North Central U.S. Climate & Drought Outlook

July 17, 2025

Photo: Cody Edwards

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Michigan Office of the State Climatologist
Michigan State University

AASC AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

REGIONAL CLIMATE CENTERS

NDMC NATIONAL DROUGHT MITIGATION CENTER UNIVERSITY OF NEBRASKA

USDA United States Department of Agriculture Midwest Climate Hub

GLISA A NOAA CAP/RISA TEAM

MICHIGAN STATE UNIVERSITY AgBioResearch

MICHIGAN STATE UNIVERSITY | Extension

Thanks to these groups for providing information

- State Climatologists/American Association of State Climatologists
- NOAA NCEI/NWS/OAR
- USDA Climate Hubs
- Midwest and High Plains Regional Climate Centers
- National Drought Mitigation Center

Next Regular Climate/Drought Outlook Webinar

- ***August 21, 2025 (1 PM CDT) – Zack Leasor (Missouri State Climatologist)***

Past Drought & Climate Webinars and Information

- https://mrcc.purdue.edu/webinars
- http://www.hprcc.unl.edu/webinars.php

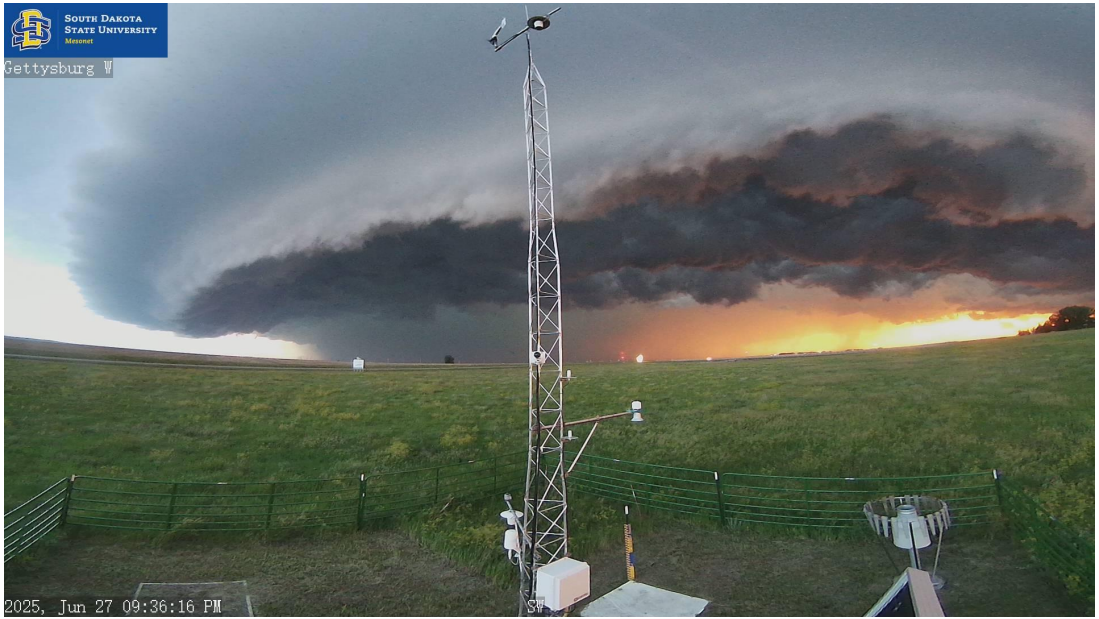
Questions and Answers at the end of the presentation

NC Climate and Drought Outlook: July 2025

Outline

- Recent Conditions
- Growing Season Progress
- Notable Events
- Outlooks

Recent Conditions



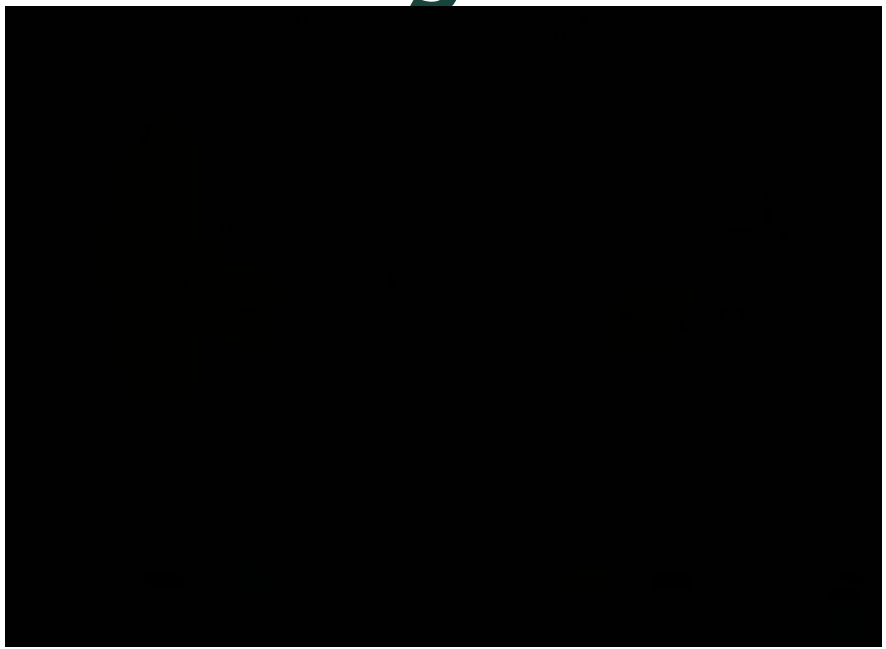
Supercell Thunderstorm
Gettysburg, SD
photo: SD Mesonet, mesonet.sdstate.edu

June Temperature Rankings

- Almost all of the rankings across the region were above (warmer than) average
- Highest (warmest) rankings were observed across central and eastern portions of the region

https://www.ncei.noaa.gov/access/monitoring/us-maps/

June Max./Min. Temperature Rankings



https://www.ncei.noaa.gov/access/monitoring/us-maps/

April-June Seasonal Temperature Rankings

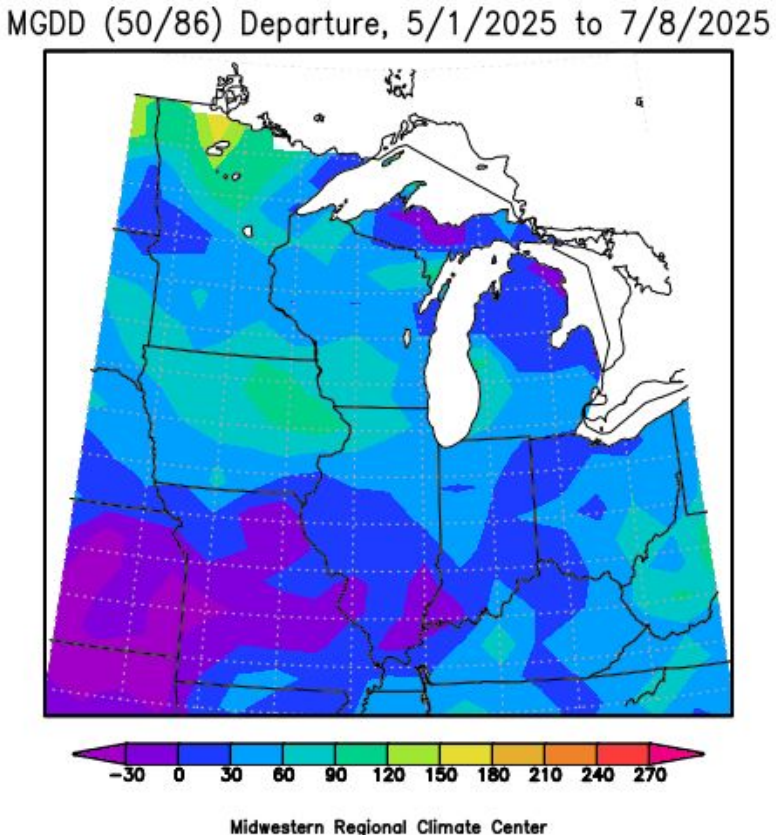
- Almost all of the rankings across the region were above (warmer than) average

- Highest (warmest) rankings were observed across central and southern portions of the region

https://www.ncei.noaa.gov/access/monitoring/us-maps/

Seasonal GDD_{50} Accumulations

- Positive (surplus) GDD departures across most areas with deficits across southwest and northeast sections



https://www.ncei.noaa.gov/access/monitoring/us-maps/

June Precipitation Rankings

- Most rankings across the region were above (wetter than) average
- Drier than normal ND, MT, and WY
- Highest (wettest) rankings were observed across central and southern portions of the region

https://www.ncei.noaa.gov/access/monitoring/us-maps/

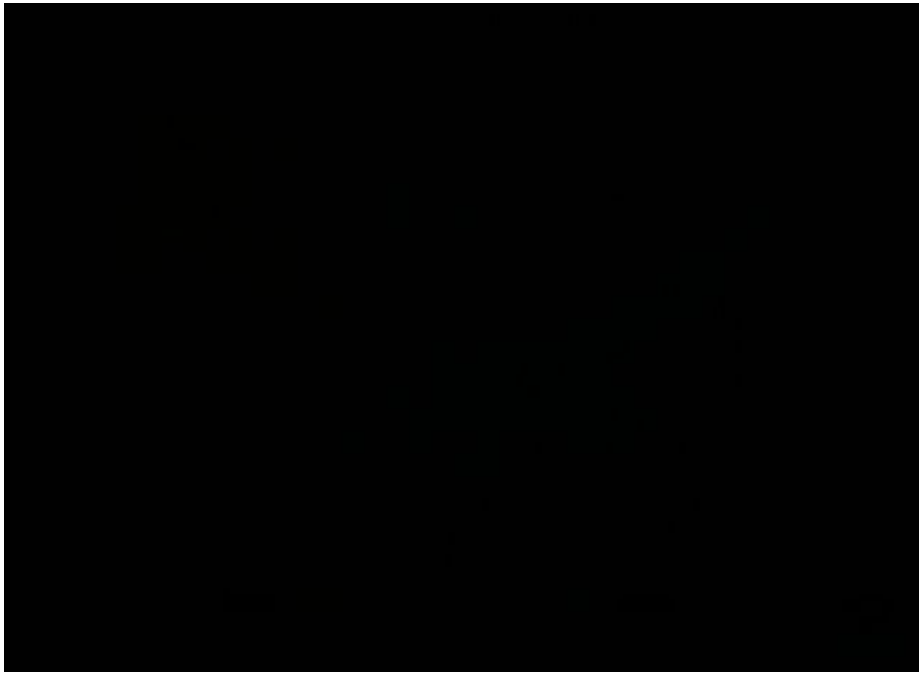
April-June Seasonal Precipitation Rankings

- Most rankings across the region were above (wetter than) average
- Highest (wettest) rankings were observed across the Ohio Valley
- Lowest (driest) rankings in the High Plains

https://www.ncei.noaa.gov/access/monitoring/us-maps/

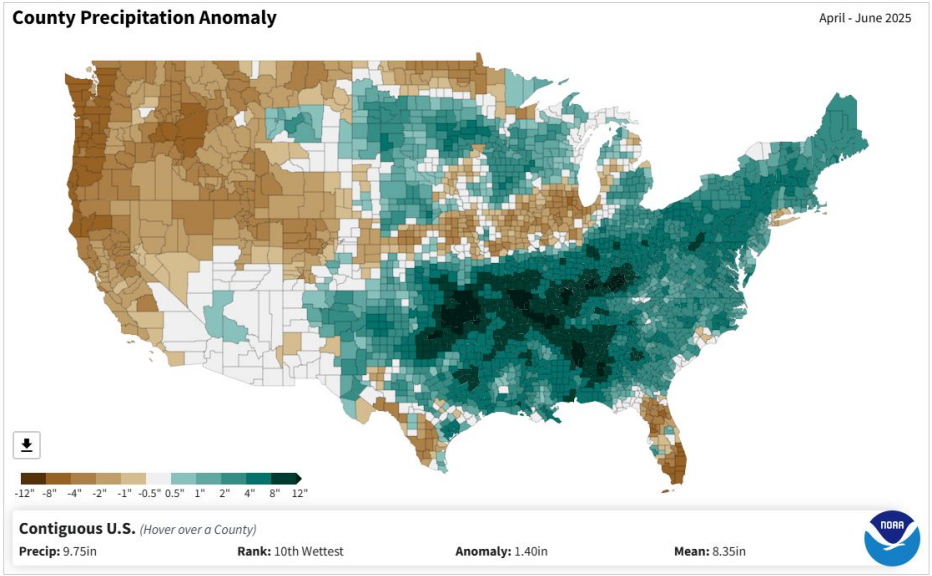
April-June County Precipitation Rankings

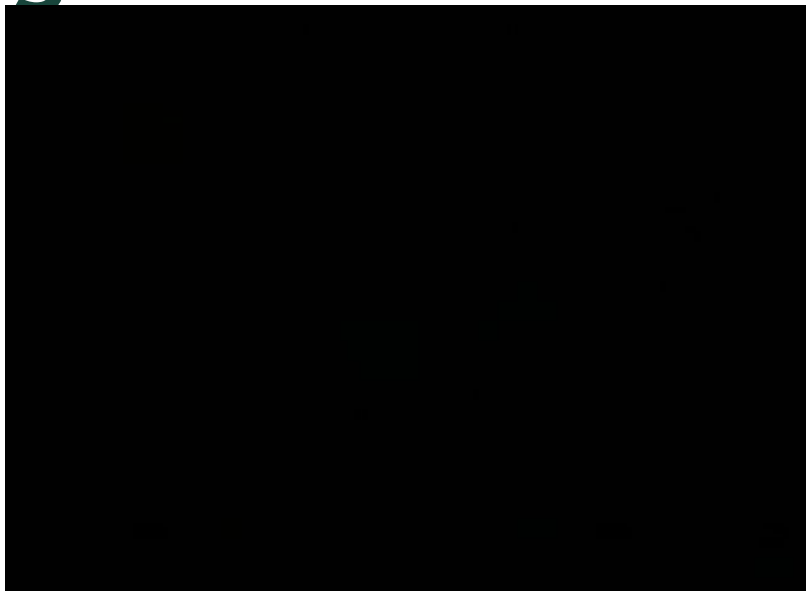
- Most rankings across the region were above (wetter than) average
- Drier than normal northern ND, MN and across portions of central corn belt
- Highest (wettest) rankings were observed across the Ohio Valley and pockets of the Great Plains



https://www.ncei.noaa.gov/access/monitoring/us-maps/

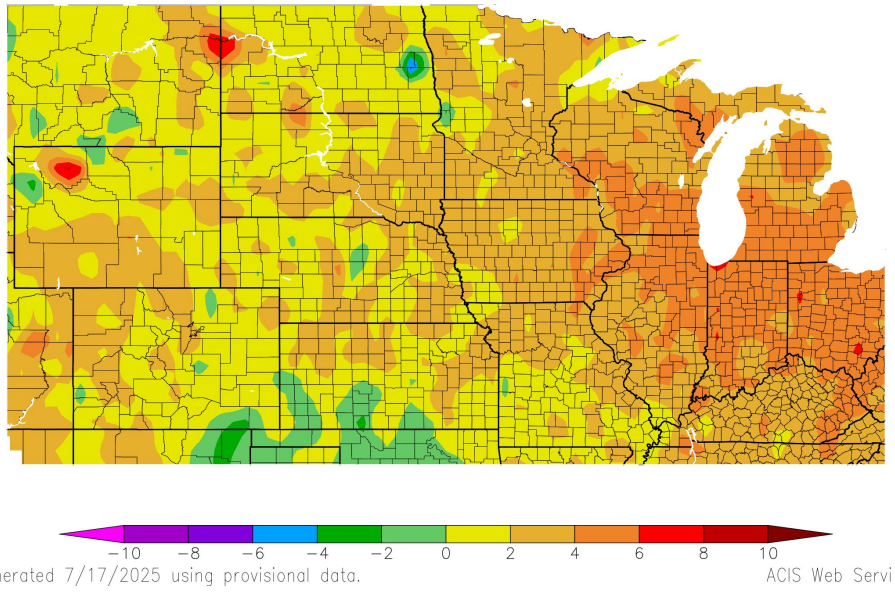
January-June Year to Date Precipitation Rankings

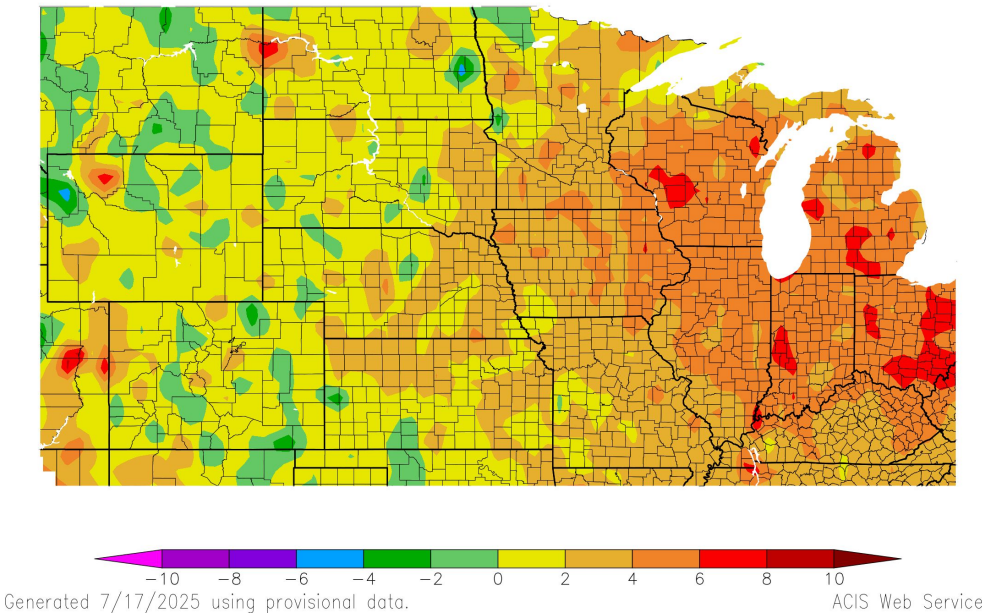




https://www.ncei.noaa.gov/access/monitoring/us-maps/

30-Day Temperatures

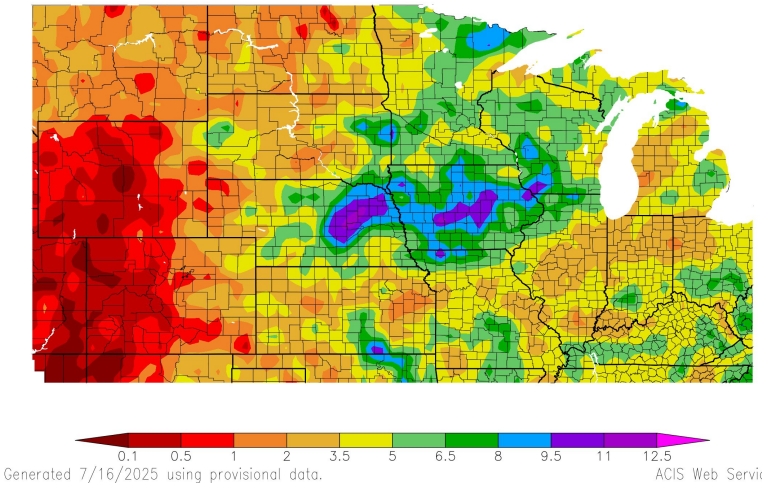




Source: https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

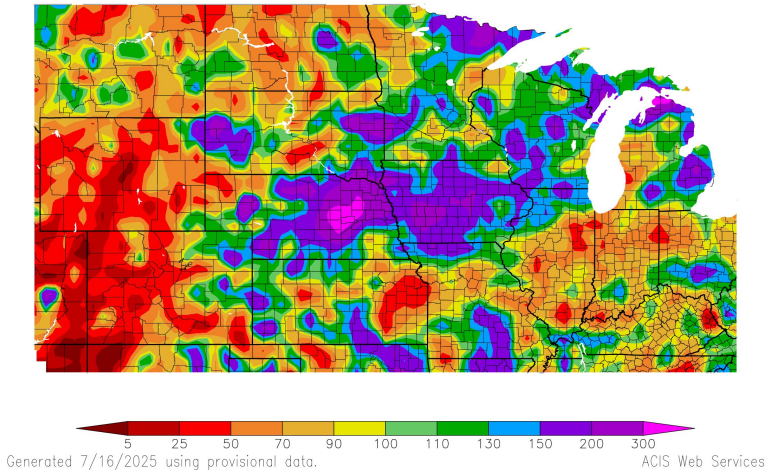
30-Day Precipitation Totals

Precipitation (in)
6/16/2025 – 7/15/2025



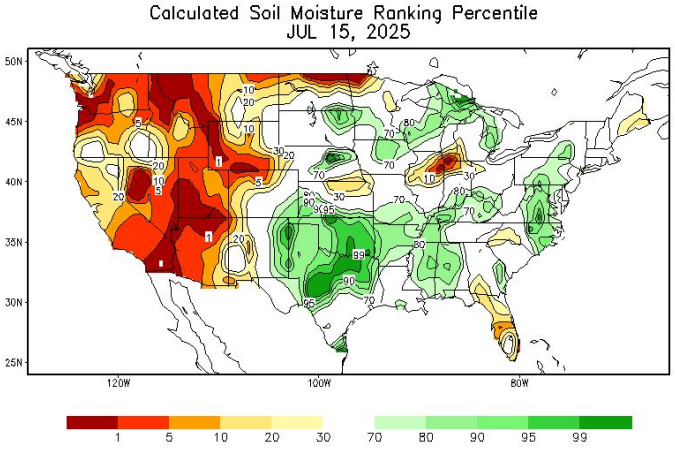
- Highly variable precipitation compared to normal across the region
- Very heavy precipitation totals across portions of eastern NE, IA, MN, and southwestern WI (8-12”)
- Light precipitation across northwest and southeastern sections

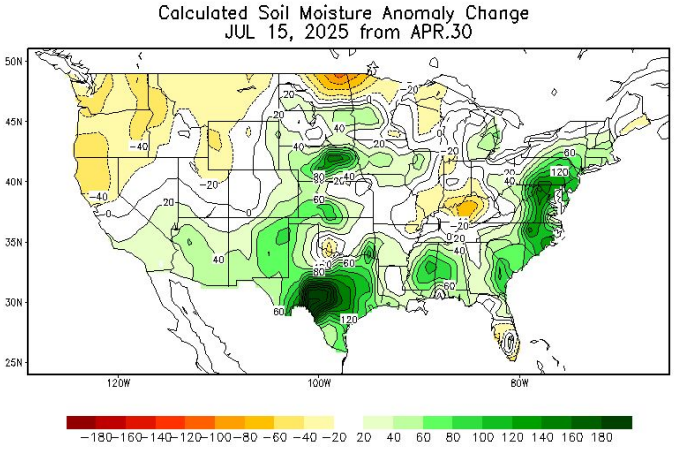
Percent of Normal Precipitation (%)
6/16/2025 – 7/15/2025

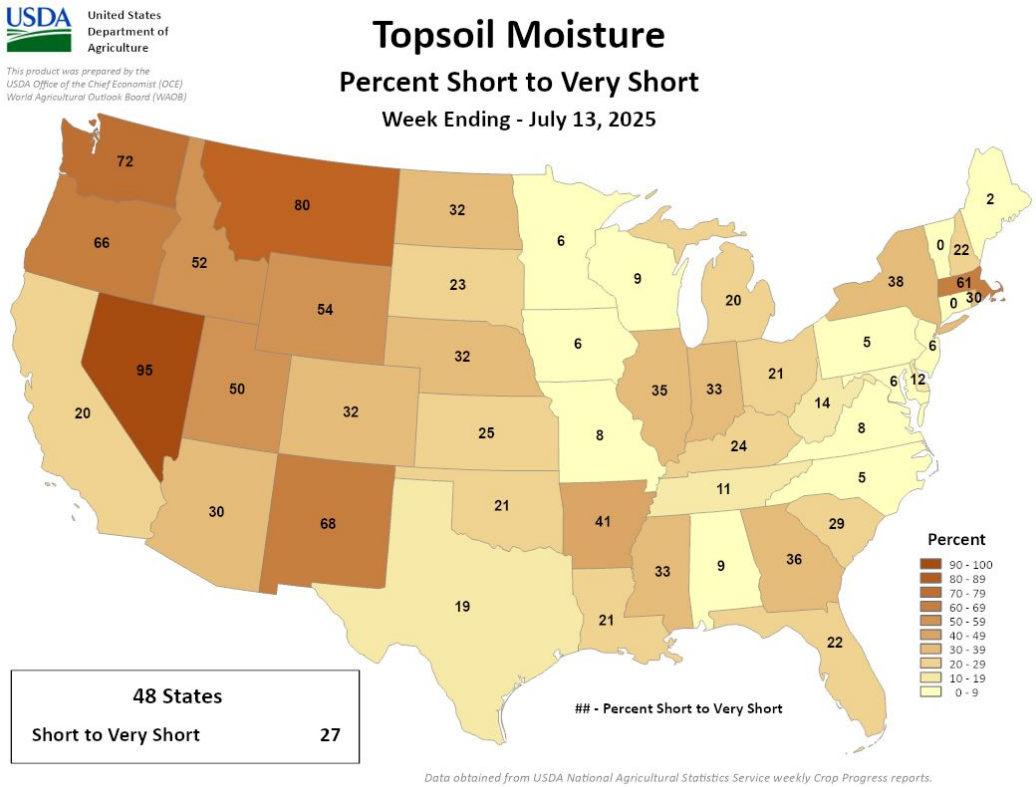


- 100-300% of normal across central and some northern portions of the region
- Less than 50% of normal across some northwestern and southeastern sections

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



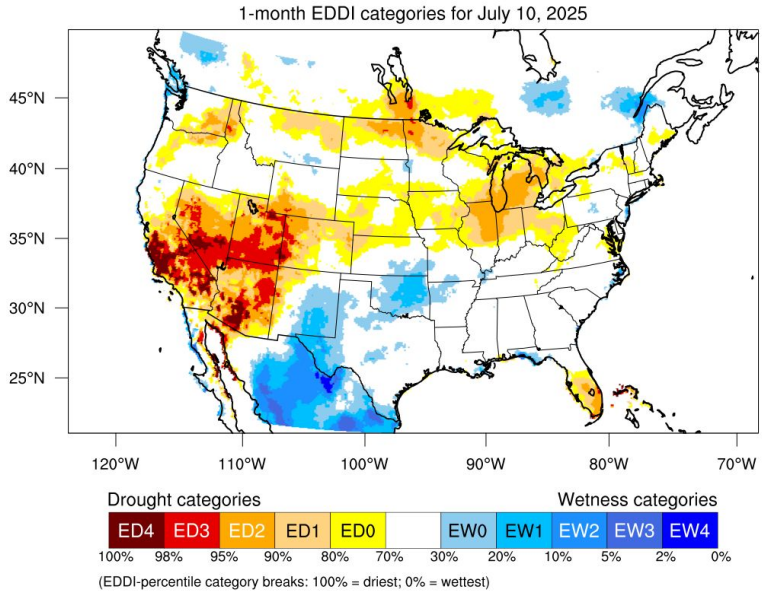


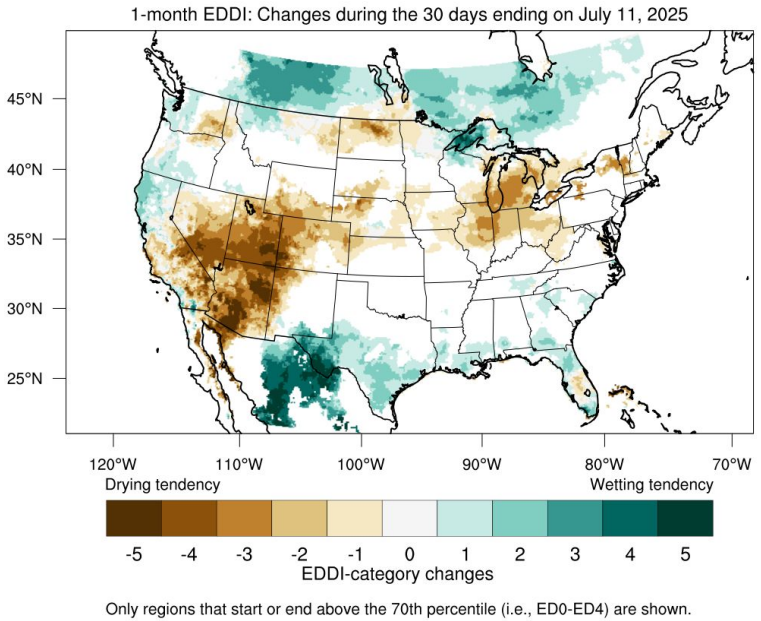


https://agindrought.unl.edu/Other.aspx

http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#

Atmospheric Evaporative Water Demand





- Overall higher than normal demand across most areas, esp. eastern sections
- Low demand extreme southwestern sections of the region

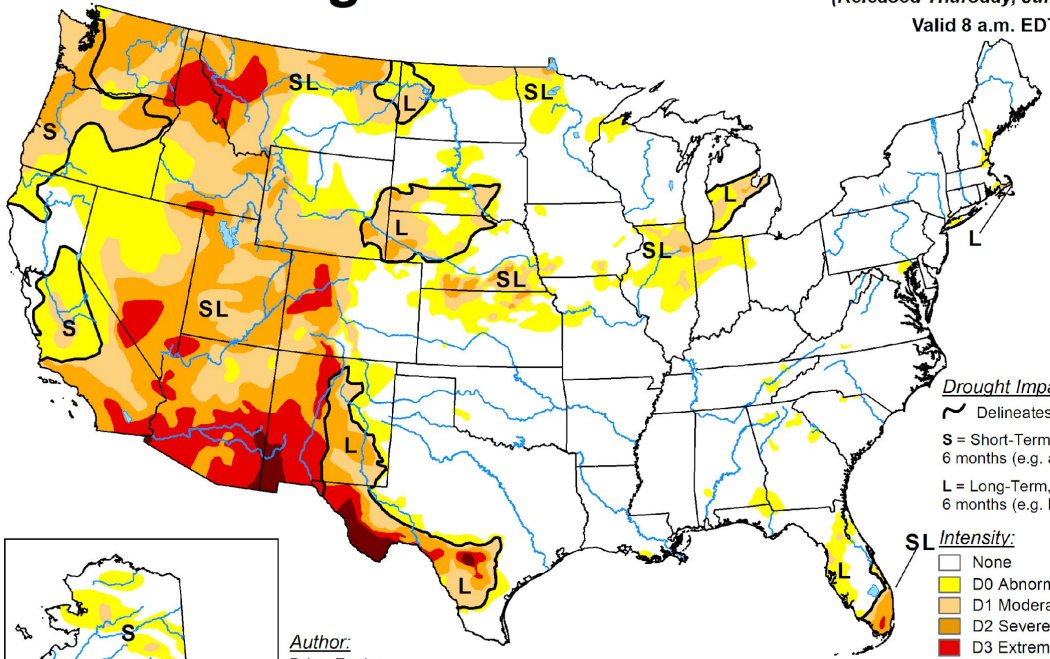
Images provided by the NOAA/ESRL Physical Sciences Laboratory, Boulder, Colorado, from their web site at: https://psl.noaa.gov/eddi/.

U.S. Drought Monitor

July 15, 2025

(Released Thursday, Jul. 17, 2025)

Valid 8 a.m. EDT



Drought Impact Types:

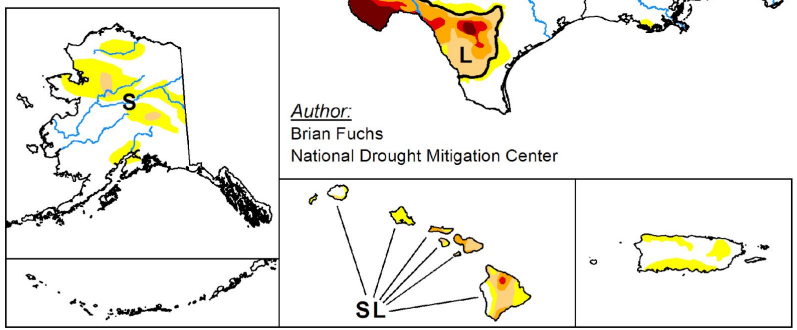
Delineates dominant impacts

S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

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



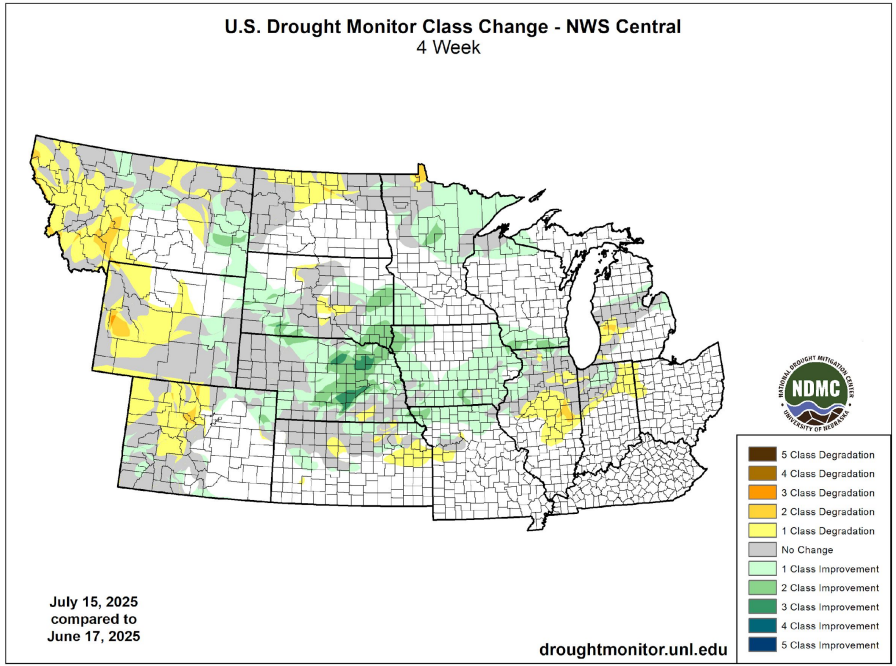
Author:
Brian Fuchs
National Drought Mitigation Center

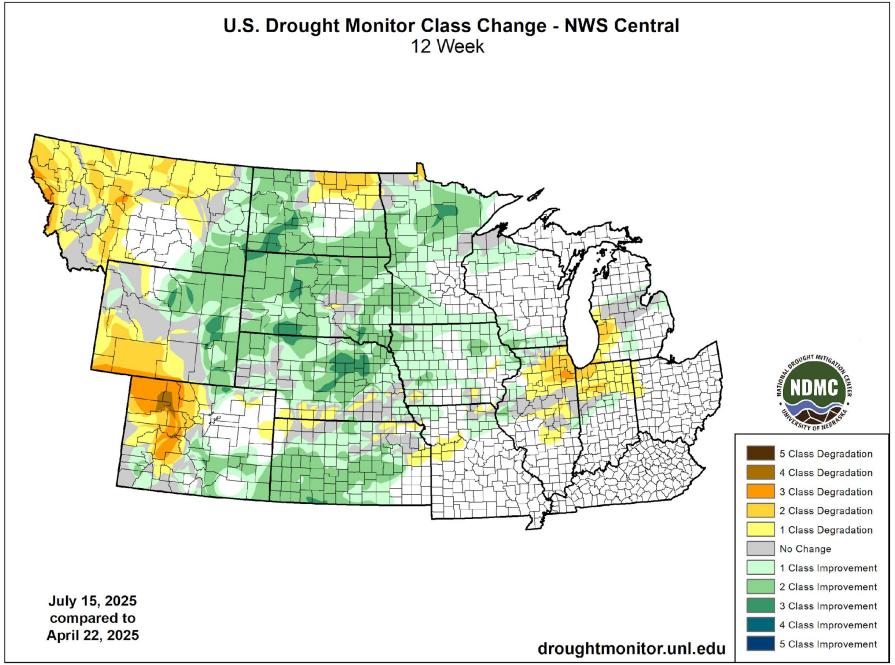
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

USDA NDMC NOAA

droughtmonitor.unl.edu

US Drought Monitor Class Changes



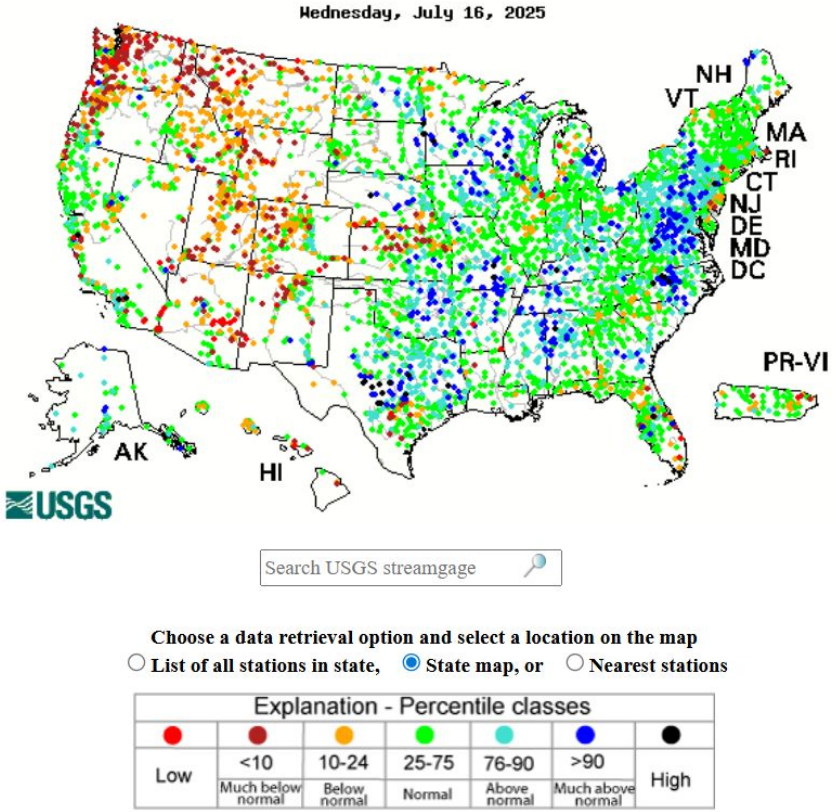


Hydrological and Wildfire Conditions

Drought conditions in
Fort Belknap, MT
Photo: Dennis Longknife, Jr

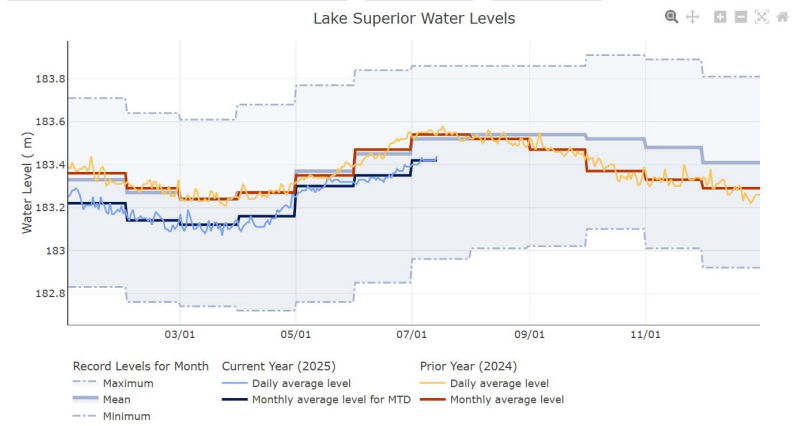
Streamflow

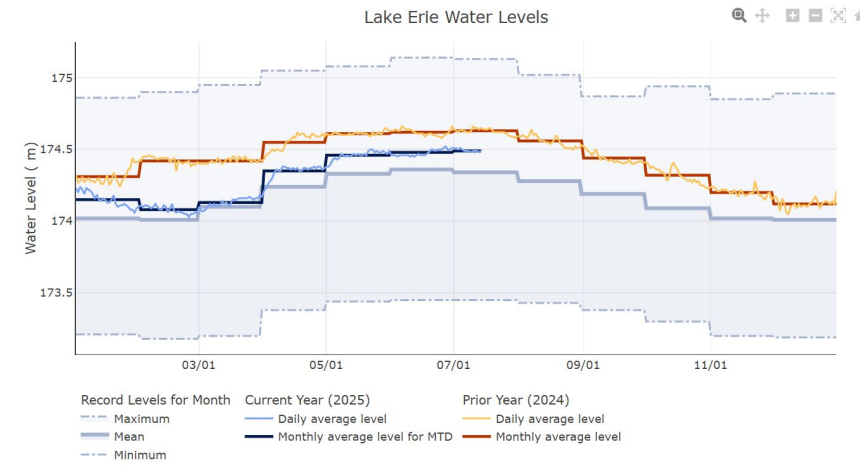
- Near normal most areas
- Above normal southern MN, western WI, northern IA, southern MO, western KY
- Below normal sections of the northern and central Great Plains, eastern IL, western Lower MI



https://waterwatch.usgs.gov/index.php?id=pa28d

Great Lakes Water Levels

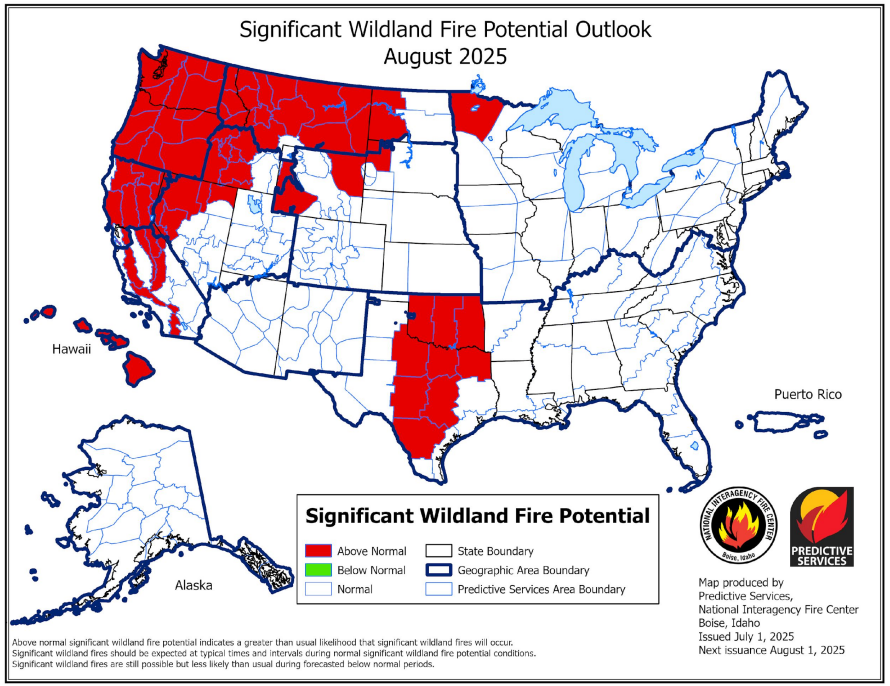


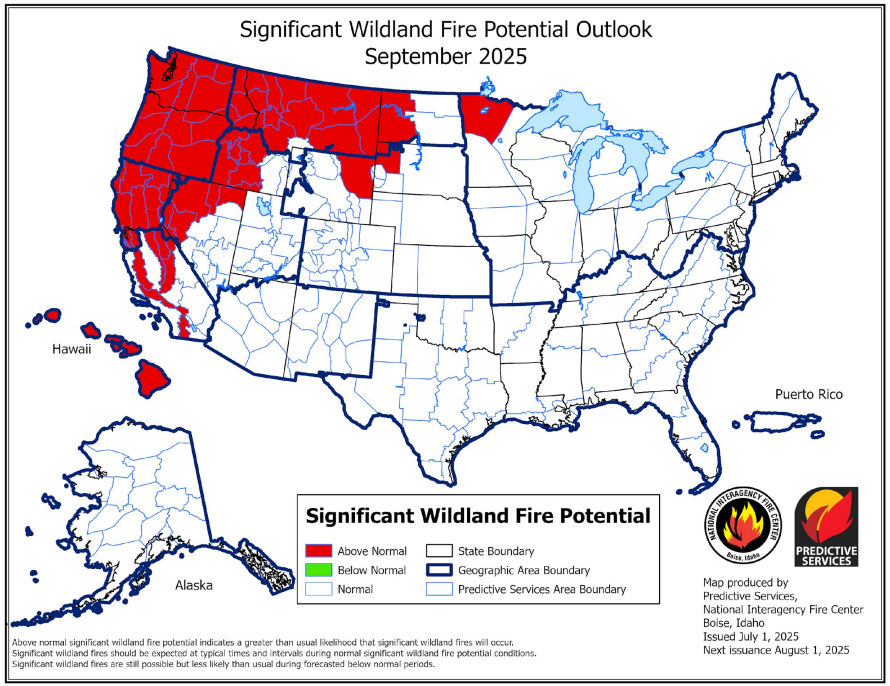


- Water levels on Lakes Superior, Michigan-Huron, and Erie are near to slightly below long term normals.
- By next month, Lakes Superior is expected to rise from the current level while Lakes Michigan/Huron and Erie are expected to fall slightly

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

Wildland Fire Outlooks



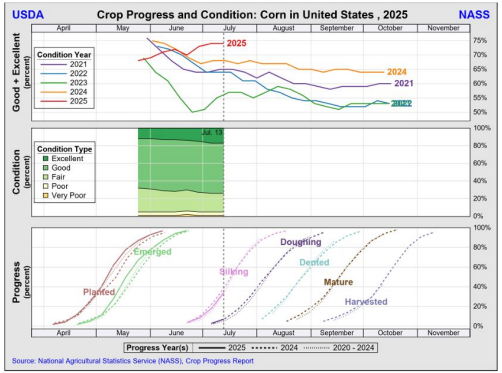


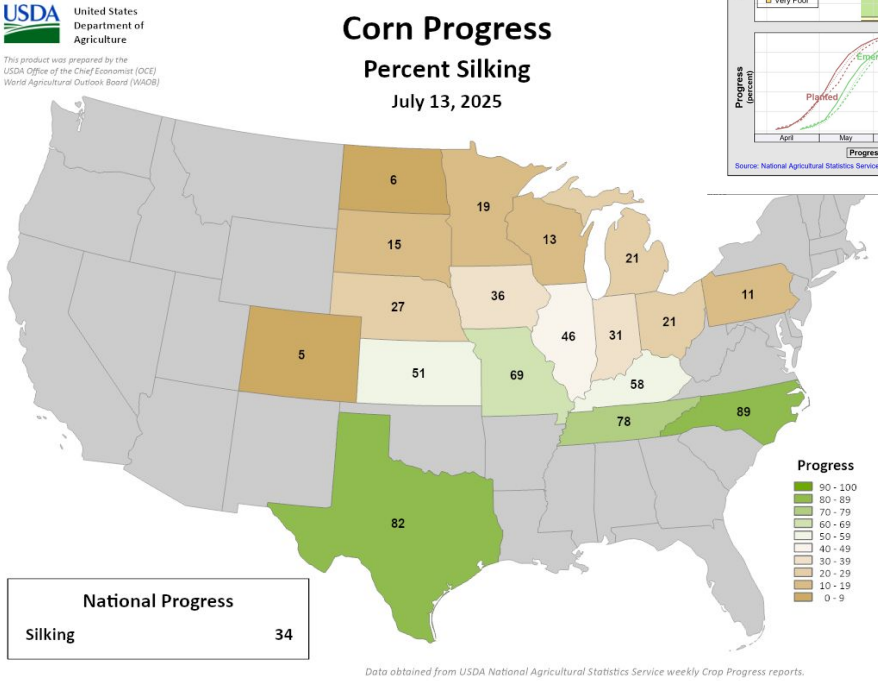
Source: https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm

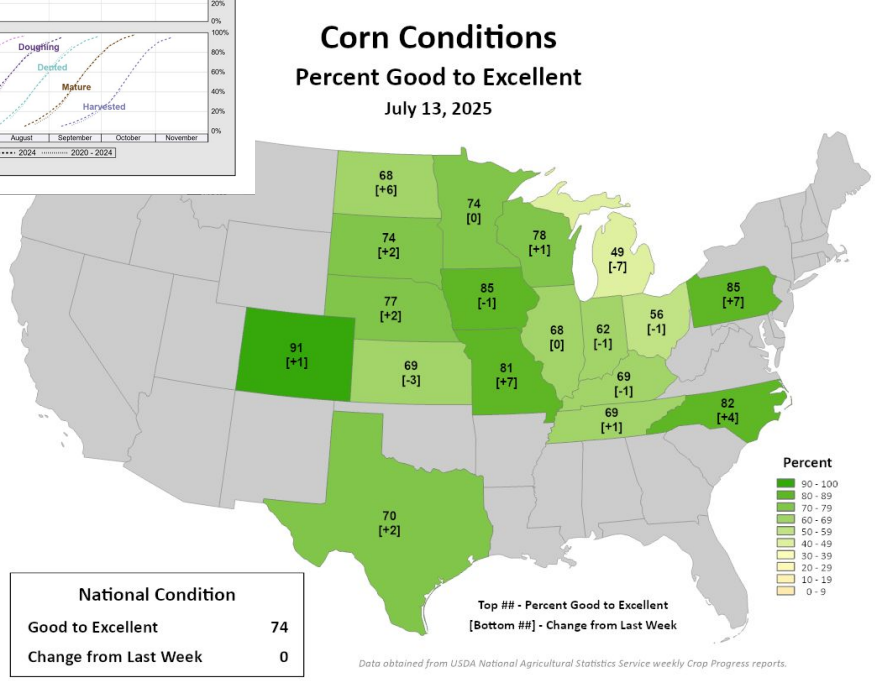
Growing Season Progress

2025 Wheat Harvest
Clinton County, MI
Photo: Jeff Andresen

USDA NASS Crop Progress: Corn

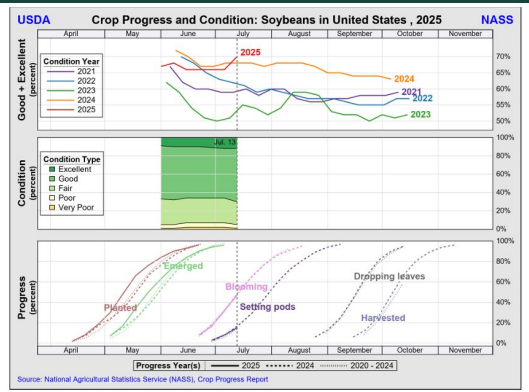


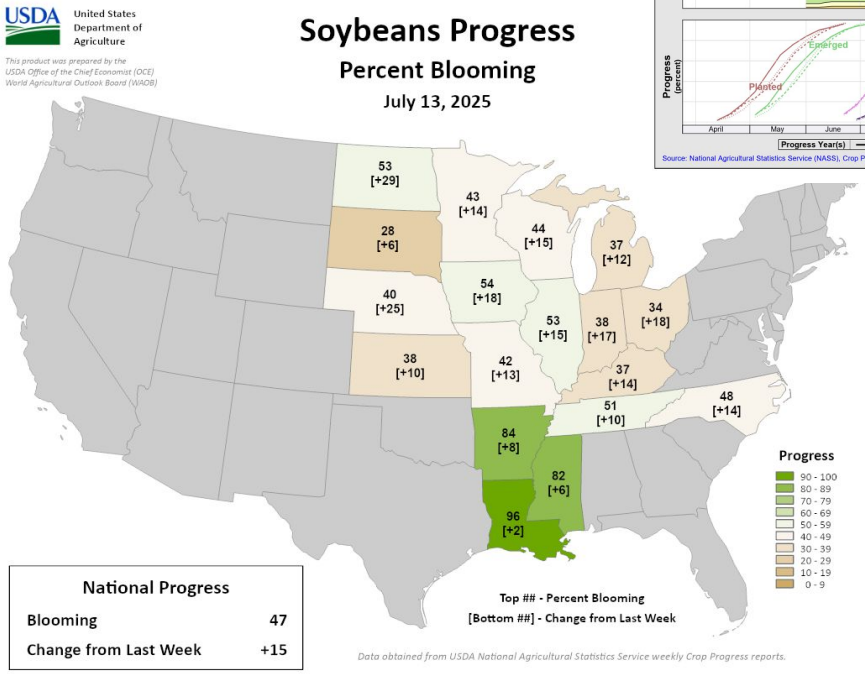




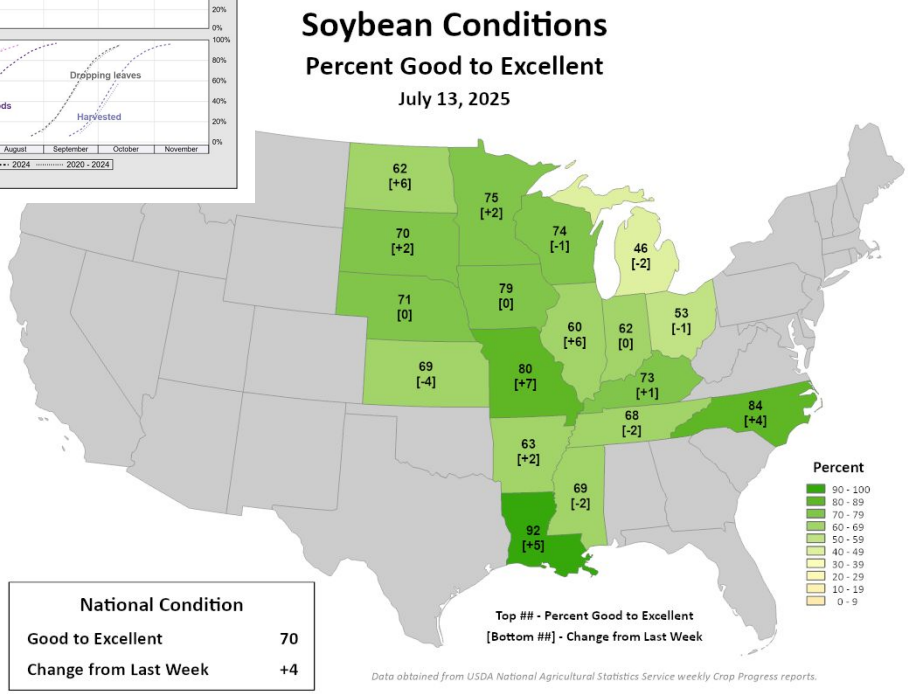
https://agindrought.unl.edu/Other.aspx

USDA NASS Crop Progress: Soybeans





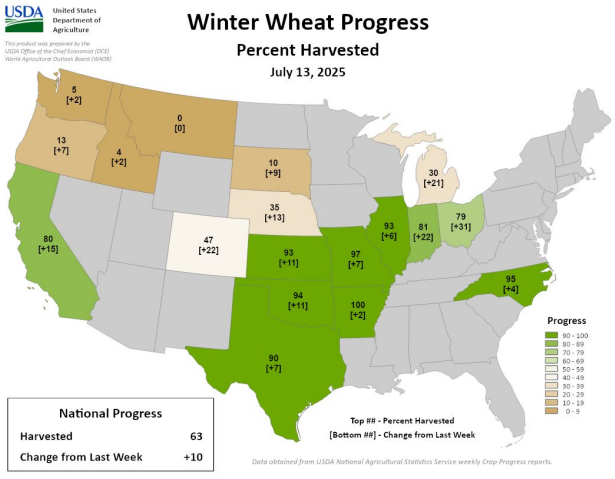
National Progress	
Blooming	47
Change from Last Week	+15

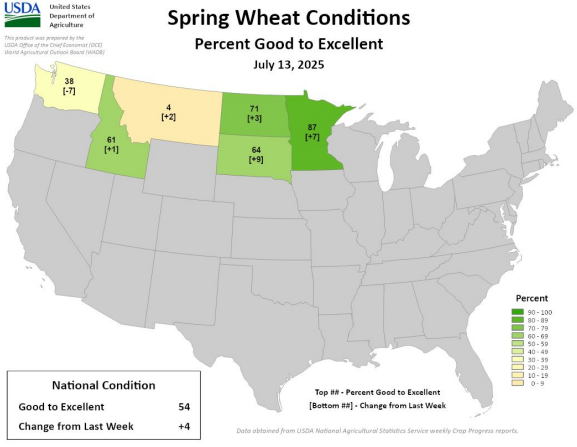


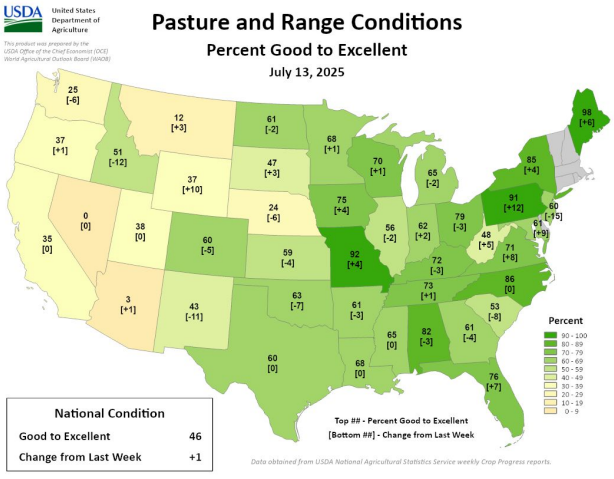
National Condition	
Good to Excellent	70
Change from Last Week	+4

https://agindrought.unl.edu/Other.aspx - Available to public each Tuesday

USDA NASS Crop Progress/Conditions: Others



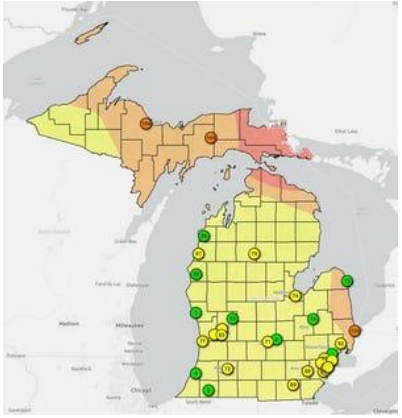


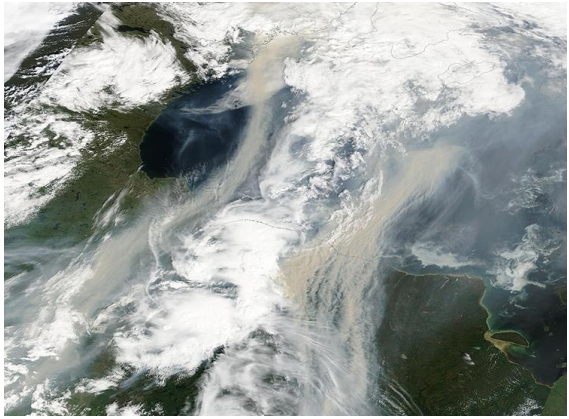


Notable Events

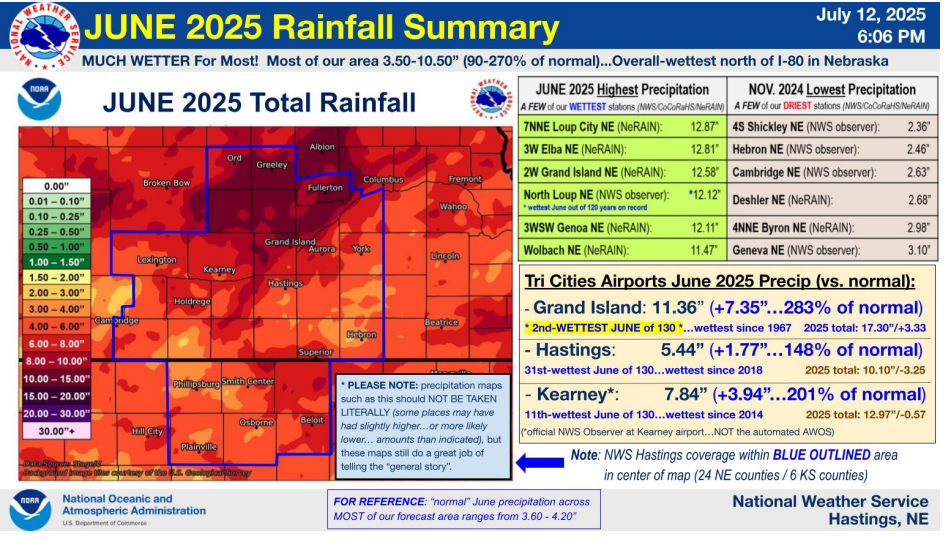
Tornado, JUN 28th, 2025
Gary, SD
Photo: Adam Orgler

11-14 July Wildfire Smoke Event



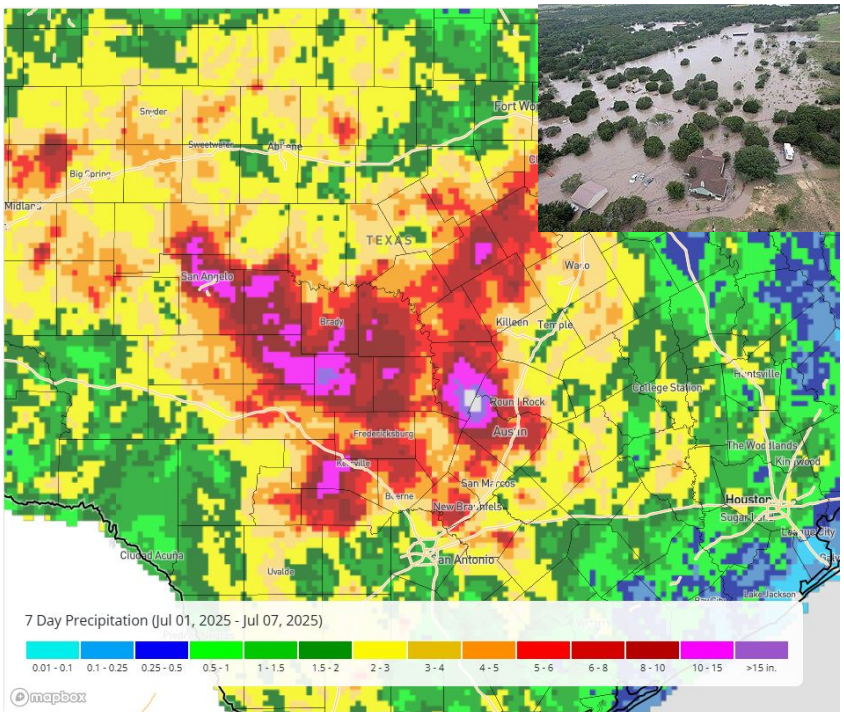


June 2025 Nebraska Heavy Rainfall



- Persistent heavy rain fell across areas of Nebraska during June, with over 10.0” at many sites
- 6.41” of rain fell at Grand Island on June 25th and 7.52” on the 25th-26th ,breaking the daily rainfall record for June and becoming the highest two-day total on record

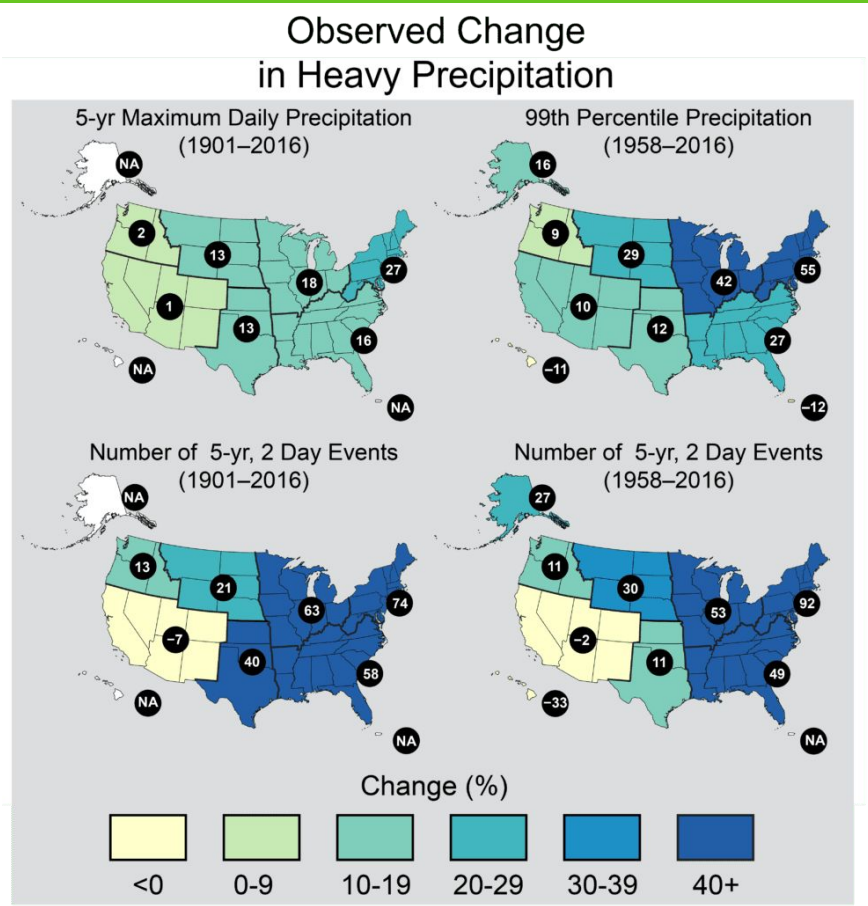
July 2025 Central Texas Heavy Rainfall Event, Flood



- Up to 20” of rainfall in several hours resulted in catastrophic flooding
- At least 100 fatalities and more than 100 still missing (17 JUL 2025), the deadliest inland flooding event in the USA since 1976
- Contributing Physical Factors
  - average recurrence interval of at least 100 years
  - Uneven topography in area with shallow soils
  - Event preceded by severe drought conditions

Heavy Rainfall Event Trends

Heavy rainfall events in the region have increased in recent decades and are projected to increase in the future



(USGCRP NCA5, 2023)

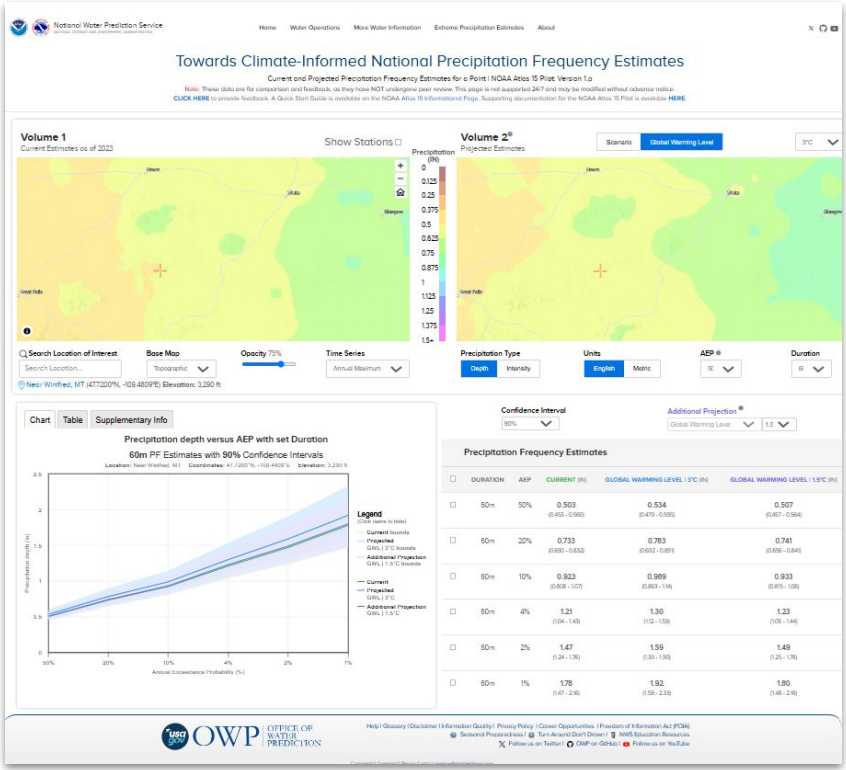
24-Hour Precipitation Totals (inches) for 2-100 Year Recurrence Intervals

Lansing, MI

	Recurrence Interval			
	2 Year	10 Year	50 Year	100 Year
TP 40 (1938-1957)	2.35	3.70	4.45	4.80
Huff and Angel (1948-1991)	2.35	3.25	4.45	5.25
NOAA Atlas 14 Vol. 8 (POR, 2013)	2.43	3.42	4.80	5.50
Future Projected 2071-2100 (Kunkel et al., 2021)	*2.98*	*4.26*	*6.08*	*6.99*

NOAA Atlas 15: New Precipitation Frequency Estimates

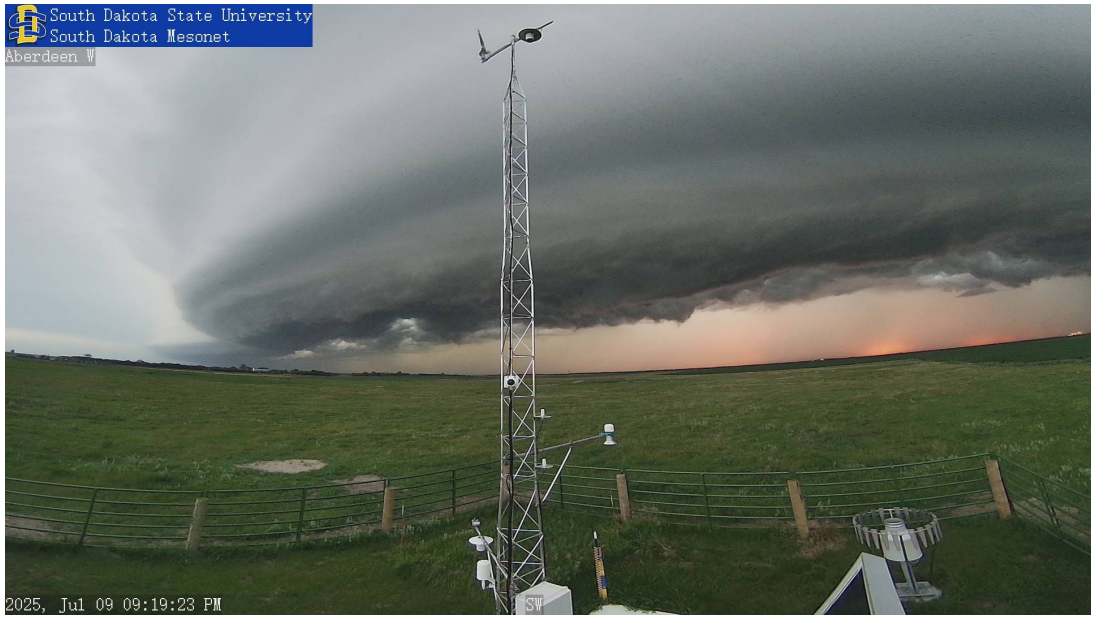
- A next-generation precipitation frequency (PF) study by NOAA's Office of Water Prediction
- NOAA Atlas 15 will:
  - Update the NOAA Atlas 14 precipitation frequency standard while **accounting for changing environmental conditions**
  - Provide estimates for the **entire U.S. and its territories**



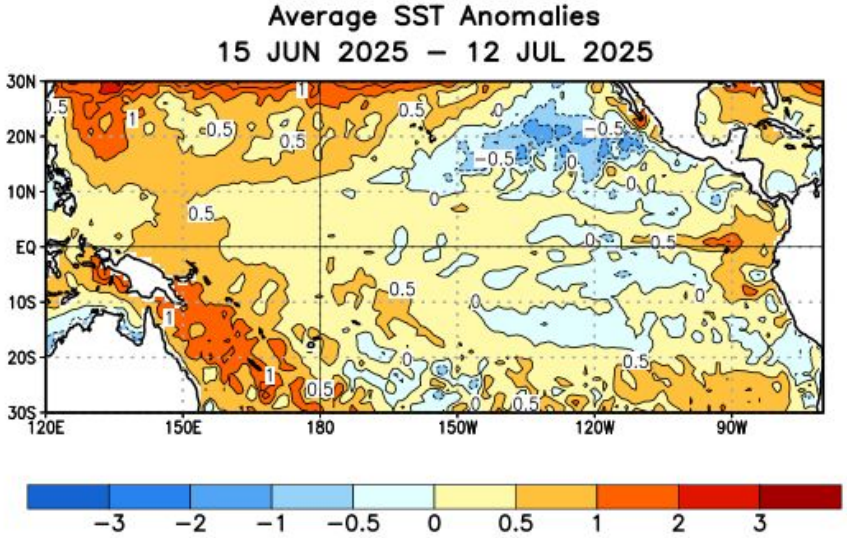
https://water.noaa.gov/about/atlas15

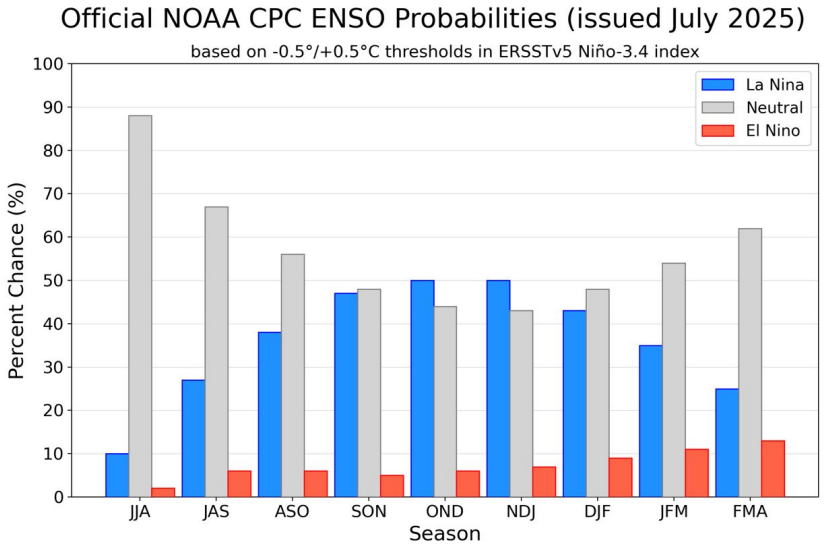
(Perica et al., 2025)

Outlooks



Supercell Thunderstorm
Aberdeen, SD
photo: SD Mesonet,
mesonet.sdstate.edu





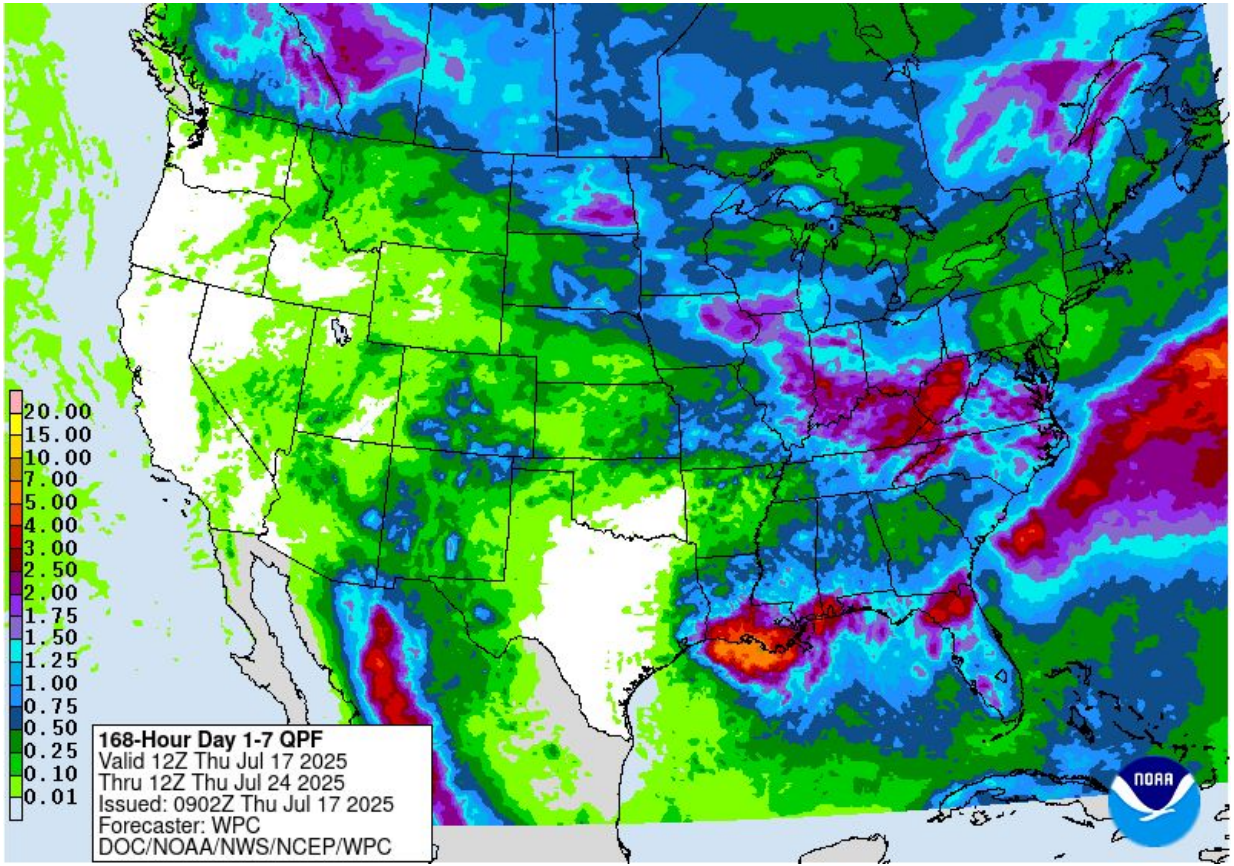
- ENSO currently neutral
- Equatorial sea surface temperatures (SSTs) are near average across most of the Pacific Ocean.

- ENSO-Neutral is likely in the Northern Hemisphere summer 2025
- Odds of La Niña conditions increase into the fall and winter 2025-26, but remain comparable to ENSO-neutral.

Source: https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.ppt

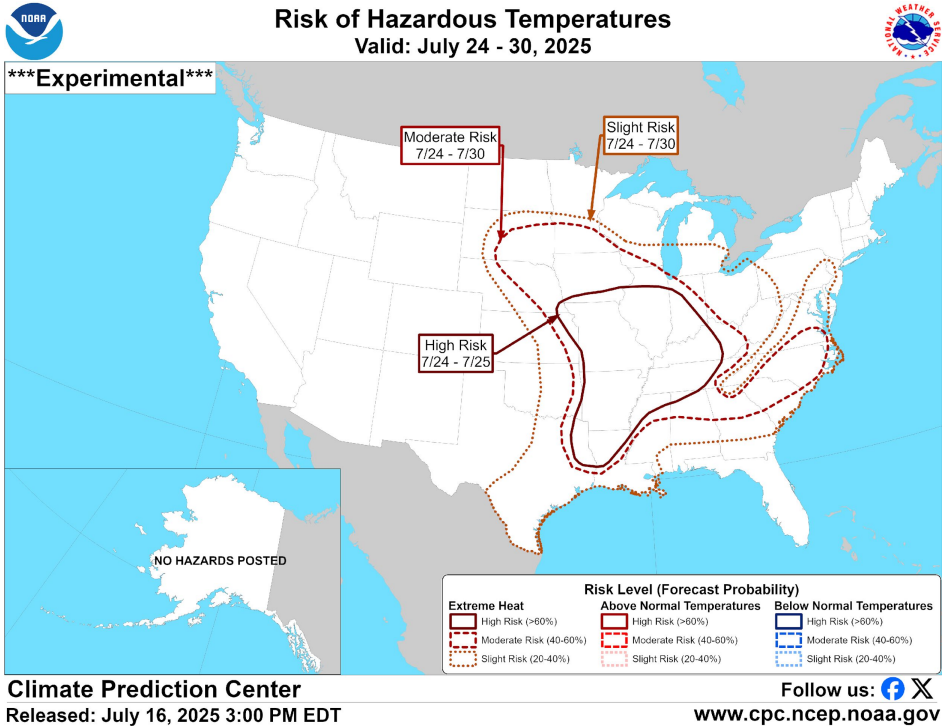
NOAA NWS Forecast 7-Day Precipitation Totals

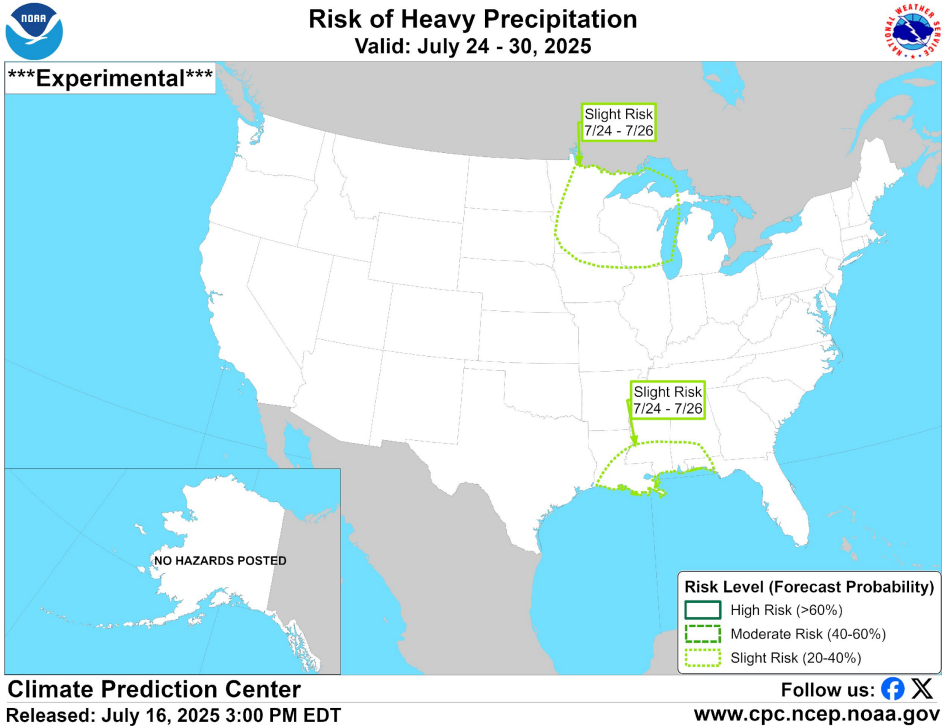
8AM Thu JUL 17th - 8AM Thu JUL 24th 2025



Source: https://www.wpc.ncep.noaa.gov/#

NOAA CPC Hazards Outlook
24-30 JUL 2025

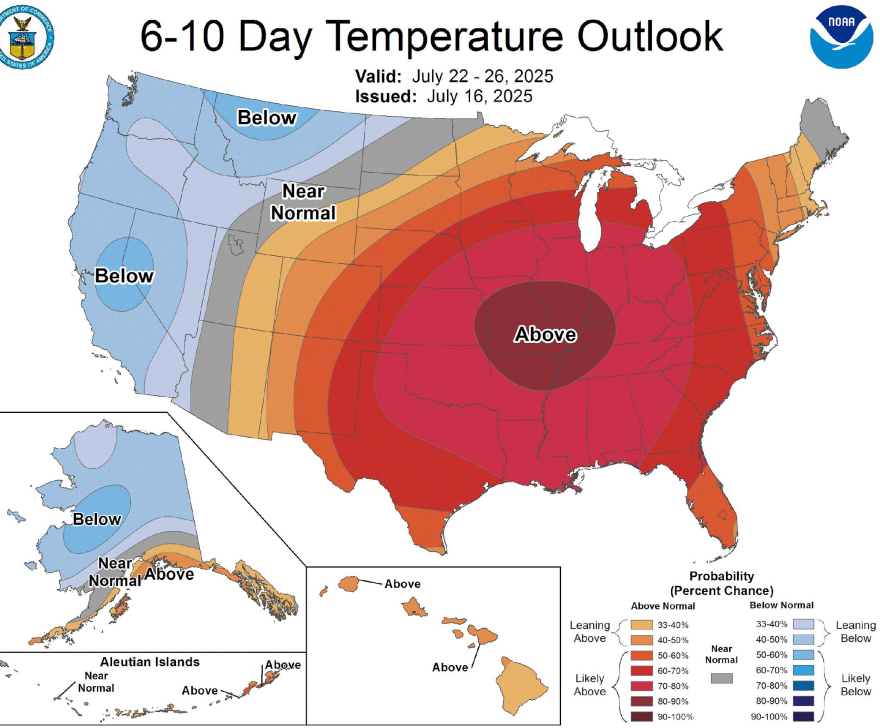


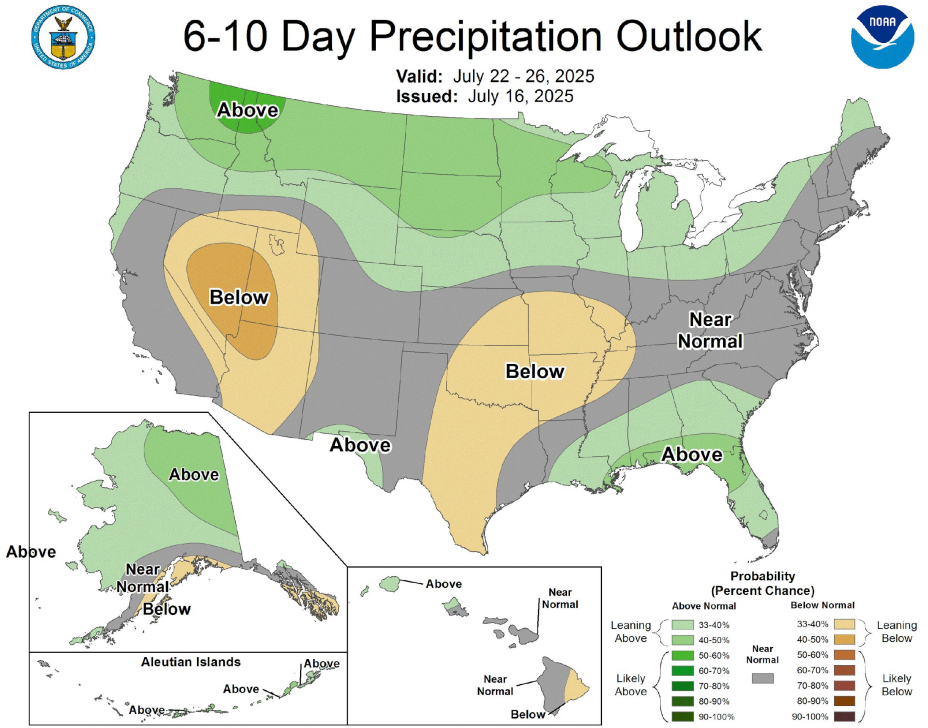


Source: https://www.cpc.ncep.noaa.gov

NOAA CPC 6-10 Day Outlook

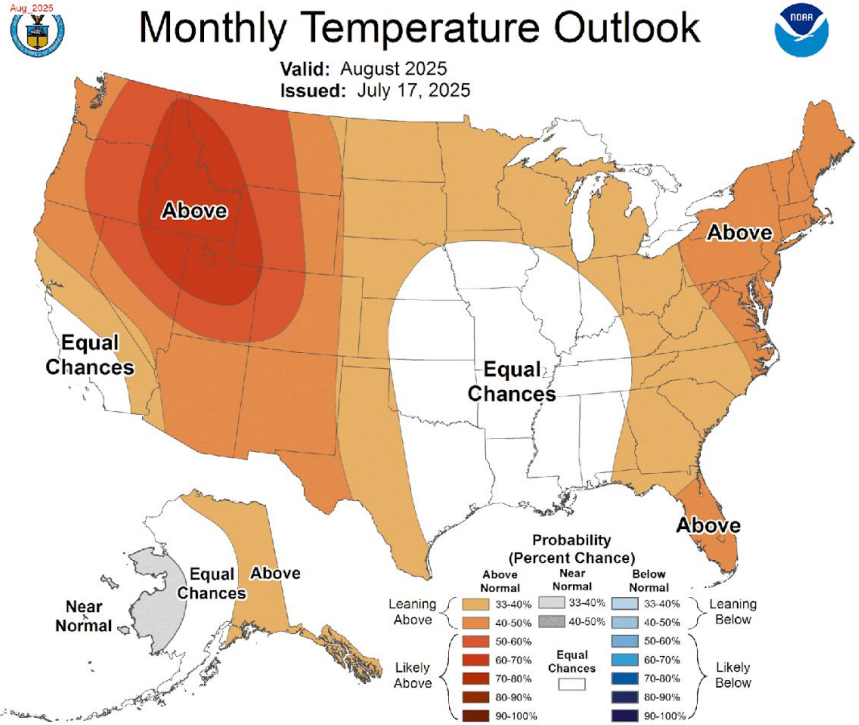
JUL 22-26, 2025

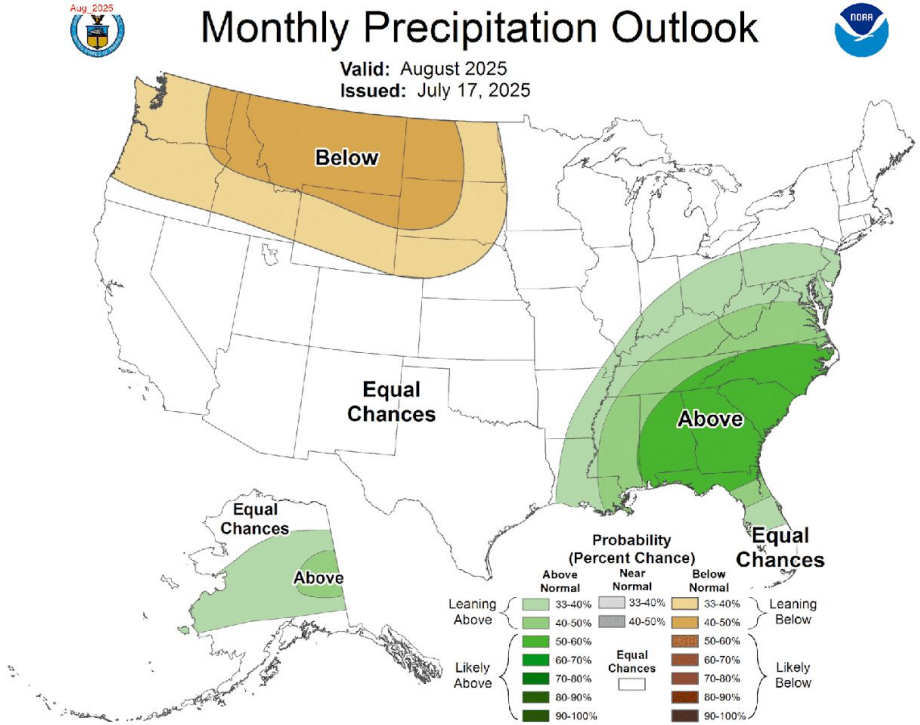




NOAA CPC Monthly Outlook

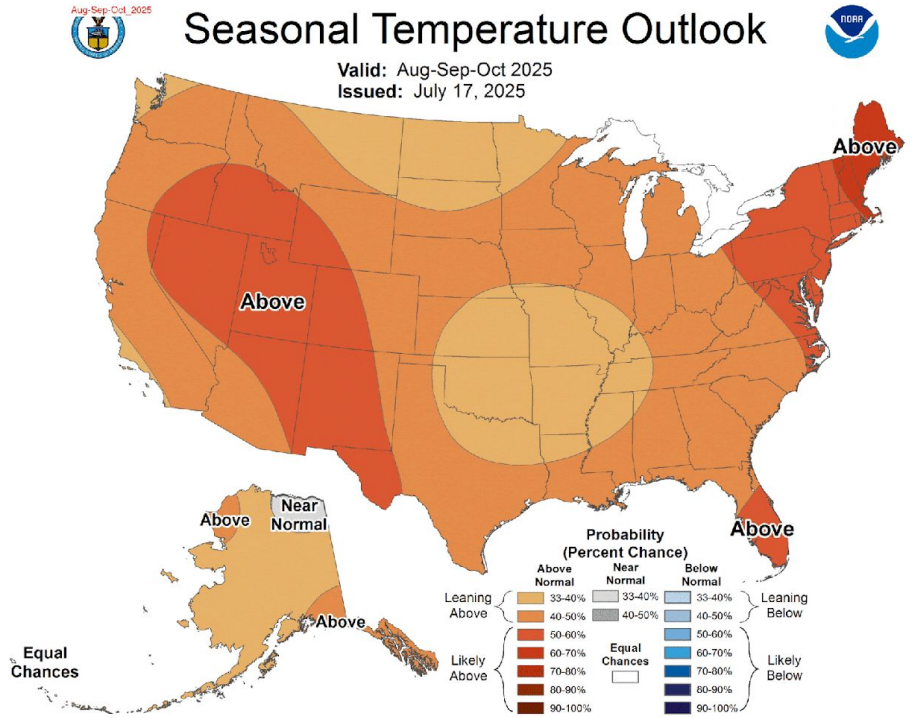
AUG, 2025

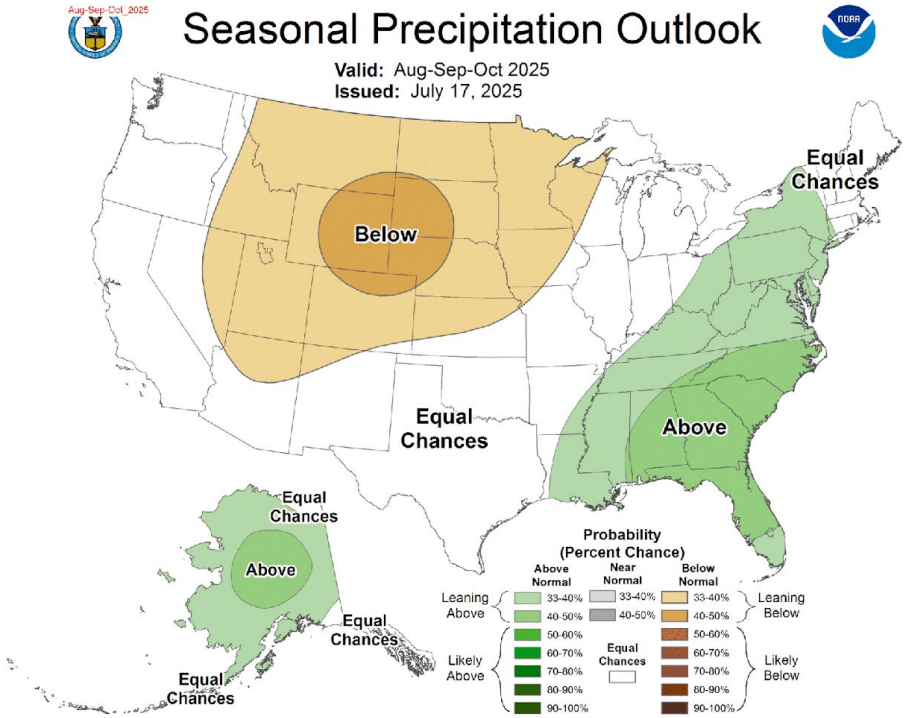




NOAA CPC Seasonal Outlook

AUG-OCT, 2025

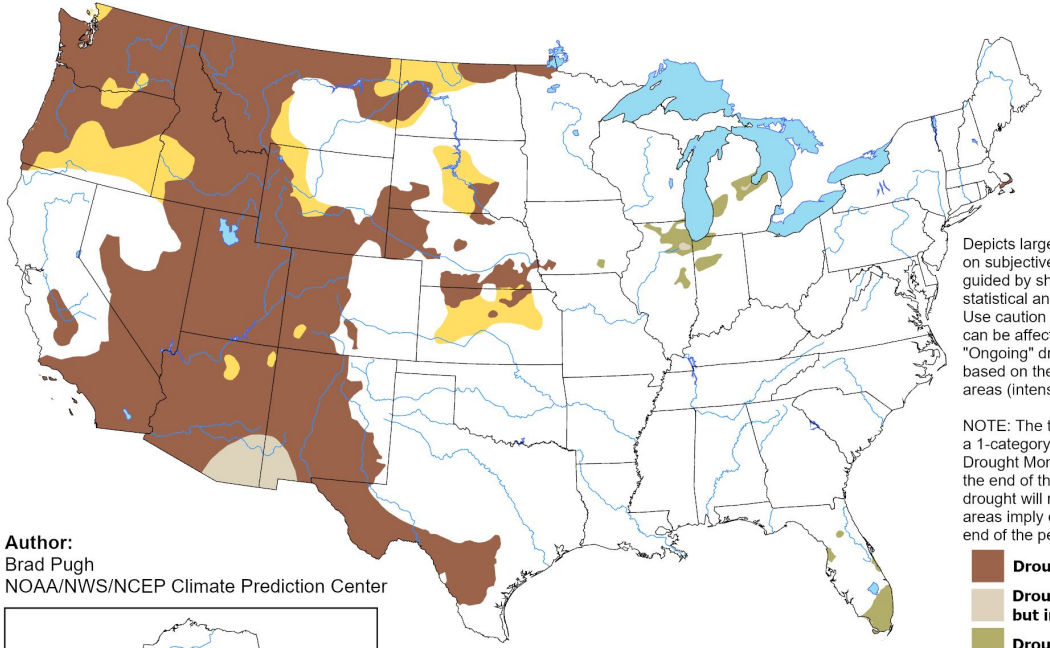




U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for July 17 - October 31, 2025
Released July 17, 2025



Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- **Drought persists**
- **Drought remains, but improves**
- **Drought removal likely**
- **Drought development likely**
- **No drought**

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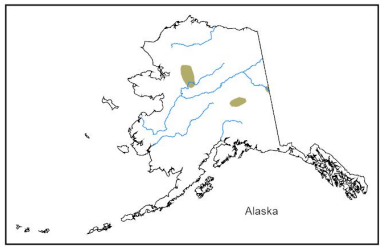

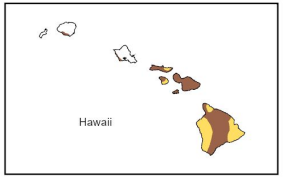

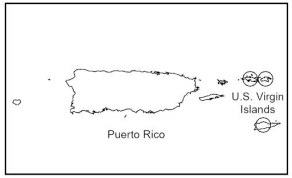

https://go.usa.gov/3eZ73

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- http://www.hprcc.unl.edu/webinars.php

- **State Climatologists/AASC:** http://www.stateclimate.org
- **NOAA's National Centers for Environmental Information:** https://www.ncei.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/
- **Regional climate centers:** http://mrcc.purdue.edu and http://www.hprcc.unl.edu

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Thank
You!
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