North Central U.S. Climate and Drought Outlook

15 May 2025

Justin Glisan, Ph.D.

State Climatologist of Iowa

Iowa Department of Agriculture and Land Stewardship

Justin.Glisan@IowaAgriculture.gov

(515)-281-8981

@JustinMGlisan

General Information

- **Providing climate services to the Central Region**
  - Collaboration Activity Between:
    - State Climatologists/American Association of State Climatologists
    - NOAA NCEI/NWS/OAR/NIDIS
    - USDA Climate Hubs
    - Midwest and High Plains Regional Climate Centers
    - National Drought Mitigation Center

- **Next Regular Climate/Drought Outlook Webinar**
  - June 19, 2025 (1 PM CST): Presenter: Dr. Aaron Wilson – State Climatologist of Ohio
- **Access to Future Climate Webinars and Information**
- http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars

  – https://mrcc.purdue.edu/multimedia/webinars.jsp
  – https://hprcc.unl.edu/webinars.php
- **Open for questions at the end (enter them along the way).**

Presentation Outline

- Recent Conditions
  - Temperature and precipitation ranks
  - 30-day temperature and precipitation
  - Drought
- Planting/Growing Progress
- Impacts and Notable Events
- Outlooks
  - ENSO-neutral conditions
  - Short-term
  - Summer

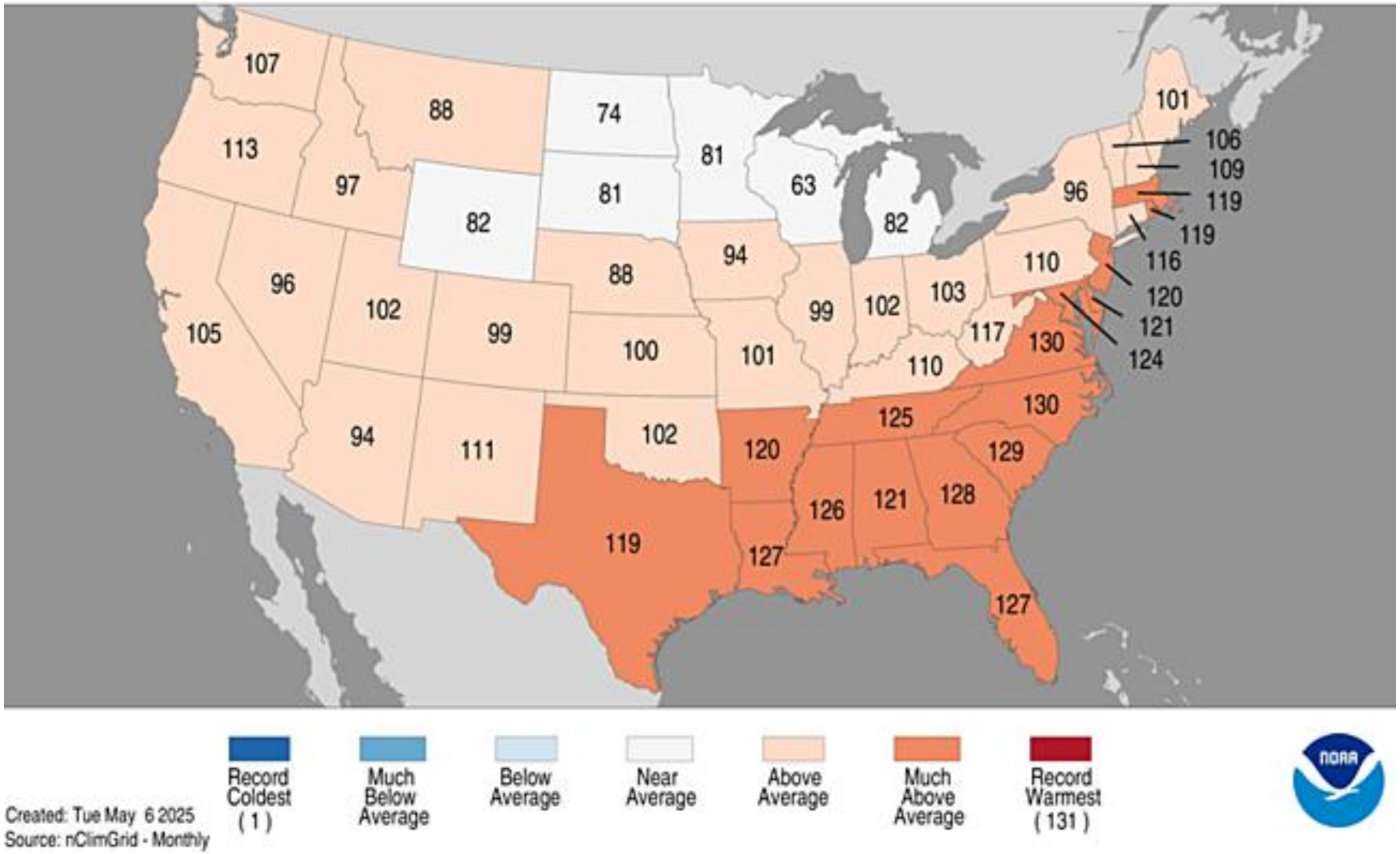
Recent Conditions

April Temperature and Precipitation Ranks
YTD Temperature and Precipitation Ranks
Departure from Normal Temperature and Precipitation
Long-term Precipitation Departures
Soil Moisture, Streamflow and Drought

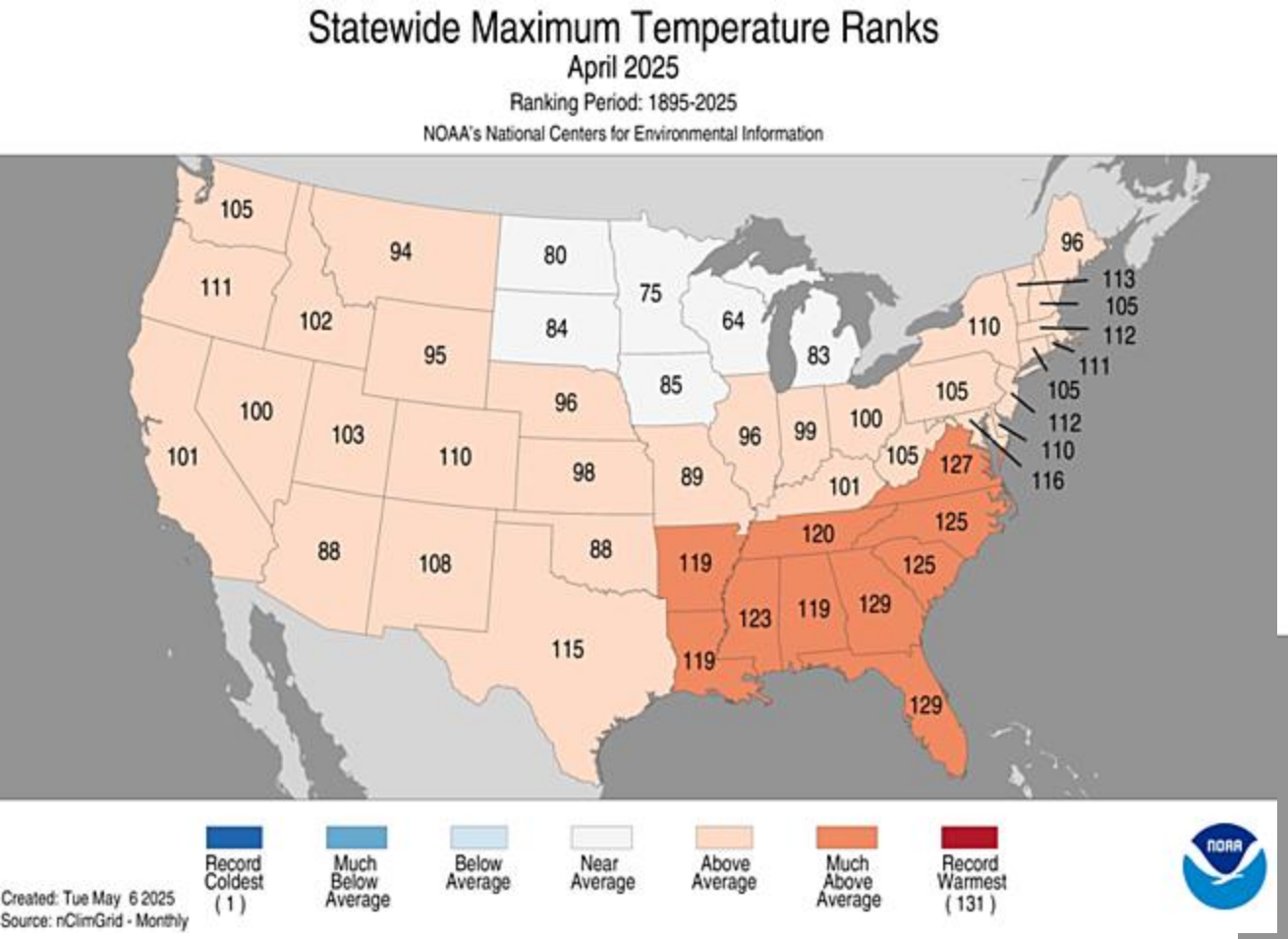
April Temperature Ranks

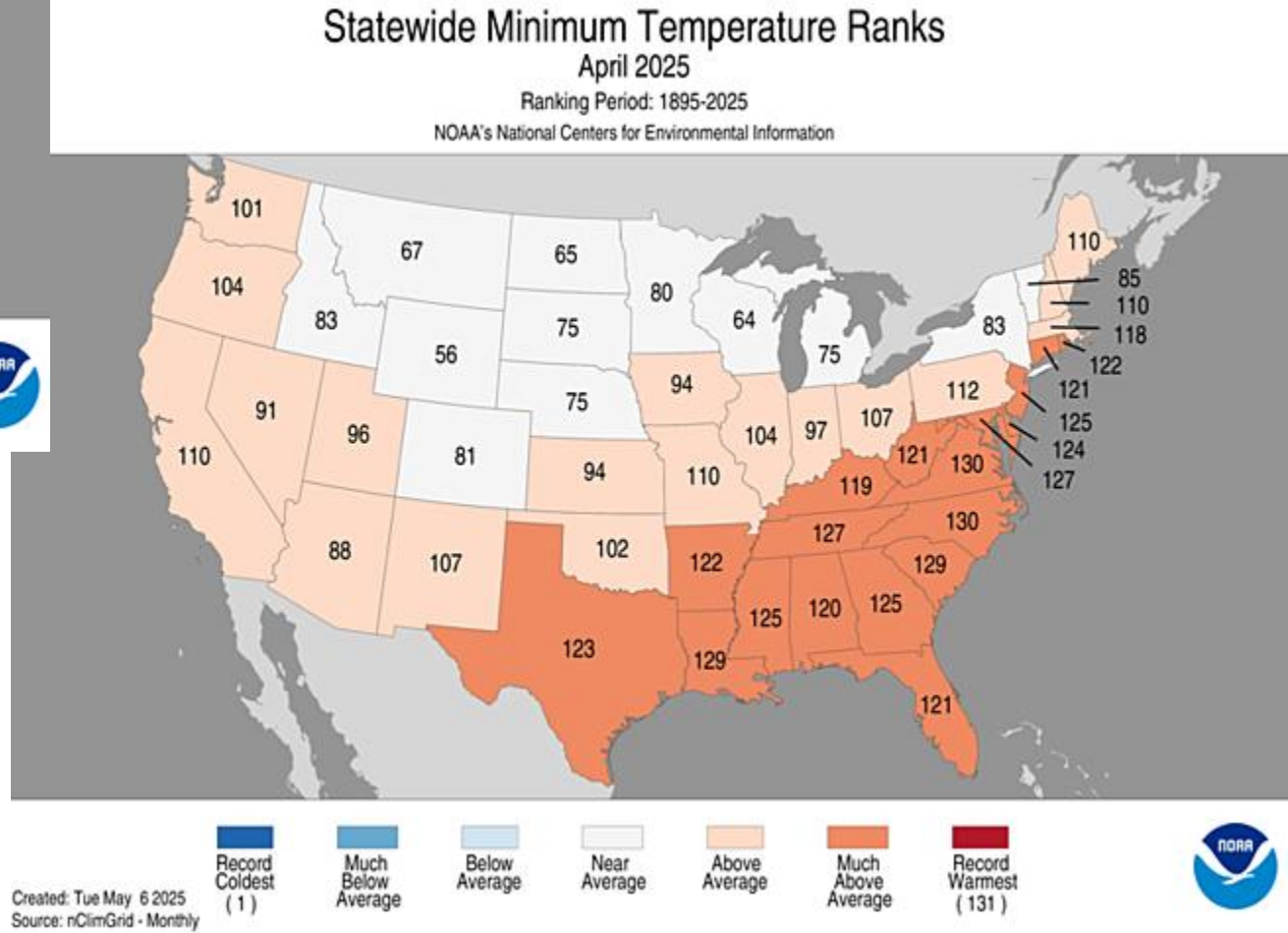
Near-normal north.

Unseasonably warm across southern portions.



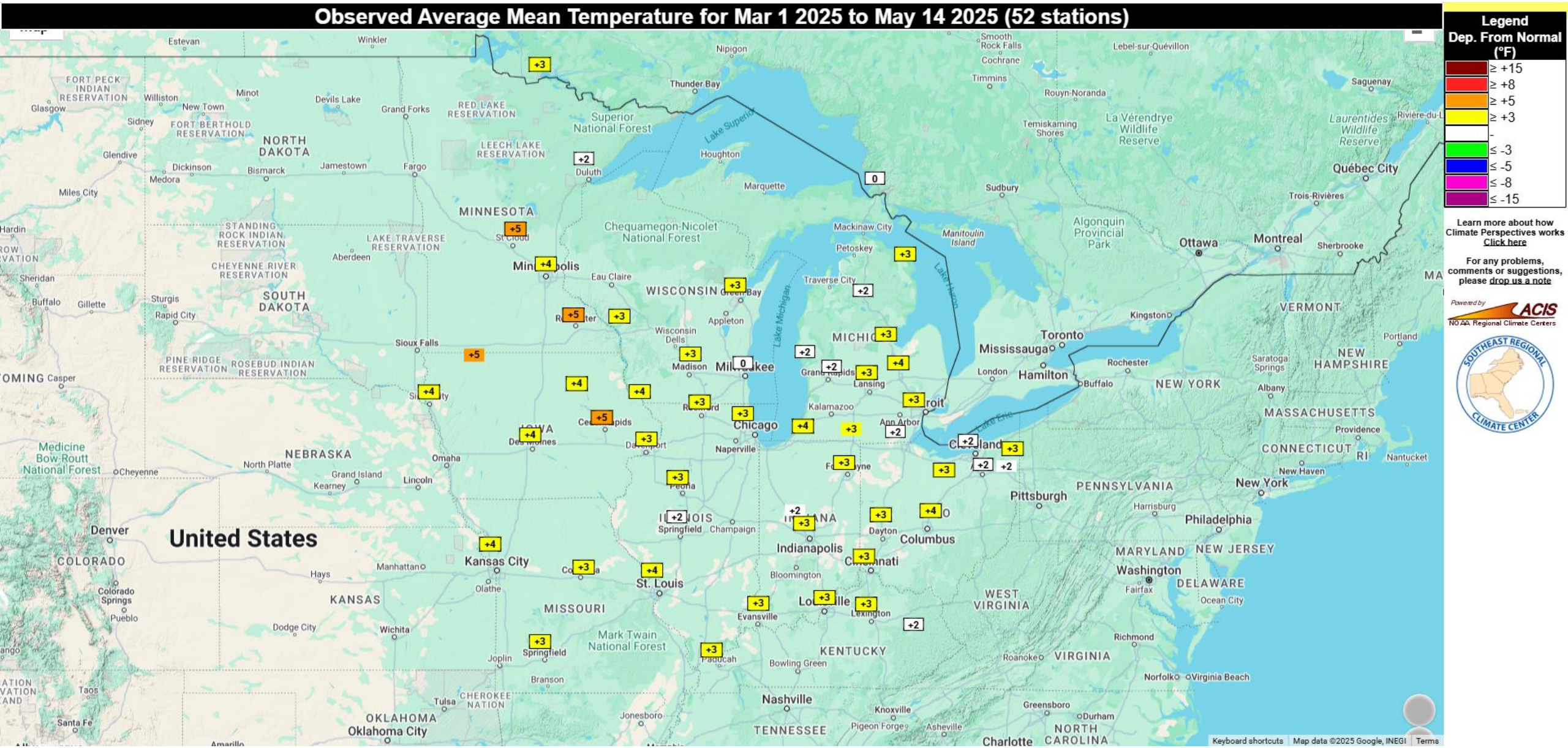
http://www.ncdc.noaa.gov/temp-and-precip/us-maps/





http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

Season-to-Date Average Temperature Departure



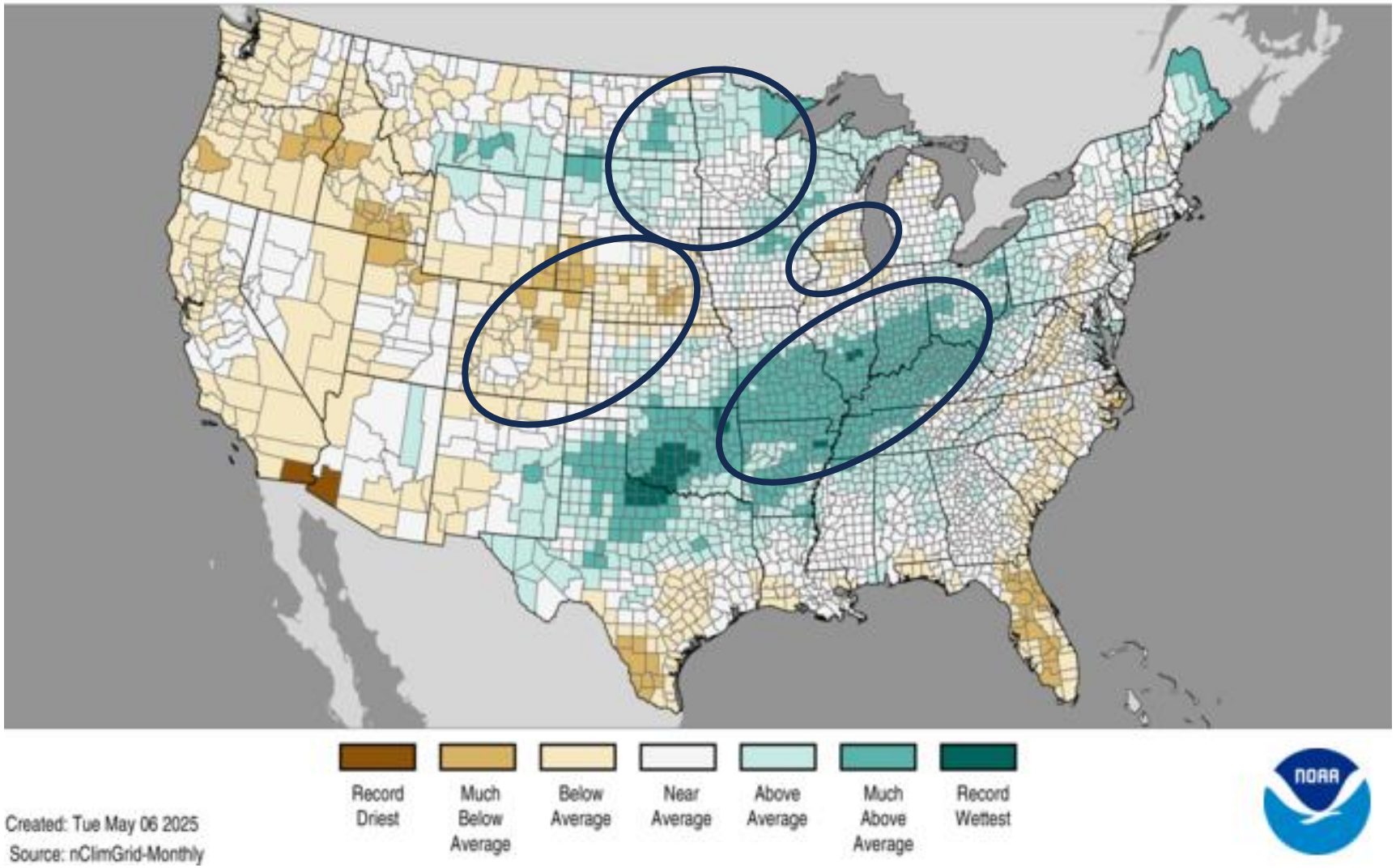
https://sercc.oasis.unc.edu/Map.php?region=mrcc&#

April Precipitation Ranks

Wet conditions from MO (4th), southern IL/IN (10th) and OH.

Dry across NE (17th)-CO(15th), southern WI

Wetter areas in the Upper Midwest.

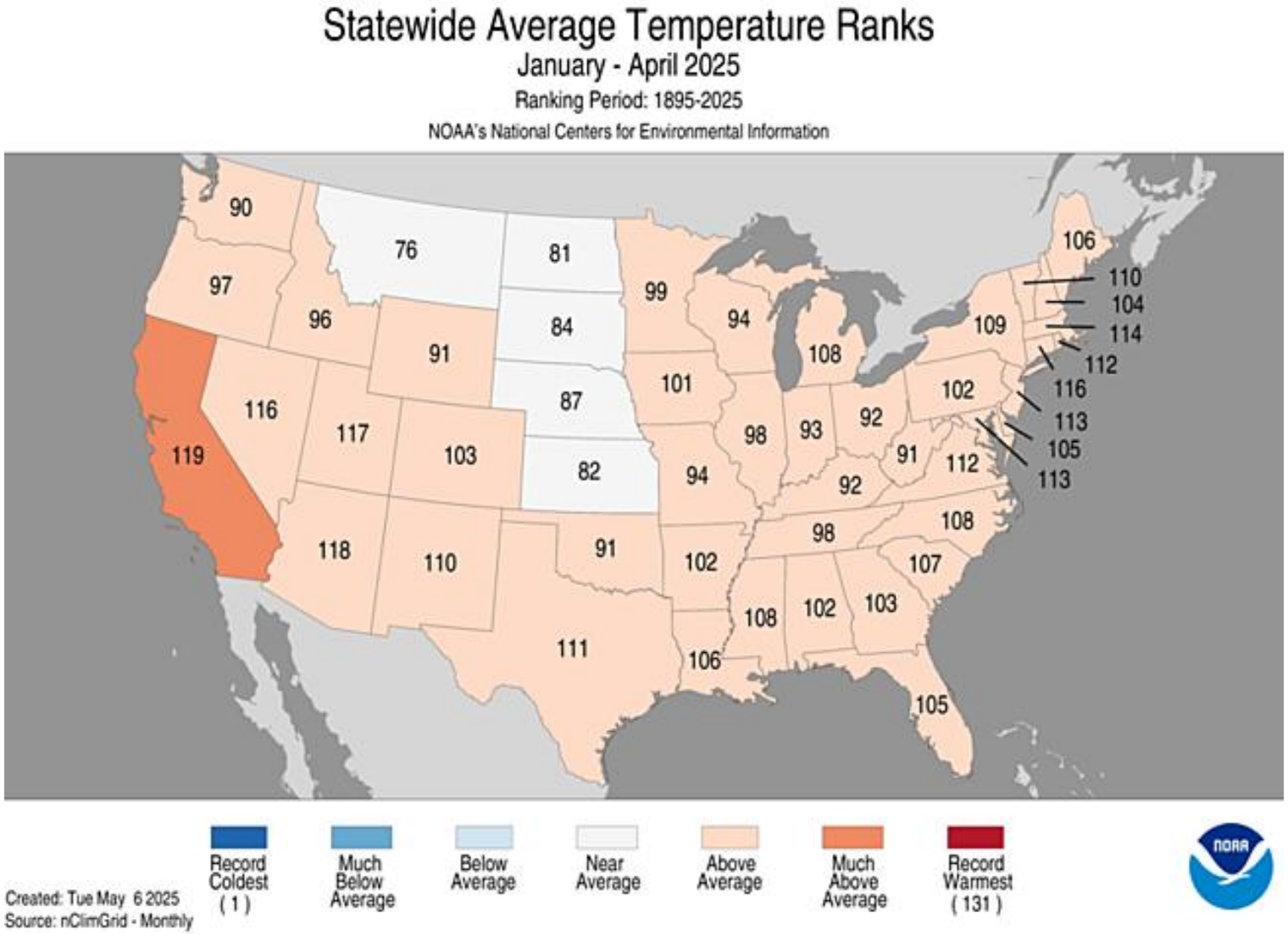


http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

January-April Temperature Recap

Warm start to the for central/eastern portions of the region.

Near-normal west.



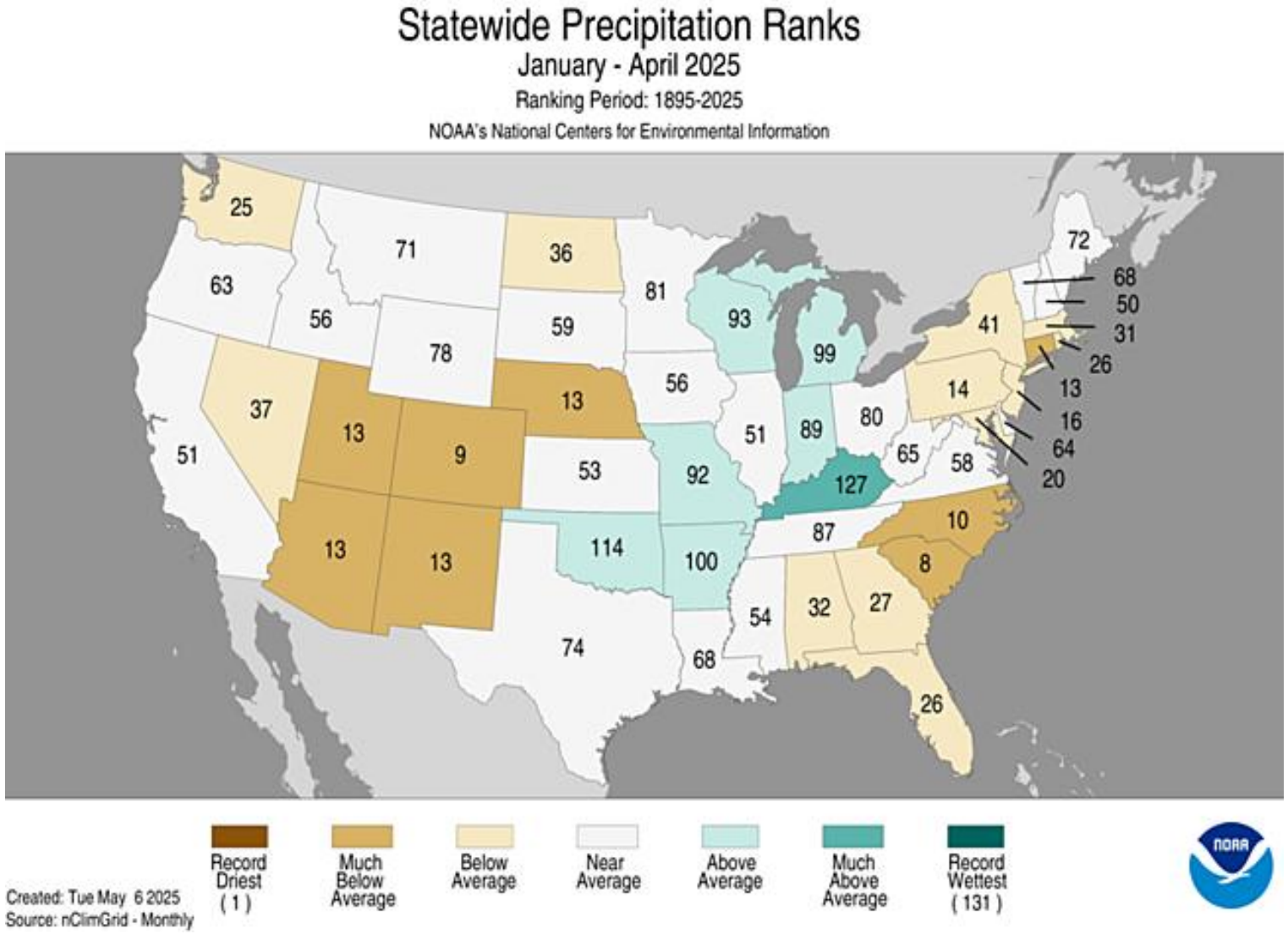
http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

January-April Precipitation Recap

Wetter conditions in WI-MI-IN (5th)-KY-MO.

9th/13th driest start for CO/NE.

Near-normal, but closer to drier for IA/IL/SD



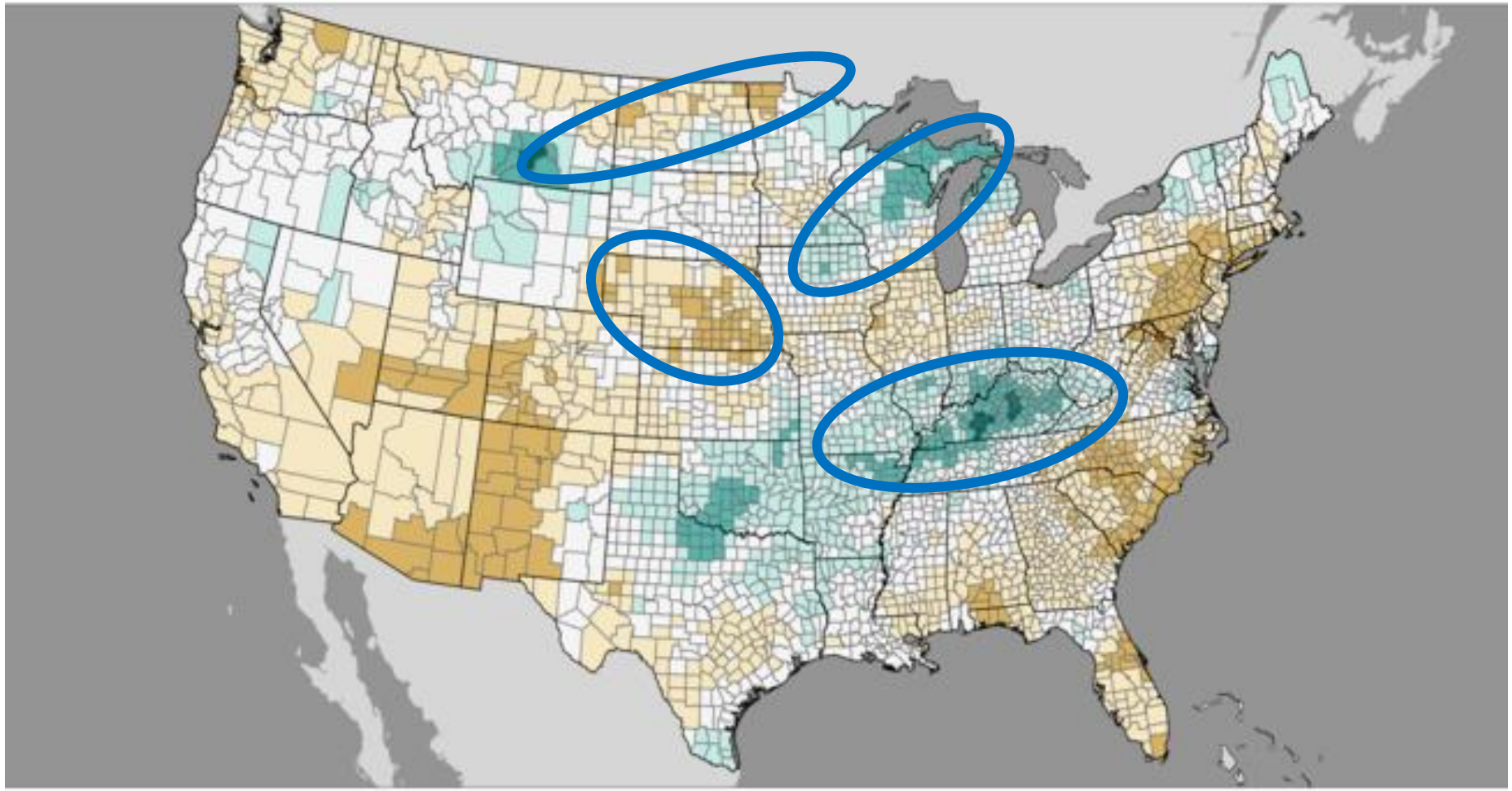
http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

County Precipitation Ranks

January-April 2025

Ranking Period: 1895-2025

NOAA's National Centers for Environmental Information

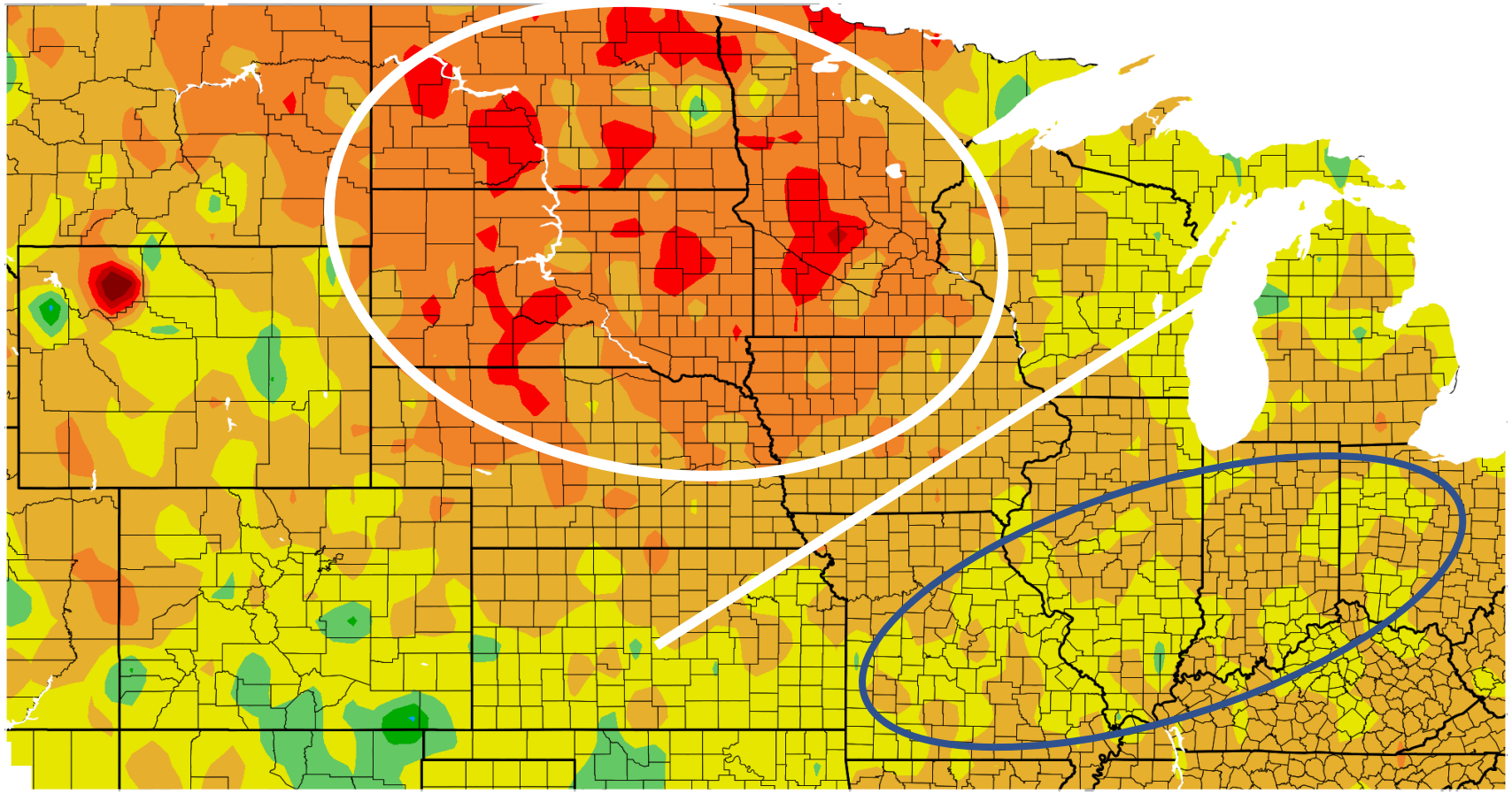


Record Driest | Much Below Average | Below Average | Near Average | Above Average | Much Above Average | Record Wettest

Created: Tue May 06 2025

Source: nClimGrid-Monthly

Departure from Normal Temperature (F)
4/15/2025 - 5/14/2025

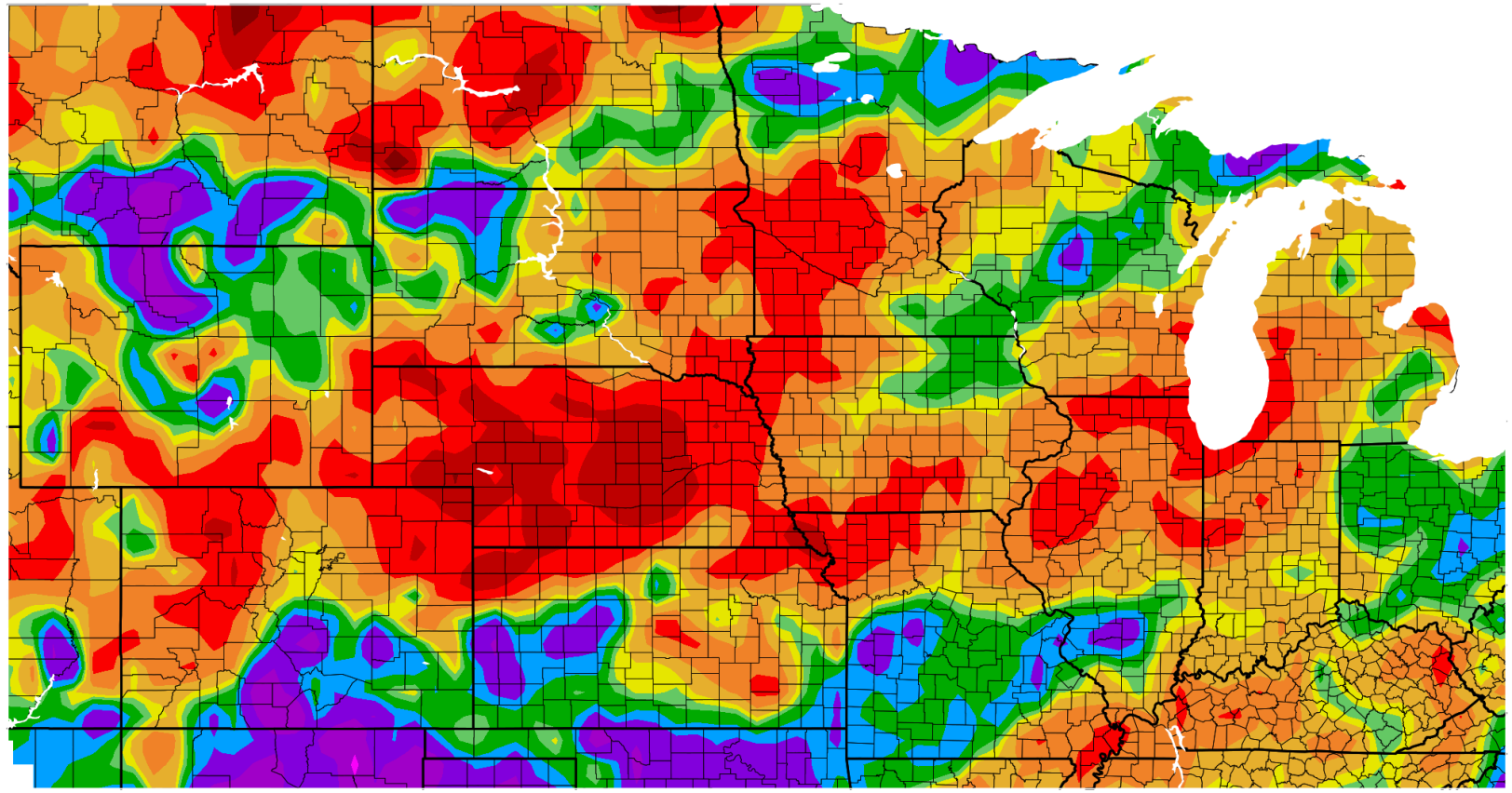


−10 −8 −6 −4 −2 0 2 4 6 8 10

https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

Generated 5/15/2025 using provisional data. ACIS Web Services

Percent of Normal Precipitation (%)
4/15/2025 – 5/14/2025

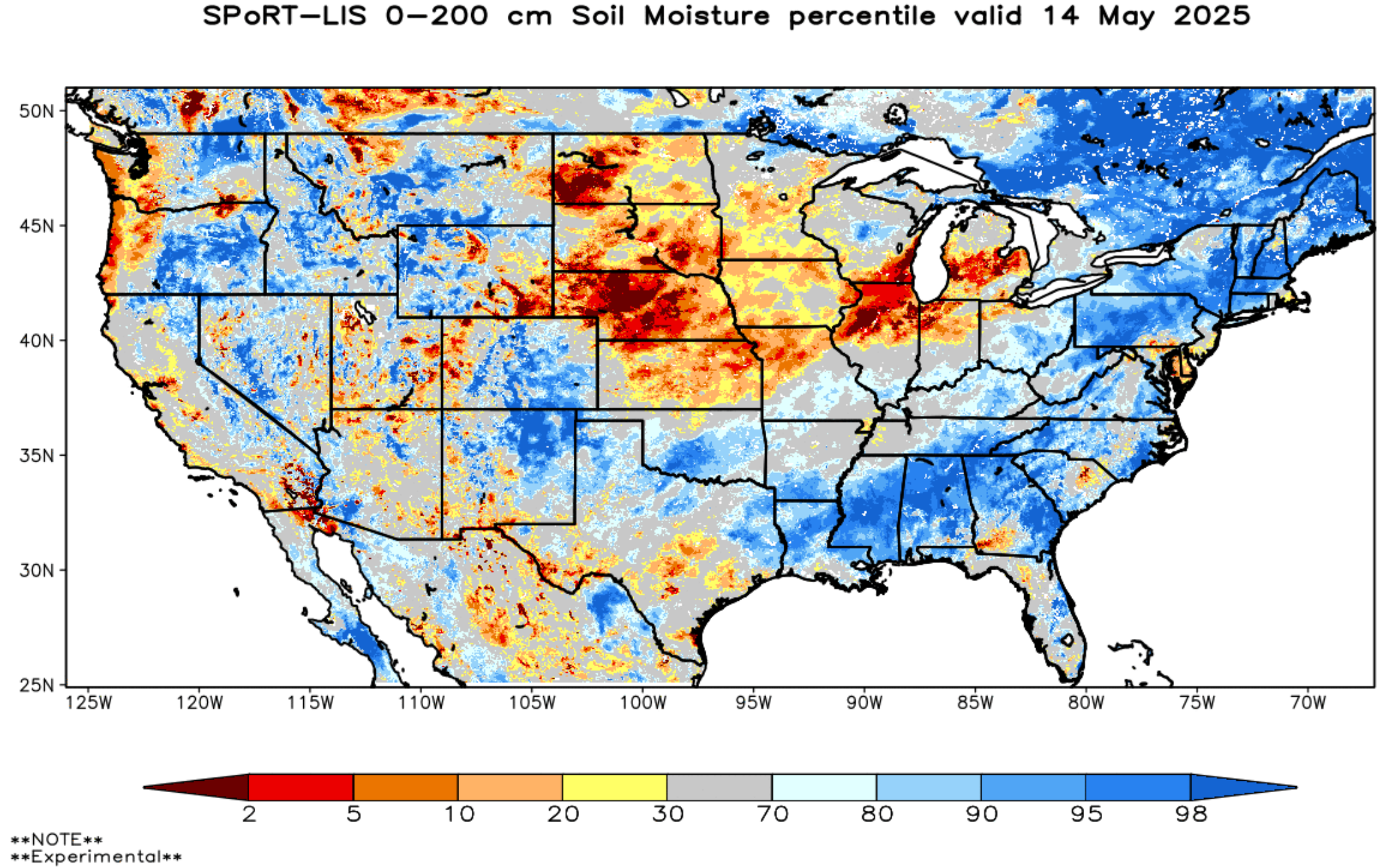


5 25 50 70 90 100 110 130 150 200 300

Generated 5/15/2025 using provisional data.

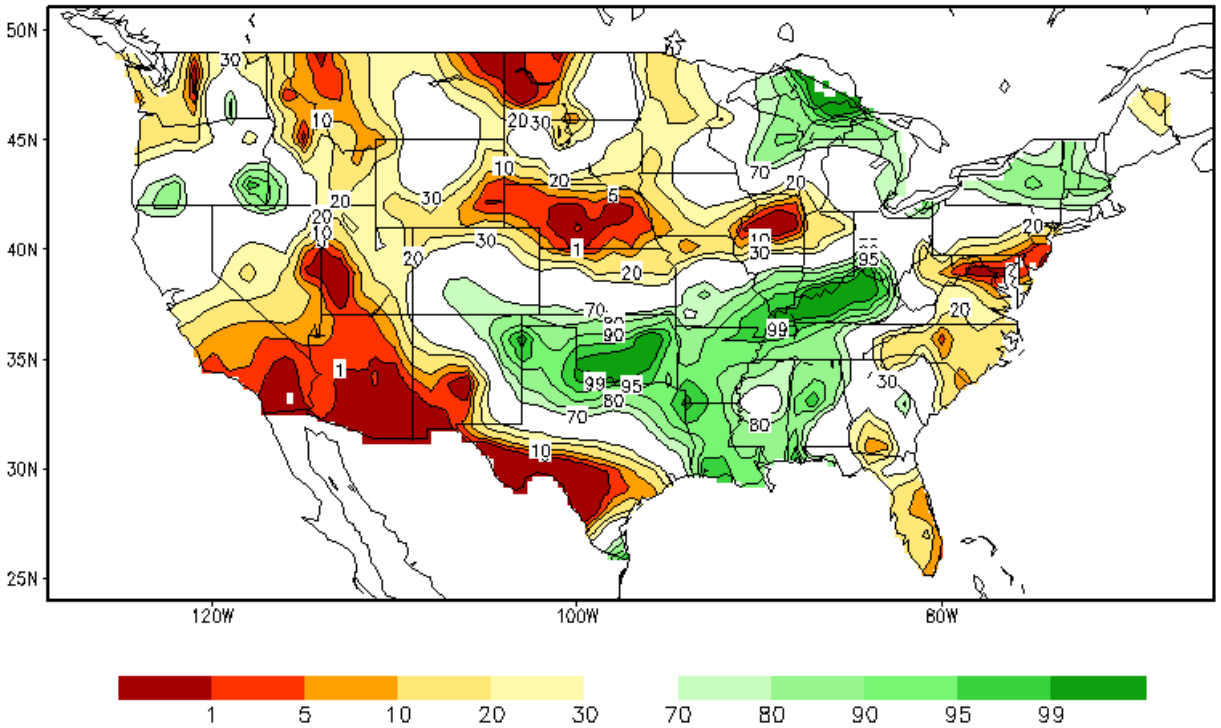
ACIS Web Services

https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

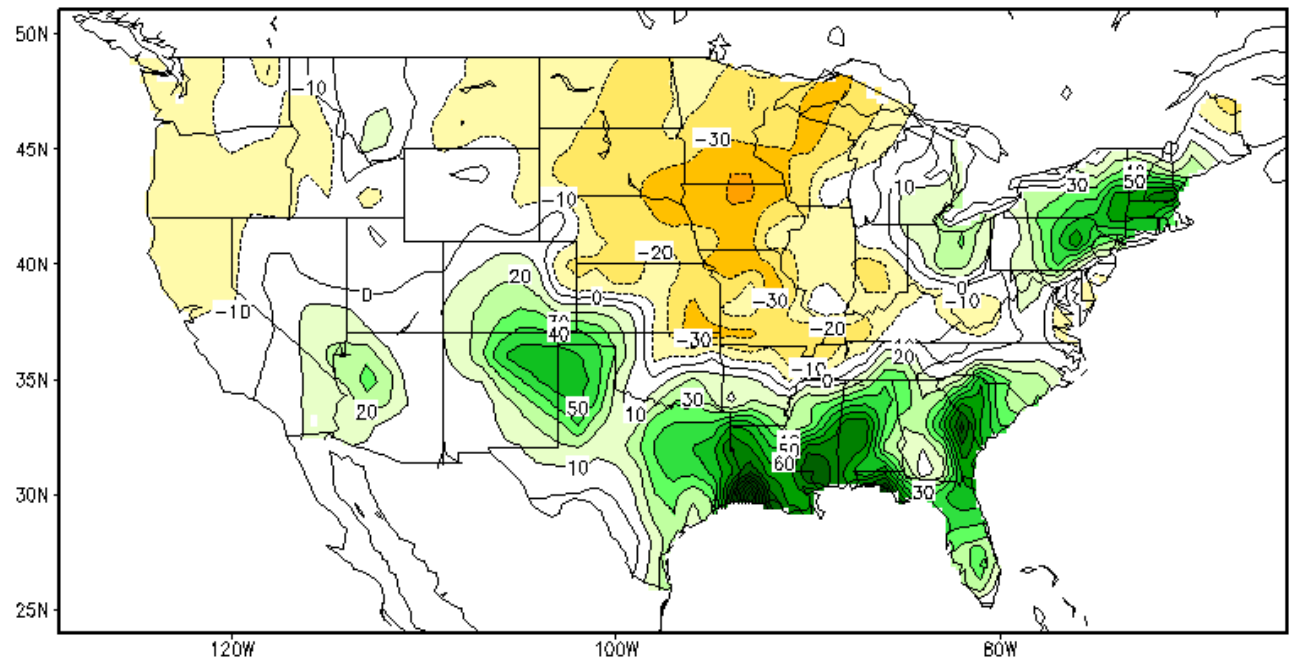


https://weather.msfc.nasa.gov/cgi-bin/basicLooper.pl?category=lis_CONUS&initialize=first&regex=vsm0-200percent_20201118

Calculated Soil Moisture Ranking Percentile
MAY 13, 2025

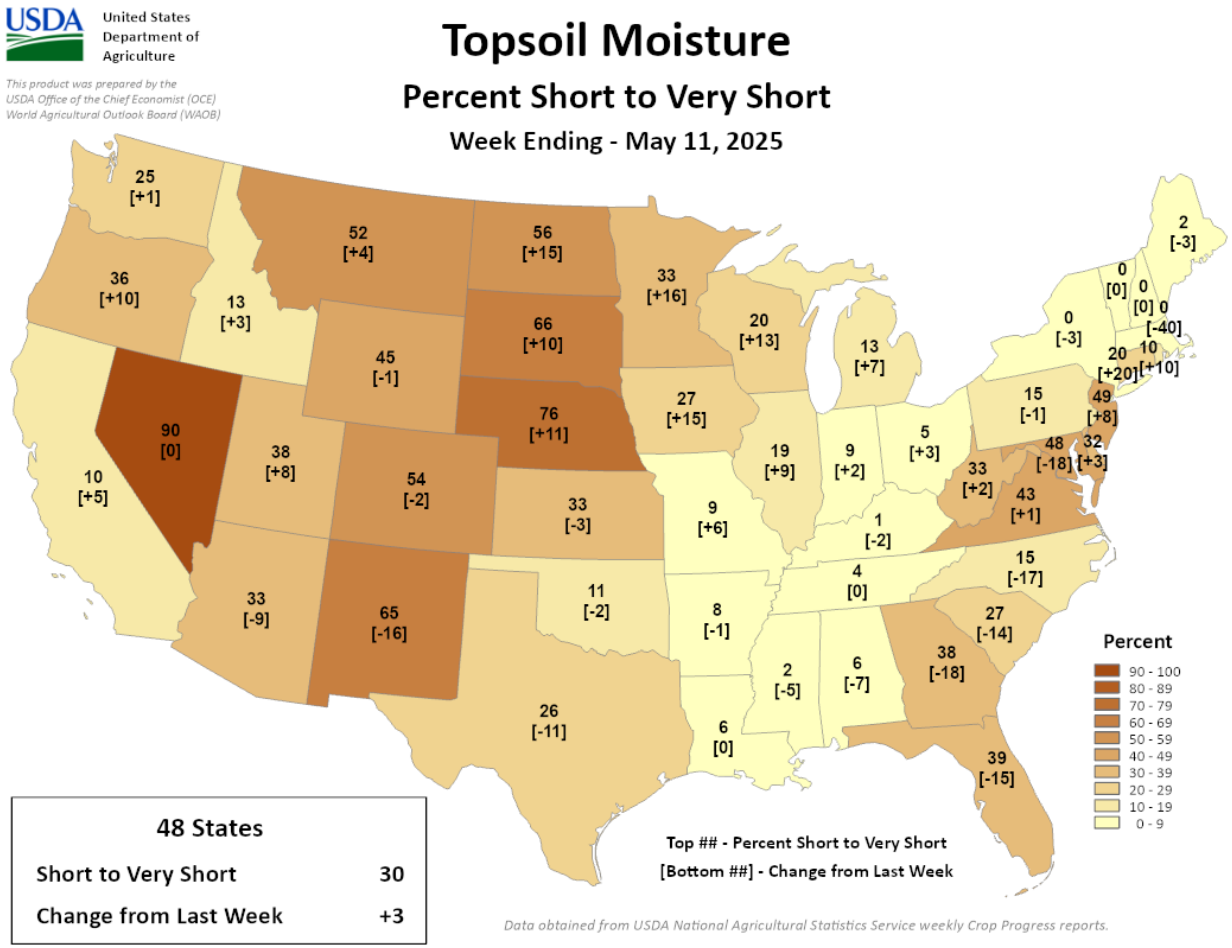


Calculated Soil Moisture Anomaly Change
MAY 13, 2025 from APR.30

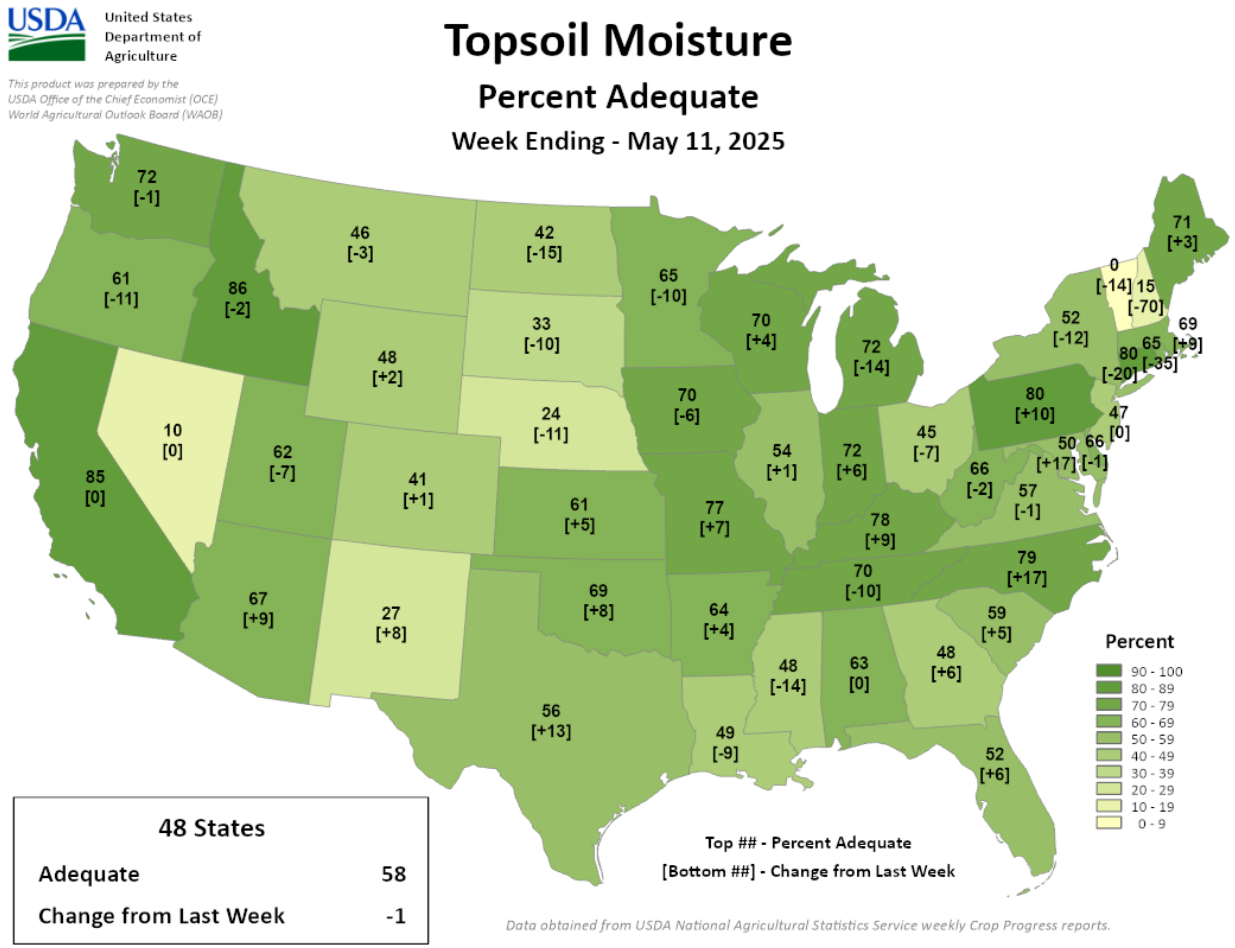


https://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilr

USDA NASS – Topsoil Moisture



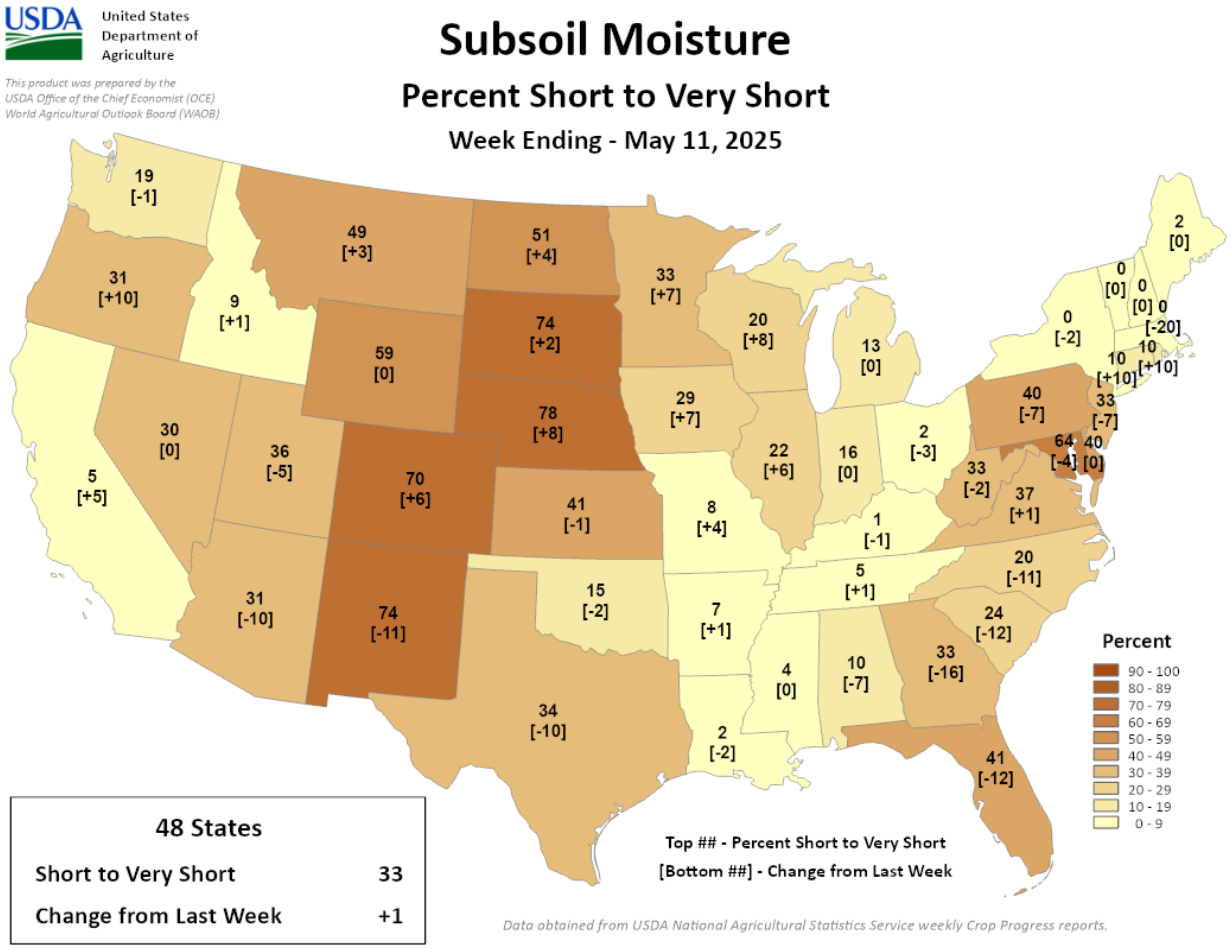
48 States	
Short to Very Short	30
Change from Last Week	+3



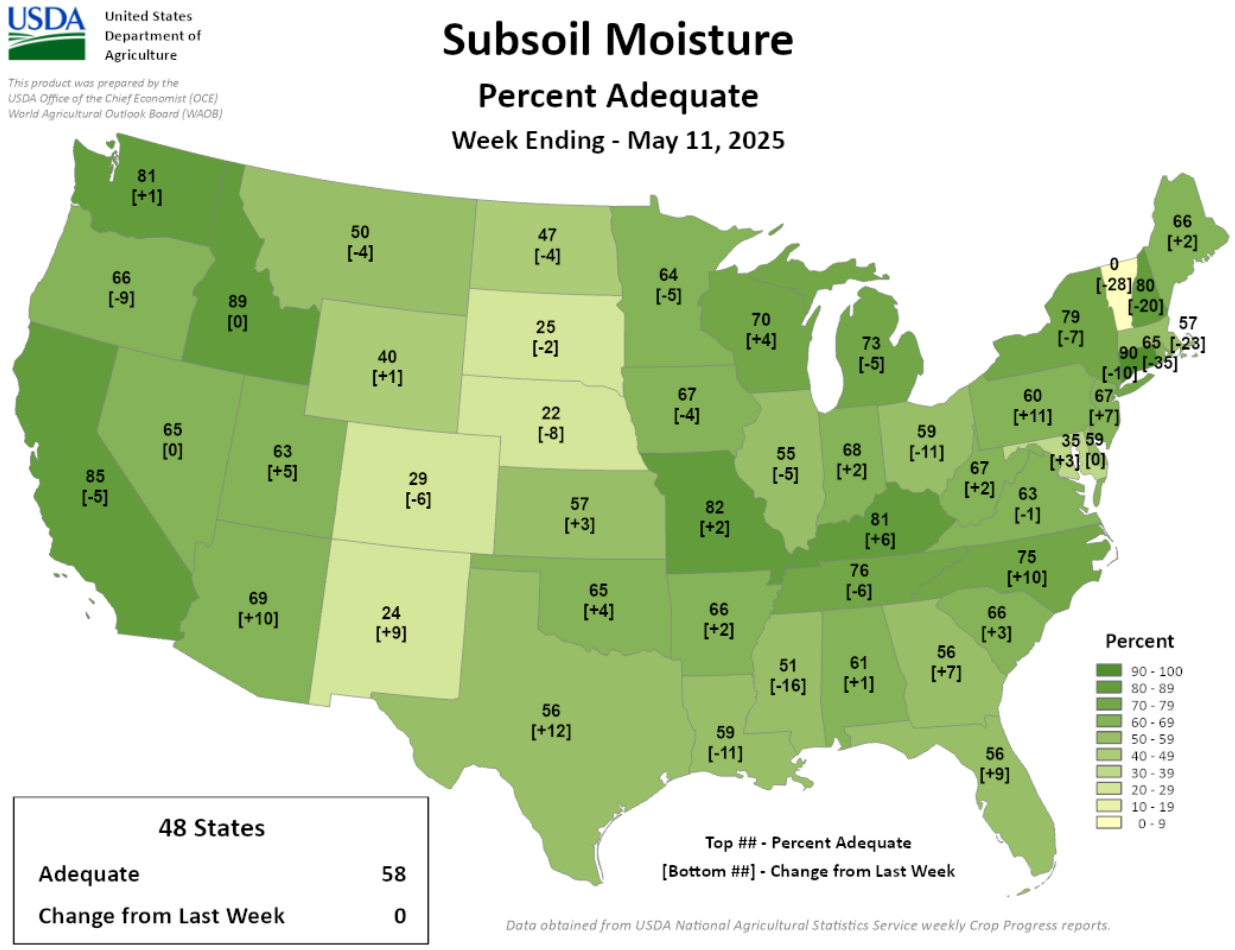
48 States	
Adequate	58
Change from Last Week	-1

https://agindrought.unl.edu/Other.aspx

USDA NASS – Subsoil Moisture

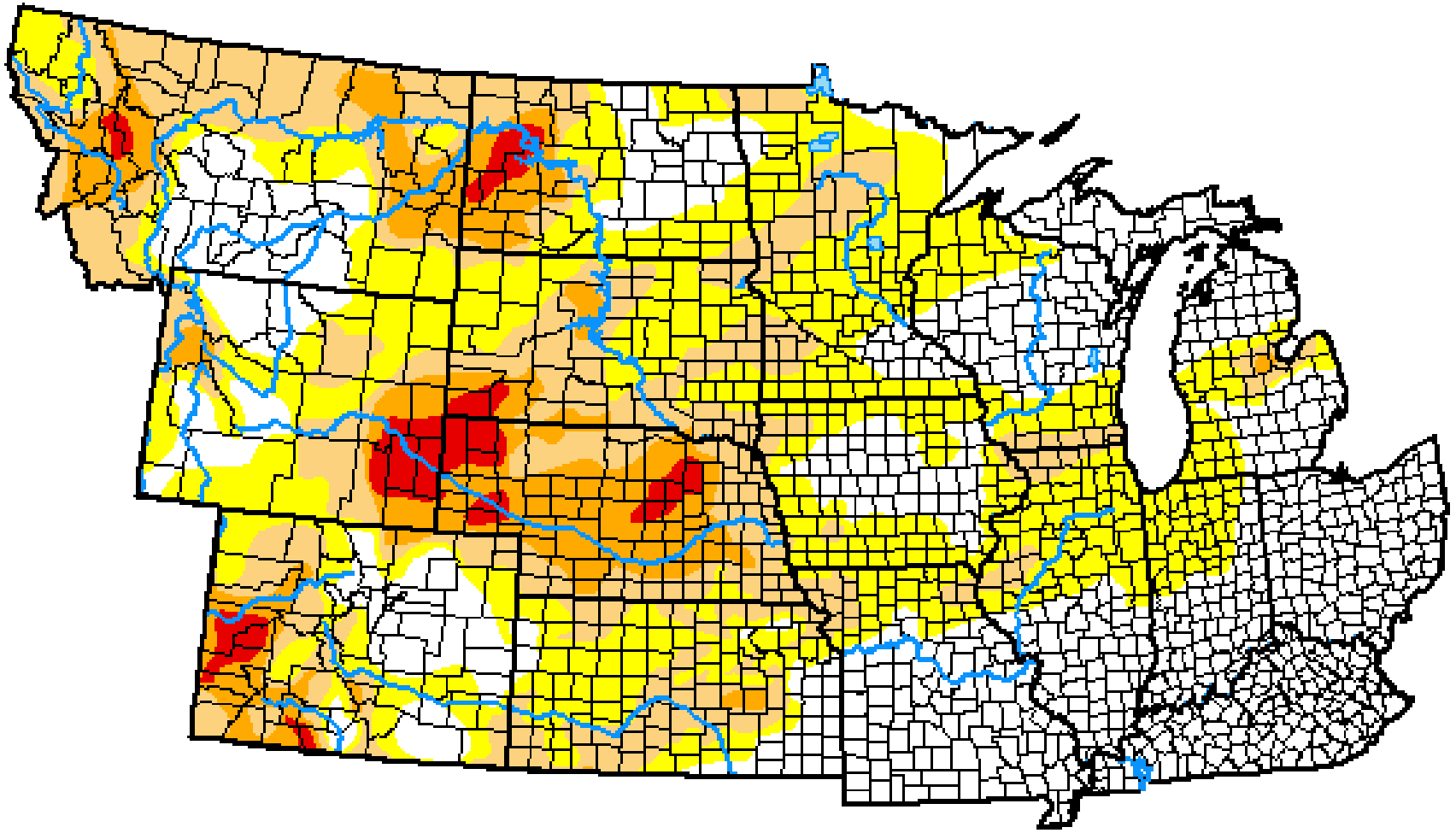


48 States	
Short to Very Short	33
Change from Last Week	+1



48 States	
Adequate	58
Change from Last Week	0

https://agindrought.unl.edu/Other.aspx



May 13, 2025

(Released Thursday, May. 15, 2025)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	35.97	64.03	33.33	12.04	2.61	0.00
Last Week *05-06-2025*	39.50	60.50	31.82	9.97	2.23	0.00
3 Months Ago *02-11-2025*	28.31	71.69	45.98	17.08	3.74	0.00
Start of Calendar Year *01-07-2025*	31.02	68.98	45.49	19.38	5.80	0.00
Start of Water Year *10-01-2024*	20.79	79.21	36.88	12.04	3.20	0.40
One Year Ago *05-14-2024*	66.09	33.91	15.48	4.56	0.21	0.00

Intensity:

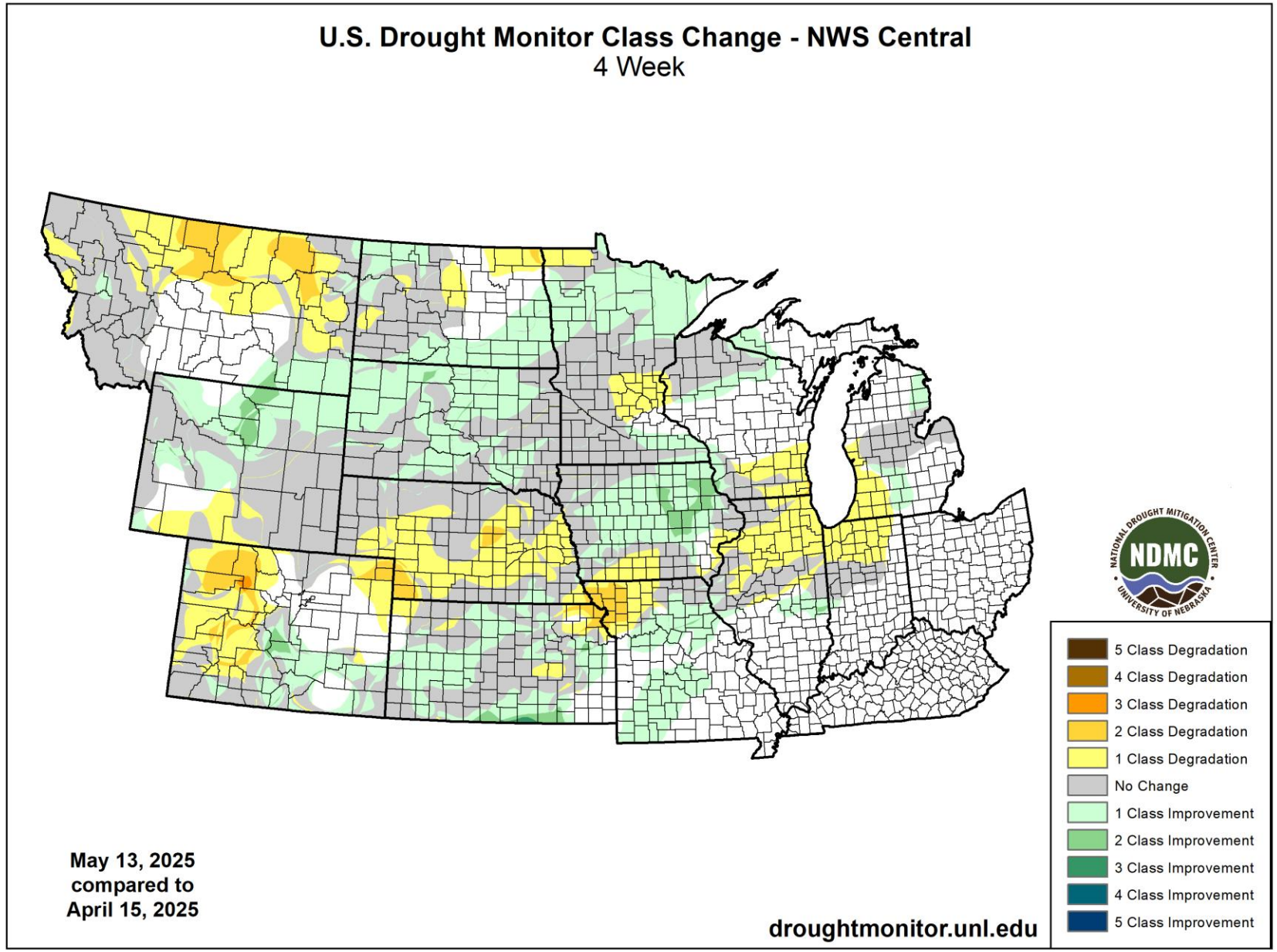
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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:
Rocky Bilotta
NCEI/NOAA

droughtmonitor.unl.edu

https://droughtmonitor.unl.edu/



https://droughtmonitor.unl.edu/Maps/ChangeMaps.aspx

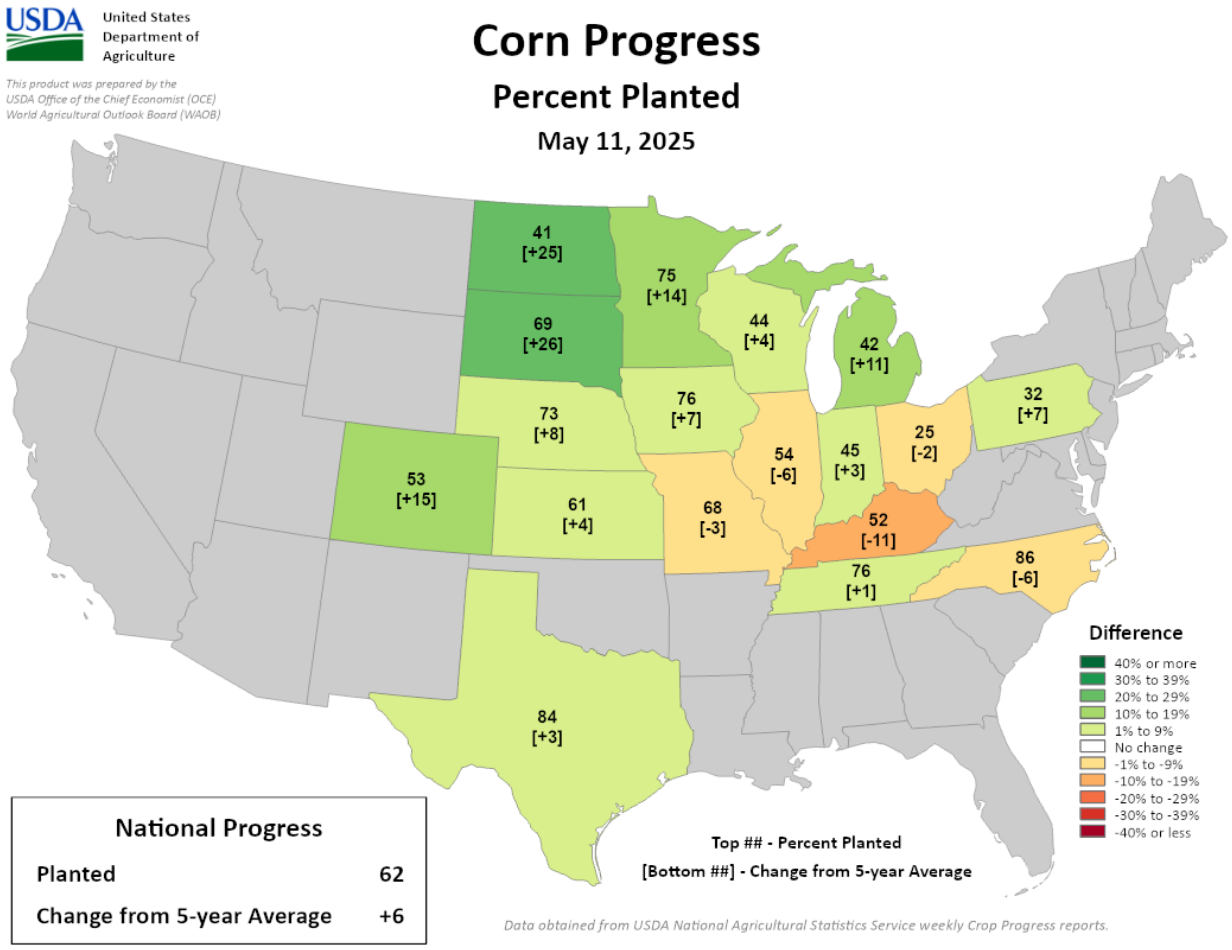
Photo Credit: Hans Schmitz

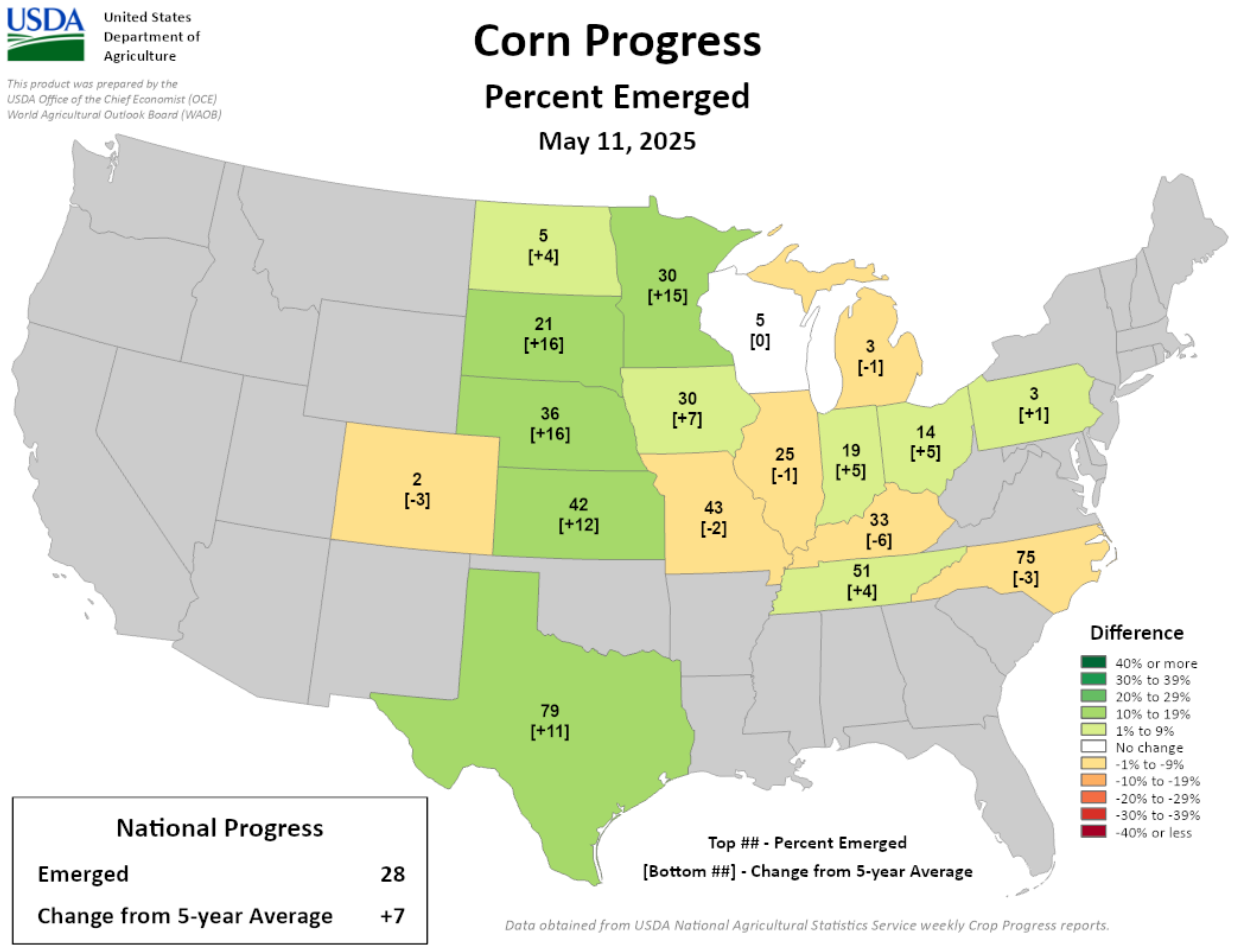
Photo Credit: Pete Boulay

Photo Credit: Bridgette Mason

Growing Season Progress

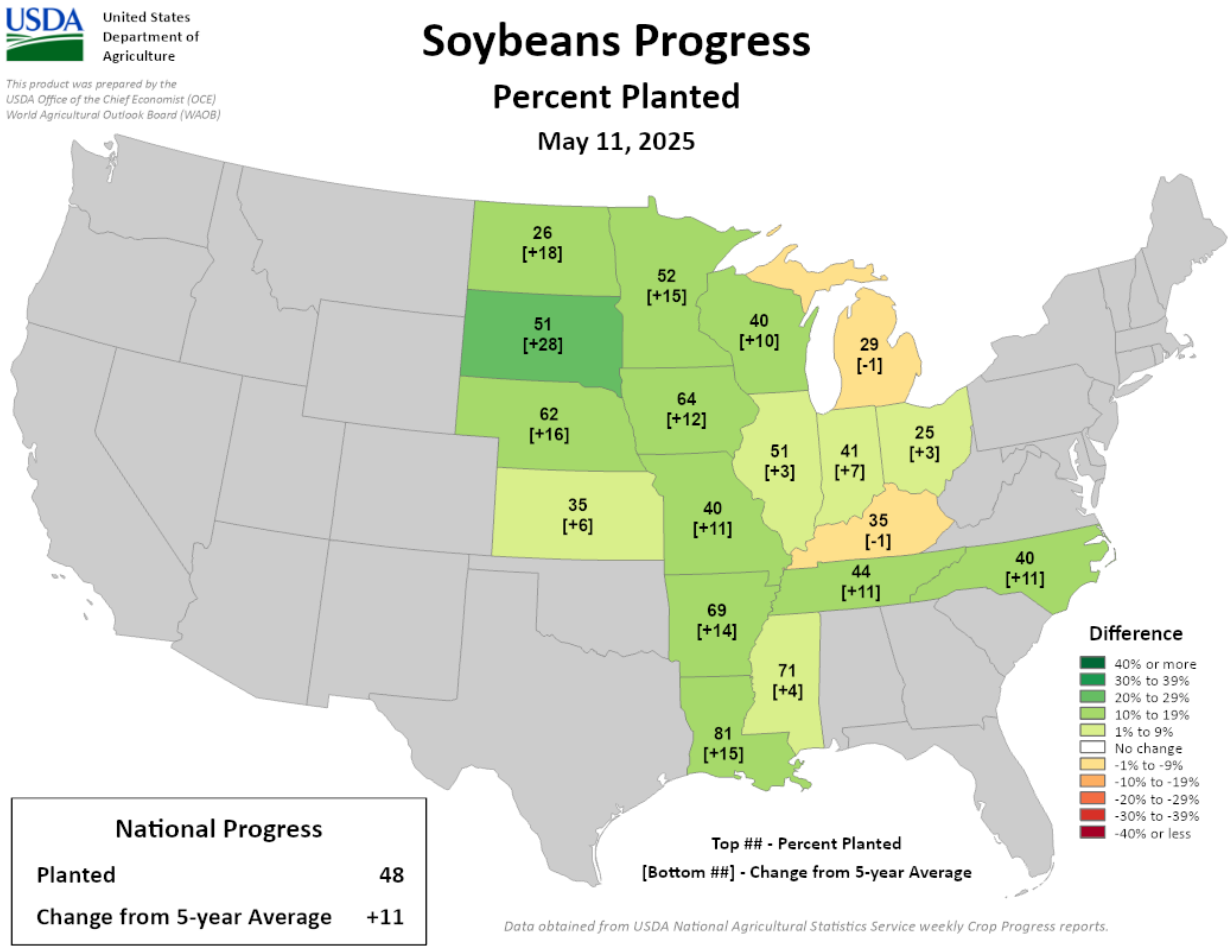
USDA NASS – Corn Progress



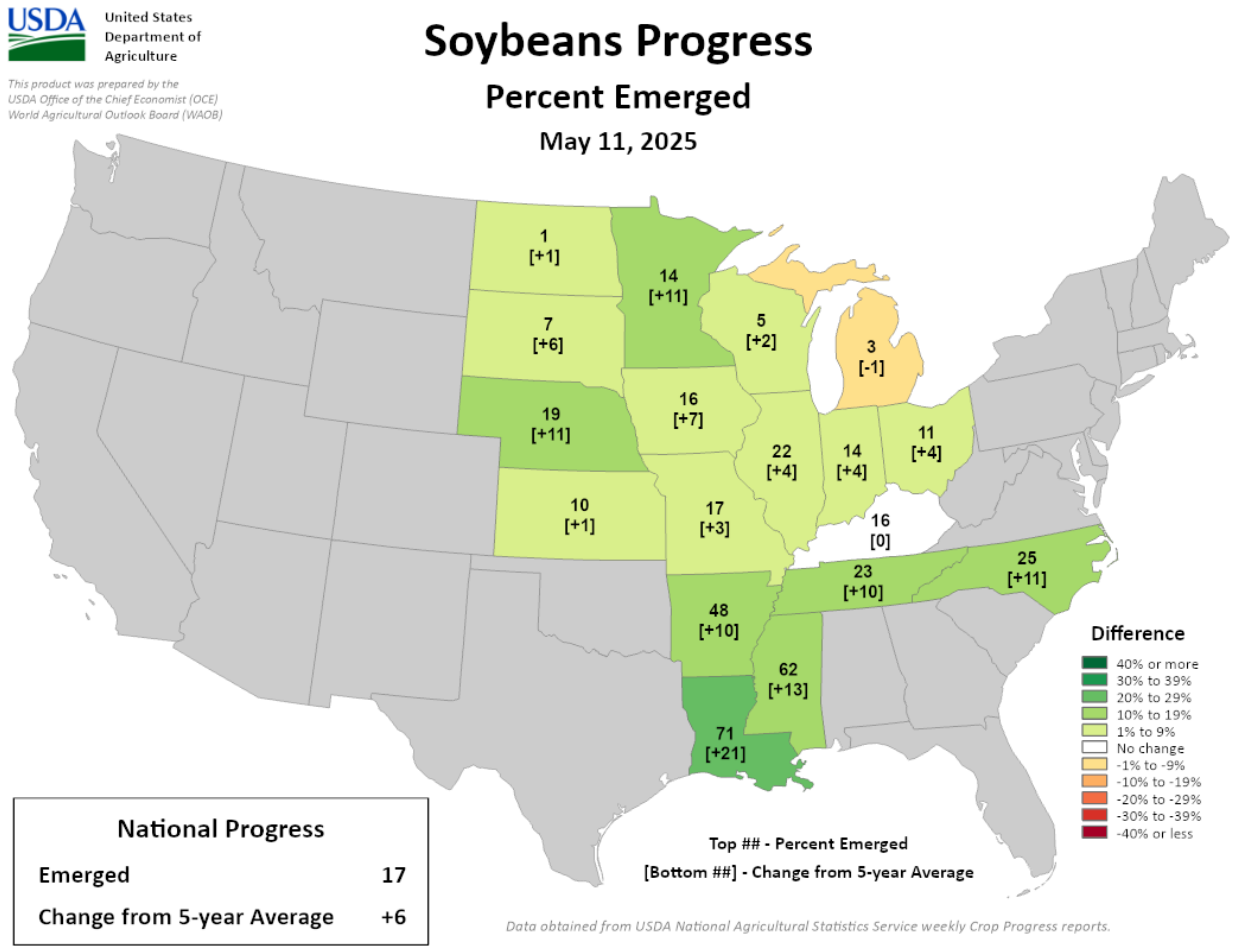


https://agindrought.unl.edu/Other.aspx

USDA NASS – Soybean Progress

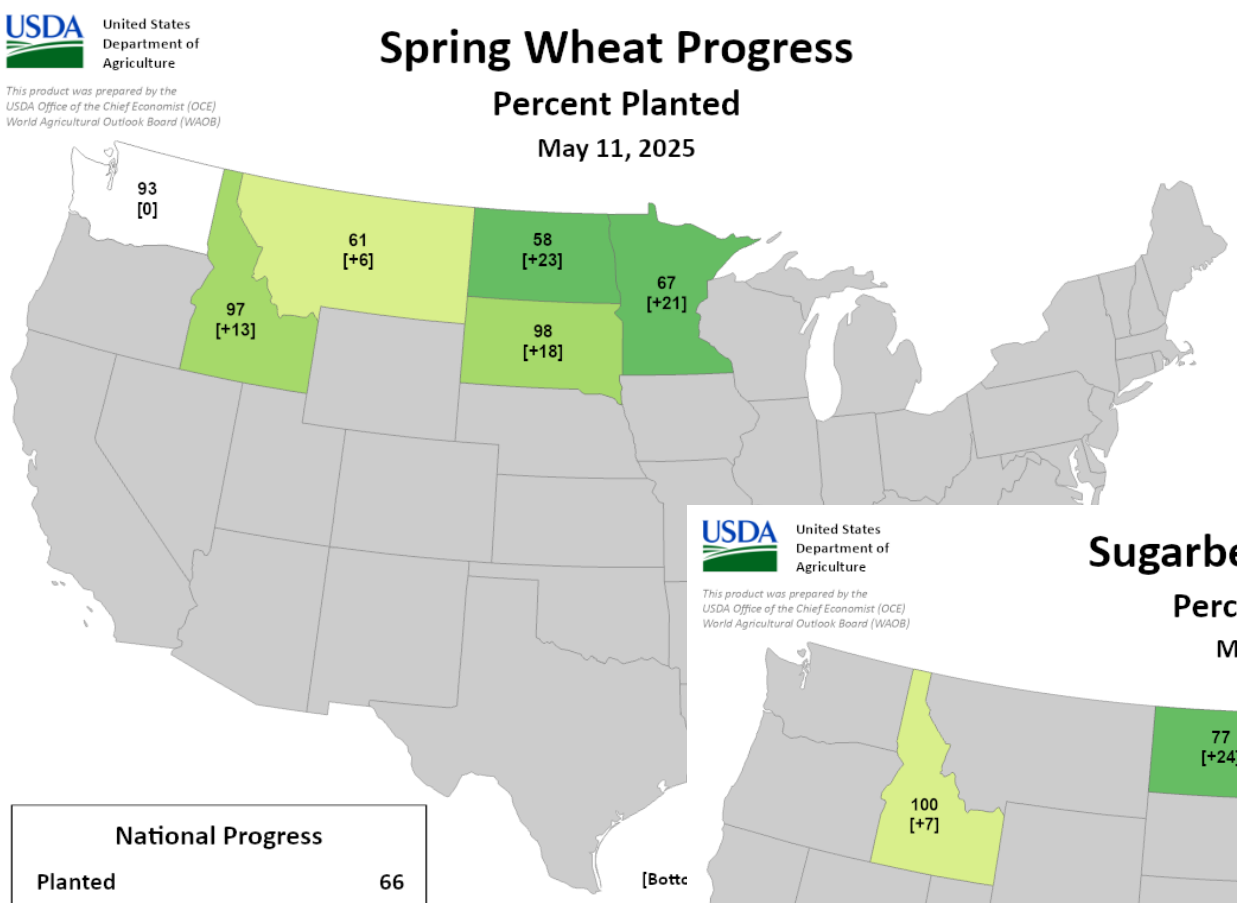


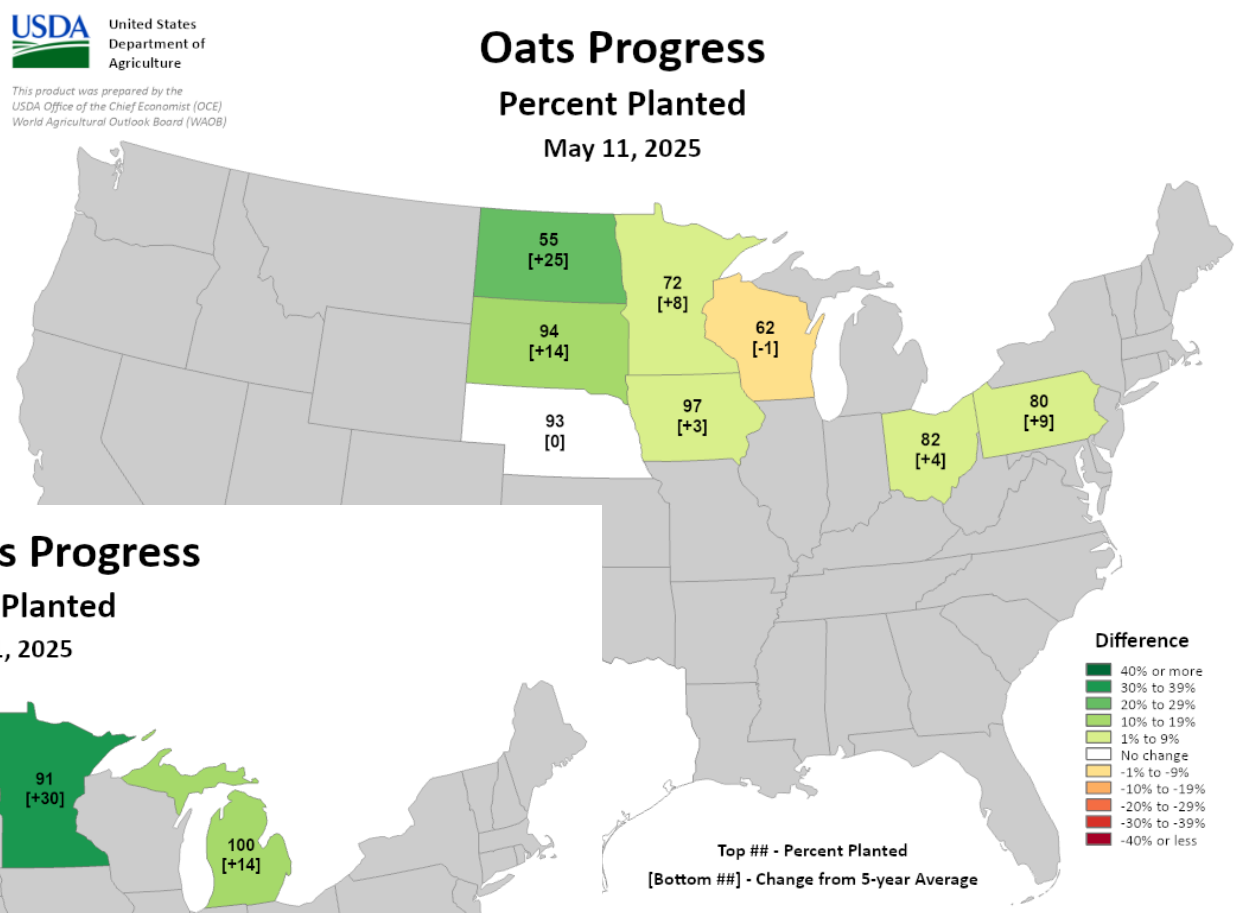
National Progress	
Planted	48
Change from 5-year Average	+11

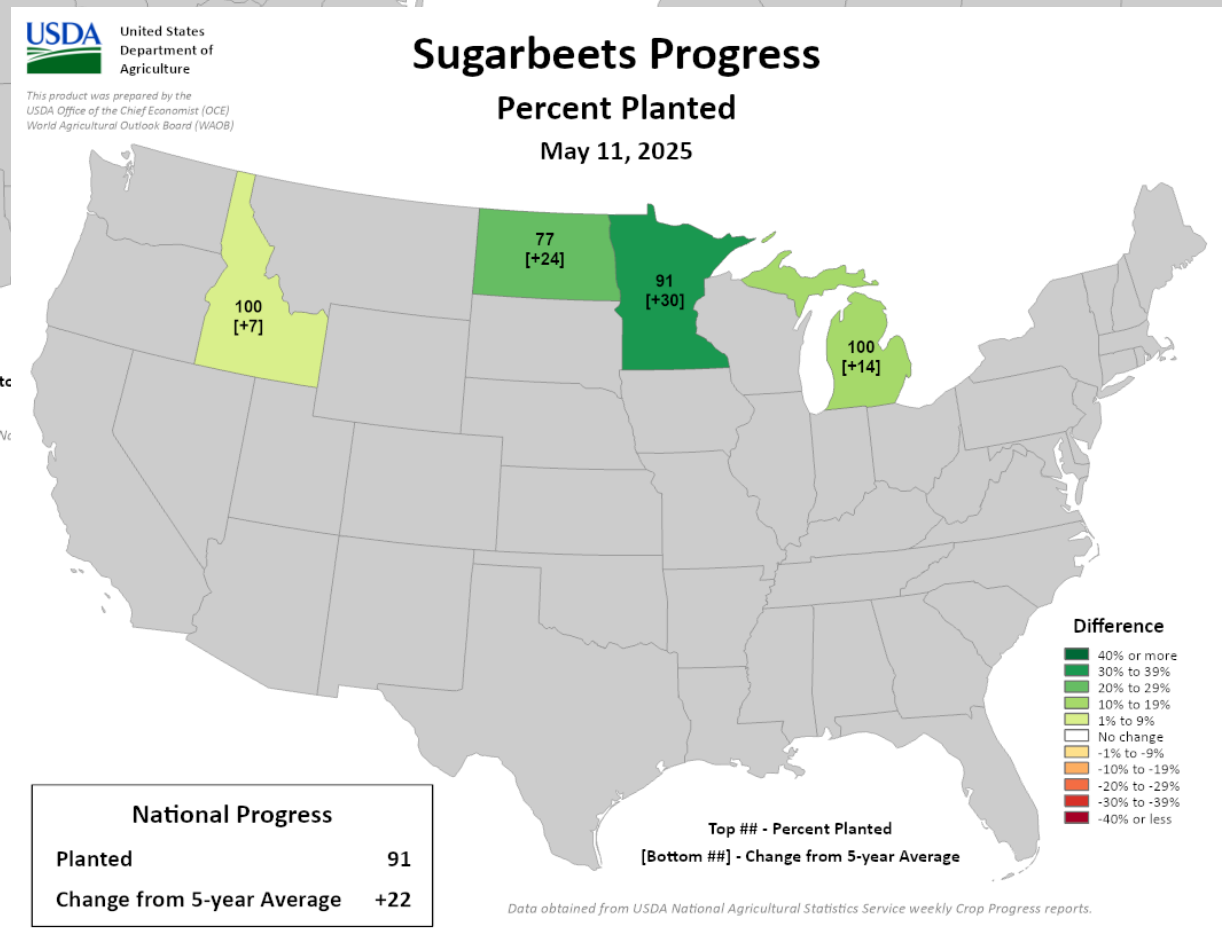


National Progress	
Emerged	17
Change from 5-year Average	+6

https://agindrought.unl.edu/Other.aspx


USDA
United States Department of Agriculture
This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)
Spring Wheat Progress
Percent Planted
May 11, 2025
93 [0]
61 [+6]
58 [+23]
67 [+21]
97 [+13]
98 [+18]
National Progress
Planted 66
Change from 5-year Average +17
Data obtained from USDA Nc

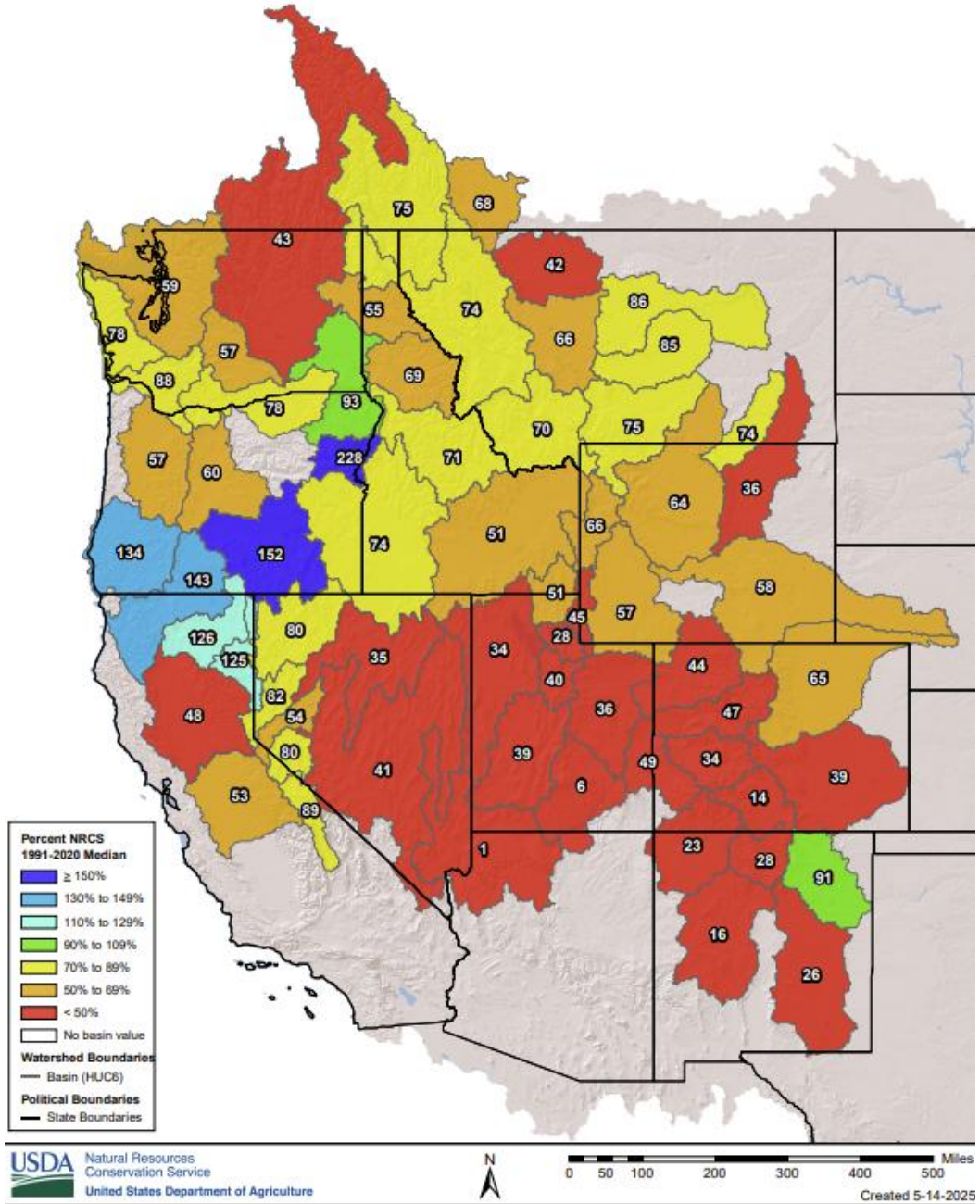

USDA
United States Department of Agriculture
This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)
Oats Progress
Percent Planted
May 11, 2025
55 [+25]
72 [+8]
94 [+14]
62 [-1]
93 [0]
97 [+3]
82 [+4]
80 [+9]
Top ## - Percent Planted
[Bottom ##] - Change from 5-year Average
Difference
40% or more
30% to 39%
20% to 29%
10% to 19%
1% to 9%
No change
-1% to -9%
-10% to -19%
-20% to -29%
-30% to -39%
-40% or less
from USDA National Agricultural Statistics Service weekly Crop Progress reports.


USDA
United States Department of Agriculture
This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)
Sugarbeets Progress
Percent Planted
May 11, 2025
100 [+7]
77 [+24]
91 [+30]
100 [+14]
National Progress
Planted 91
Change from 5-year Average +22
Top ## - Percent Planted
[Bottom ##] - Change from 5-year Average
Difference
40% or more
30% to 39%
20% to 29%
10% to 19%
1% to 9%
No change
-1% to -9%
-10% to -19%
-20% to -29%
-30% to -39%
-40% or less
Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

/Other.aspx

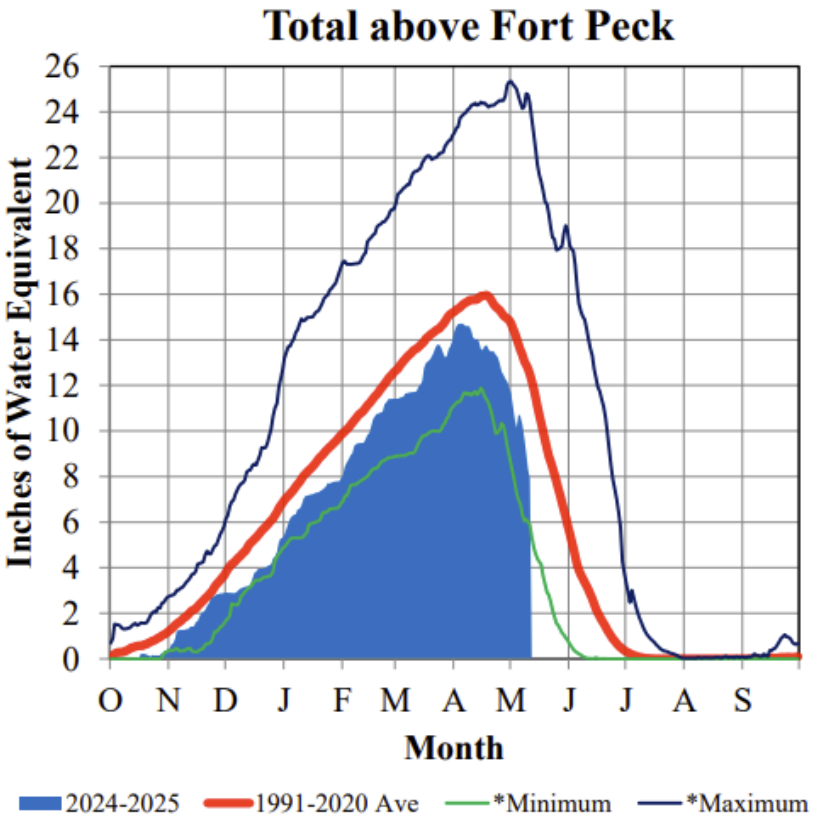
Photo Credit: Jonathan Brendemuehl

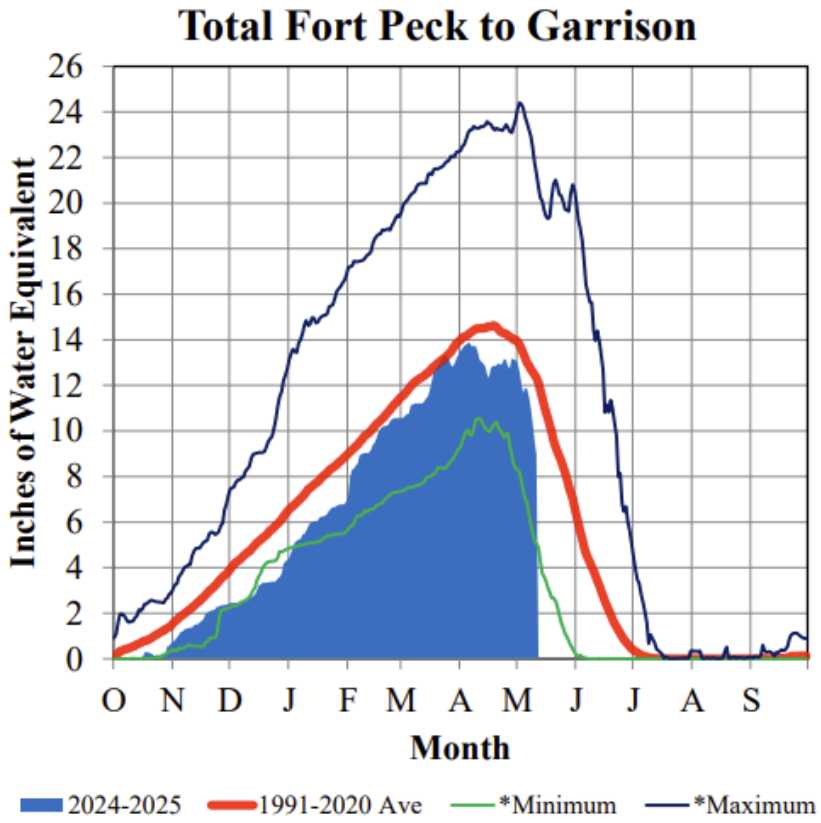
Snow, Fire, Rivers and Lakes



- Overall, SWE percentages range from mid 30% to upper 80s% northeast.
- SWE below 70% northwest.
- SWE percentages can be misleading this time of year.
- Recent warmer temperatures have led to a loss of 20-30% of snowpack in CO/WY/MT.
- Late-season snowstorm added to existing snowpack.

https://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_swepctnormal_update.pdf



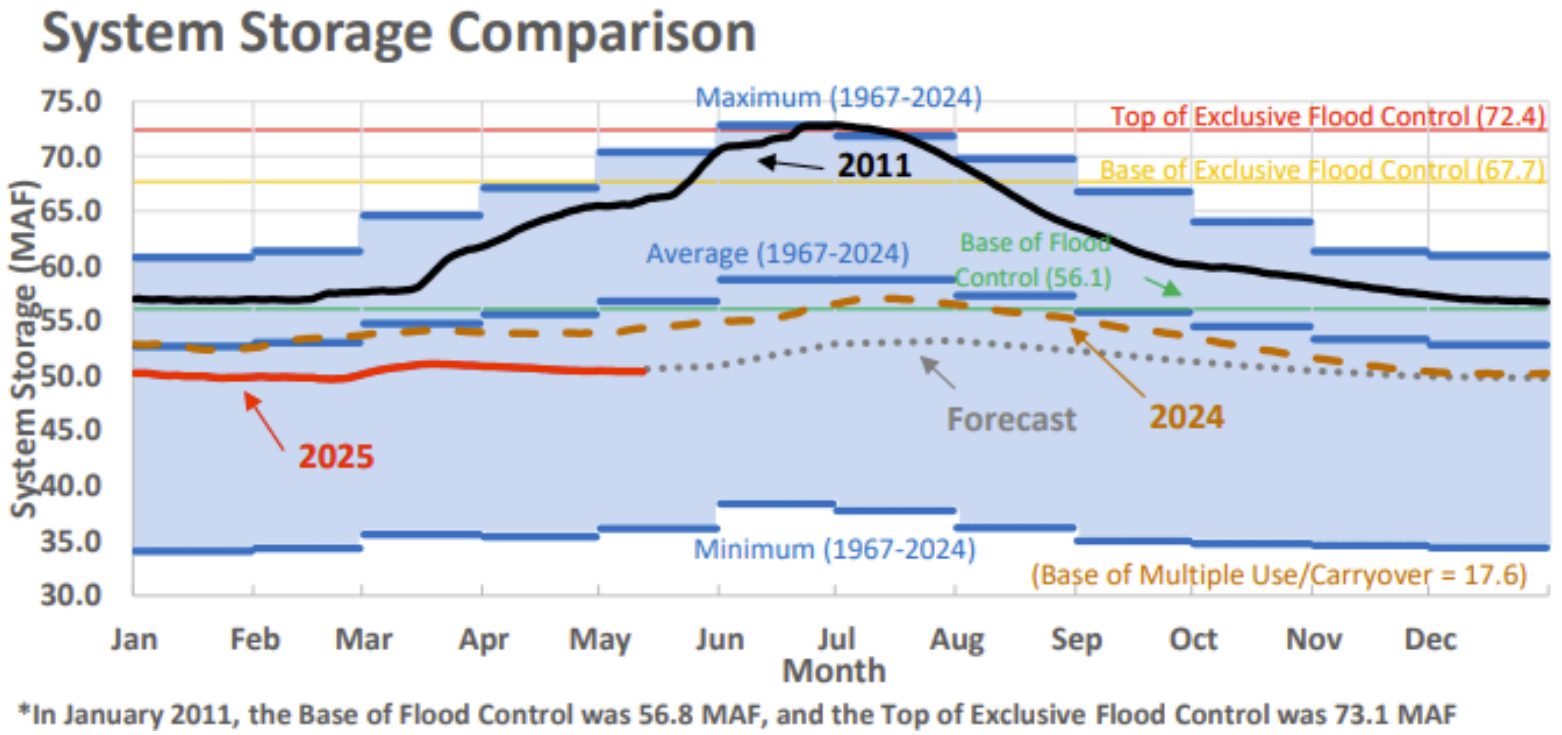


- Mountain snowpack had another uptick thanks to late-season accumulation.
- As of May 11, the reach above Fort Peck has 14.7” of SWE and 92% of annual peak remains. (normal peak is 17 Apr.)
- The reach between Fort Peck and Garrison had 13.9” of SWE and 95% of peak remaining. (Peak reached on April 5).

Missouri River System Storage

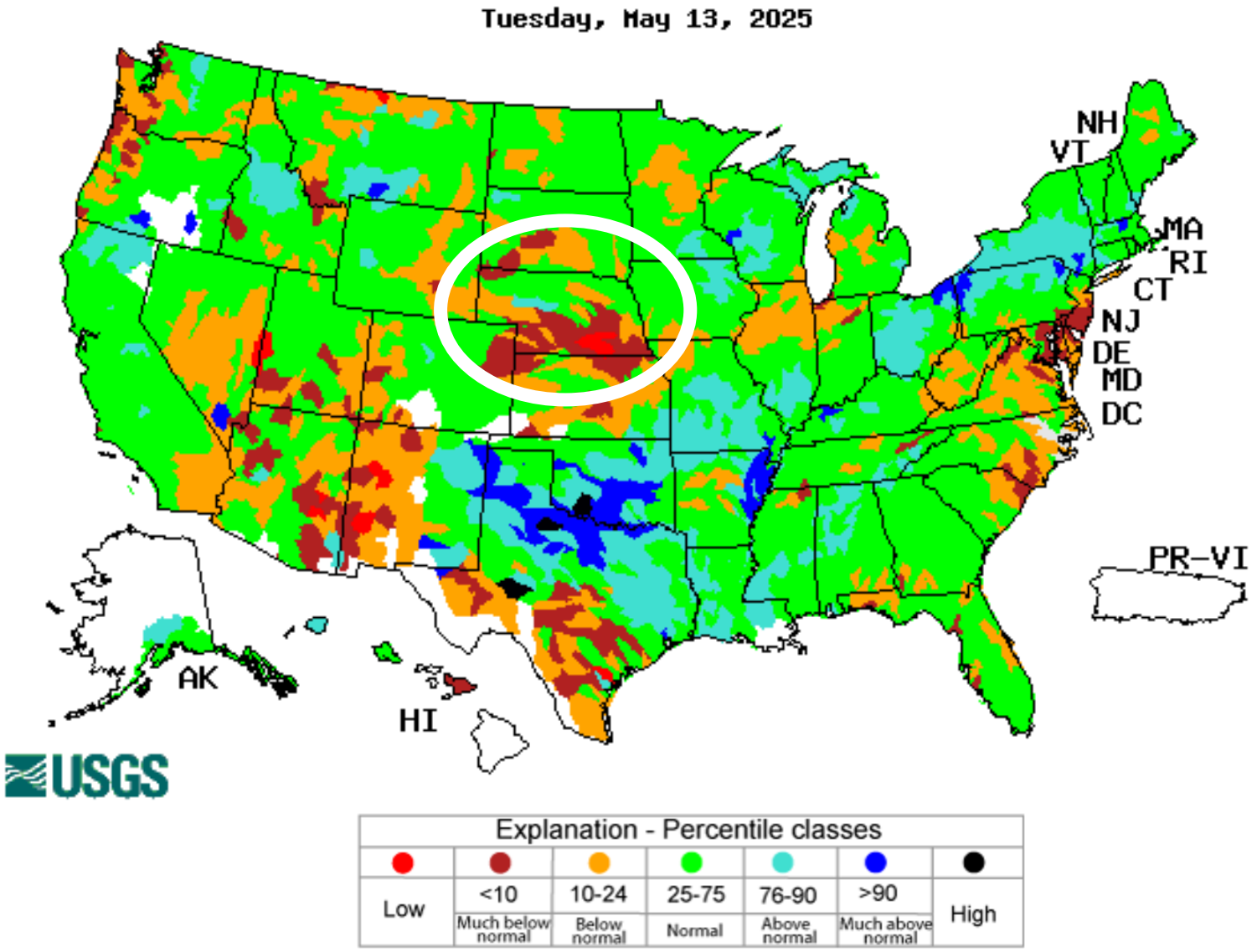
Missouri Mainstem Reservoir Status (as of 5/13/25):

- System storage is 50.4 million-acre feet, below the 1967-2024 average and unchanged from last week.
- The Gavins Point release is currently 26,500 cfs and will be adjusted as needed to meet downstream nav. targets.
- Reservoir levels slightly less than average



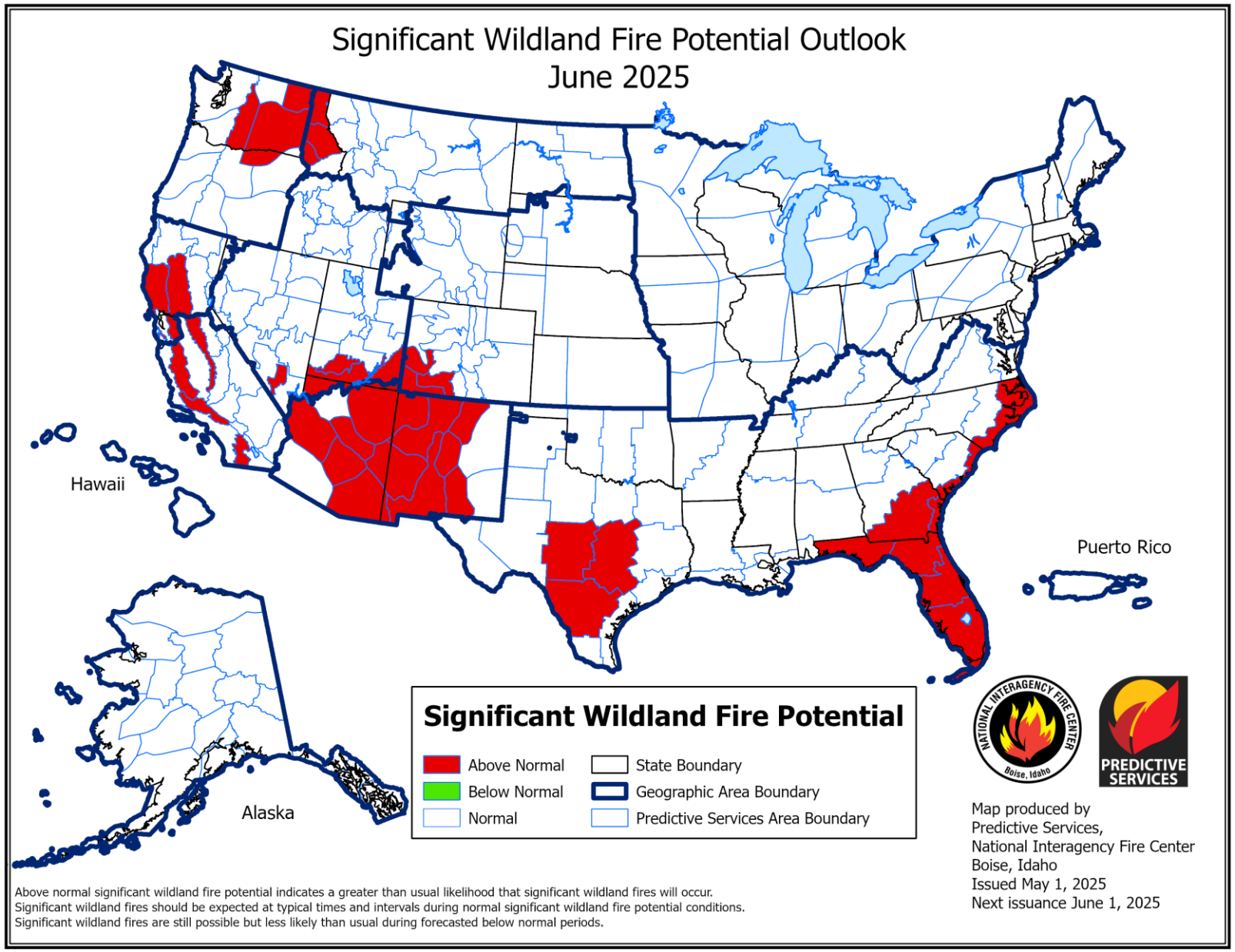
http://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/weeklyupdate_previous.pdf

28-day Average Streamflow



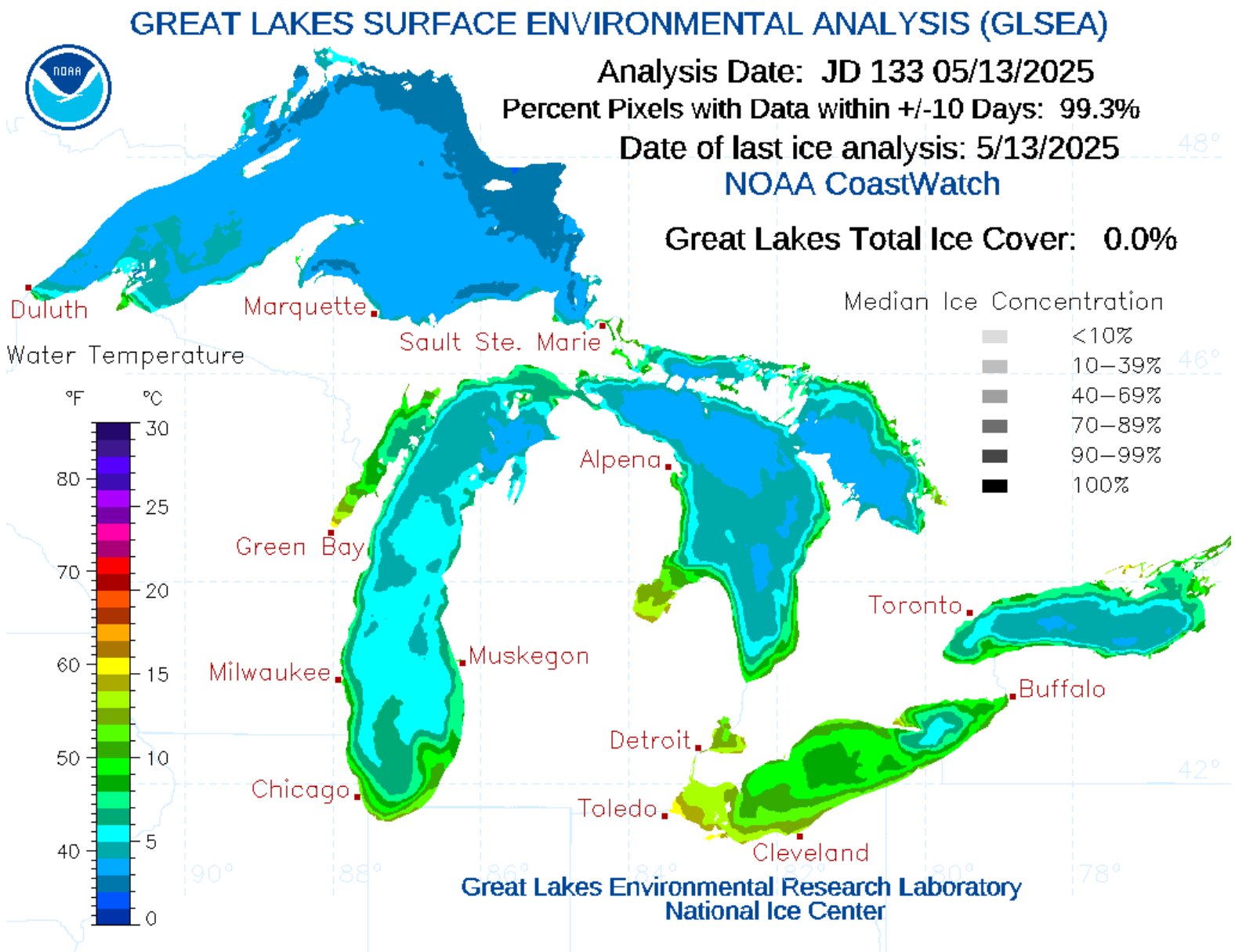
http://waterwatch.usgs.gov/index.php?id=pa07d

- Above-normal in OH, southern IL NE IA, SW WI and much of MO.
- Upper Midwest generally near-normal.
- Below normal northern MN/IL, NW MO and portions of the Dakotas.
- Much below in NE/KS … similar conditions to a year ago as well.



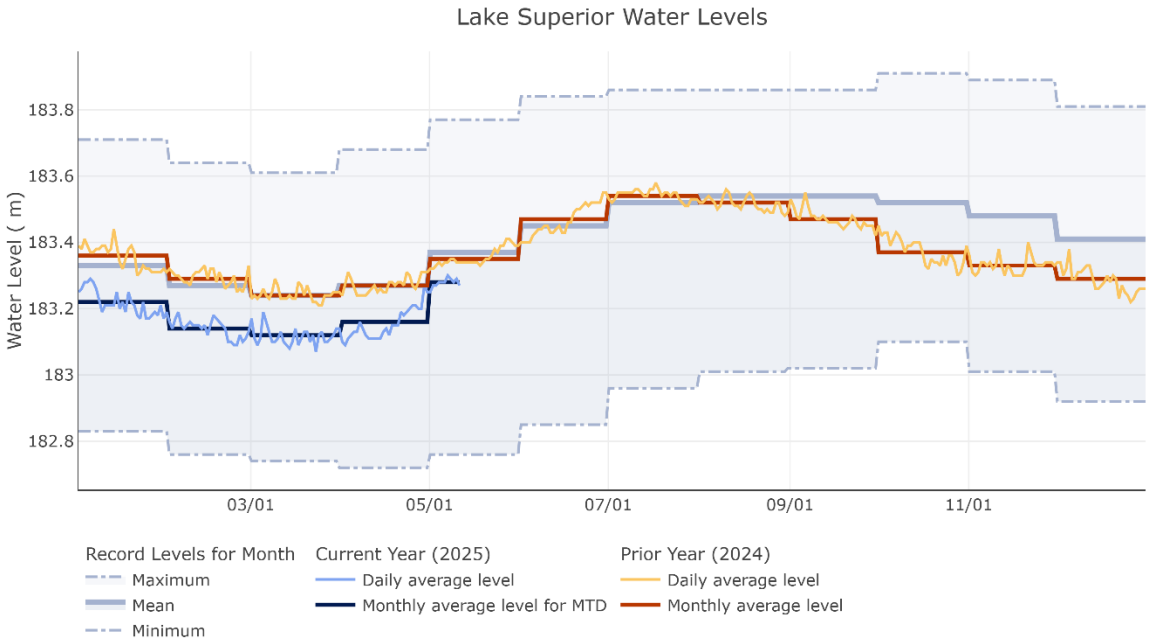
- Above-normal potential much of MN and northern IA in May.
- No significant wildland fire in June.

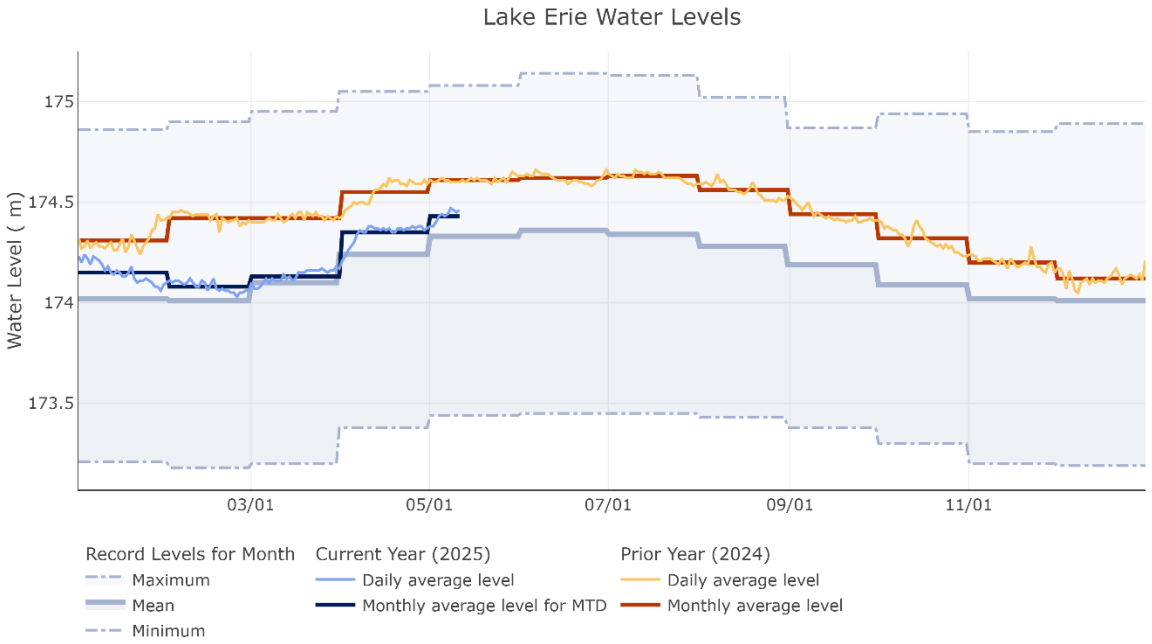
https://www.nifc.gov/nicc/predictive-services/outlooks



- Great Lakes ice cover near average for the 2025 season.
- Lake temperatures are tracking with the mean.

Great Lakes Water Levels





- Water levels are below the May long-term average levels on Lakes Michigan-Huron and Superior.
- Lake Erie is about 5” above May’s long-term average.
- By next month, Lakes Superior, Michigan-Huron are forecast to rise slightly; Lakes Erie and Ontario are expected to remain near their current level

https://www.glerl.noaa.gov/data/wlevels/dashboard/#mastergauge

Impacts and Notable Events

Photo Credit: Bridgett Mason

Severe Weather Season So Far …

- 3173 severe weather reports in April (737 more than last April).
- Several rounds of severe winds and tornadoes across the region's eastern part.
- Widespread events:
  - 17th (NE-IA-MN-WI)
  - 18th (WI/MI-MO-IL-IN-OH)
  - 19th (OH)
  - 20th (MO-IL); 40 tornadoes reported
  - 27- 28th (NE-KS-IA-MN-WI) – Tornado Bust
  - 29-30th (MO-IL-IN-OH) 21 MO/IL tornadoes
  - 1st-2nd (OH)
  - 13th (IL/IN) Four reported tornadoes
  - 14th (CO-NE-SD)

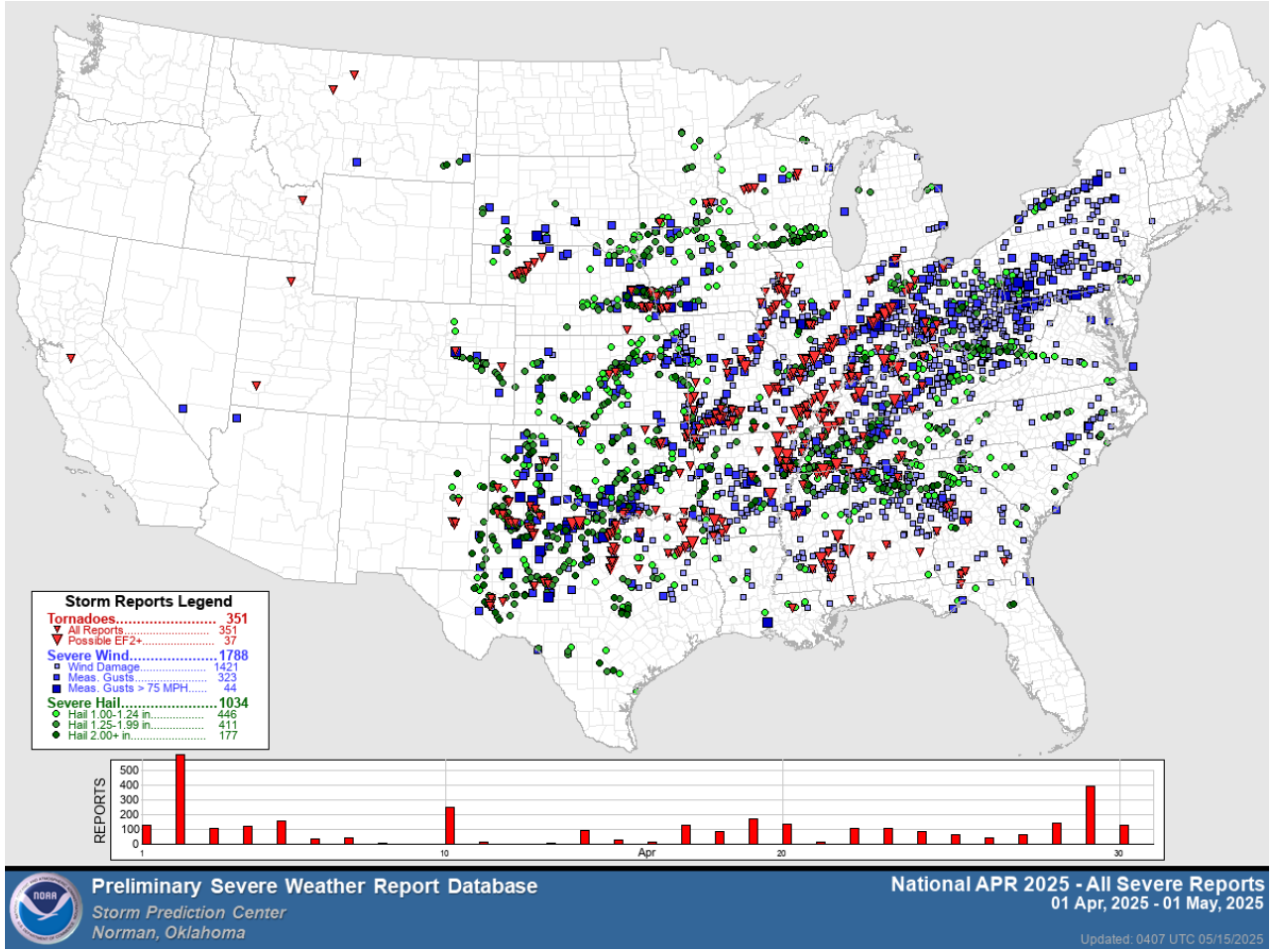



Photo credit: Bridgette Mason

Climate scientists predict above average hurricane season in 2025

May 12, 2025 12:44 PM

Minnesota Wildfires

Dan Kraker, David Schaper and Annie Baxter · Brimson, Minn. · May 14, 2025 4:00 AM · **UPDATED:** MAY 14, 2025 5:38 PM

By: Amanda Andrews

Reinforcements arrive in northeastern Minnesota to help battle growing wildfires

Corn Planting Progress Falls Just Shy of Two-Thirds Complete

Indiana farmers continue to make planting progress in early May

Storm hits Pennsylvania and Ohio, leaving 490K customers without power

The National Weather Service's Pittsburgh office said straight-line winds gusted over 80 to 90 mph, which is stronger than many EF0 and EF1 tornadoes.

BY:
ASSOCIATED PRESS
| 04/30/2025 12:29 PM EDT | UPDATED 04/30/2025 01:46 PM EDT

Summer 2025: Nearly half of the US expected to have abnormally hot, dry conditions

NWS confirms more tornadoes across mid-Missouri from Easter Sunday

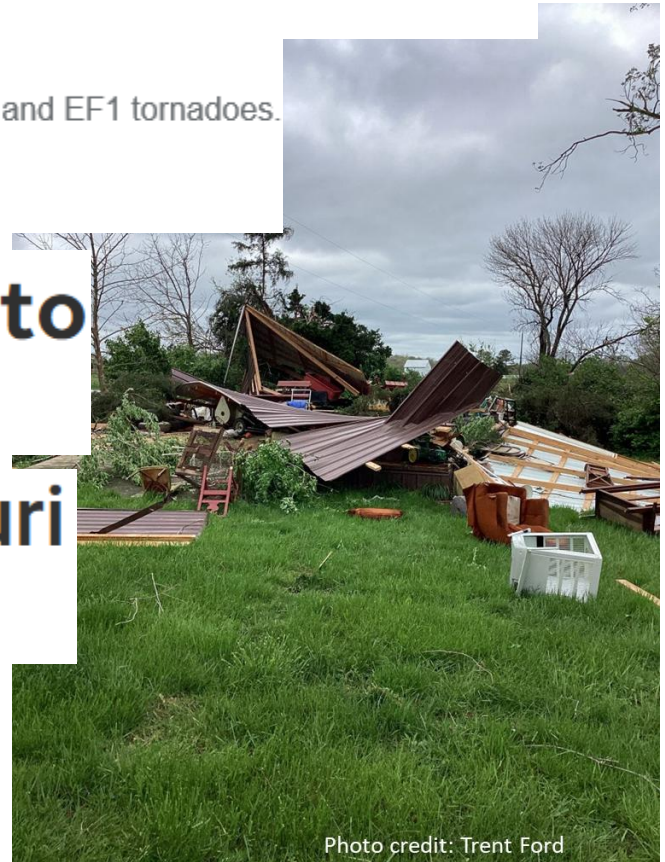
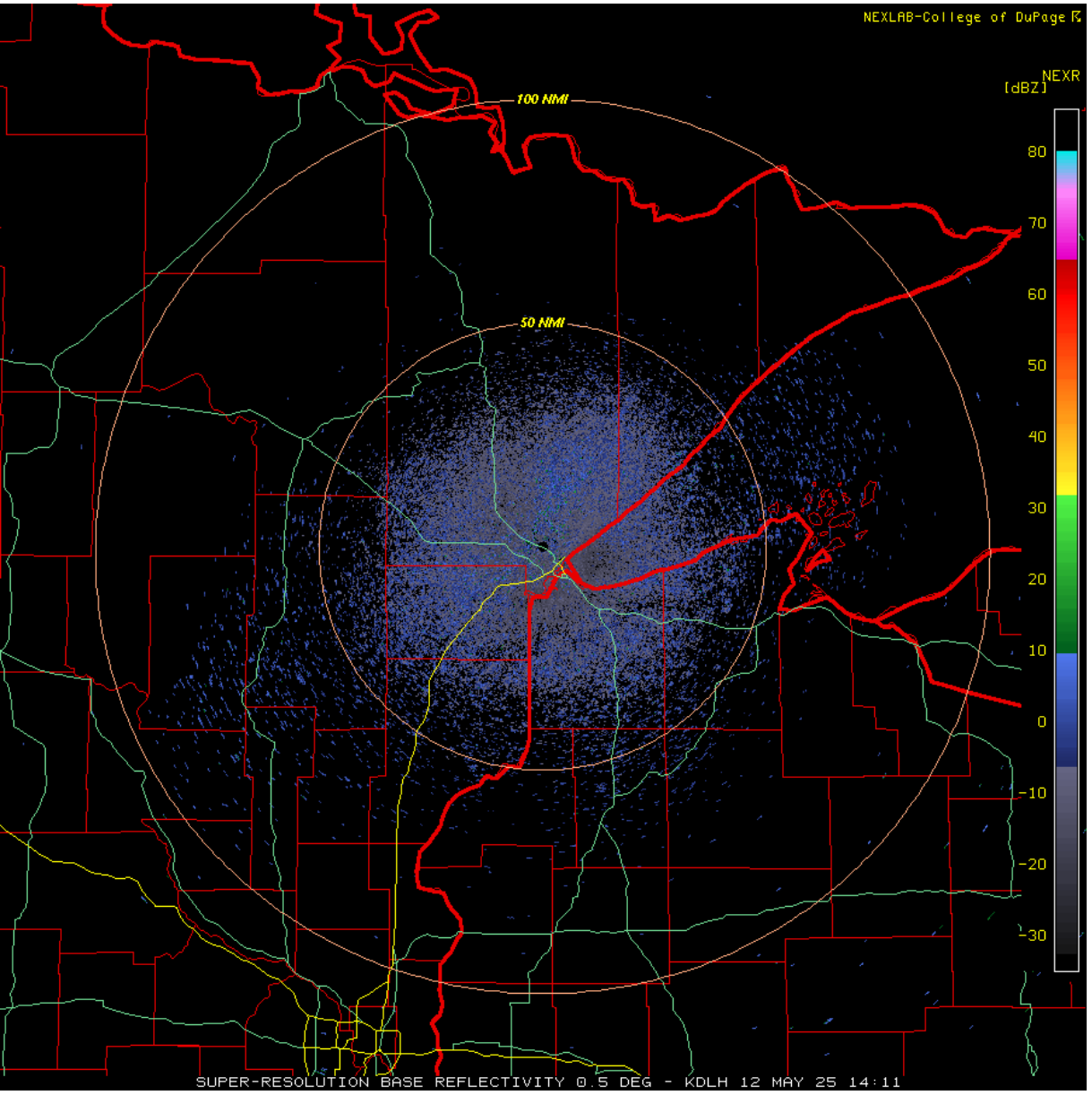


Photo credit: Trent Ford

Tornadoes, hail possible for much of Wisconsin on Monday evening

Severe storms are forecast to move into western Wisconsin, across the state between 6 p.m. and midnight



Minnesota:

- Ten straight days of zero precipitation and temperatures running about ten to 20 degrees above normal are driving the fire danger, along with low humidity.
- The excessively dry heat, combined with gusty winds and emergent or dormant vegetation, led to a high risk for wildfires.
    - The first major fire, the Camp House Fire, formed near Brimson in St. Louis County, damaging structures and requiring some evacuations
    - The worst since the Pagami Creek Fire of 2011

Missouri:

- April was Missouri's fourth wettest April on record, despite northern Missouri finishing the month drier than average.
- Longstanding April monthly rainfall records were broken at St. Louis and Springfield.
- 80 reported tornadoes statewide in 2025 would already rank the year as the fifth most annual tornadoes since 1993; fastest pace to 80 tornadoes in a year.

Illinois (wet south/dry north):

- Most of the southern half of Illinois had a top 5 wettest April on record.
- The impacts of the wet weather have been planting delays across southern Illinois.
    - Many folks are 2-3 weeks behind already on both corn and beans.
    - Specialty growers have also had some delays in their spring operations, especially for horseradish and strawberries.
- While conditions haven't been extremely dry in northern IL, there have been lots of open windows with good weather for planting progress
- Illinois was second in the nation in tornado reports in April (47) and is currently second in the nation for tornado reports for 2025 (85).
- A serious tornado outbreak on Easter Sunday in western IL.

Wisconsin:

- April 2025 averaged 0.2°F below normal and 0.03” below normal, which made it the most “normal” April in Wisconsin since 2009
- This past April, Wisconsin saw 43 severe warnings, whereas the 1986-2024 April average is 21 warnings.
    - Baseball-sized hailstones – as large as 2.75” – were reported on April 18 near Platteville (Grant County), New Glarus (Green County), and Edgerton (Rock and Dane Counties) (images of hailstones and damage attached to email).
    - Seven tornadoes (4 EF-0s and 3 EF-1s) occurred April 28
- Between May 12 and 13, very high to extreme fire danger was widespread across central and northern Wisconsin.
- The number of days with wind gusts of 30 miles per hour or more was particularly striking in Madison, which logged 13 such days — its second highest count on record, just behind 2014 with 14 days
- Apple growers faced early-season challenges as warm, wet conditions led to high levels of apple scab infection.

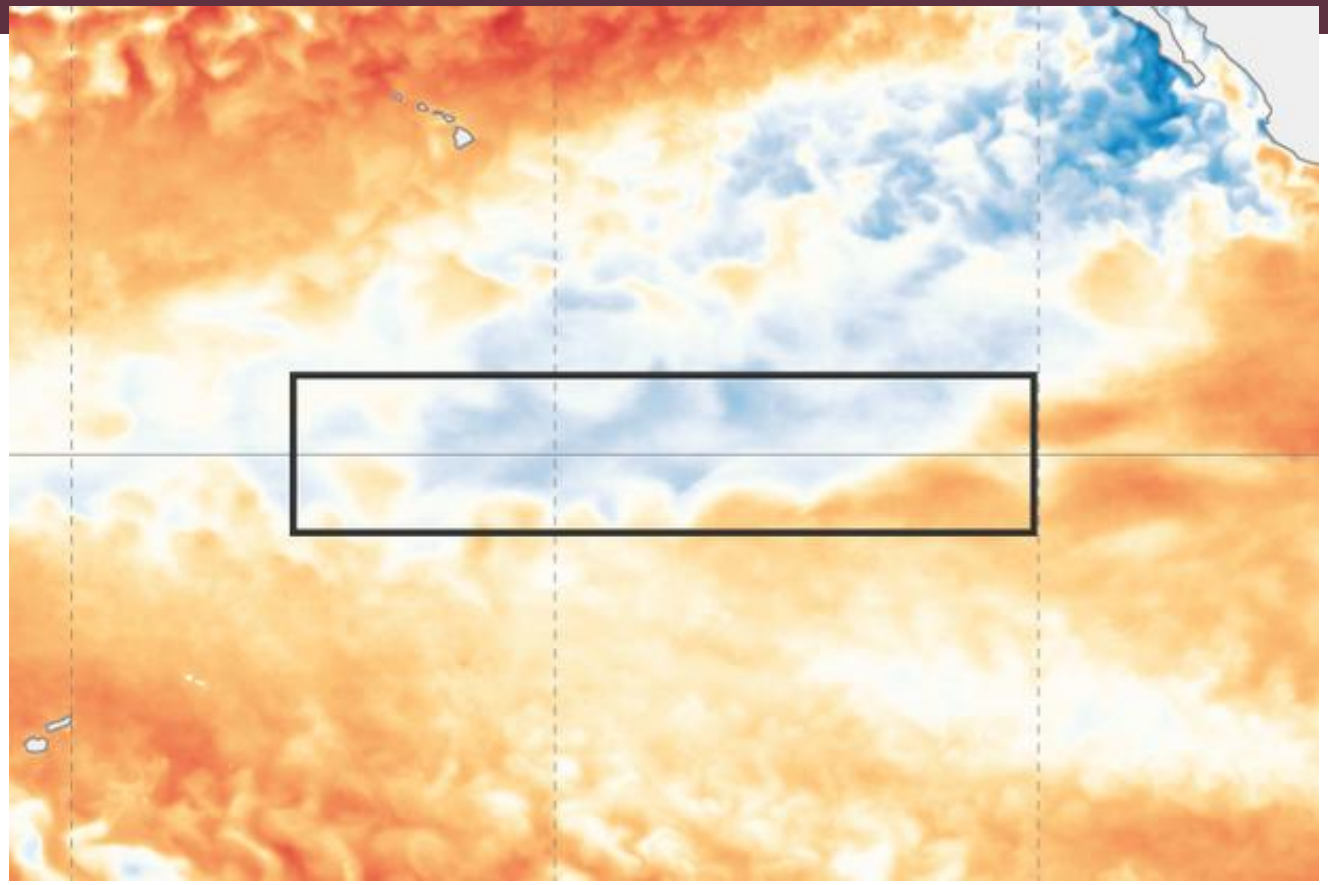
Iowa:

- April was Missouri’s fourth wettest April on record, despite northern Missouri finishing the month drier than average.
- Longstanding April monthly rainfall records were broken at St. Louis and Springfield.
- 80 reported tornadoes statewide in 2025 would already rank the year as the fifth most annual tornadoes since 1993; fastest pace to 80 tornadoes in a year.

Climate Outlooks

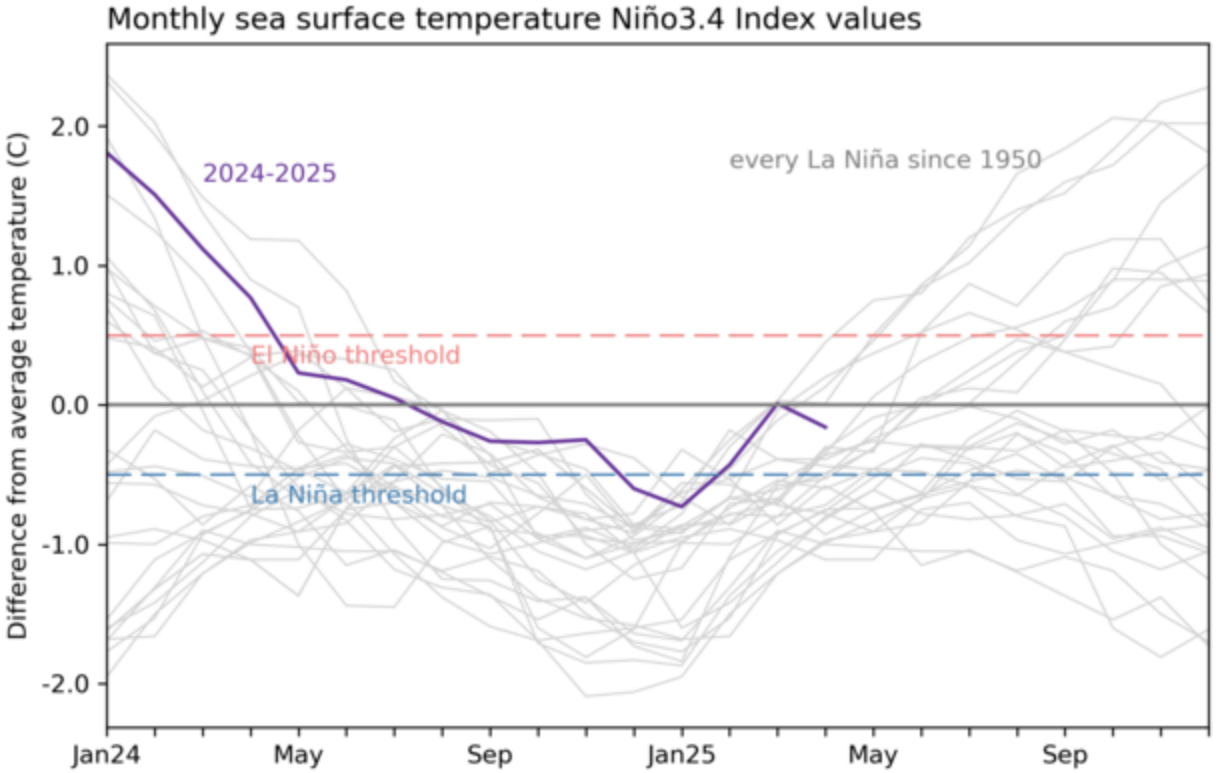
- El Niño Advisory/ La Niña Watch
- 7-day Precipitation Forecast
- 8 – 14 day Outlook
- May/Initial June Outlooks
- JJA temperature and precipitation

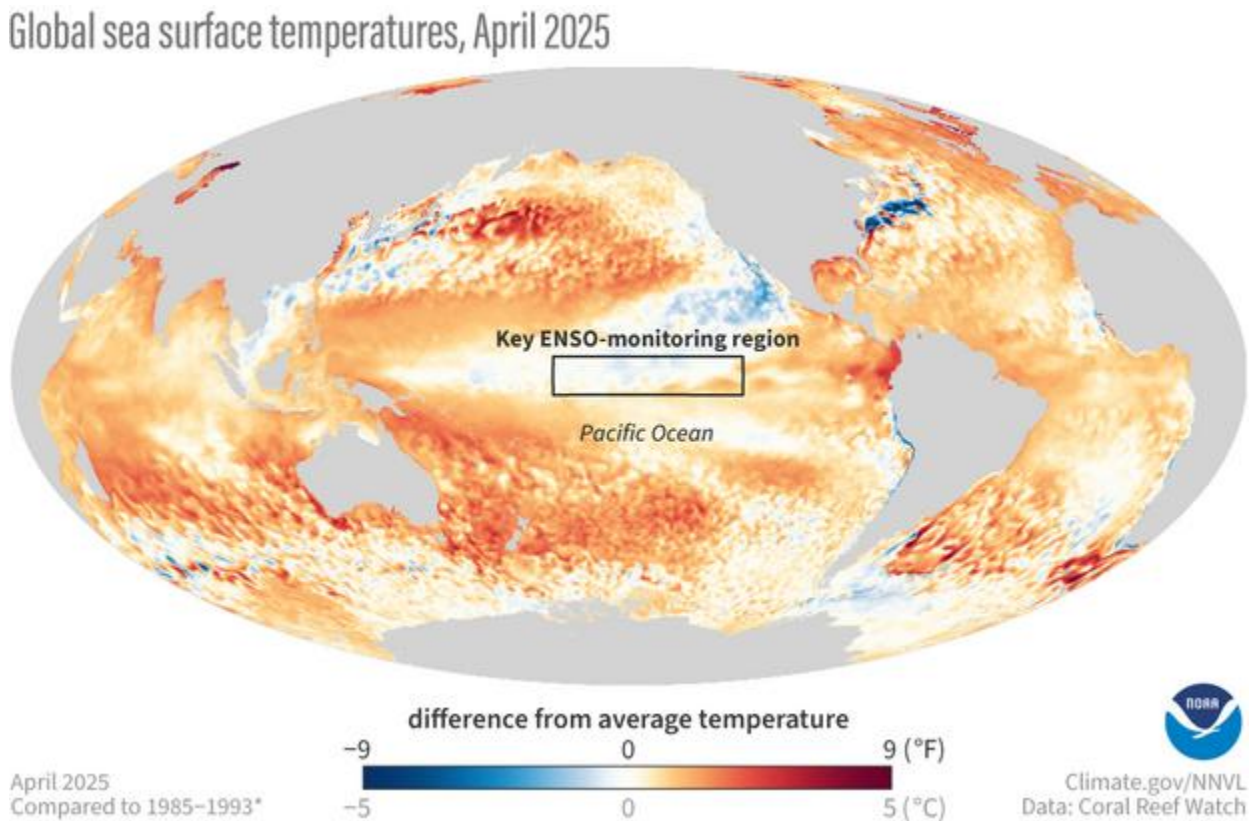
ENSO Alert System Status: Not Active



- La Nina conditions faded in March.
- SSTs trending warmer then a slight cool dip – atmospheric has decoupled.
- ENSO-neutral is favored through the Northern Hemisphere summer 2025 (74% chance during June-August), with chances exceeding 50% through August-October 2025.

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml





https://www.climate.gov/news-features/blogs/enso/may-2025-enso-update-eye-neutral

ENSO Probabilities

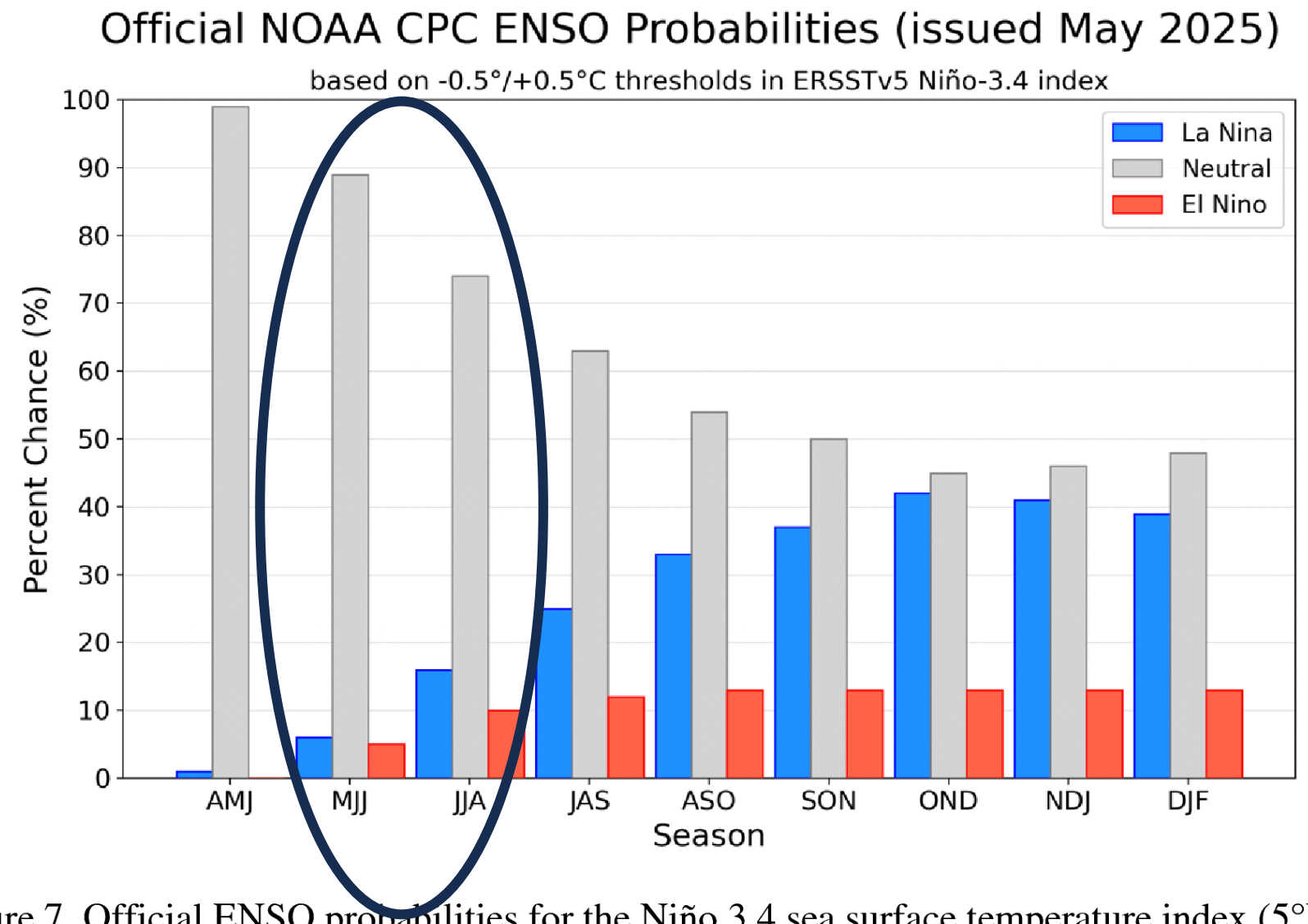
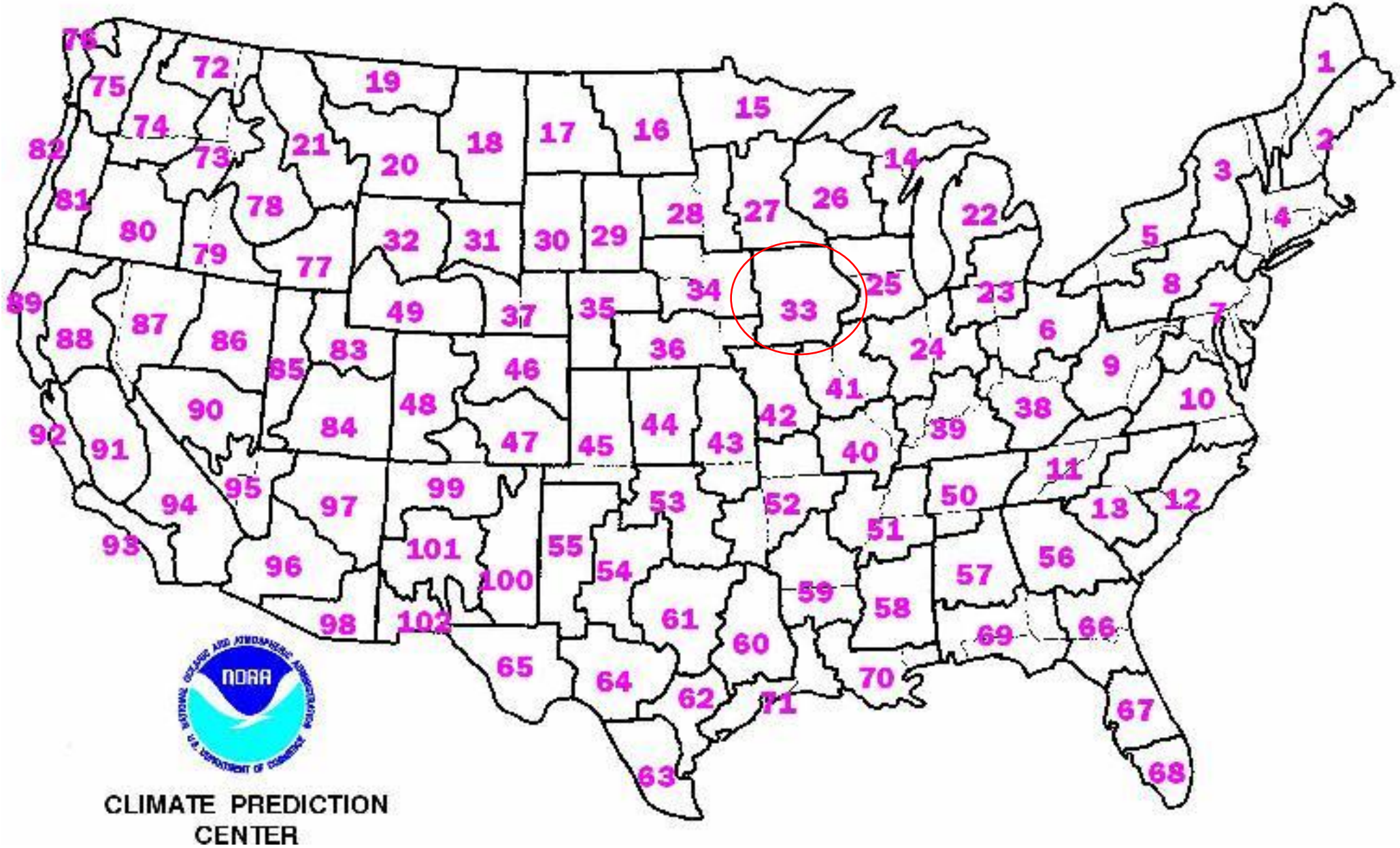
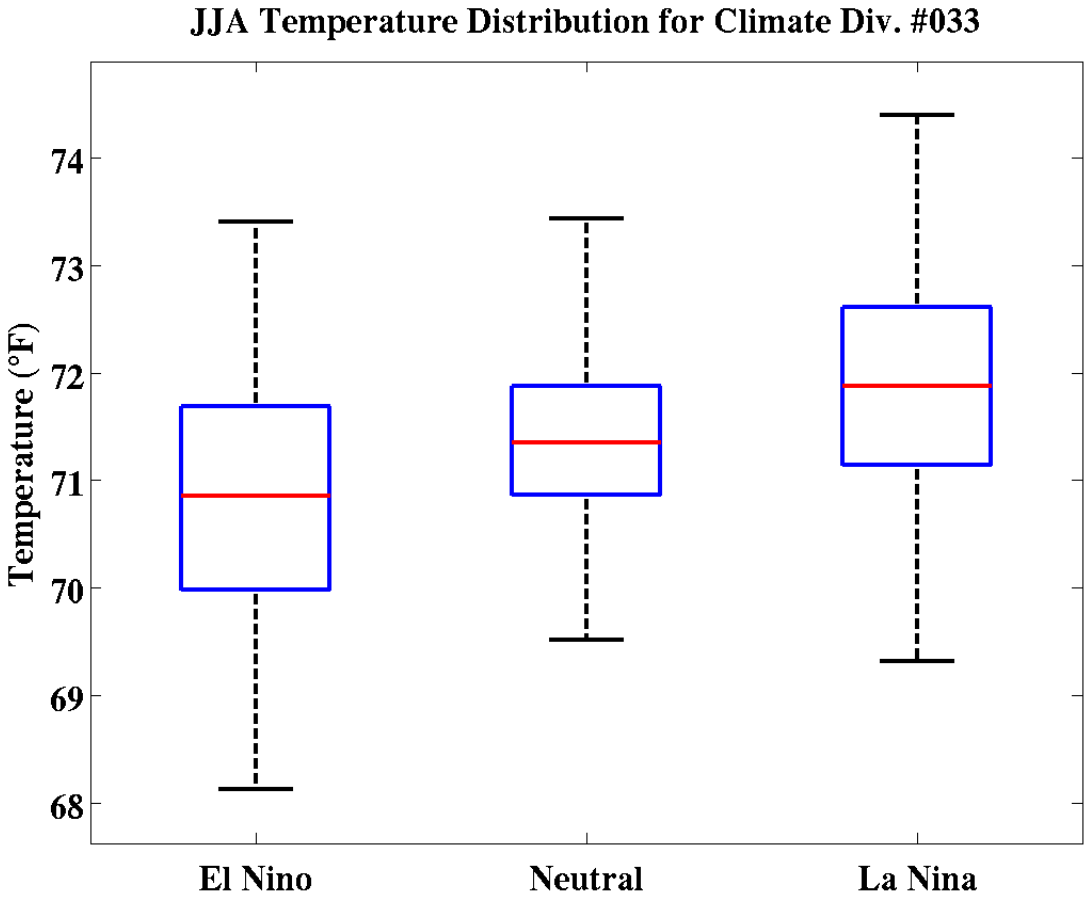


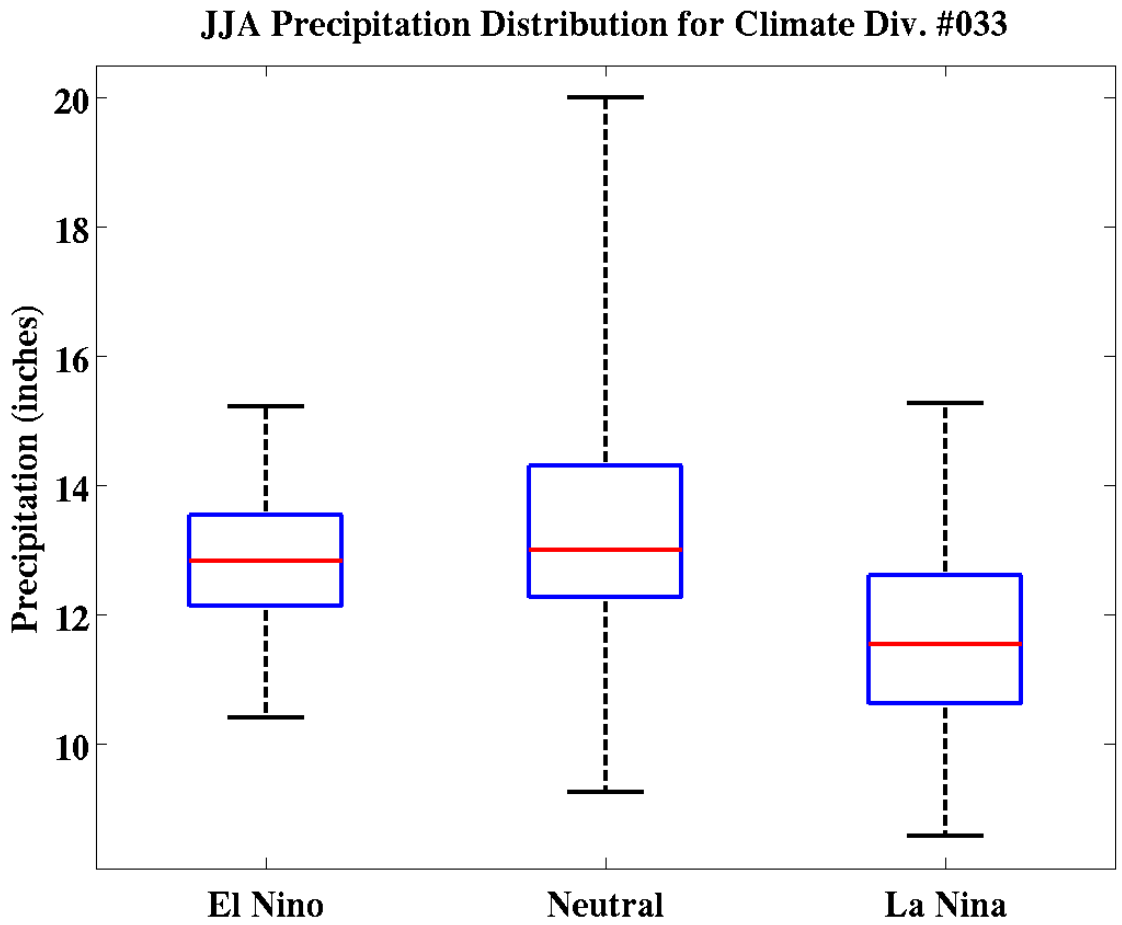
Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N-5°S, 120°W-170°W). Figure updated 8 May 2025.

https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/?enso_tab=enso-cpc_plume



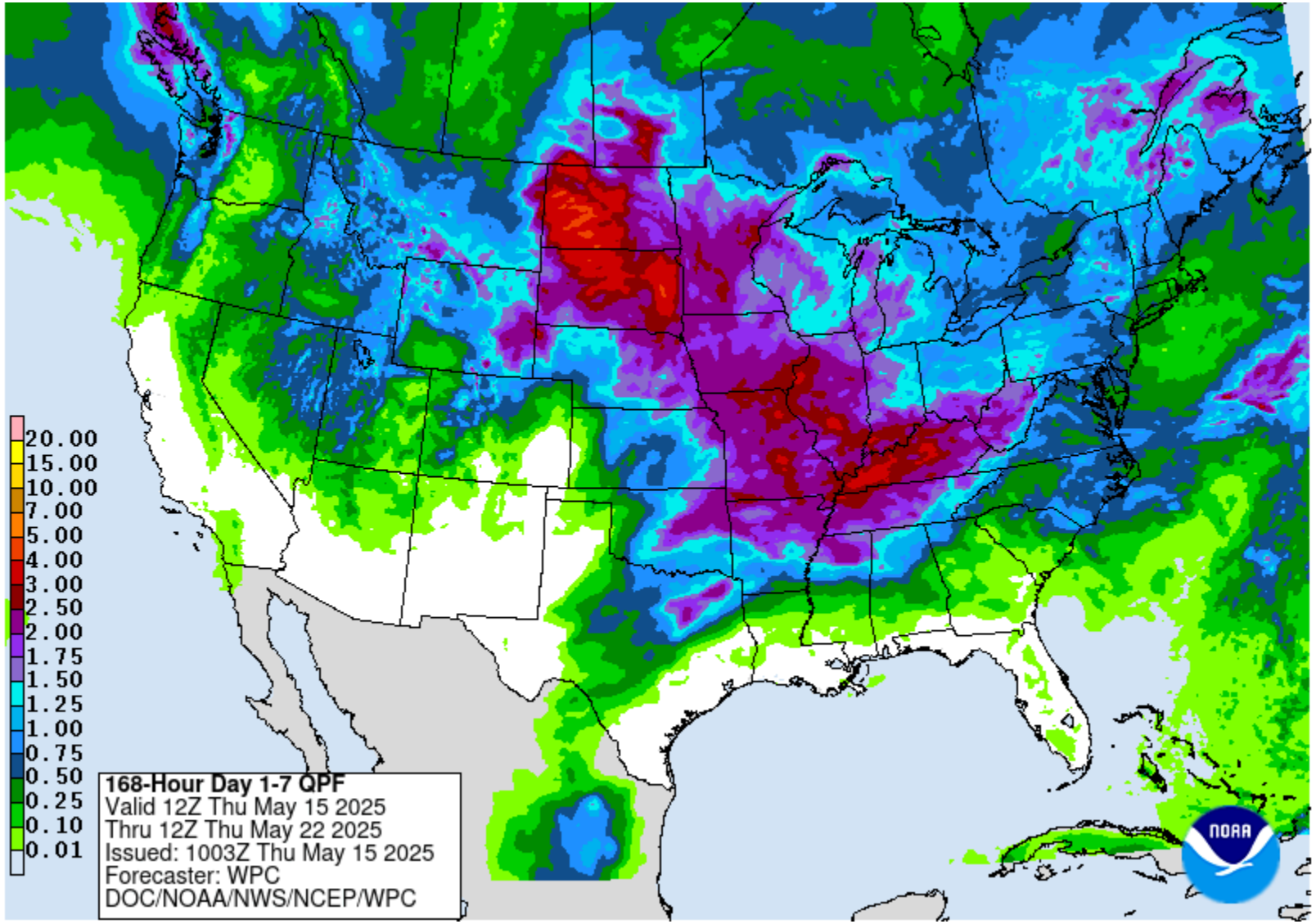
https://www.cpc.ncep.noaa.gov/products/precip/CWlink/ENSO/box_whiskers/index.php


JJA Temperature Distribution for Climate Div. #033
Temperature (°F)
74
73
72
71
70
69
68
El Nino
Neutral
La Nina


JJA Precipitation Distribution for Climate Div. #033
Precipitation (inches)
20
18
16
14
12
10
El Nino
Neutral
La Nina

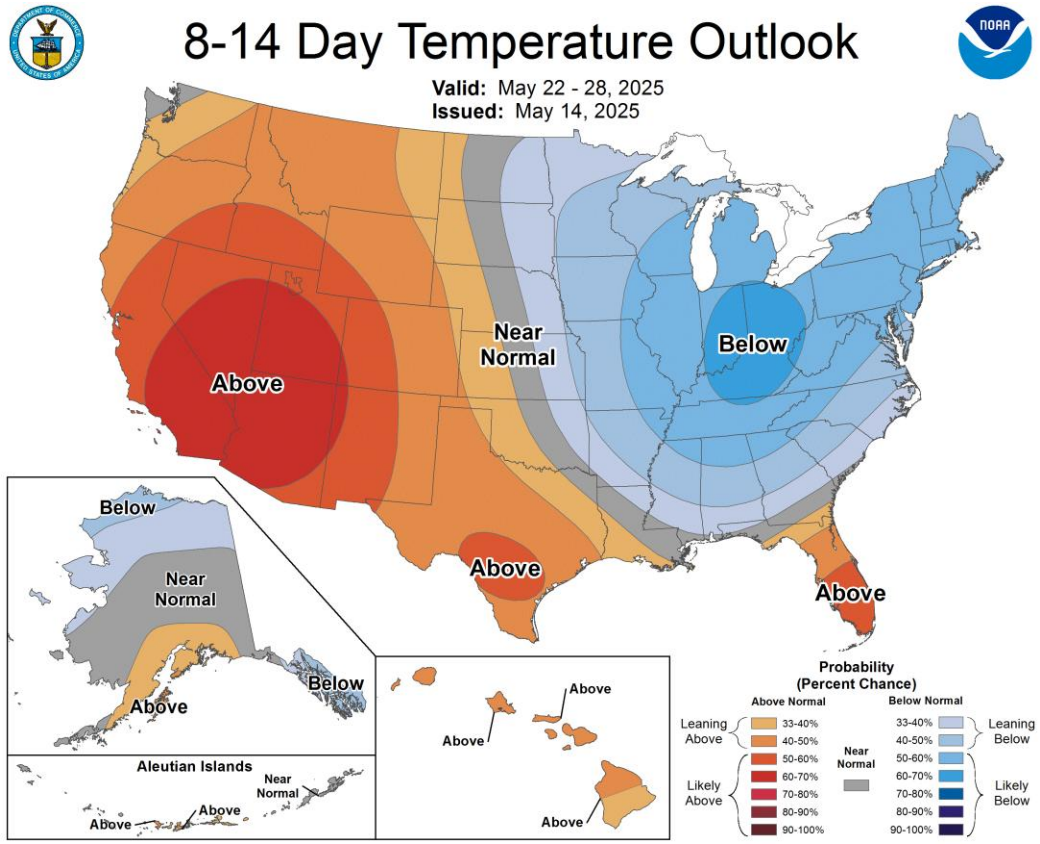
7-day Cumulative Precipitation Forecast

Valid: May 15 - 22

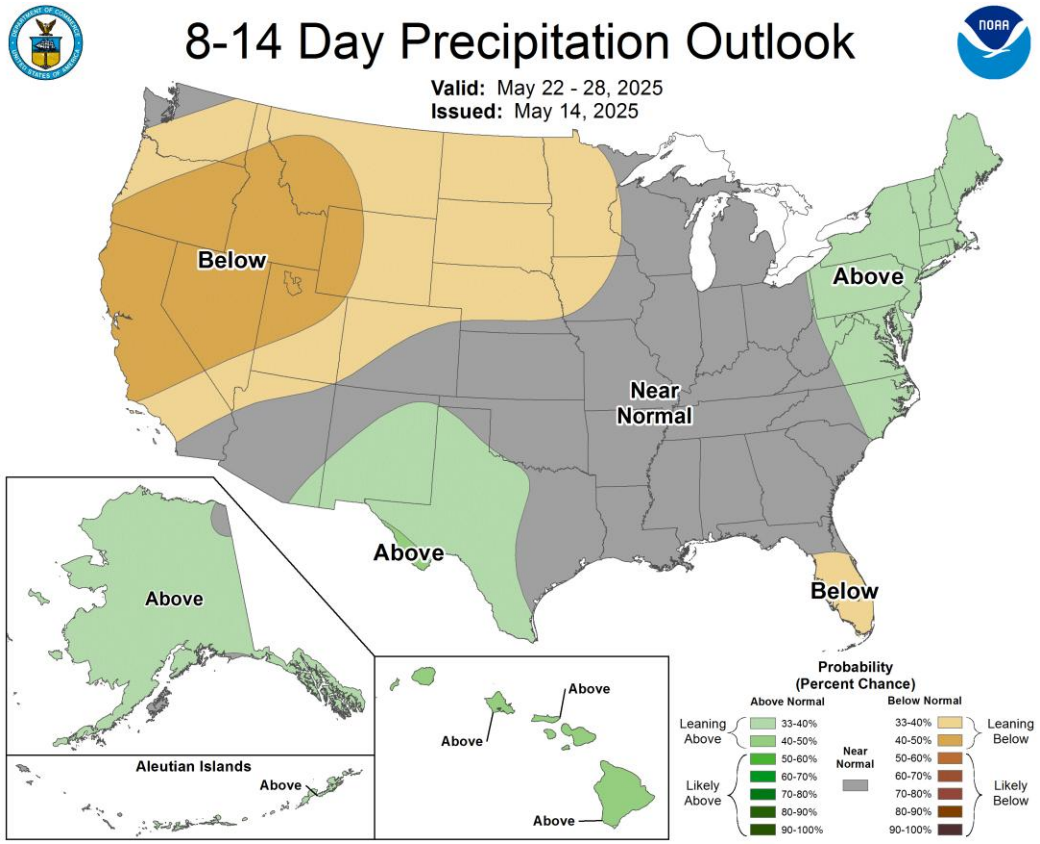


https://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml

8-14 Day Outlooks (Valid May 23 - 29)



Temperature



Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/814day/

U.S. Day 3-7 Hazards Outlook

About the Hazards Outlook

Created May 14, 2025

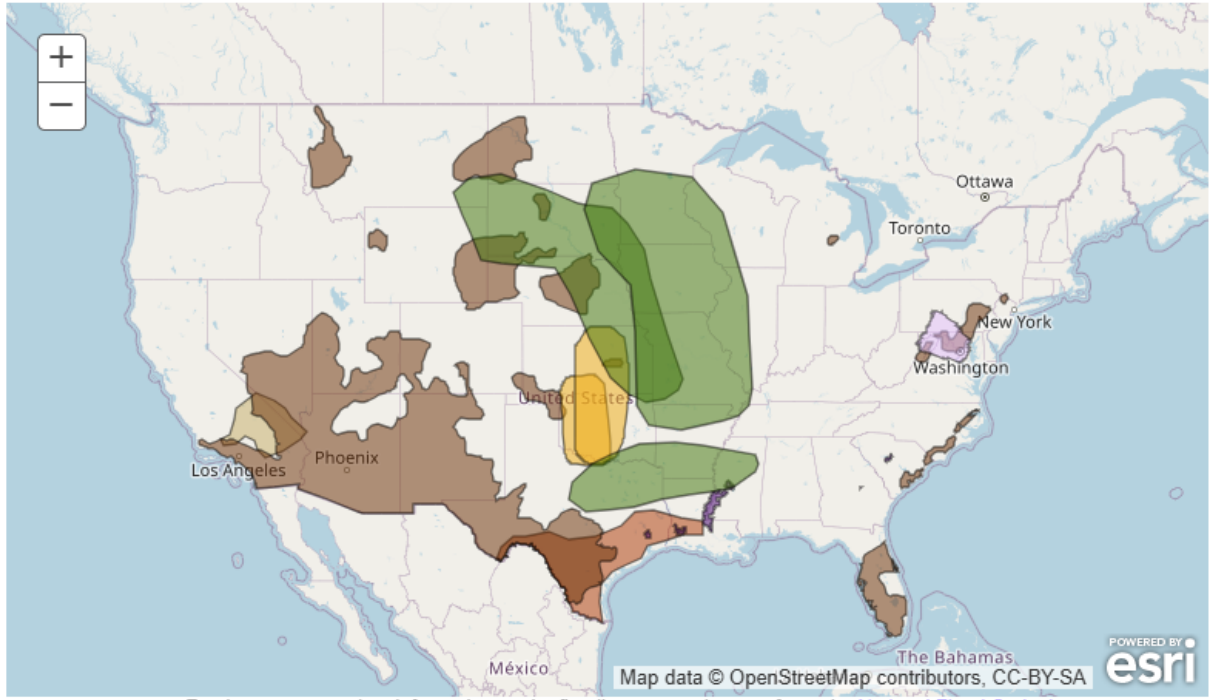
NOTE: These products are only created Monday through Friday. Please exercise caution using this outlook during the weekend.

Precipitation	☑
Temperature	☑
Wildfires	☑
Soils	☑

Valid May 17, 2025 - May 21, 2025

Legend

- Flooding Likely
- Flooding Occurring or Imminent
- Flooding Possible
- Freezing Rain
- Heavy Precipitation
- Heavy Rain
- Heavy Snow
- Hazardous Heat
- Hazardous Cold
- Frost/Freeze
- High Winds
- Significant Waves
- Critical Wildfire Risk
- Severe Weather



For the most up to date information on the flooding areas, please refer to the National Flood Outlook

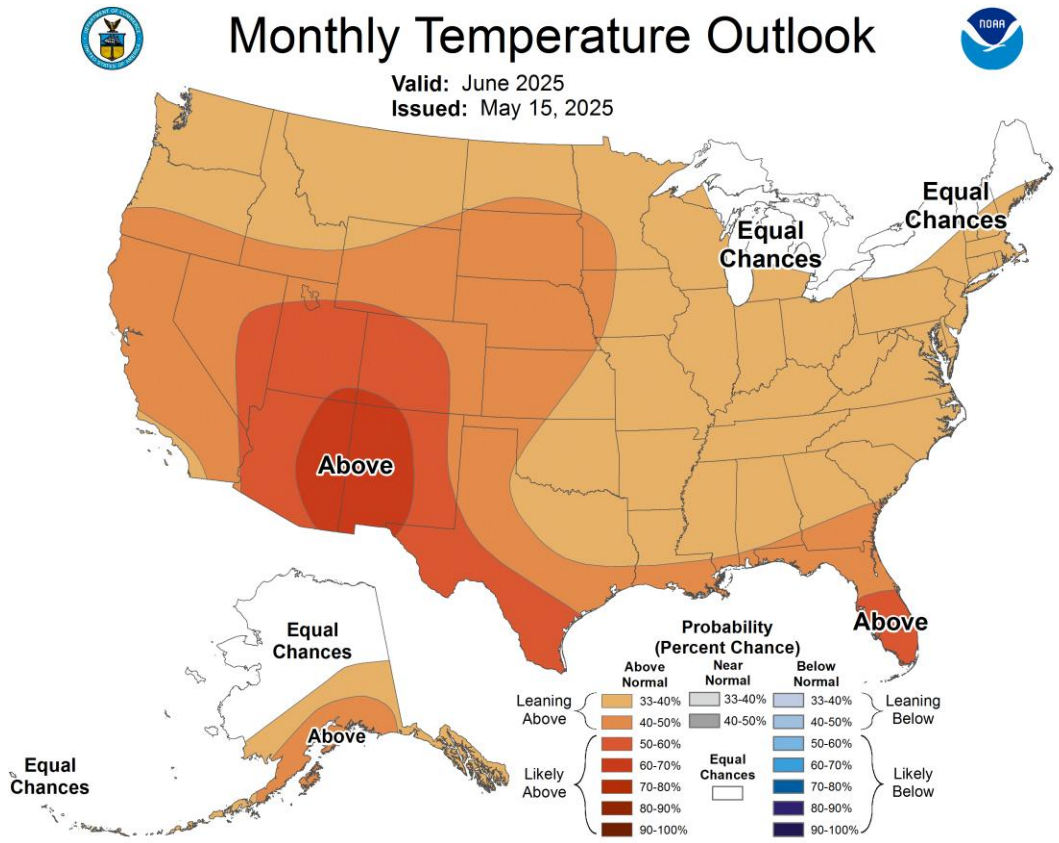
Static Hazards Map Image

CPC's Day 8-14 US Hazards Outlook

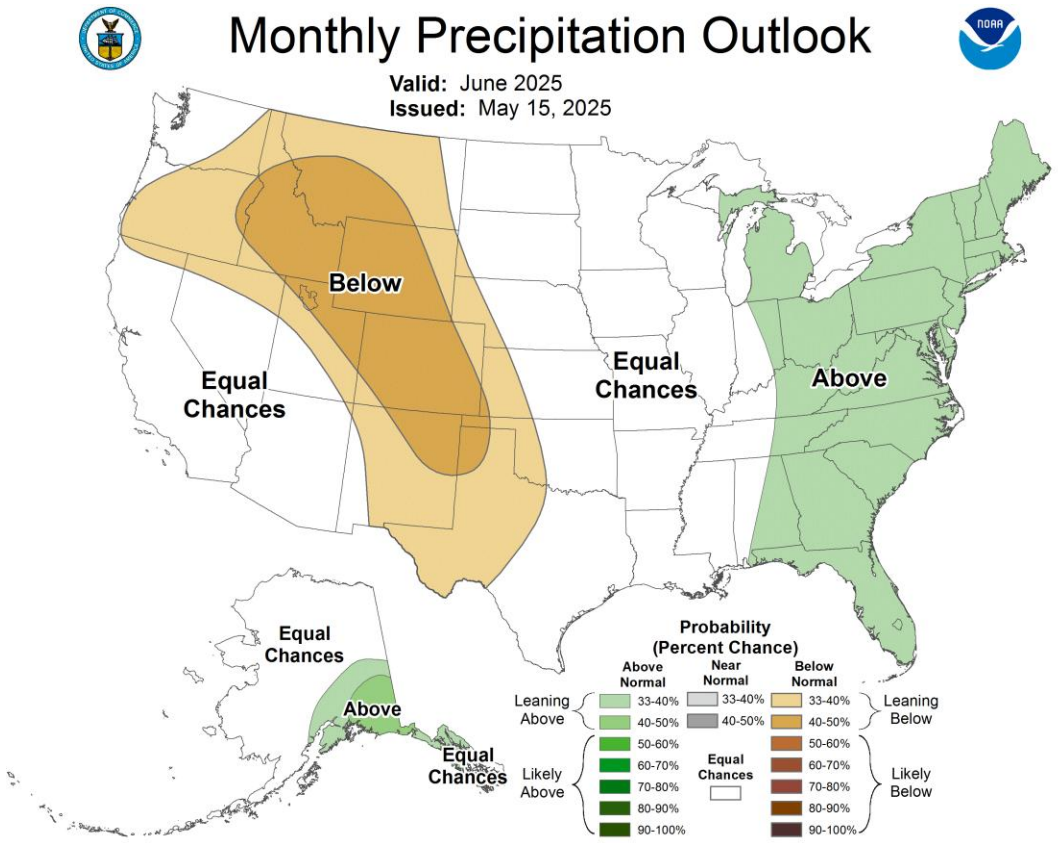
https://www.wpc.ncep.noaa.gov/threats/threats.php

https://www.cpc.ncep.noaa.gov/products/predictions/threats/temp_probhazards_d8_14_contours.png

Initial June Outlooks

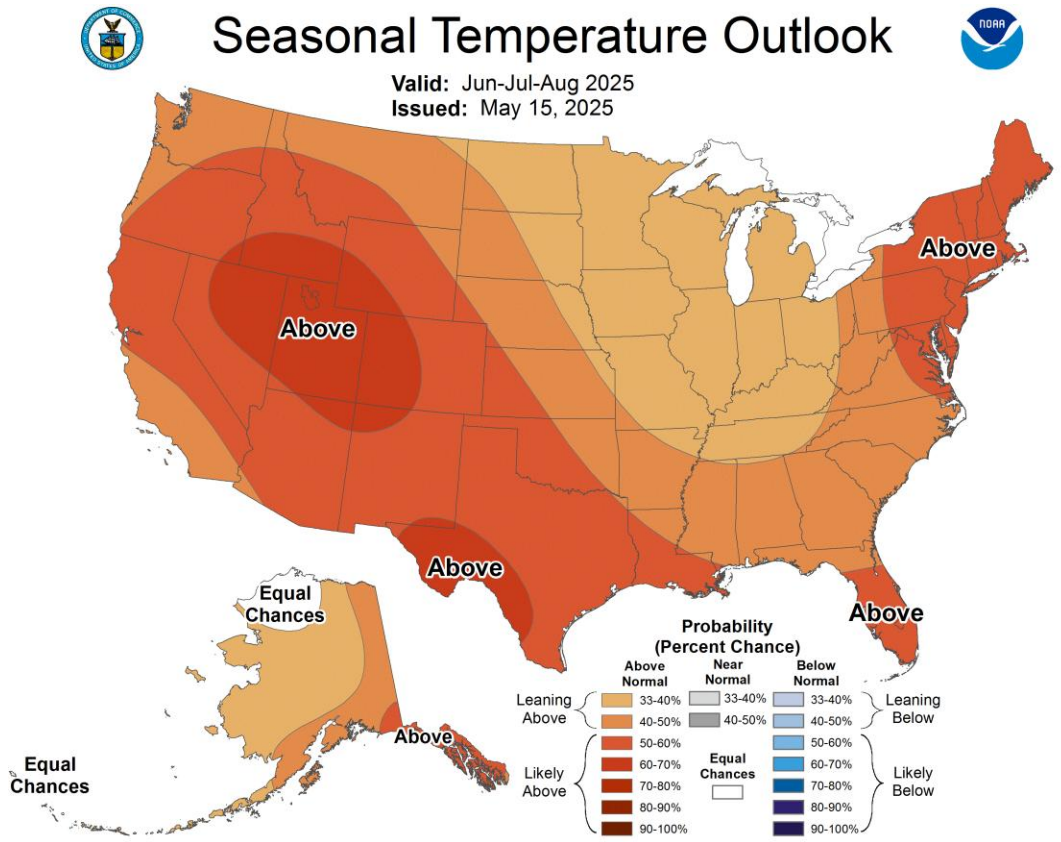


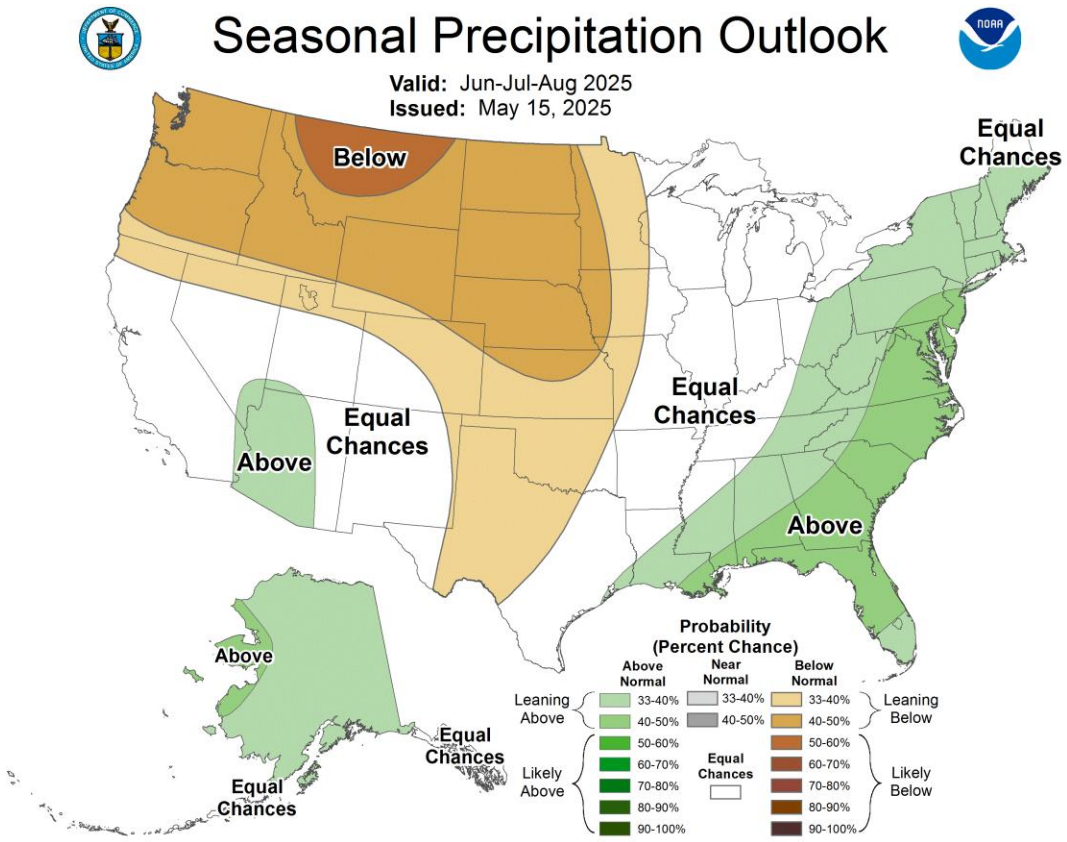
Temperature



Precipitation

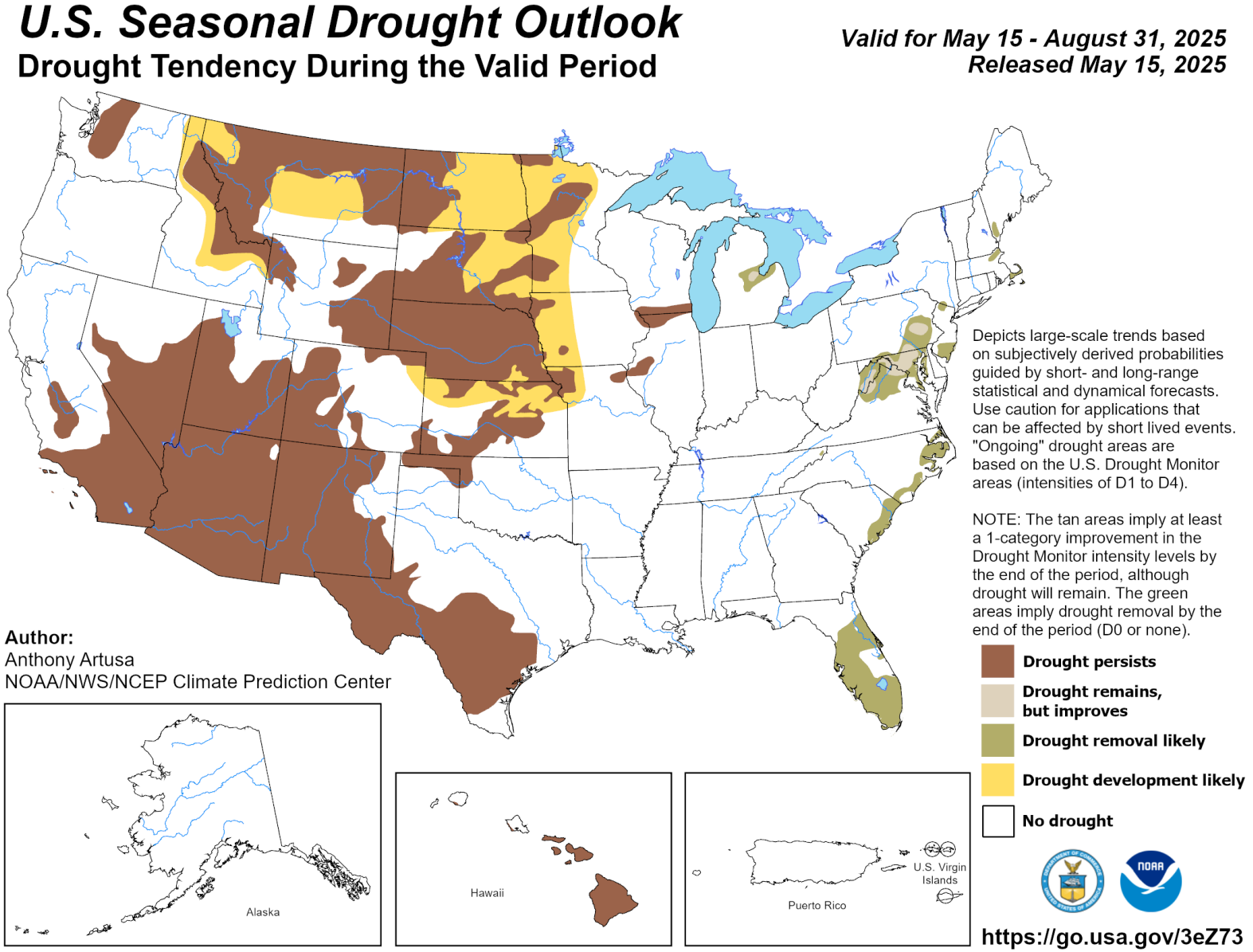
June-July-August Outlooks





https://www.cpc.ncep.noaa.gov/products/predictions/90day/

Seasonal Drought Outlook



http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.png


2025 Hurricane Season Outlook
Atlantic Basin
Colorado State University
Average
2024 Season
Total Named
17
14
18
Hurricanes
9
7
11
Cat 3 +
4
3
5

Outlook Summary

- Short-term outlooks through the end of May show higher probabilities of cooler temperatures across much of the Central Region.
- A shift to a more active storm track increases rainfall chances.
- Seasonal temperature outlooks show a “leaning” signal for above-normal temperatures with higher probabilities west.
- Seasonal precipitation outlooks are leaning dry from IA/MN west with the highest chances of unseasonable dryness NE/Dakotas into MT
- Drought conditions look to persist and degrade across the western states.
- ENSO-neutral conditions are present and will likely persist into fall.

Further Information - Partners

- **Today's and Past Recorded Presentations and :**
  - https://mrcc.purdue.edu/multimedia/webinars.jsp
  - https://hprcc.unl.edu/webinars.php
- NOAA's National Climatic Data Center: www.ncdc.noaa.gov
  - ➢ Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Climate Portal: www.climate.gov
- U.S. Drought Portal: www.drought.gov
- National Drought Mitigation Center**: http://drought.unl.edu/**
- USDA Climate Hubs https://www.climatehubs.usda.gov/
- State climatologists
  - http://www.stateclimate.org
- Regional climate centers
  - http://mrcc.purdue.edu
  - http://www.hprcc.unl.edu

Thank You and Questions?

- Questions:
  - **Climate:**
  - Justin Glisan: justin.glisan@iowaagriculture.gov, 515-281-8981
  - Dennis Todey: dennis.todey@usda.gov , 515-294-2013
  - Doug Kluck: doug.kluck@yahoo.com
  - Melissa Widhalm: mwidhalm@purdue.edu 765-494-8191
  - Gannon Rush: grush2@unl.edu
  - Brian Fuchs: bfuchs2@unl.edu 402 472-6775
  - Molly Woloszyn: molly.woloszyn@noaa.gov

  - **Weather:**
  - crhroc@noaa.gov