








Living in a Changing World

Climate Outlooks for the United States

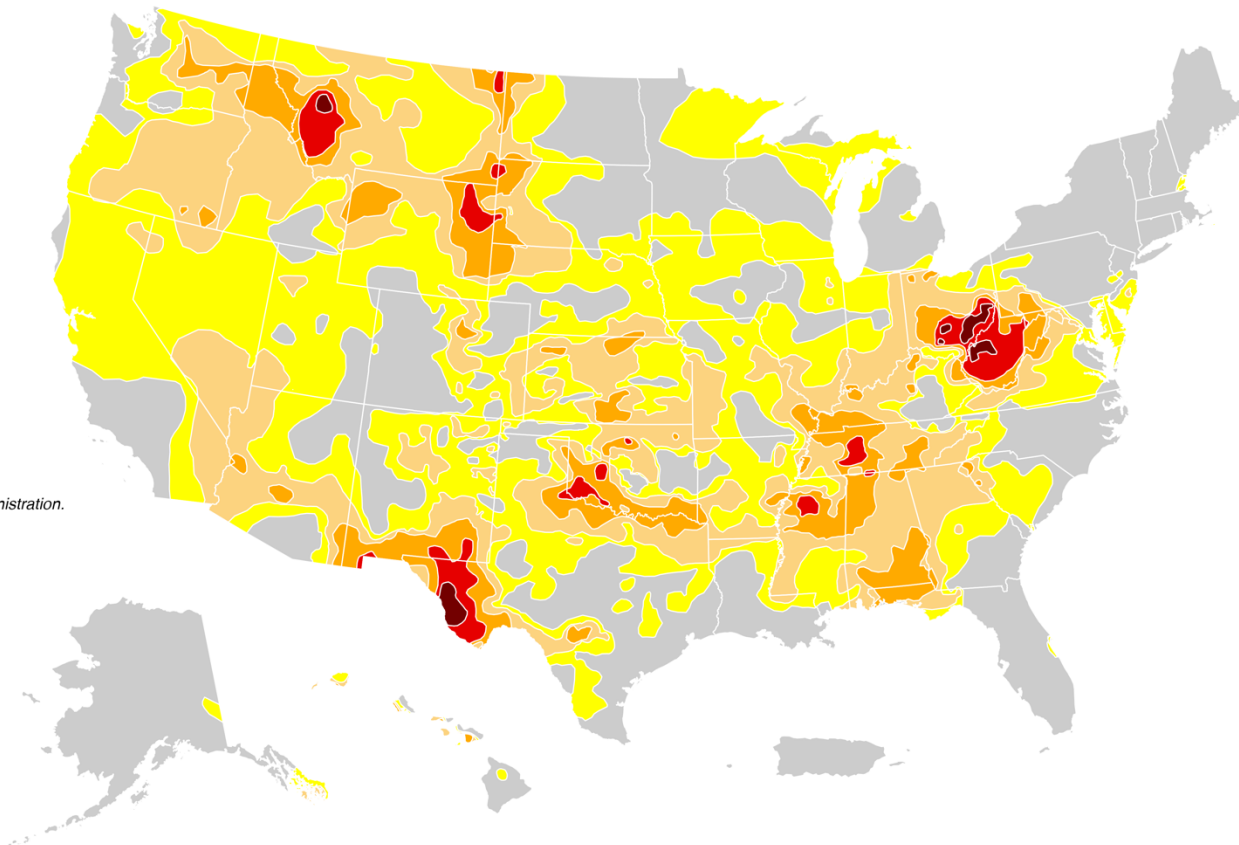
Kyle Bocinsky
Director of Climate Extension
Montana Climate Office



US Drought Monitor September 10, 2024

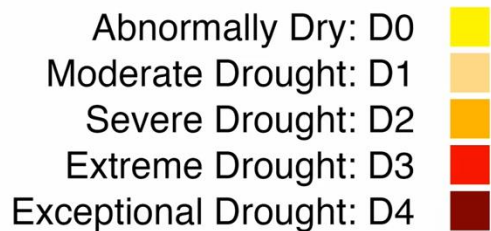
Abnormally Dry: D0	
Moderate Drought: D1	
Severe Drought: D2	
Extreme Drought: D3	
Exceptional Drought: D4	

The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map data courtesy of NDMC. Map courtesy of the Montana Climate Office.

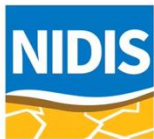
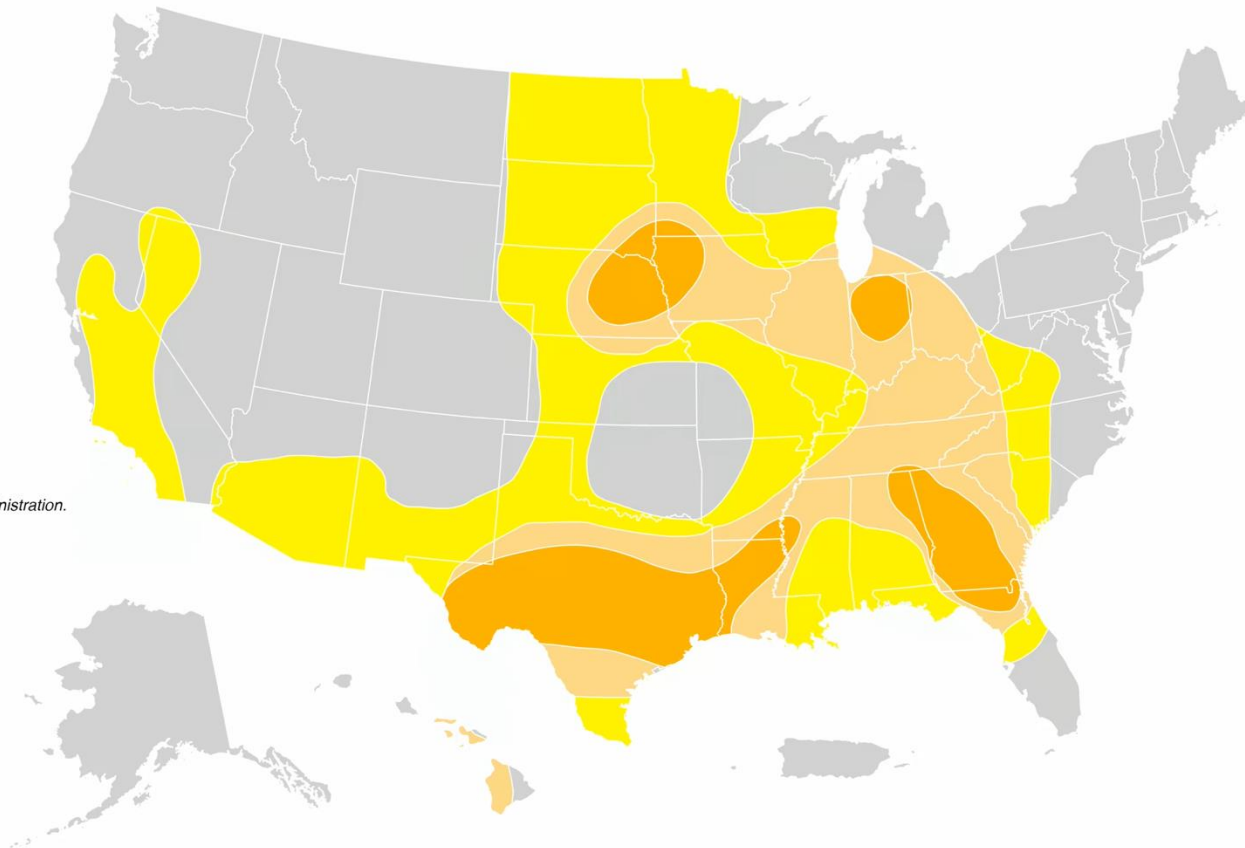


US Drought Monitor

January 4, 2000



The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map data courtesy of NDMC. Map courtesy of the Montana Climate Office.

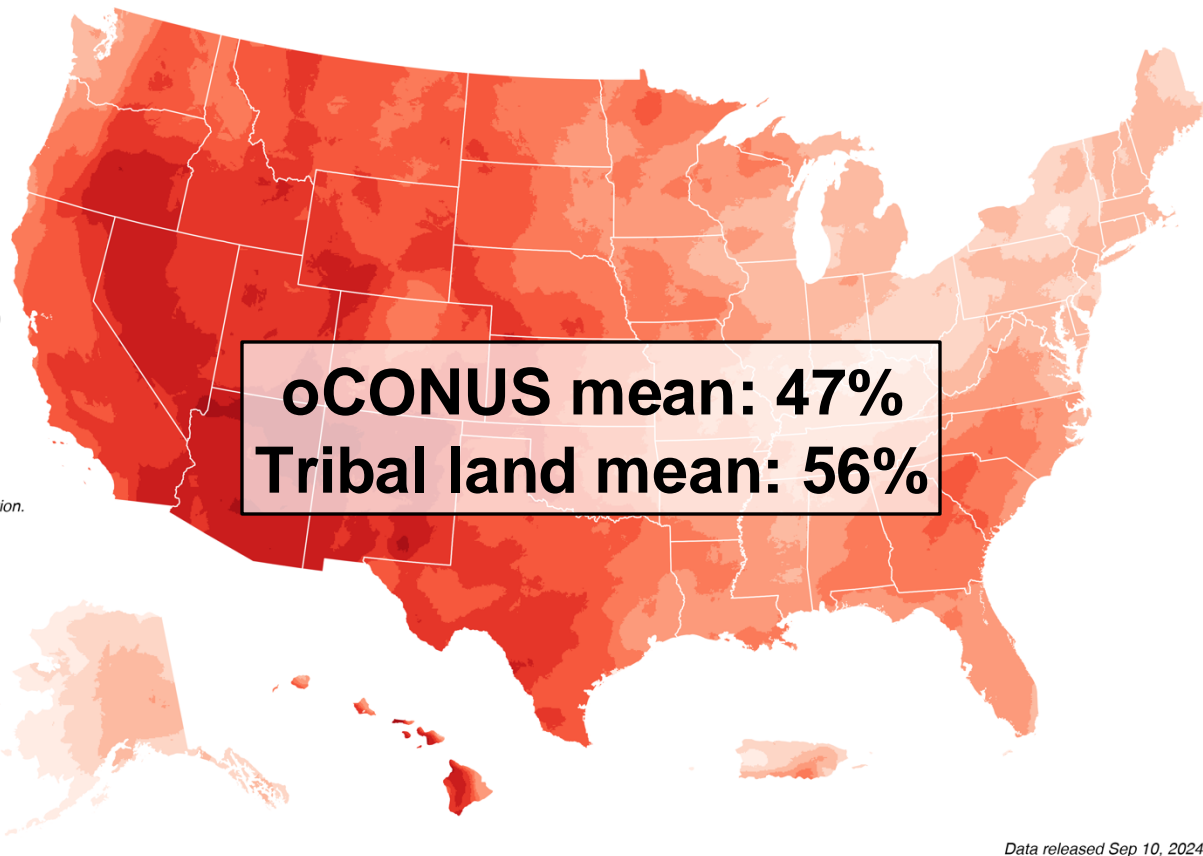


US Drought Monitor % of Weeks in Class D0–D4 Jan 4, 2000 – Sep 10, 2024



0 10 20 30 40 50 60 70 80 90 100

The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map data courtesy of NDMC. Map courtesy of the Montana Climate Office.



Data released Sep 10, 2024



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Native Climate Working Group — September 17, 2024

US Drought Monitor % of Weeks in Class D2–D4 Jan 4, 2000 – Sep 10, 2024



0 10 20 30 40 50 60 70 80 90 100

The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map data courtesy of the Montana Climate Office.



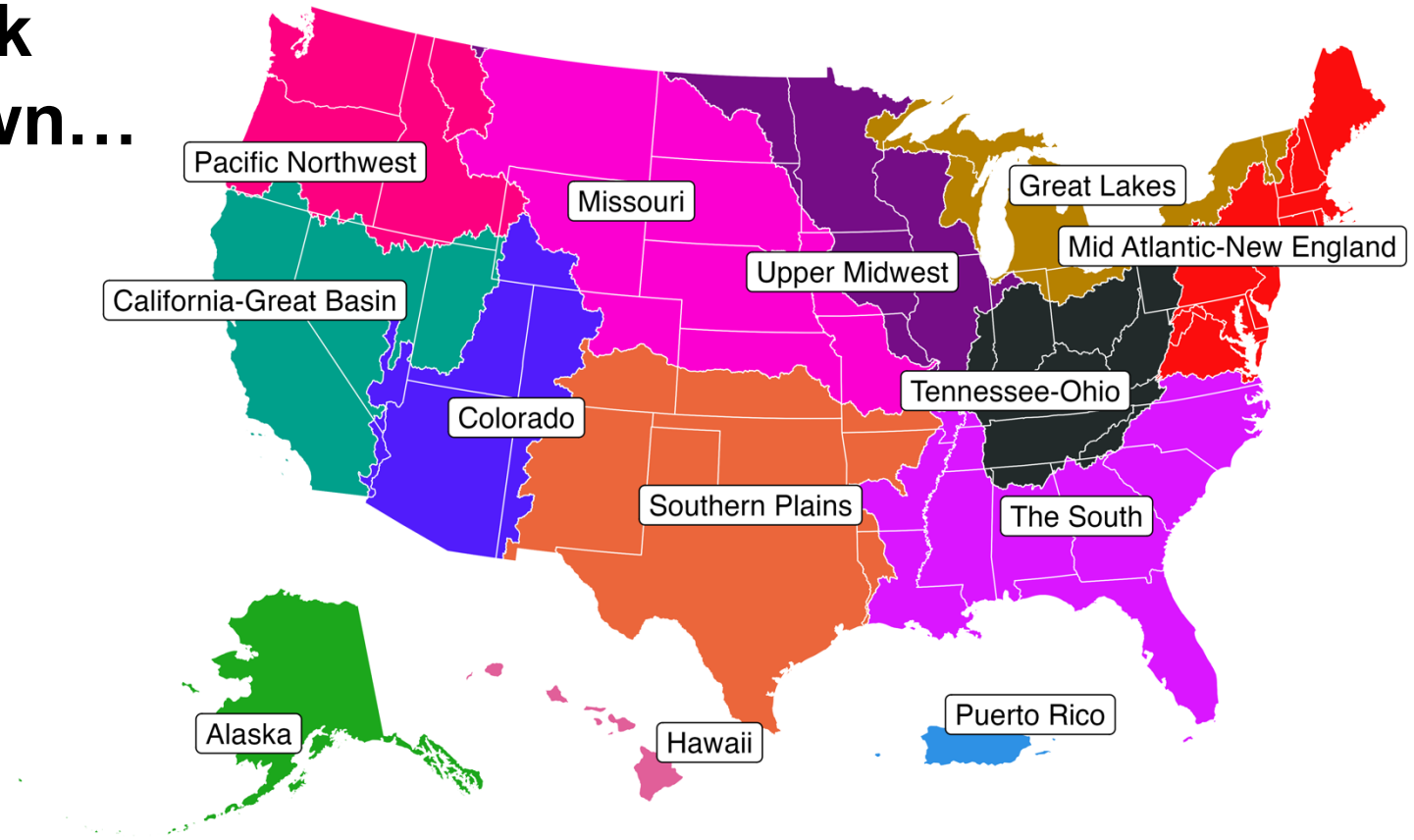
oCONUS mean: 17%
Tribal land mean: 22%

Data released Sep 10, 2024

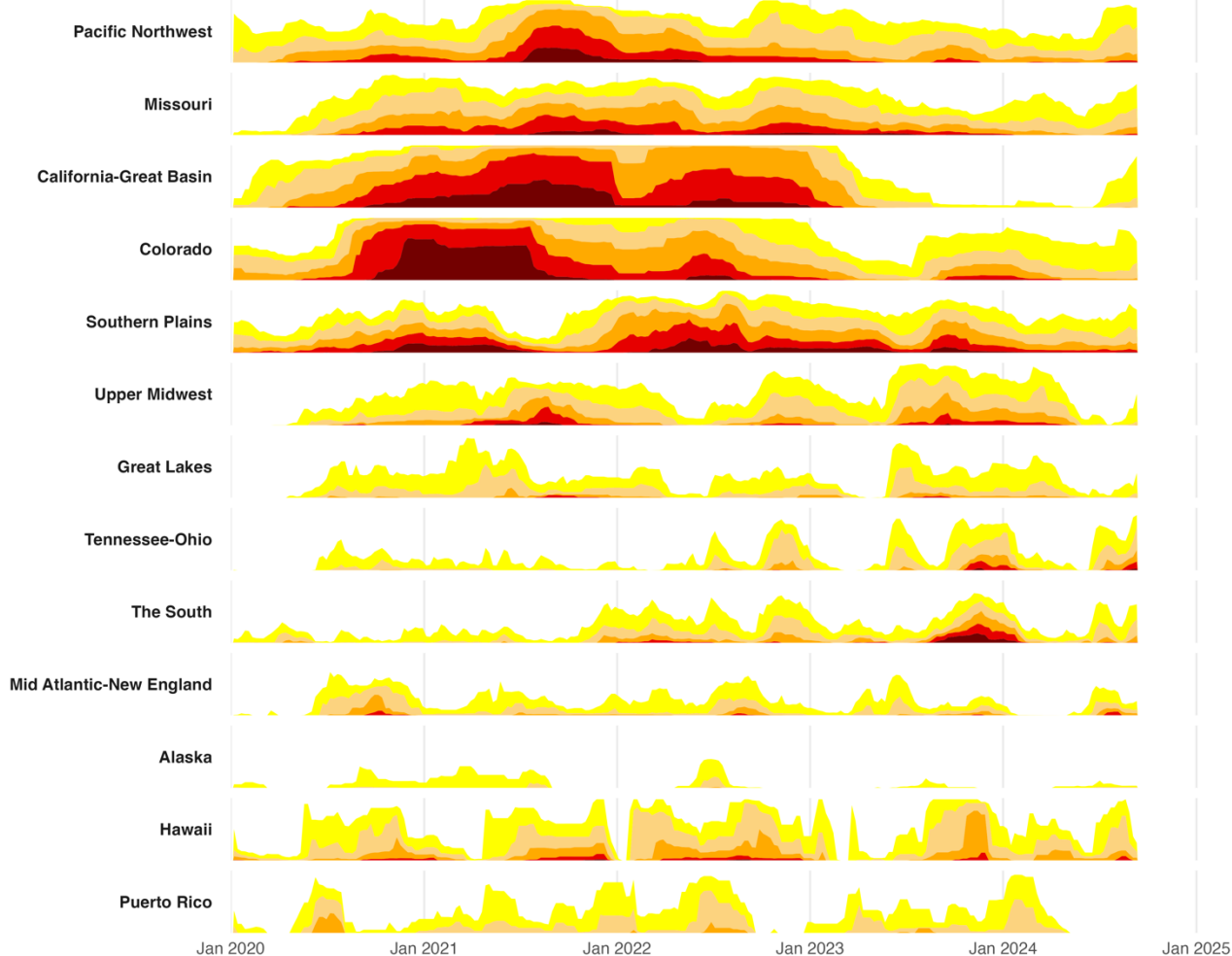
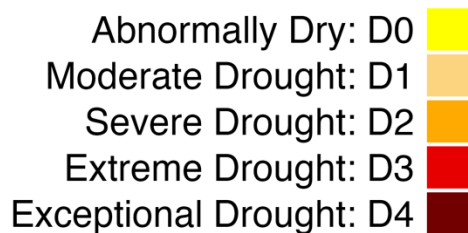


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Let's break this down...

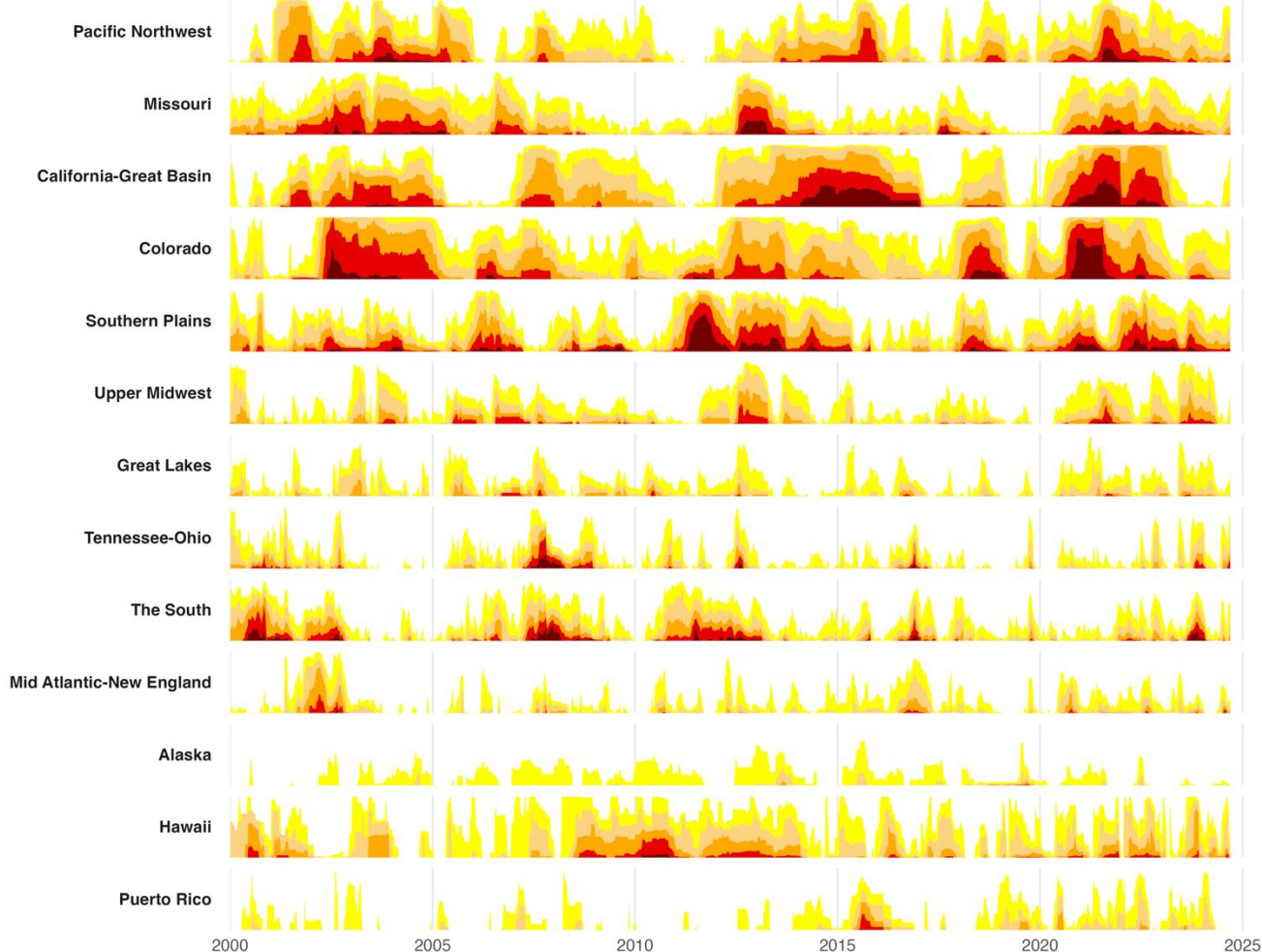


US Drought Monitor

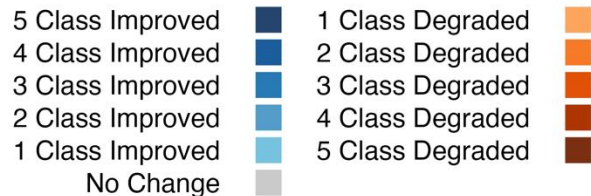


US Drought Monitor

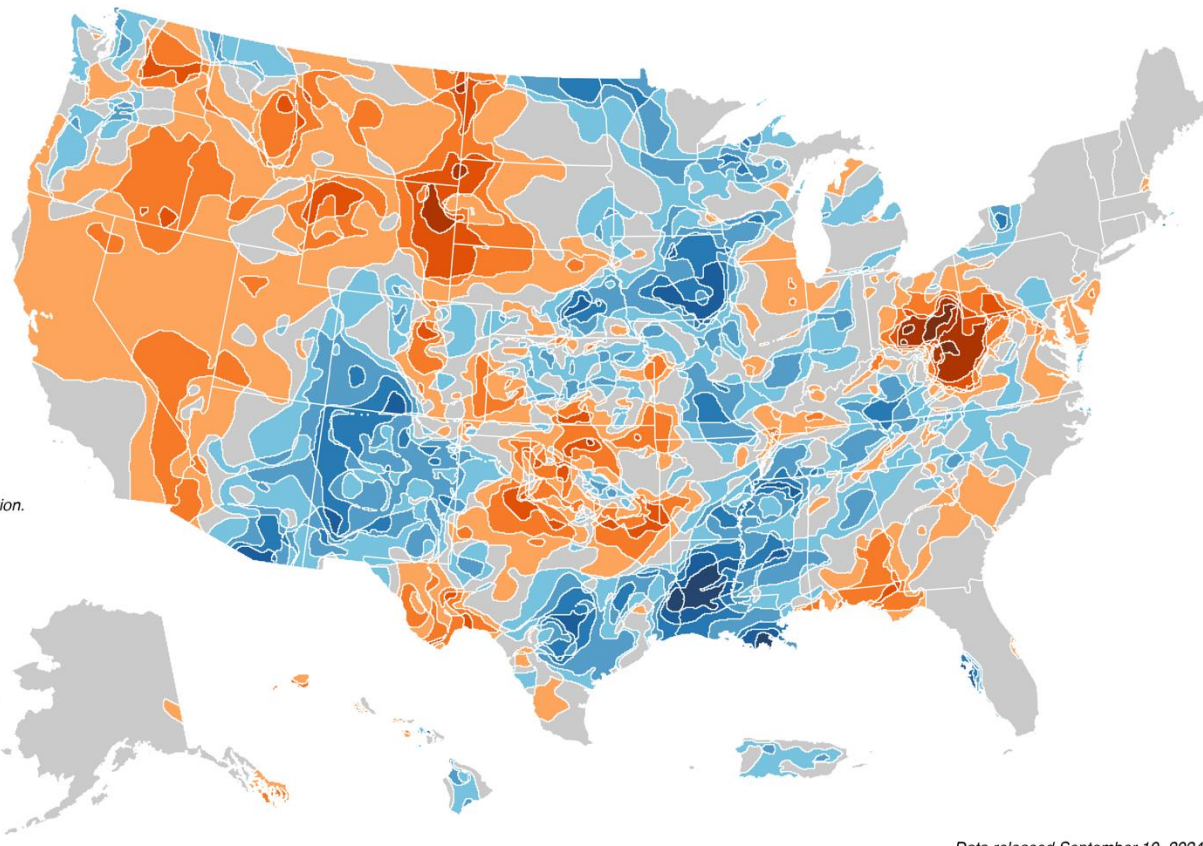
Abnormally Dry: D0 
Moderate Drought: D1 
Severe Drought: D2 
Extreme Drought: D3 
Exceptional Drought: D4 



US Drought Monitor Class Change Start of Calendar Year



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Data released September 10, 2024

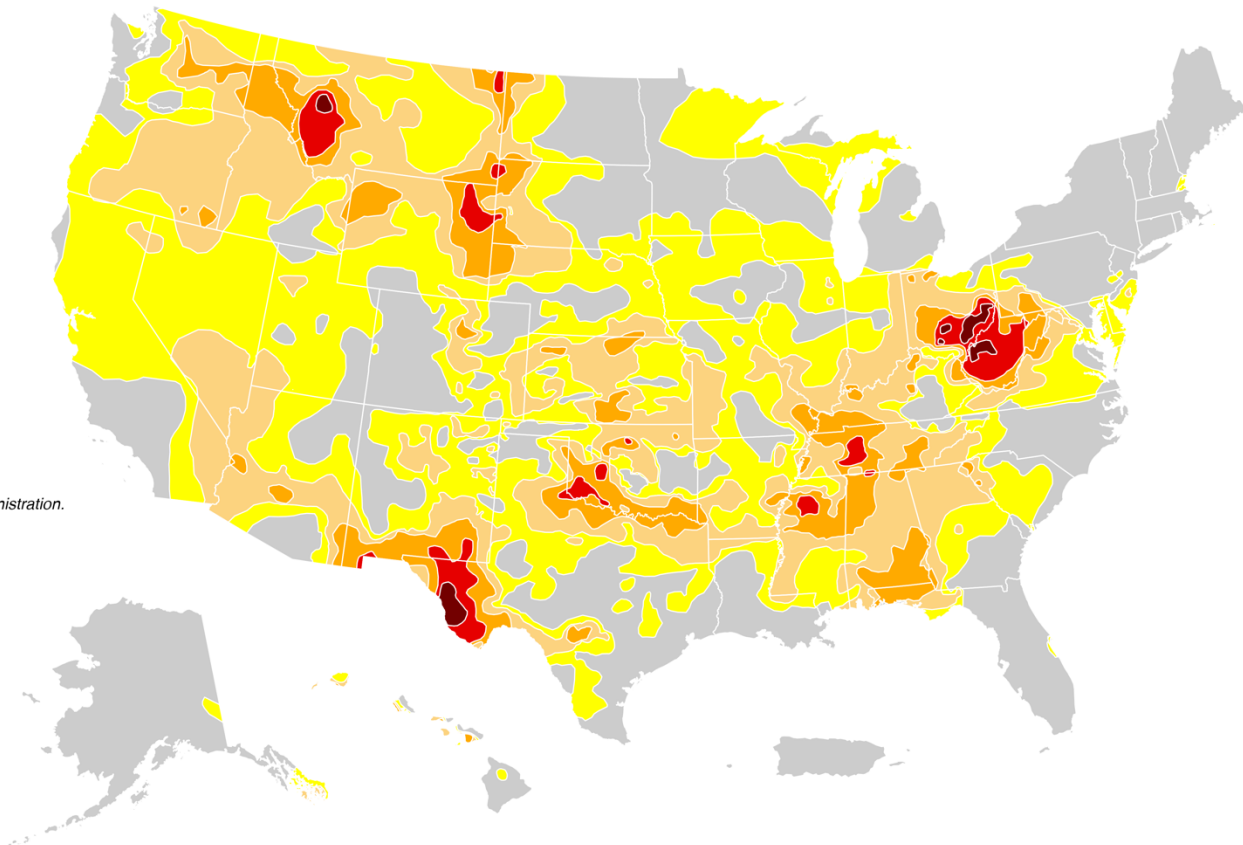


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 Native Climate Working Group — September 17, 2024



US Drought Monitor September 10, 2024

Abnormally Dry: D0	
Moderate Drought: D1	
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Extreme Drought: D3	
Exceptional Drought: D4	

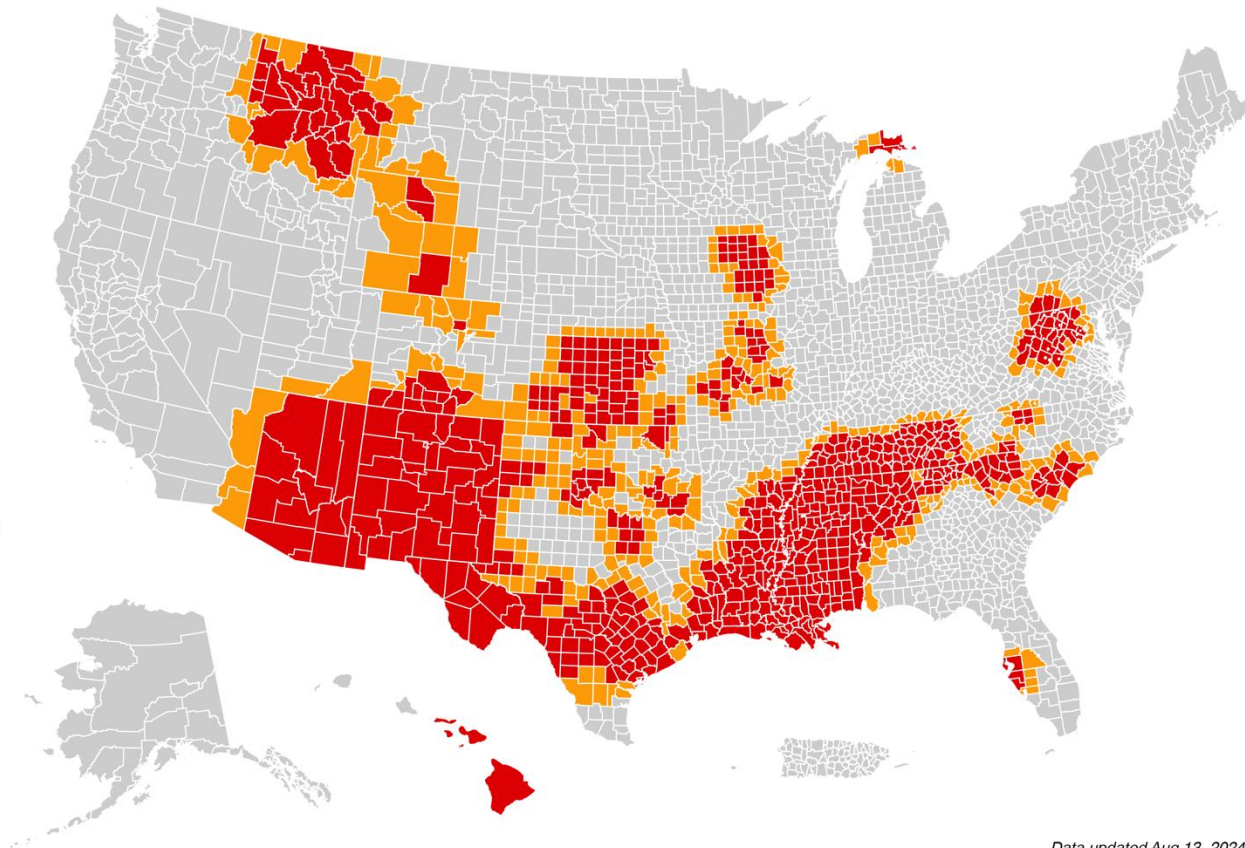
The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map data courtesy of NDMC. Map courtesy of the Montana Climate Office.



2024 USDA Secretarial Disaster Designations for Drought

Primary 
Contiguous 

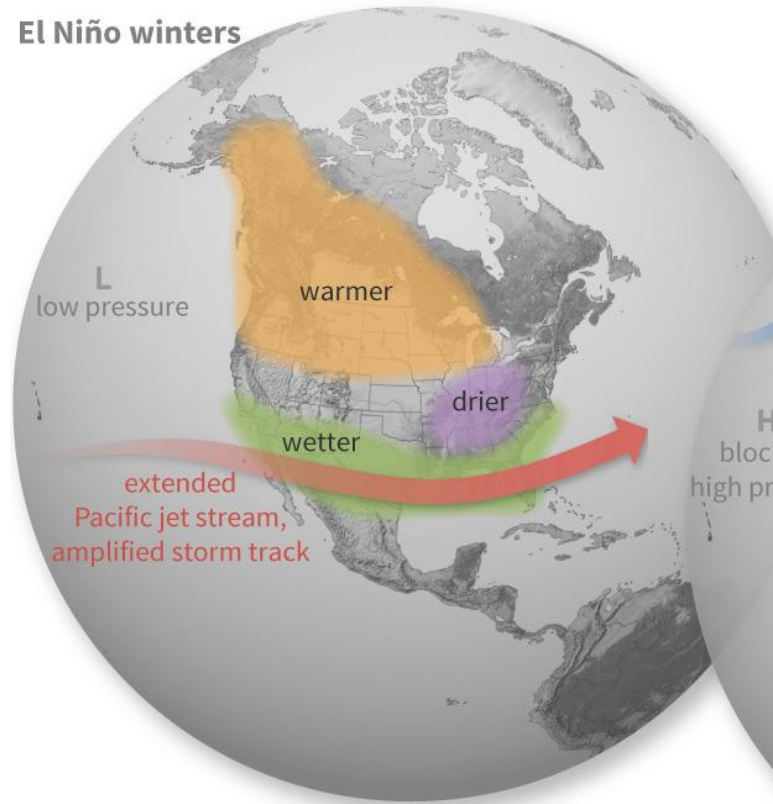
The Secretary of Agriculture is authorized to designate counties as disaster areas for emergency loan and assistance programs, such as Farm Service Agency (FSA) disaster assistance programs. Map data courtesy of the FSA. Map courtesy of the Montana Climate Office.



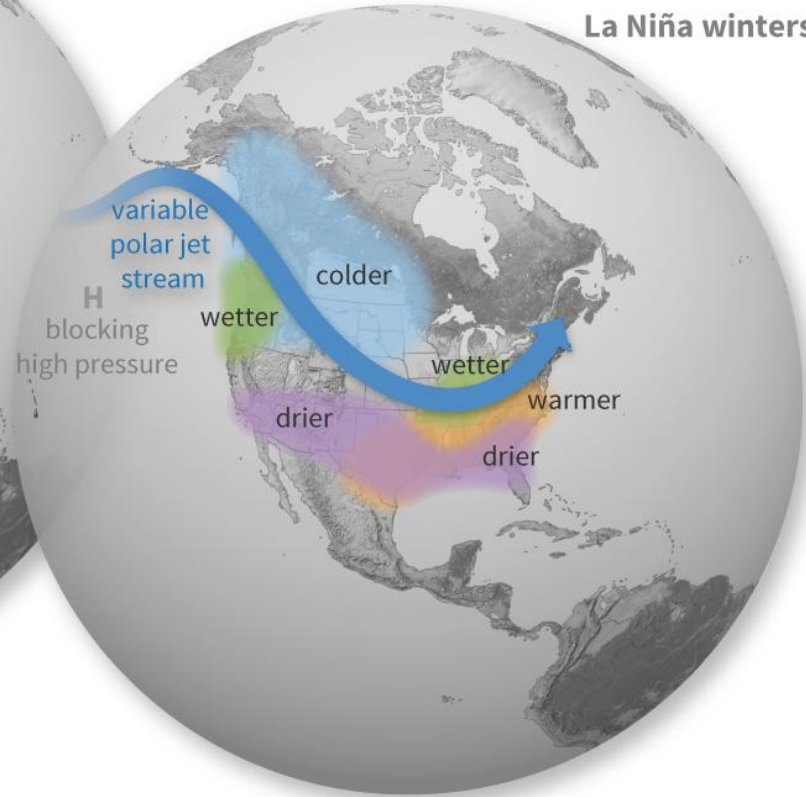
Data updated Aug 13, 2024



El Niño winters



La Niña winters



NOAA Climate.gov

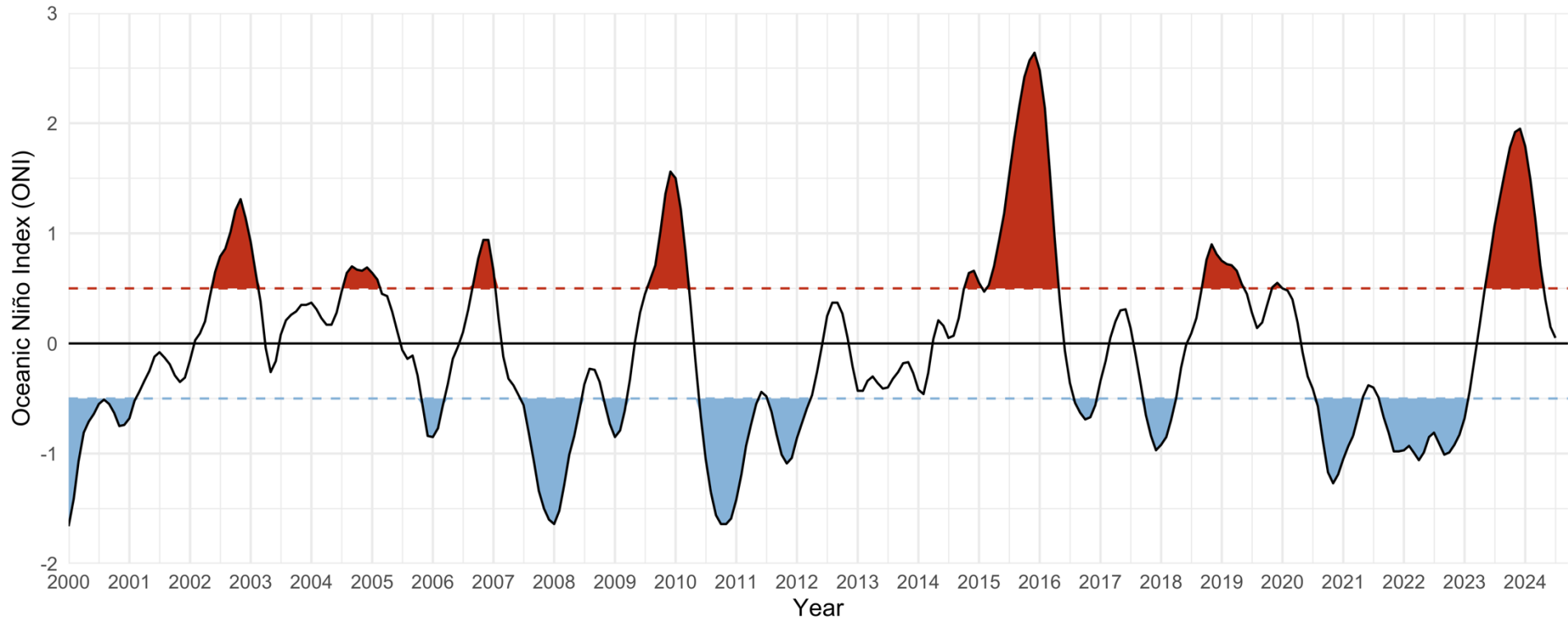


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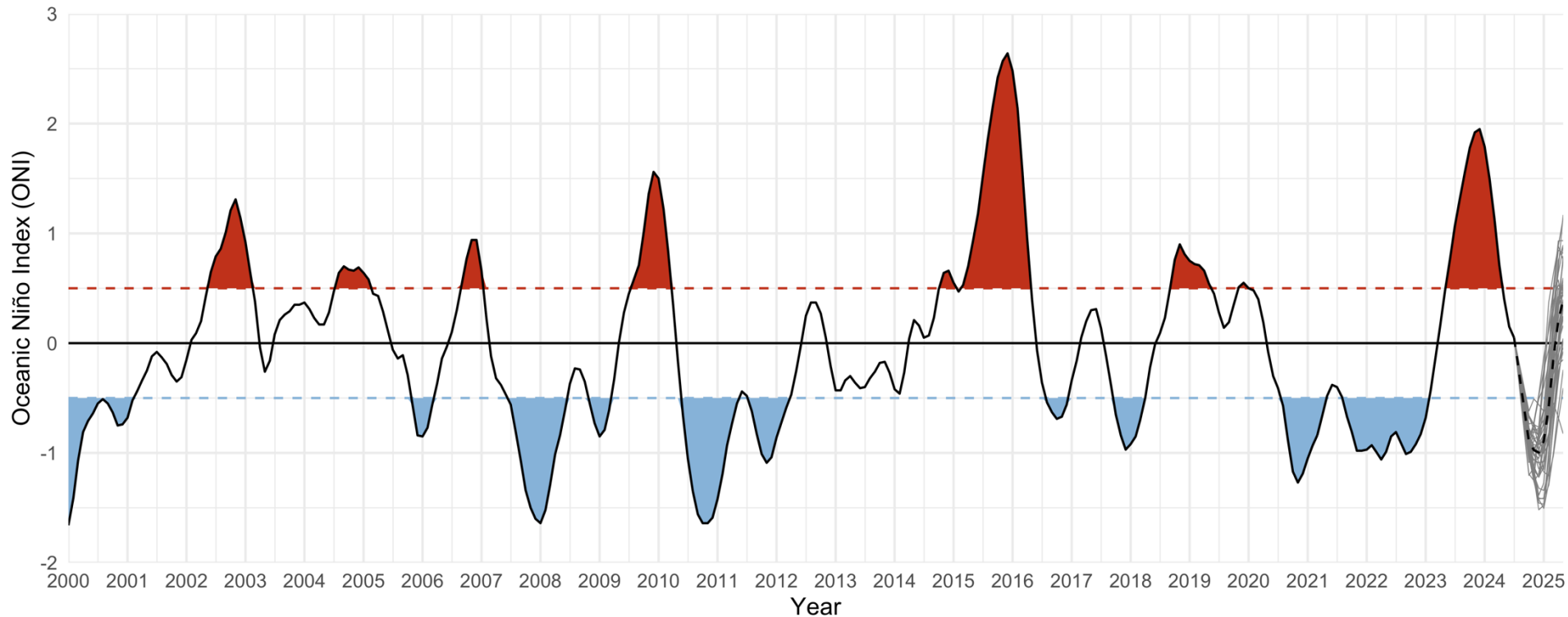
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ENSO Since 2000

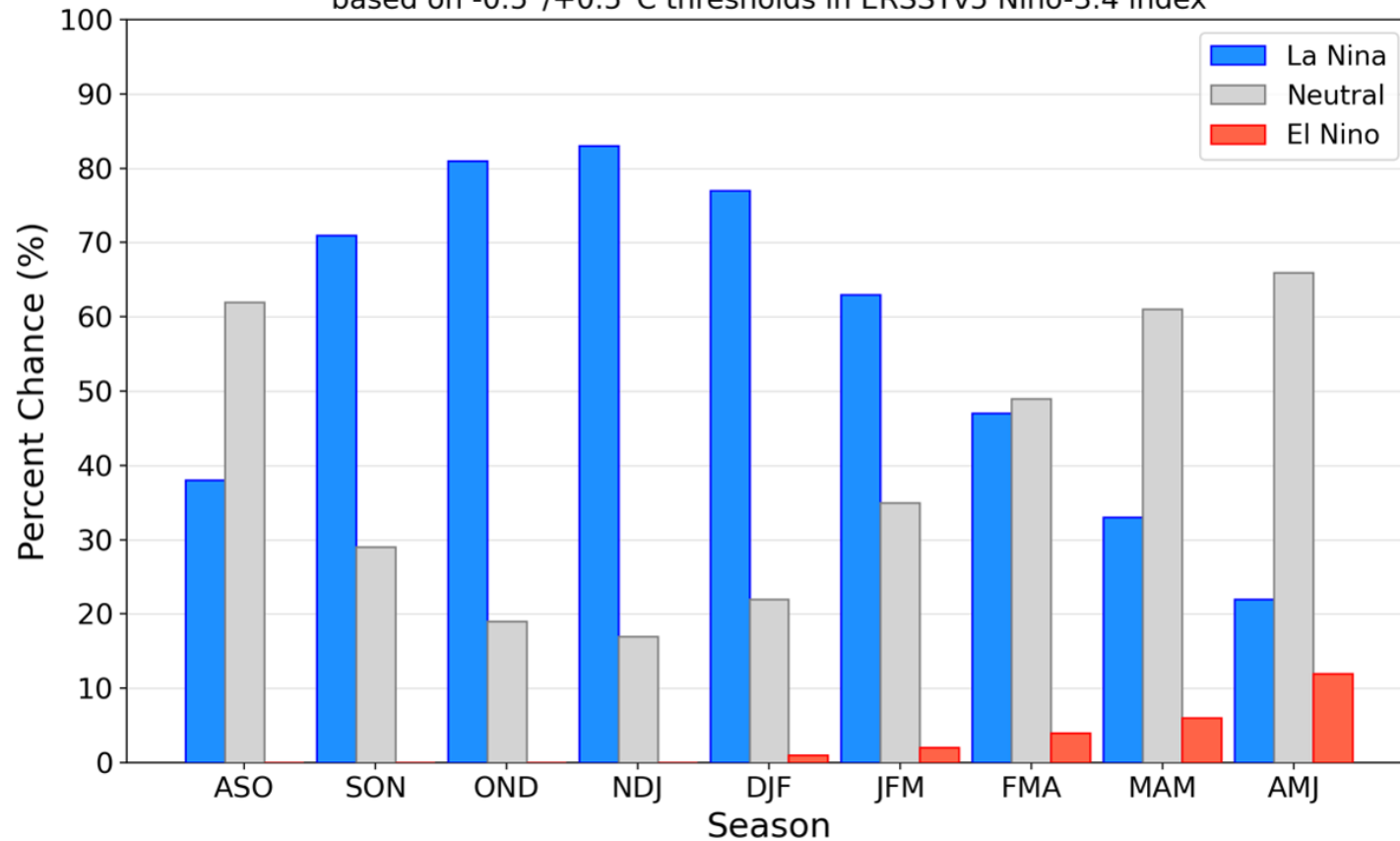


Winter 2024–2025 Projections

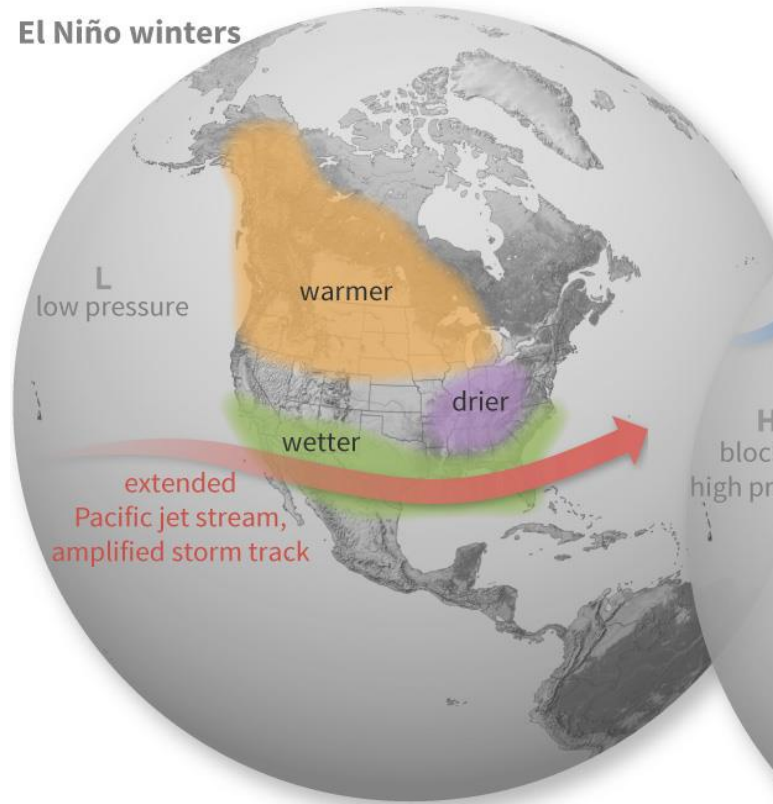


Official NOAA CPC ENSO Probabilities (issued September 2024)

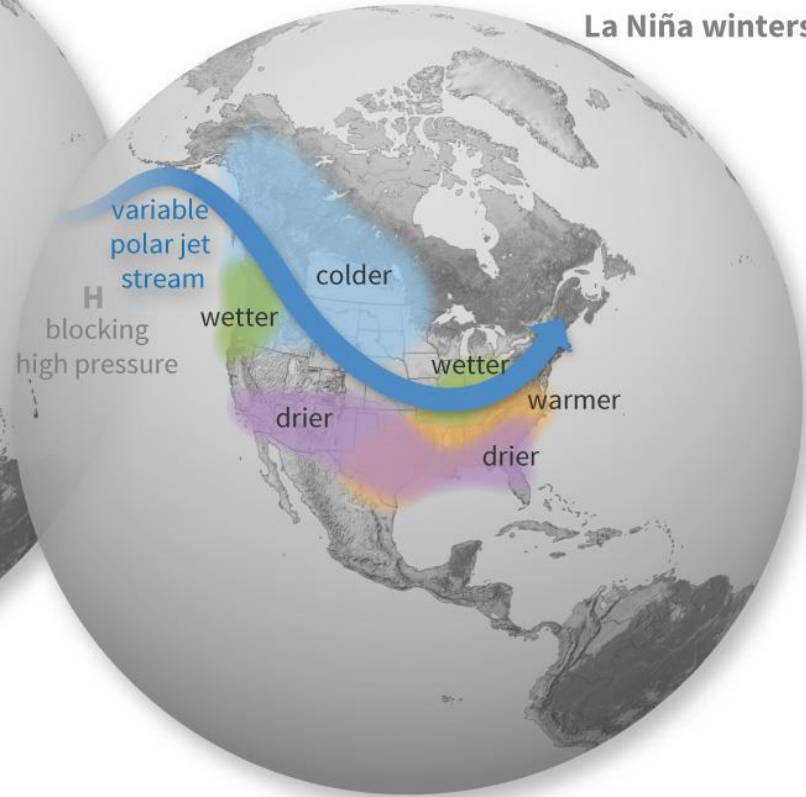
based on $-0.5^{\circ}/+0.5^{\circ}\text{C}$ thresholds in ERSSTv5 Niño-3.4 index



El Niño winters



La Niña winters



NOAA Climate.gov

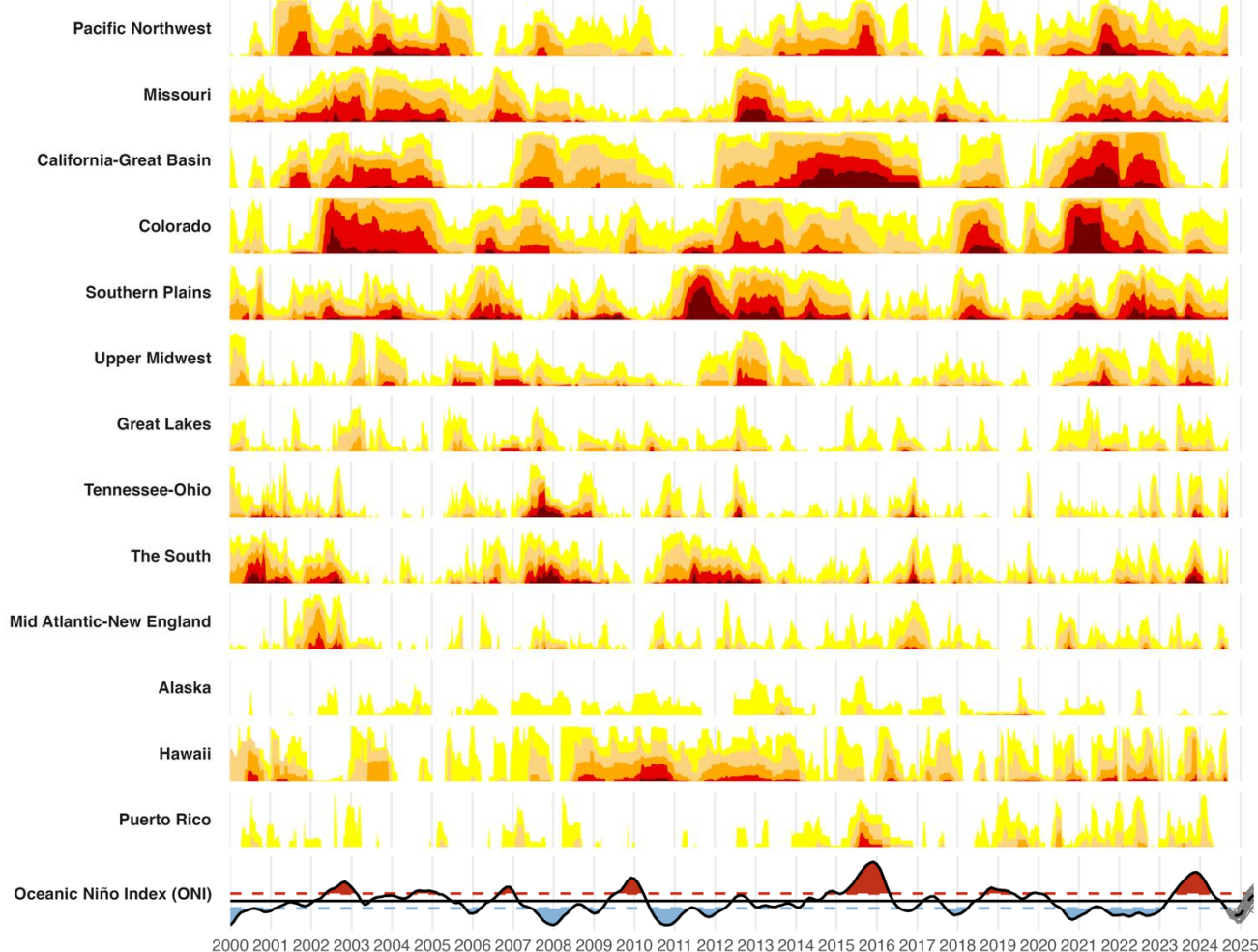
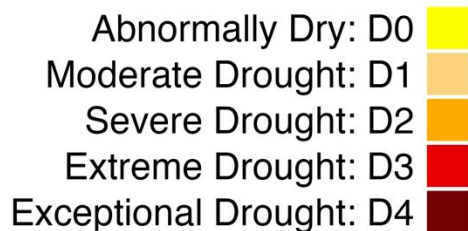


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US Drought Monitor



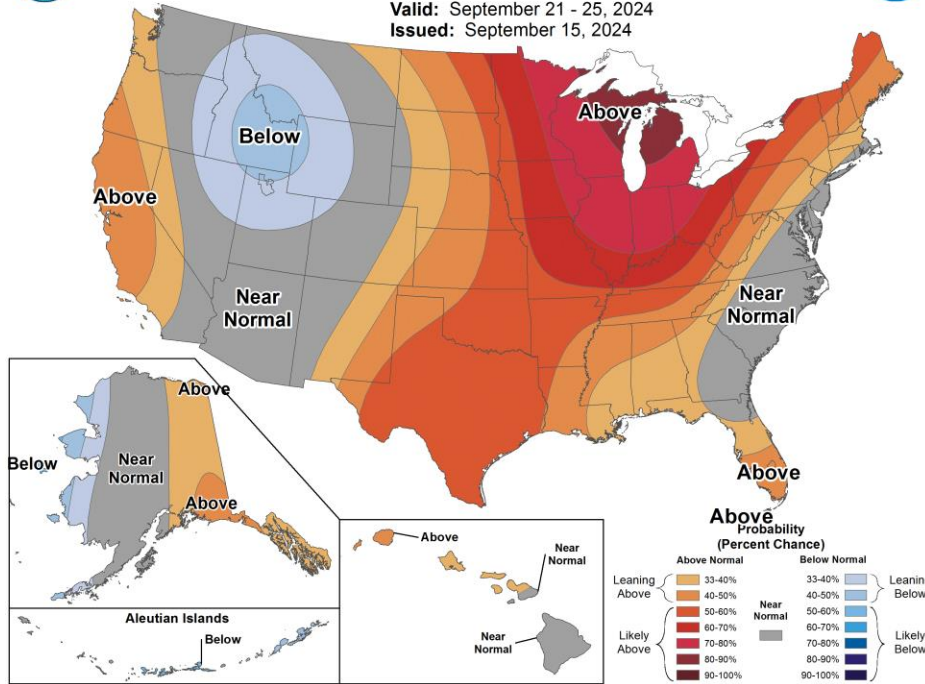
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025





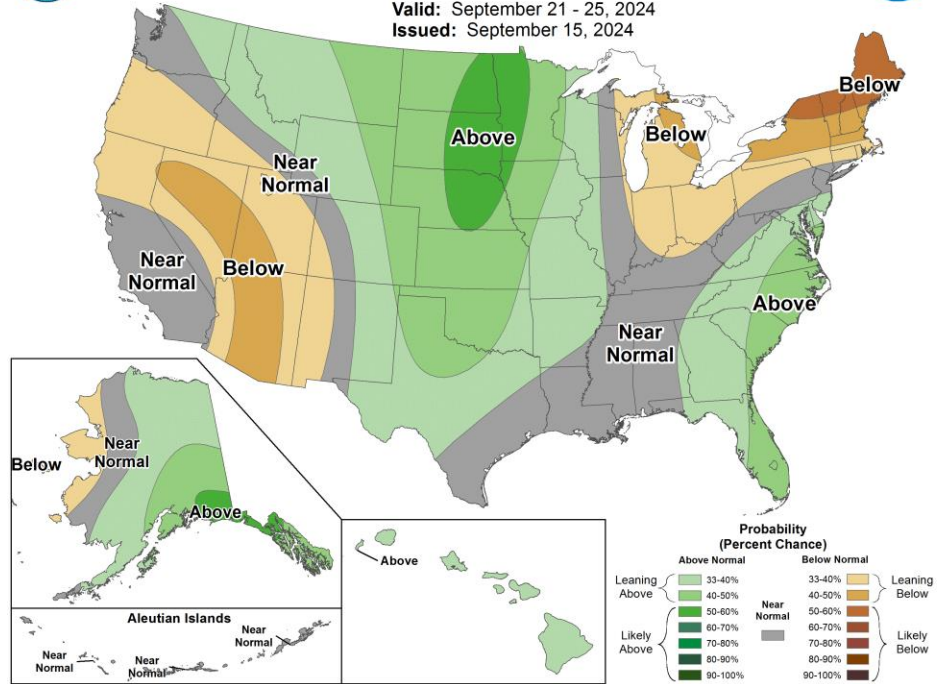
6-10 Day Temperature Outlook

Valid: September 21 - 25, 2024
Issued: September 15, 2024



6-10 Day Precipitation Outlook

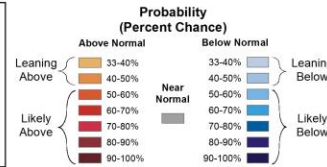
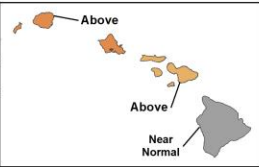
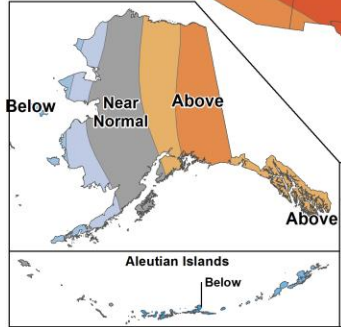
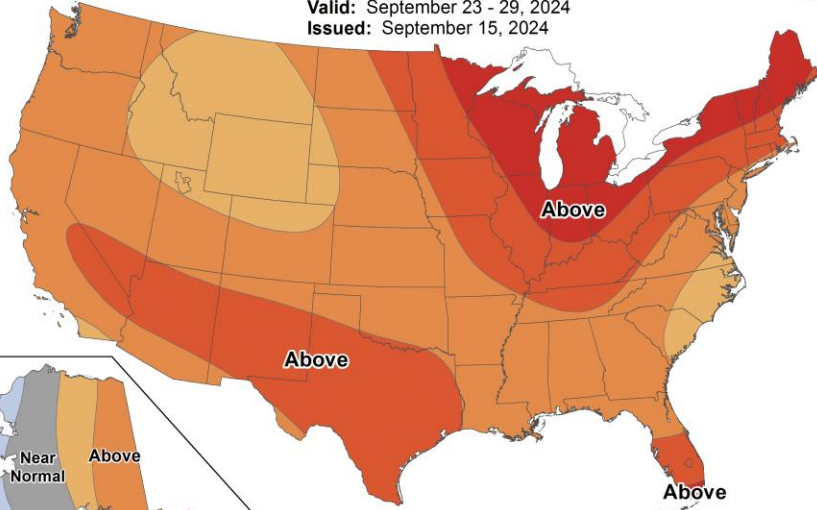
Valid: September 21 - 25, 2024
Issued: September 15, 2024





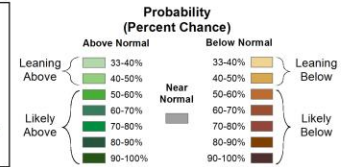
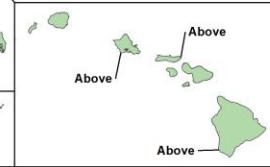
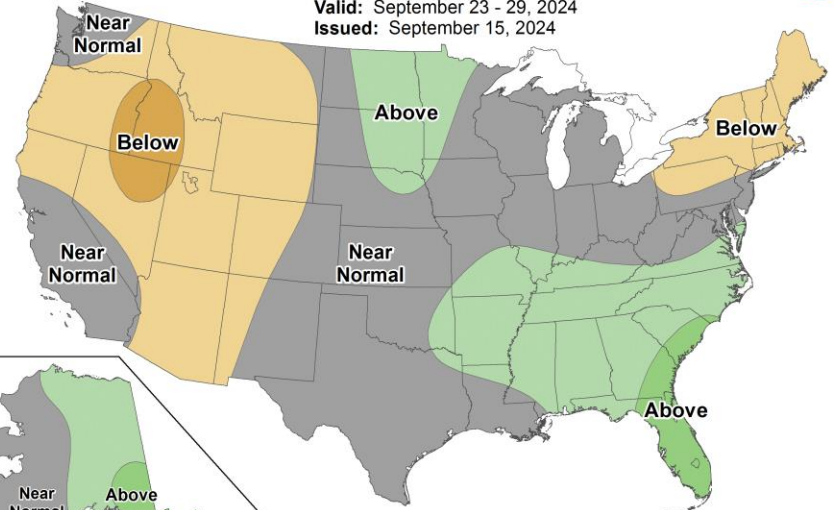
8-14 Day Temperature Outlook

Valid: September 23 - 29, 2024
Issued: September 15, 2024



8-14 Day Precipitation Outlook

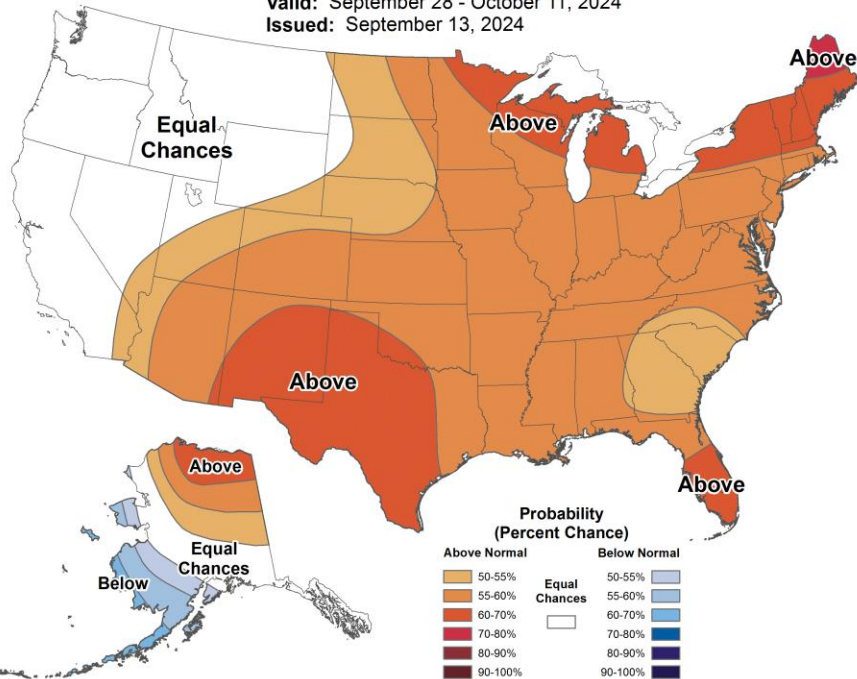
Valid: September 23 - 29, 2024
Issued: September 15, 2024





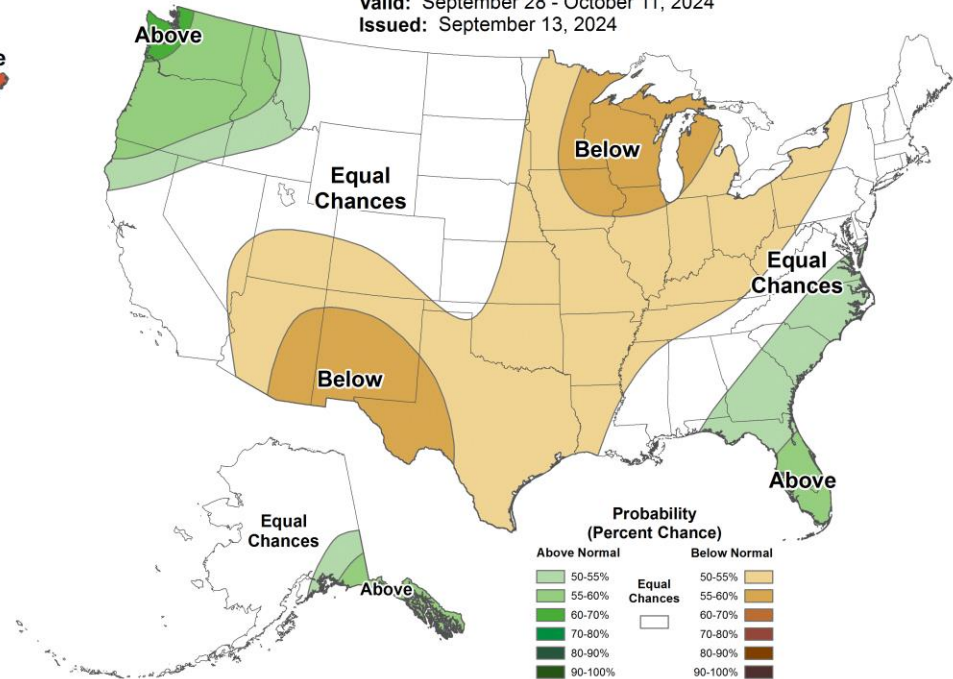
Weeks 3-4 Temperature Outlook

Valid: September 28 - October 11, 2024
Issued: September 13, 2024



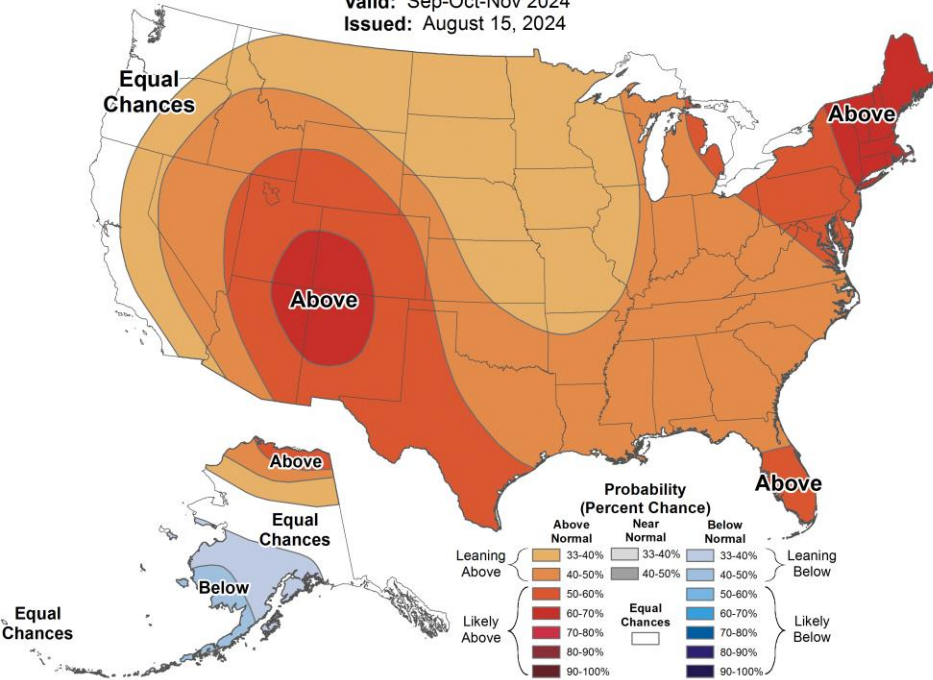
Weeks 3-4 Precipitation Outlook

Valid: September 28 - October 11, 2024
Issued: September 13, 2024



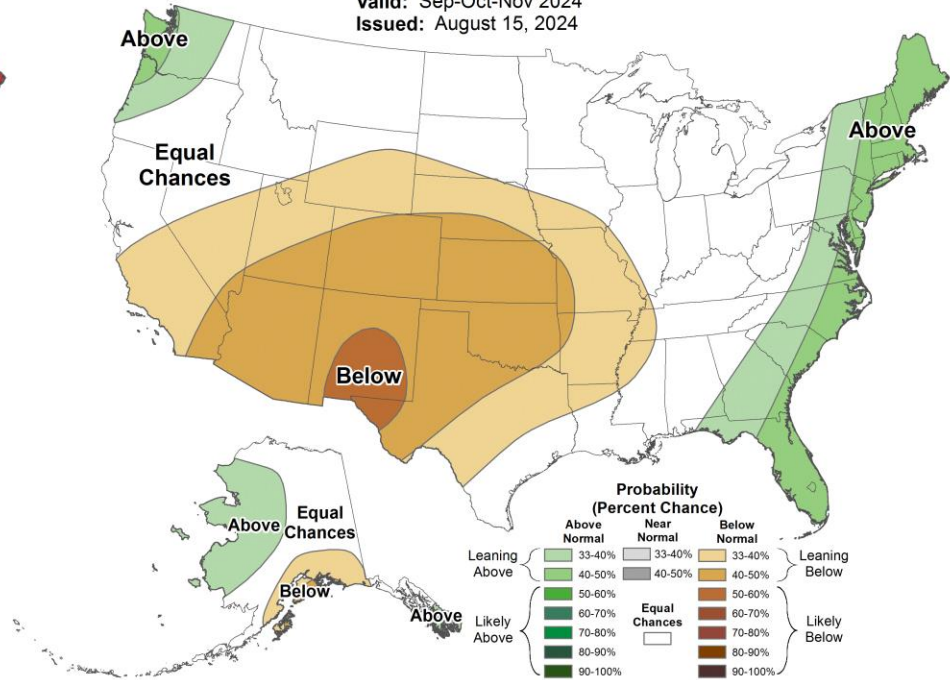
Seasonal Temperature Outlook

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



Seasonal Precipitation Outlook

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



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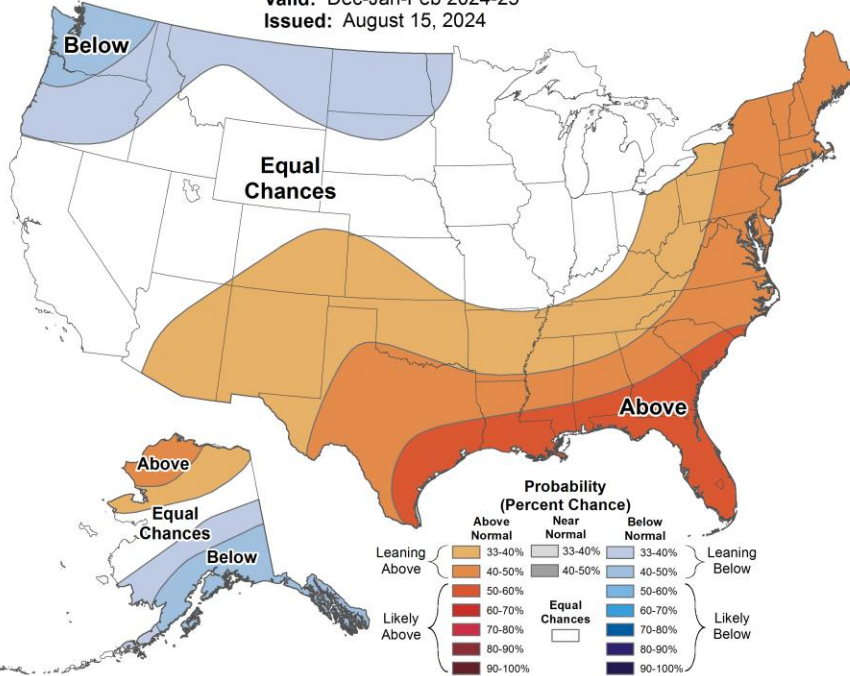
Kyle Bocinsky, Montana Climate Office

Native Climate Working Group—September 17, 2024



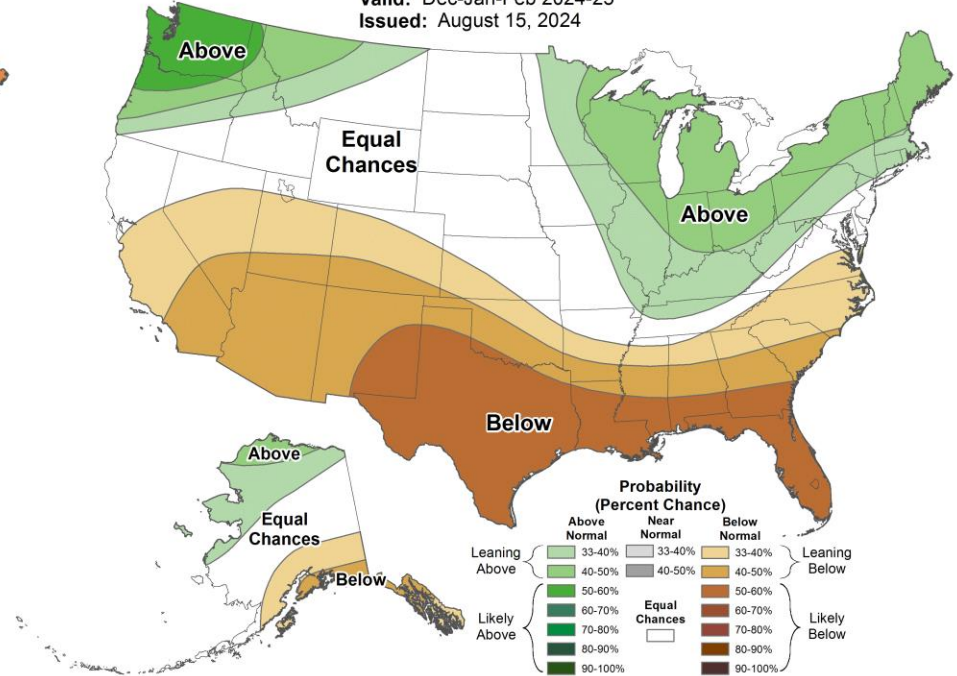
Seasonal Temperature Outlook

Valid: Dec-Jan-Feb 2024-25
Issued: August 15, 2024



Seasonal Precipitation Outlook

Valid: Dec-Jan-Feb 2024-25
Issued: August 15, 2024



NATIVE
CLIMATE







US Drought Outlook through Sep 2024

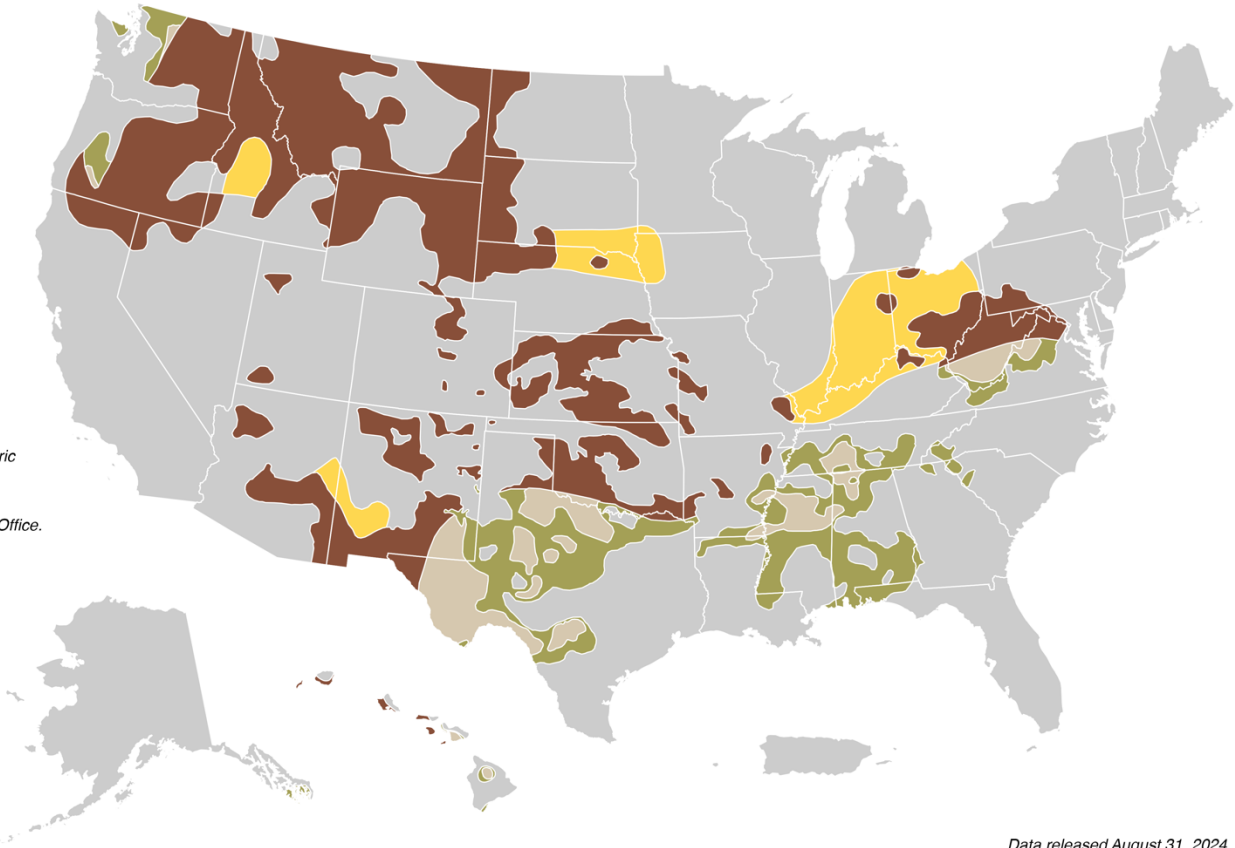
Removal

Improvement

Persistence

Development





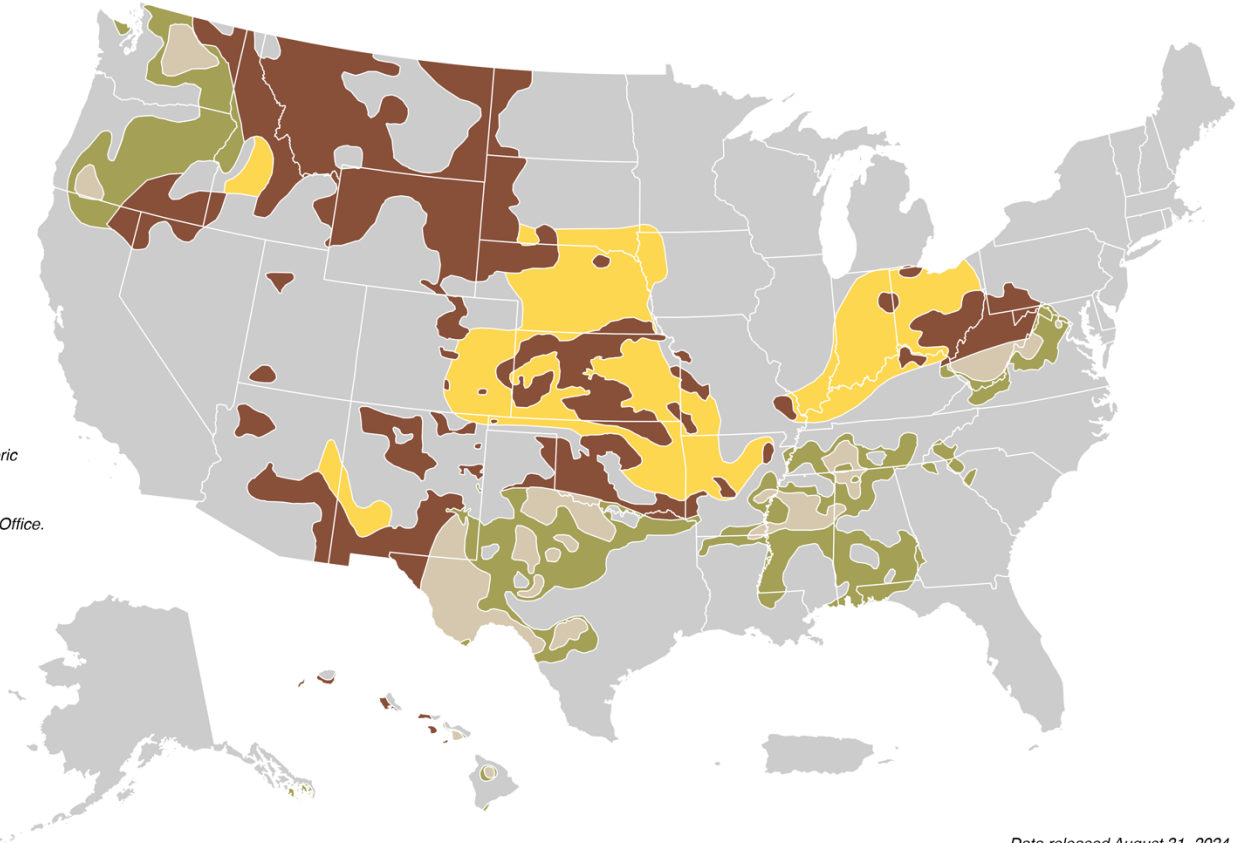
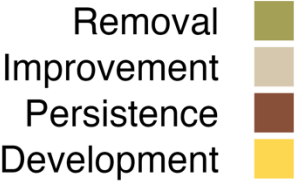
The U.S. Drought Outlook is produced by the National Oceanic and Atmospheric Administration's Climate Prediction Center based on data from the National Drought Mitigation Center at the University of Nebraska-Lincoln. Map data courtesy of NDMC and CPC. Map courtesy of the Montana Climate Office.



Data released August 31, 2024



US Drought Outlook through November 30



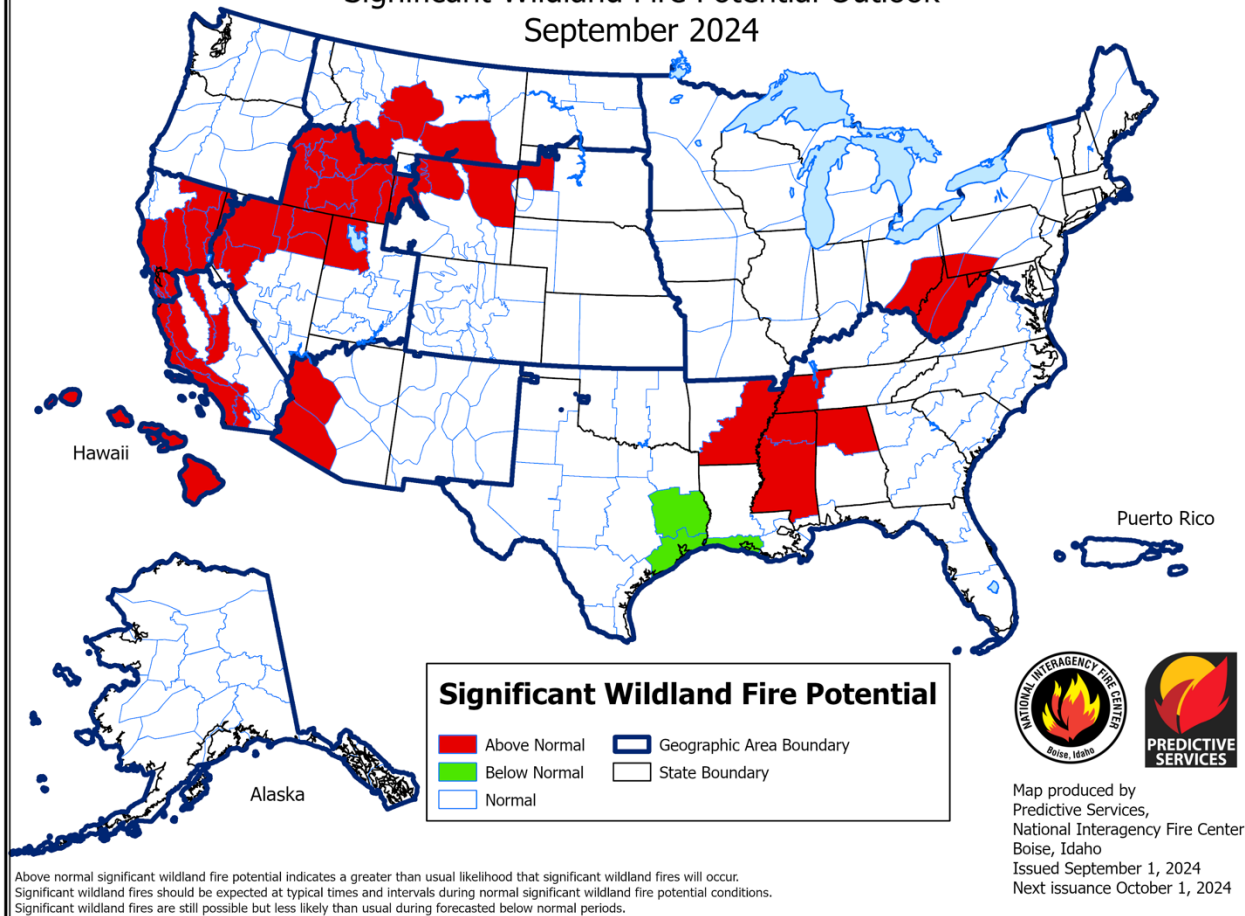
The U.S. Drought Outlook is produced by the National Oceanic and Atmospheric Administration's Climate Prediction Center based on data from the National Drought Mitigation Center at the University of Nebraska-Lincoln. Map data courtesy of NDMC and CPC. Map courtesy of the Montana Climate Office.



Data released August 31, 2024



Significant Wildland Fire Potential Outlook September 2024

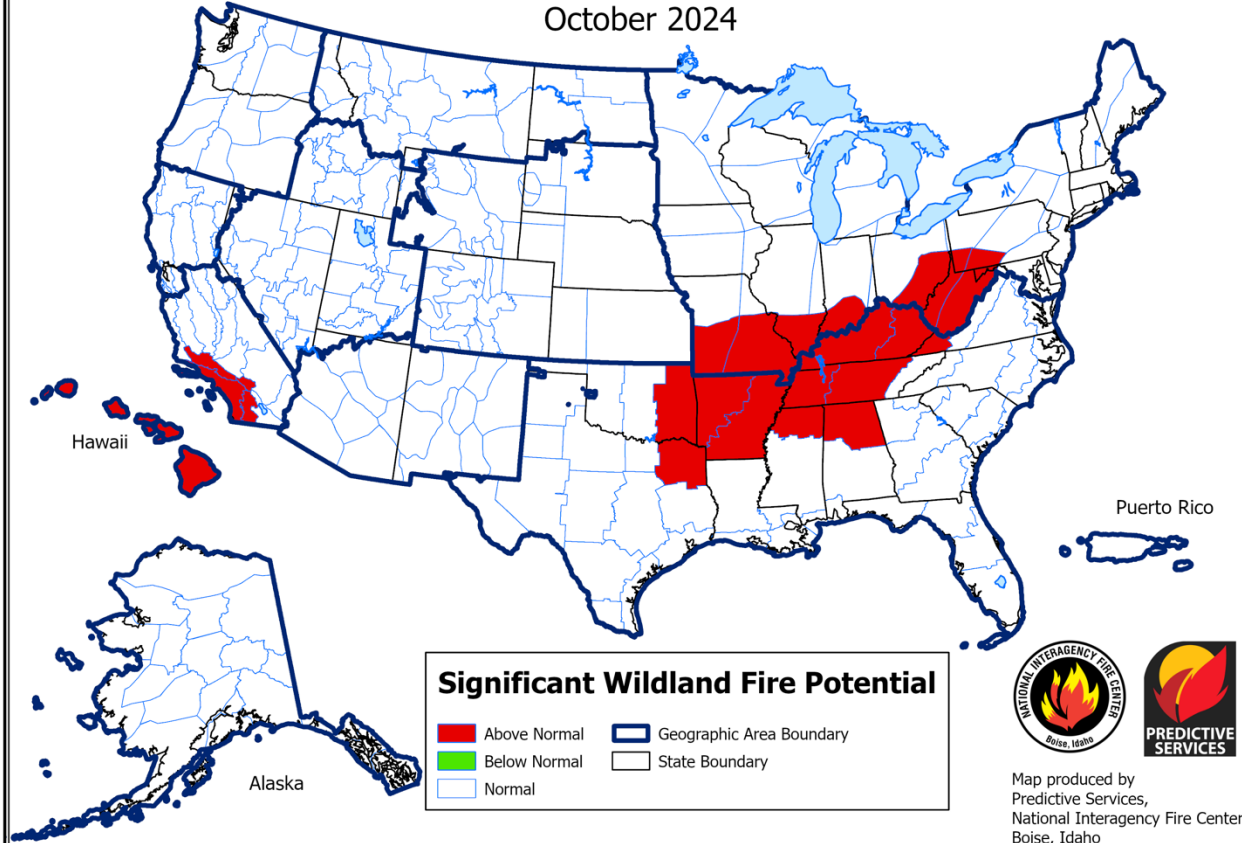


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Significant Wildland Fire Potential Outlook October 2024



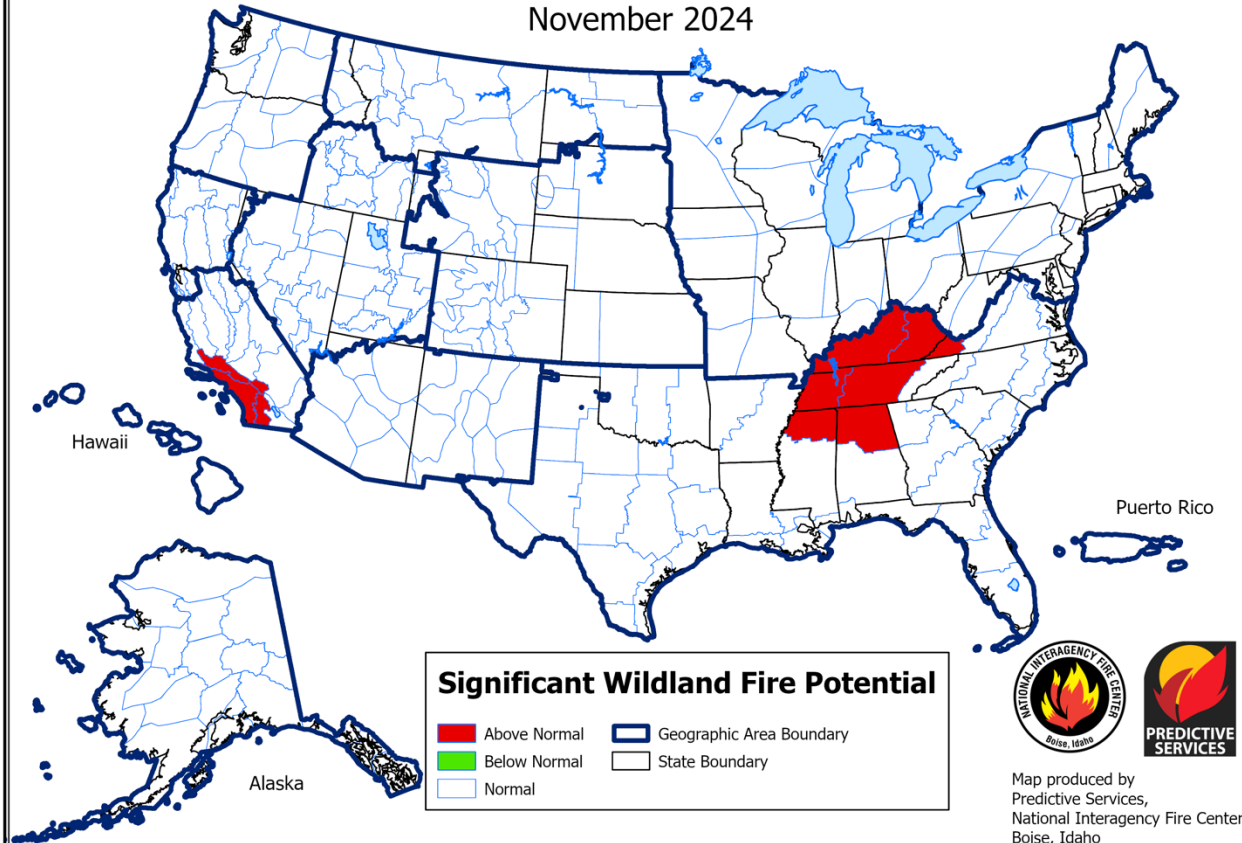
Above normal significant wildland fire potential indicates a greater than usual likelihood that significant wildland fires will occur.
Significant wildland fires should be expected at typical times and intervals during normal significant wildland fire potential conditions.
Significant wildland fires are still possible but less likely than usual during forecasted below normal periods.



Map produced by
Predictive Services,
National Interagency Fire Center
Boise, Idaho
Issued September 1, 2024
Next issuance October 1, 2024



Significant Wildland Fire Potential Outlook November 2024



Map produced by
Predictive Services,
National Interagency Fire Center
Boise, Idaho
Issued September 1, 2024
Next issuance October 1, 2024

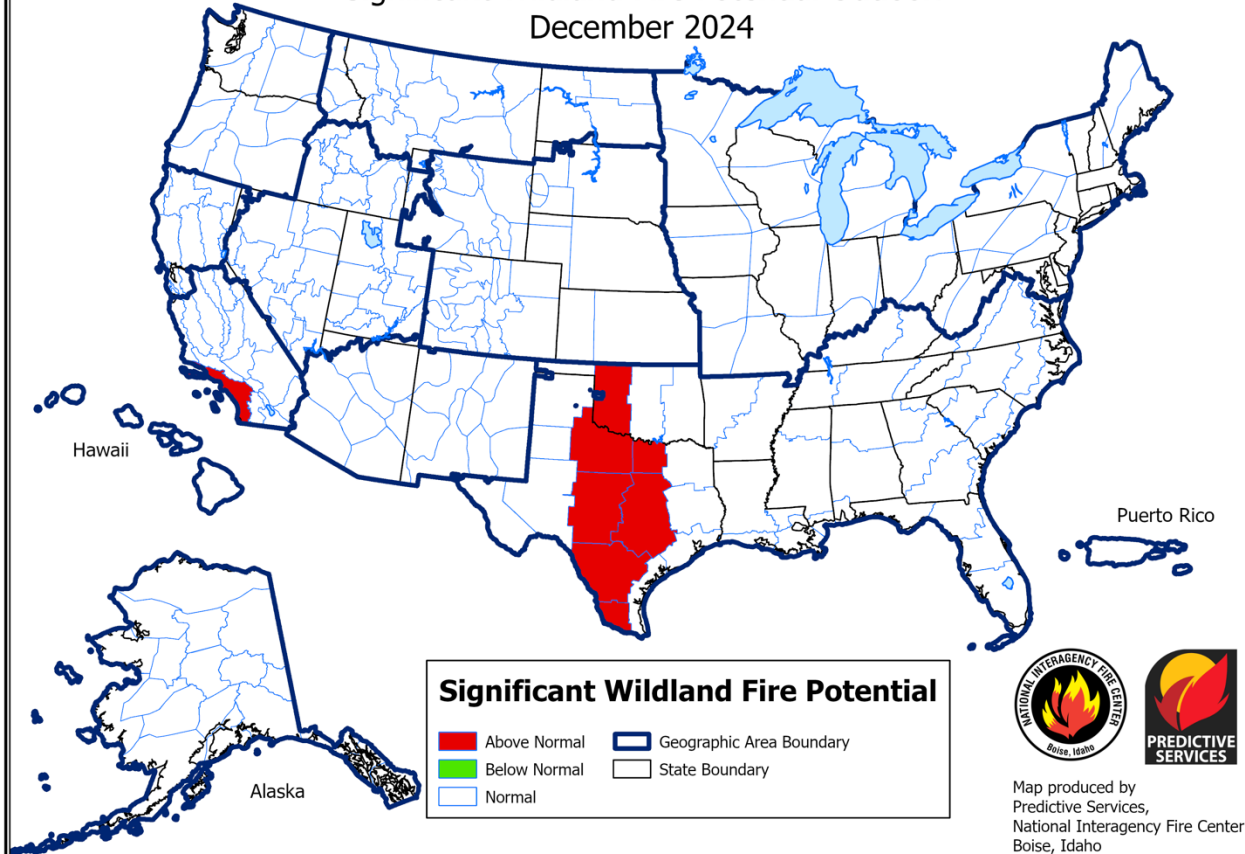
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Significant Wildland Fire Potential Outlook December 2024



Above normal significant wildland fire potential indicates a greater than usual likelihood that significant wildland fires will occur.
Significant wildland fires should be expected at typical times and intervals during normal significant wildland fire potential conditions.
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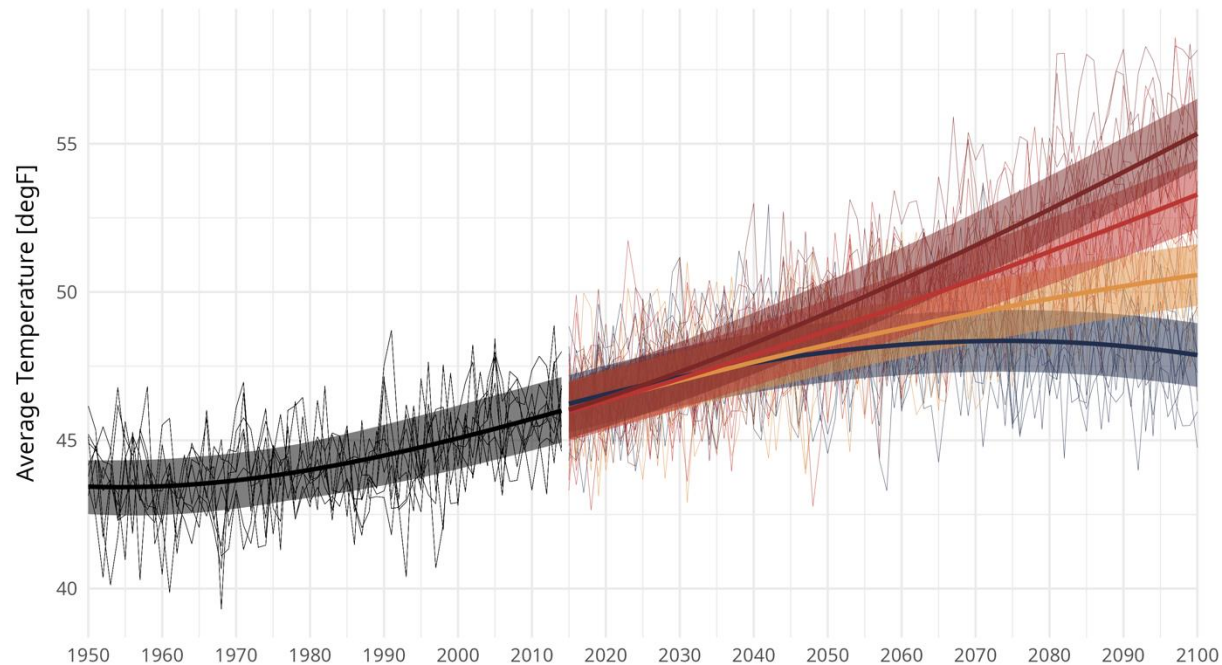


CMIP6 Climate Projections for 633 tribally controlled lands, Alaska Native Villages and State Designated Tribal Areas, and climate divisions for the State of Hawai'i

<https://native-climate.com/projections/>



Flathead Reservation
Climate Projections of Average Temperature [degF]



Historical Emissions

Moderating Emissions (SSP1-2.6)

Middle of the Road (SSP2-4.5)

High Emissions (SSP3-7.0)

Accelerating Emissions (SSP5-8.5)



CMIP6 Climate Projections for
633 tribally controlled lands,
Alaska Native Villages and
State Designated Tribal Areas,
and climate divisions for the
State of Hawai'i

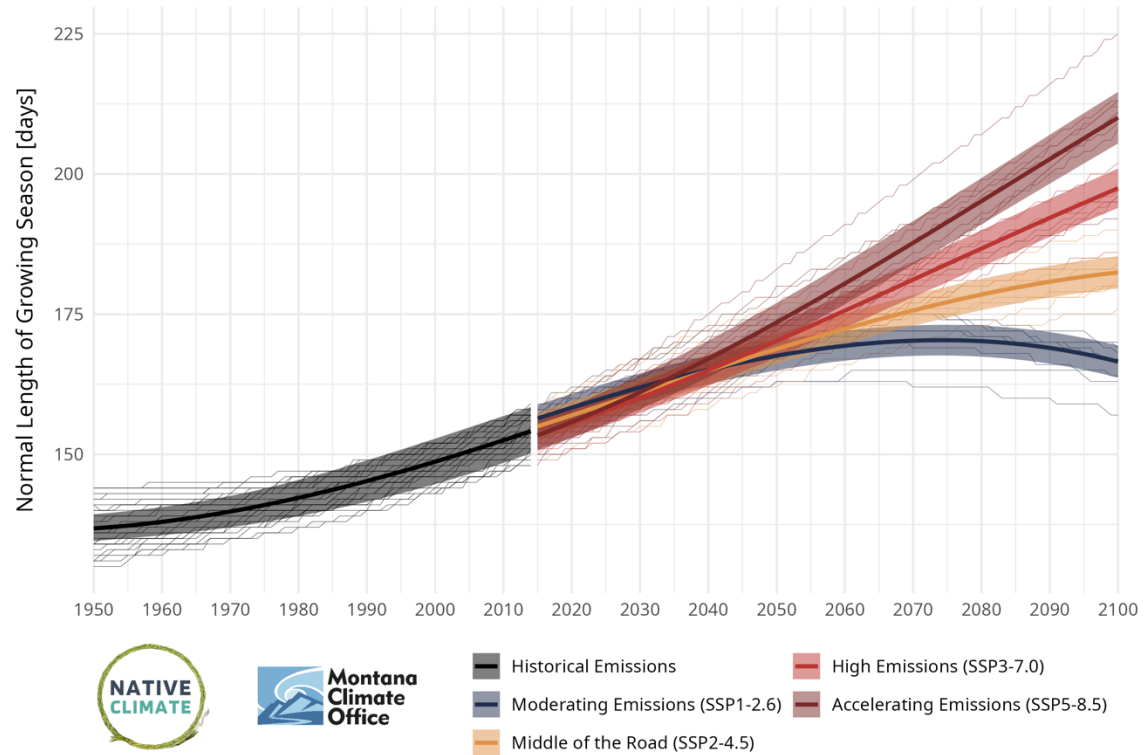
<https://native-climate.com/projections/>



Agricultural Variables

Flathead Reservation

Climate Projections of Normal Length of Growing Season [days]



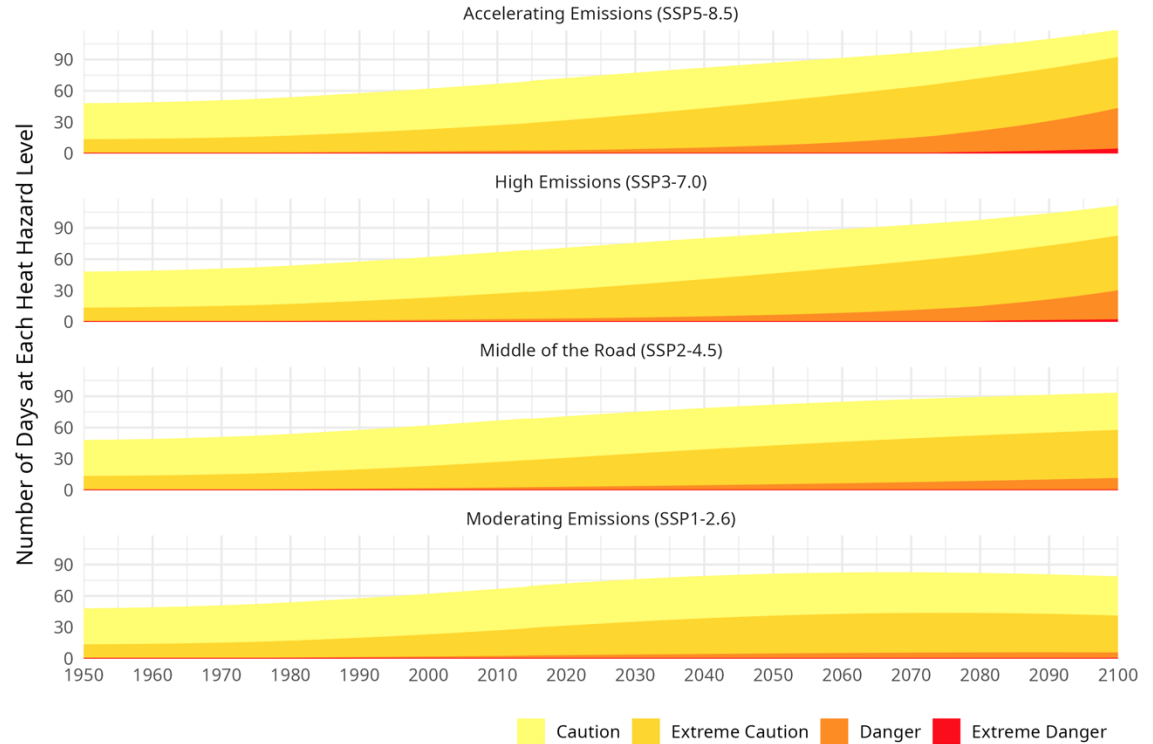
CMIP6 Climate Projections for 633 tribally controlled lands, Alaska Native Villages and State Designated Tribal Areas, and climate divisions for the State of Hawai'i

<https://native-climate.com/projections/>



Health Variables

Flathead Reservation Climate Projections of Heat Index Hazard



Questions?



kyle.bocinsky@umontana.edu

