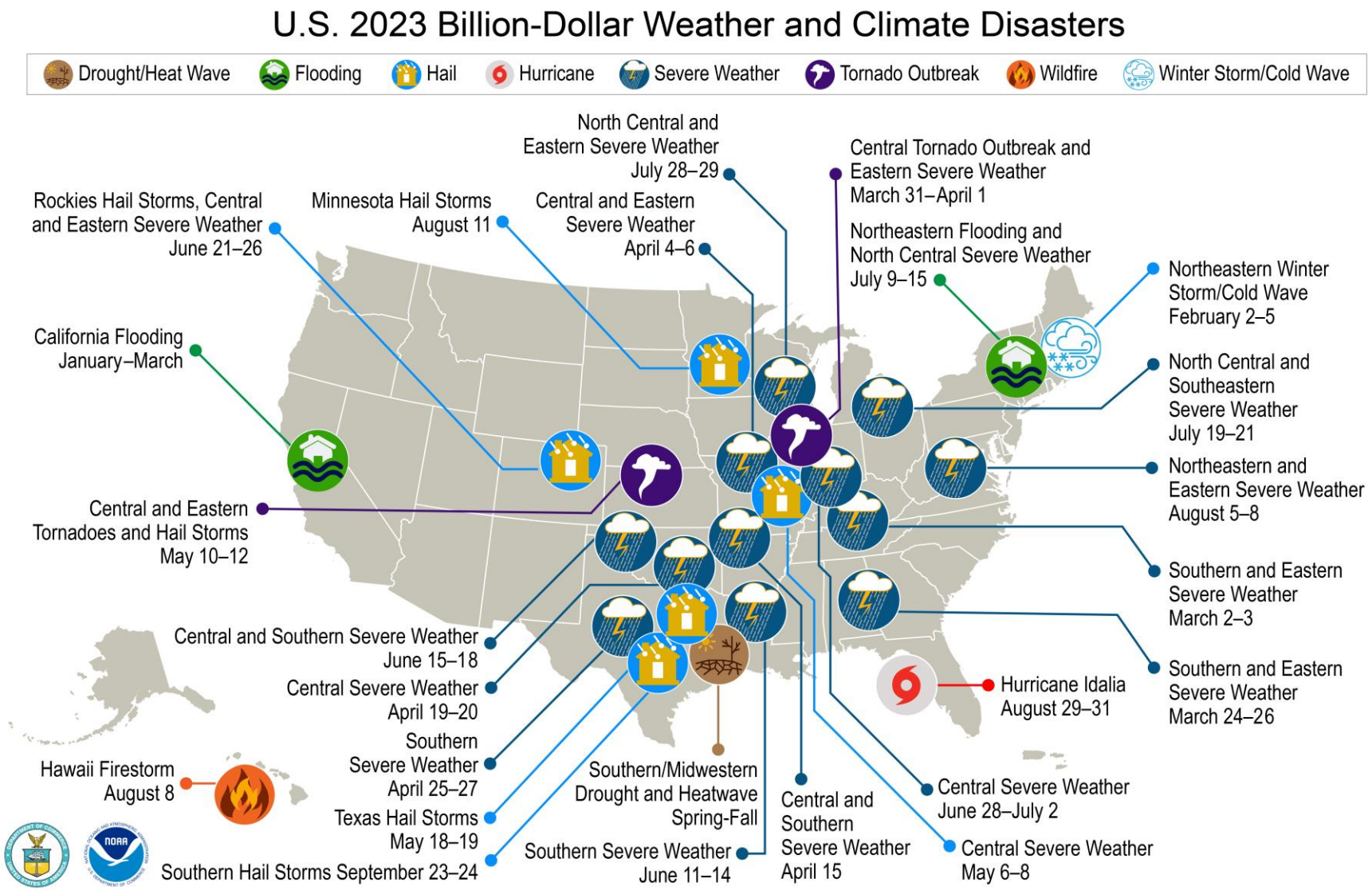
Current U.S. Drought

~33.3% of the contiguous U.S. is in drought (down ~4% since early November)

- **Drought conditions lessened/ diminished:** Northwest & Northern Tier, Texas & Gulf Coast, Carolinas and Virginia
- **Drought conditions expanded/ intensified:** Midwest
- **Outside the contiguous U.S.:** Drought coverage lessened across Hawaii

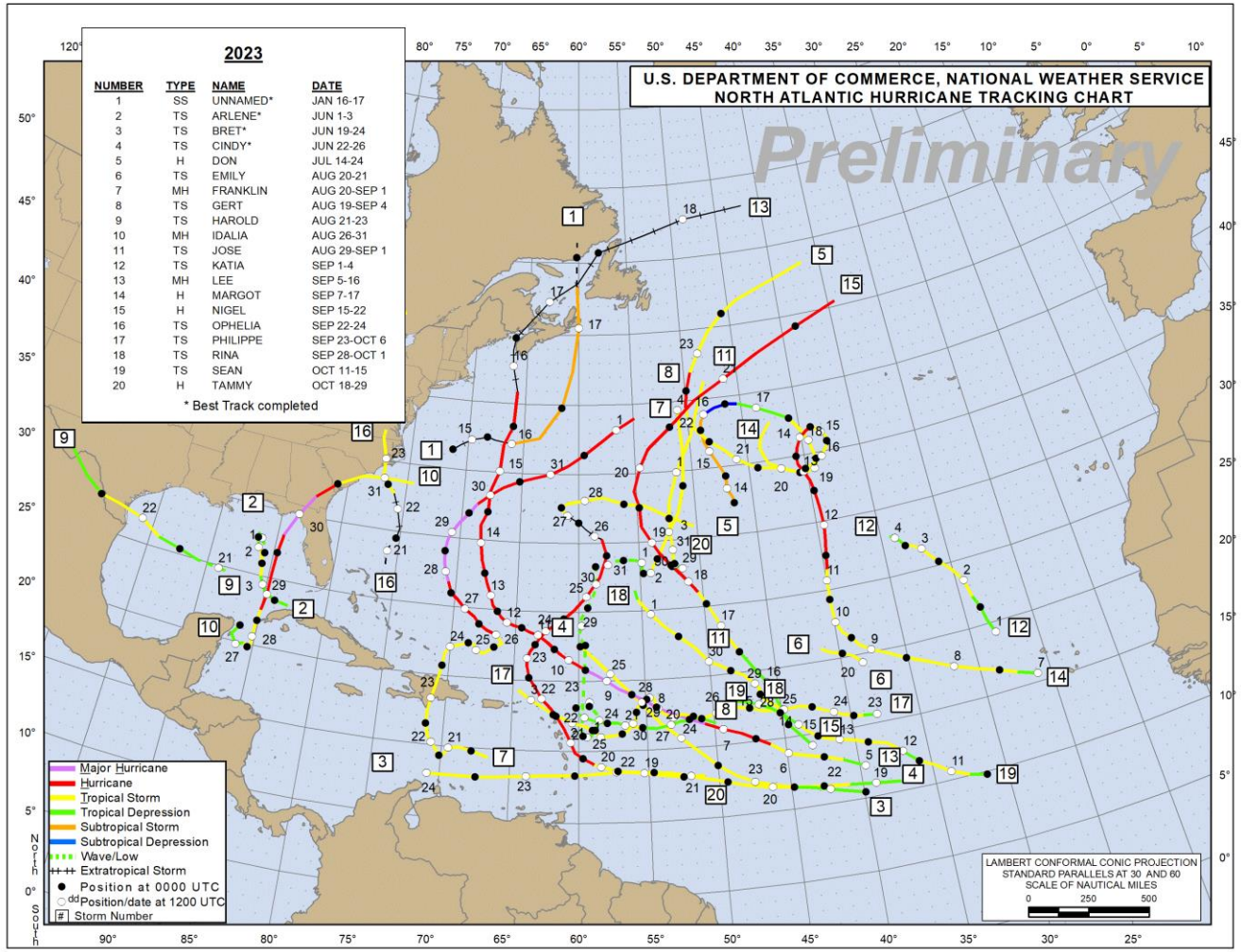


Billion Dollar Weather & Climate Disasters



*This map denotes the approximate location for each of the **25 separate billion-dollar weather and climate disasters that impacted the United States through November 2023.***

2023 Atlantic Hurricane Season



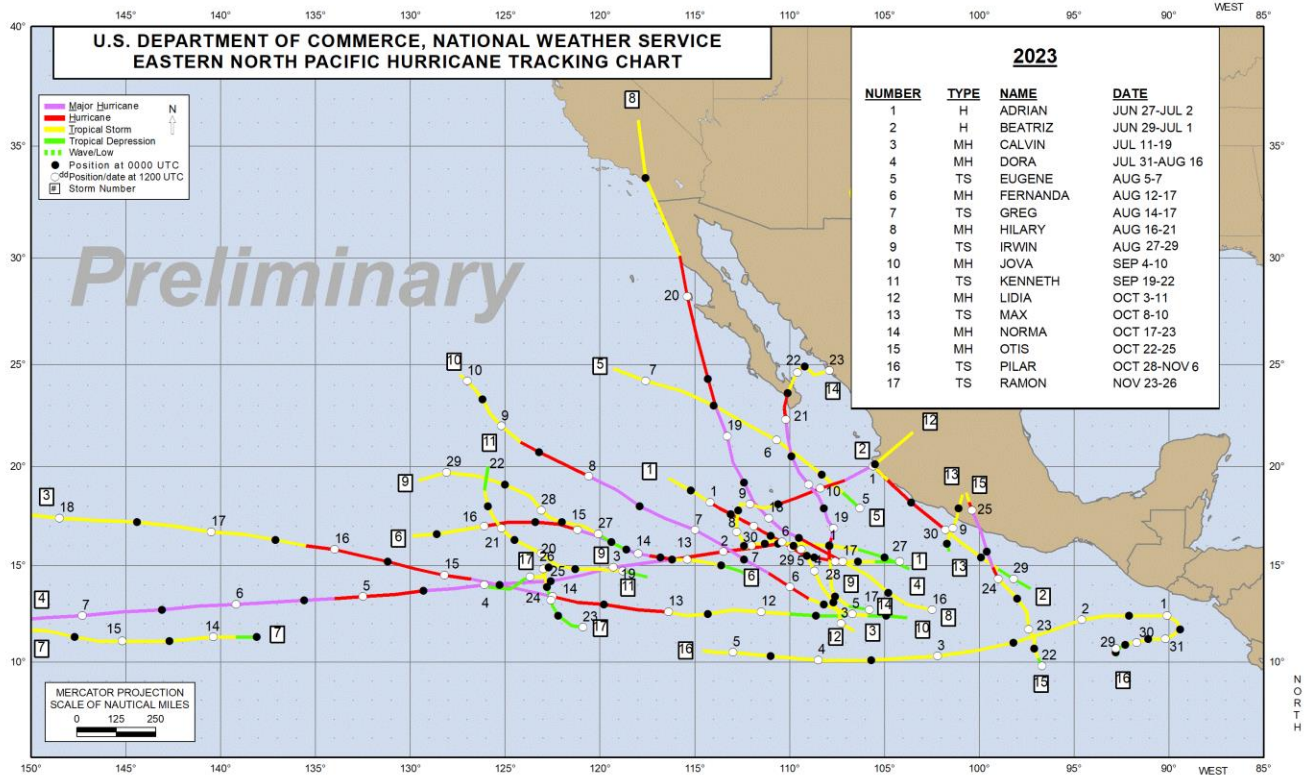
Category	Observed	Normal
Named storms	20	14
Hurricanes	7	7
Major Hurr	3	3
ACE	145 kts^2 (150%)	96.7 kts^2

4th most Named storms on record (1950 onward)

Hurricane Idalia – only landfalling hurricane, bringing inundation of 7-12 feet.

Tropical Storm Ophelia caused flooding in North Carolina.

2023 East Pacific Hurricane Season

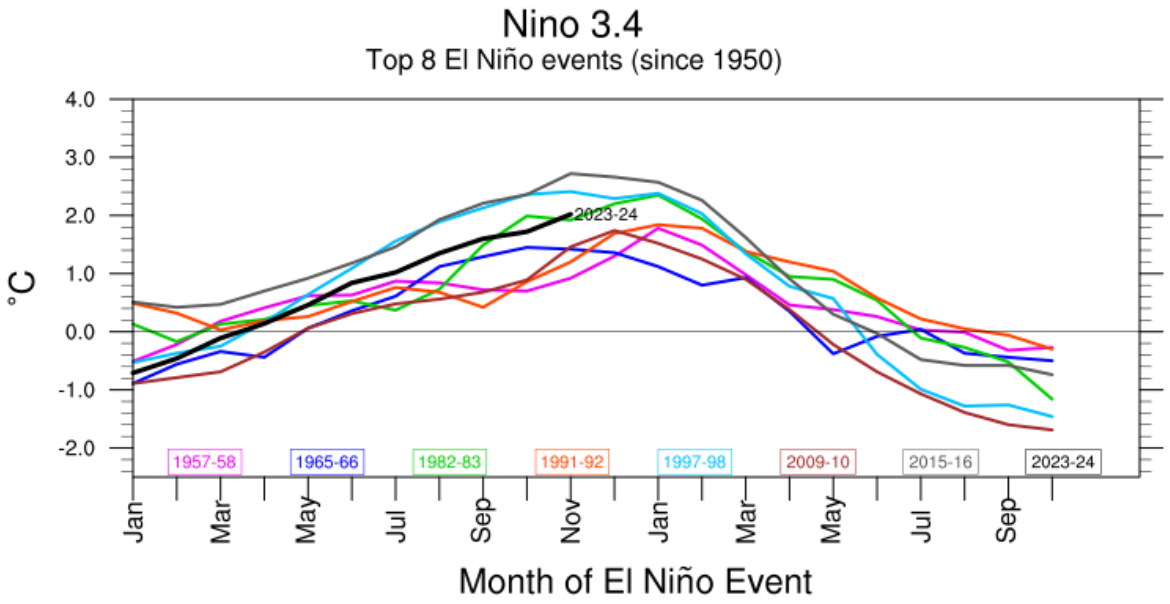


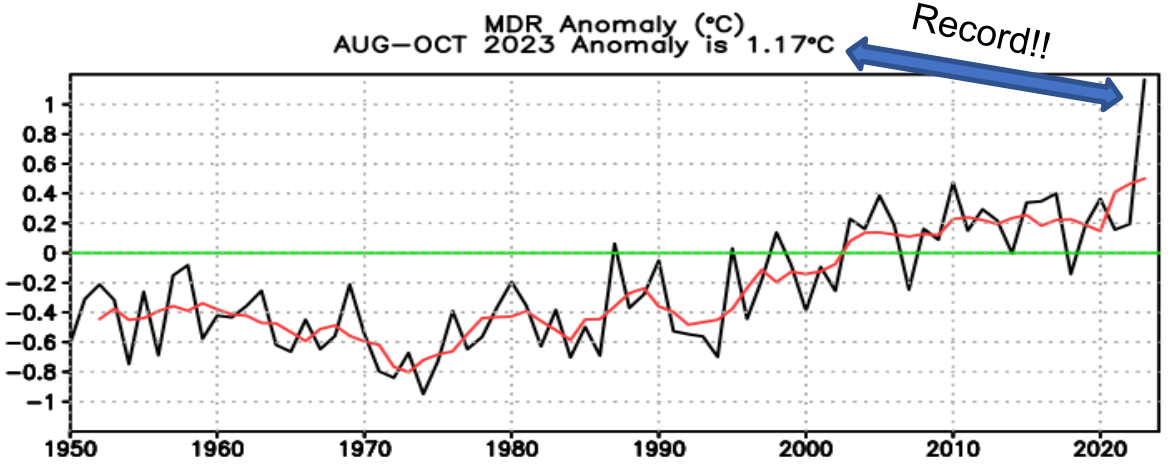
Category	Observed	Normal
Named storms	17	15
Hurricanes	10	8
Major Hurr	8	4
ACE	133 kts^2 (137%)	97.2 kts^2

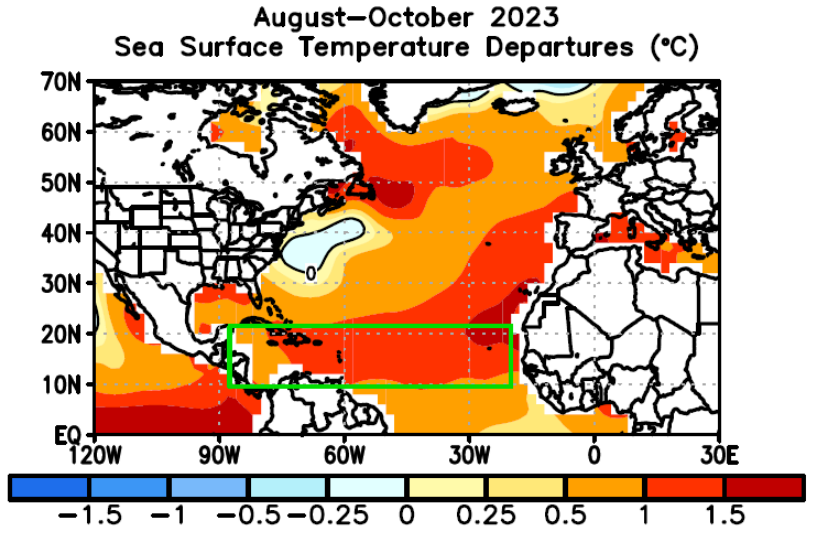
Hurricane Otis - Strongest east Pacific basin hurricane landfall in the modern era
165 mph (Cat5)
Hurricane Hilary – First issuance of tropical watches and warnings by NHC for California

2023 Atlantic Hurricane Season

Two major climate forcings – El Niño and record warm Atlantic Sea Surface Temperatures
El Niño usually means less tropical activity, while warm SSTs typically mean more.

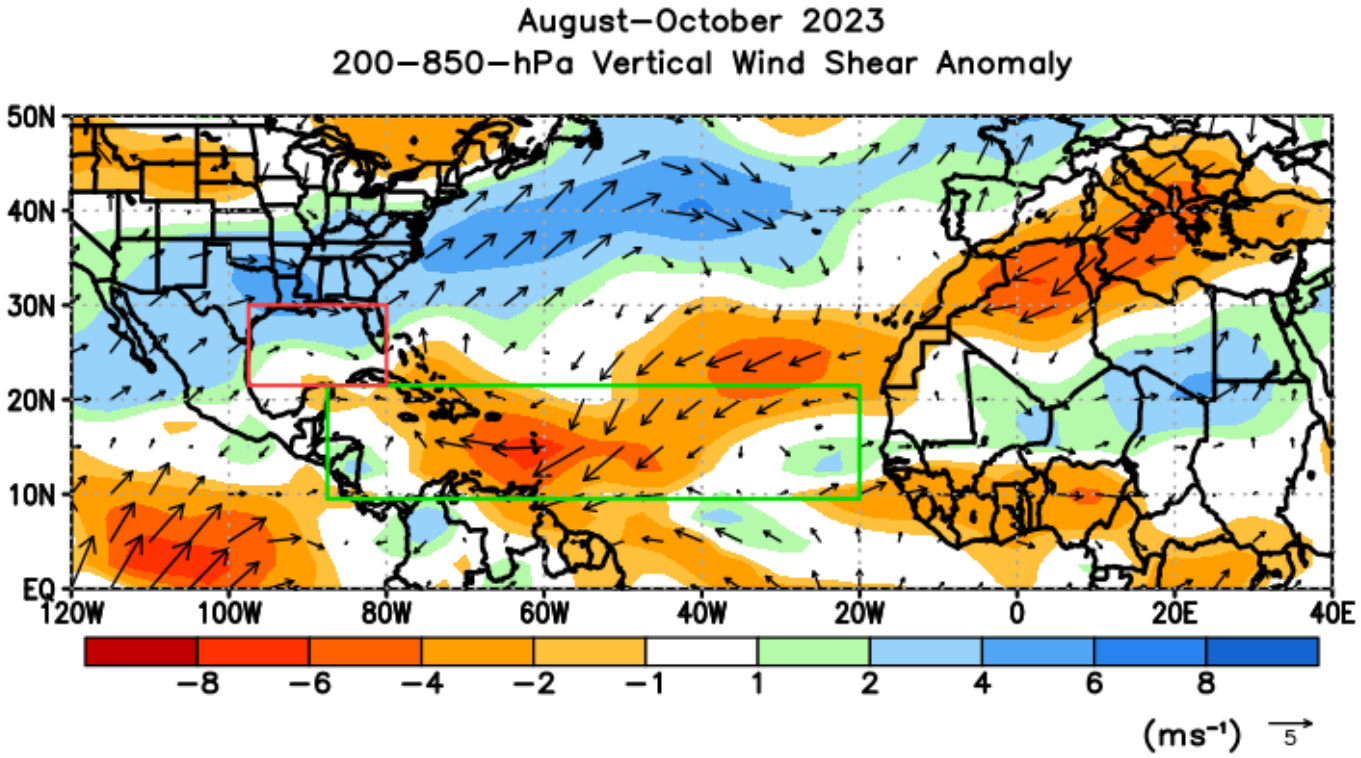






Given that we had the 4th most on record, initial thoughts are that the Atlantic SSTs (local conditions) dominated, but El Niño may have impacted the season in other ways.

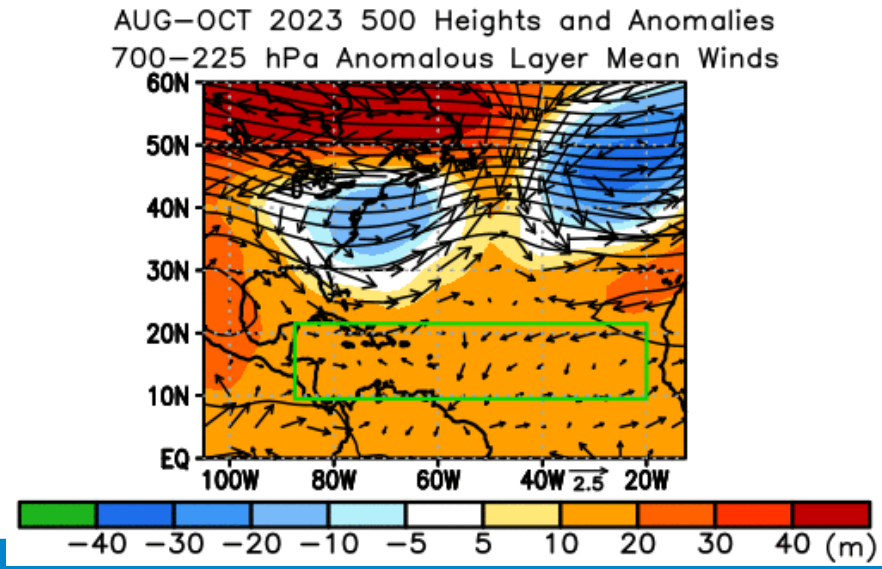
2023 Atlantic Hurricane Season



Wind Shear was relatively high over the Gulf of Mexico and Western Caribbean – Very typical of El Niño impacts.

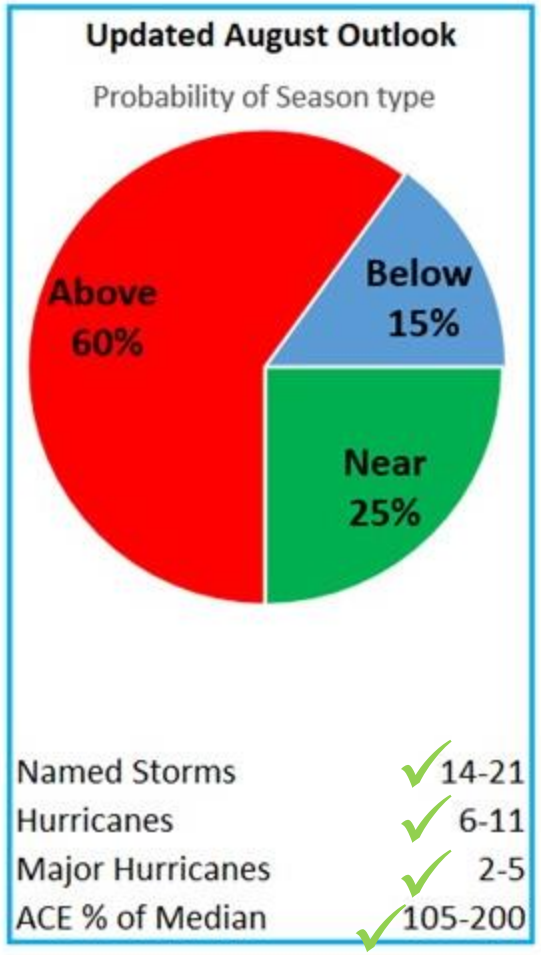
Wind Shear was quite low over over the main development region (MDR) (8th lowest since 1950).

60% of named storms (12) formed in MDR (higher fraction than normal), while only 10% formed in the Gulf of Mexico (2), a lower fraction than normal.

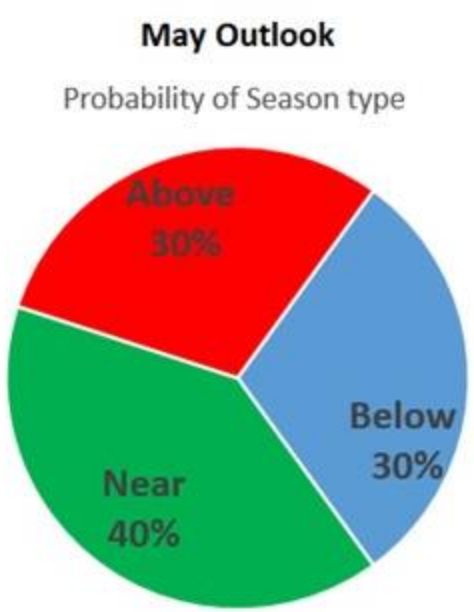


Overall, the steering currents that determine the hurricane paths were directed away from the coast of the U.S, resulting in a low amount of landfalling storms despite high activity.

2023 Atlantic Hurricane Season Preliminary Verification

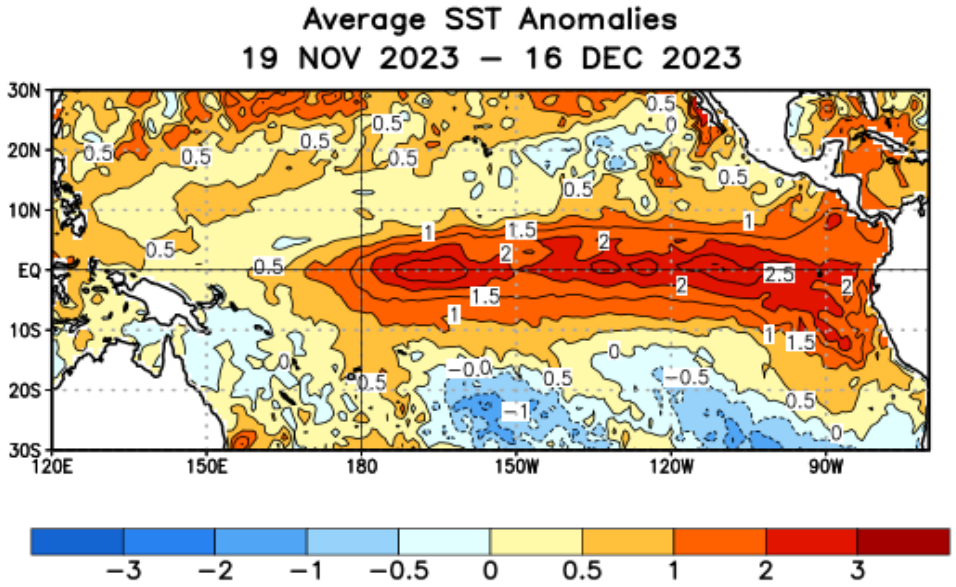


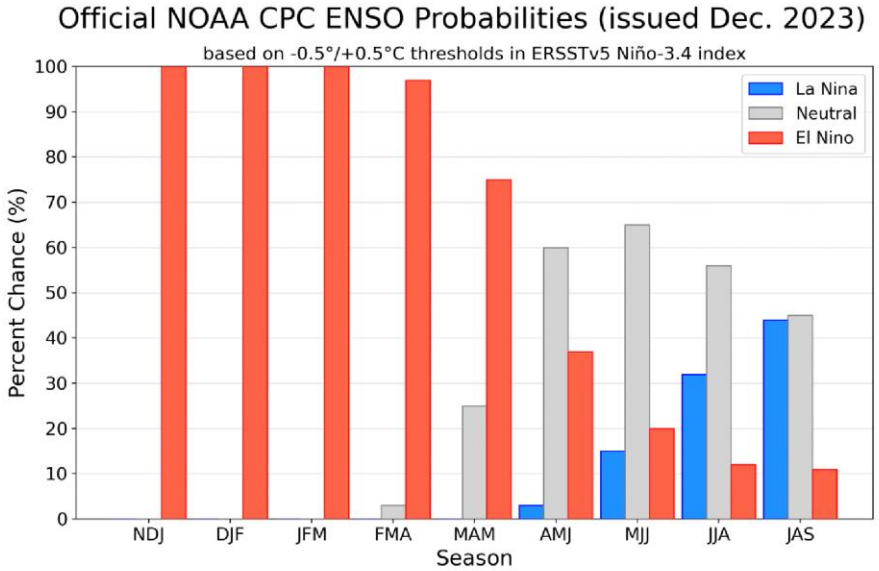
Named Storms	✓14-21
Hurricanes	✓6-11
Major Hurricanes	✓2-5
ACE % of Median	✓105-200



Named Storms	12-17
Hurricanes	✓5-9
Major Hurricanes	✓1-4
ACE % of Median	70-145

Sea Surface Temperatures and ENSO



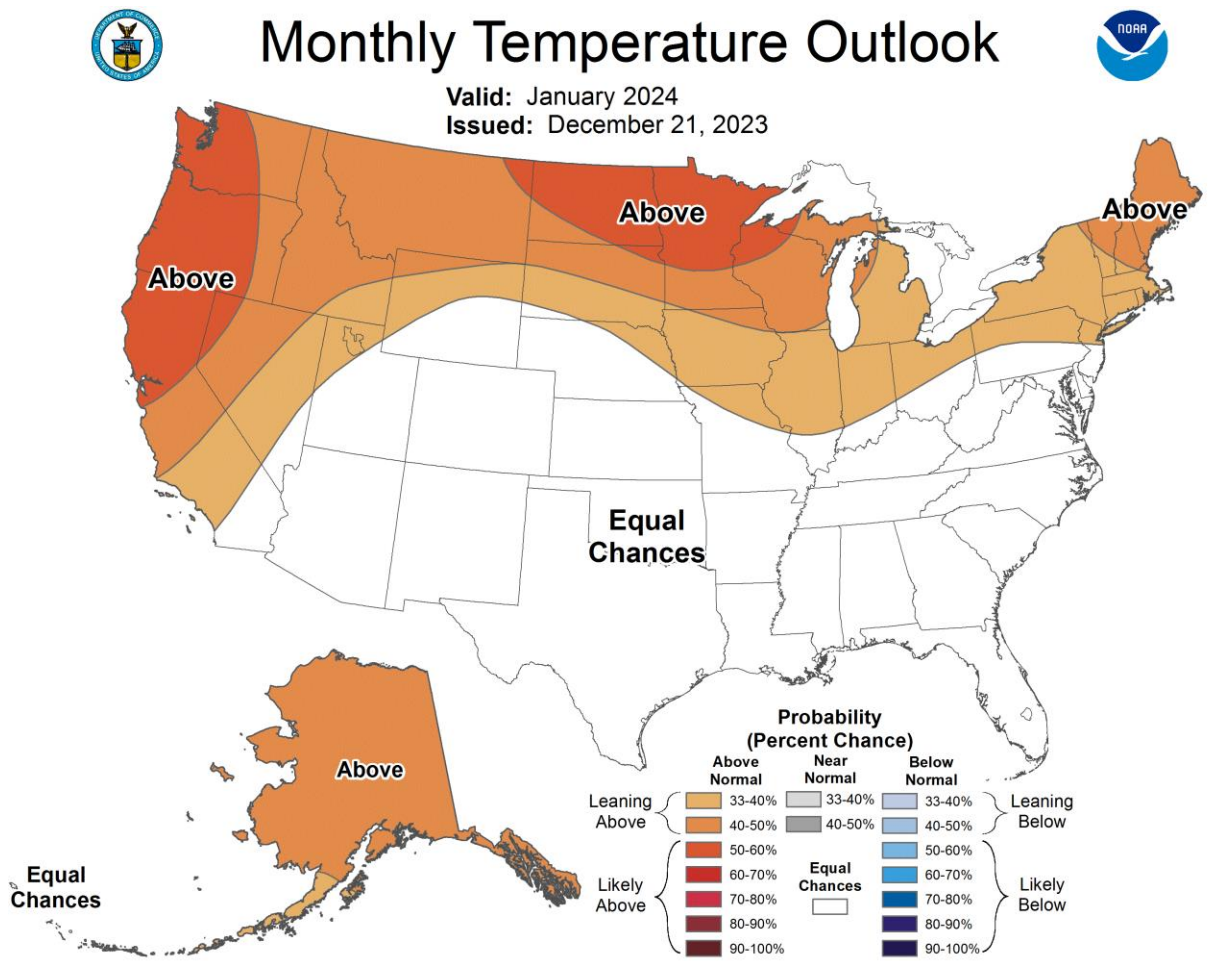


- Sea surface temperatures
  - In the last four weeks, equatorial SSTs were above average across most of the Pacific Ocean, with near average SSTs in the western Pacific Ocean.
  - The tropical Pacific atmospheric anomalies are consistent with El Niño.

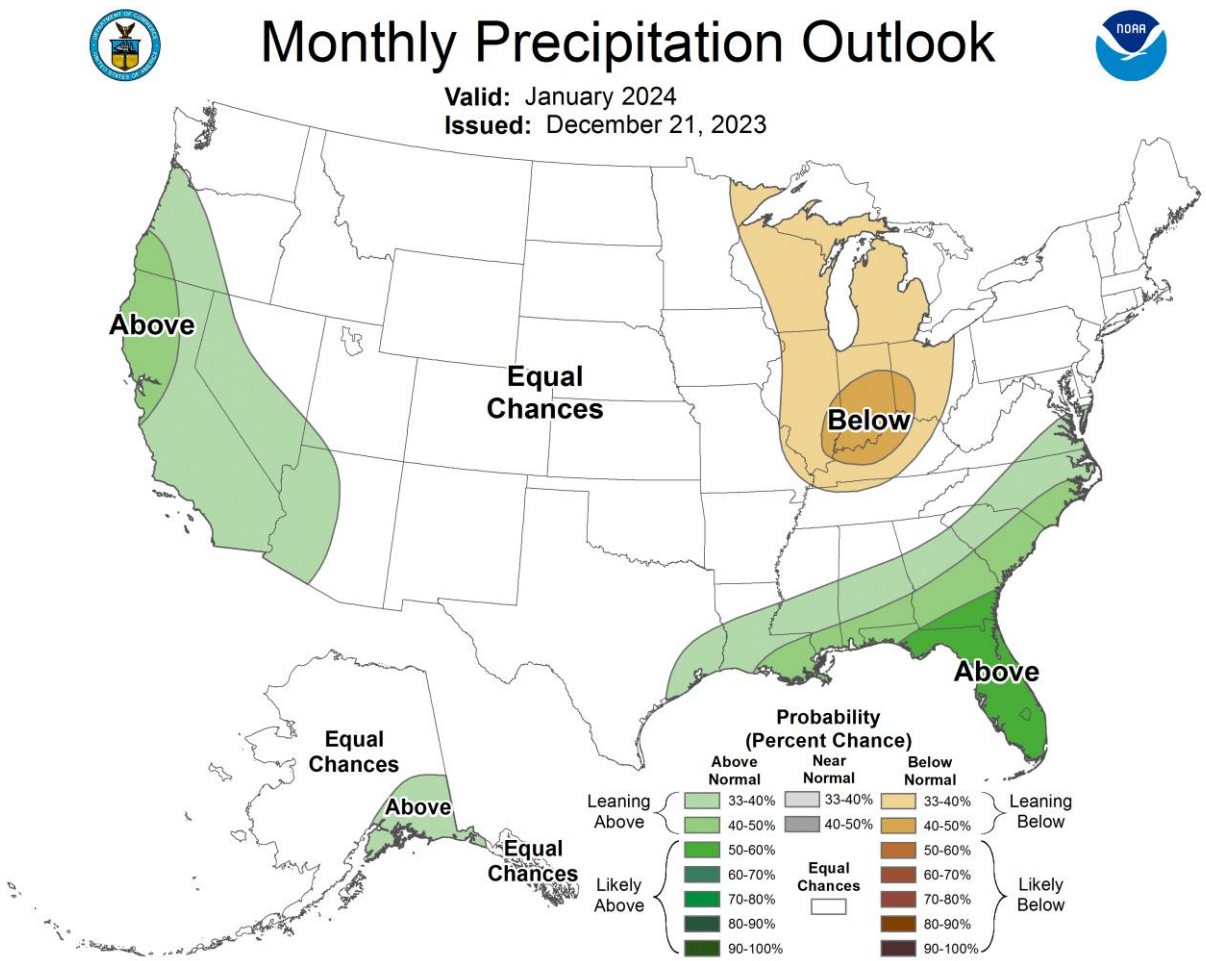
- ENSO forecast
  - El Niño is expected to continue through the Northern Hemisphere winter, with a transition to ENSO-neutral favored during April-June 2024 (60% chance).
  - There is now a 54% chance of a "historically strong" El Niño during the November-January season (≥ 2.0°C in Niño-3.4)

Monthly Forecast (January)

January Average
Temperature Probability

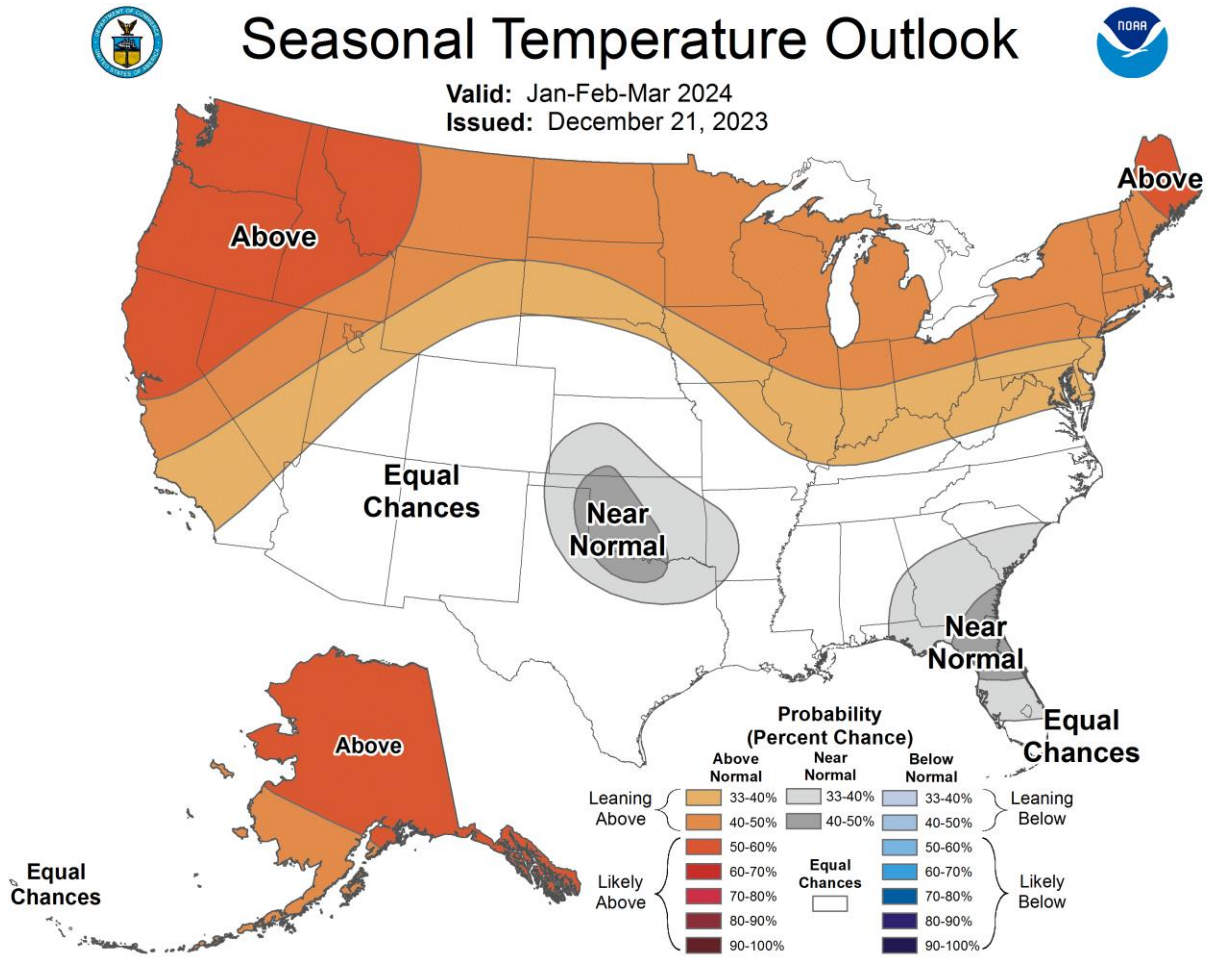


January Total
Precipitation Probability

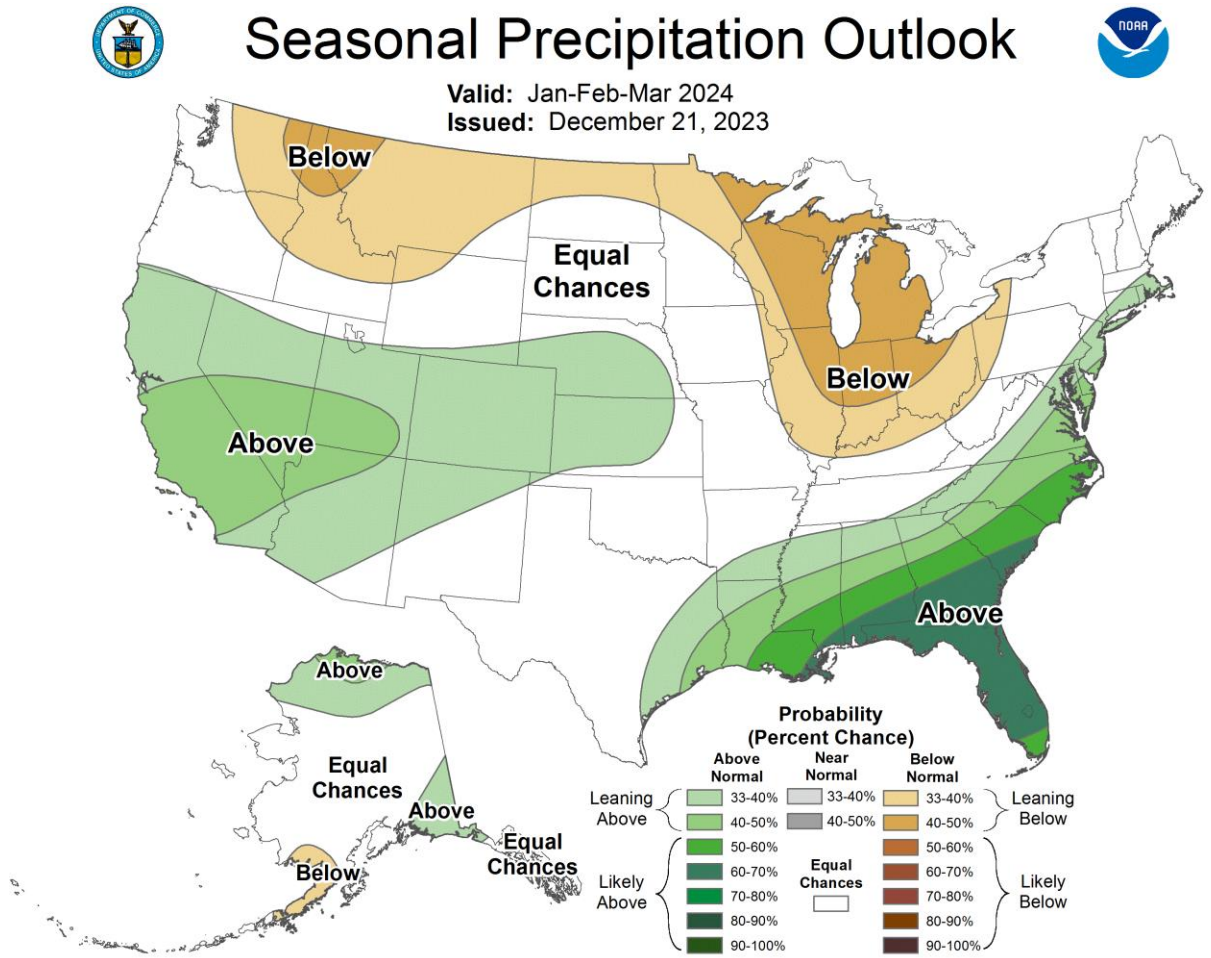


Three-Month Forecast (Jan-Feb-Mar)

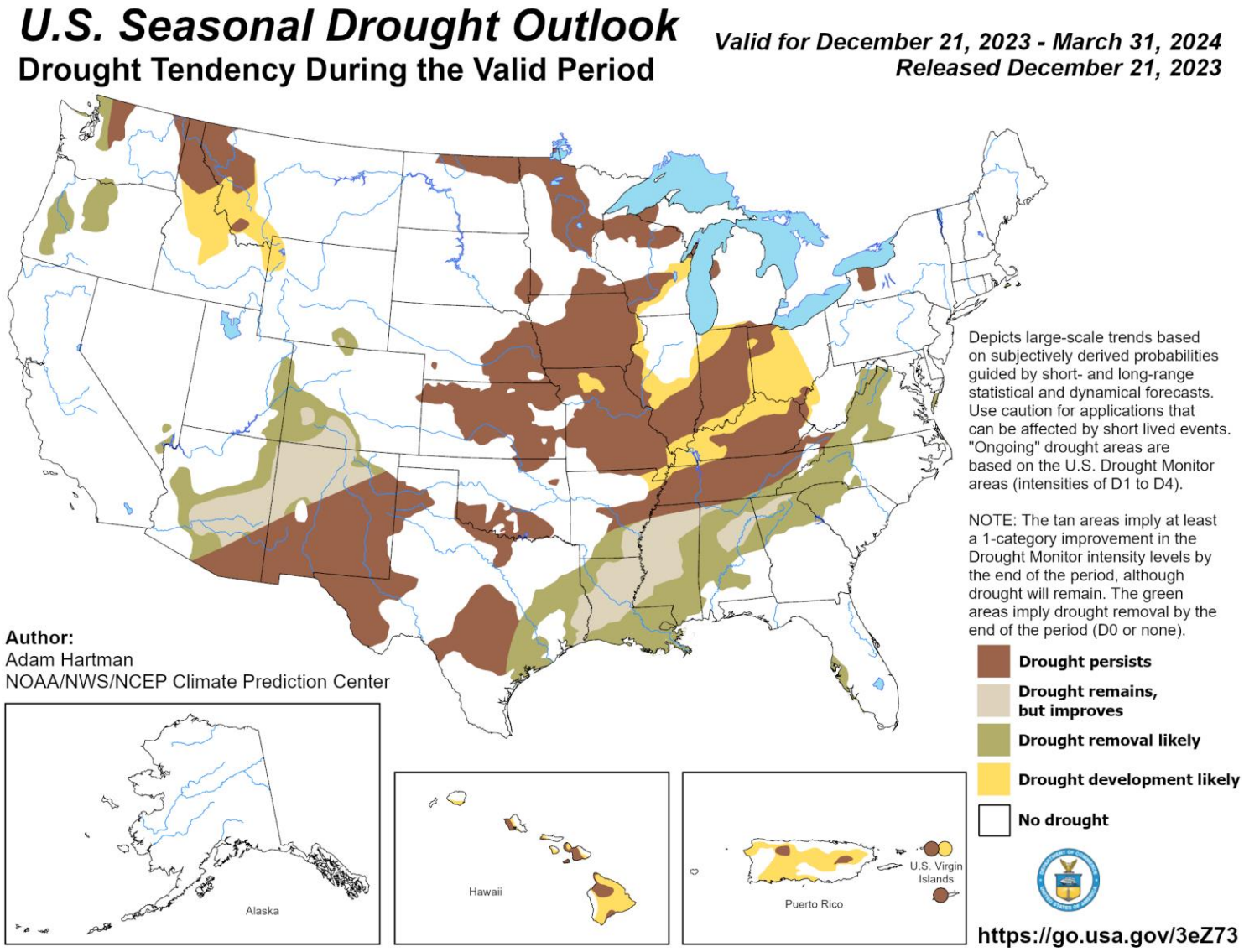
Jan-Feb-Mar Average
Temperature Probability



Jan-Feb-Mar Total
Precipitation Probability



Drought Outlook



For More Information

Today's presentation:

- https://www.ncei.noaa.gov/access/monitoring/monthly-report/briefings

NOAA's National Centers for Environmental Information: www.ncei.noaa.gov

- Monthly climate reports (U.S. & Global): https://www.ncei.noaa.gov/access/monitoring/monthly-report/
- Dates for upcoming reports: https://www.ncei.noaa.gov/access/monitoring/dyk/monthly-releases

NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov

U.S. Drought Monitor: www.drought.gov

Climate portal: www.climate.gov

NOAA media contacts: john.jones-bateman@noaa.gov, 202-424-0929 (NOAA/NESDIS PAO)