



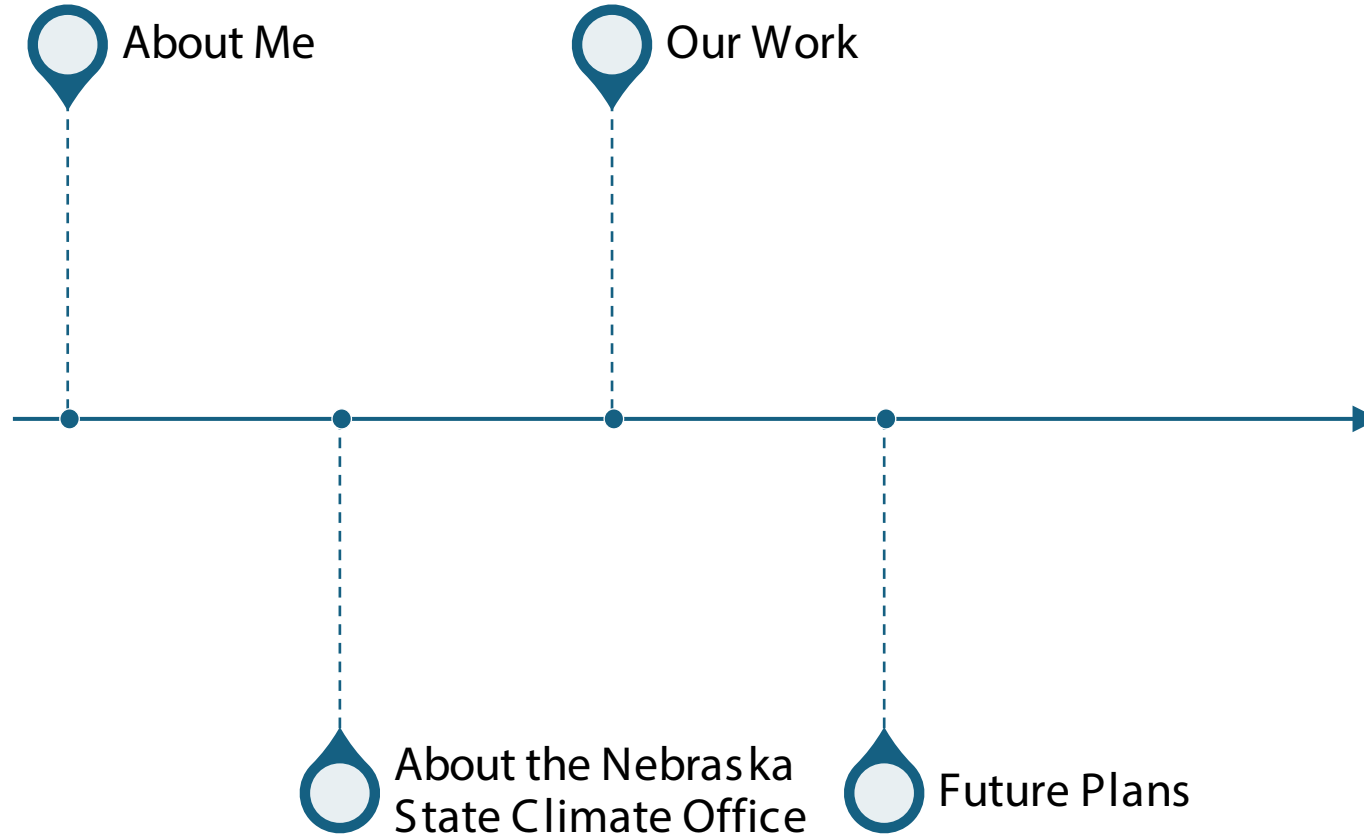
NEBRASKA STATE
CLIMATE OFFICE

Climate Update

NWRA Meeting
January 23, 2025
Deborah Bathke
State Climatologist



Outline



About Me



flickr/Overduebook



About the Nebraska State Climate Office

DEBORAH BATHKE
STATE CLIMATOLOGIST



RUBEN BEHNKE
NEBRASKA MESONET
MANAGER



ERIC HUNT
EXTENSION CLIMATOLOGIST
FOR AGRICULTURE & CLIMATE
RESILIENCE



About the Nebraska State Climate Office

WHAT

Study the climate record

WHY

Help Nebraskans prepare for and respond to changes and impacts

HOW

Through weather & climate monitoring, climate services, research, and engagement.



Our Efforts – Monitoring, Service, & Research

Recent Articles

JAN 10 **2024 was the 2nd warmest year on record in Nebraska**
2024 was very warm Official statewide average temperature for the year comes in at 52.7F. This puts 2024 as the second warmest all-time in Nebraska
[Read more](#)

DEC 18 **Drought relief in November 2024**
Wet November November 2024 was the 7th wettest on record in Nebraska, with a statewide average of 2.02" that was 1.17" above the 20th century
[Read more](#)

NOV 20 **Drought intensification in October 2024**

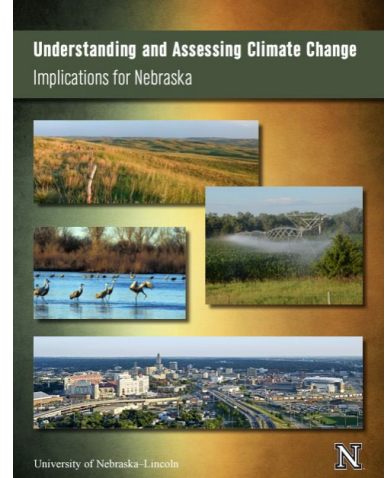
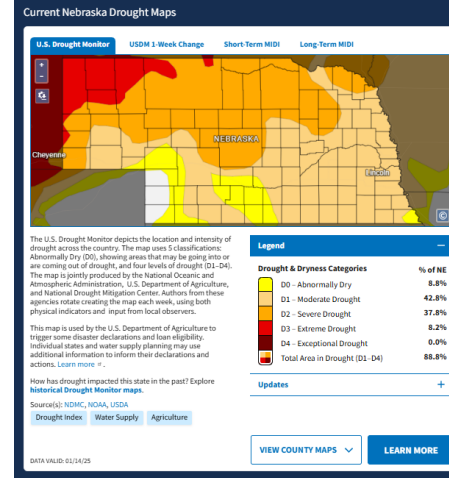
CropWatch Event Information

Event Host: Nebraska State Climate Office

<https://cropwatch.unl.edu/second-tuesday-9>

Event Start: 12/10/2024 09:00 AM

Event End: 12/10/2024 09:30 AM

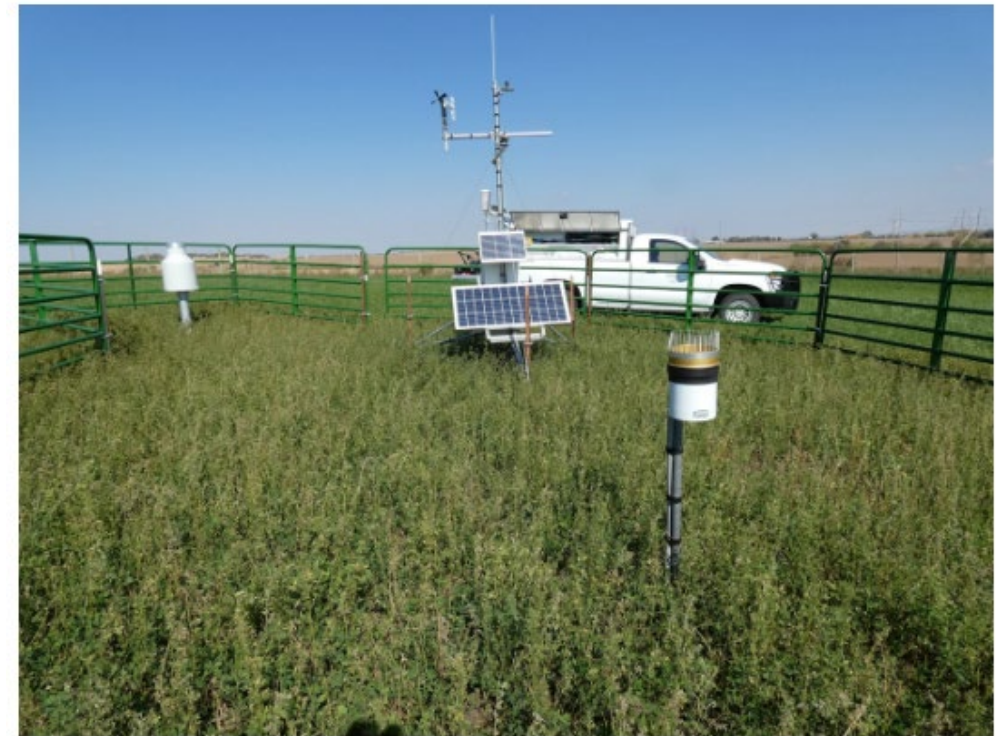


Nebraska Mesonet

Observed Weather and Soil Variables

The NE Mesonet serves as an environmental monitoring network, including the following observations with their height and observation frequency.

 AIR TEMPERATURE 10 m 2 m 1 minute	 RELATIVE HUMIDITY 10 m 2 m 1 minute	 WIND SPEED & DIRECTION 10 m 3 m Includes: Wind Gust Direction of Gust Standard Deviation of Wind Speed 1 minute	 SOLAR RADIATION 2 m 1 minute	 PRECIPITATION: SURFACE 1 minute New stations are receiving weighing precipitation gauges (measures liquid and liquid water equivalent precipitation) Tipping bucket gauges used for rest of network
 STATION PRESSURE 2 m 1 minute	 SNOW DEPTH/SNOW FALL: SURFACE 1 minute	 SOIL MOISTURE & SOIL TEMPERATURE 1 hour legacy 5 minutes new Soil Moisture = Volumetric Water Content (m ³ /m or fraction) - New stations are receiving 2", 4", 20", 30", 40" sensors - Legacy soil observations: include 2", 4", 10", 20", 40" depths	 BARE SOIL TEMPERATURE 4" 5 minutes	 CAMERA(S) 4 m Ranges from 1 minute to hourly



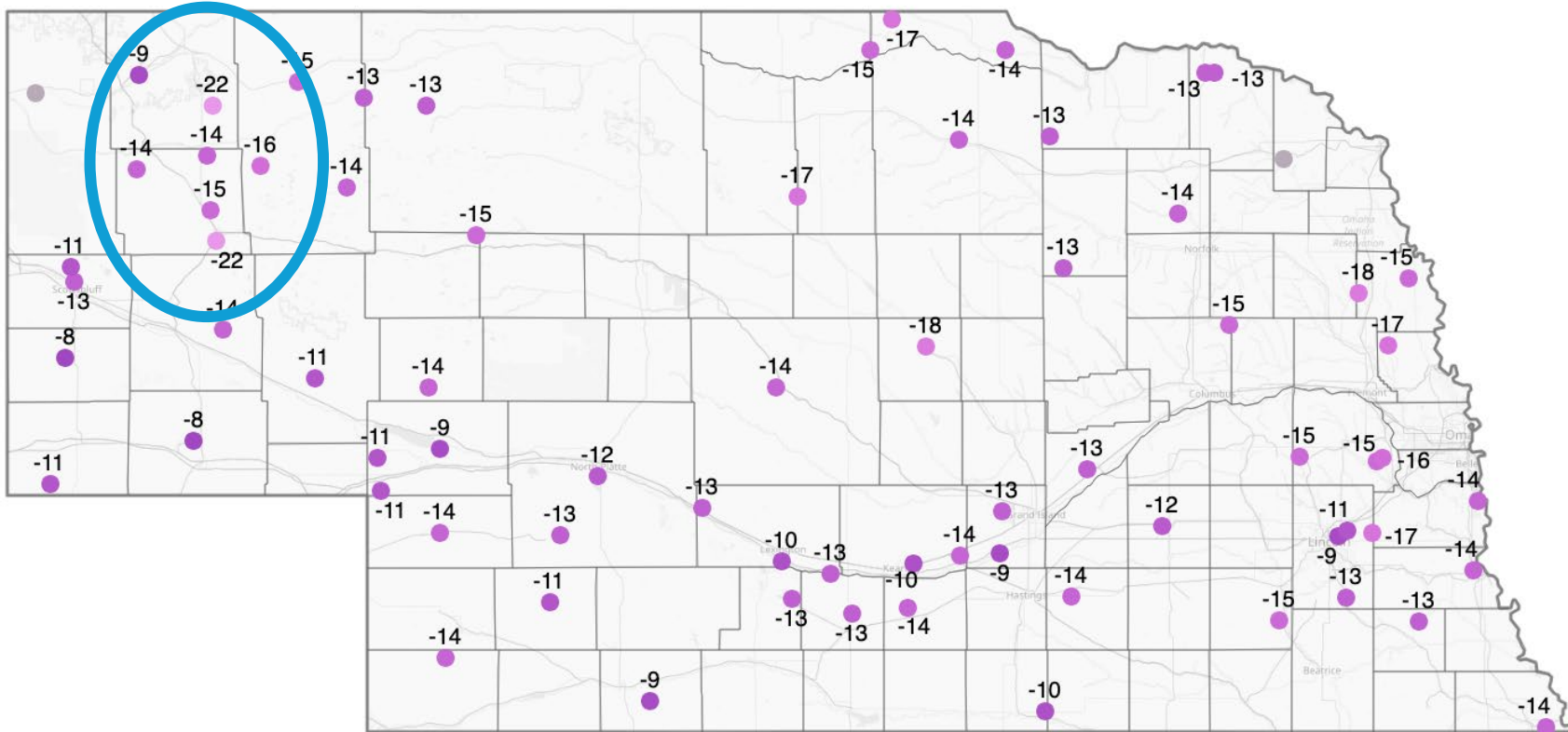
<https://nemesonet.unl.edu>

Nebraska Mesonet

<https://nemesonet.unl.edu>

Air Temperature - Minimum

Real-Time Past Hour **Since 12 AM** Yesterday



1/21/2025, 12:01 AM CST - 1/21/2025, 8:17 AM CST

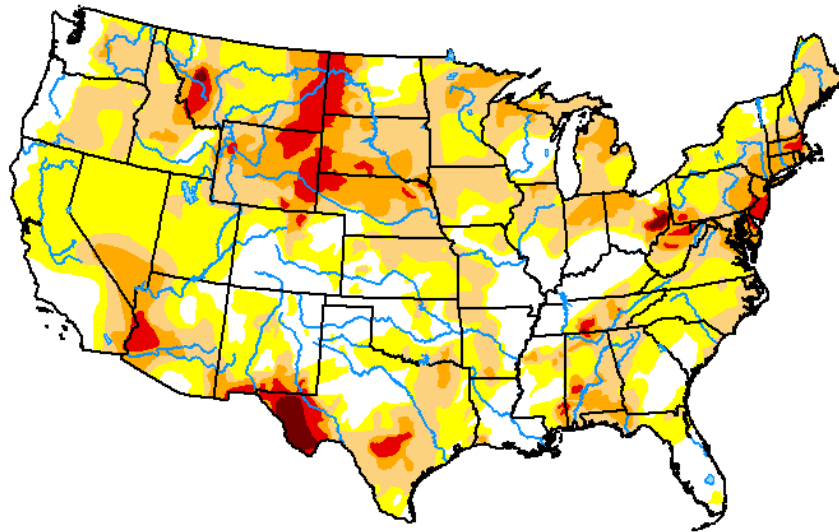
Leaflet | © Nebraska Mesonet 2025 nemesonet.unl.edu, Map data from OpenStreetMap



Drought

U.S. Drought Monitor Contiguous U.S. (CONUS)

November 19, 2024
(Released Thursday, Nov. 21, 2024)
Valid 7 a.m. EST



Intensity:

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

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <http://droughtmonitor.unl.edu/About.aspx>

Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



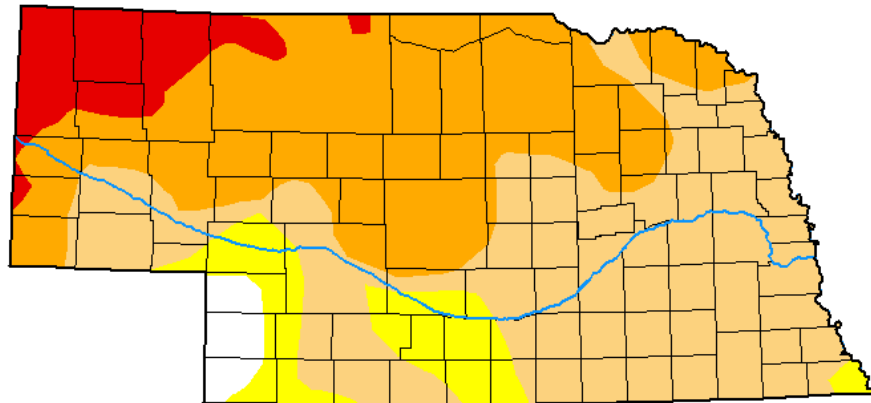
droughtmonitor.unl.edu

droughtmonitor.unl.edu

Drought

U.S. Drought Monitor Nebraska

January 14, 2025
(Released Thursday, Jan. 16, 2025)
Valid 7 a.m. EST



Intensity:

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

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Brad Pugh
CPC/NOAA



droughtmonitor.unl.edu

8

primary counties with
USDA Drought Disaster
Designations, according to
the USDA Farm Service
Agency

1.8 Million

Nebraska residents in
areas of drought,
according to the Drought
Monitor

↑ 1.6% since last week

25th

driest December on record
(since 1895)

0.27 in. total precipitation

↓ 0.33 in. from normal

60th

driest January—December
on record (since 1895)

22.41 in. total
precipitation

↓ 0.22 in. from normal

Drought in perspective

Past Year

Drought conditions have worsened over much of the northern & central part of the state

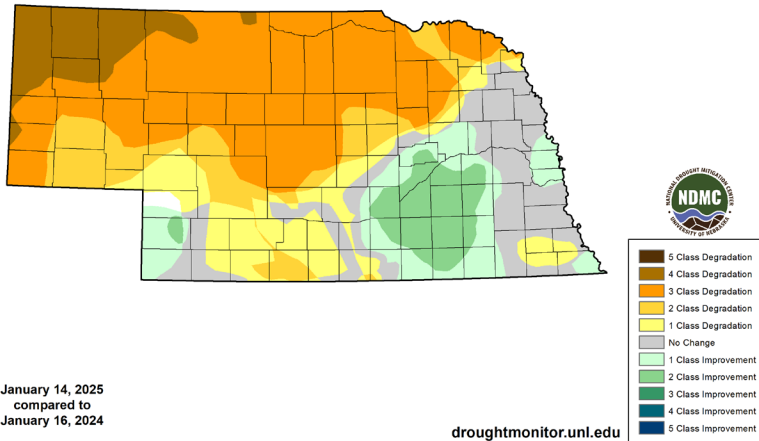
This season

Drought conditions improved in the southwest and southeast

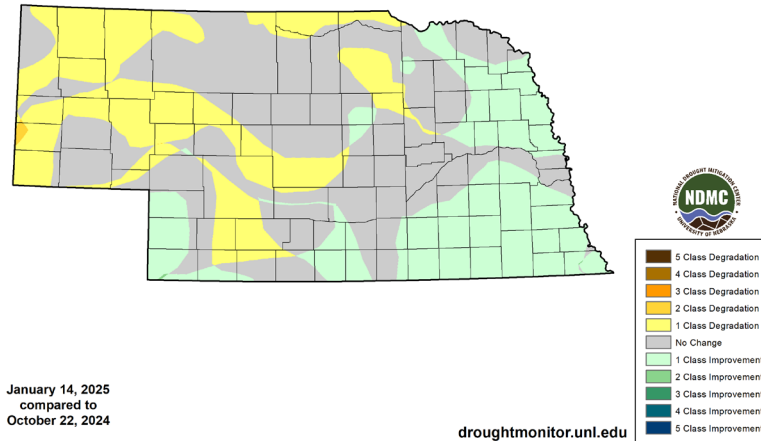
Past month

Drought conditions persisted with some worsening in the southwest part of the state

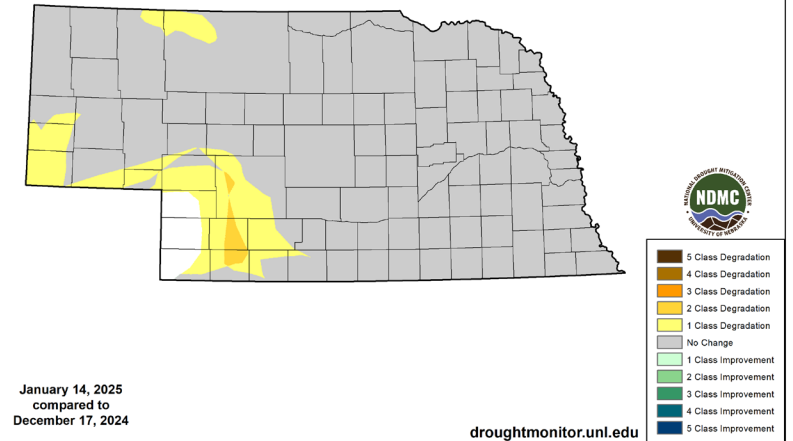
U.S. Drought Monitor Class Change - Nebraska
52 Week



U.S. Drought Monitor Class Change - Nebraska
12 Week



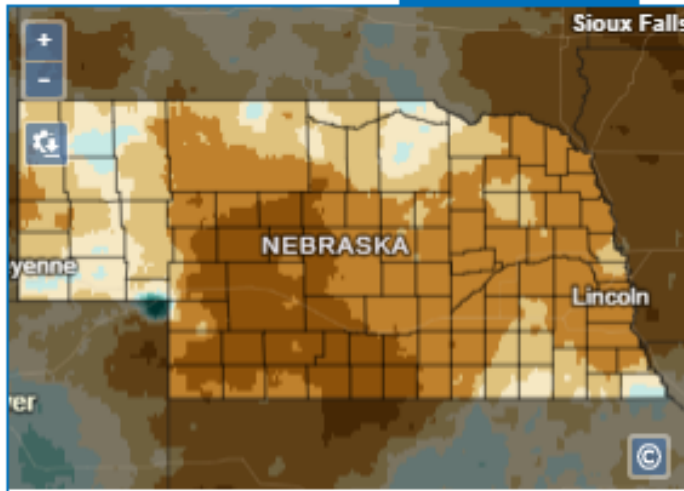
U.S. Drought Monitor Class Change - Nebraska
4 Week



Drought

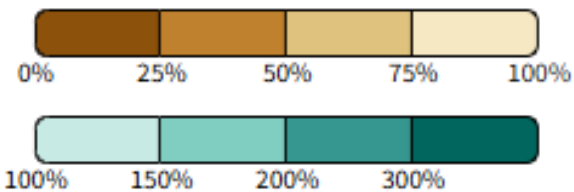
Nebraska Precipitation Conditions

7-Day 30-Day % Normal 60-Day % Normal



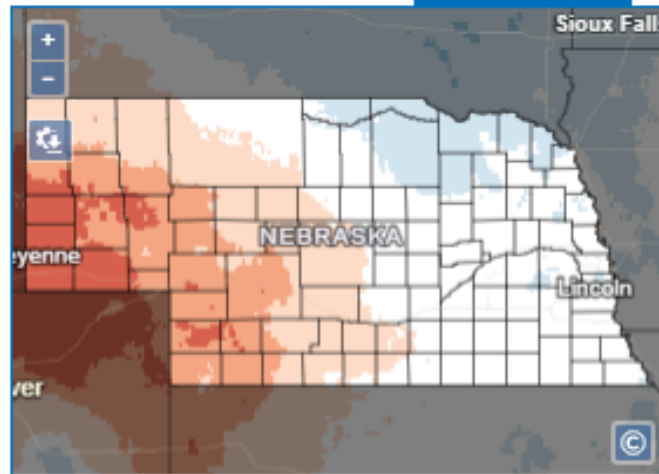
Legend

Percent of Normal Precipitation (%)



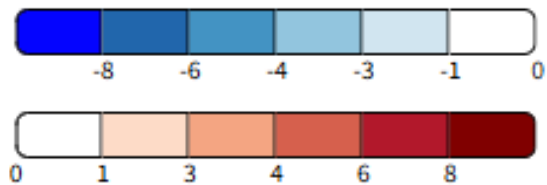
Nebraska Temperature Conditions

7-Day Avg 7-Day Anomaly 30-Day Anomaly



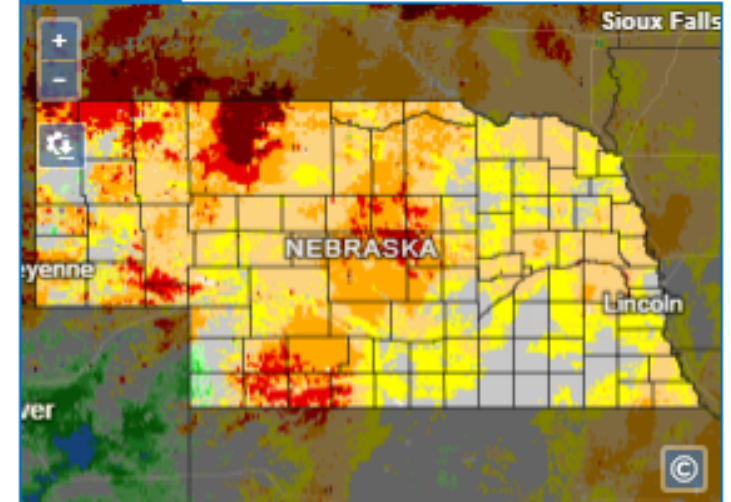
Legend

Departure from Normal Max Temperature (°F)



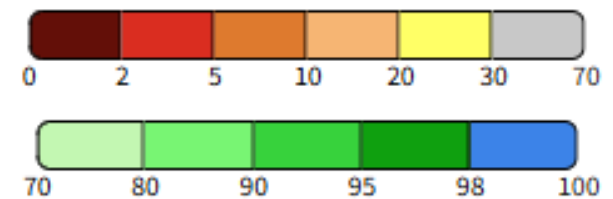
Nebraska Soil Moisture Conditions

SPoRT-LIS Crop-CASMA



Legend

0-100 cm Soil Moisture Percentile



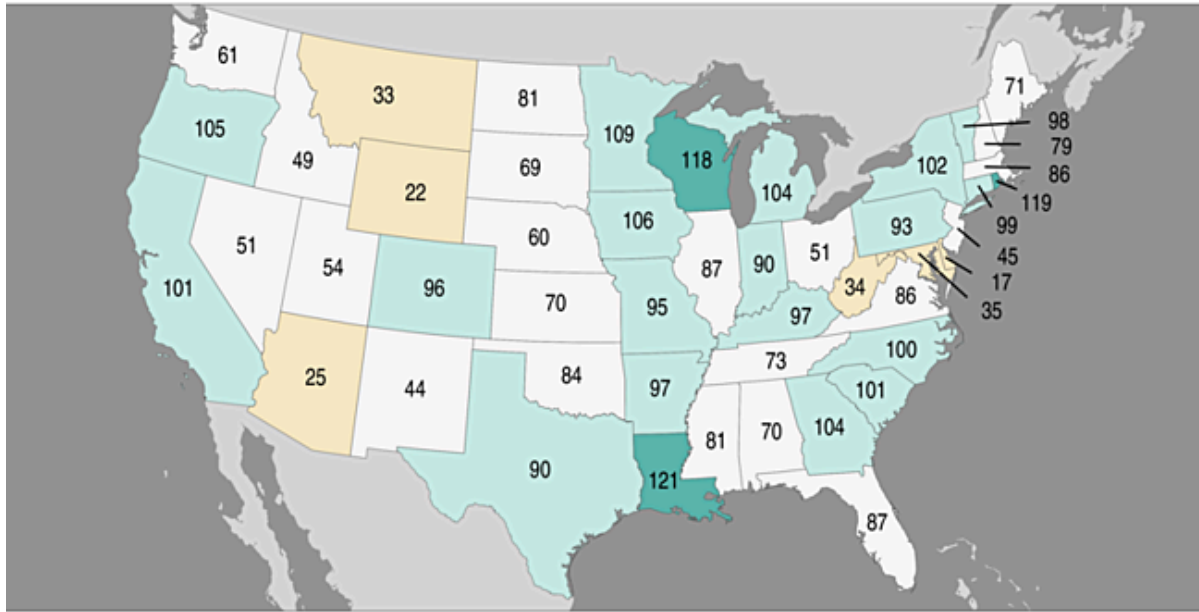
Precipitation & Temperature

Statewide Precipitation Ranks

January - December 2024

Ranking Period: 1895-2024

NOAA's National Centers for Environmental Information



Created: Tue Jan 7 2025
Source: nClimGrid - Monthly

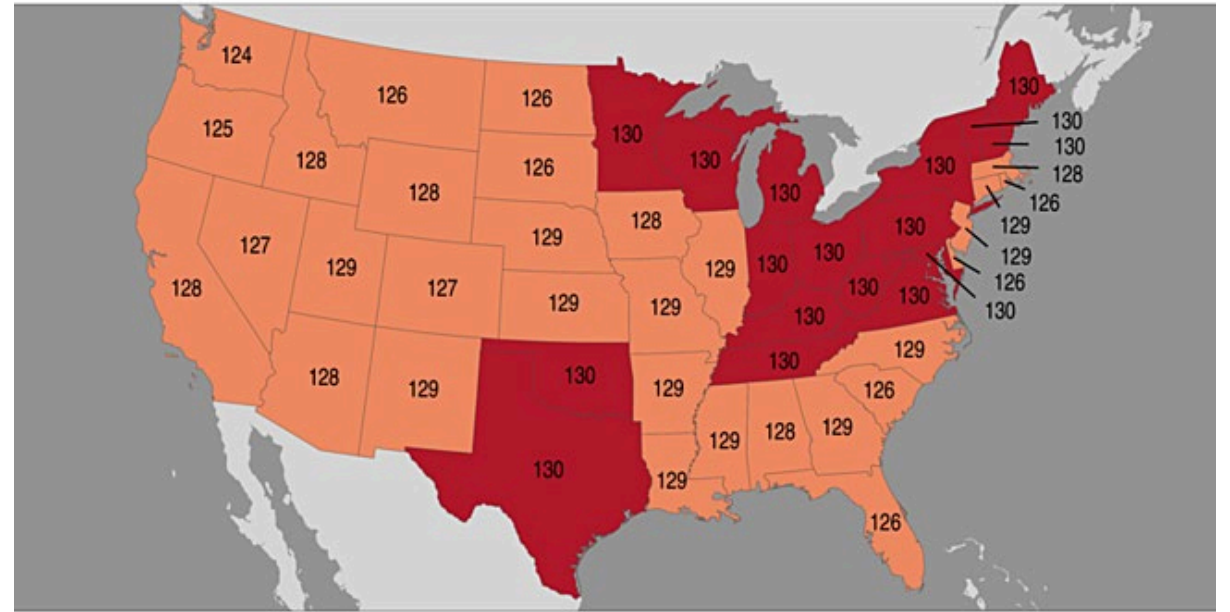


Statewide Average Temperature Ranks

January - December 2024

Ranking Period: 1895-2024

NOAA's National Centers for Environmental Information



Created: Tue Jan 7 2025
Source: nClimGrid - Monthly



Record Setting Temperatures

Nebraska

December 2024 Average Temperature Rankings

View Period (Months): All 1 2 3 4 5 6 7 8 9 10 11 12 18 24 36 48 60

Download: [↓ CSV](#) [↓ JSON](#) [↓ XML](#)

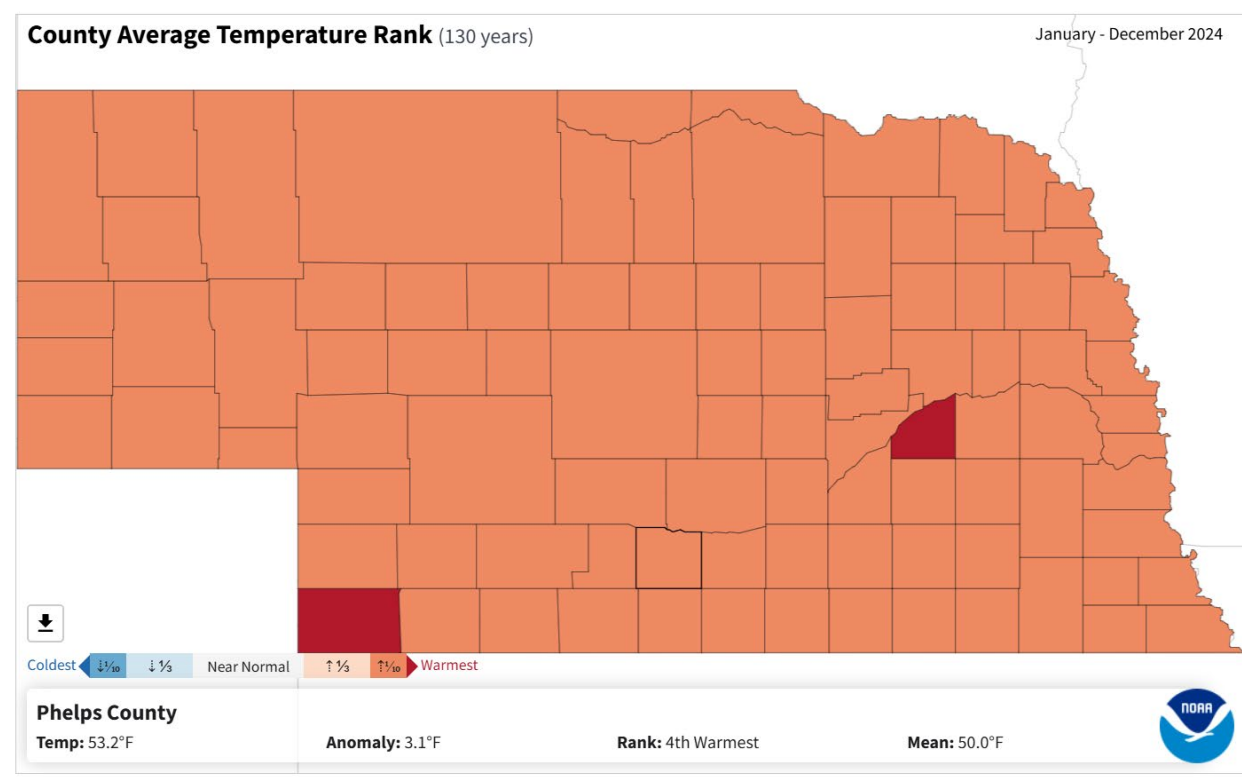
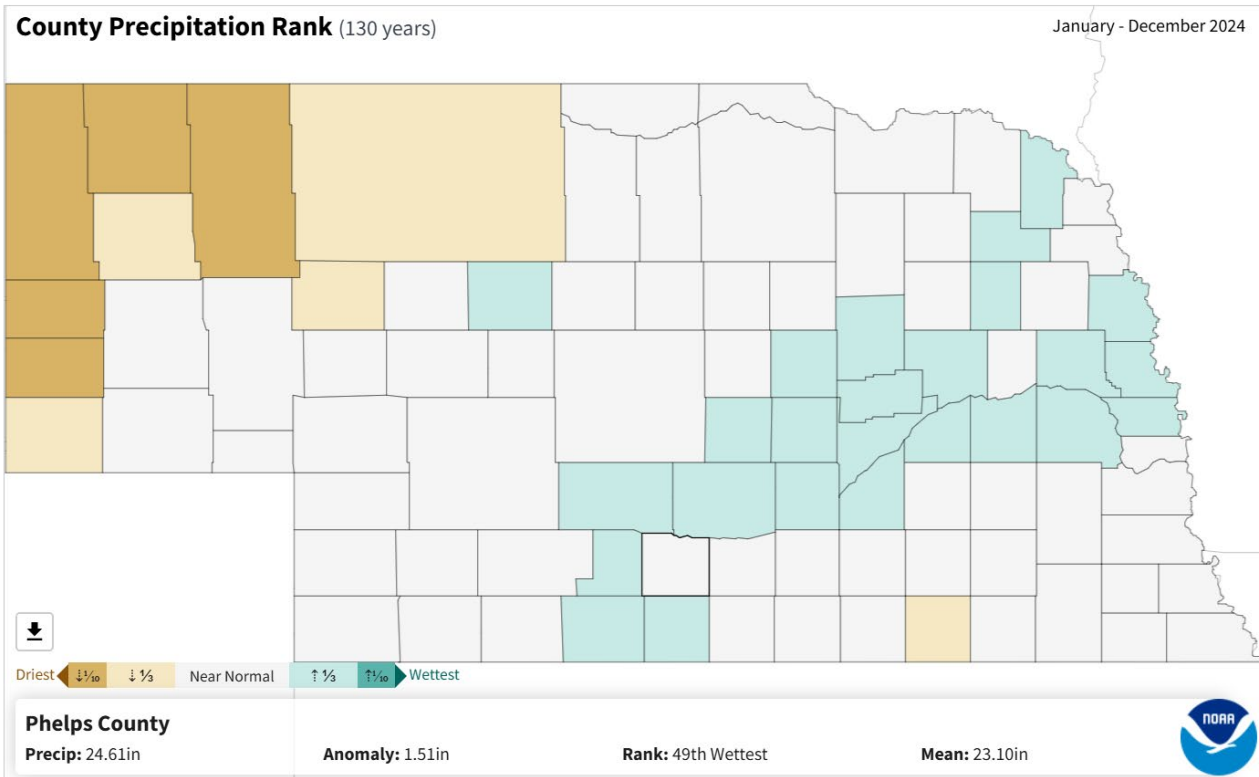
Record Coolest		Bottom 1/10		Bottom 1/3		Normal		Top 1/3		Top 1/10		Record Warmest	
Period	Value	1901-2000 Mean	Anomaly	Rank (1895-2024)	Coollest/Warmest Since	Record							
Jan-Dec 2024 12-Month	52.0°F (11.1°C)	48.4°F (9.1°C)	3.6°F	129th Coolest	Coollest since: 2023	1951							
				2nd Warmest	Warmest since: 2012	2012							
Ties: 1934													

Record warmth

- 4-month: Sep – Dec 2024
- 11-month: Feb 2024 – Dec 2024
- 18-month: Jul 2023 – Dec 2024
- 48-month: Jan 2021 – Dec 2024
- 60-month: Jan 2020 – Dec 2024

All other time periods were in the top 6

Precipitation & Temperature



Precipitation & Temperature

Phelps County, Nebraska

December 2024 Average Temperature Rankings

View Period (Months): All 1 2 3 4 5 6 7 8 9 10 11 12 18 24 36 48 60

Download: [↓ CSV](#) [↓ JSON](#) [↓ XML](#)

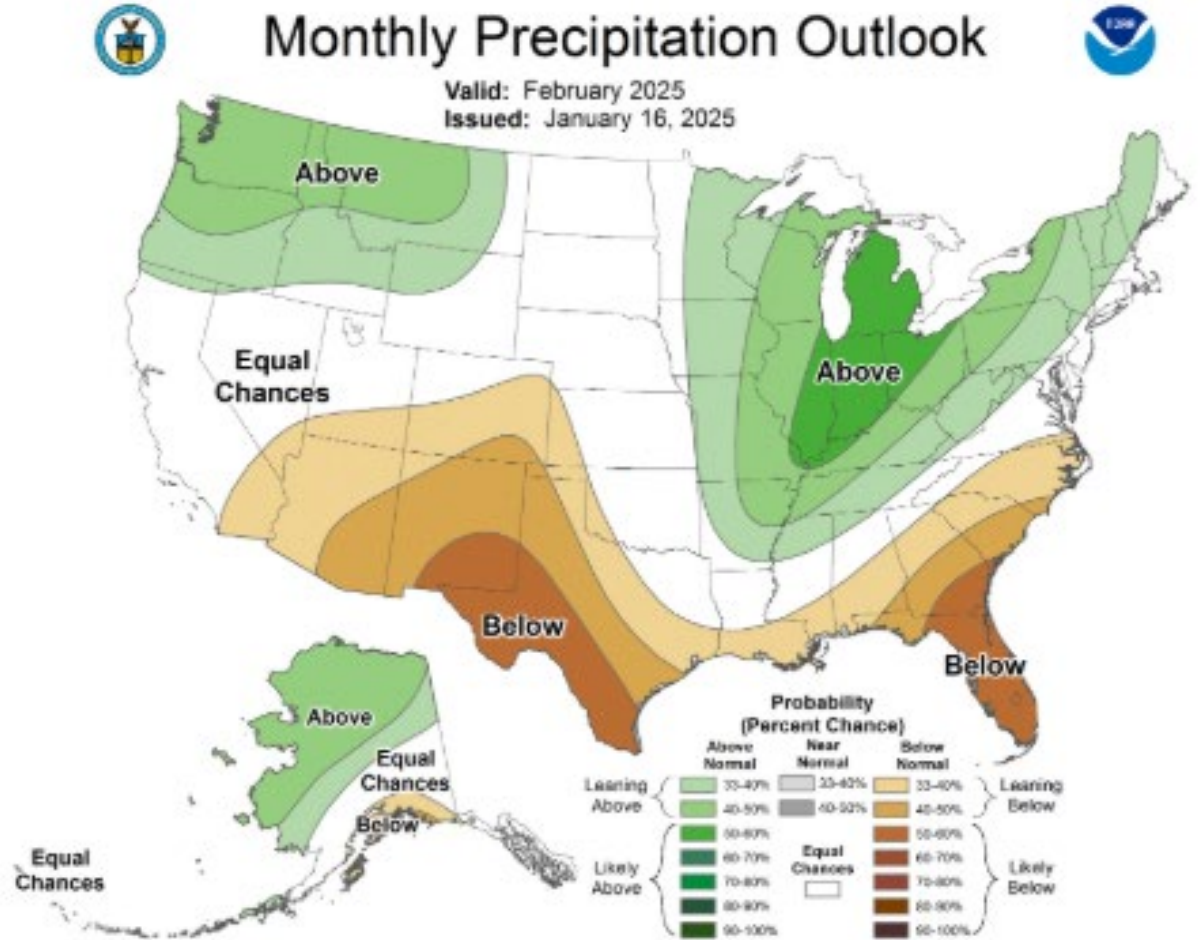
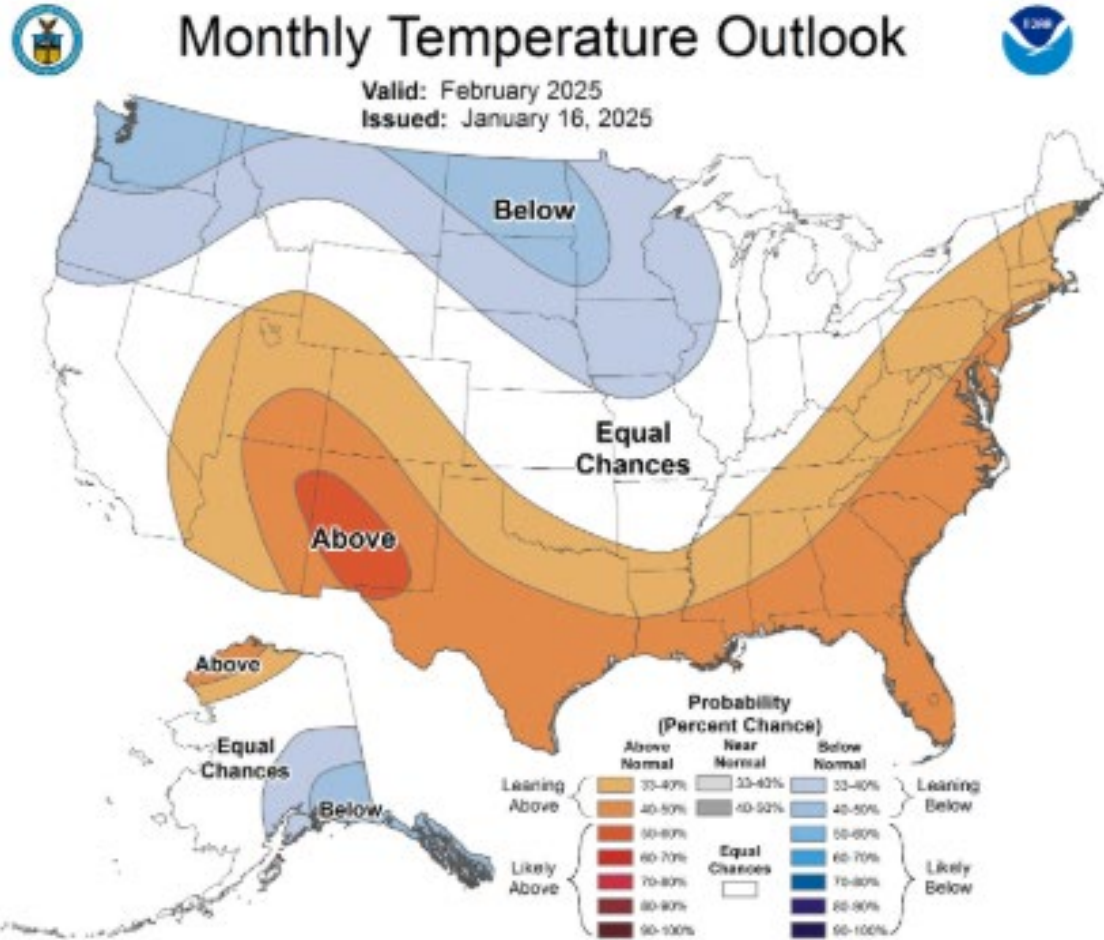
Record Coolest		Bottom 1/10		Bottom 1/3		Normal		Top 1/3		Top 1/10		Record Warmest	
Period	Value	1901-2000 Mean	Anomaly	Rank (1895-2024)	Coollest/Warmest Since	Record							
Jan-Dec 2024 12-Month	53.2°F (11.8°C)	50.0°F (10.0°C)	3.2°F	127th Coolest	Coollest since: 2023	1993							
				4th Warmest	Warmest since: 2016	1934							
Ties: 2016													

Record warmth

- 3-month: Oct – Dec 2024
- 4-month: Sep – Dec 2024
- 11-month: Feb 2024 – Dec 2024

All other time periods were in the top 6

Outlooks



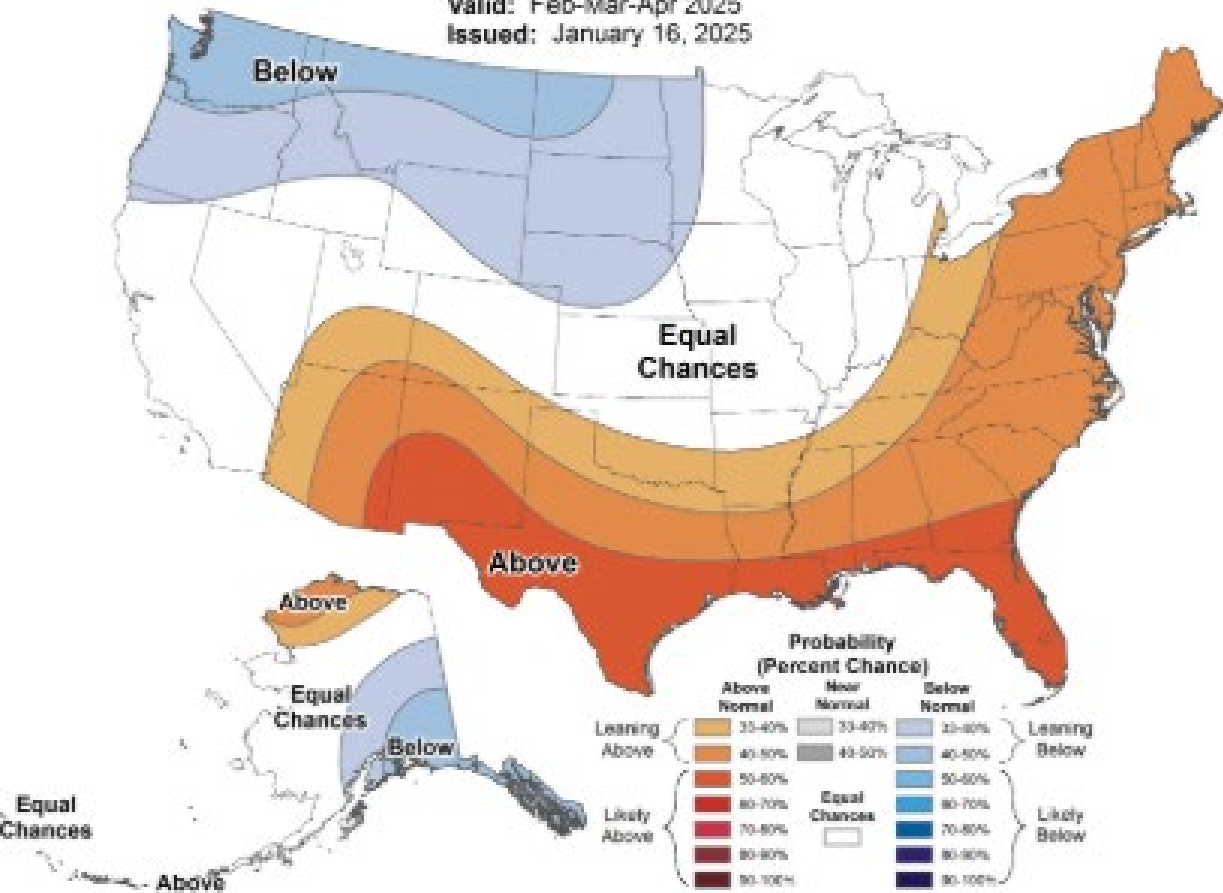
Outlooks



Seasonal Temperature Outlook



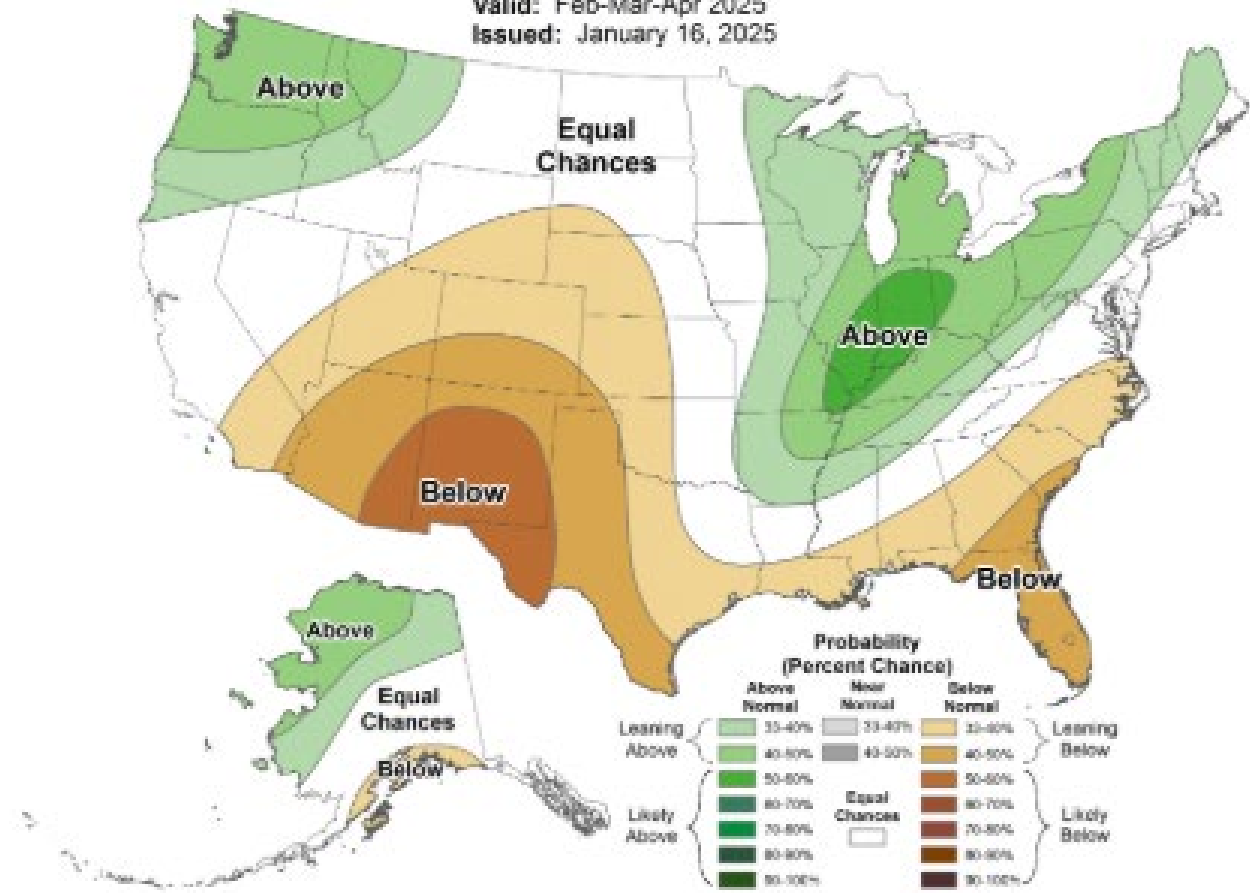
Valid: Feb-Mar-Apr 2025
Issued: January 16, 2025



Seasonal Precipitation Outlook



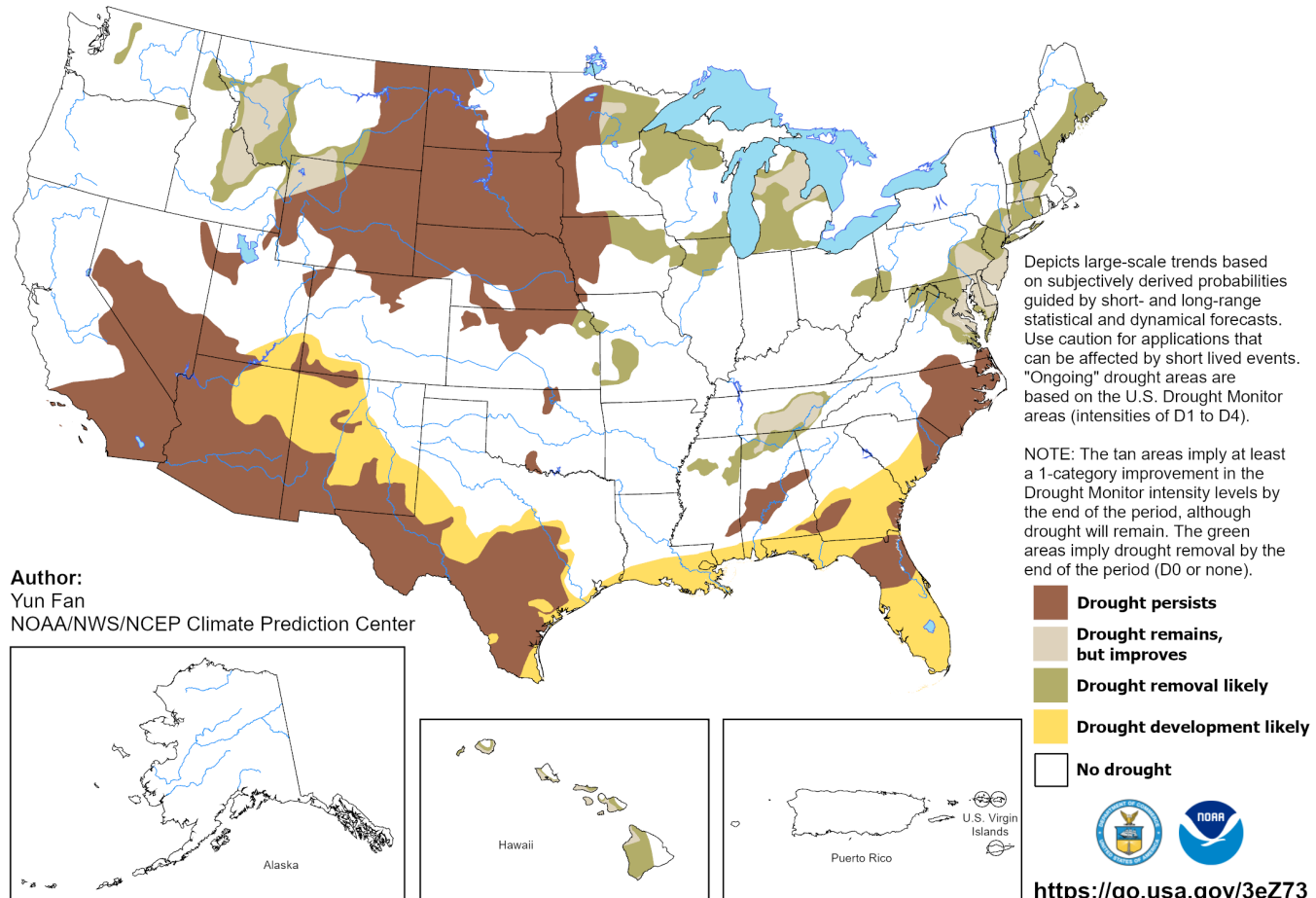
Valid: Feb-Mar-Apr 2025
Issued: January 16, 2025



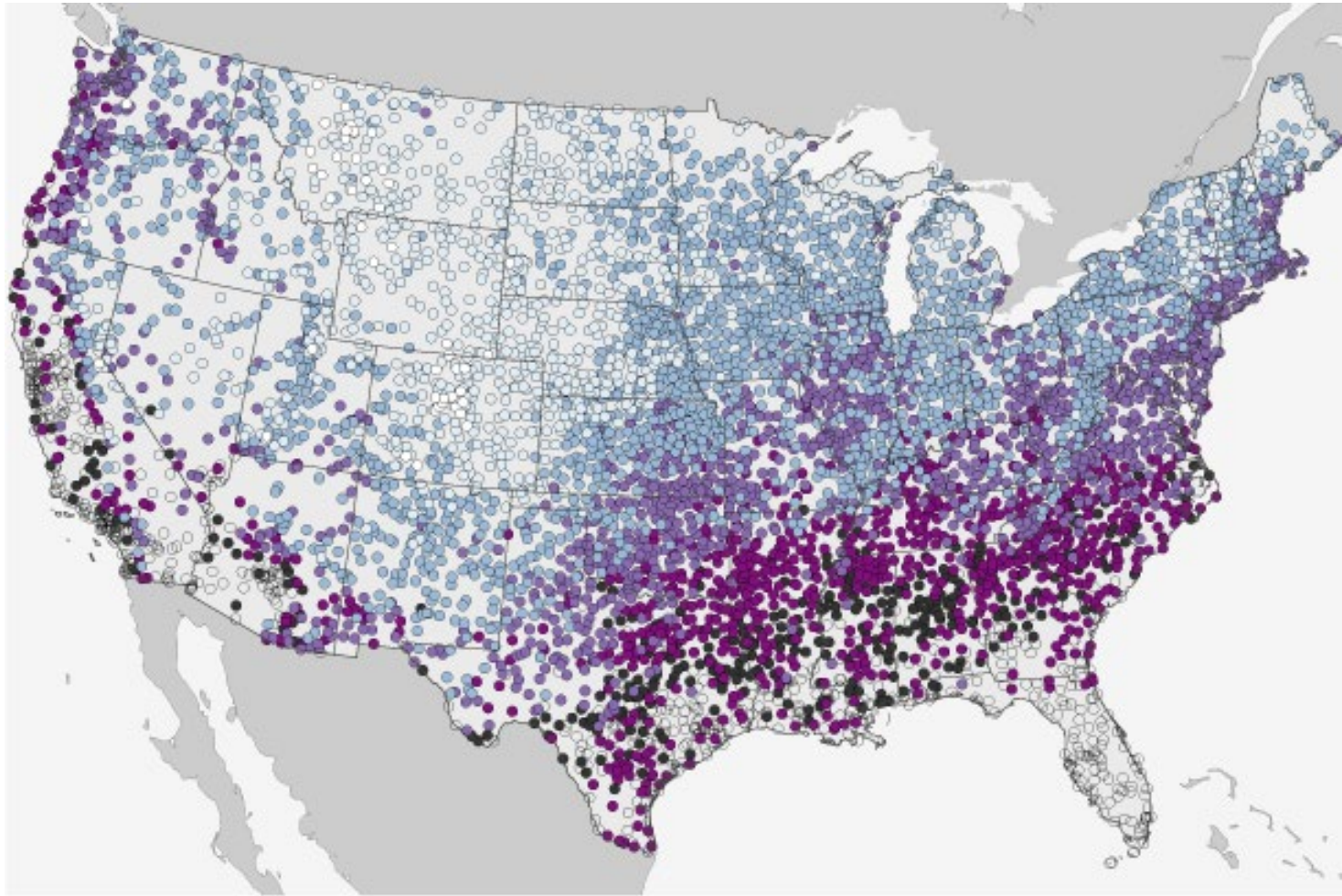
Outlooks

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

Valid for January 16 - April 30, 2025
Released January 16, 2025



When do we usually get 1st snow?



Based on historical patterns from 1981-2010,

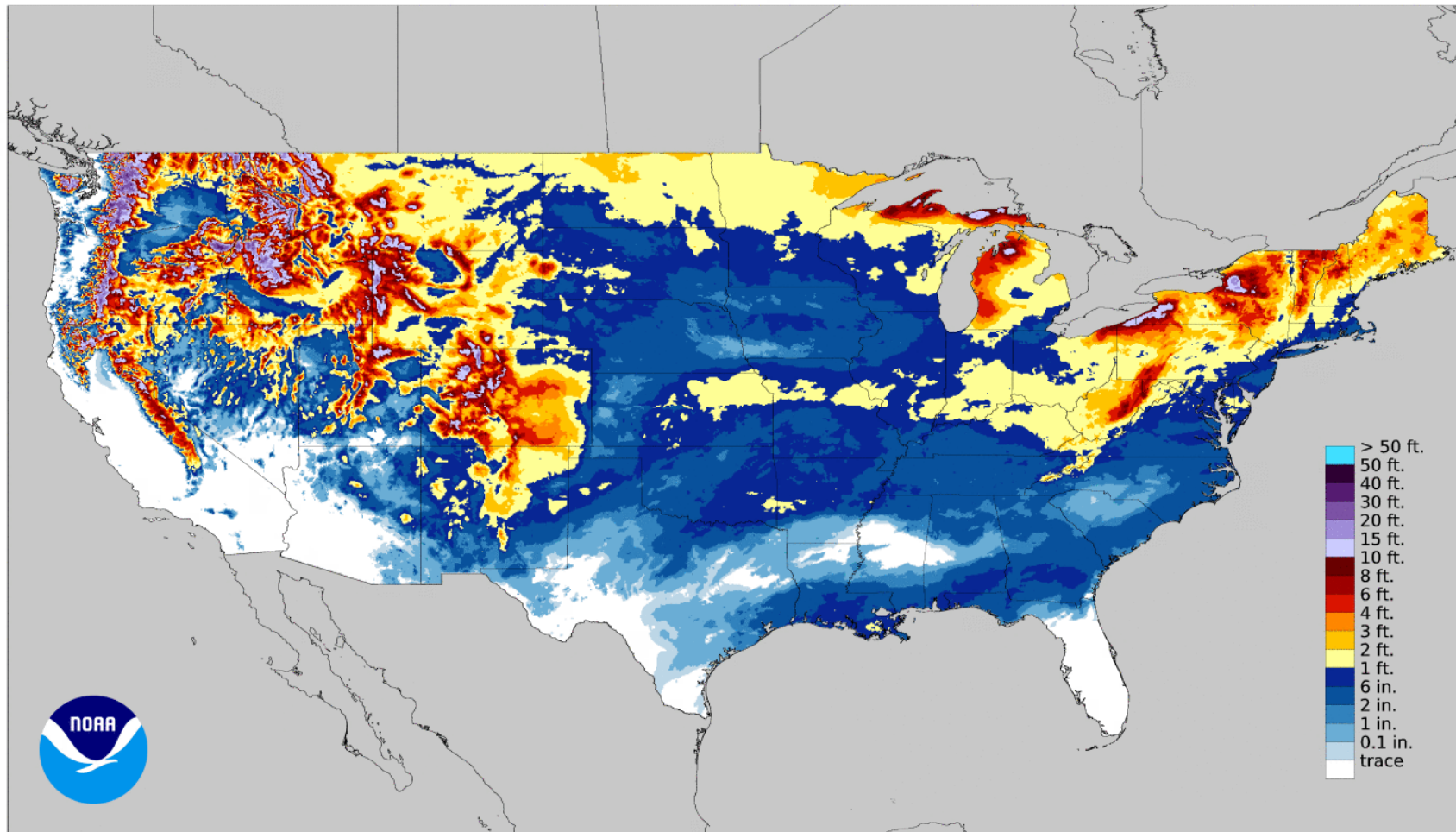


Climate.gov
Data: NCEI

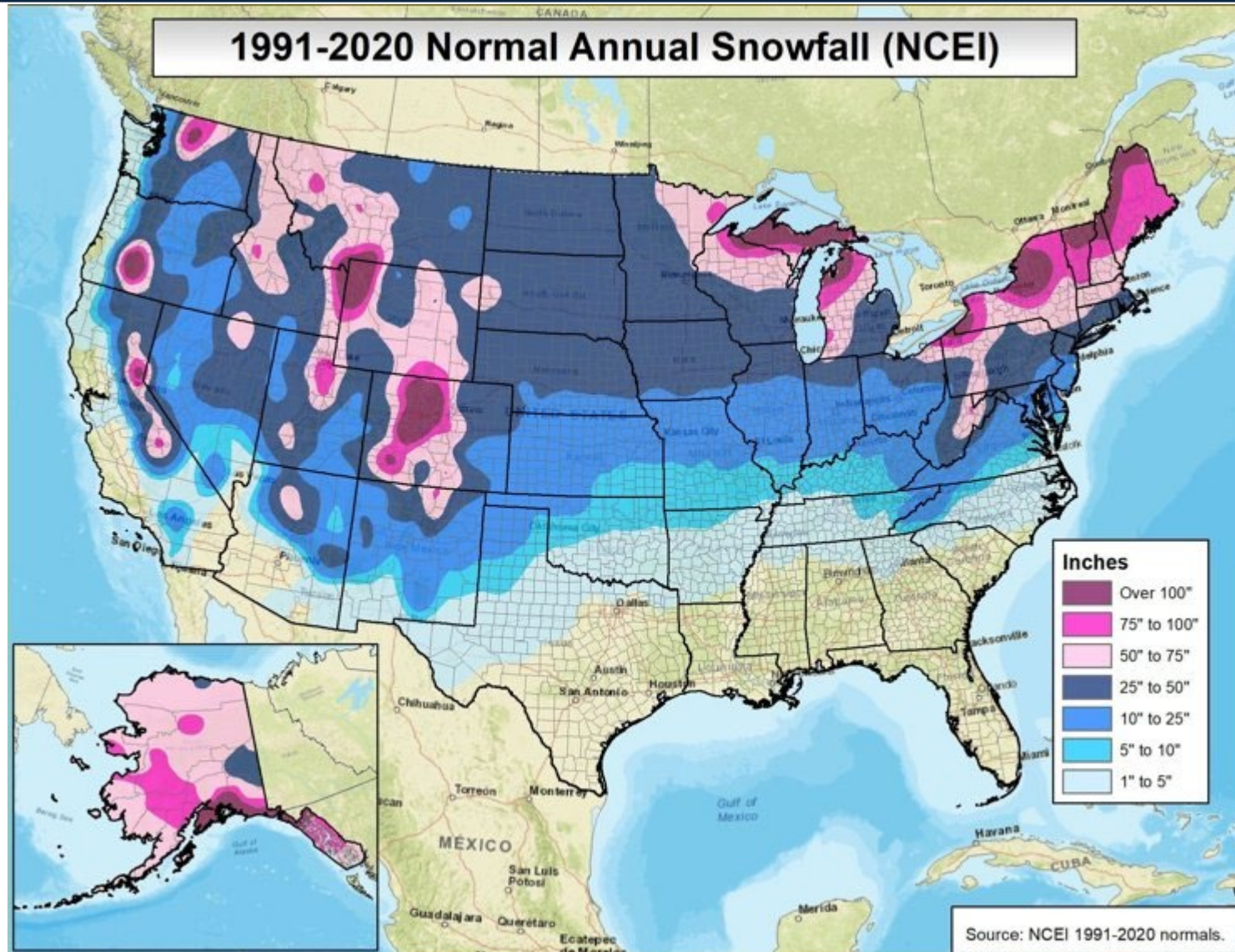
2024 snow

National Snowfall Analysis: accumulation from 2024-09-30 to 2025-01-22

Issued 2025-01-22 16:05:36 UTC



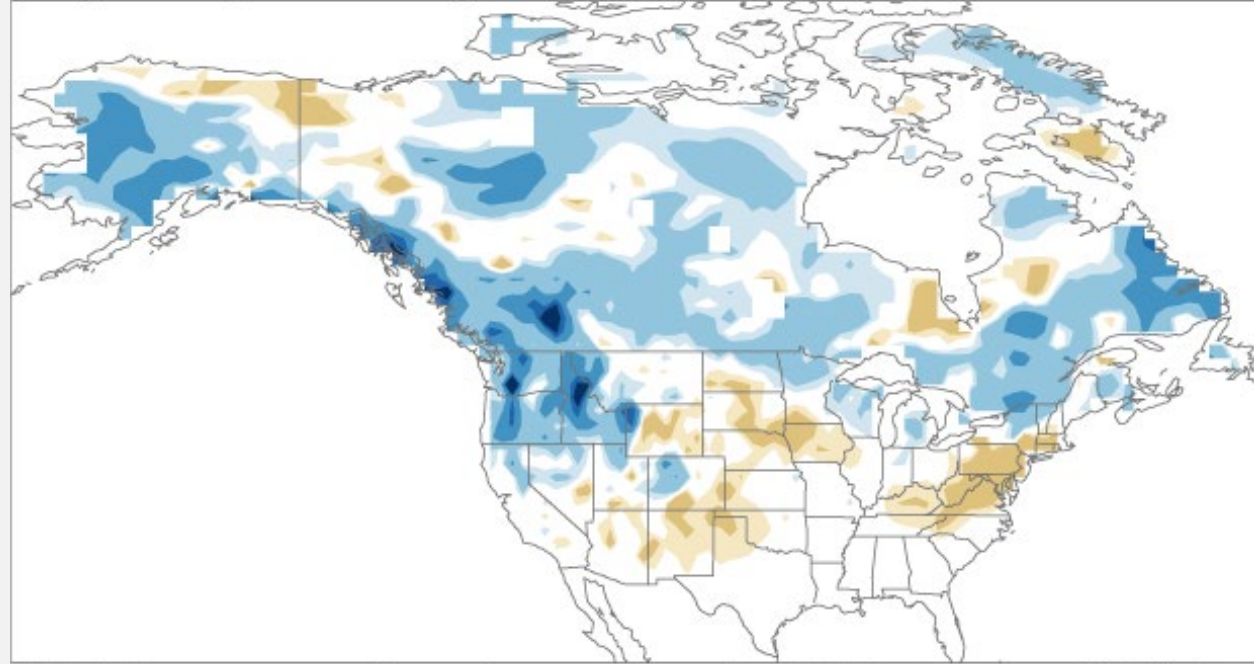
2024 snow



La Niña Snow

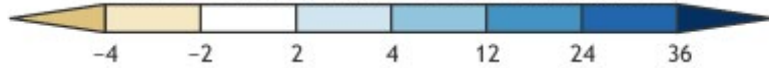
Strong La Nina

Average snowfall patterns for strong La Niña years



October-April
1950-51 to 2008-09

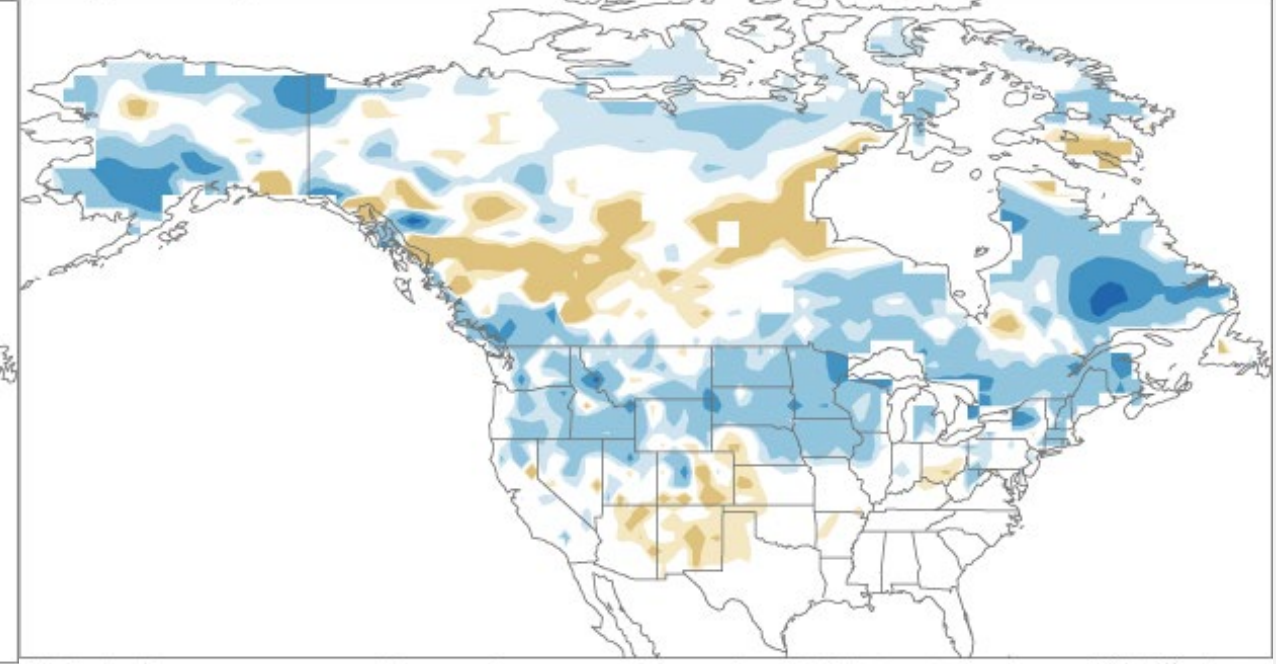
Difference from average seasonal snowfall (inches)



NOAA Climate.gov
Data: Rutgers GSL

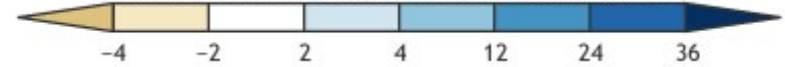
Weak La Nina

Average snowfall patterns for weak La Niña years



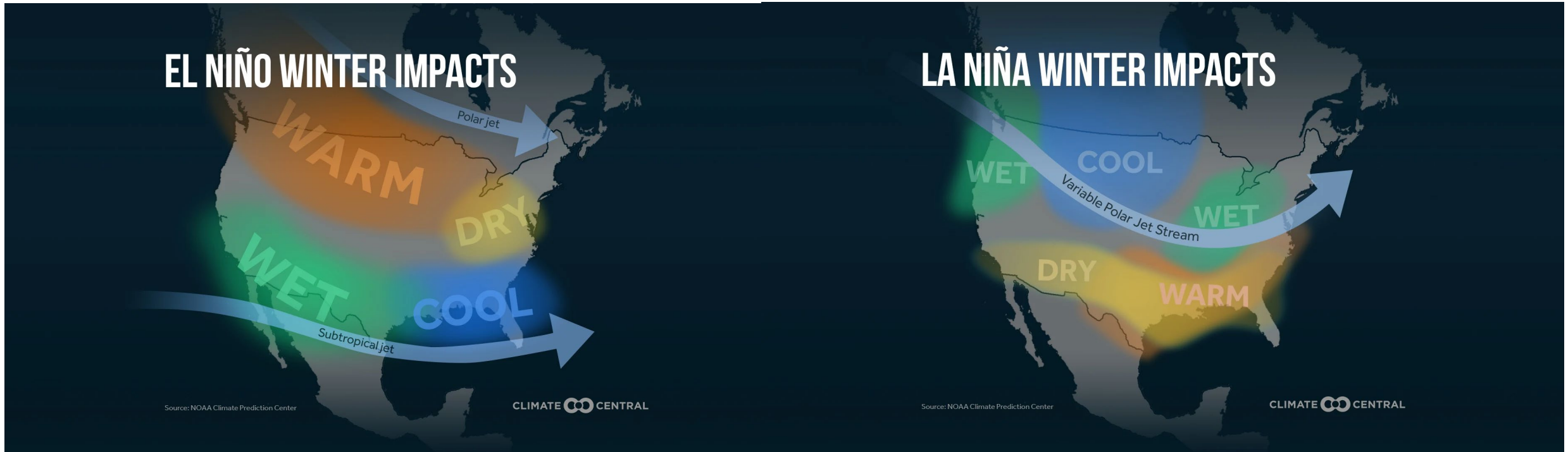
NOAA Climate.gov
Data: Rutgers GSL

Difference from average seasonal snowfall (inches)



NOAA Climate.gov
Data: Rutgers GSL

La Niña vs El Niño Jet Stream

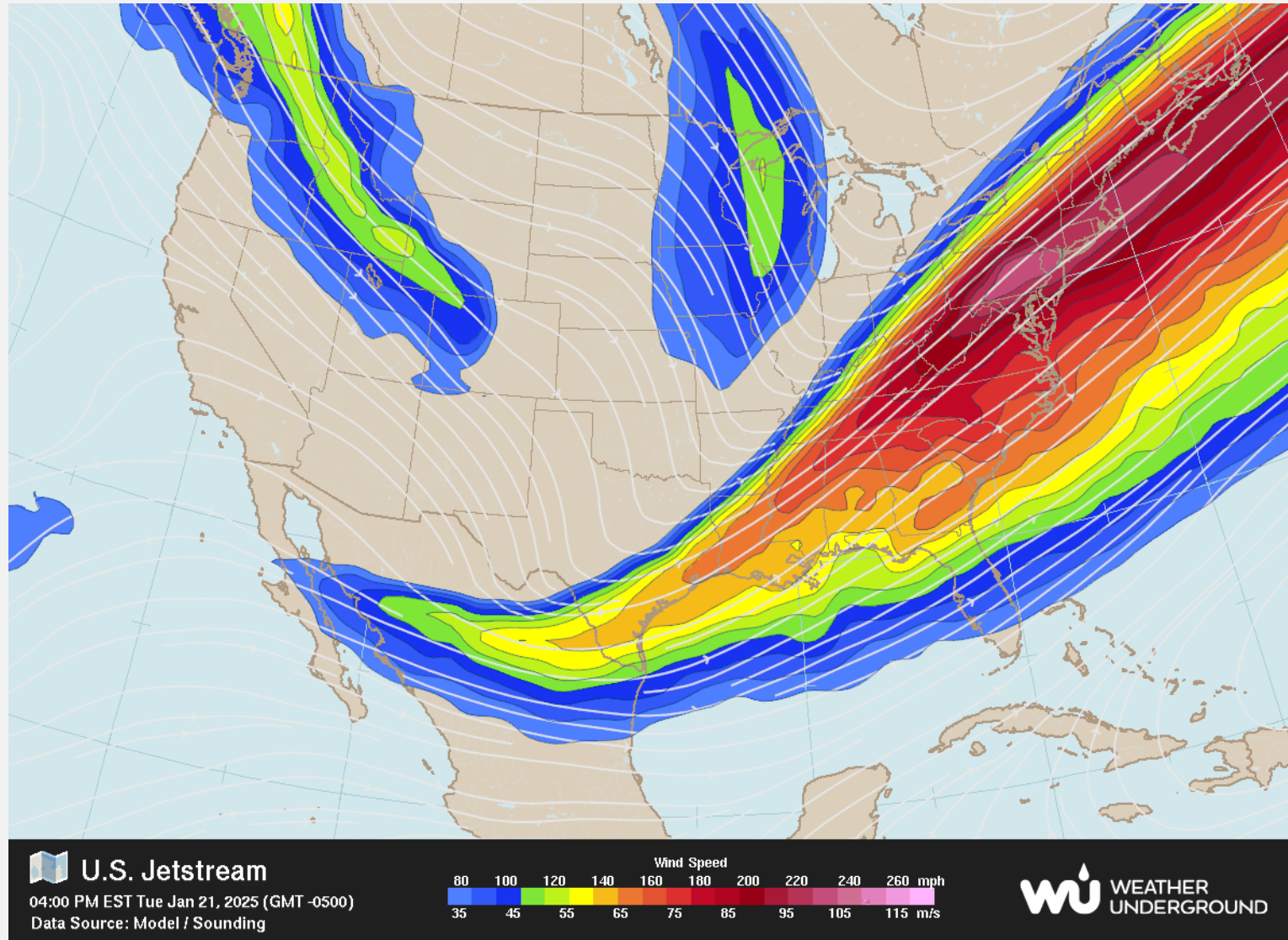


Spring 2023 – Spring 2024

Summer 2020 – Winter 2023

We are in a La Niña watch

Jet stream



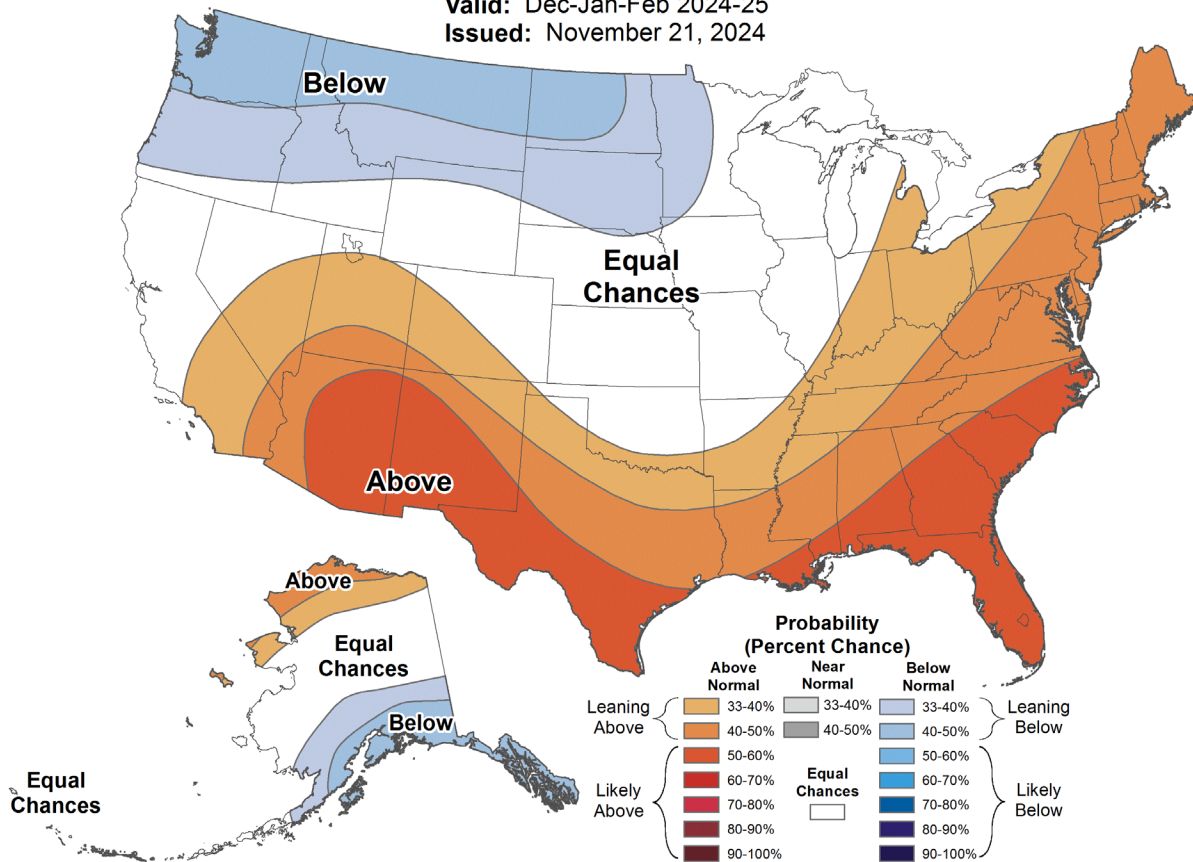
Winter 2024 outlook



Seasonal Temperature Outlook



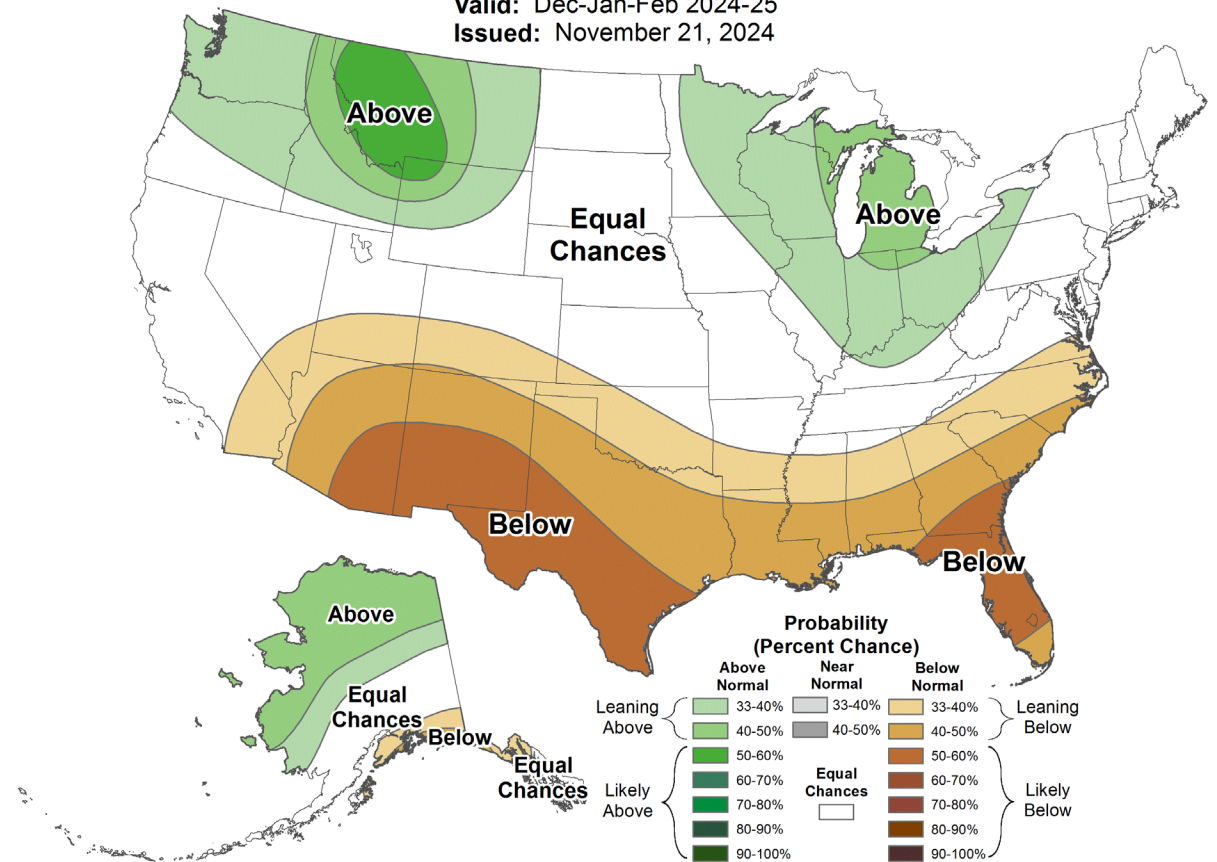
Valid: Dec-Jan-Feb 2024-25
 Issued: November 21, 2024



Seasonal Precipitation Outlook



Valid: Dec-Jan-Feb 2024-25
 Issued: November 21, 2024





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