North Central U.S. Climate-Drought Outlook

September 15, 2022

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South Dakota State Fire Meteorologist

Associate Professor of Practice

South Dakota School of Mines and Technology

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General Information

Photo submitted by CMOR user, retrieved via go.unl.edu/cmor_drought, accessed 9/14/22

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

- **Next Regular Climate/Drought Outlook Webinar**
  - October 20, 2022 (1 PM CST)
    - **Laura Edwards – South Dakota State Climatologist, South Dakota State University Extension**
    - **Brad Rippey – USDA Meteorologist**
      - Will heavily focus on agriculture and harvest

- **Access to Future Climate Webinars and Related Information**
- www.drought.gov/drought/content/regional-programs/regional-drought-webinars
- **Access to Past Climate Webinars**
- https://mrcc.purdue.edu/multimedia/webinars.jsp
- *www.hprcc.unl.edu/webinars.php*

USDA United States Department of Agriculture Midwest Climate Hub

AASC AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS

NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

Regional Climate Centers

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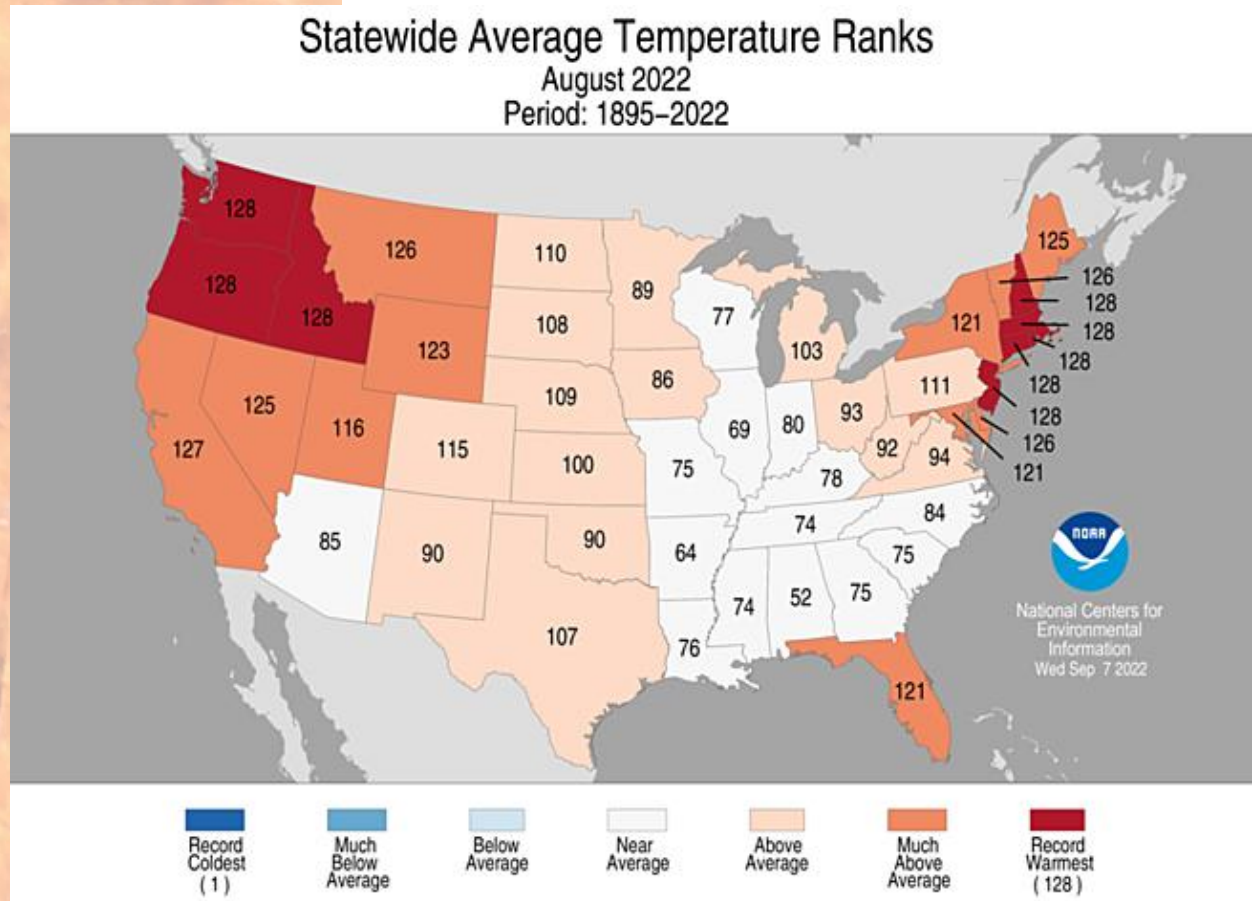
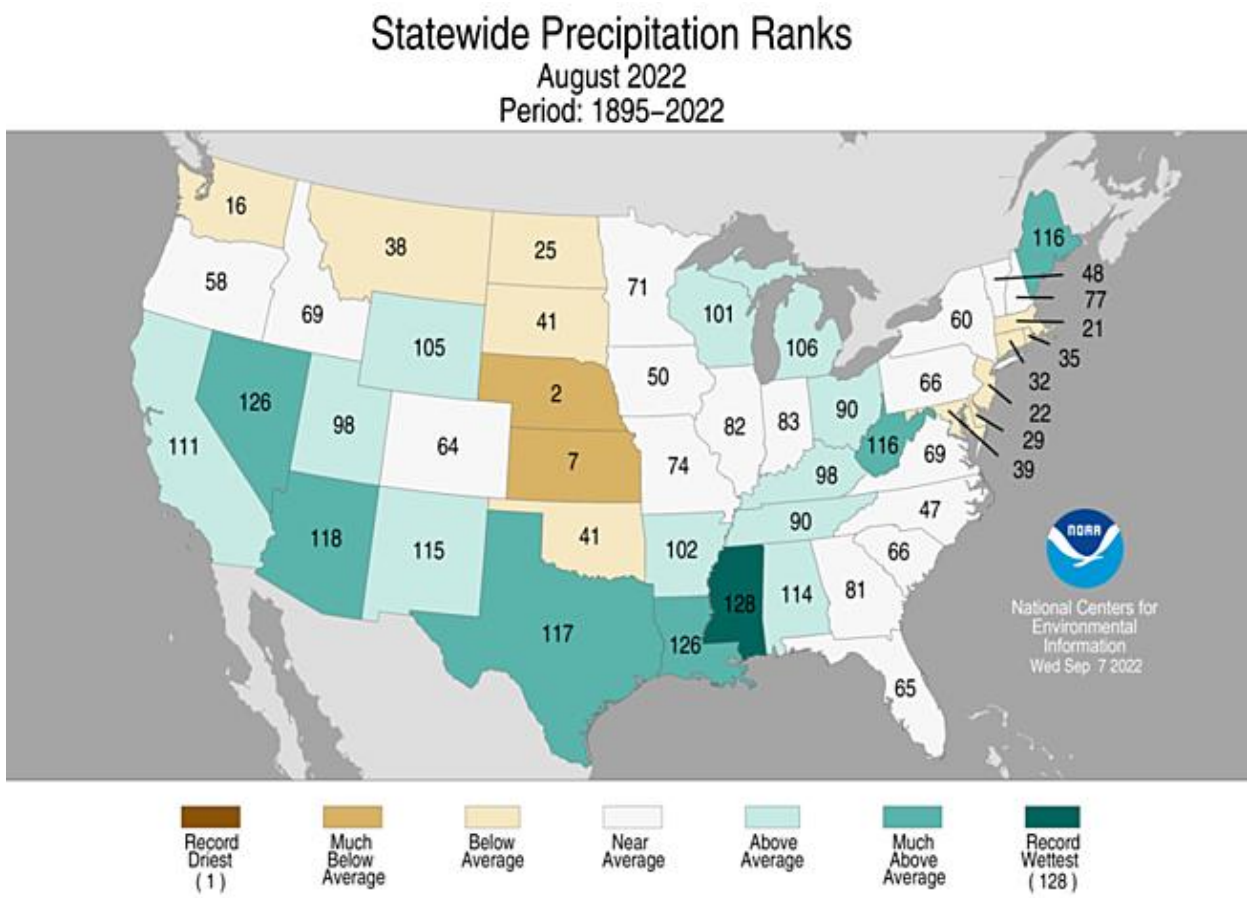
Agenda

- Current/Recent Past Conditions
- Regional Impacts
- Agricultural and Hydrologic Concerns
- Wildfires/Smoke
- US Drought Monitor
- Outlooks
- Questions

Kidder County, ND near Tuttle on 9/11/22. Photo: NDSU Extension.

August Climatology





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

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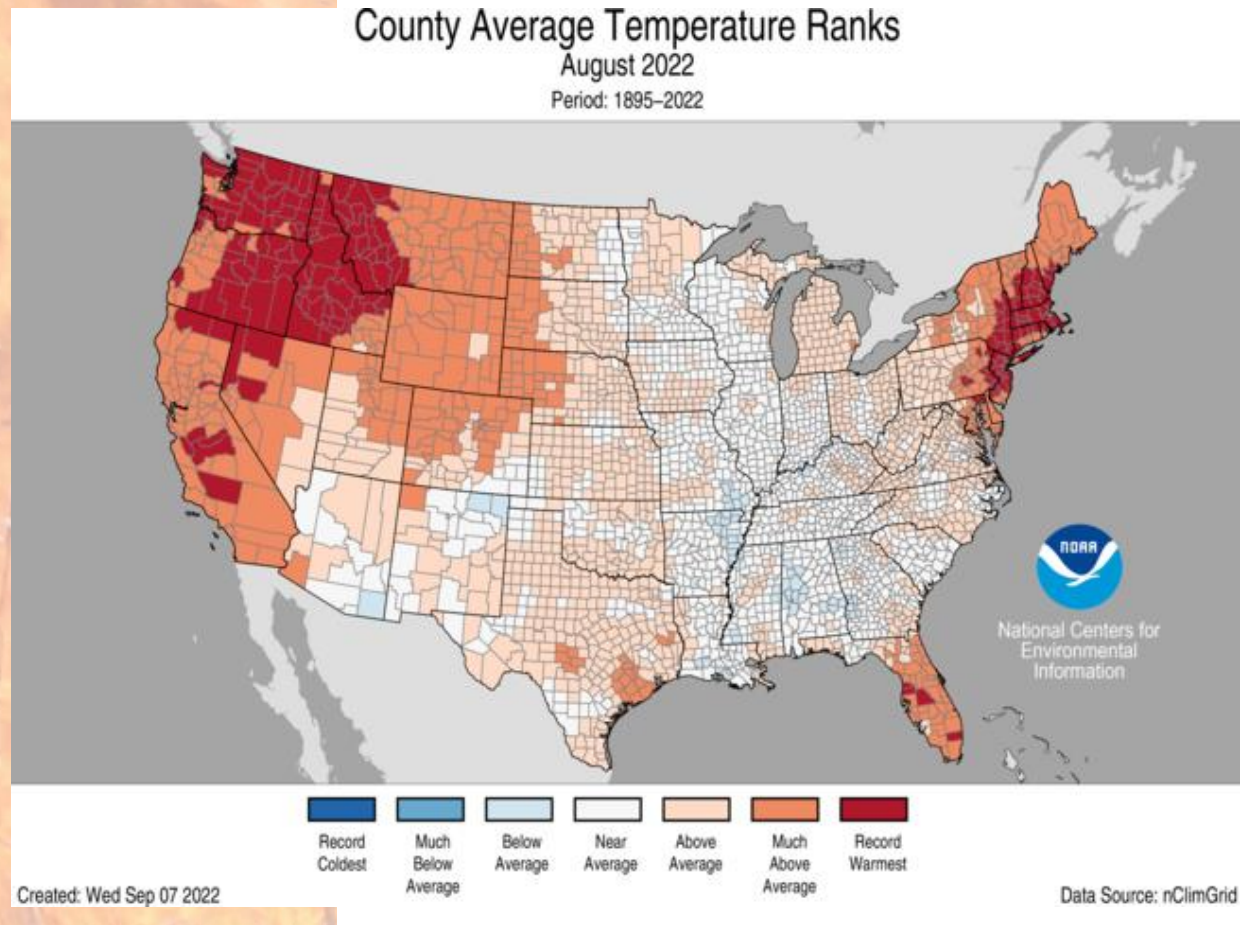
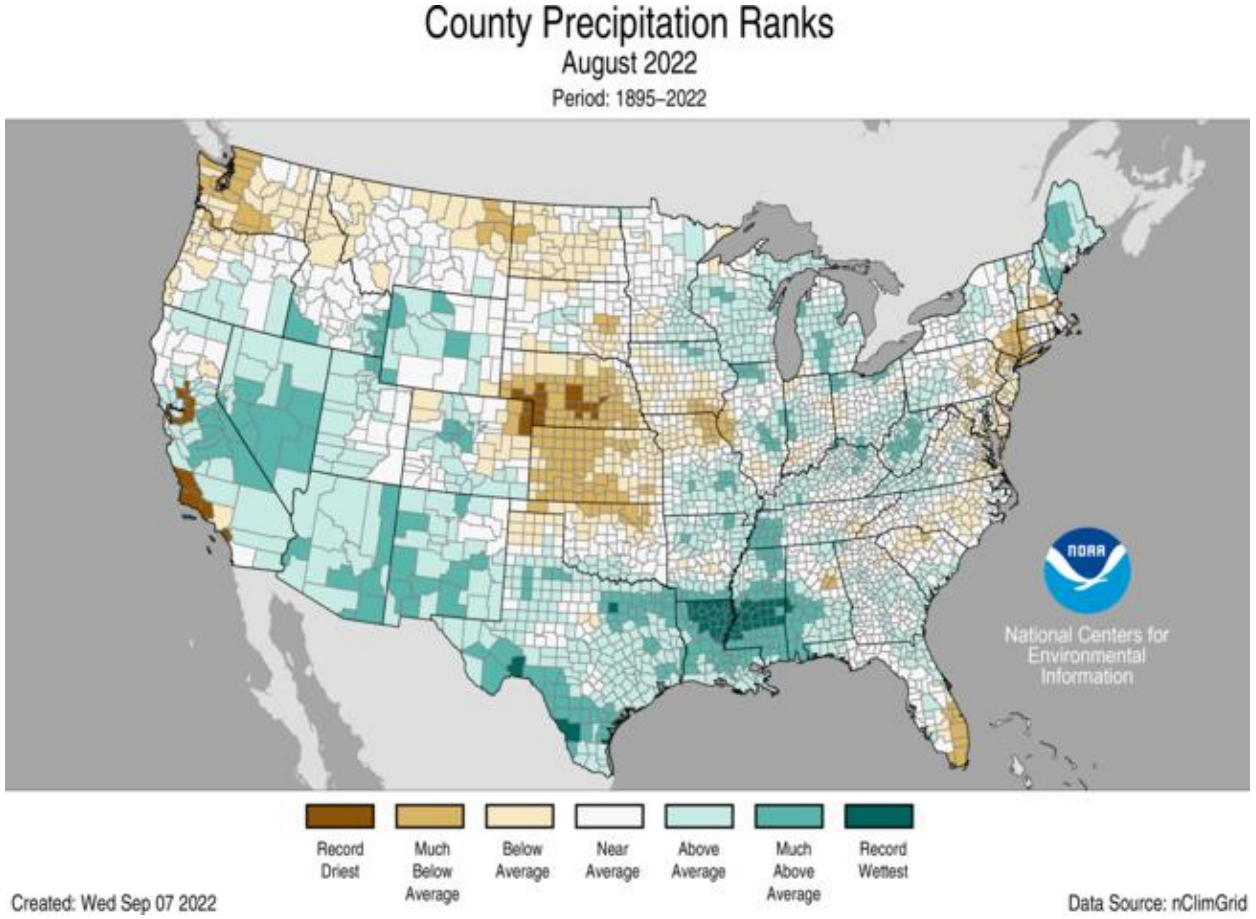
August Climatology





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

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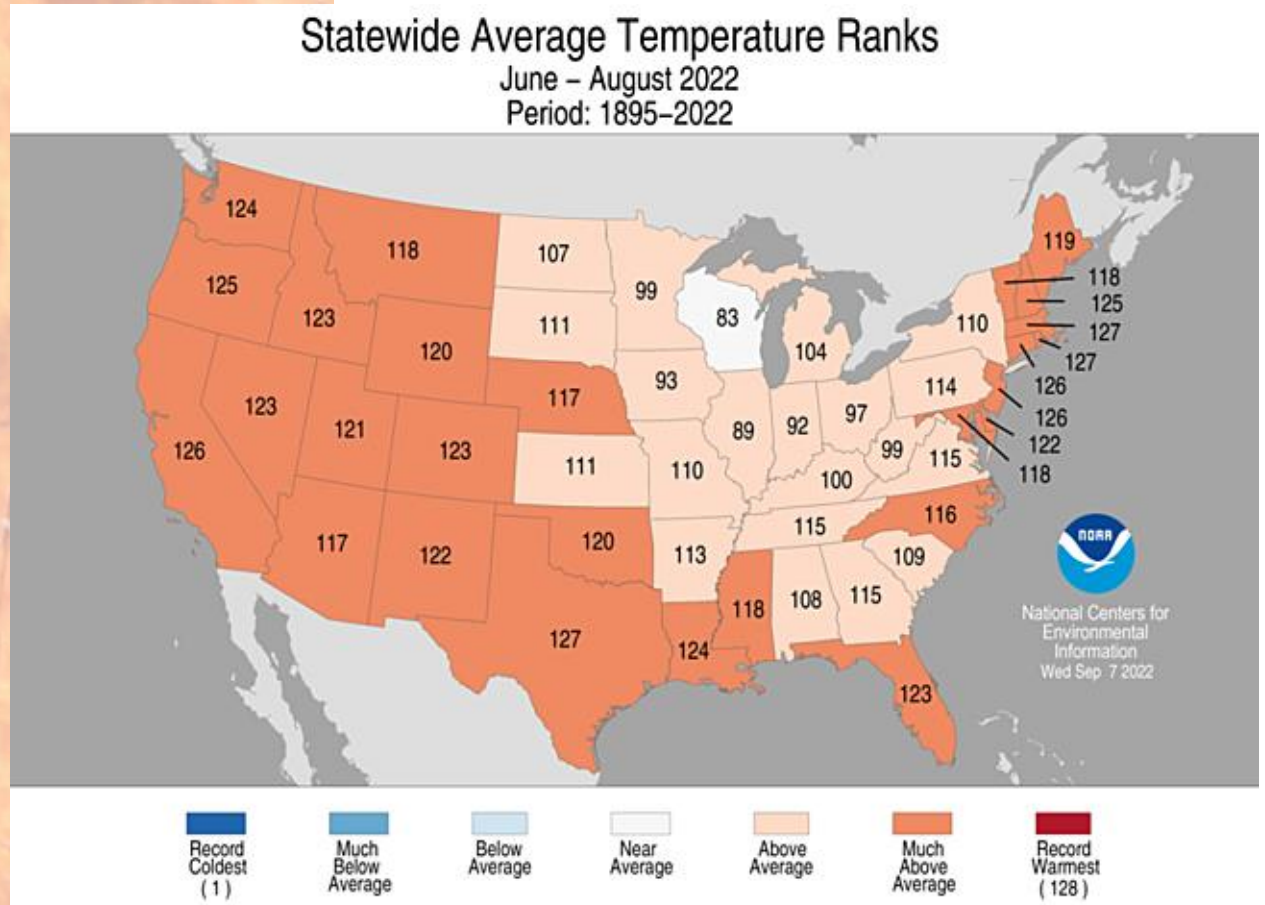
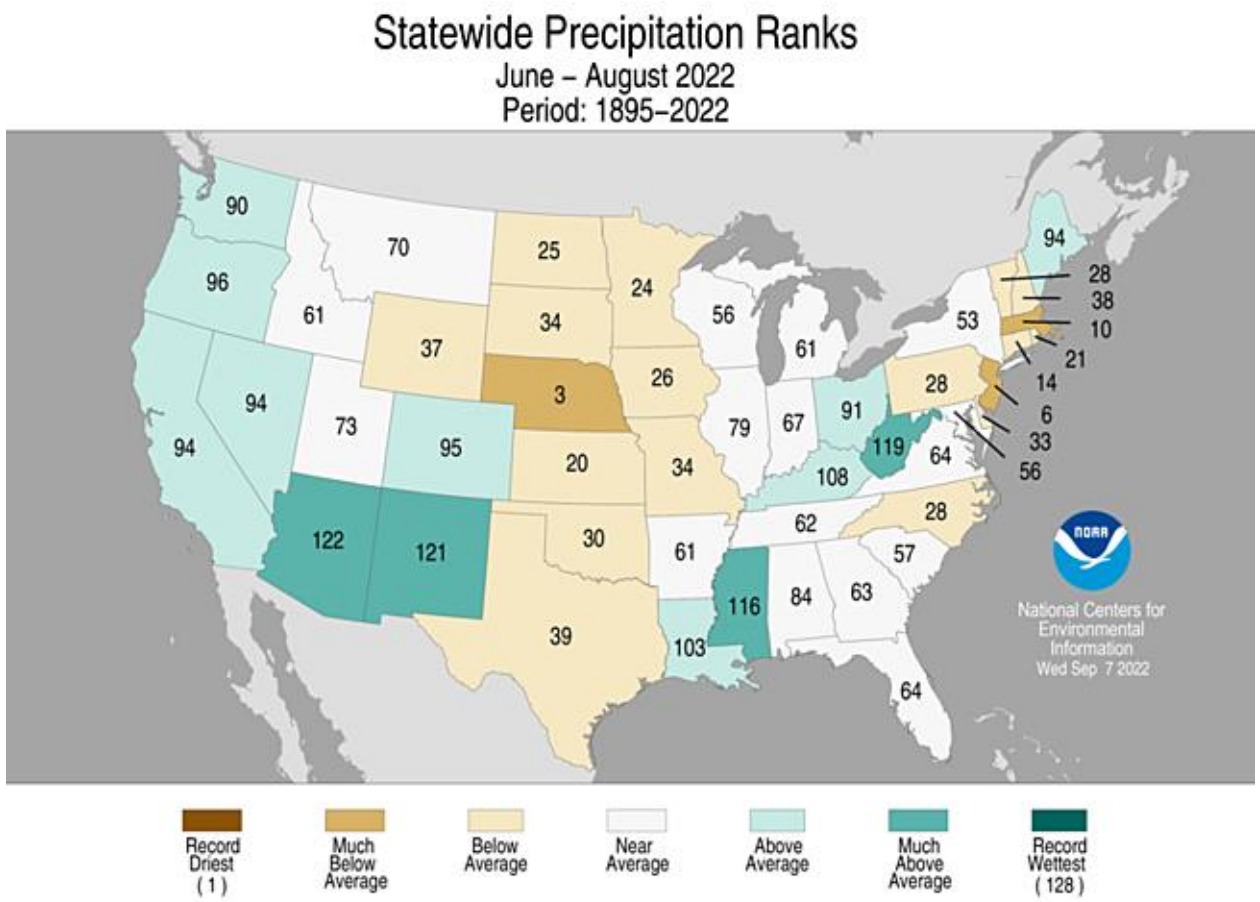
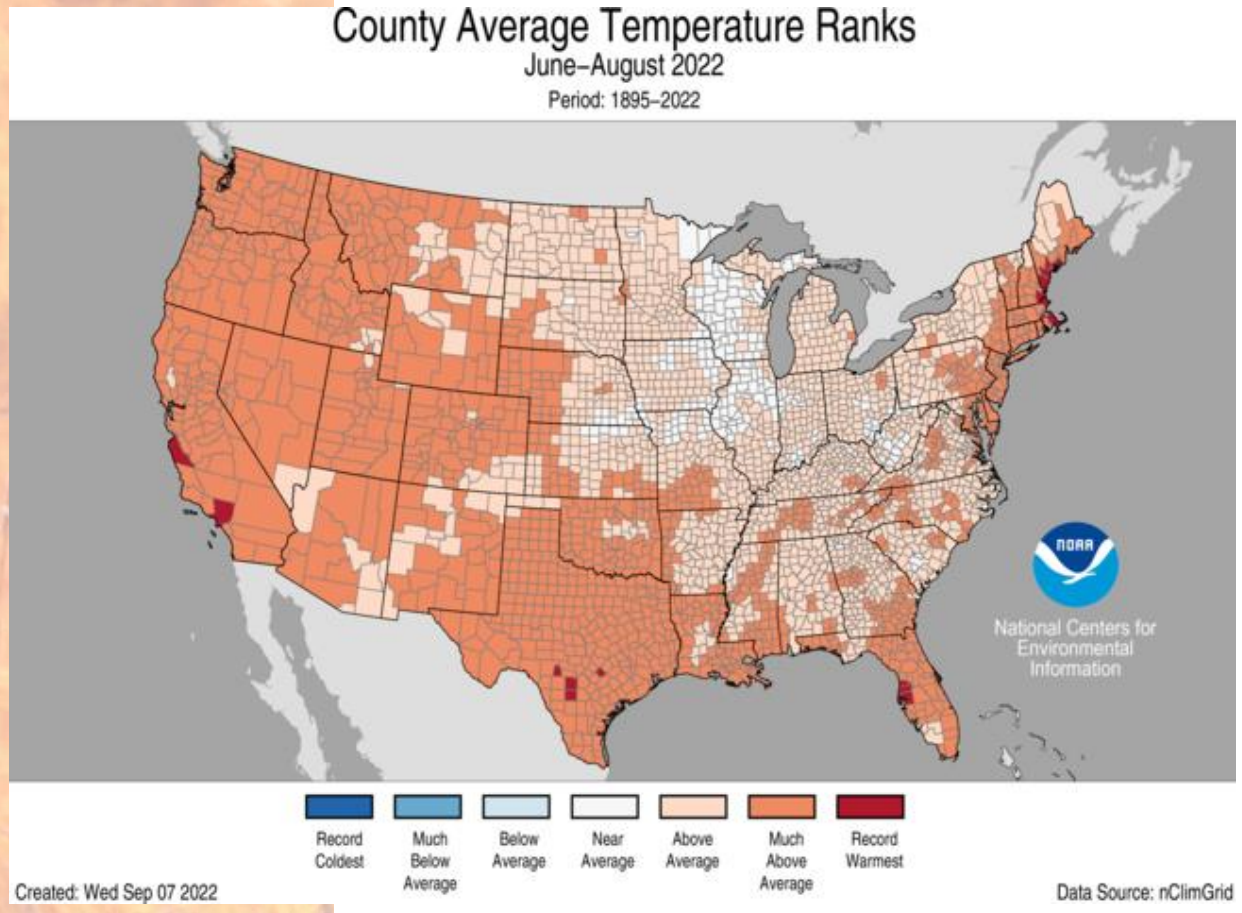
3-month Climatology

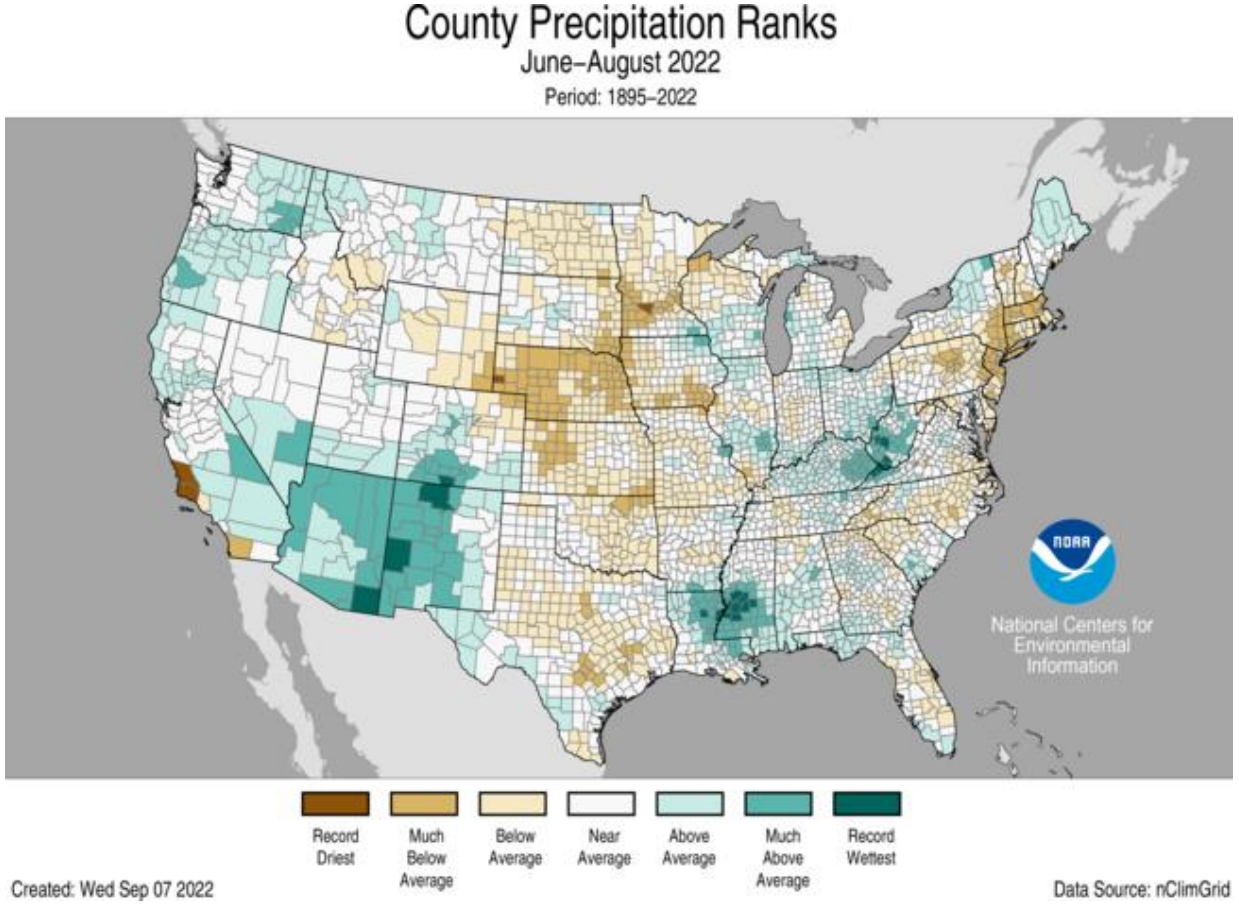




https://www.ncei.noaa.gov/access/monitoring/monthly-report/

3-month Climatology





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

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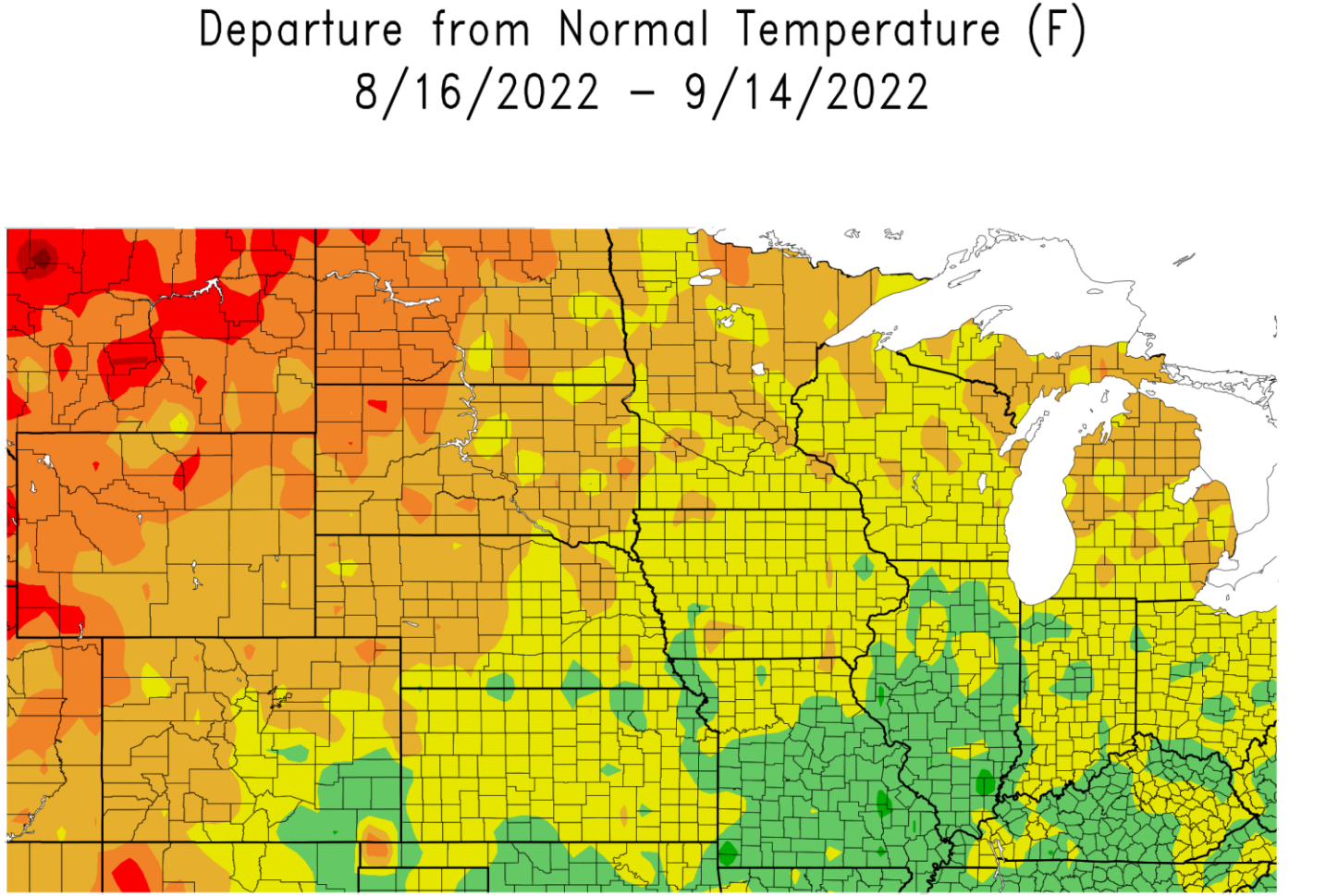
30-Day Temperature Departure



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

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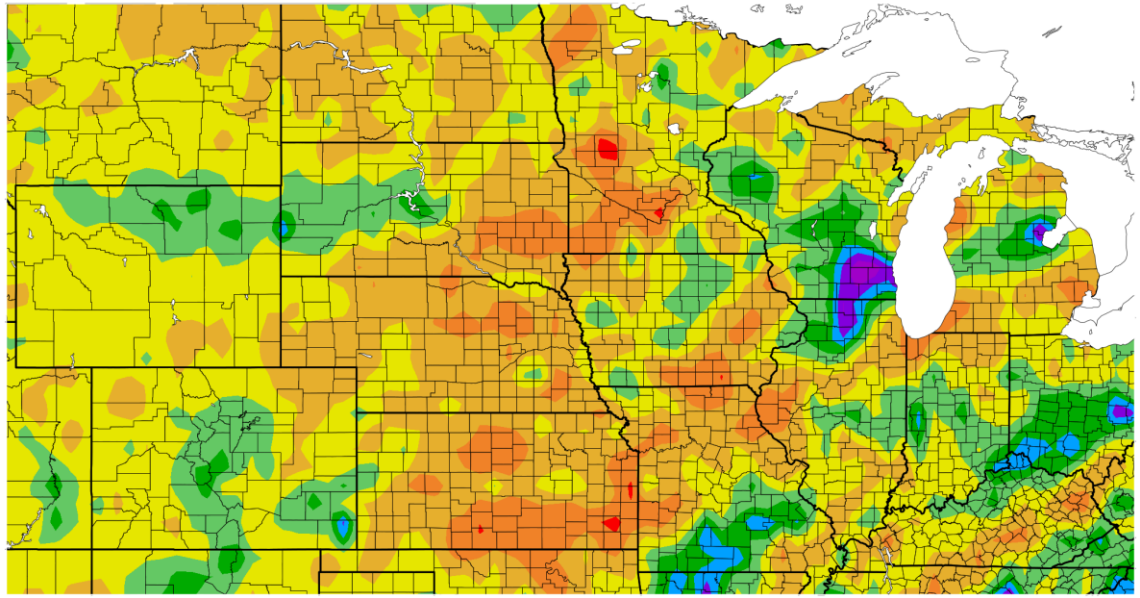
30-Day Precipitation Deficits and Percentages

Departure from Normal Precipitation (in)
8/16/2022 – 9/14/2022

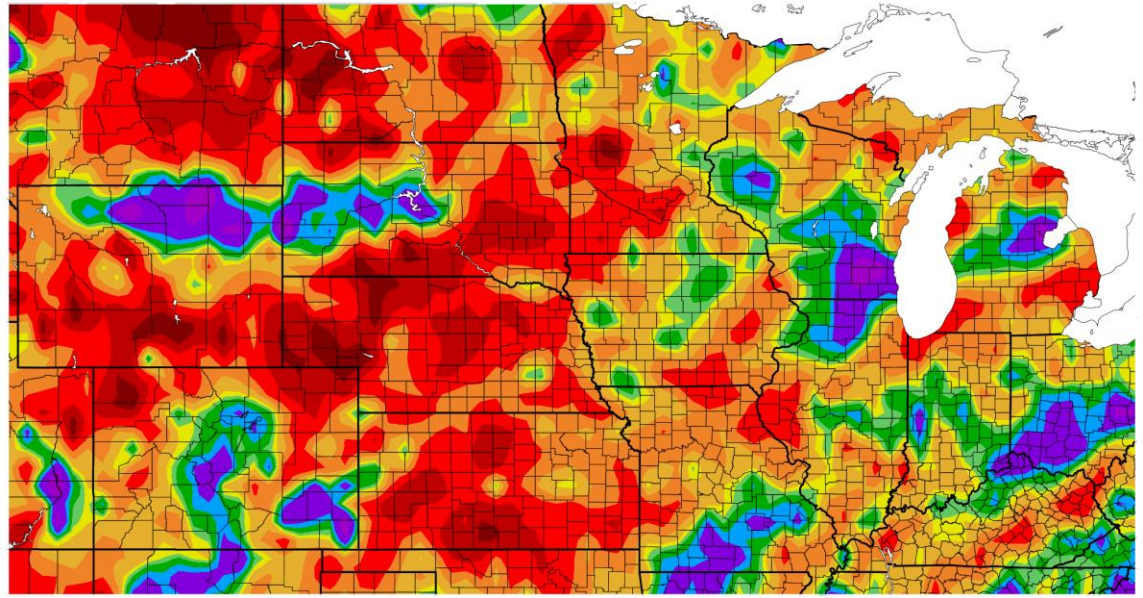


−5 −4 −3 −2 −1 0 1 2 3 4 5

Generated 9/15/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
8/16/2022 – 9/14/2022



5 25 50 70 90 100 110 130 150 200 300

Generated 9/15/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

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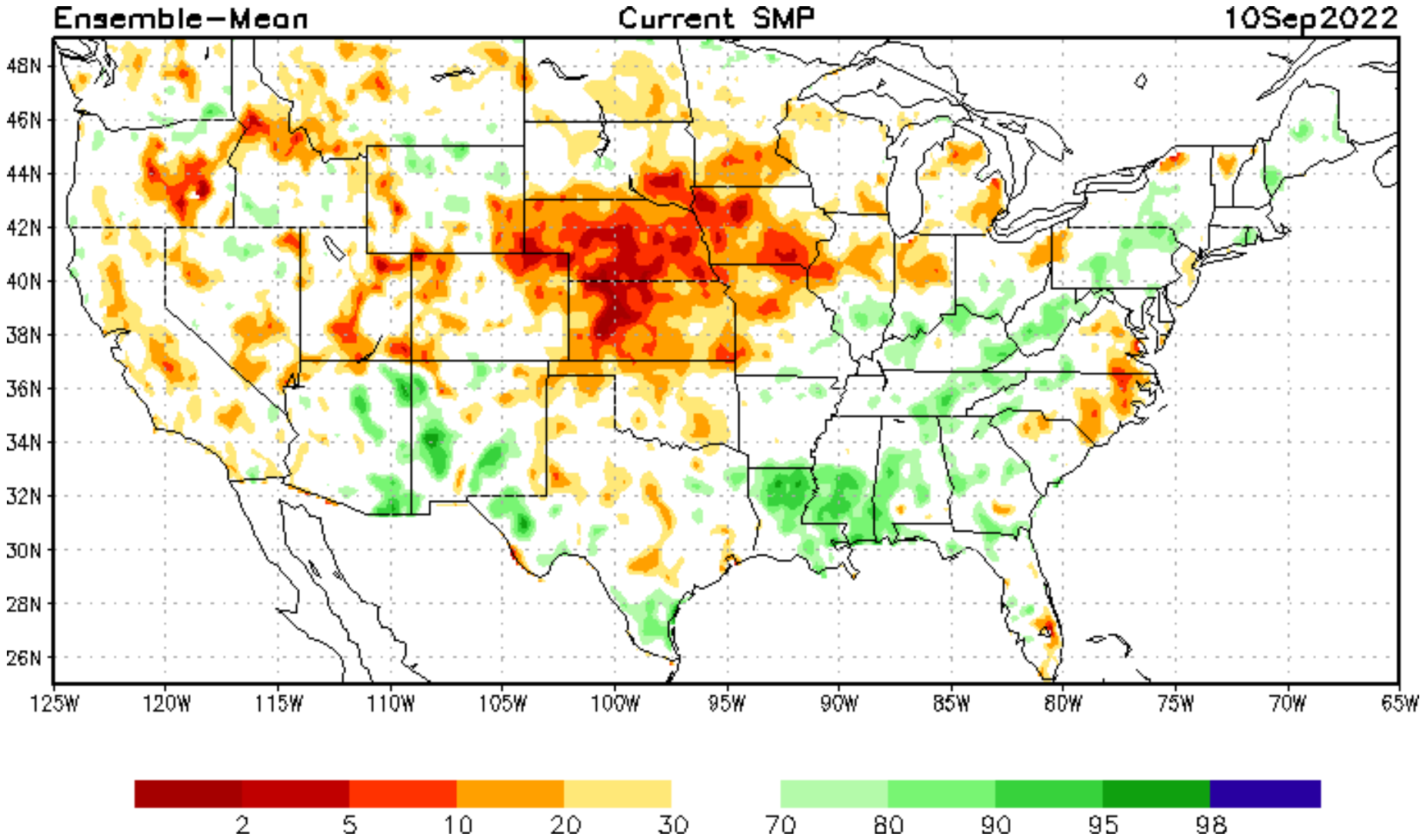
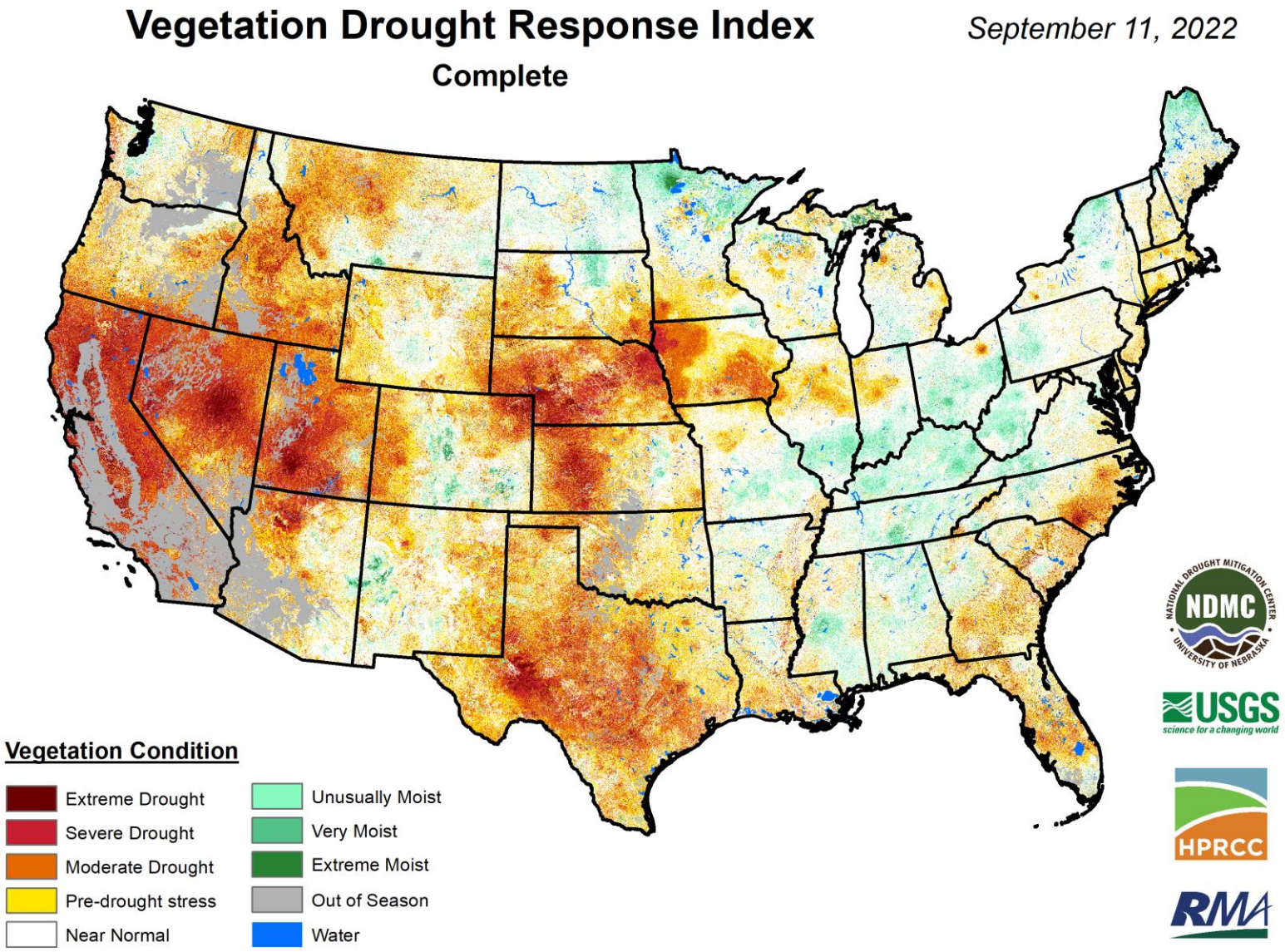
Soil Moisture Anomalies



https://www.cpc.ncep.noaa.gov/products/Drought/Monitoring/smp_new.shtml#

Vegetation Response Drought Index (VegDri)



https://vegdri.unl.edu/

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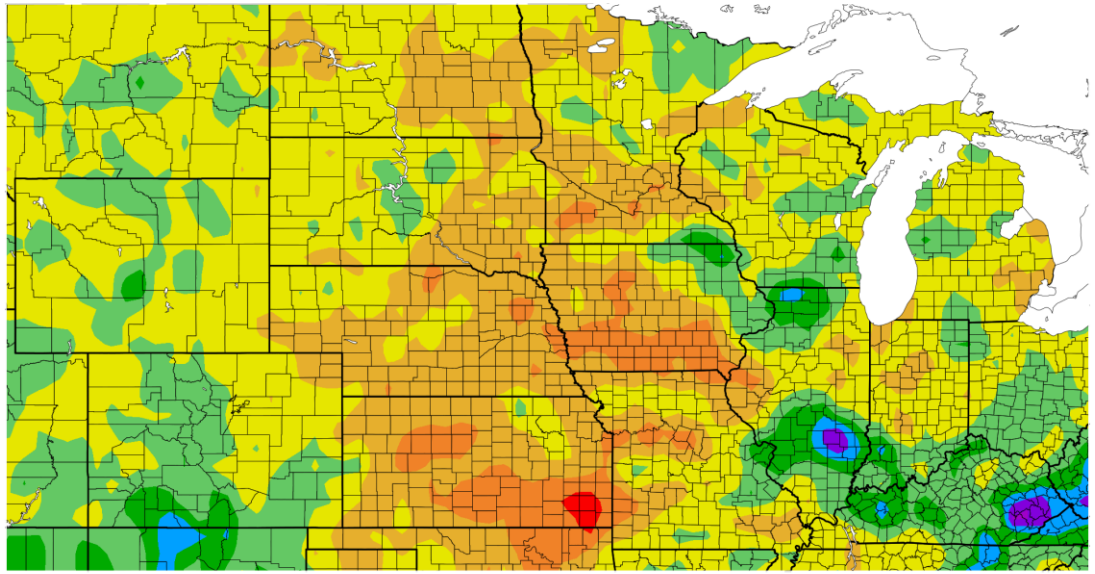
90-Day Precipitation Deficits and Percentages

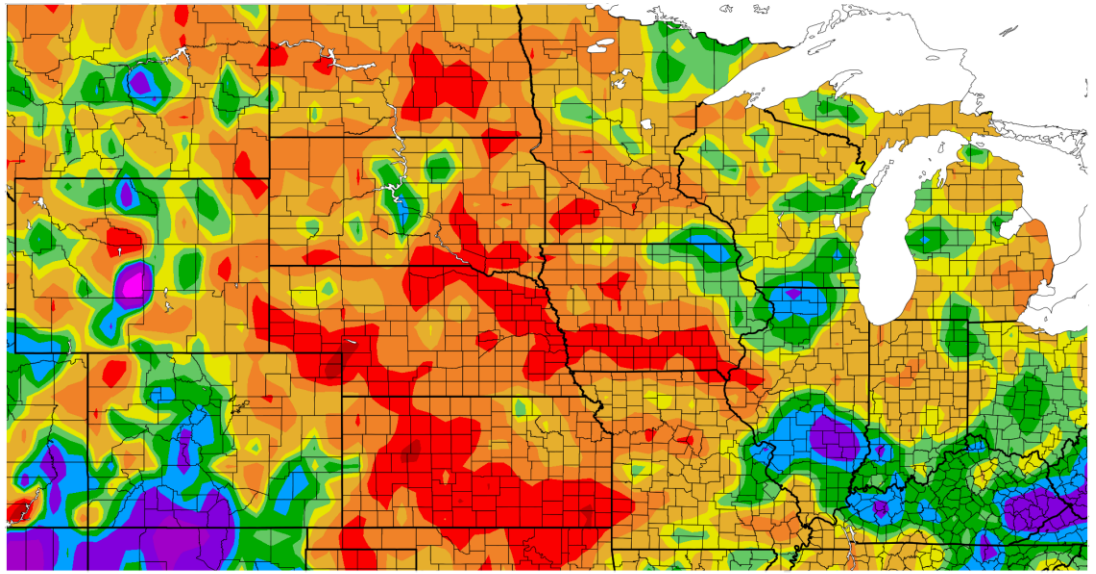
Departure from Normal Precipitation (in)
6/17/2022 – 9/14/2022



Generated 9/15/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
6/17/2022 – 9/14/2022



Generated 9/15/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

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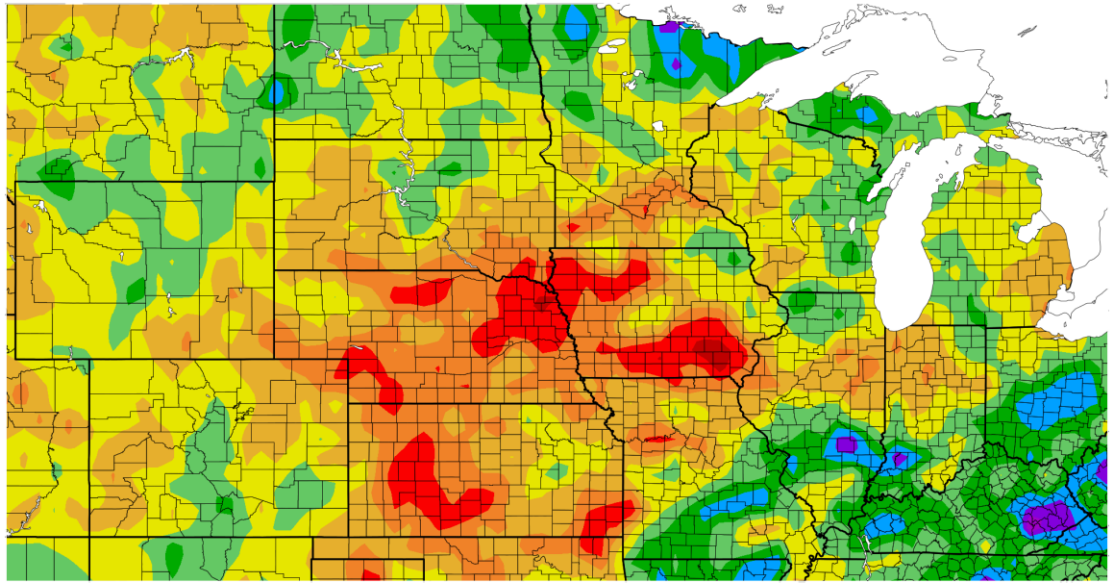
Year-to-Date Precipitation Deficits and Percentages

Departure from Normal Precipitation (in)
1/1/2022 – 9/14/2022

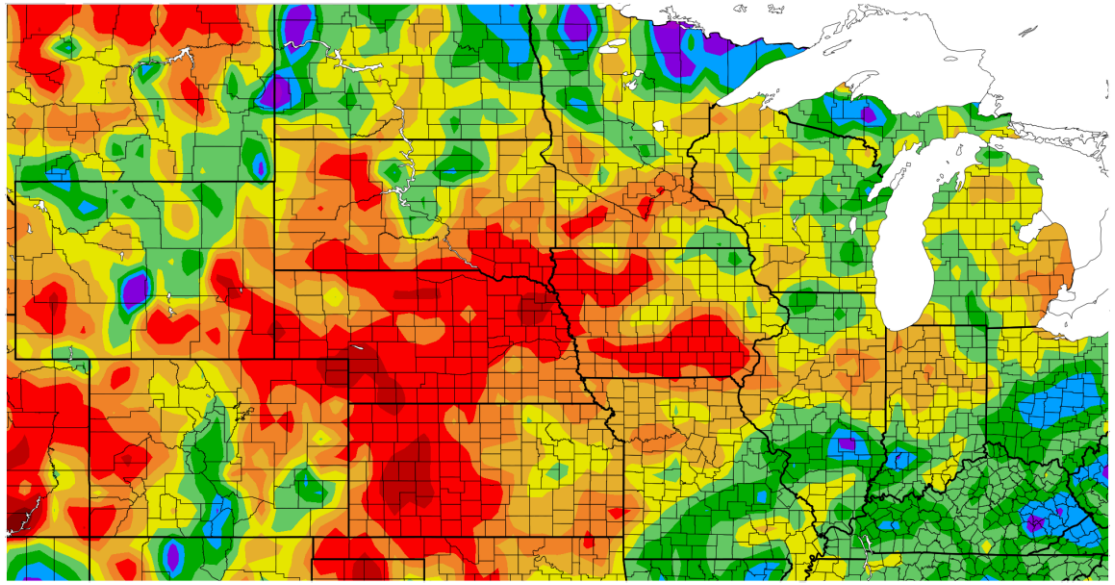


−15 −12 −9 −6 −3 0 3 6 9 12 15

Generated 9/15/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
1/1/2022 – 9/14/2022



25 50 70 80 90 100 110 120 130 150 175

Generated 9/15/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

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Regional Impacts

- Missouri River Basin
  - Rapidly drying over western ND
    - Grasshopper infestation
    - Water quality issues in stock ponds. Algal blooms/cyanobacteria and high concentrations of salts.
  - Southeastern SD: as bad as 2012 or close to it
    - D3 and degrading, east in general is drying down, and southcentral
  - No current issues to planting of winter wheat
  - Pheasant numbers are up

Rapid City, SD. Photo: Darren Clabo

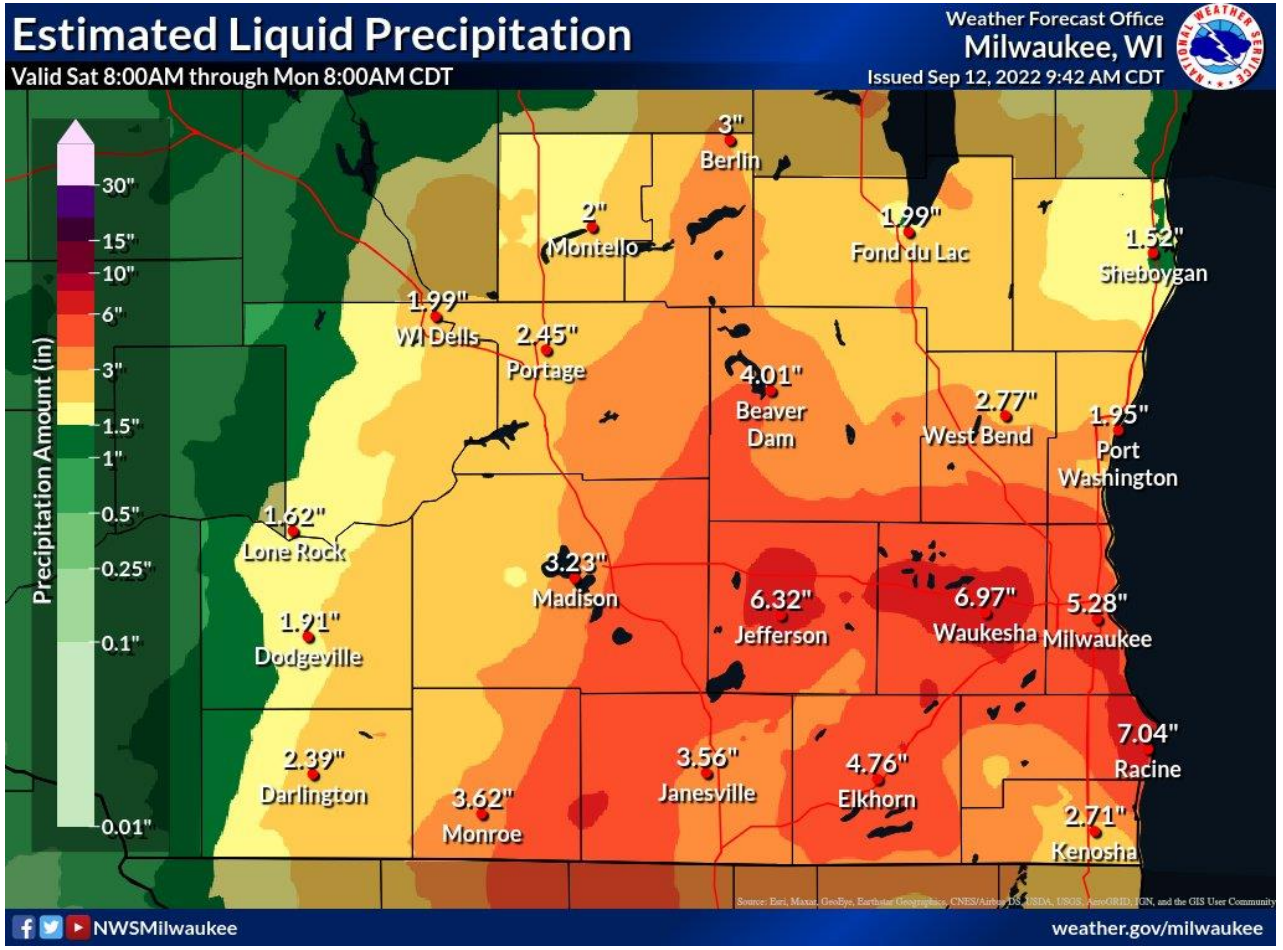
Regional Impacts

Central IA corn. Photo: Dennis Todey

- Midwest
  - Minnesota pheasant numbers 15-18%
    - Oak tree deaths due to two-lined chestnut borer
  - Southeastern IA: producers hauling water with drying stock ponds
    - Lack of forage production
      - Only 1 cutting of hay versus 2 or 3
      - Depletion of winter feed supply
    - Northeastern IA in much better shape
  - Flooding
    - Southeastern IN: 1 fatality in swept away house.
      - Jefferson County, 5-8 inches of precipitation in first week of September

Regional Impacts

- Midwest
  - Big rain event (Milwaukee, WI area and west)
    - 48-hour rainfall over 7 inches in places



https://twitter.com/NWSMilwaukee/status/1569350076107194368?s=20&t=97-rQiUAp2mn7GF1SGel_g

Regional Impacts

- Midwest
  - Great year for pumpkins!
  - Tree fruits tending to be smaller but are showing sign of concentrated sugars—more flavor!
  - Recent moisture is leading to tar spot and powdery mildew

https://www.ers.usda.gov/newsroom/trending-topics/pumpkins-background-statistics/

Regional Impacts

- Central Plains
  - Charcoal rot prevalent in soybeans in KS
    - Soybeans in SW are doing OK, southcentral have been baled
  - Grasshopper issues with the wheat
  - Corn worries, harvest is weak due to drought
    - Wind issues could be problematic with knocking corn down
    - Too dry for silage
  - Widespread sorghum failure
  - Dodge City had 95 days of 90-degree weather, 2nd highest (2011)
    - 33 days of 100+
  - South central NE reporting drought-stressed corn with toxic levels of nitrates in stalks
    - McCook: Driest summer in the last 100 years

Sad-looking corn from Greeley County in far western Kansas. From UNL CMOR.

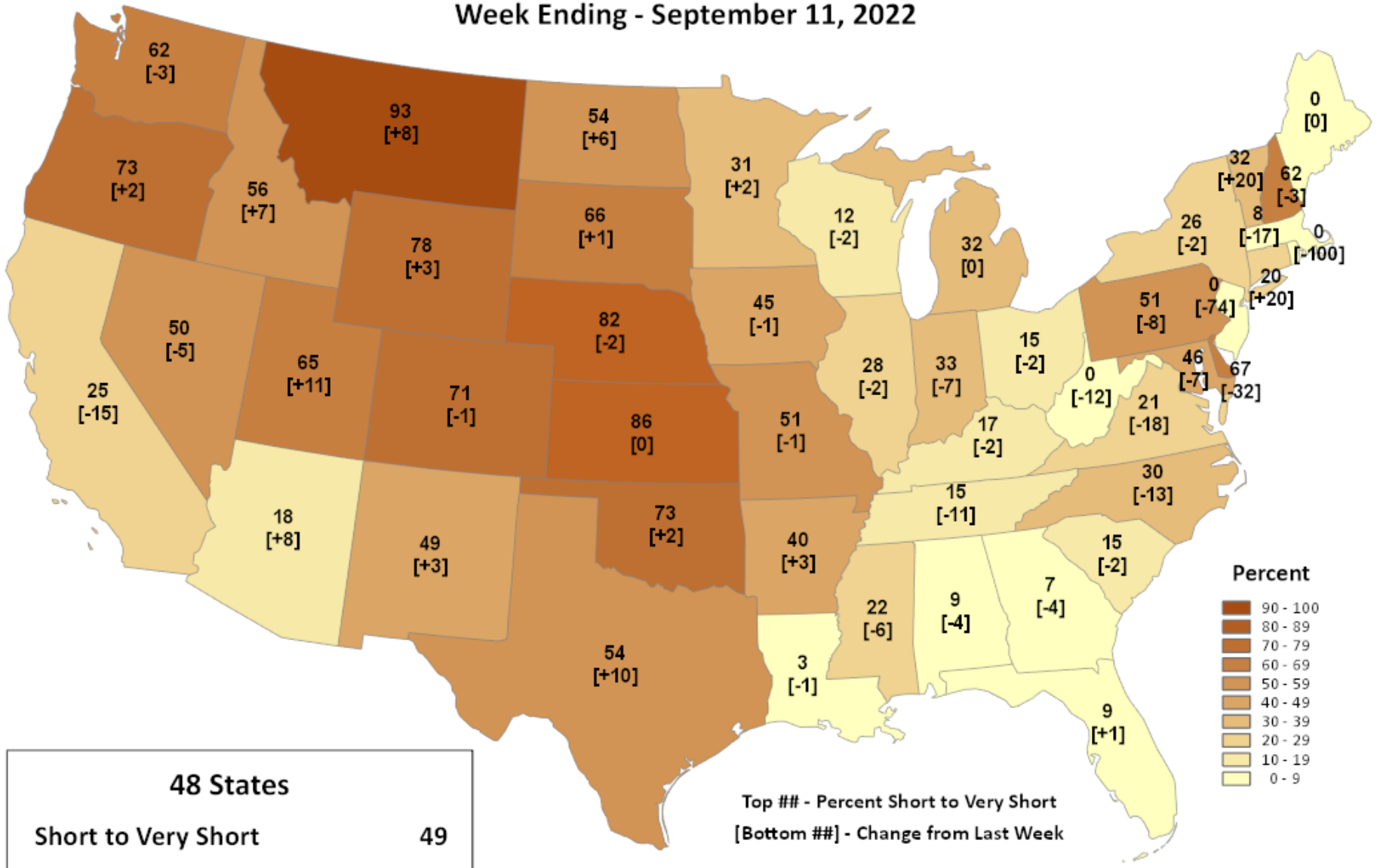
United States Department of Agriculture

This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)

Topsoil Moisture

Percent Short to Very Short

Week Ending - September 11, 2022



48 States	
Short to Very Short	49
Change from Last Week	0

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

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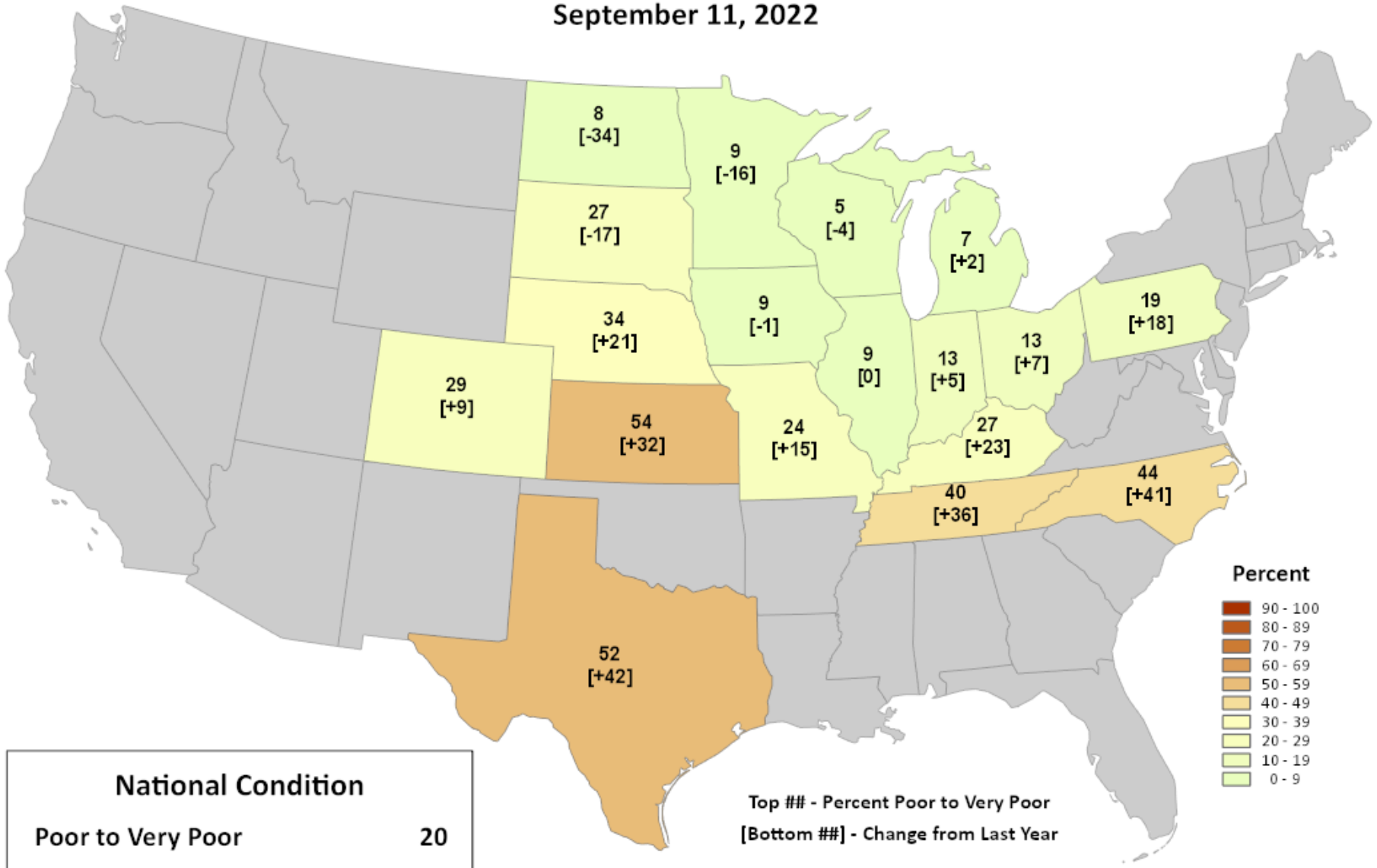
Corn Conditions

Percent Poor to Very Poor

September 11, 2022



National Condition	
Poor to Very Poor	20
Change from Last Year	+5

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

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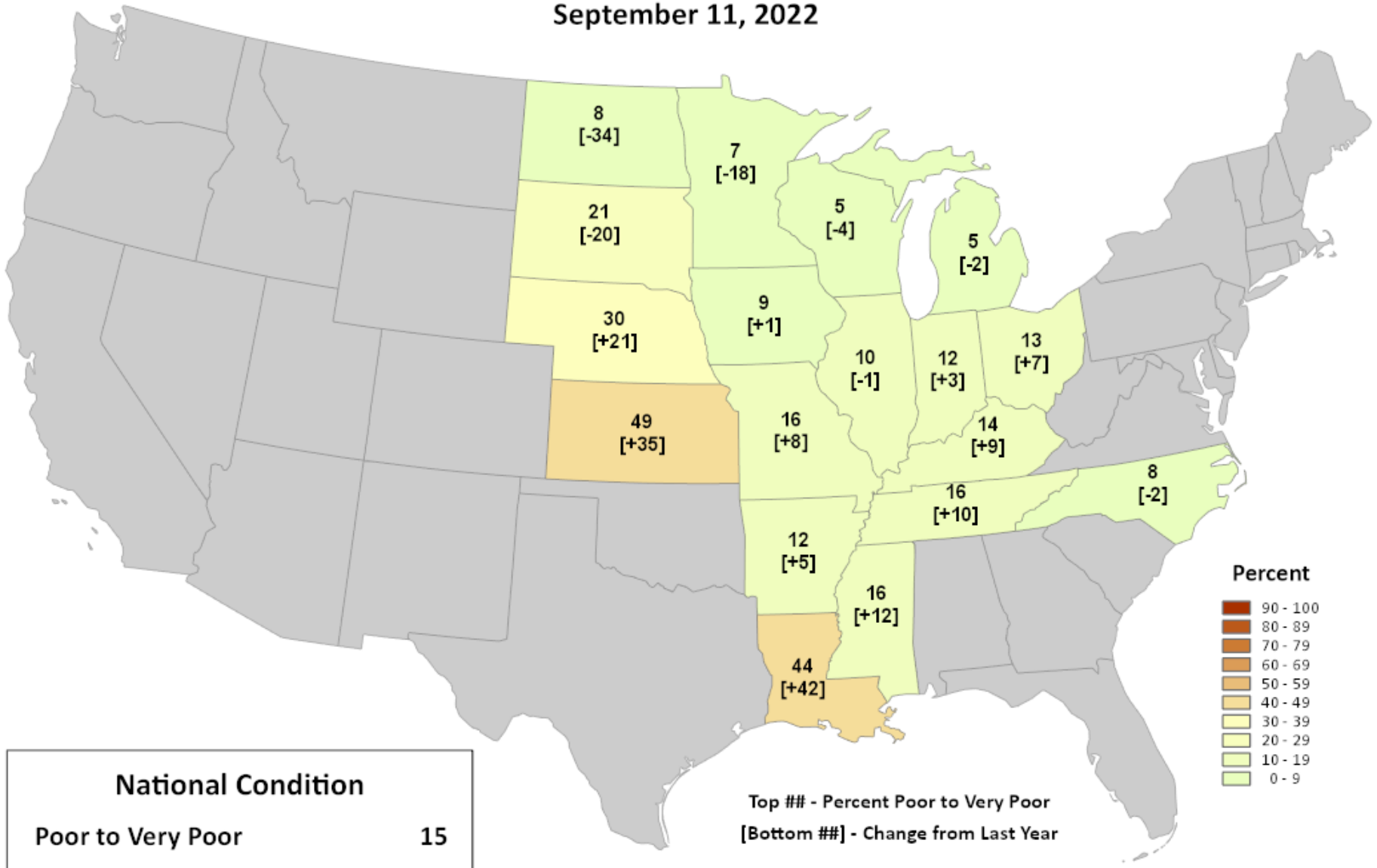
This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)

Soybean Conditions

Percent Poor to Very Poor

September 11, 2022



National Condition	
Poor to Very Poor	15
Change from Last Year	+1

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

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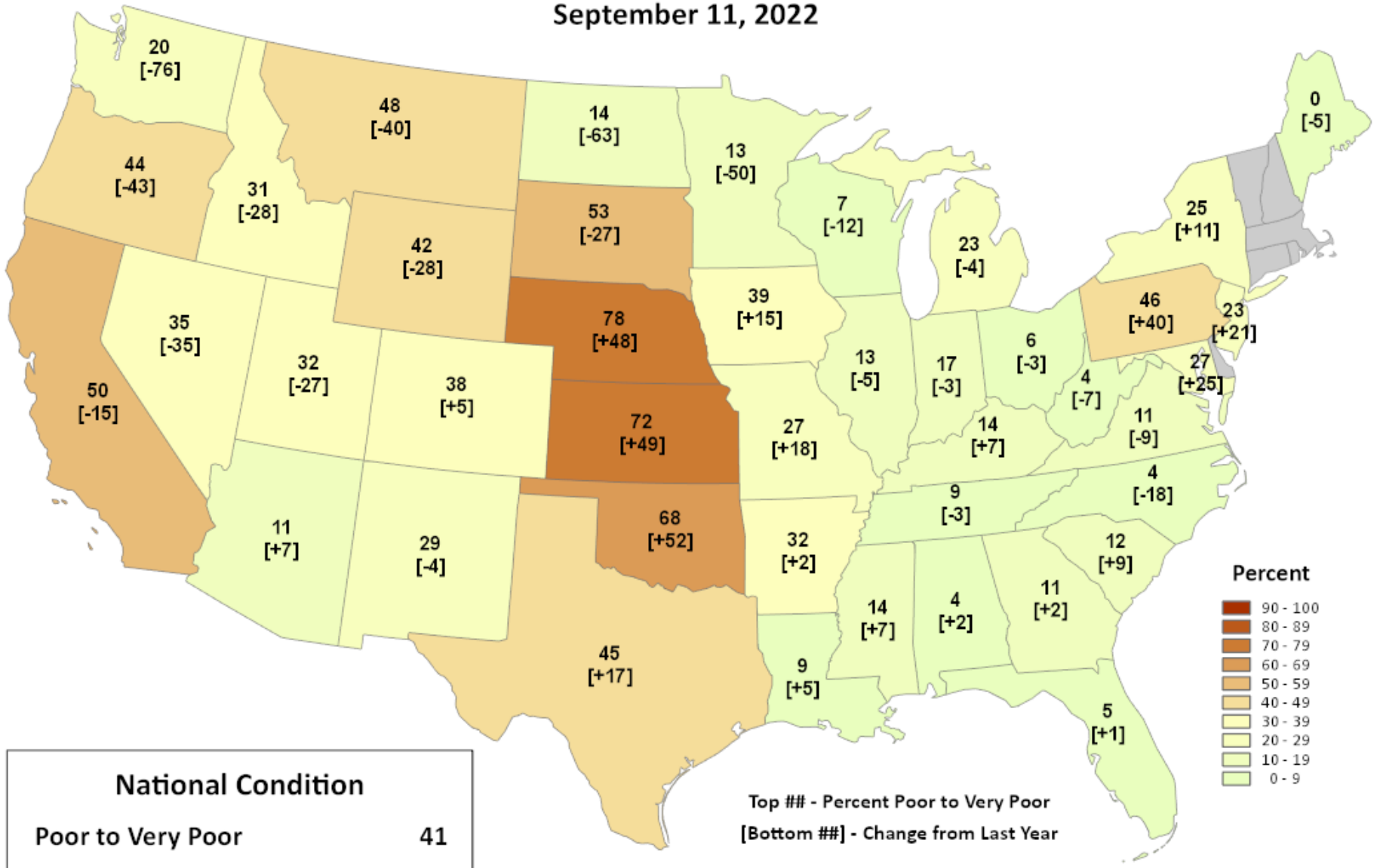
USDA United States Department of Agriculture

This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)

Pasture and Range Conditions

Percent Poor to Very Poor

September 11, 2022



National Condition	
Poor to Very Poor	41
Change from Last Year	-1

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

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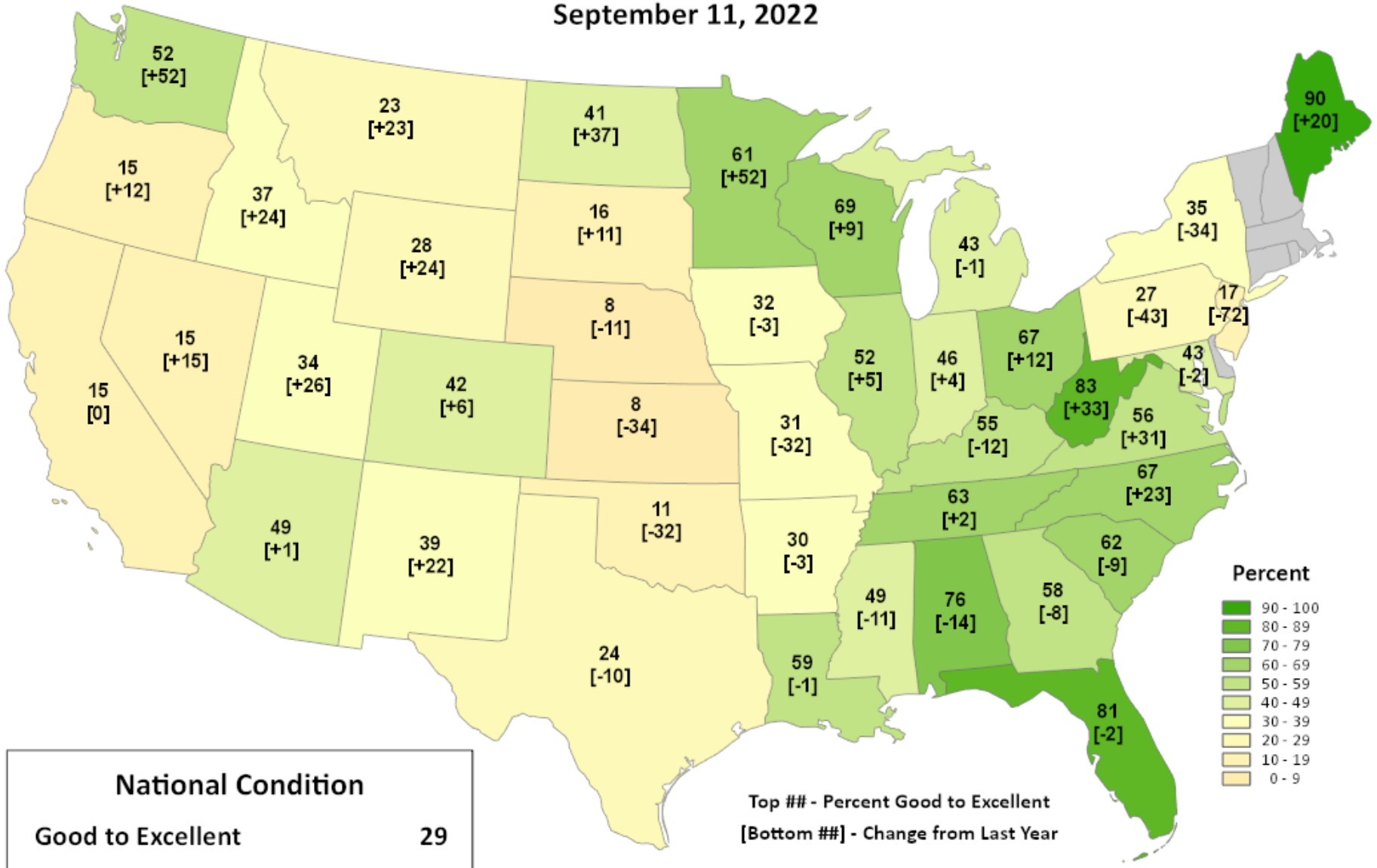
USDA United States Department of Agriculture

This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)

Pasture and Range Conditions

Percent Good to Excellent

September 11, 2022



National Condition	
Good to Excellent	29
Change from Last Year	+4

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

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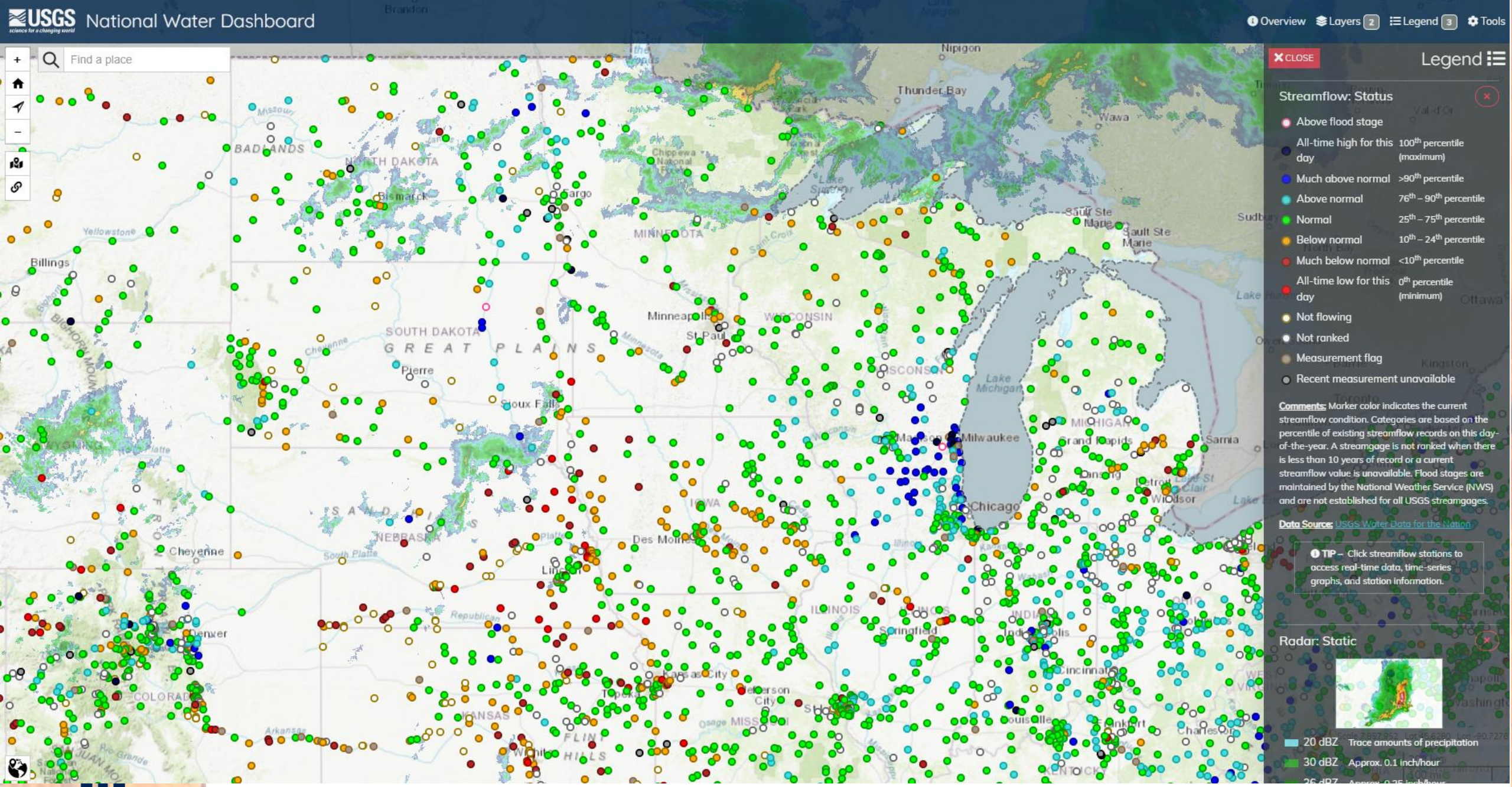

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Missouri River

Gavins Point Winter Releases Will be at Minimum Rates

MISSOURI RIVER WATER MANAGEMENT DIVISION

Published Sept. 7, 2022

PRINT | E-MAIL

OMAHA, Neb. --Drought conditions in the Missouri River Basin above Sioux City, Iowa, continued throughout the month of August. Per the Master Manual and the September 1 System storage check, winter releases from Gavins Point Dam will be 12,000 cubic feet per second (cfs), as part of the overall water conservation measures.

Missouri River

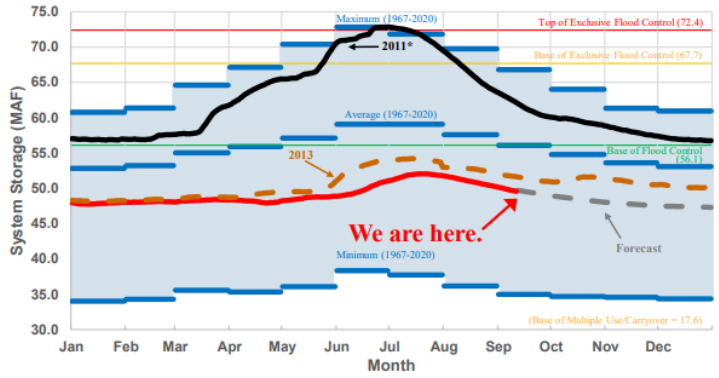
https://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/weeklyupdate.pdf

Missouri River Basin – Update – 13 September 2022

Mainstem Reservoir Status:

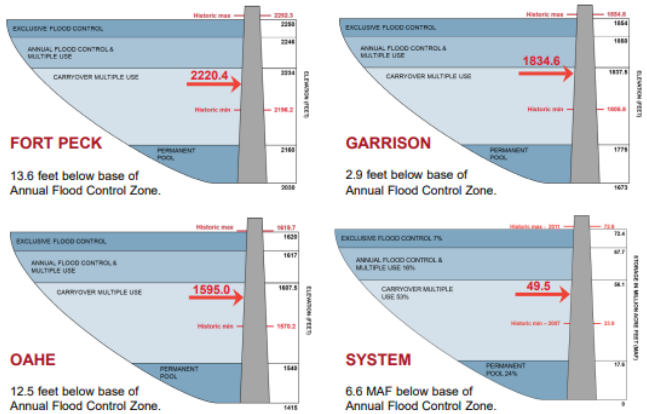
- System storage is 49.5 MAF, 0.4 MAF less than last week (upper right quadrant). Current and projected System storage is shown on the plot.
- The 2022 calendar year forecast for the Missouri River Basin above Sioux City, updated on September 1, is 20.2 MAF, 78% of average. For the September monthly study with forecasted pool levels and releases for each mainstem project (click here).
- The Gavins Point release will be adjusted to meet the current service level of 500 cfs above minimum service, per the Master Manual. Releases are currently 31,500 cfs. The release schedule for Gavins Point is provided in our daily forecast (click here).
- The seasonal drought outlook extending through the end of November shows drought conditions persisting and expanding in areas of the Basin (lower right quadrant).
- Refer to the 3-Week Forecast (click here) for the most up-to-date System information – pool levels, inflows, and releases.

System Storage Comparison



*In January 2011, the Base of Flood Control was 56.8 MAF, and the Top of Exclusive Flood Control was 73.1 MAF.

Current Reservoir Levels

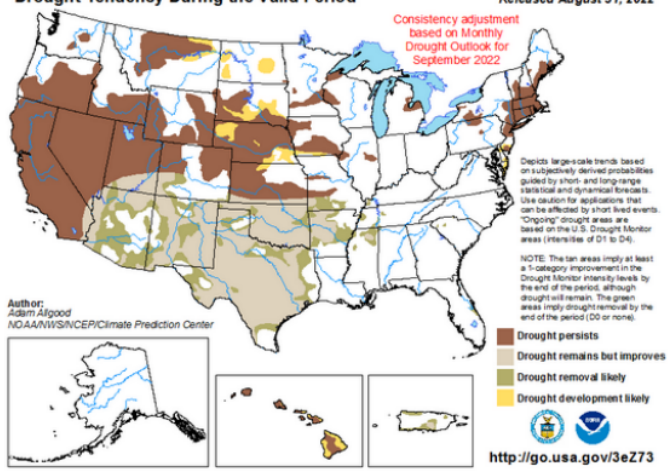


Click Here for Latest 3-Week Forecast | Click Here for Comparison Plots

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for September 1 - November 30, 2022
Released August 31, 2022



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

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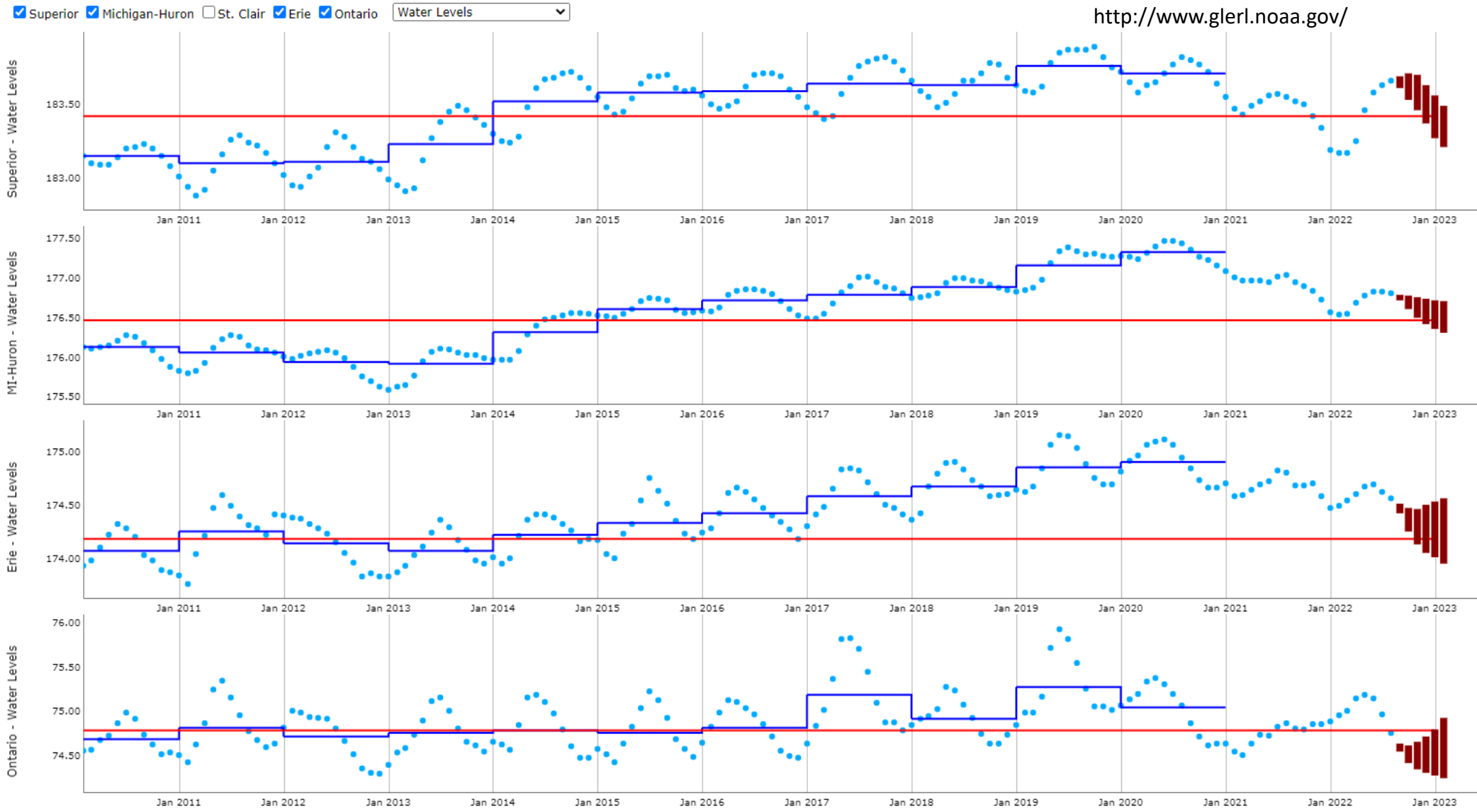
Great Lakes Water Levels 2010 - Present



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Lake Erie Satellite Imagery

Current Lake Erie Sentinel-3 a and b Composited Satellite Imagery from the Ocean and Land Color Imager (OLCI) as of 2022-09-13 showing bloom location and extent.

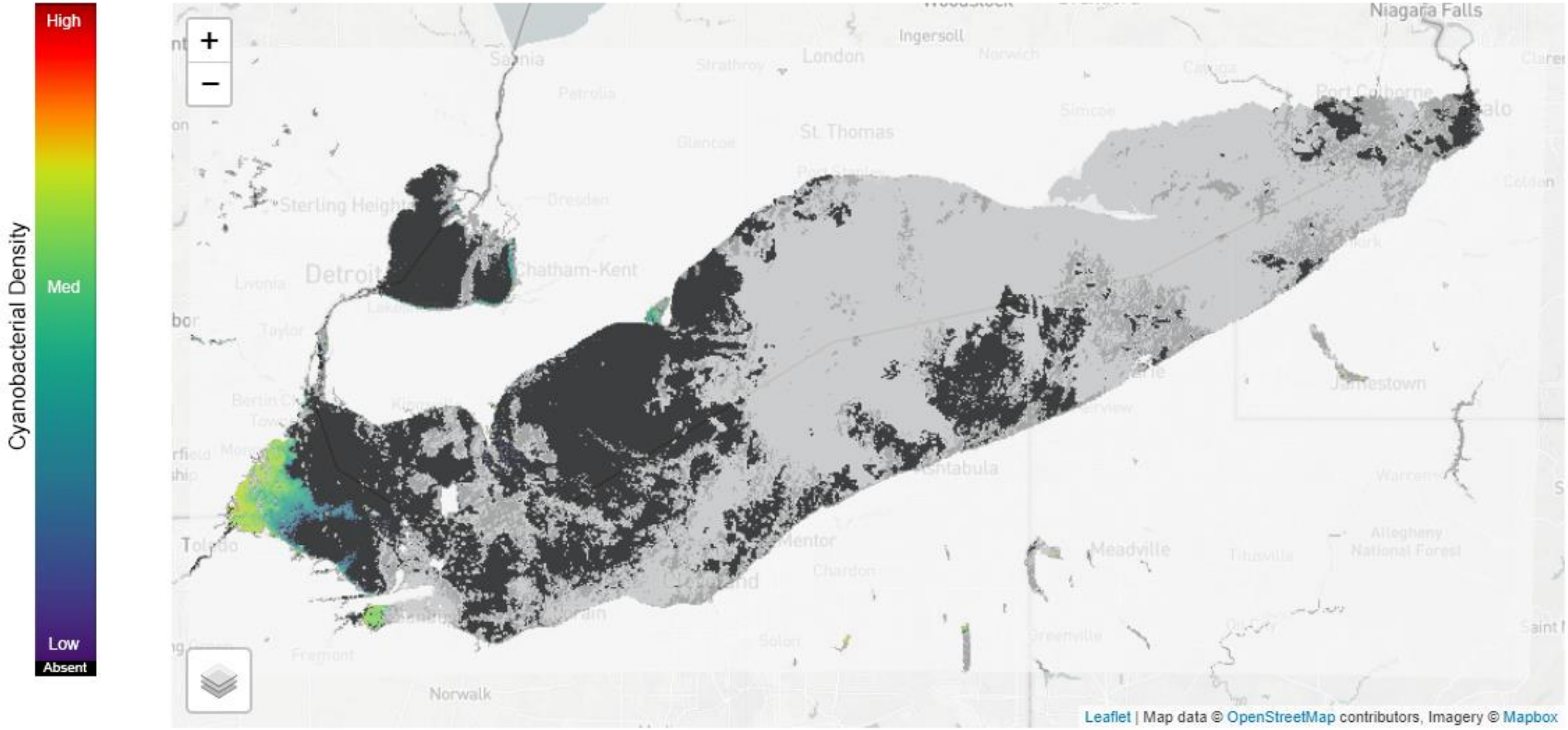


Image credit: The images were derived from Copernicus Sentinel-3 satellite data from the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) and were processed by NOAA, National Centers for Coastal Ocean Science. NOTE: Image quality will vary with clouds and satellite position (OLCI satellite background information). See more information about our bloom monitoring imagery.

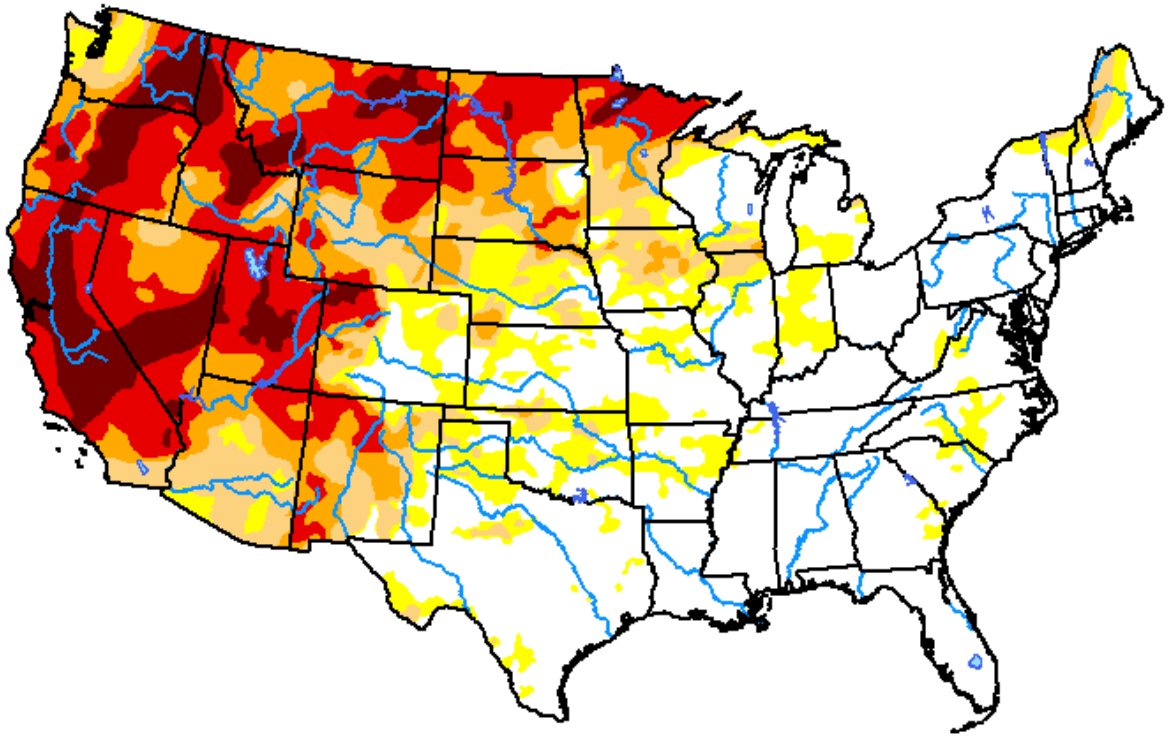
U.S. Drought Monitor

Contiguous U.S. (CONUS)

September 14, 2021

(Released Thursday, Sep. 16, 2021)

Valid 8 a.m. EDT



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 Rippey
U.S. Department of Agriculture

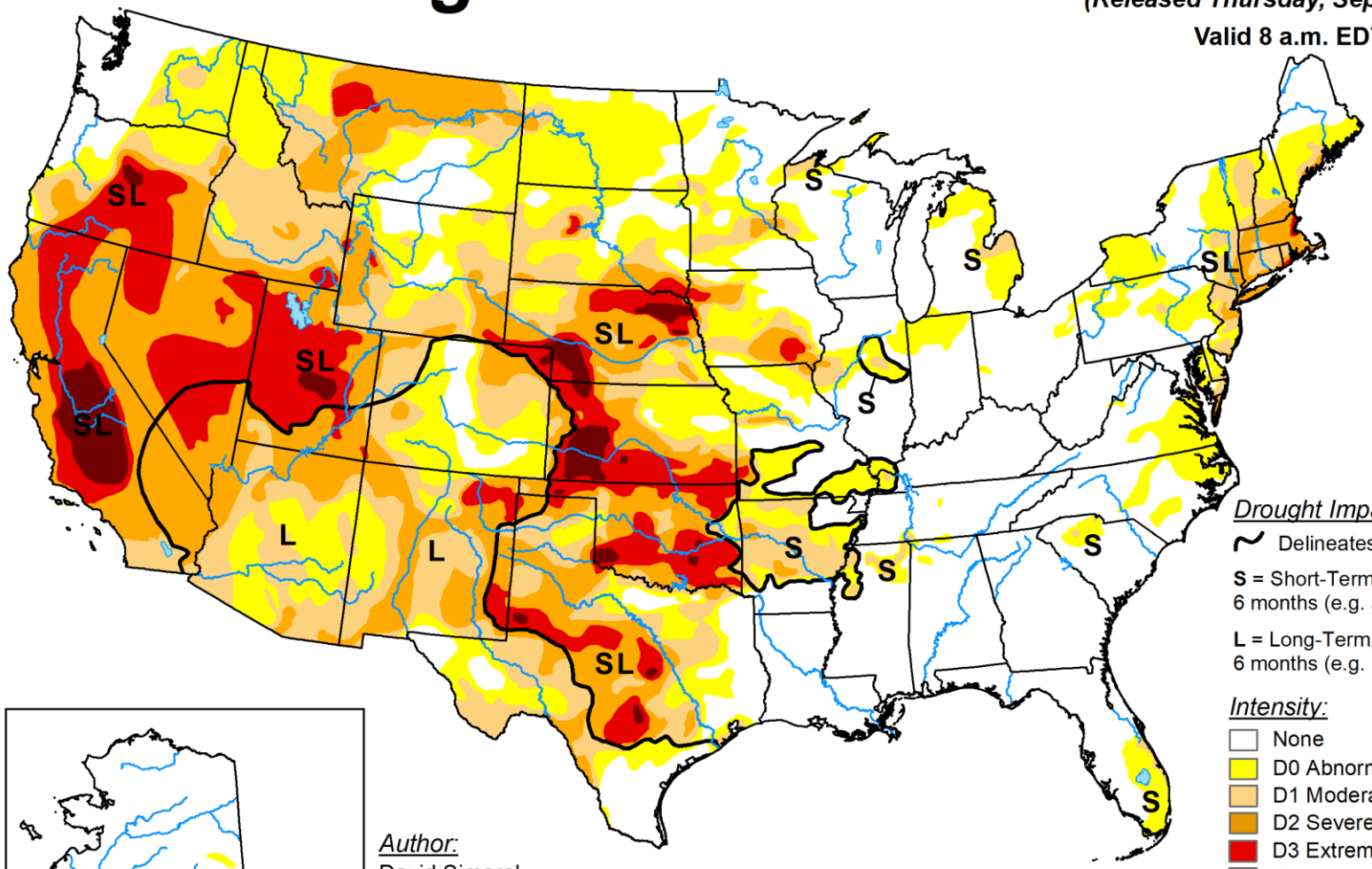
droughtmonitor.unl.edu

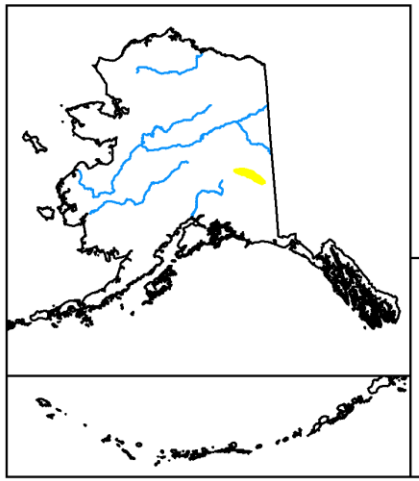
U.S. Drought Monitor

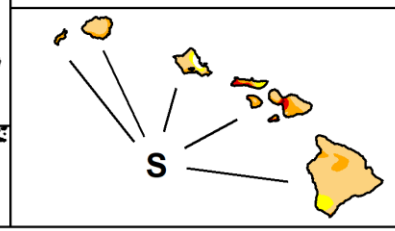
September 13, 2022

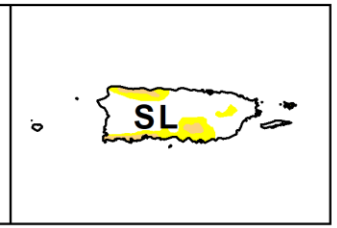
(Released Thursday, Sep. 15, 2022)

Valid 8 a.m. EDT









Author:
David Simeral
Western Regional Climate Center

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)

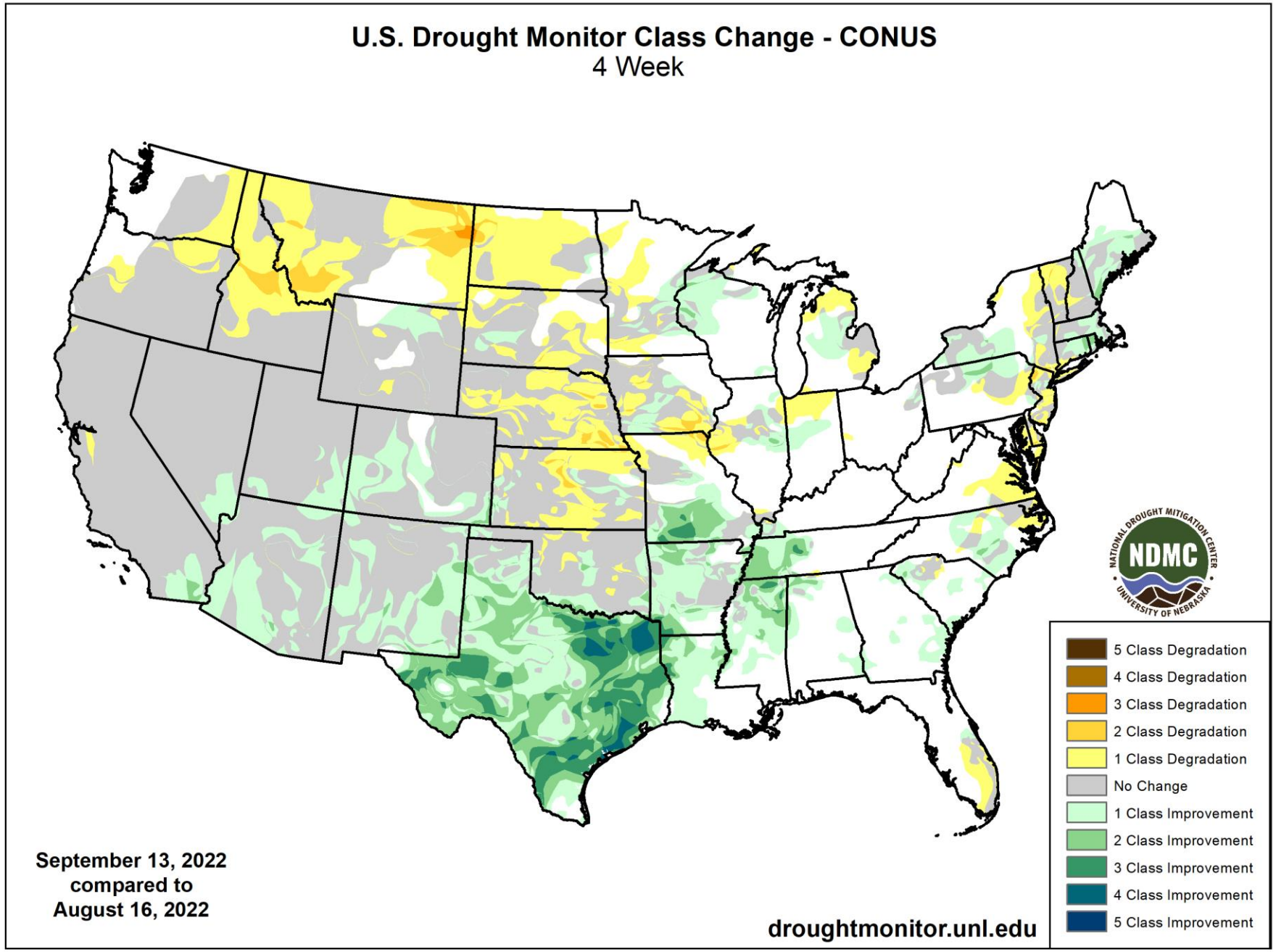
Intensity:

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

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



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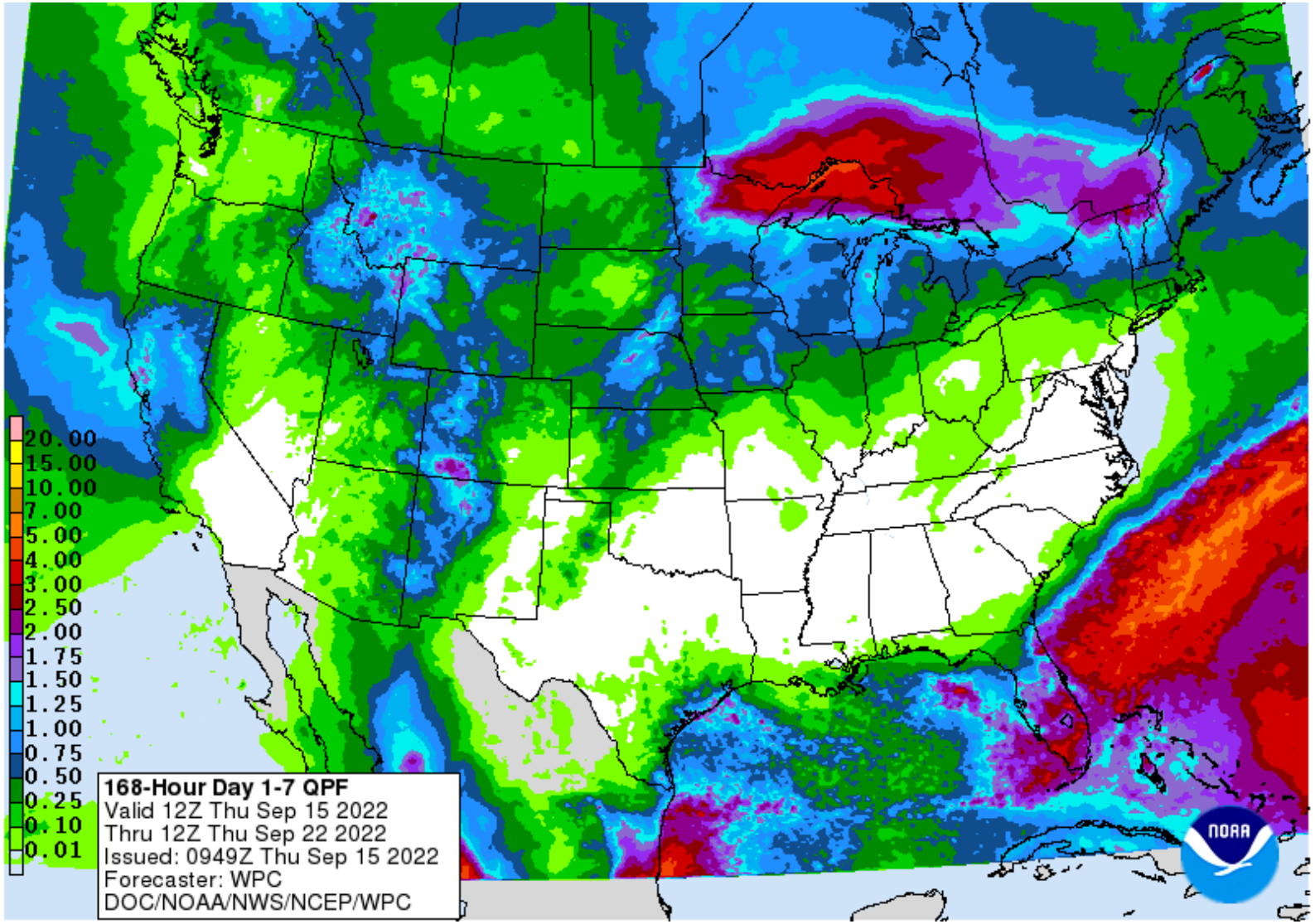
7-day Precipitation Forecast



https://www.wpc.ncep.noaa.gov/#page=qpf

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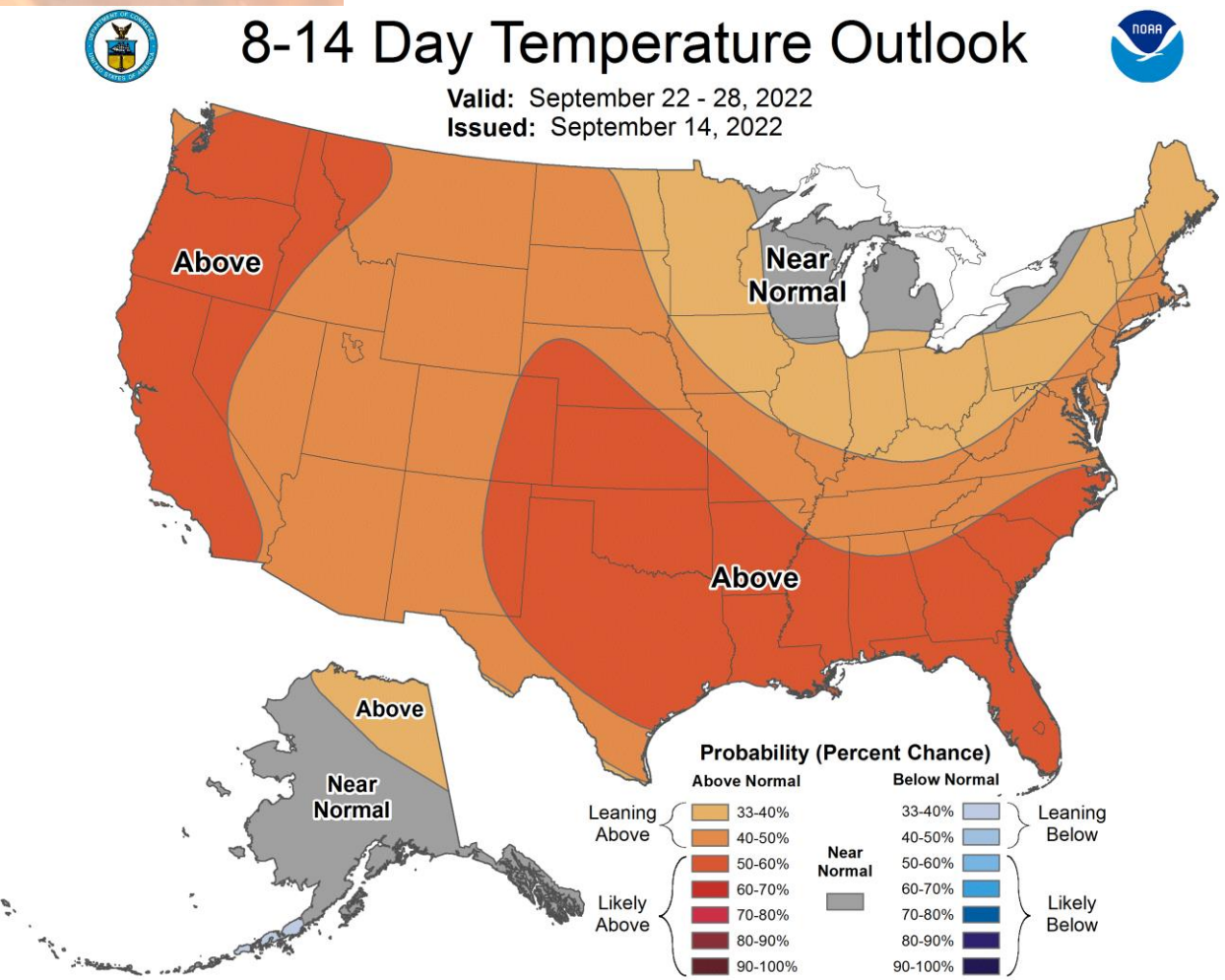

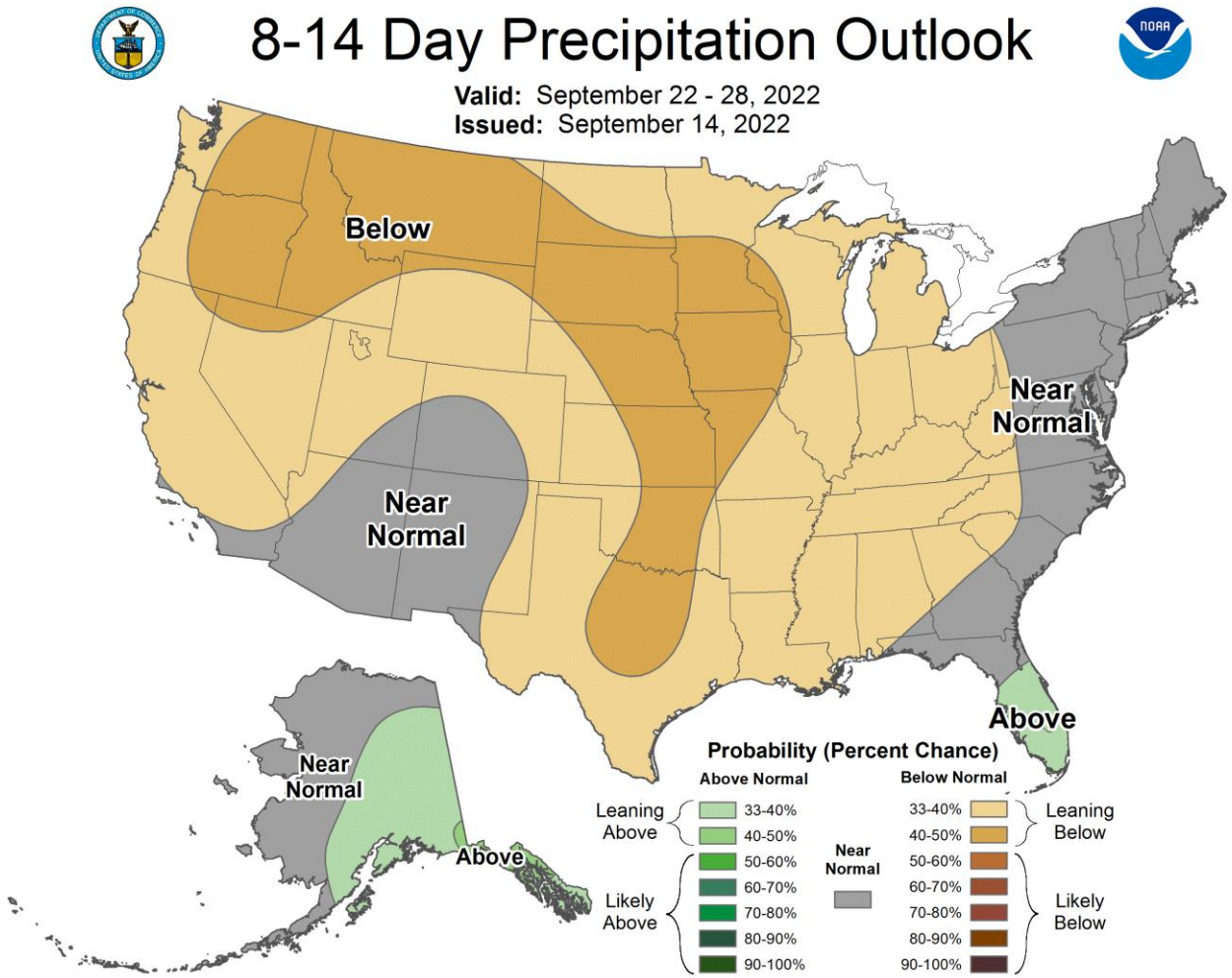

https://www.cpc.ncep.noaa.gov/

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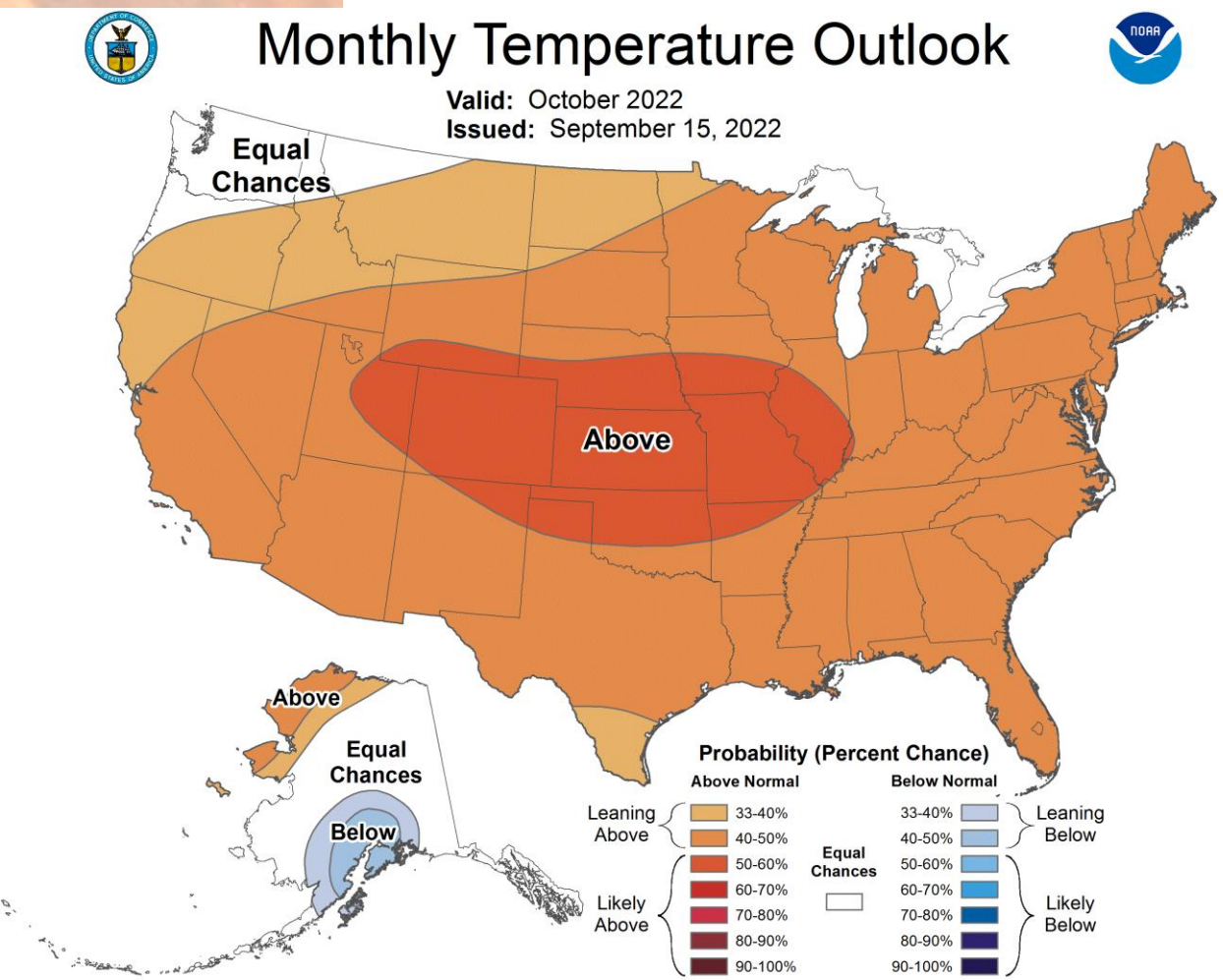

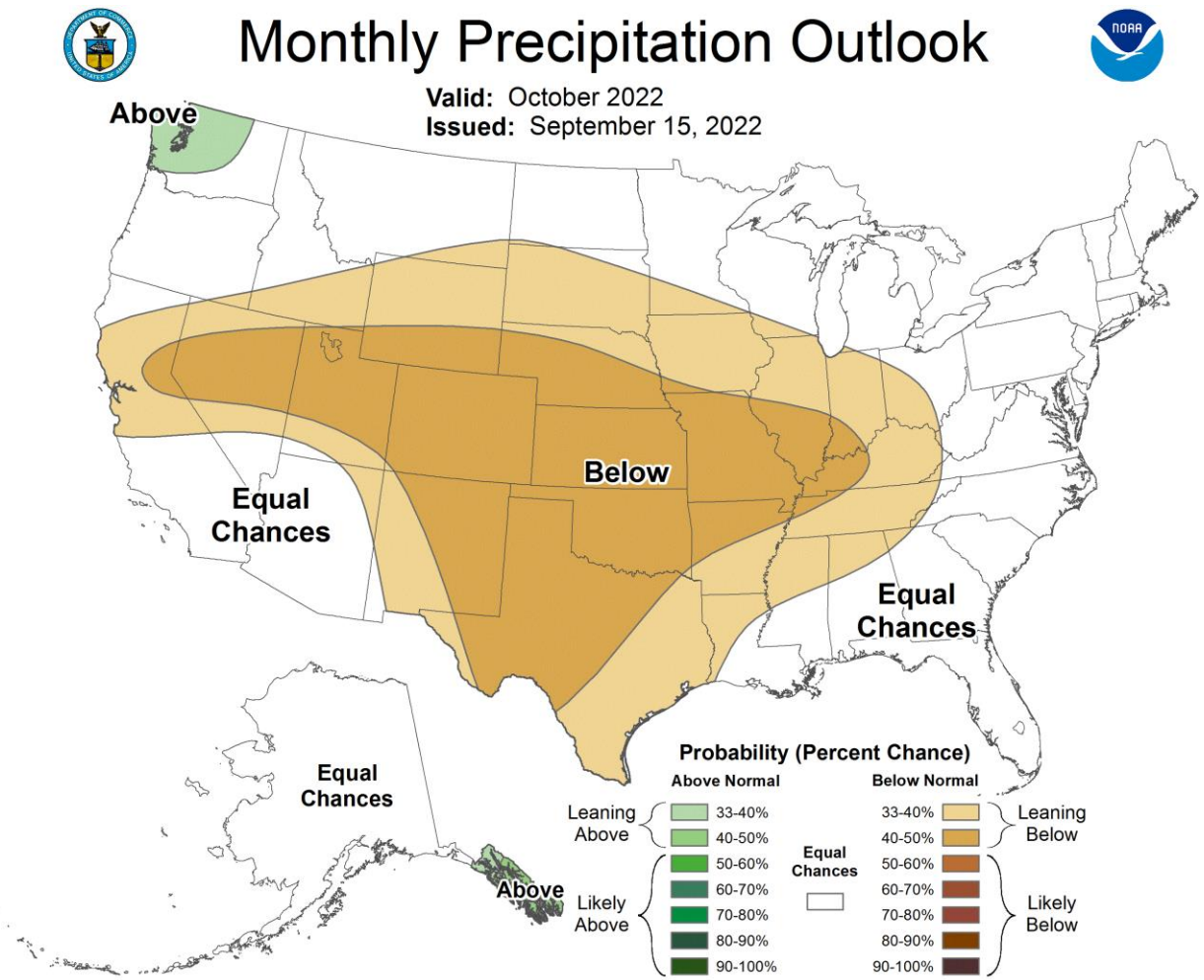

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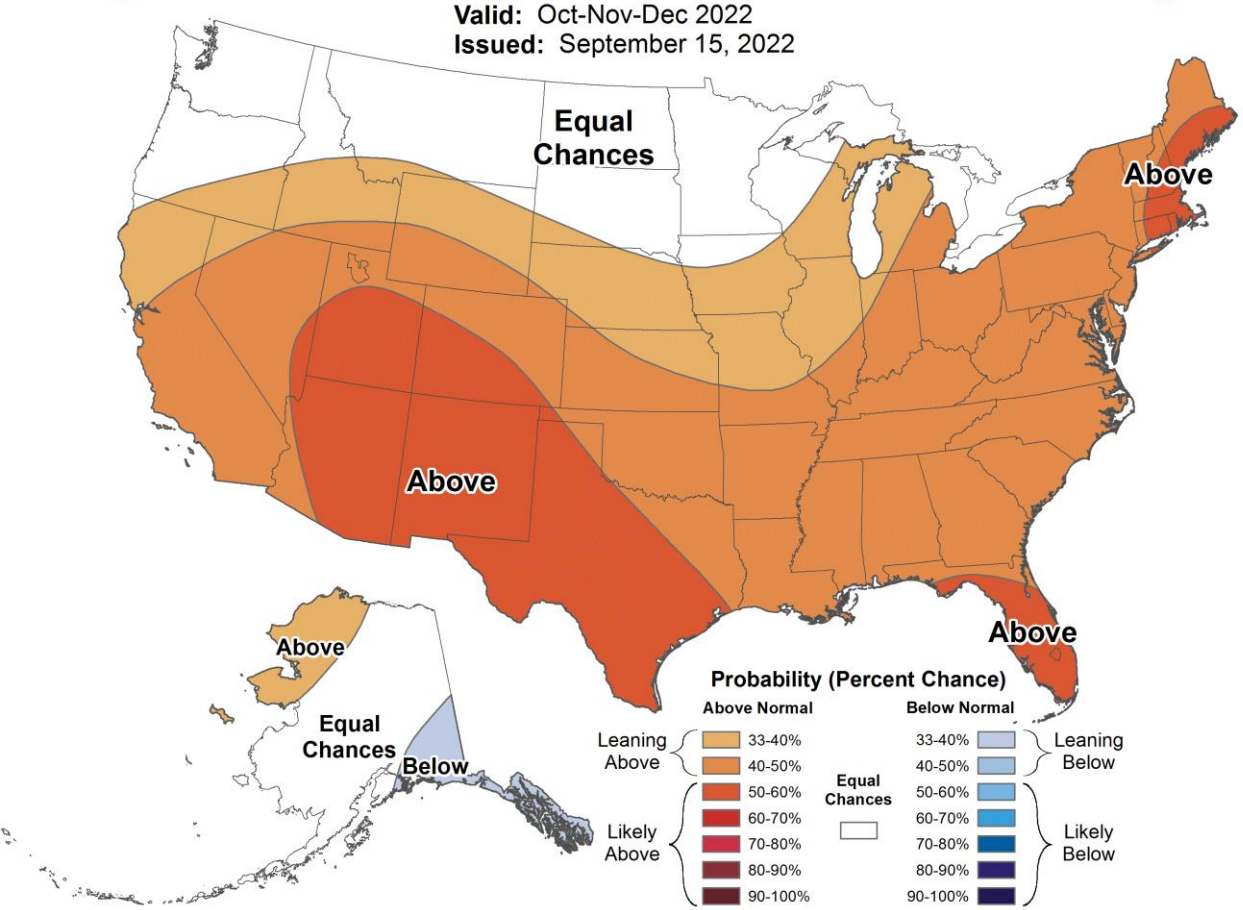
Seasonal Temperature Outlook

Valid: Oct-Nov-Dec 2022
Issued: September 15, 2022



Seasonal Precipitation Outlook

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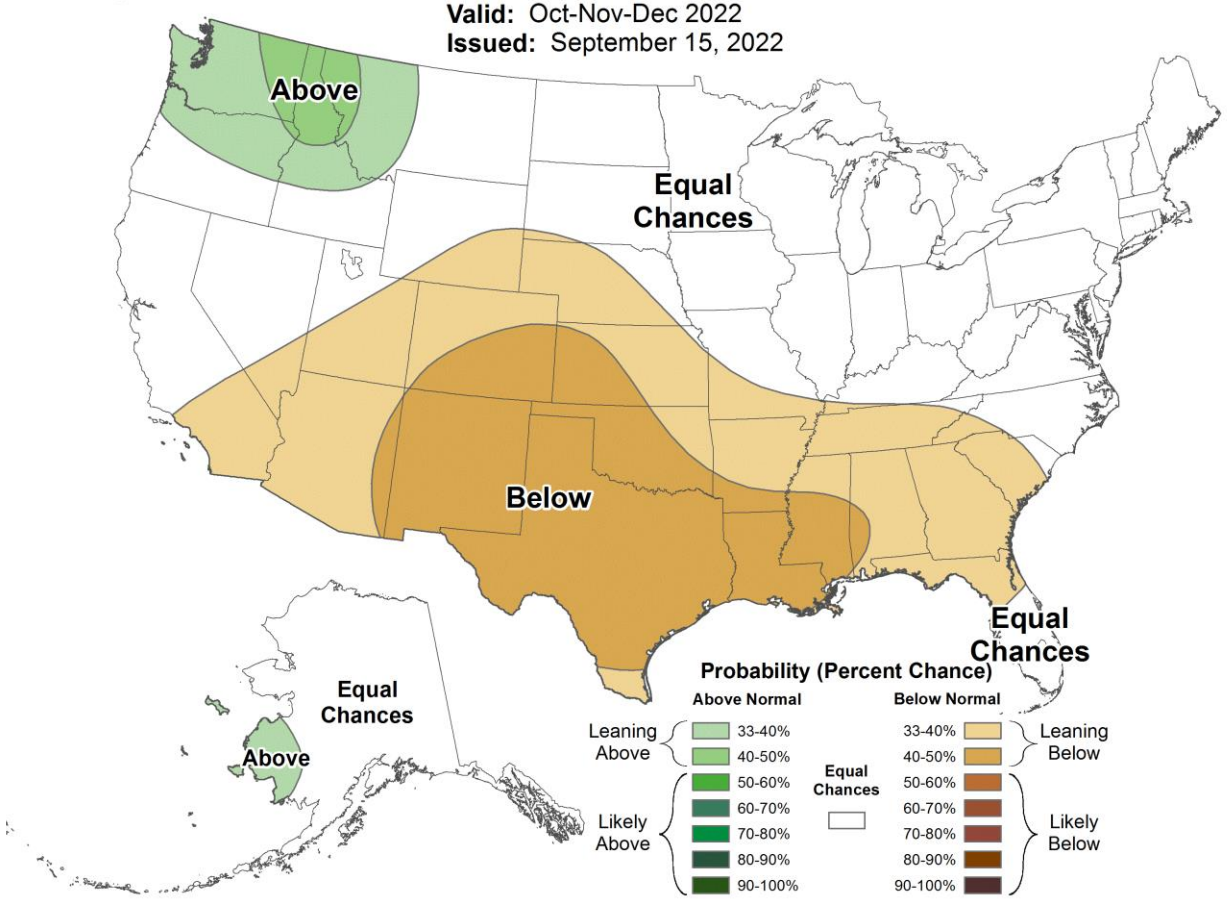

https://www.cpc.ncep.noaa.gov/

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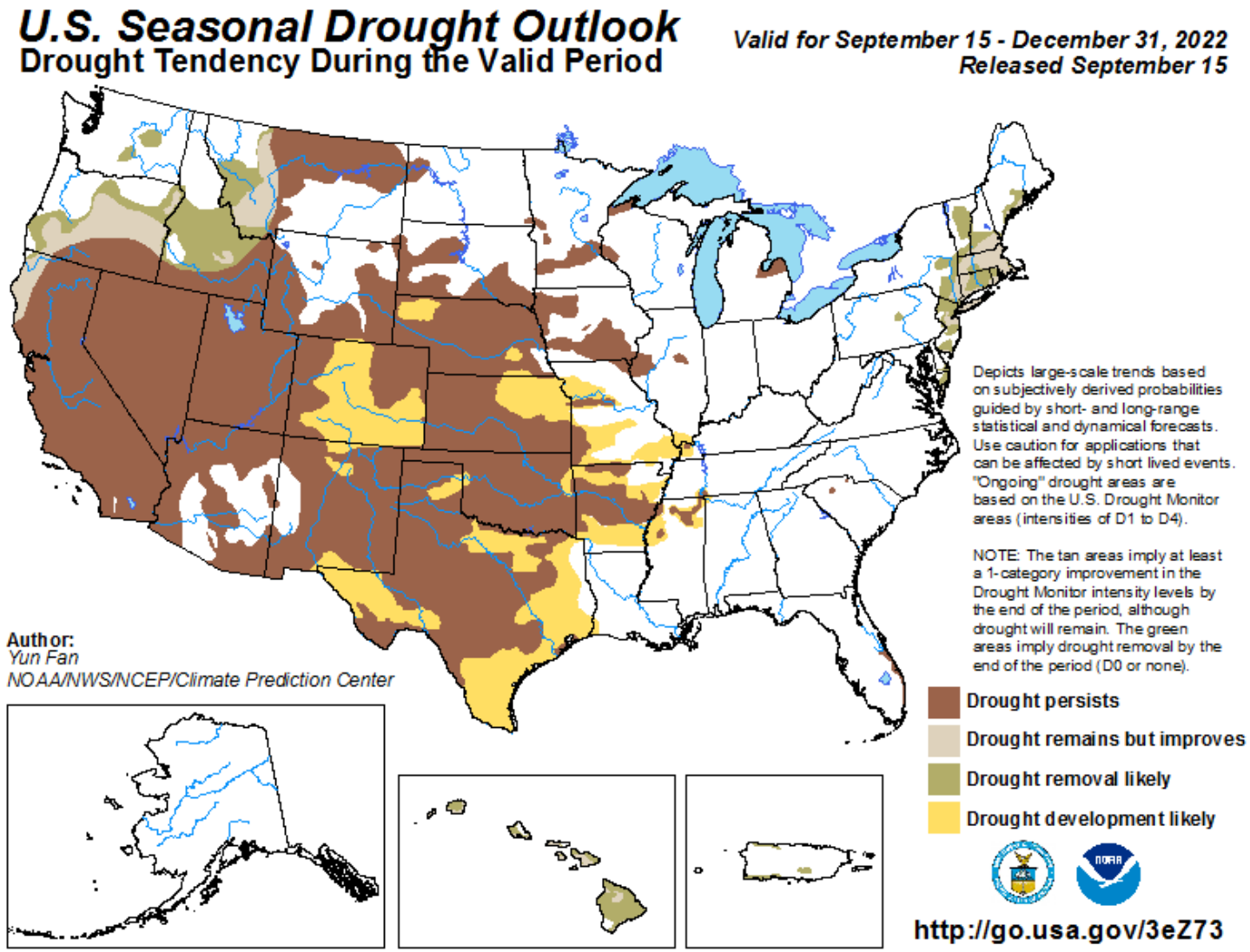
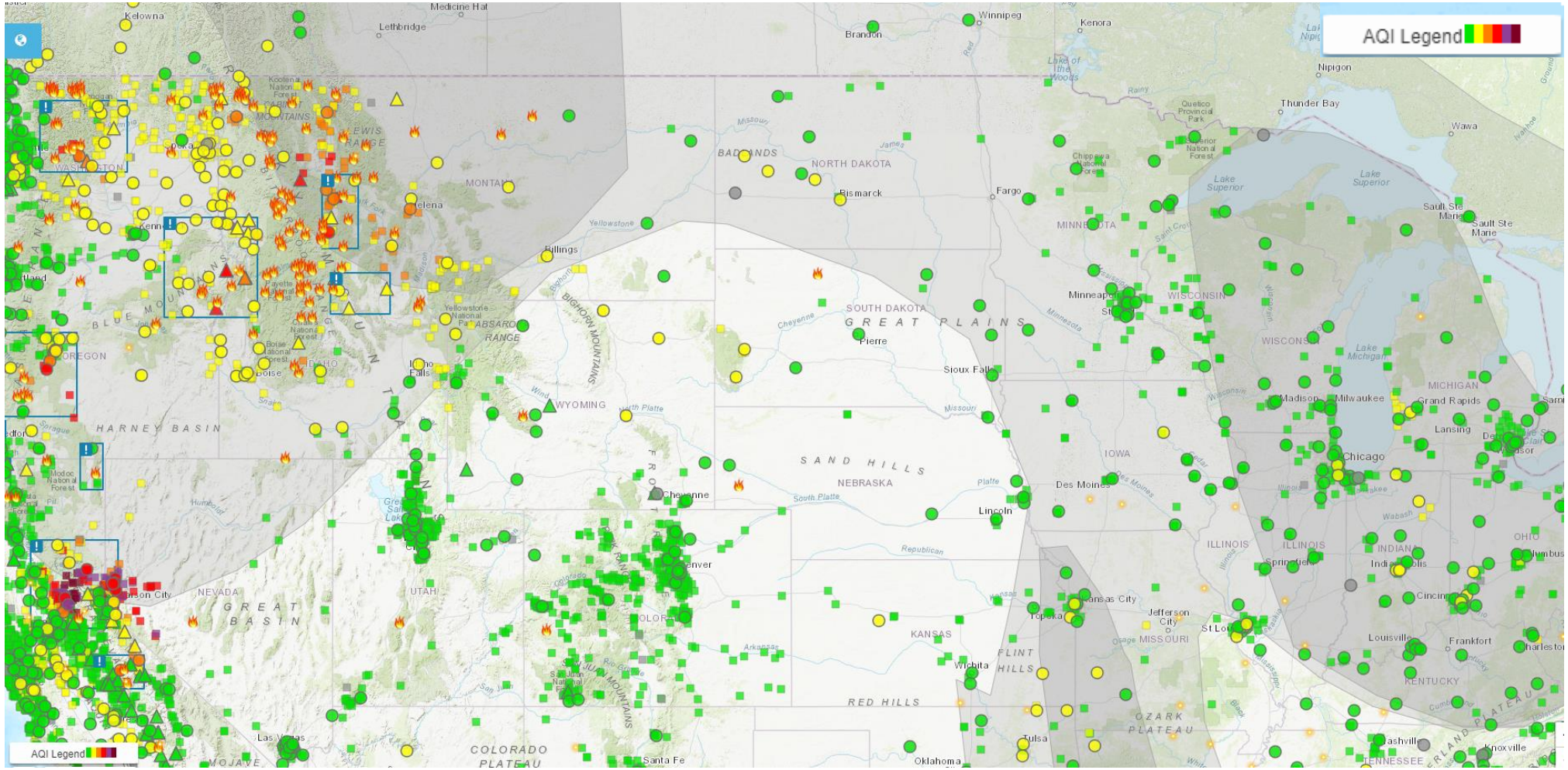
Seasonal Drought Outlook

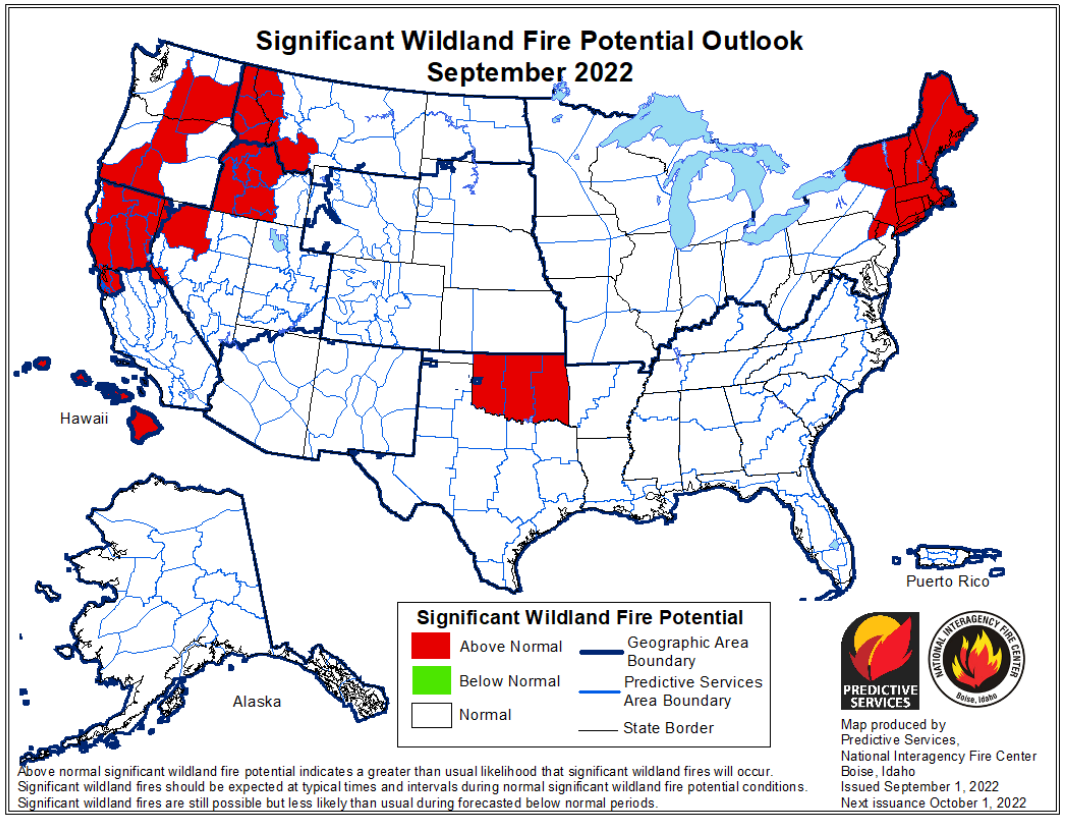


Current Large Wildfires, Smoke, and Air Quality

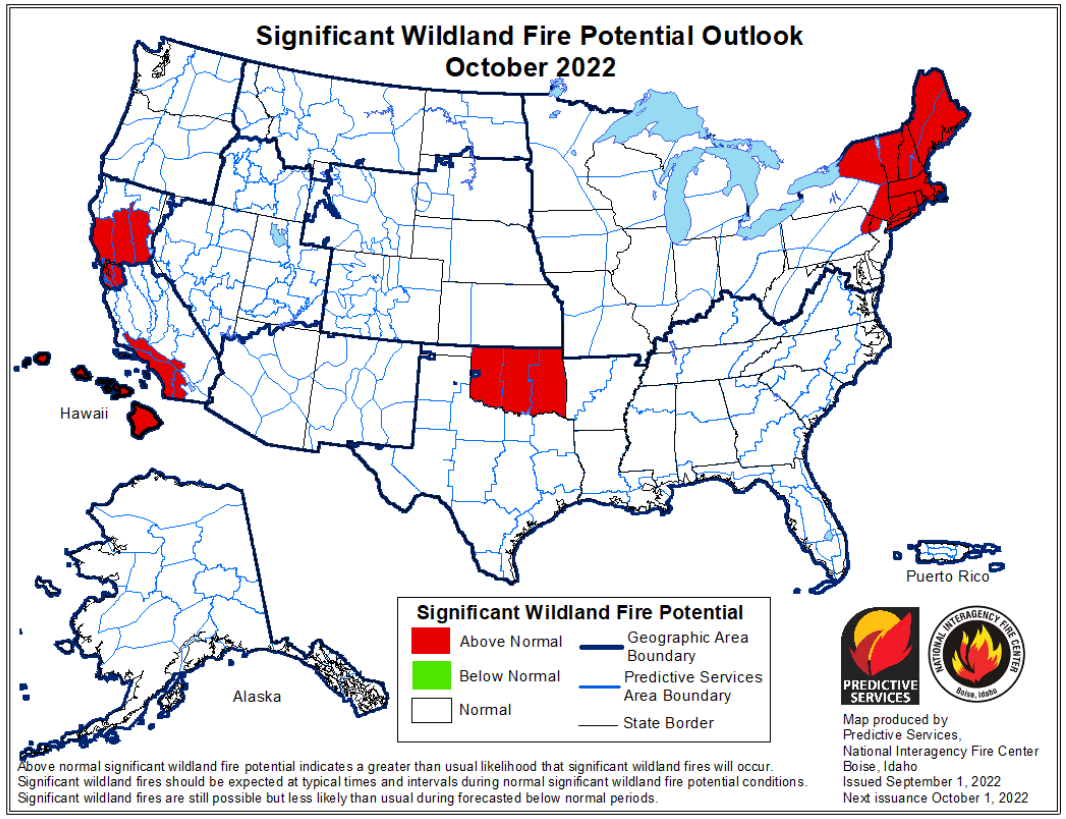


https://fire.airnow.gov/#

Wildland Fire Potential



https://www.nifc.gov/nicc/predictive/outlooks/outlooks.htm



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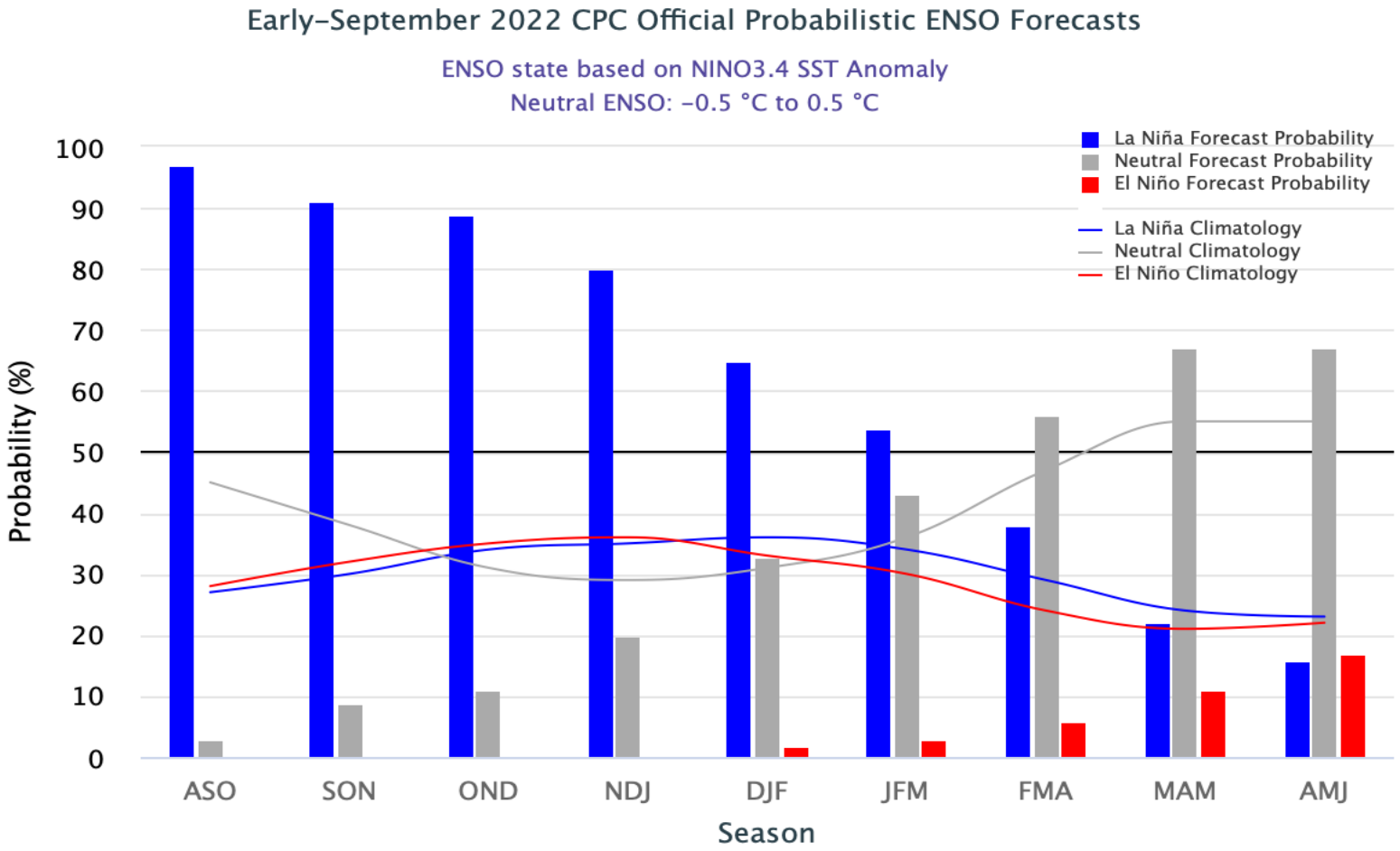
La Niña Potential – A third winter



https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml

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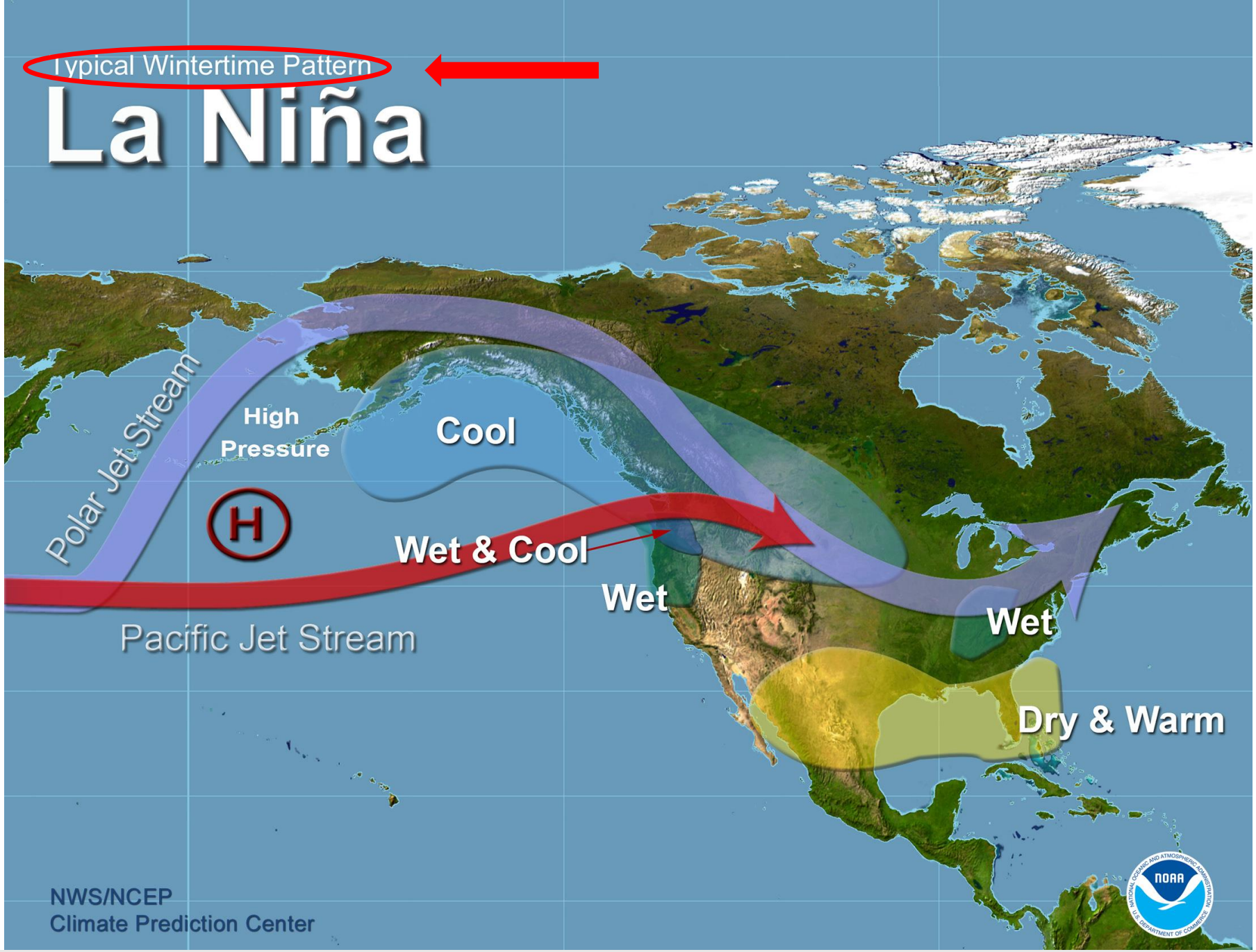
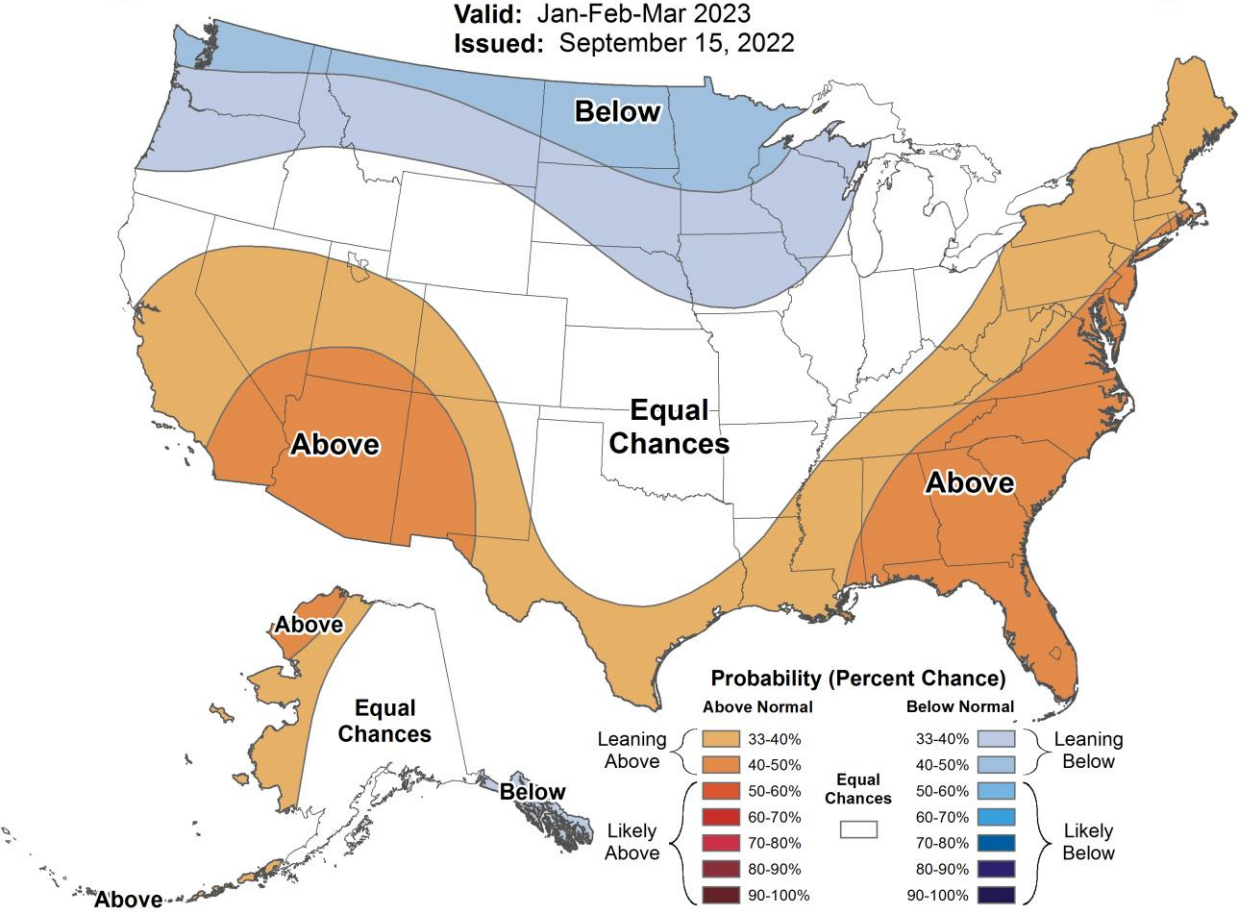
What does a typical La Nina pattern mean?

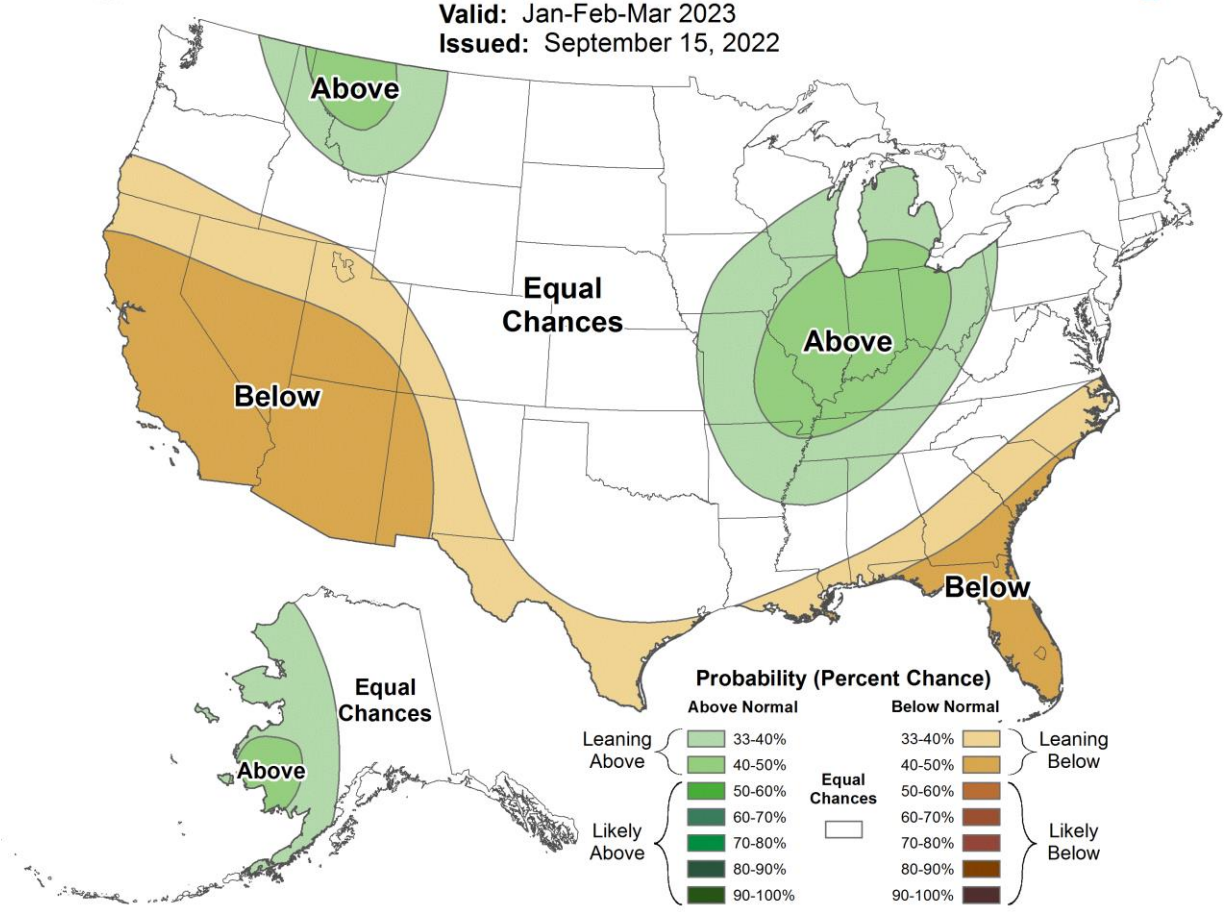


https://www.pmel.noaa.gov/elnino/sites/default/files/thumbnails/image/LaNina-Jet-Wintertime-Pattern.jpg

Seasonal Temperature Outlook



Seasonal Precipitation Outlook



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Summary

- Drought worsening over much of the Great Plains
- Midwest: spotty improvement, some drought development
- Exceptional summer dryness for Nebraska
- Warm and dry fall likely for central US
  - Hints of average to above average precipitation near the Canada border
- La Niña likely again this winter

Smoky sunset, central IA. Photo: Dennis Todey

FOR ADDITIONAL INFORMATION

Presentations Archive	http://www.hprcc.unl.edu https://mrcc.purdue.edu/multimedia/webinars.jsp
NOAA's National Centers for Environmental Information	www.ncdc.noaa.gov
Monthly Climate Reports	www.ncdc.noaa.gov/sotc/
NOAA's Climate Prediction Center	www.cpc.ncep.noaa.gov
National Drought Mitigation Center	drought.unl.edu
U.S. Drought Portal	www.drought.gov
State Climatologists	www.stateclimate.org
Regional Climate Centers	www.hprcc.unl.edu and https://mrcc.purdue.edu/

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