North Central U.S. Climate-Drought Outlook

September 16, 2021

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National Drought Mitigation Center
University of Nebraska-Lincoln
School of Natural Resources

NDMC

NATIONAL DROUGHT MITIGATION CENTER

UNIVERSITY OF NEBRASKA

General Information

- **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 21, 2021 (1 PM CST) with **Laura Edwards**, South Dakota State Climatologist and **Brad Rippey**, USDA Office of the Chief Economist

- **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*

Smokey sun in Iowa from Dennis Todey

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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

Agenda

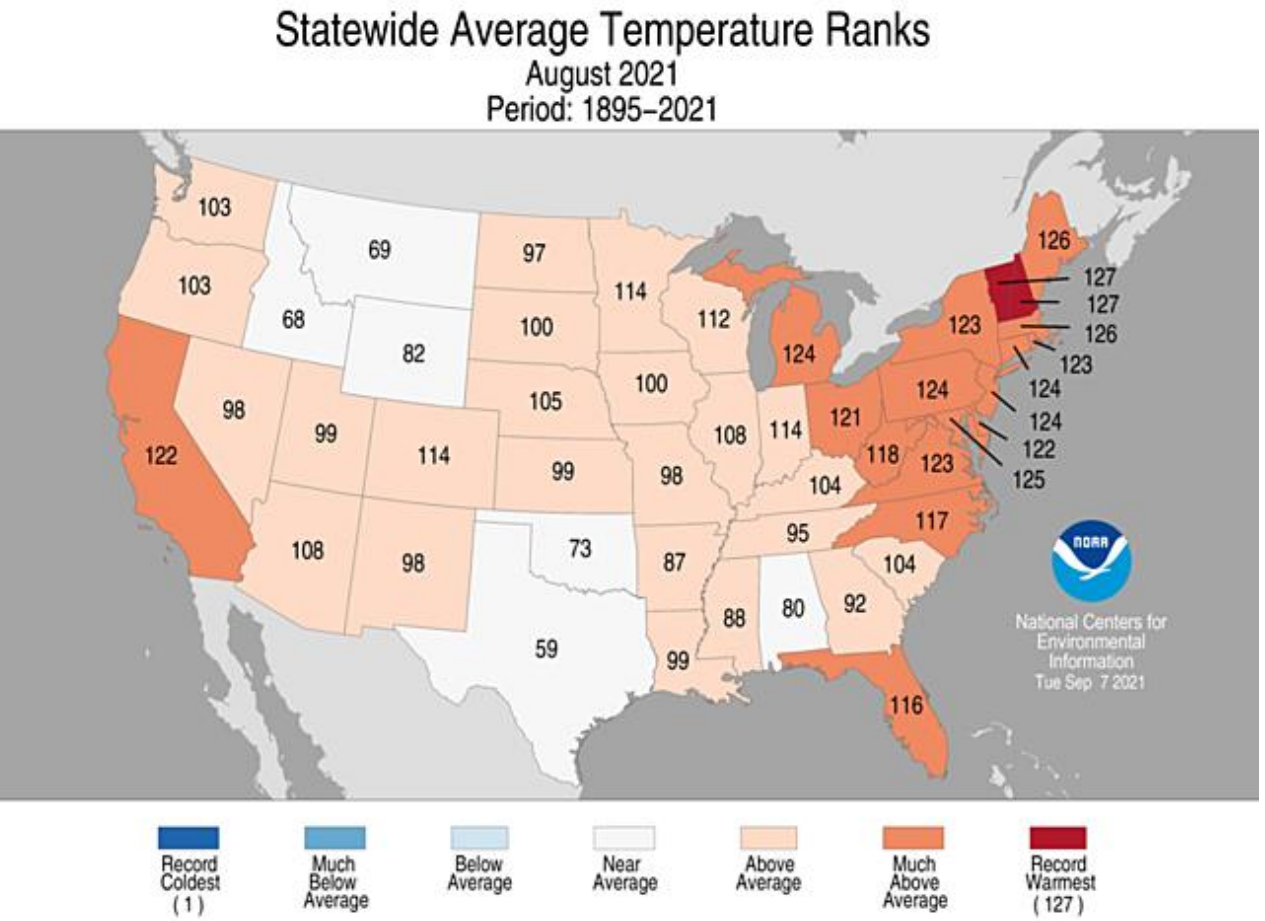
- Current/Recent Past Conditions
- Regional Impacts
  - General
  - Hydrological
  - Agricultural
- Outlooks
- Questions

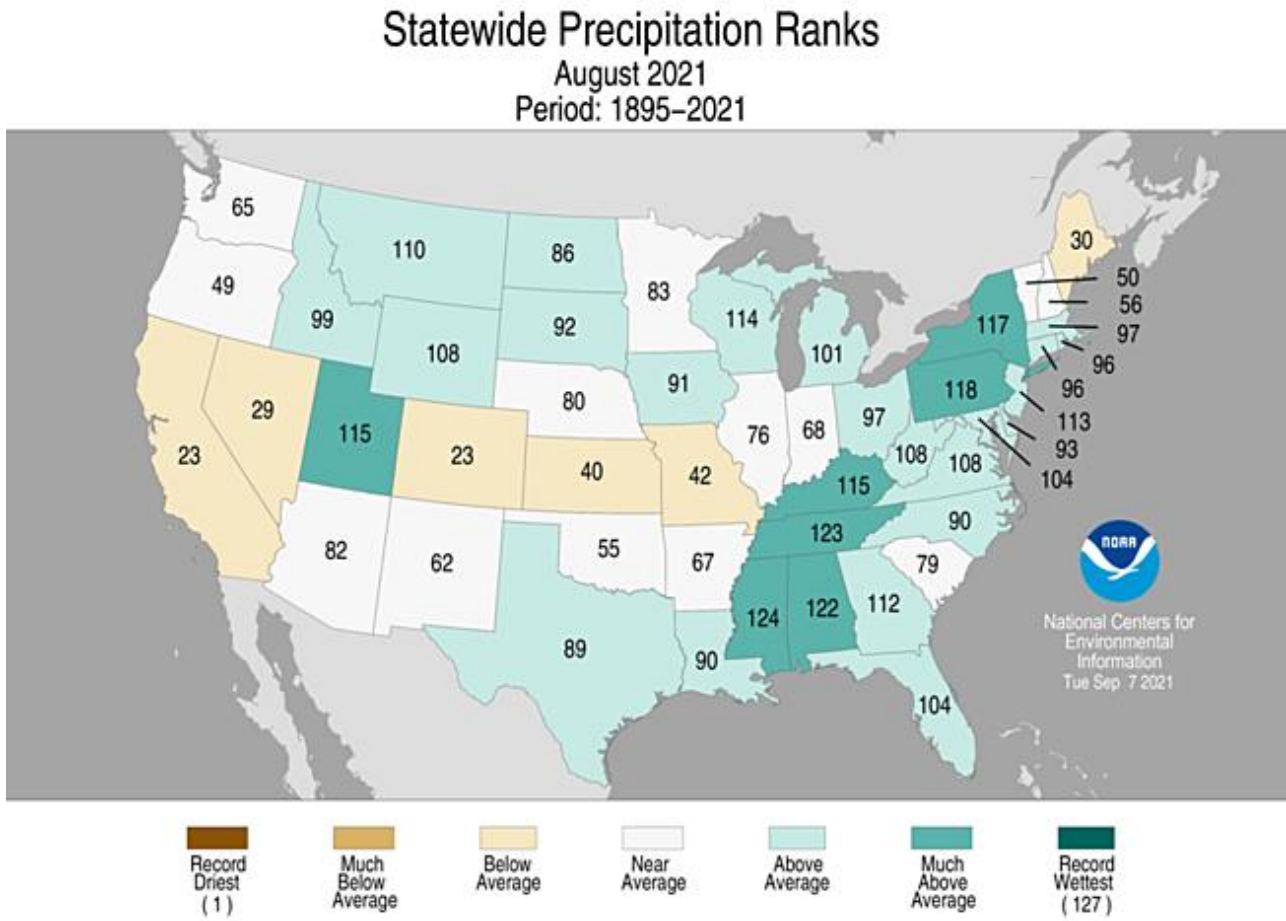
Slope County, ND via CMOR

Current Conditions

Mellette County South Dakota Fire in early August from CMOR

August Climatology from the National Centers for Environmental Information

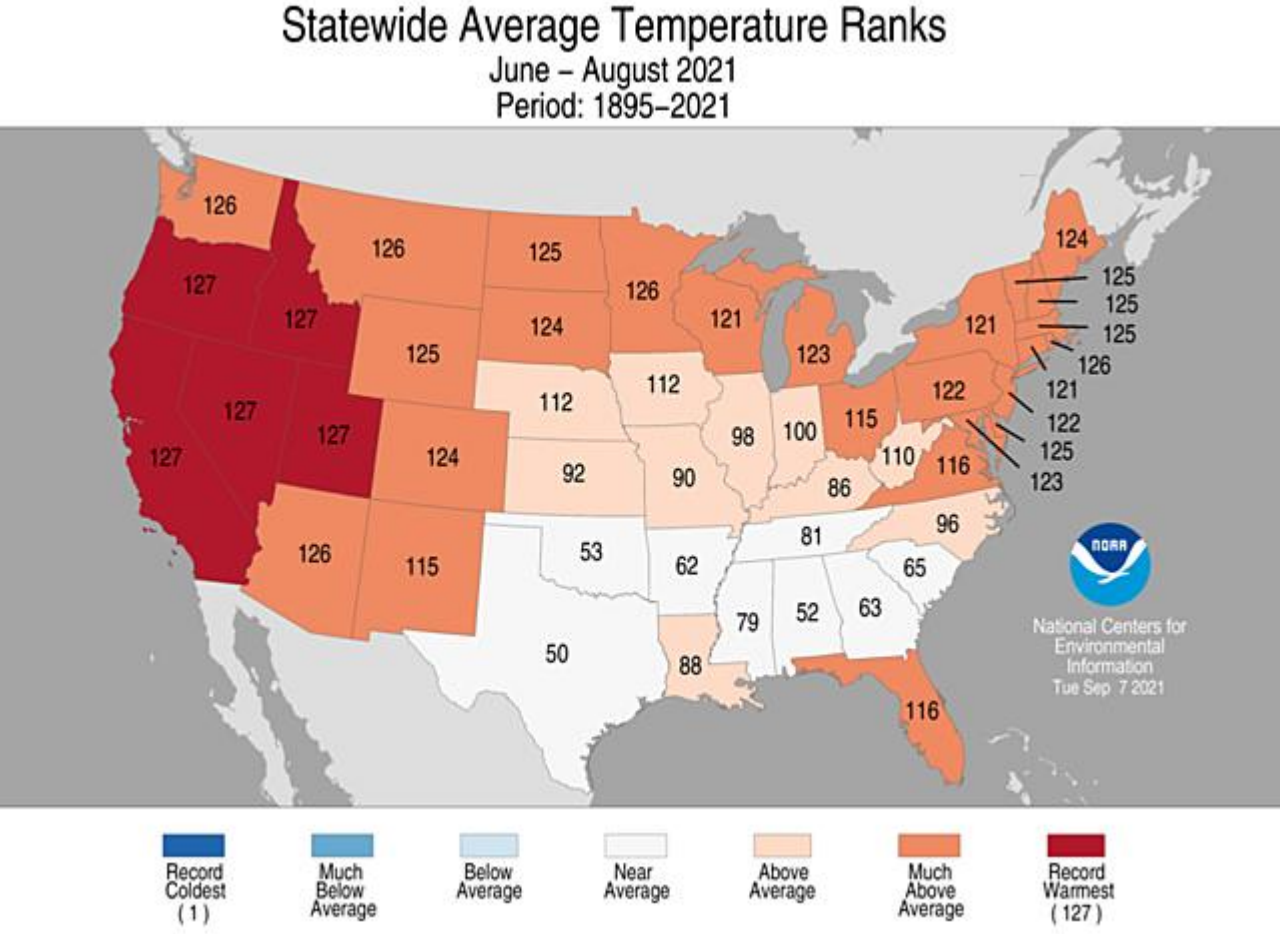


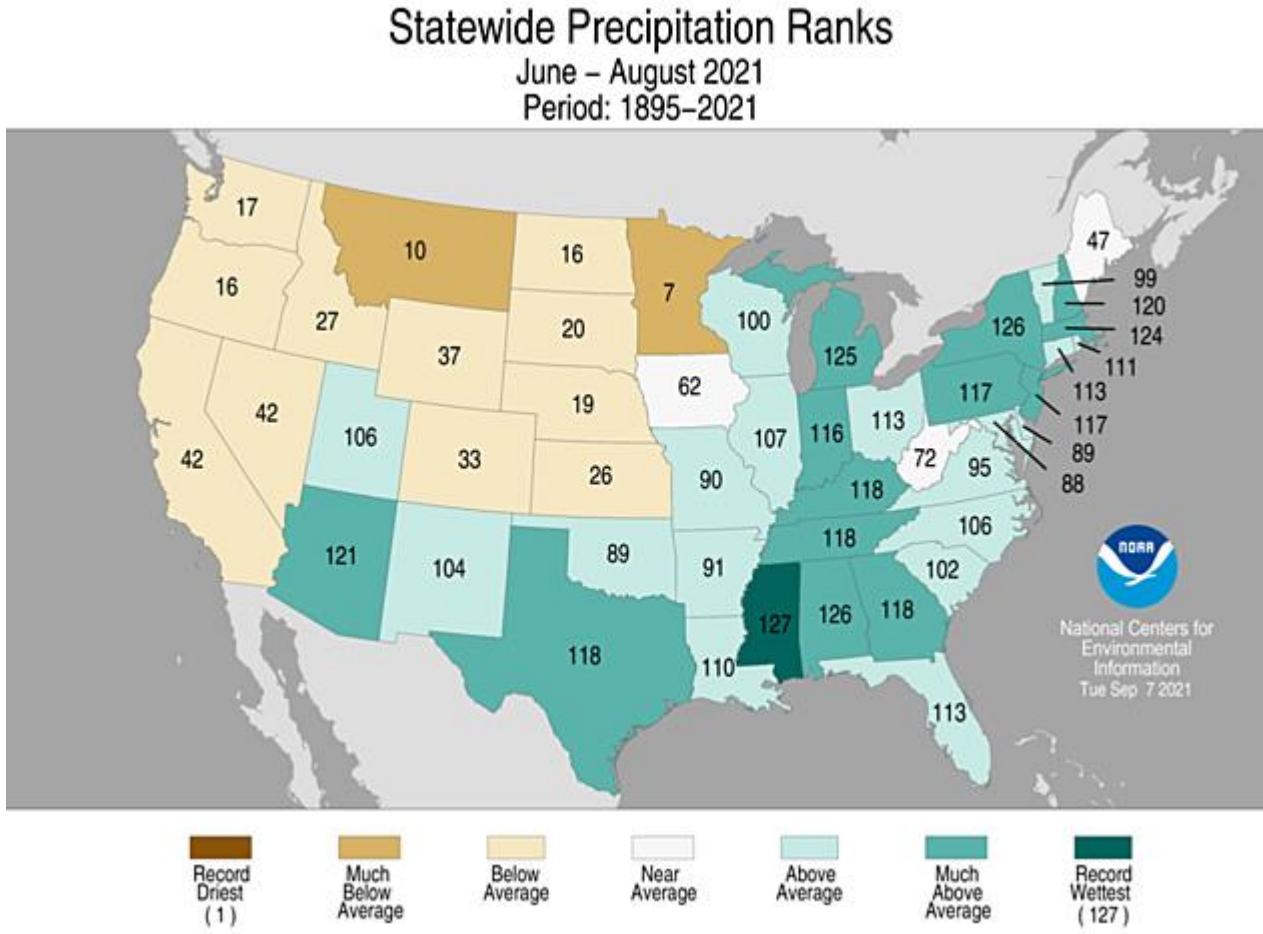


https://www.ncdc.noaa.gov/sotc/

Summer Climatology from the National Centers for Environmental Information

The contiguous United States had its warmest summer on record essentially tied with 1936 during the Dust Bowl

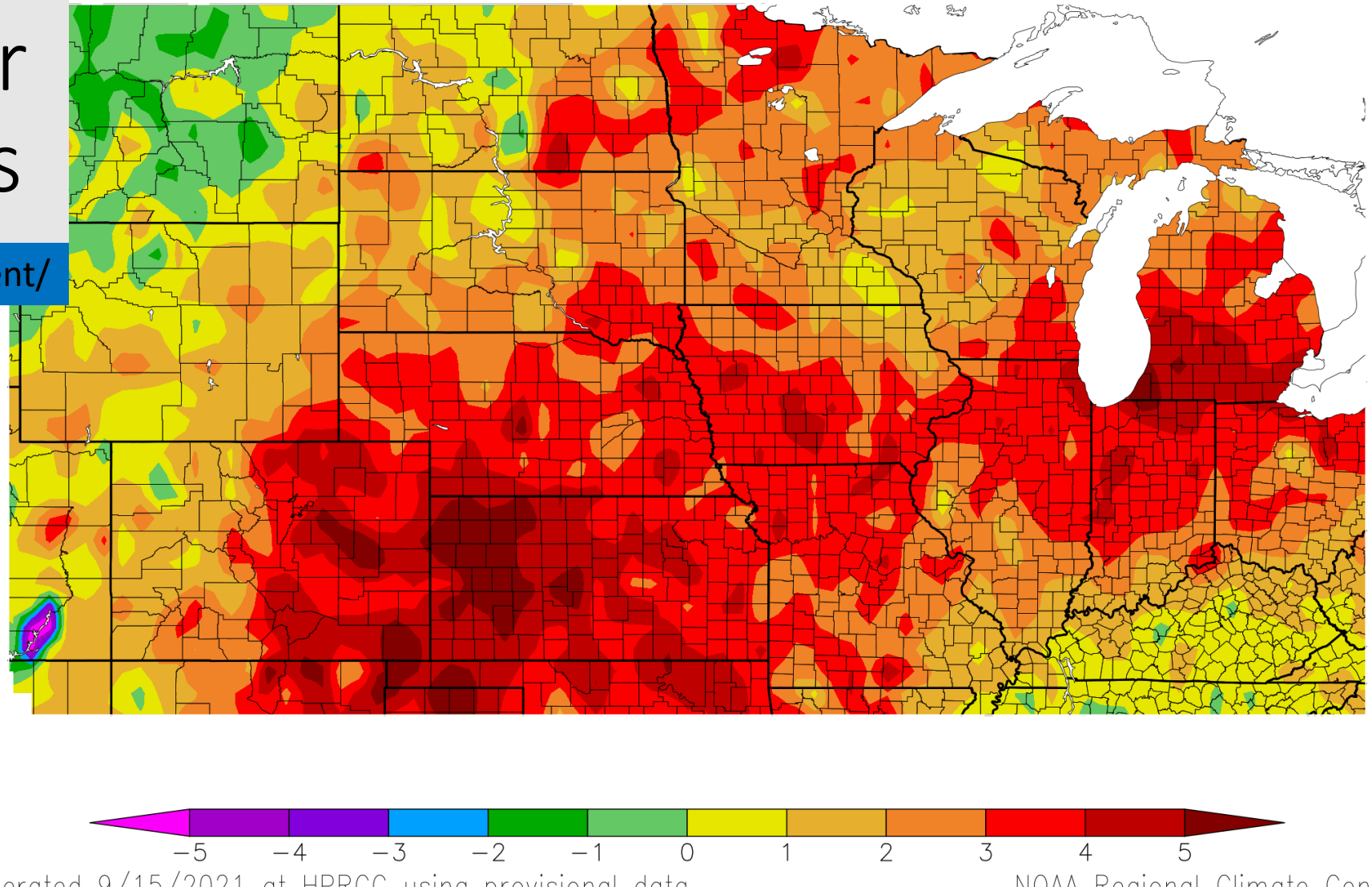




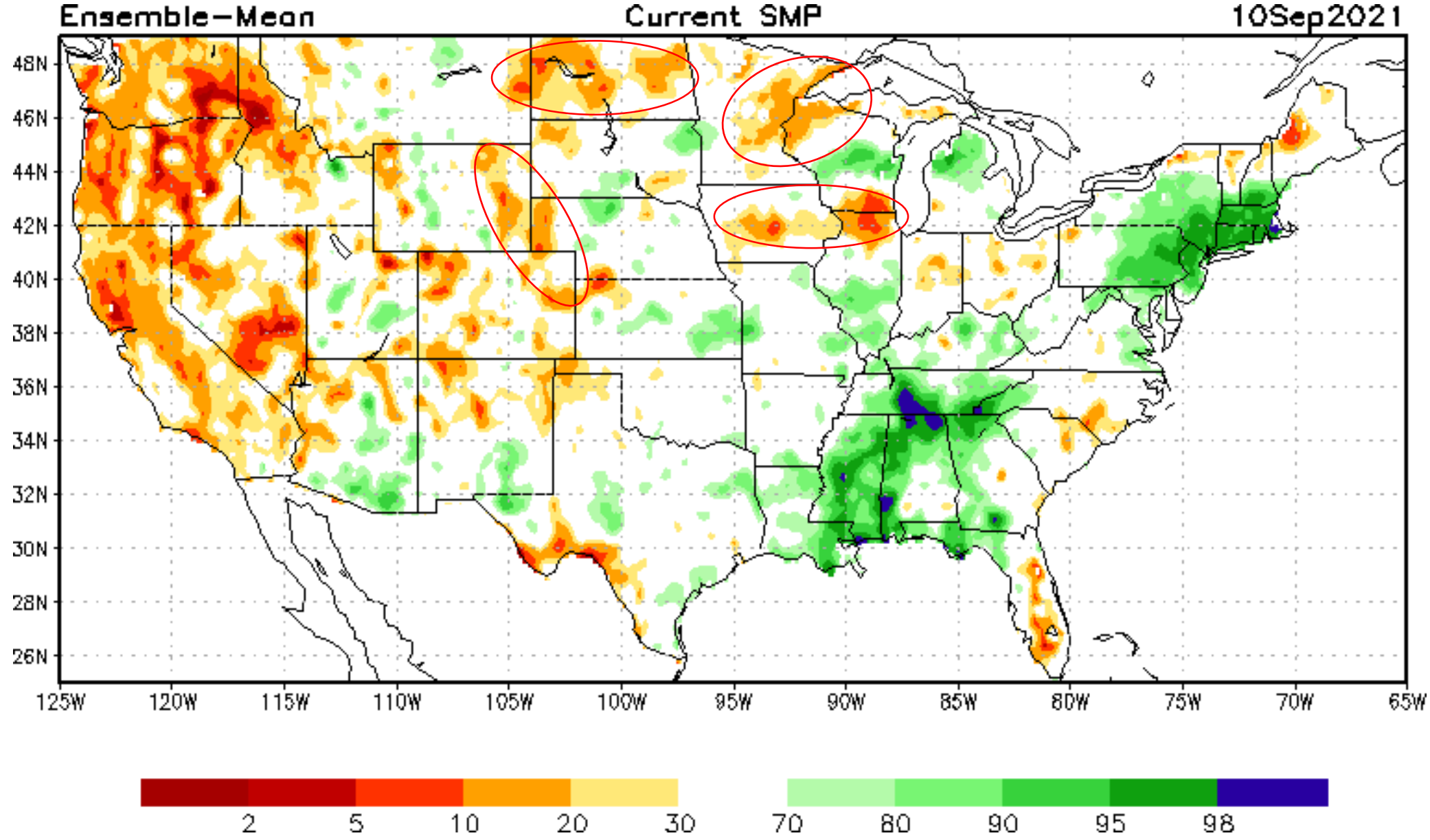
https://www.ncdc.noaa.gov/sotc/

Temperature departures over the last 30 Days

http://www.hprcc.unl.edu/maps/current/

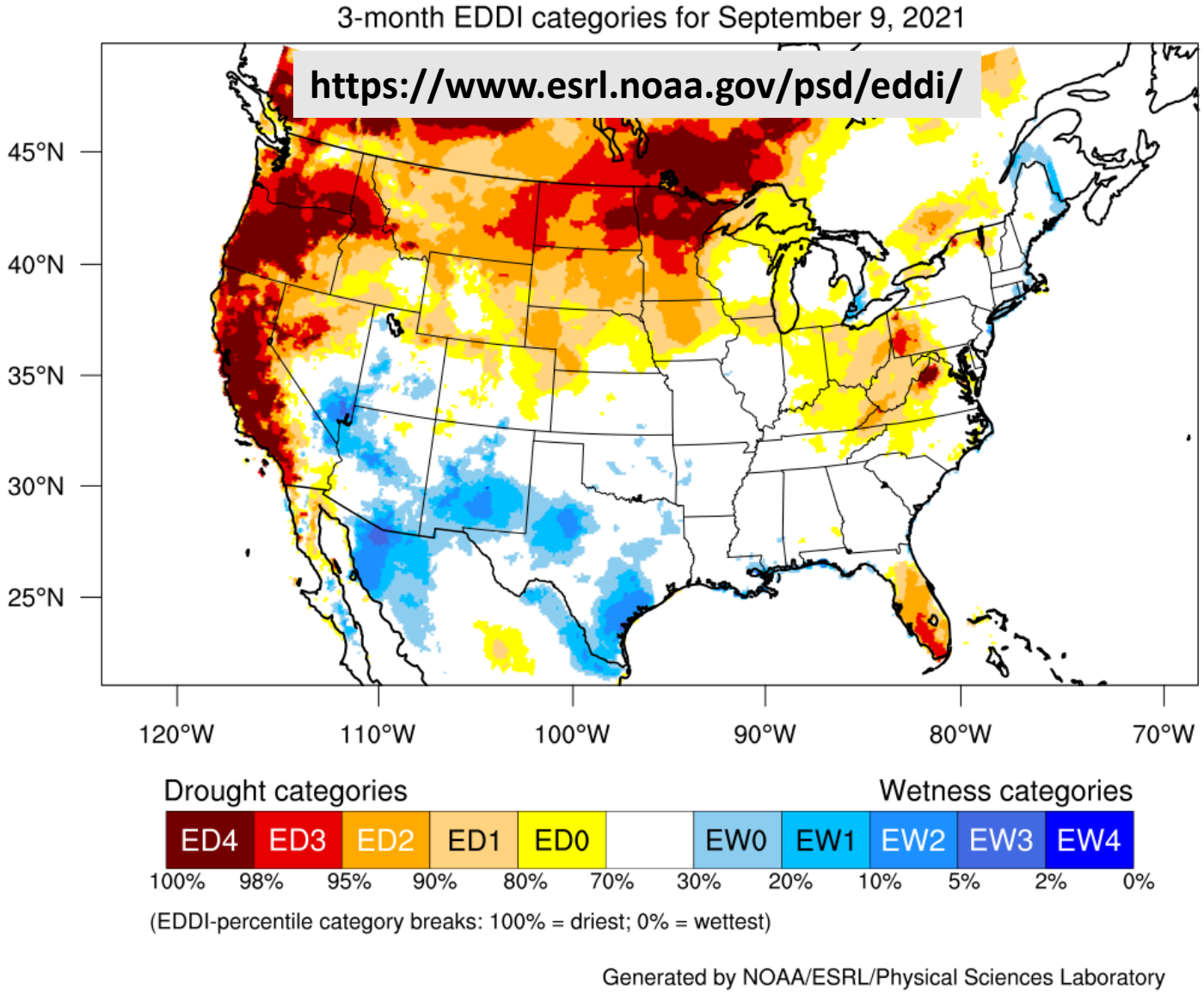


Current Soil Moisture Anomaly

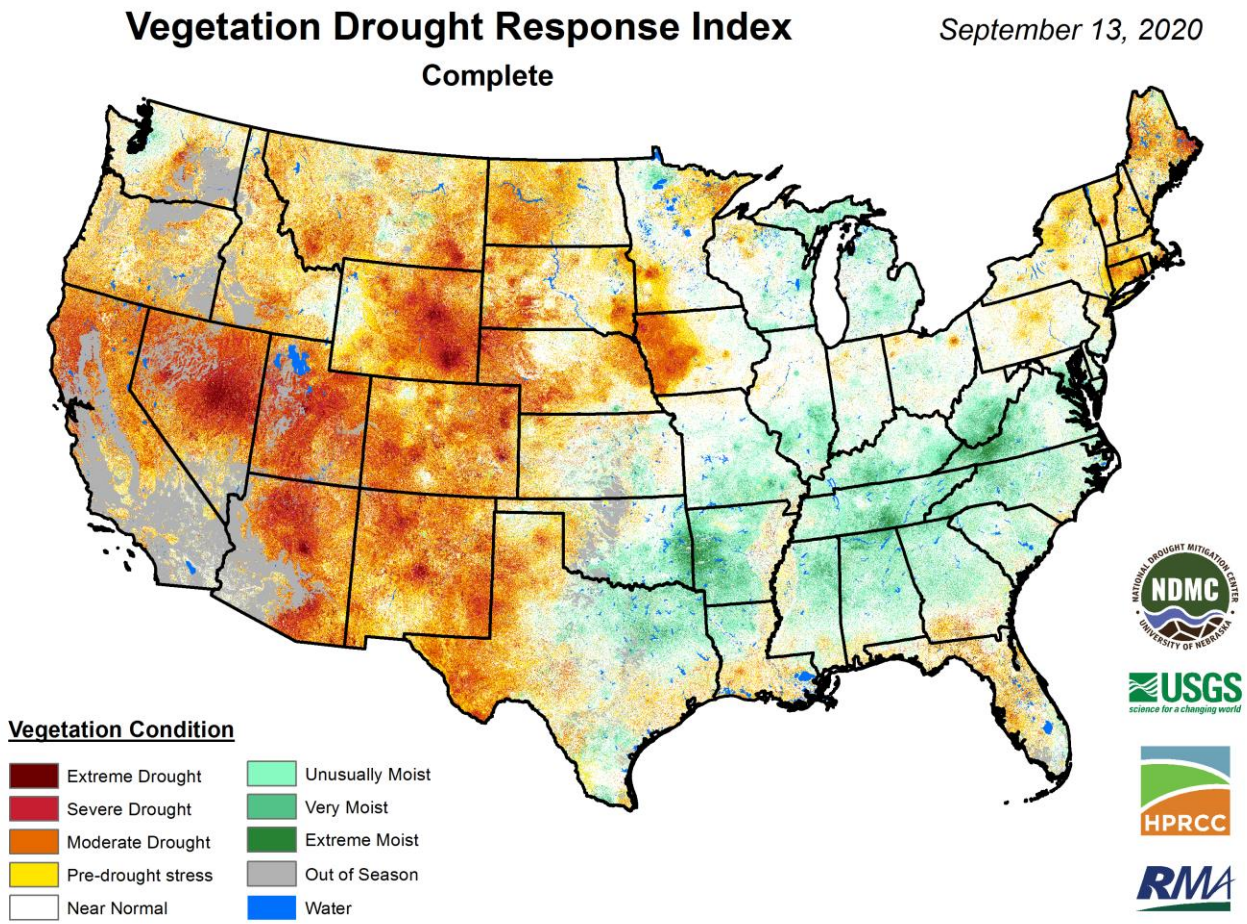


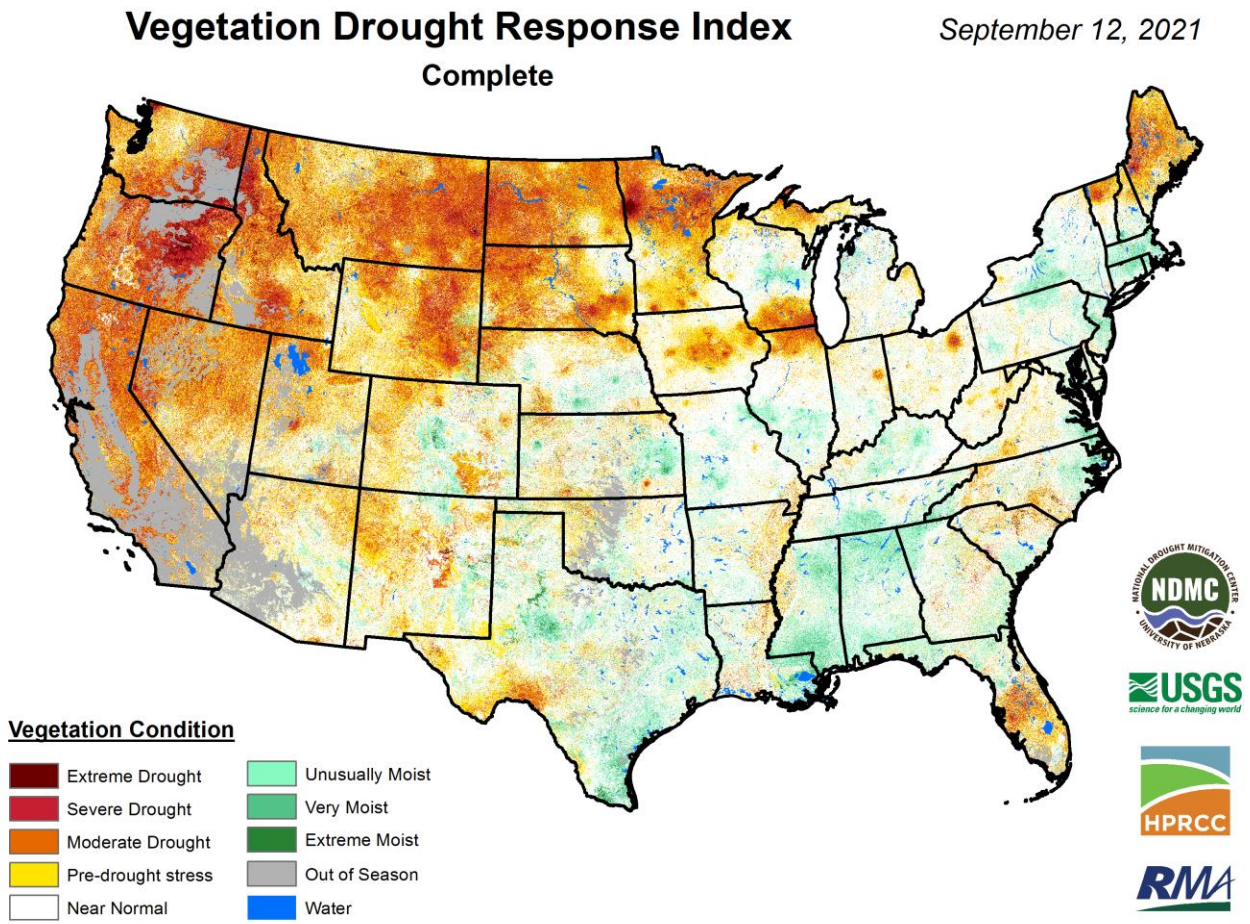
https://www.cpc.ncep.noaa.gov/products/Drought/Monitoring/smp_new.shtml#

Evaporative Demand Drought Index (EDDI)



Vegetation Drought Response Index (VegDRI)

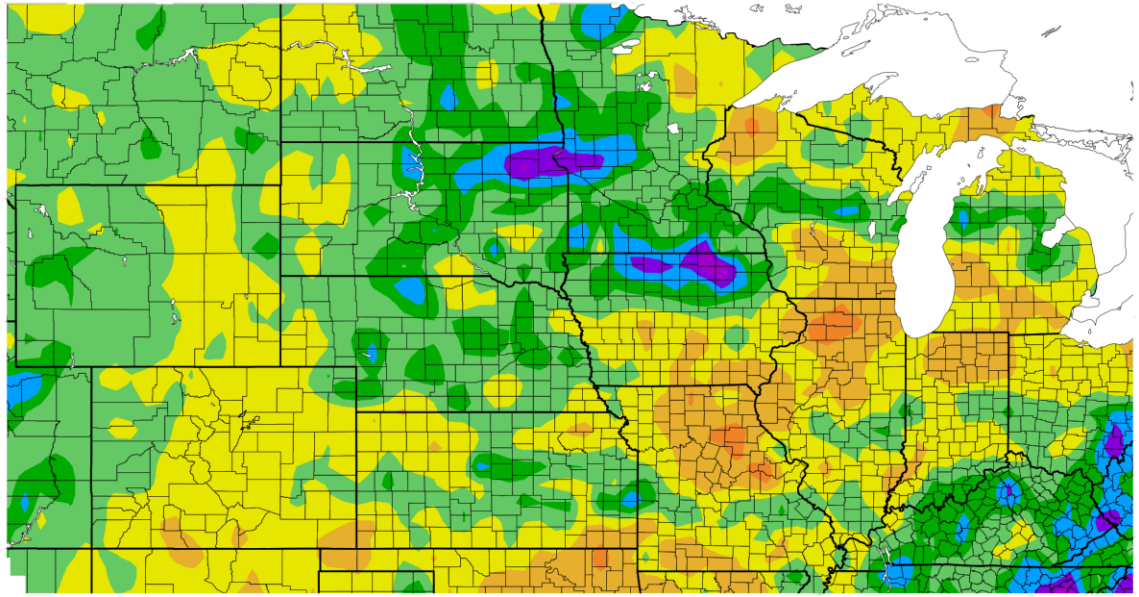




https://vegdri.unl.edu/

Precipitation over the last 30 Days

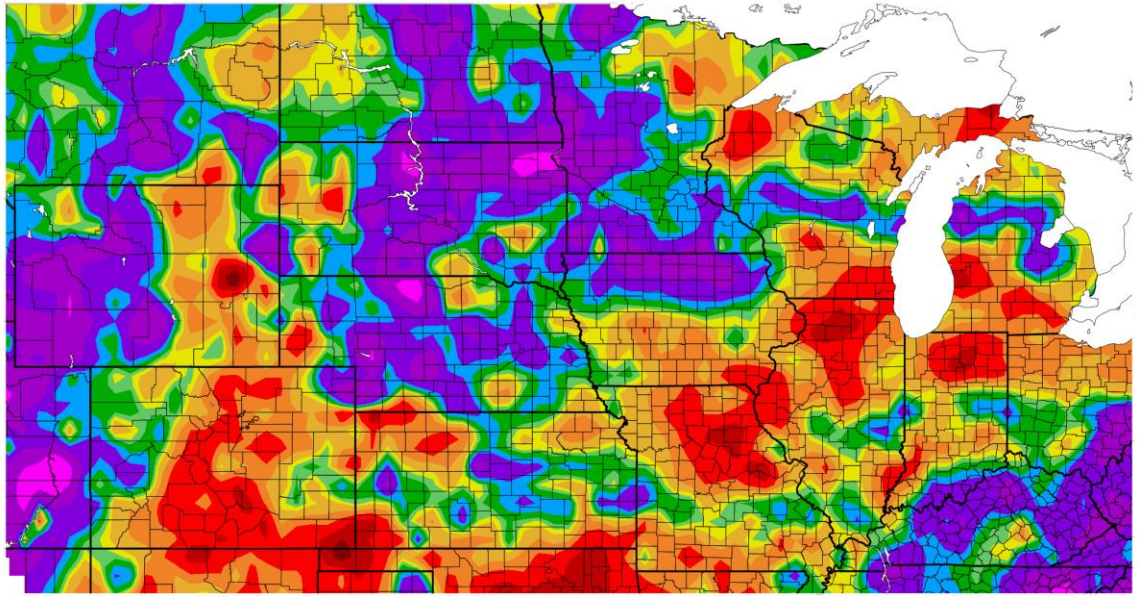
Departure from Normal Precipitation (in)
8/16/2021 – 9/14/2021



−7.5 −6 −4.5 −3 −1.5 0 1.5 3 4.5 6 7.5

Generated 9/15/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
8/16/2021 – 9/14/2021



5 25 50 70 90 100 110 130 150 200 300

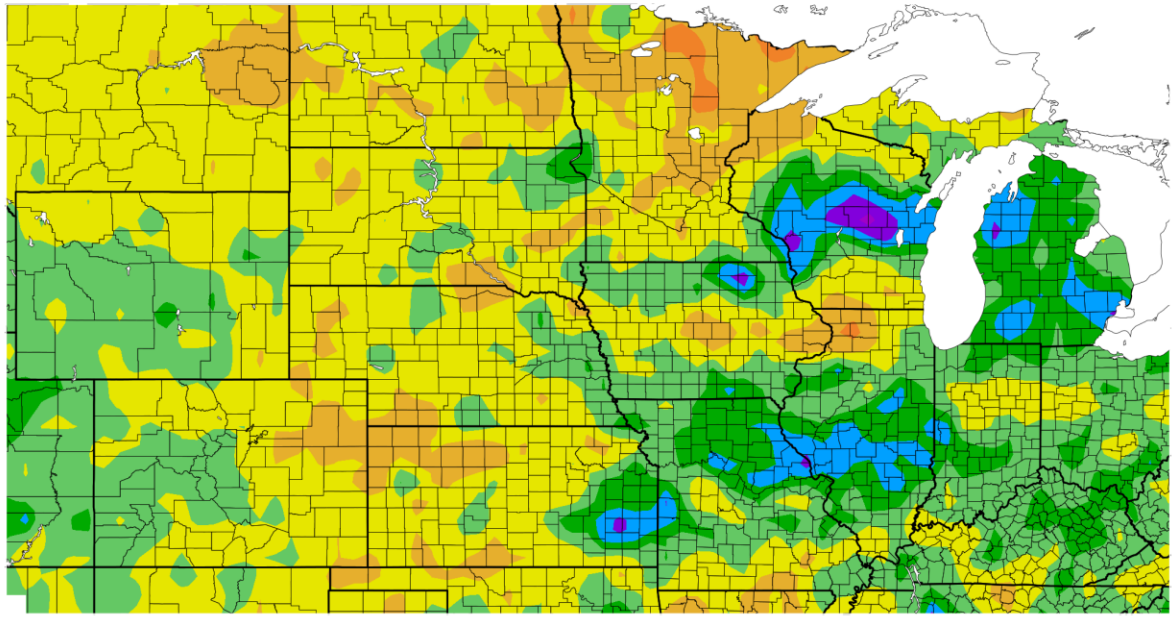
Generated 9/15/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

http://www.hprcc.unl.edu/maps/current/

NATIONAL DROUGHT MITIGATION CENTER

Precipitation over the last 90 Days

Departure from Normal Precipitation (in)
6/17/2021 – 9/14/2021

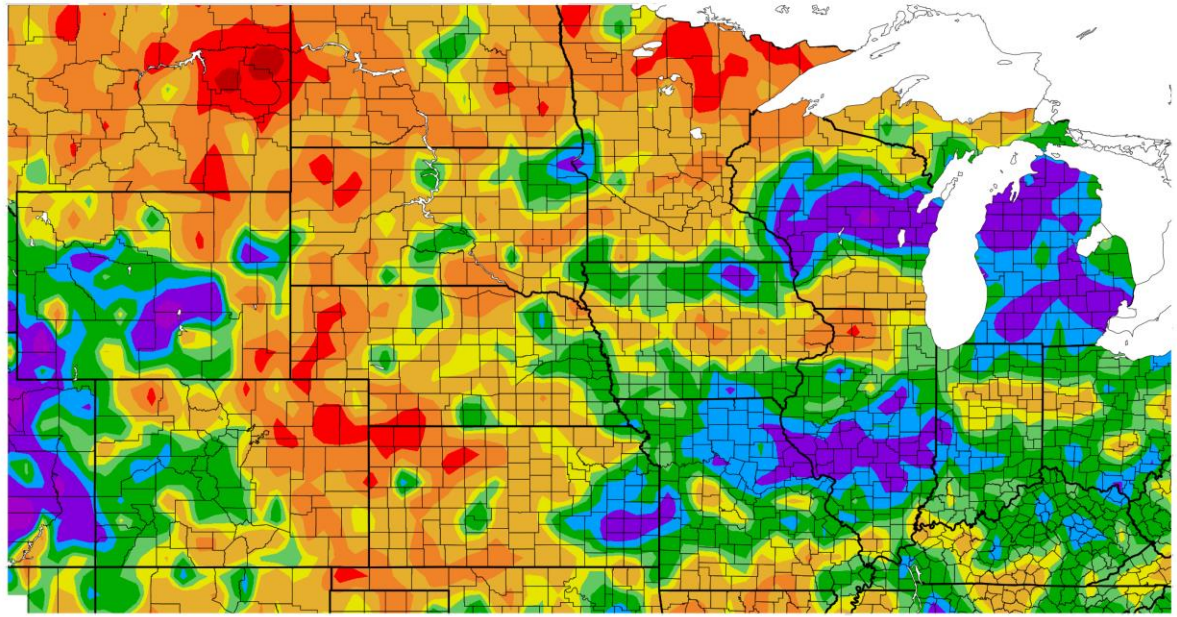


−15 −12 −9 −6 −3 0 3 6 9 12 15

Generated 9/15/2021 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
6/17/2021 – 9/14/2021



5 25 50 70 90 100 110 130 150 200 300

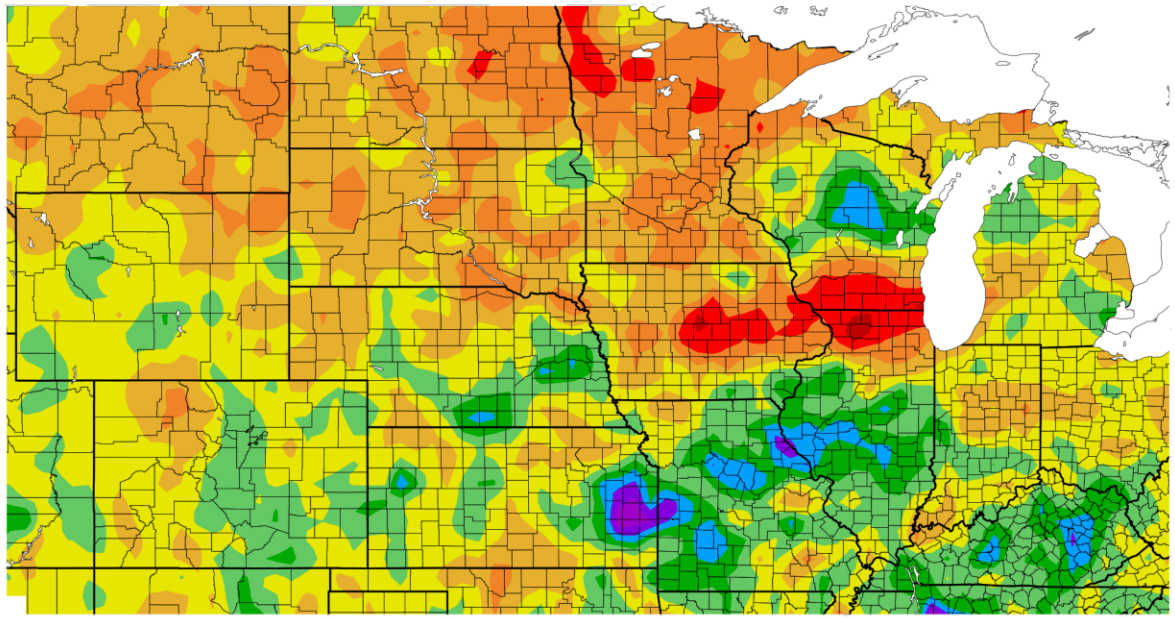
nerated 9/15/2021 at HPRCC using provisional data.

NOAA Regional Climate Centers

http://www.hprcc.unl.edu/maps/current/

Calendar Year Precipitation

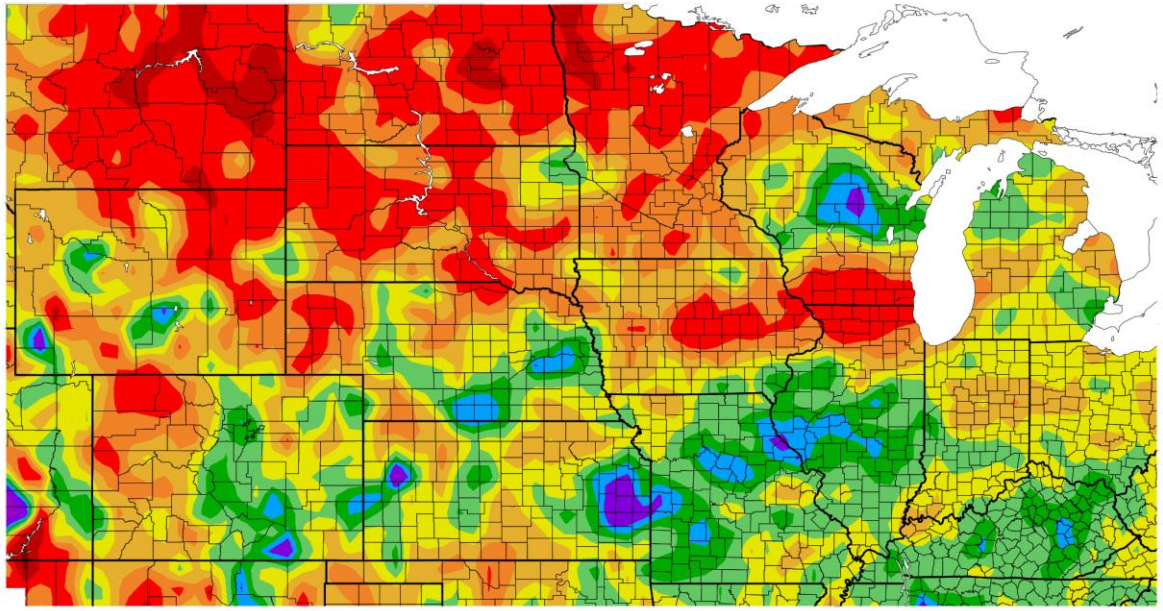
Departure from Normal Precipitation (in)
1/1/2021 – 9/14/2021



−15 −12 −9 −6 −3 0 3 6 9 12 15

Generated 9/15/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
1/1/2021 – 9/14/2021



25 50 70 80 90 100 110 120 130 150 175

Generated 9/15/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

http://www.hprcc.unl.edu/maps/current/

Regional Impacts

Ness County, KS sorghum in late August
Chip Redmond, KS state climate office

Condition Monitoring Observer Reports (**CMOR)** report photo from Beltrami County, MN

Our house and property is Located in Tenstrike, Minnesota at Gull Lake. The lake throughout the summer months has been receding 33 - 35 feet + from the normal level. Invasive plants, yellow jackets (wasps), bald faced hornets have been more prevalent especially close to the waters edge this season. Precipitation is a record low for this area this year in over a century. In the photographs there are markers with orange tips that are spaced 10 feet apart. The Wood steak is normal level indicator. The Wood Dock is 36 feet long the wheels are 24 inches.

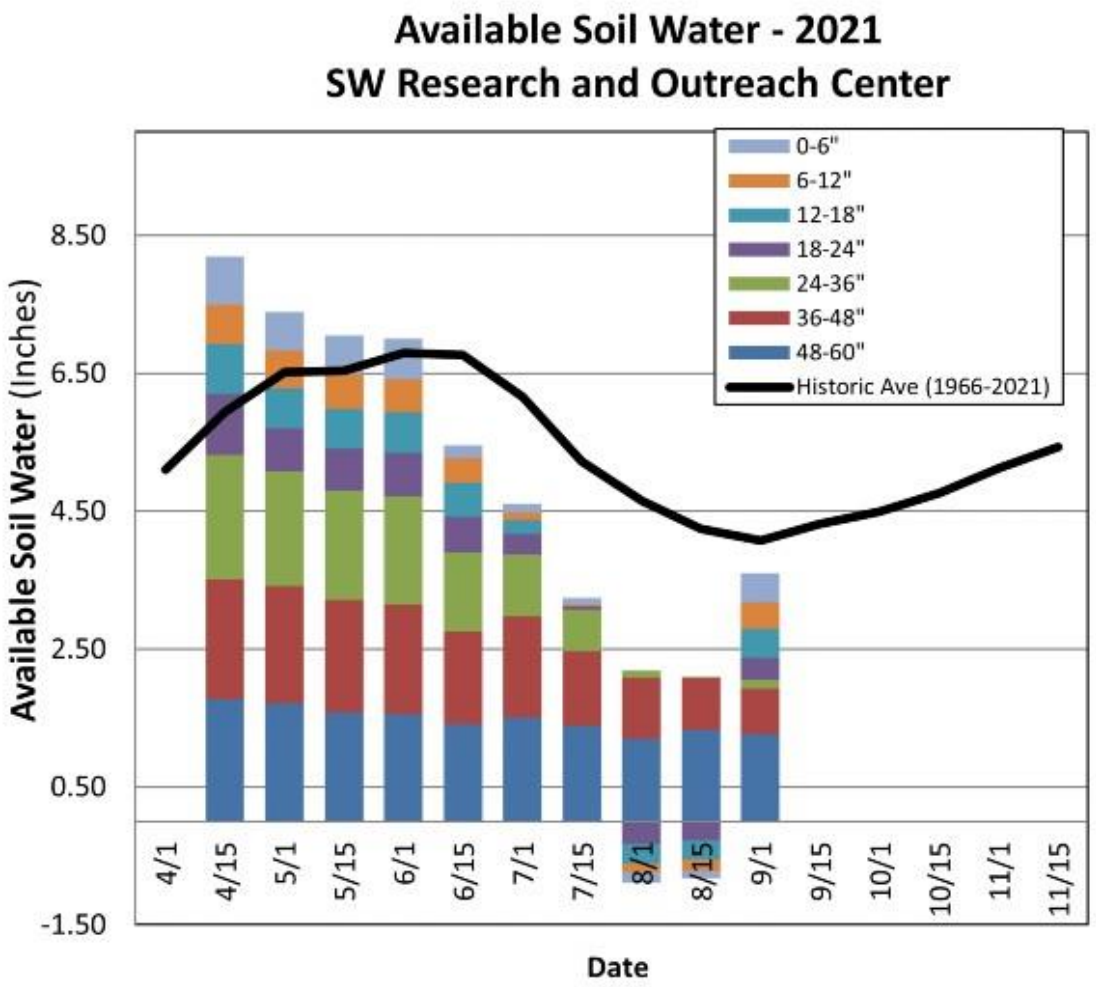
https://droughtimpacts.unl.edu/ConditionMonitoringObservations.aspx

South Dakota recent improvements from Laura Edwards

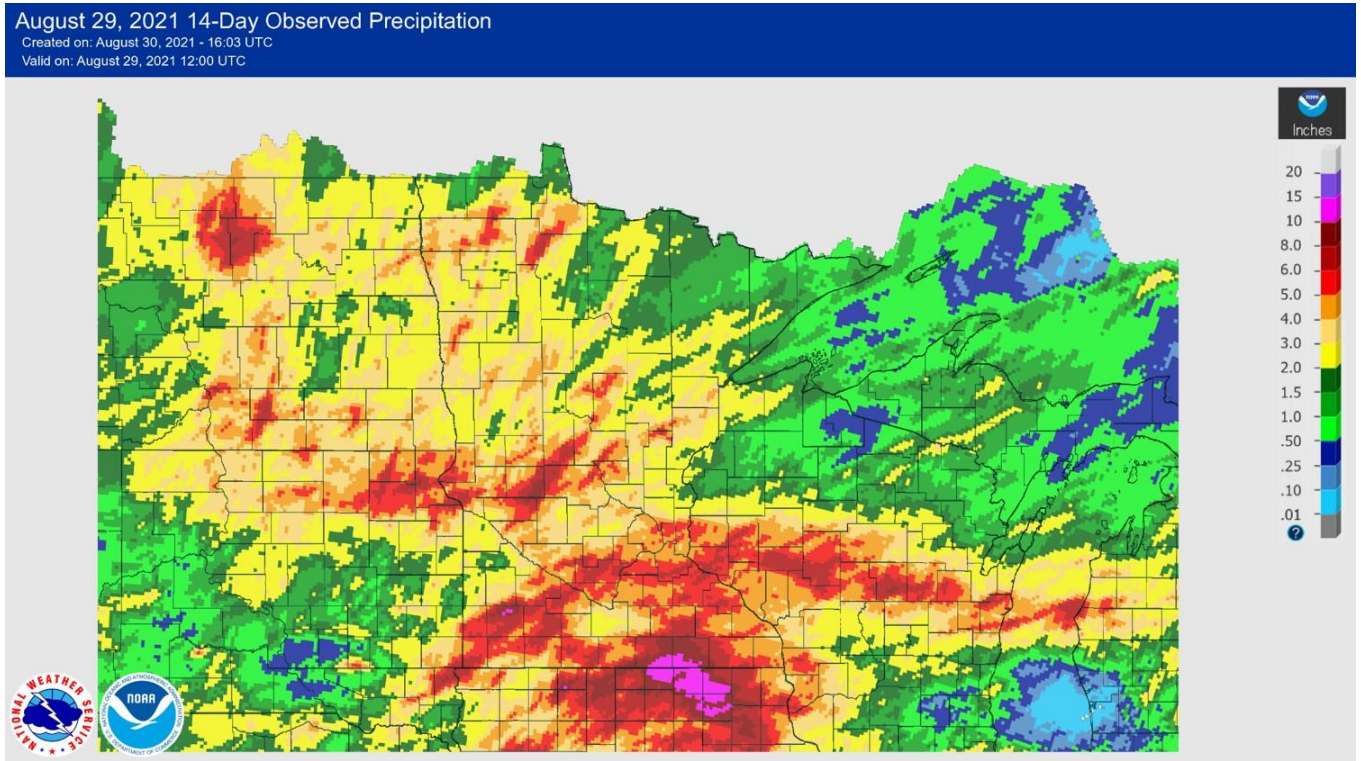
- Wheat planting is starting with decent moisture
- Some corn stalk issues developing (lodging) which may impact harvest
- Late influx of weeds with recent moisture
- Baseball size hail in northern/northeast SD the morning of August 28

Photos courtesy of Bonnie Hoffman, Ipswich, SD

Minnesota: Recent improvements from Pete Boulay



- Most of the improvements came during a late August wet spell
- A good response in soil moisture levels
- The Greenwood fire in Lake County has been burning for a month and has covered 26,000 acres and is 75% contained at this time



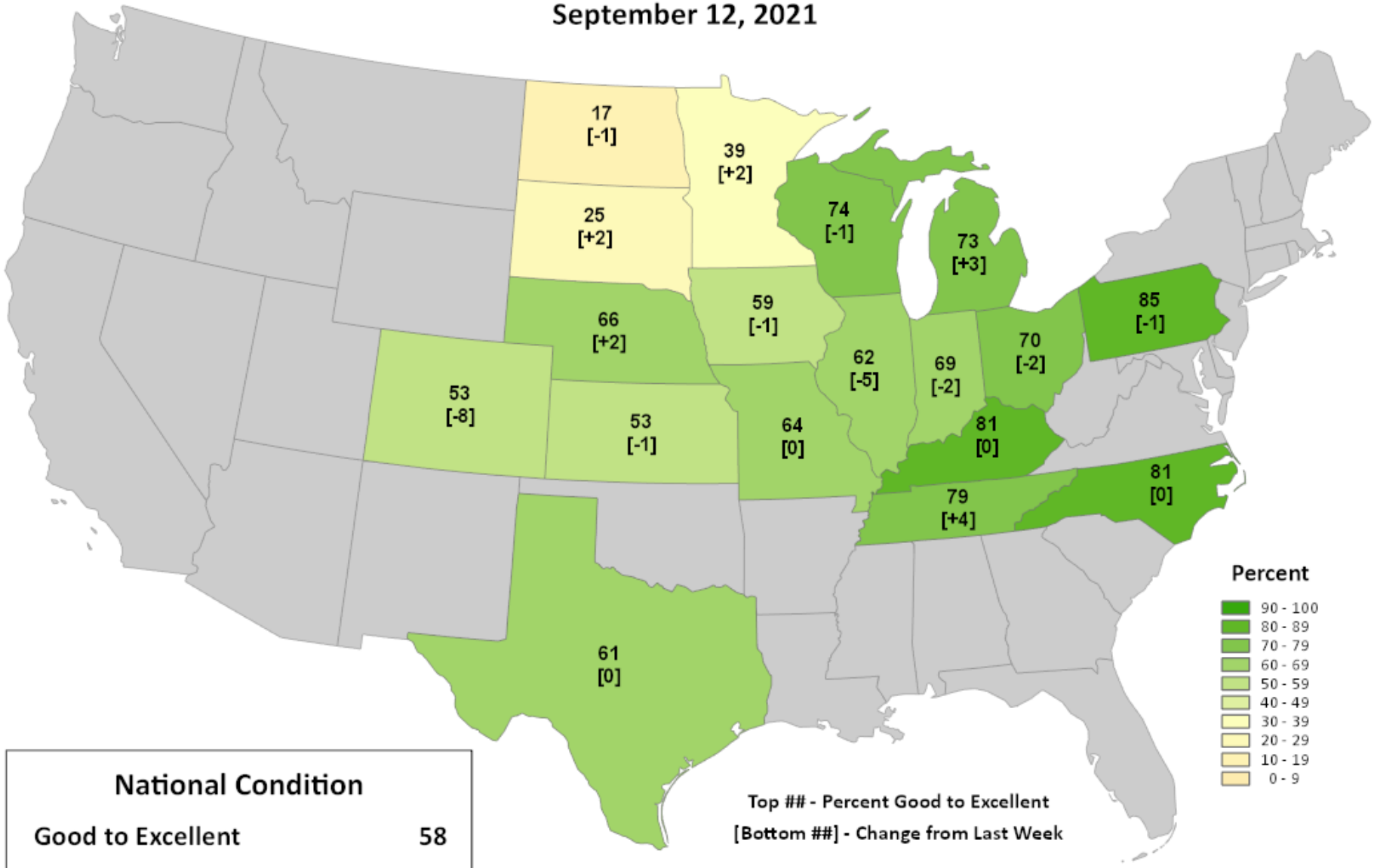
USDA United States Department of Agriculture

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

Corn Conditions

Percent Good to Excellent

September 12, 2021



National Condition	
Good to Excellent	58
Change from Last Week	-1

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

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United States Department of Agriculture

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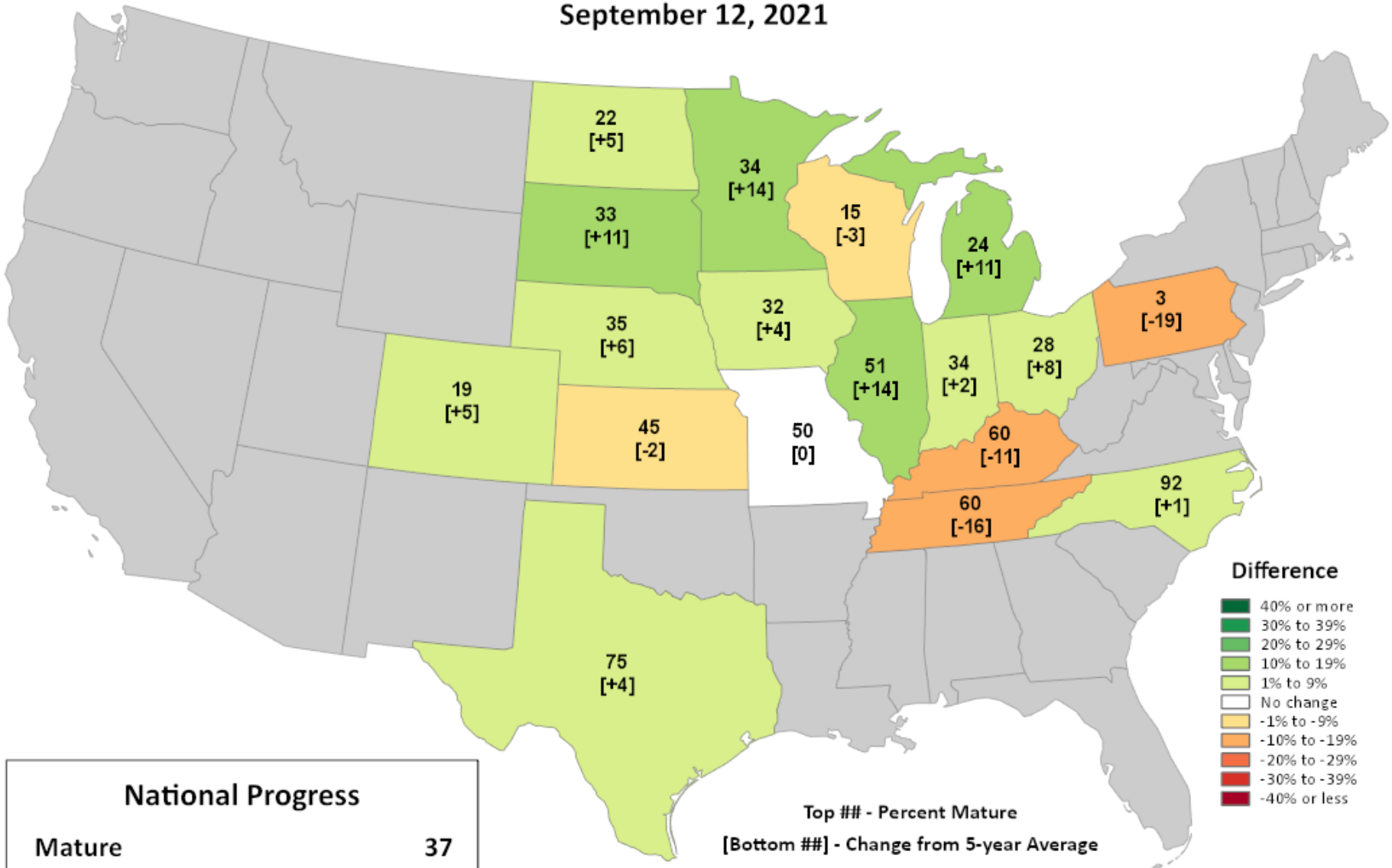
Corn Progress

Percent Mature

September 12, 2021



National Progress	
Mature	37
Change from 5-year Average	+6

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

United States Department of Agriculture

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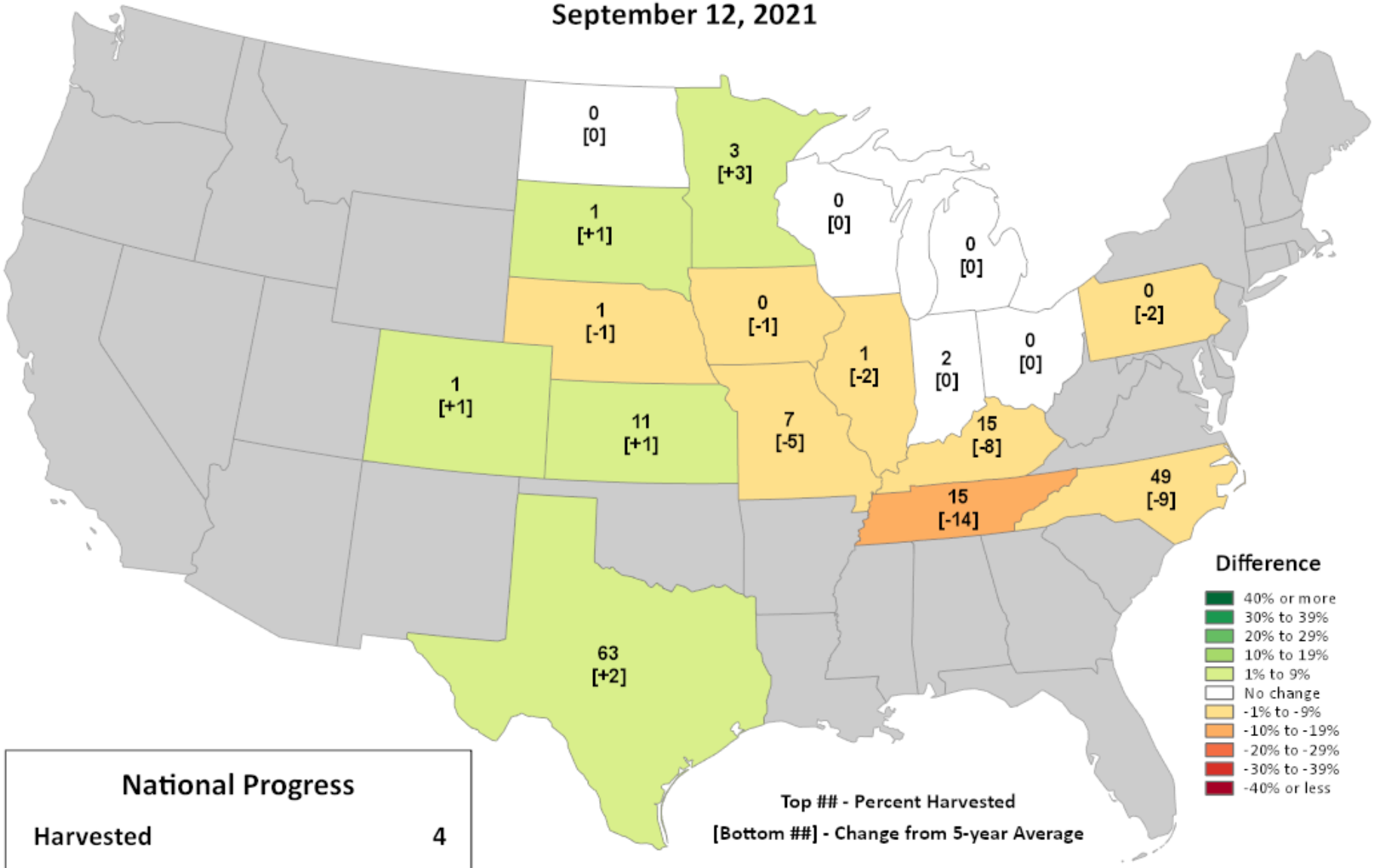
Corn Progress

Percent Harvested

September 12, 2021



National Progress	
Harvested	4
Change from 5-year Average	-1

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

Illinois update from Trent Ford

- Corn and beans drying fast in the fields with current grain moisture levels in the mid 20's
- Corn is being chopped for silage
- Wind damage in northern IL with damaged crops being harder to harvest
- Year to date, Chicago is 0.02" less than at the same time in 2012, driest since 2005.

Gundy County, IL damaged corn photos by Russ Higgins

United States Department of Agriculture

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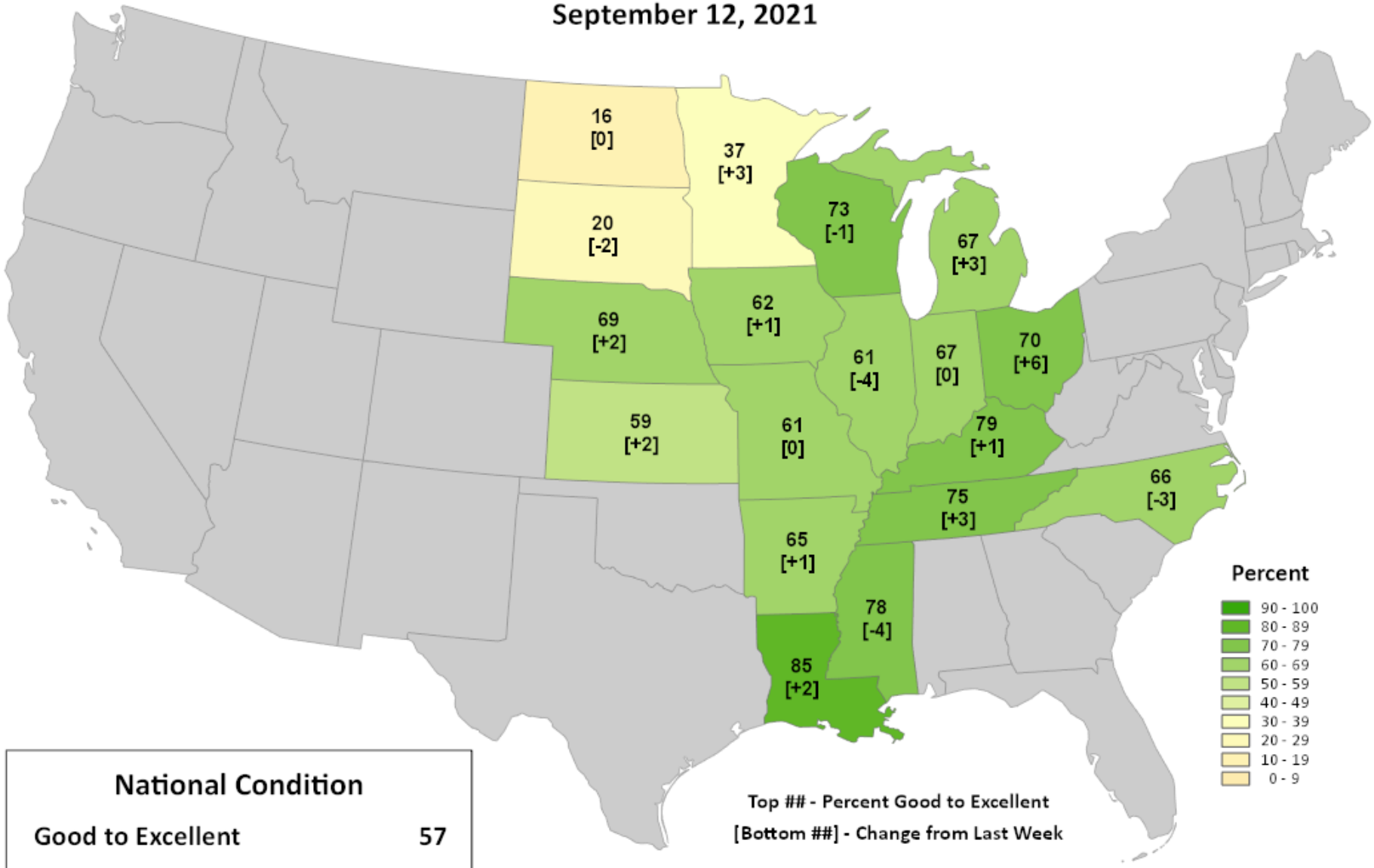
Soybean Conditions

Percent Good to Excellent

September 12, 2021



National Condition	
Good to Excellent	57
Change from Last Week	0

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

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USDA United States Department of Agriculture

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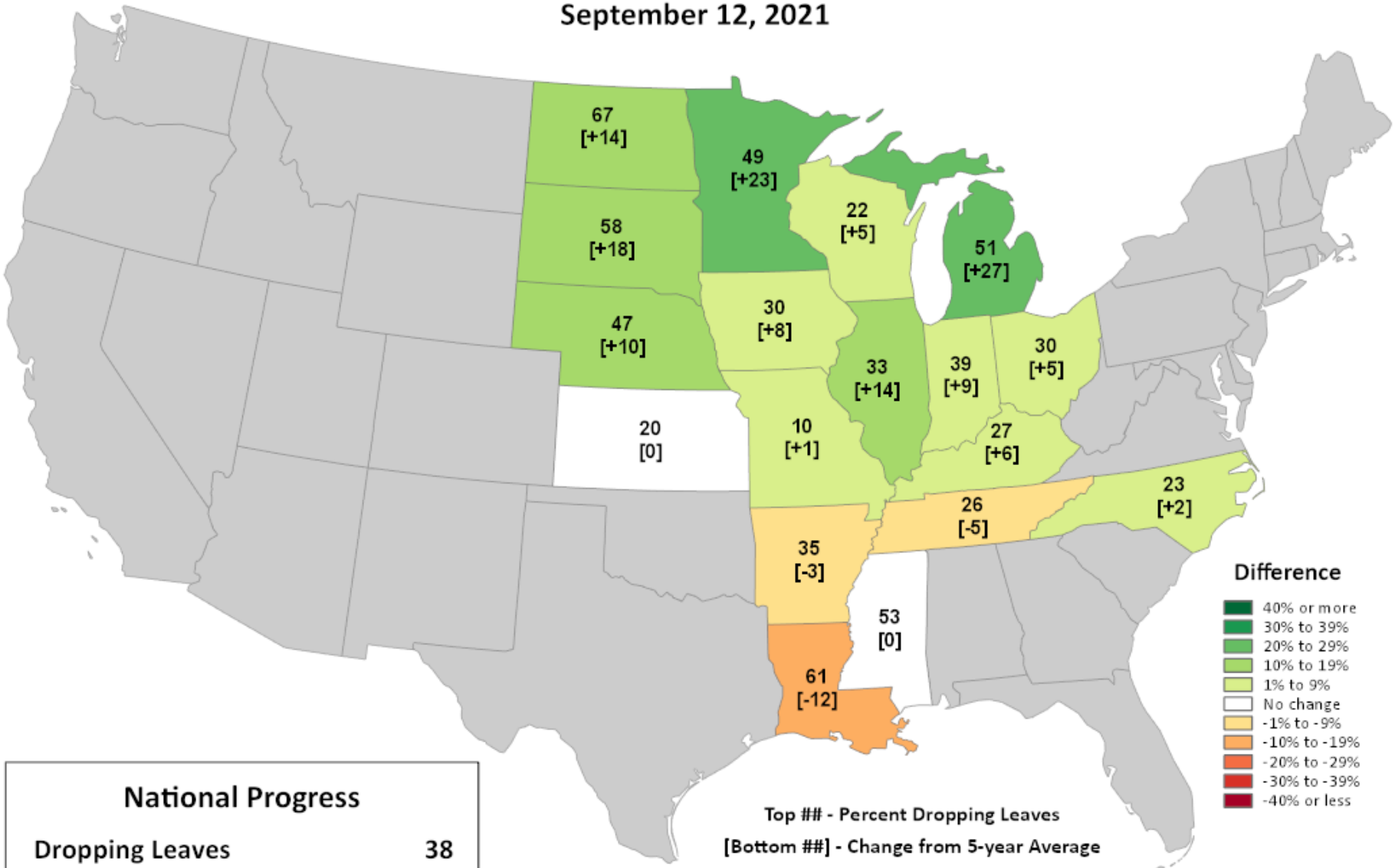
Soybeans Progress

Percent Dropping Leaves

September 12, 2021



National Progress	
Dropping Leaves	38
Change from 5-year Average	+9

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

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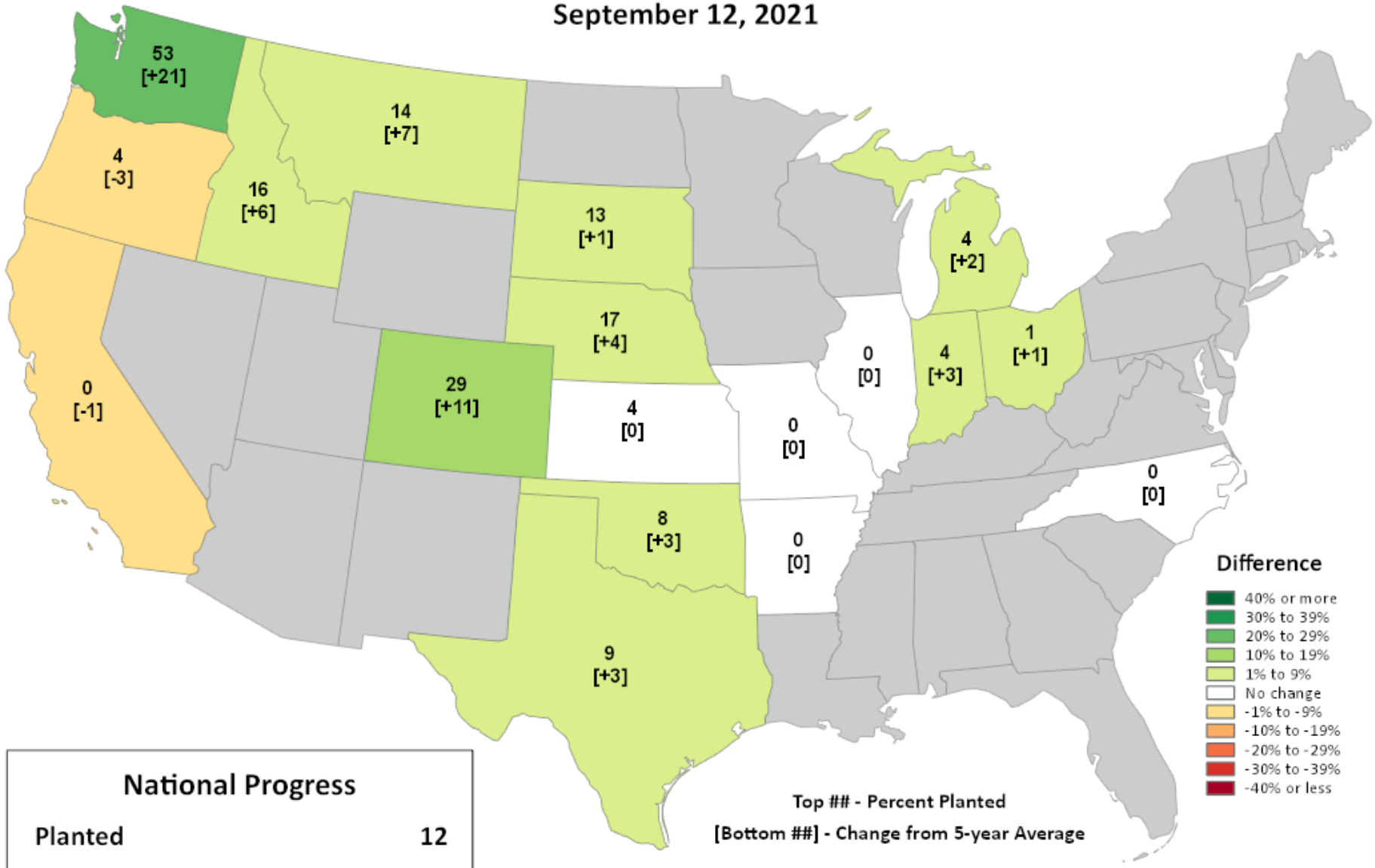
Winter Wheat Progress

Percent Planted

September 12, 2021



National Progress	
Planted	12
Change from 5-year Average	+4

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

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Wyoming and Colorado: Winter Wheat Planting and Hay concerns

From Justin Derner:

- Winter wheat is mostly planted in SE Wyoming.
- Spotty recent rains have permitted green to remain on the rangeland landscape - forage conditions remain good to excellent.
- Hay supplies remain tight and prices high.
- Some pneumonia in calves and cows with cool nights and hot days (45-50 degree swings from morning to afternoon).
- 3rd cutting alfalfa mostly either cut and ready to bale or has been baled. Millet is mostly baled.
- Good amount of silage being cut from here to central Nebraska.

From Becky Bollinger:

- Summer dryness in E. Colorado was tough on spring planted crops
- Winter wheat planting is taking place with decent germination except in northeast CO wh[illegible] slowing down planting progress
- Hot temperatures continuing with temperatures into the 100's in September with record highs being set
- Western CO had a good monsoon season which helped soil moisture and surface flows
- No fire issues at this time

USDA United States Department of Agriculture

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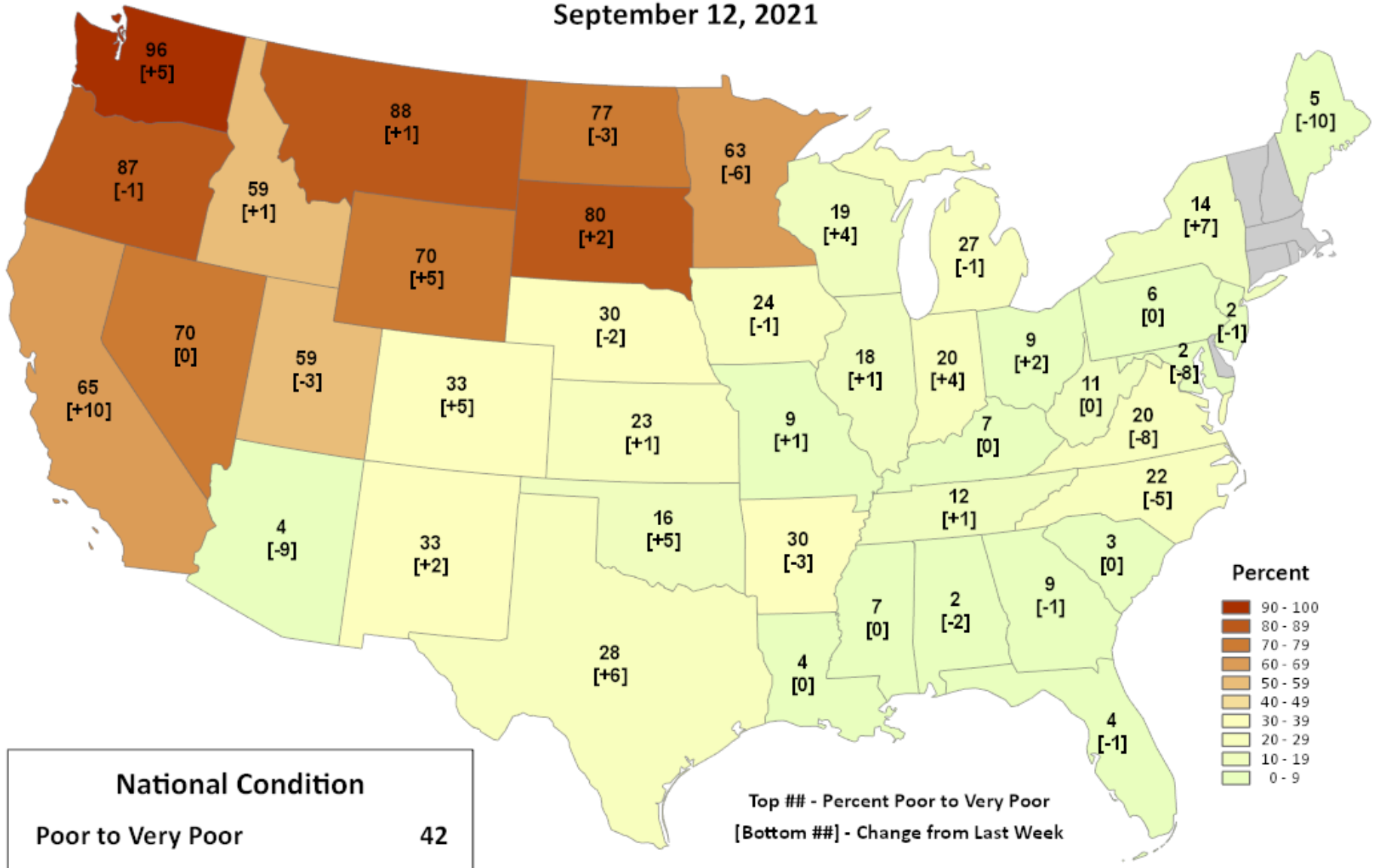
Pasture and Range Conditions

Percent Poor to Very Poor

September 12, 2021



National Condition	
Poor to Very Poor	42
Change from Last Week	+1

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

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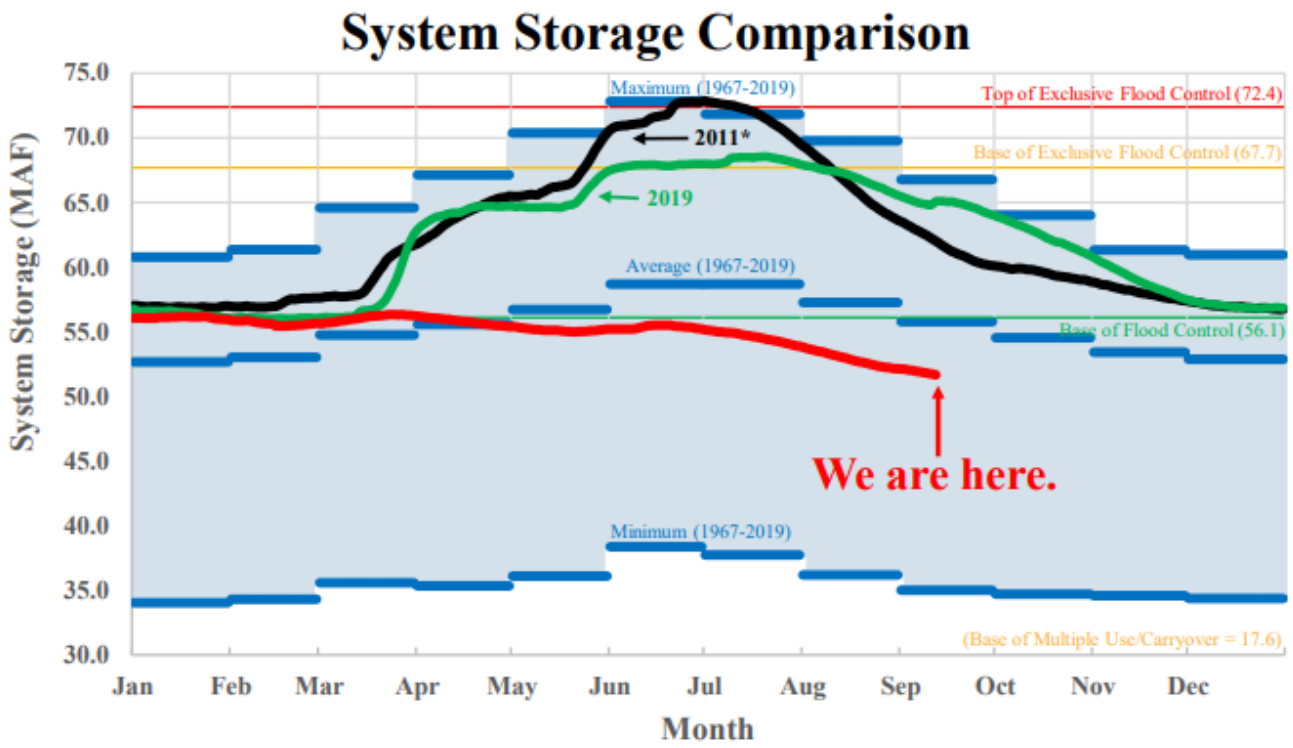
Missouri River Basin

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

Missouri River Basin – Update – 14 Sep 2021

Mainstem Reservoir Status:

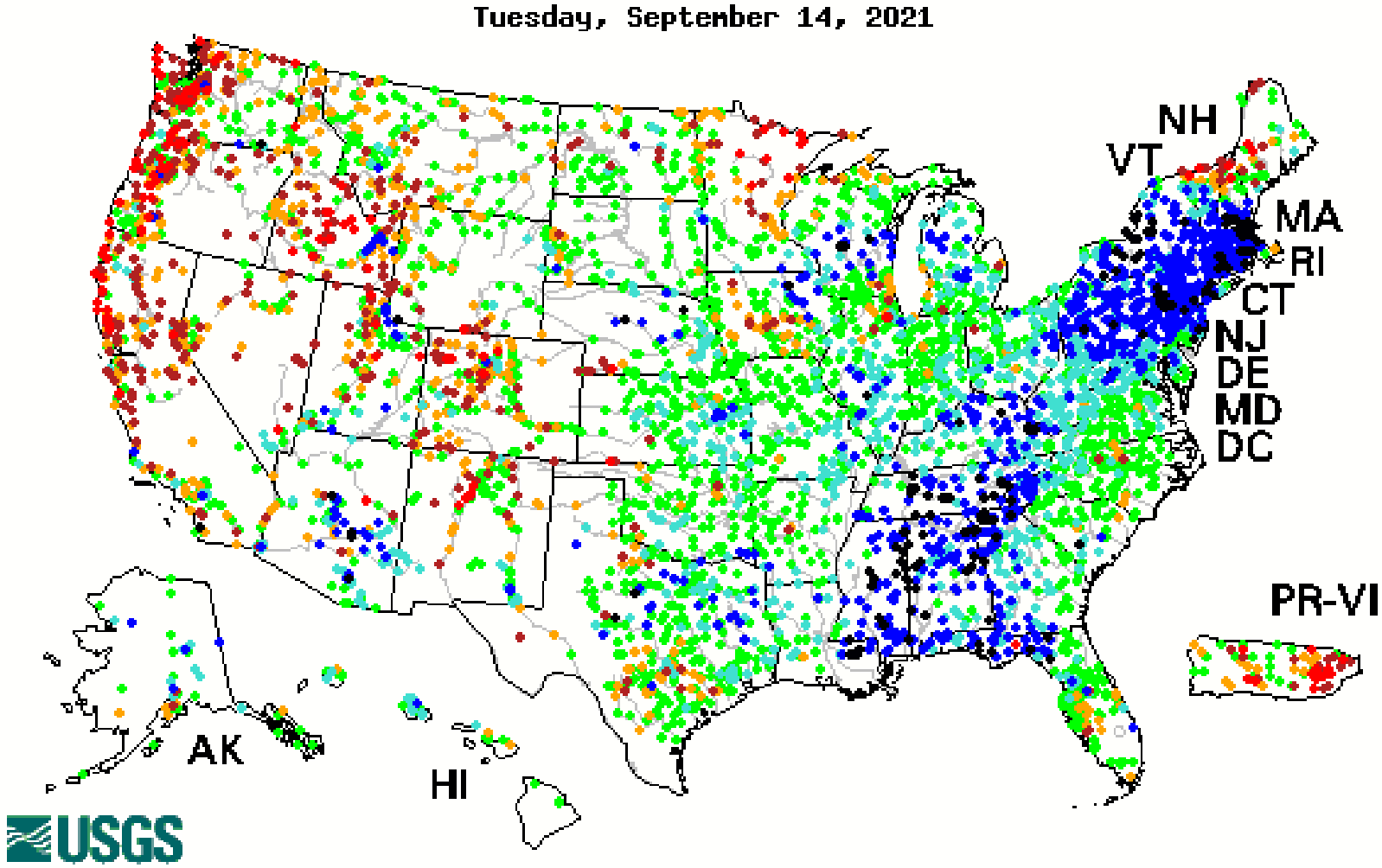
- System storage is 51.6 MAF, 0.3 MAF less than last week (upper right quadrant).
- A letter was mailed to lower river water users notifying them that Gavins Point winter releases will be at the minimum rate of 12,000 cfs, per the September 1 System storage check (click here).
- Upper Basin runoff during the first 2 weeks of September was 90% of average (click here).
- Soil conditions in most of the Basin have improved since June 30th (lower right quadrant).
- Fall in-person public meetings have been scheduled for the last week in October. Details for locations, dates, and times can be found in our latest press release (click here).
- Per the Master Manual, support for the 2nd half of the navigation flow support season (July 1 to December 1) is 1,500 cfs less than full service (click here).
- The navigation flow support will be a full 8-month season.
- Refer to the 3-Week Forecast (click here) for the most up-to-date System information – pool levels, inflows and releases.



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

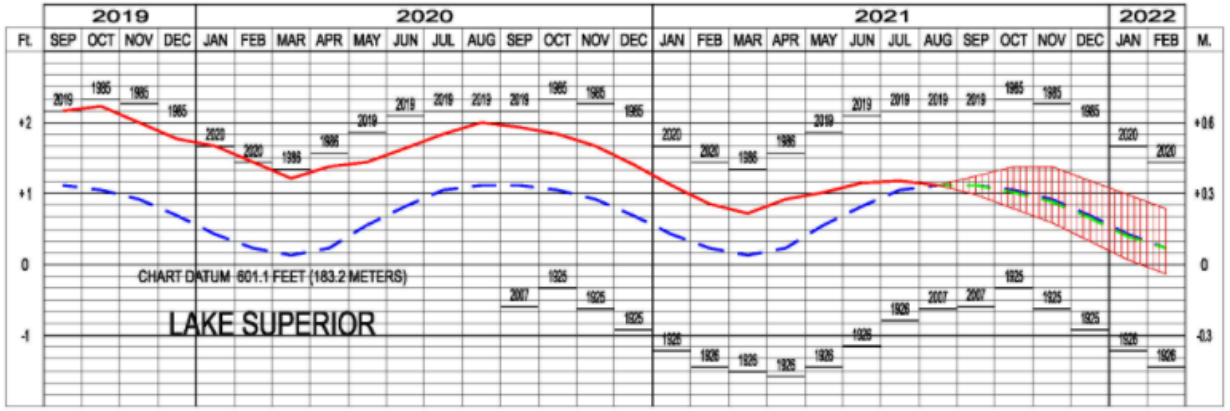
http://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/weeklyupdate.pdf

28-Day Average Streamflow

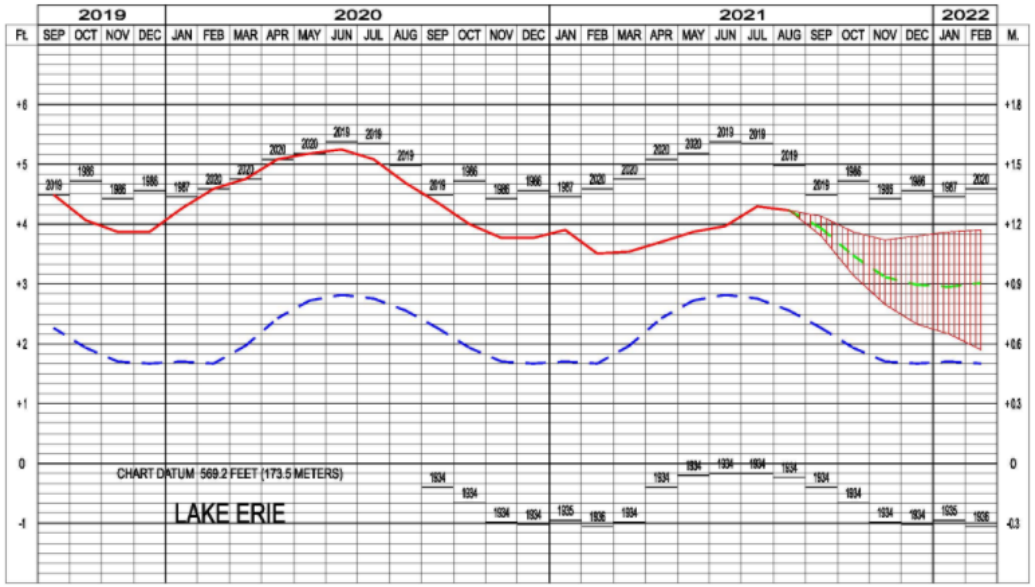


http://waterwatch.usgs.gov/

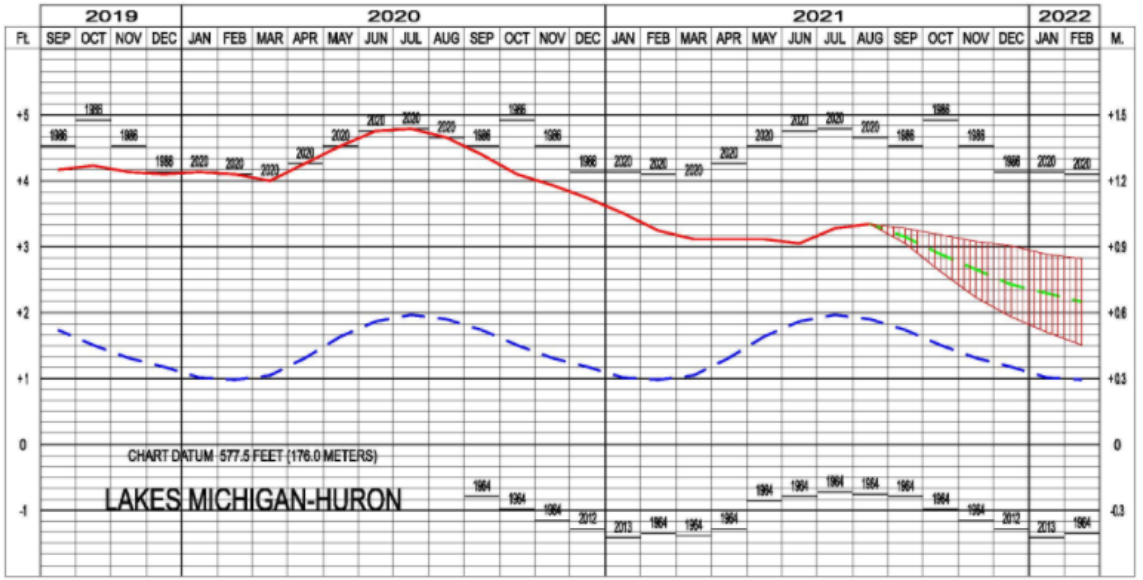
LAKE SUPERIOR WATER LEVELS - SEPTEMBER 2021

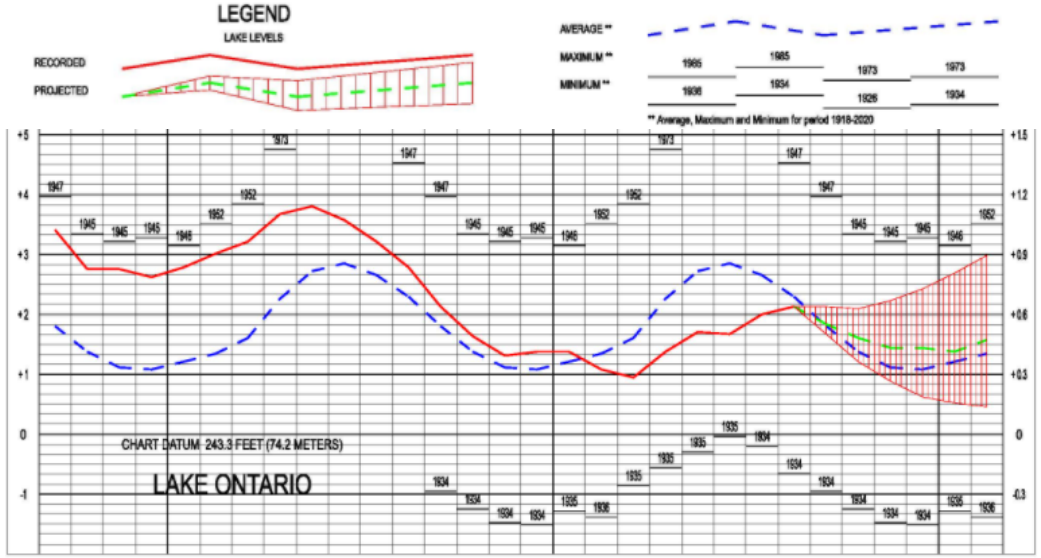


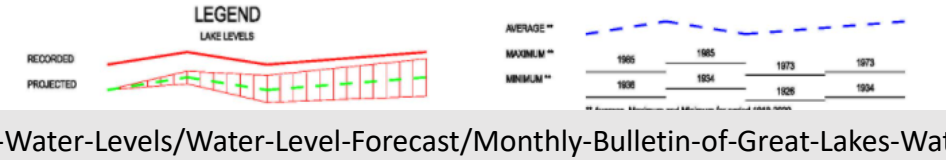
LAKE ERIE WATER LEVELS - SEPTEMBER 2021



LAKES MICHIGAN-HURON WATER LEVELS - SEPTEMBER 2021







https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/Monthly-Bulletin-of-Great-Lakes-Water-Levels/

Drought Update

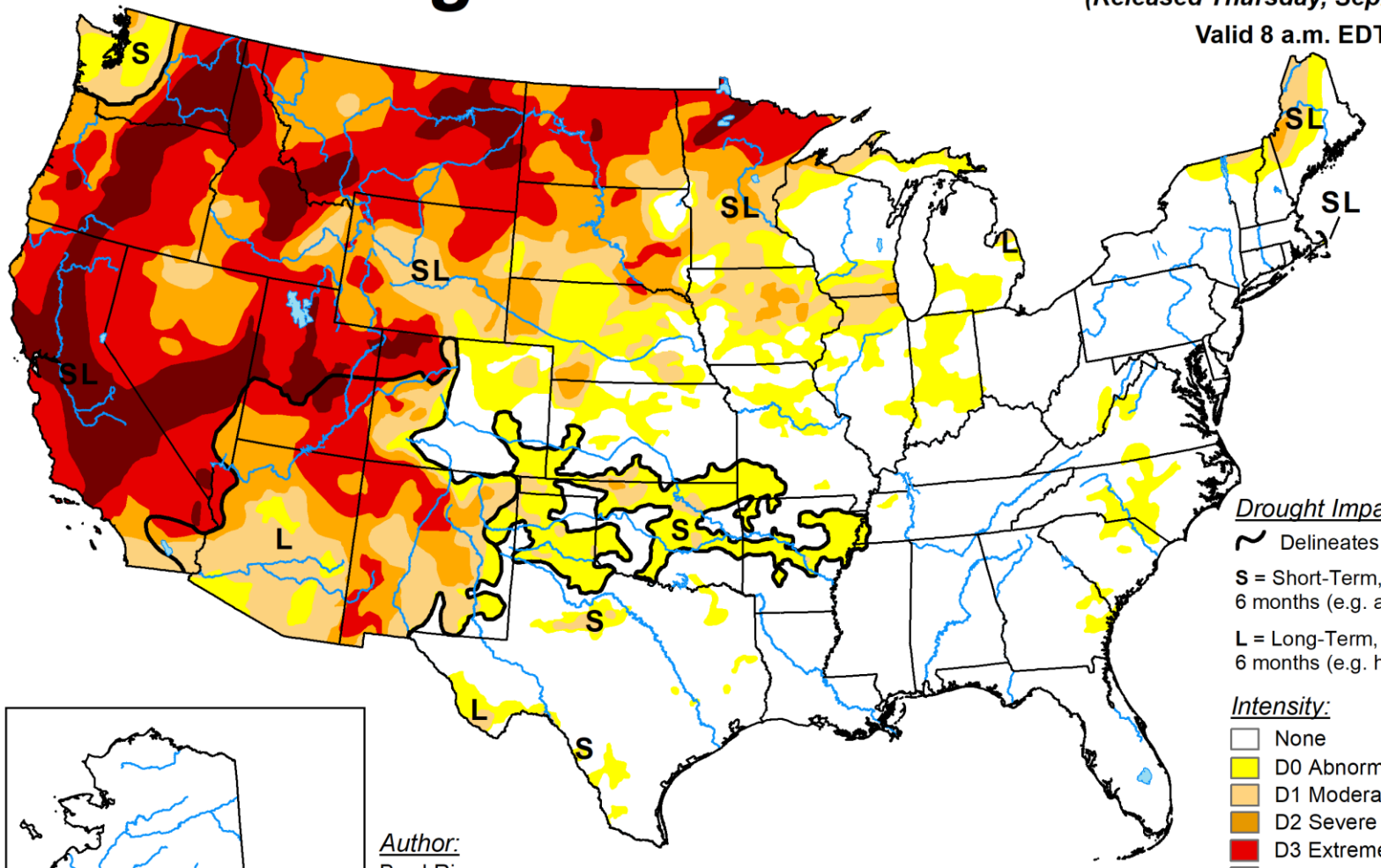
Photo via CMOR in Beltrami County, MN

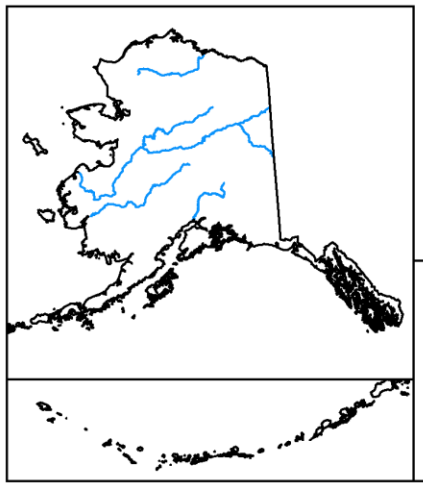
U.S. Drought Monitor

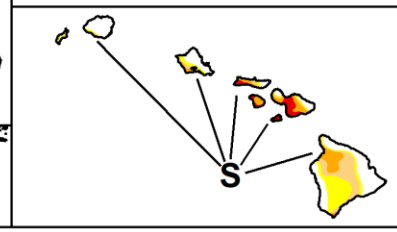
September 14, 2021

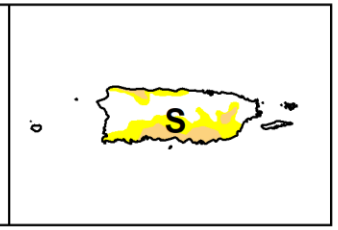
(Released Thursday, Sep. 16, 2021)

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:

Brad Rippey

U.S. Department of Agriculture

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

droughtmonitor.unl.edu

Statistics

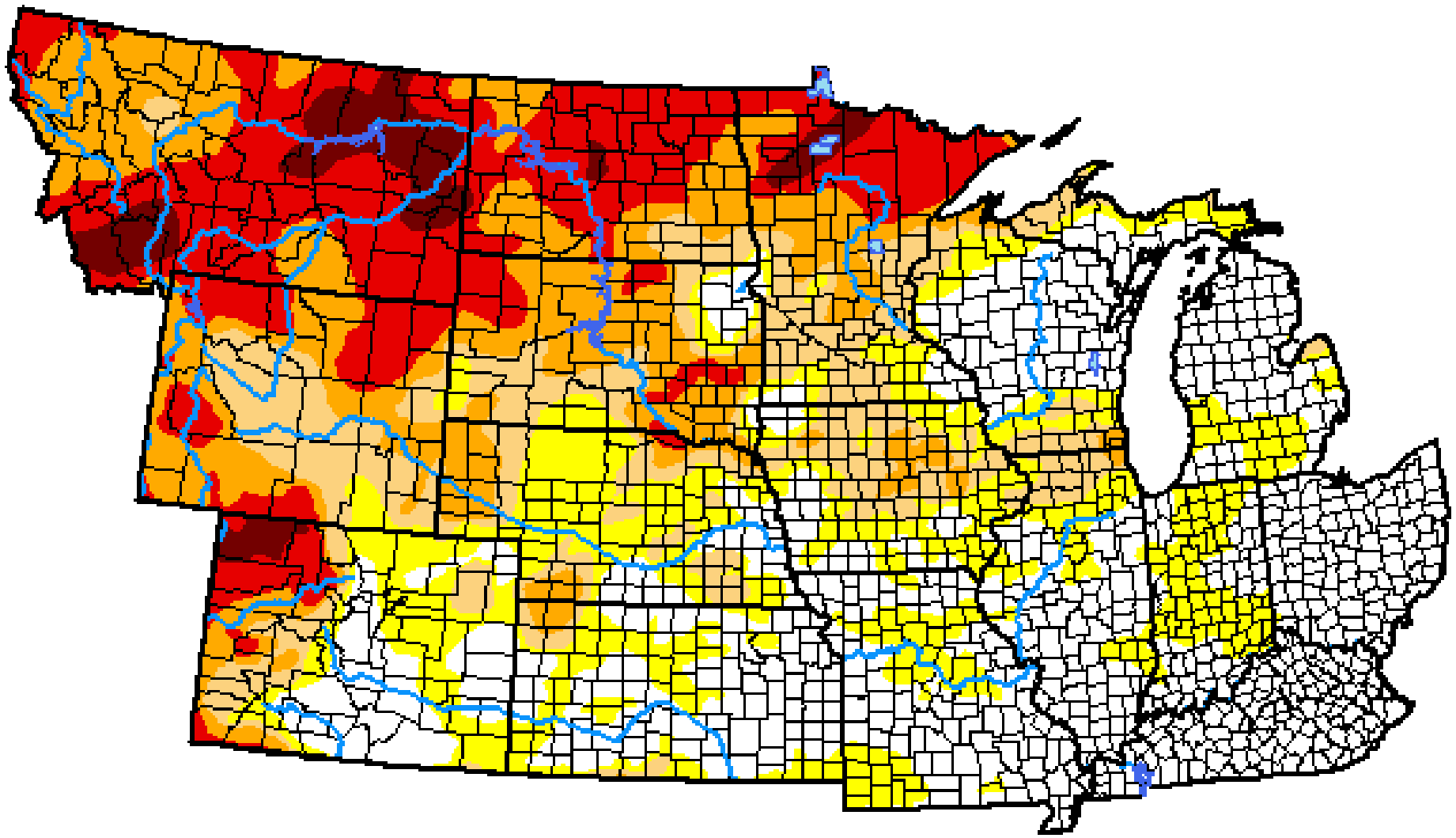
Statistics type: Cumulative Percent Area Export table: CSV XLS

Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2021-09-14	51.01	48.99	38.19	29.85	19.87	6.29	143
Last Week	2021-09-07	54.02	45.98	38.19	29.86	20.04	6.36	140
3 Months Ago	2021-06-15	47.31	52.69	38.50	27.51	17.90	8.26	145
Start of Calendar Year	2020-12-29	43.05	56.95	40.97	28.61	18.56	8.26	153
Start of Water Year	2020-09-29	44.50	55.50	35.78	22.89	12.23	1.00	127
One Year Ago	2020-09-15	47.00	53.00	32.82	21.00	9.64	0.36	117

As of 9/14/21 just over **73,000,000** people are being impacted by drought in the United States.

U.S. Drought Monitor

NWS Central



September 14, 2021

(Released Thursday, Sep. 16, 2021)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.14	66.86	48.97	36.08	19.66	3.49
Last Week *09-07-2021*	38.19	61.81	49.16	36.27	20.15	3.60
3 Months Ago *06-15-2021*	36.47	63.53	44.74	24.43	9.17	2.66
Start of Calendar Year *12-29-2020*	30.52	69.48	46.07	24.23	12.18	2.52
Start of Water Year *09-29-2020*	29.60	70.40	37.34	17.96	7.13	0.24
One Year Ago *09-15-2020*	42.86	57.14	30.09	15.83	6.23	0.03

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:

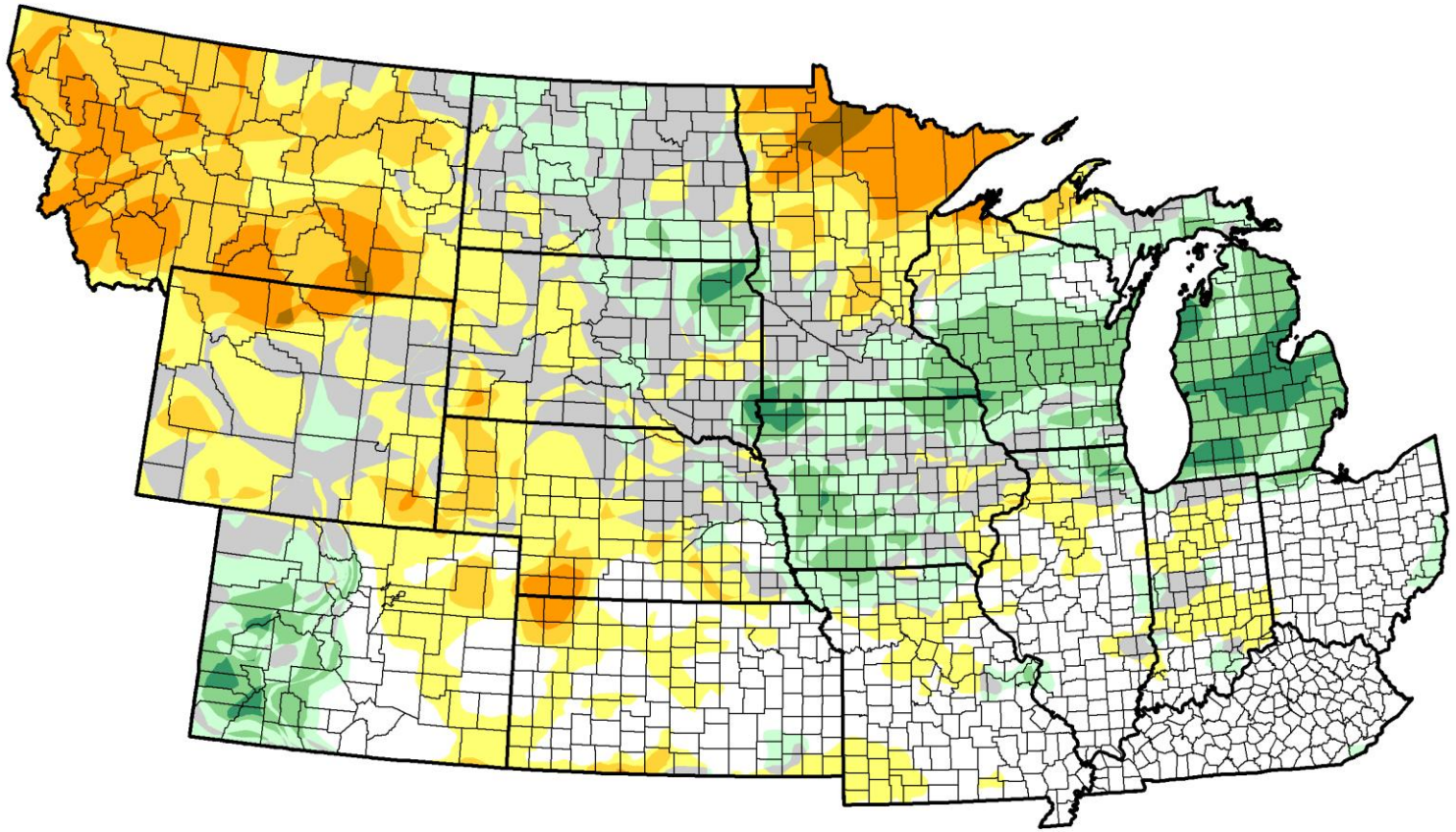
Brad Rippey

U.S. Department of Agriculture

droughtmonitor.unl.edu

U.S. Drought Monitor Class Change - NWS Central

13 Week



September 14, 2021
compared to
June 15, 2021

droughtmonitor.unl.edu

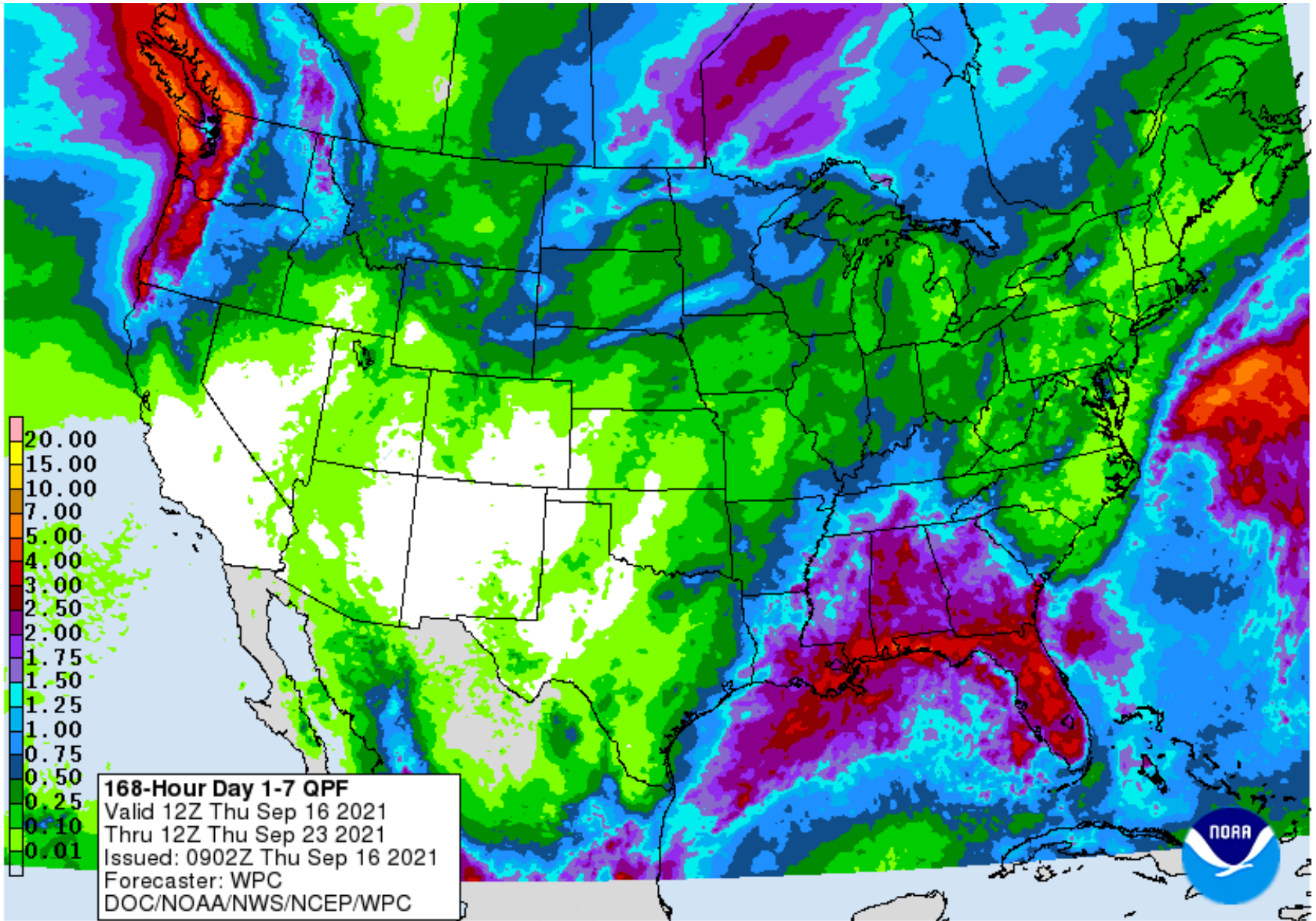
- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

Climate Outlooks

- 7-day precipitation forecast
- 8-14 day outlook
- Monthly Outlook
- Autumn Outlook (Sep-Nov)
- Winter Outlook (Dec-Feb)
- Seasonal Drought Outlook

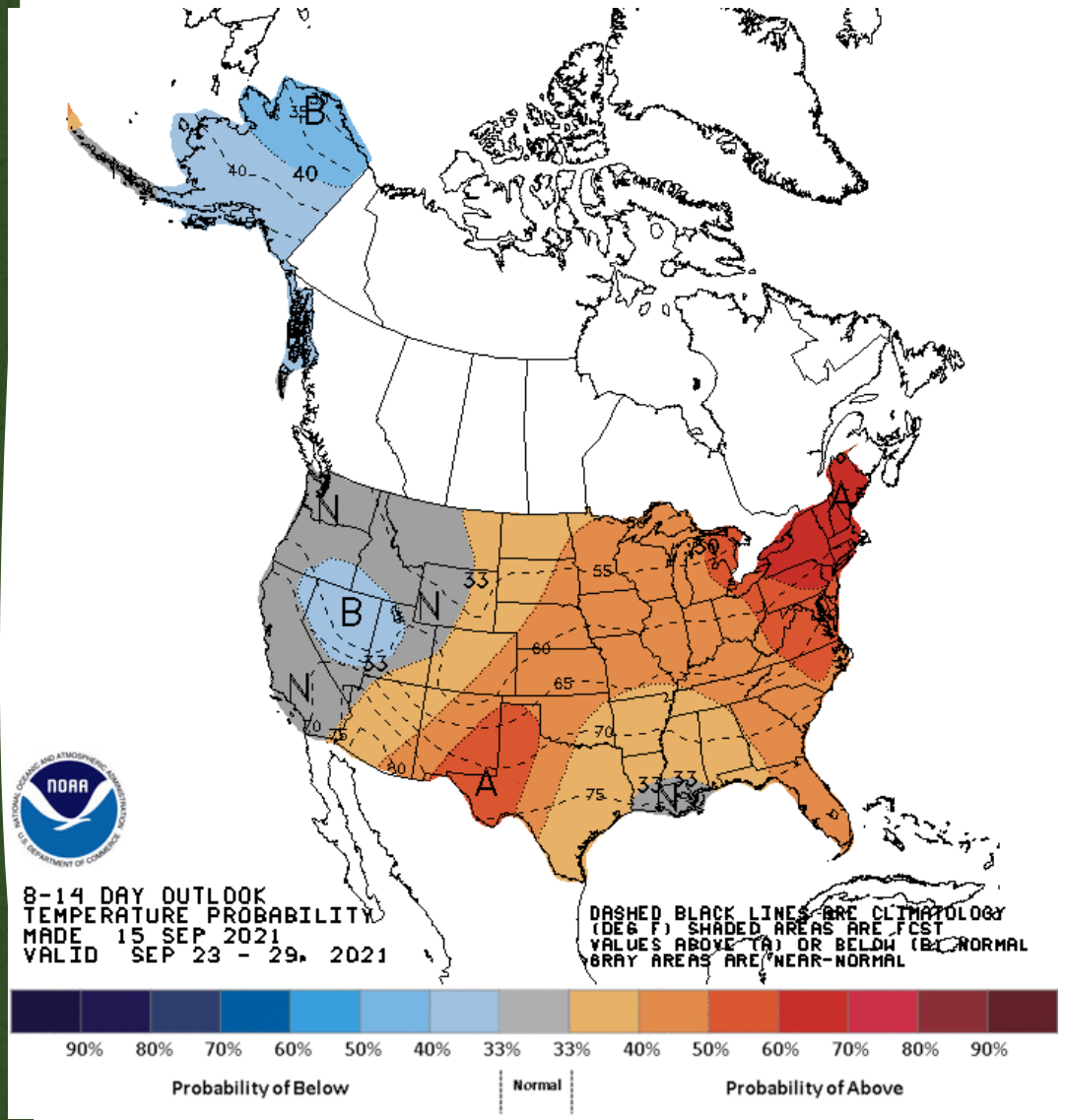
Forecasted rainfall for the next 7-Days valid from September 16-23, 2021

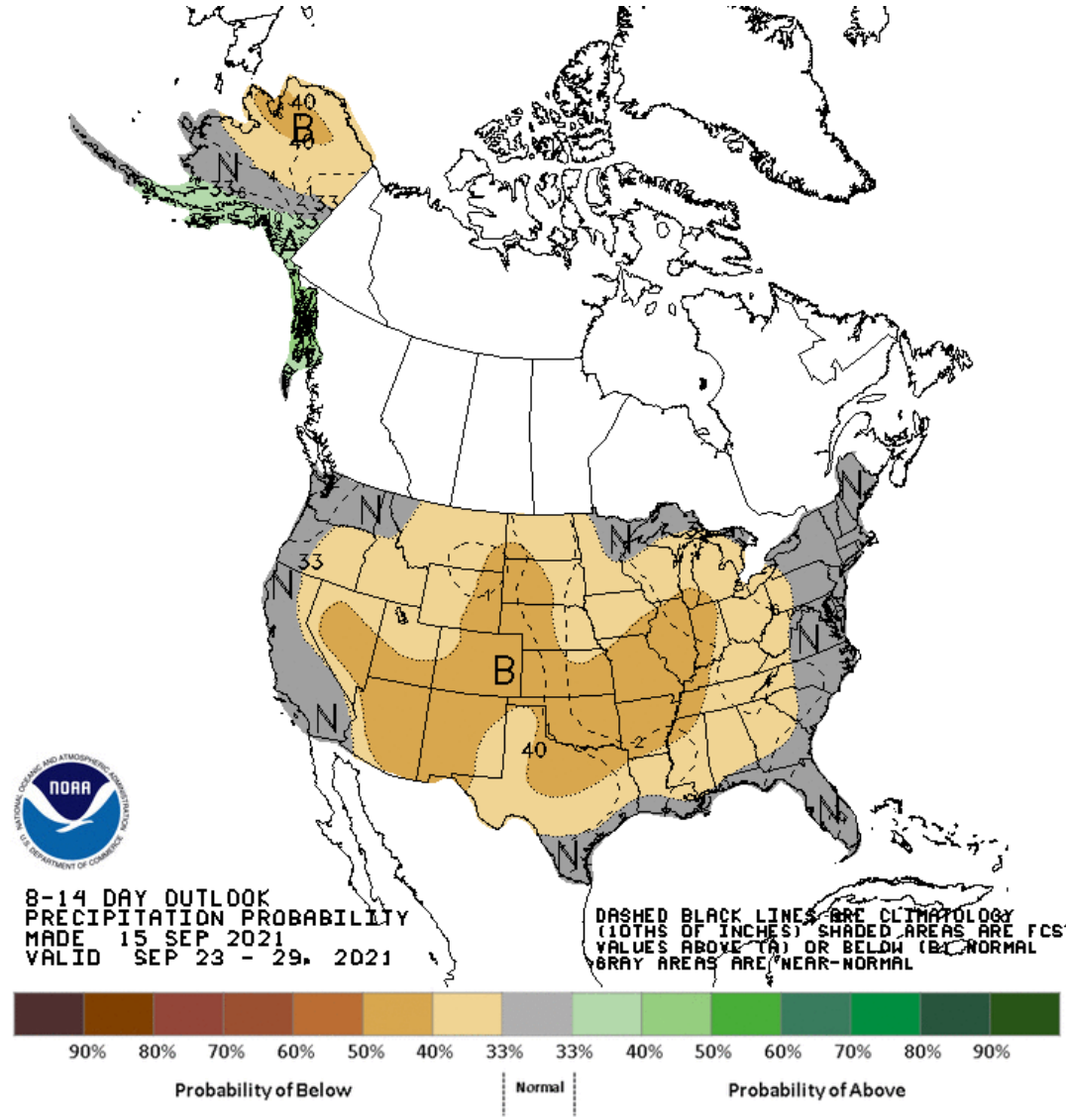
https://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml



8-14 day outlook for September 23-29, 2021

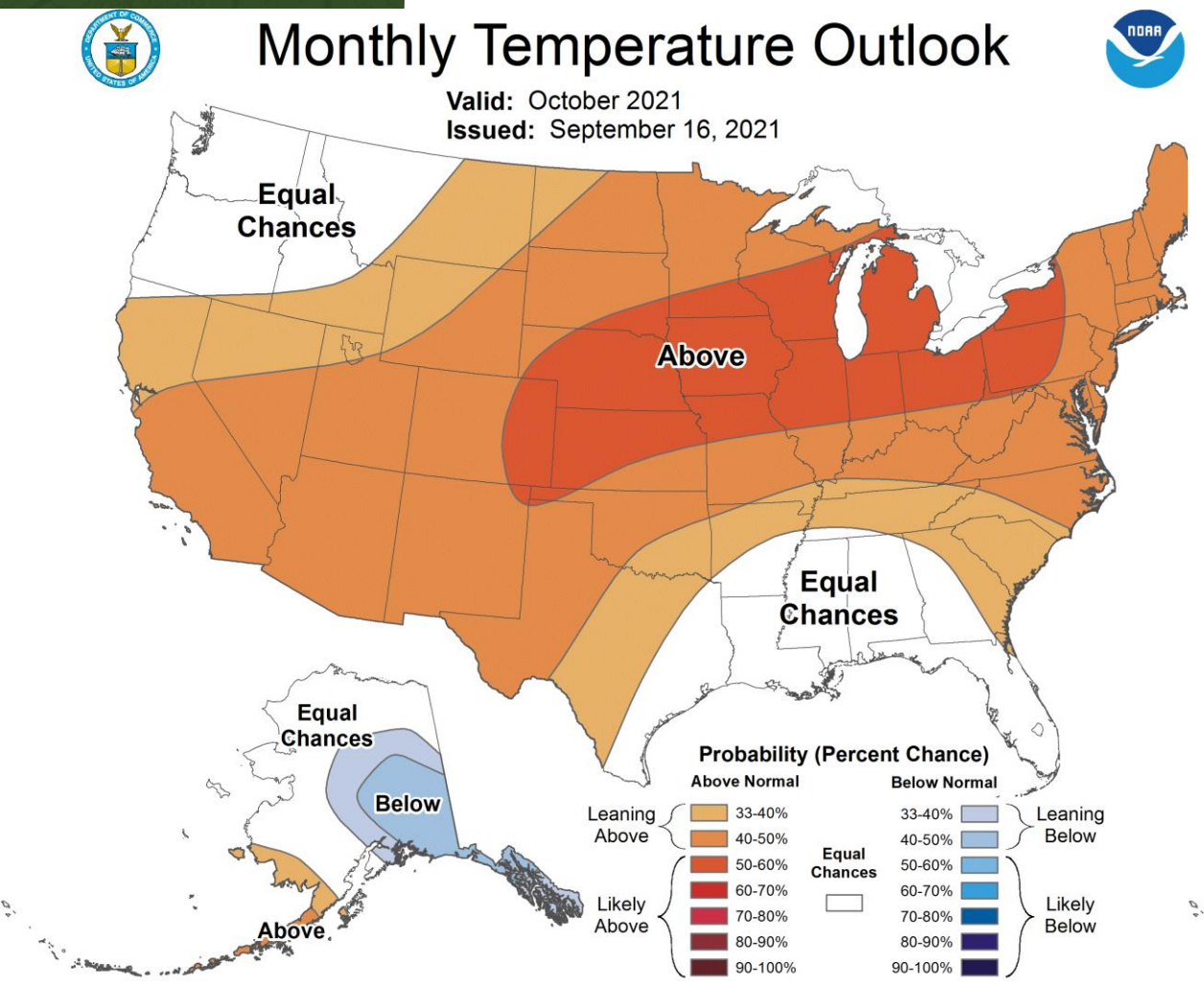
http://www.cpc.ncep.noaa.gov/products/predictions/814day/

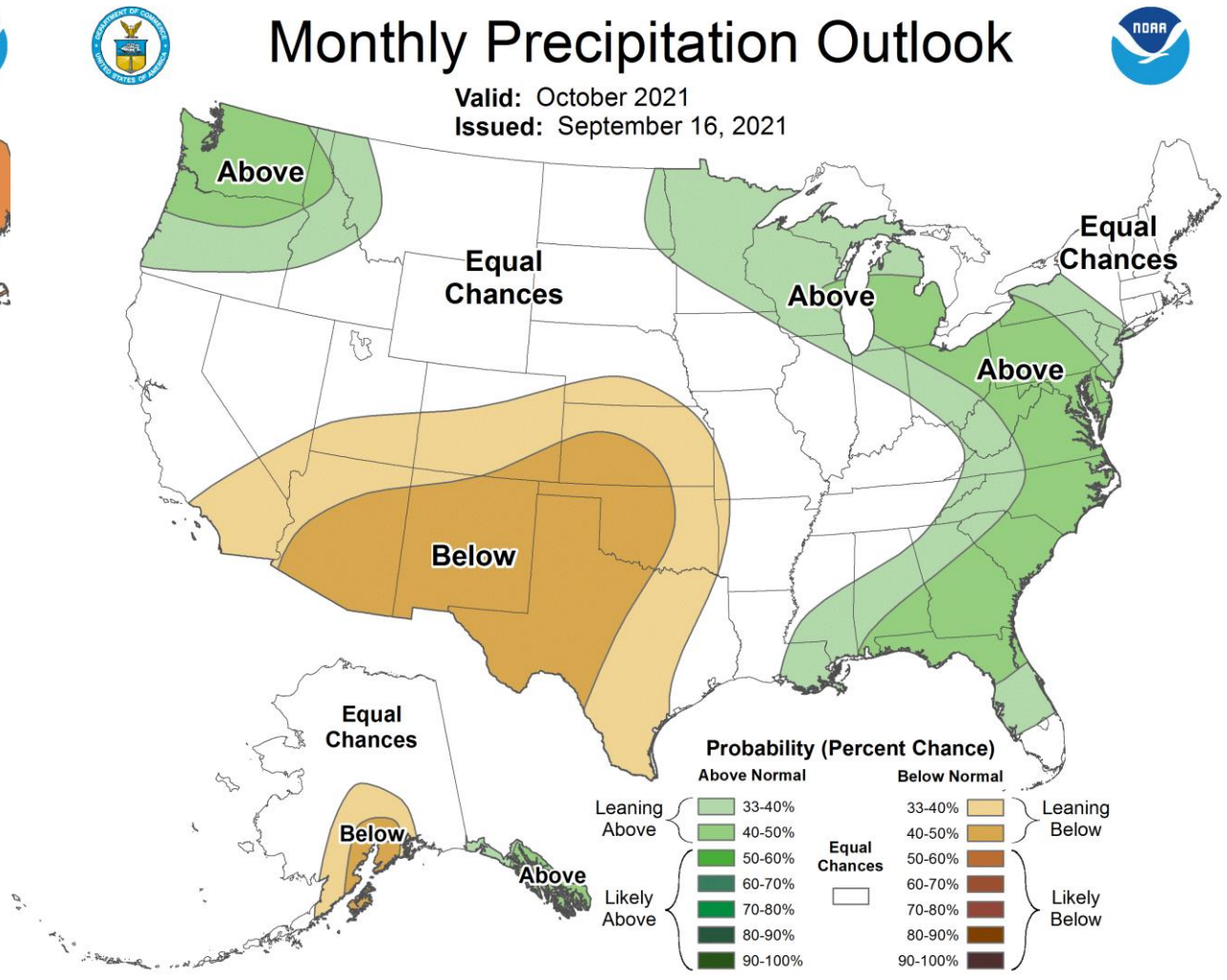




Monthly Outlook for October 2021

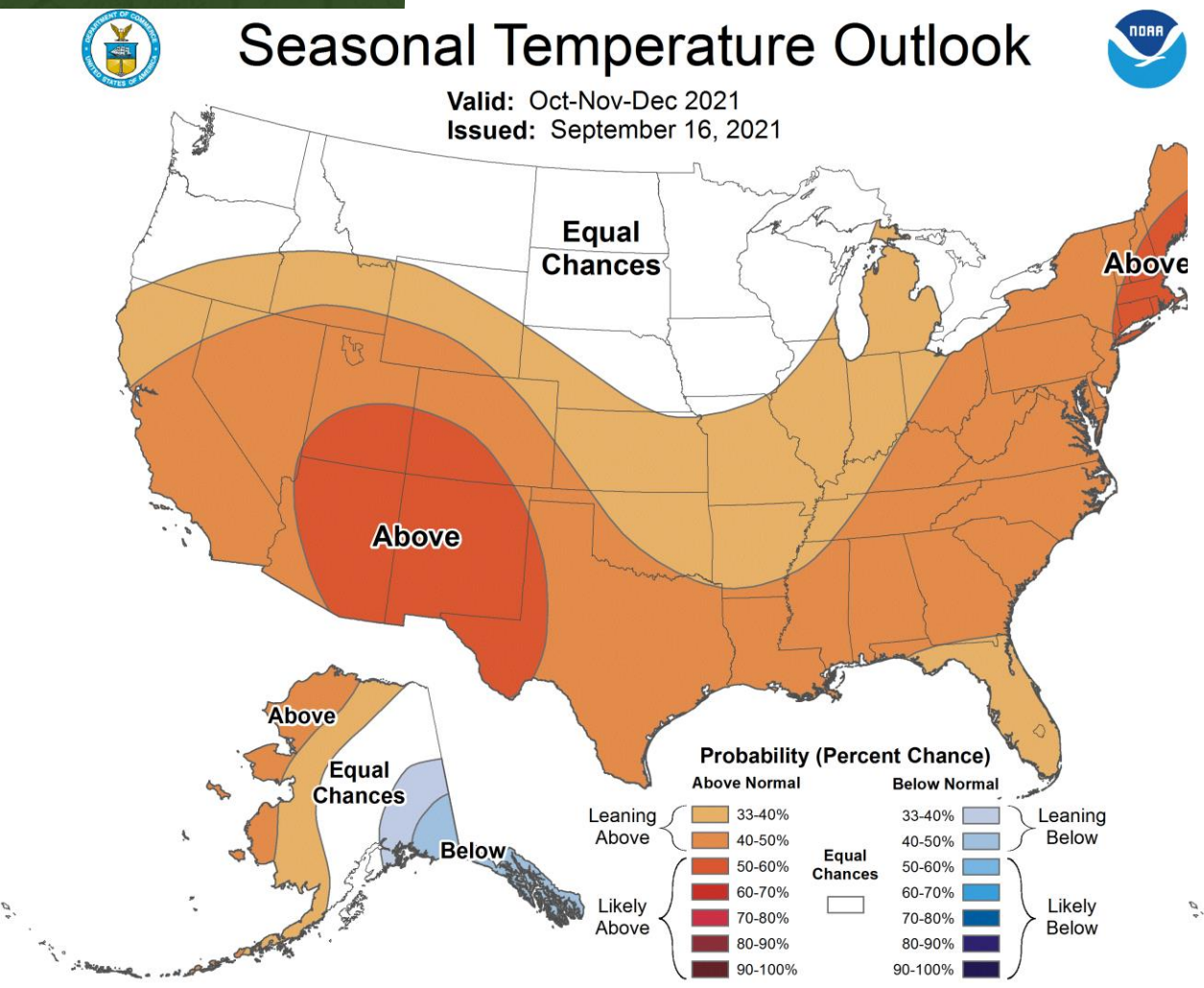
https://www.cpc.ncep.noaa.gov/products/predictions/30day/

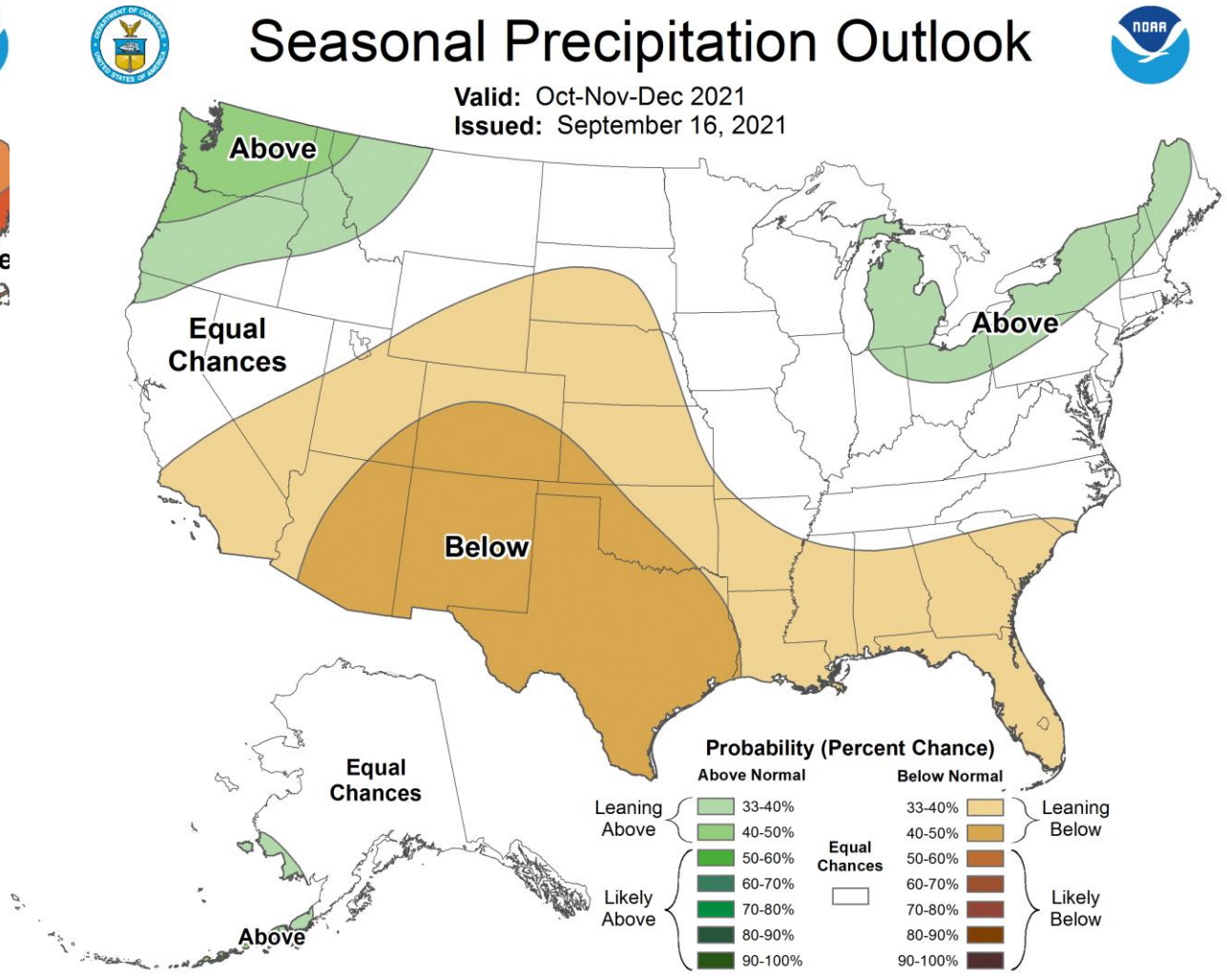


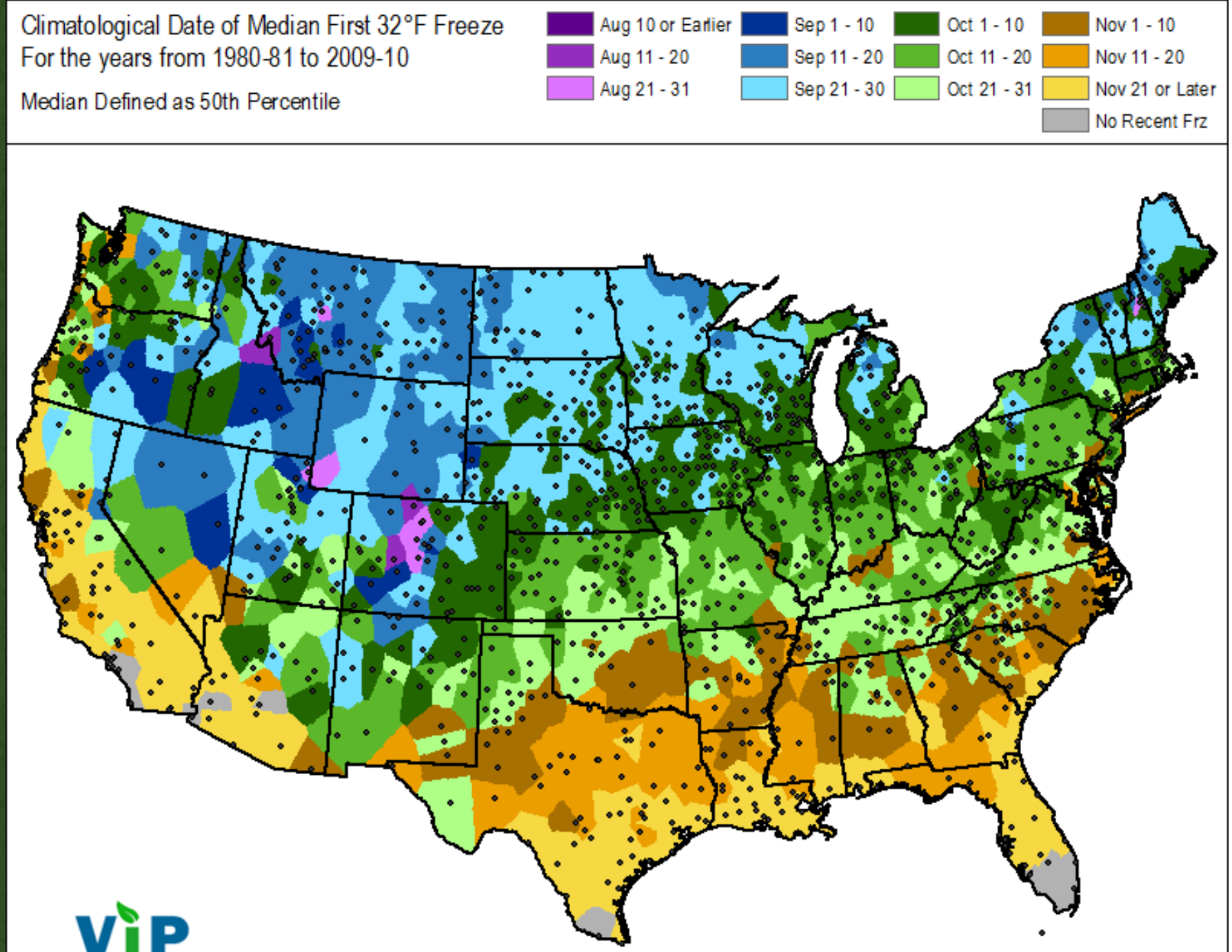


3-Month Outlook (October-December,2021)

https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

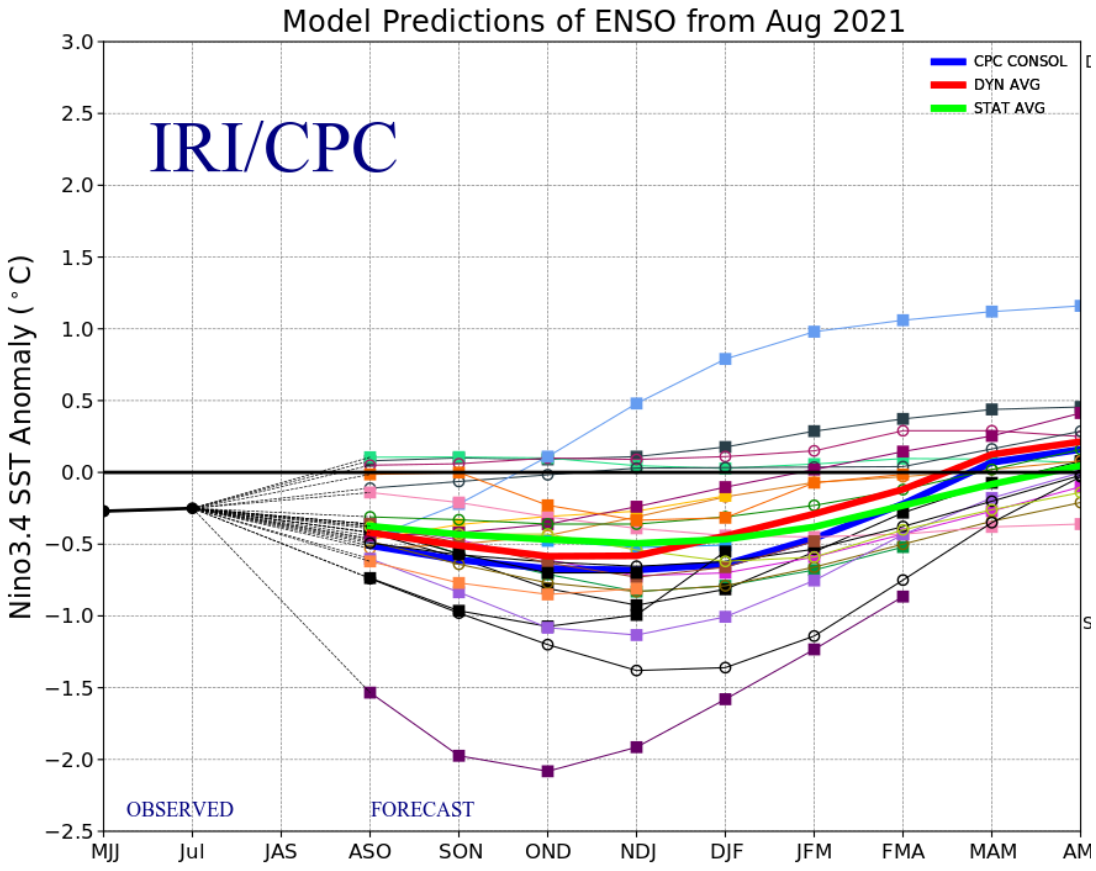


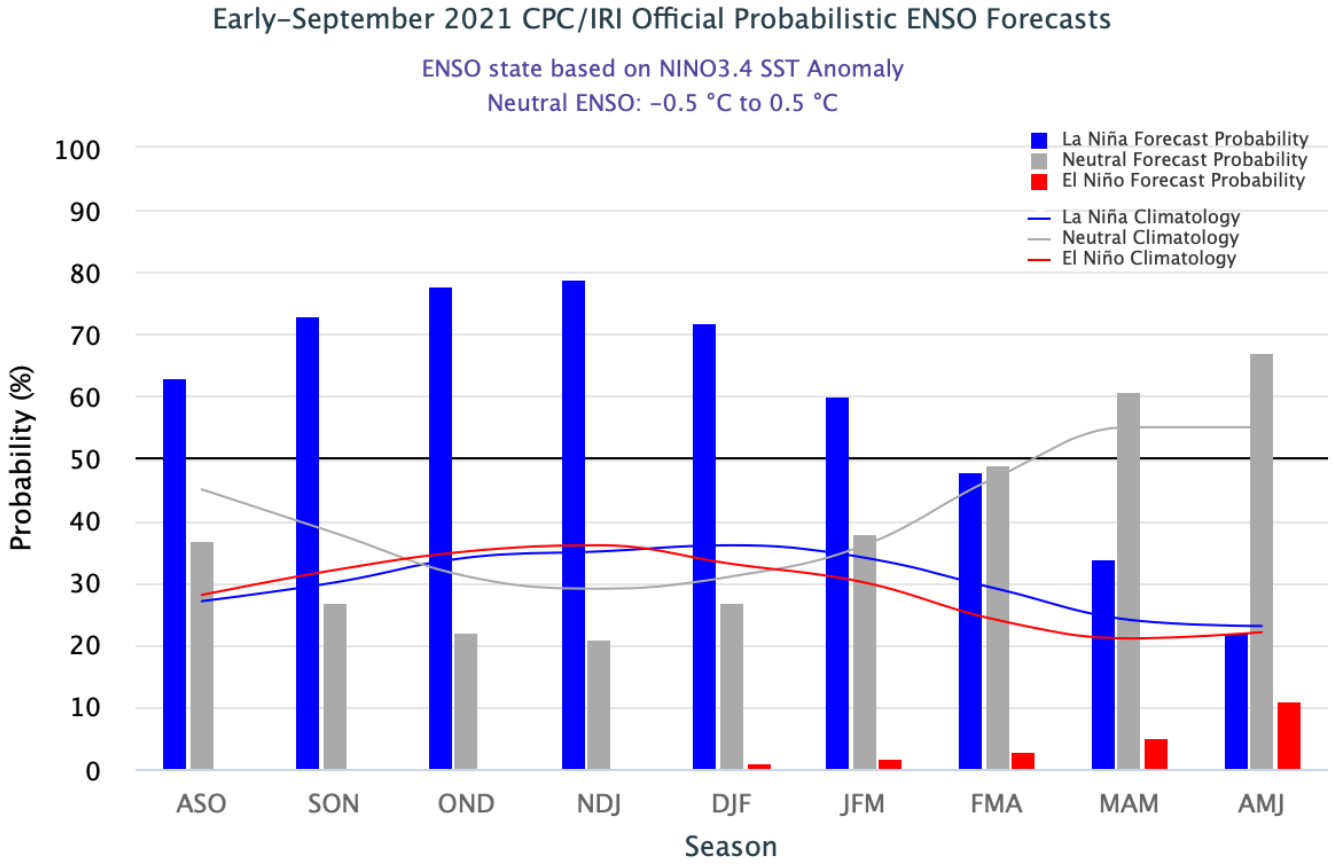




https://mrcc.illinois.edu/VIP/frz_maps/freeze_maps.html

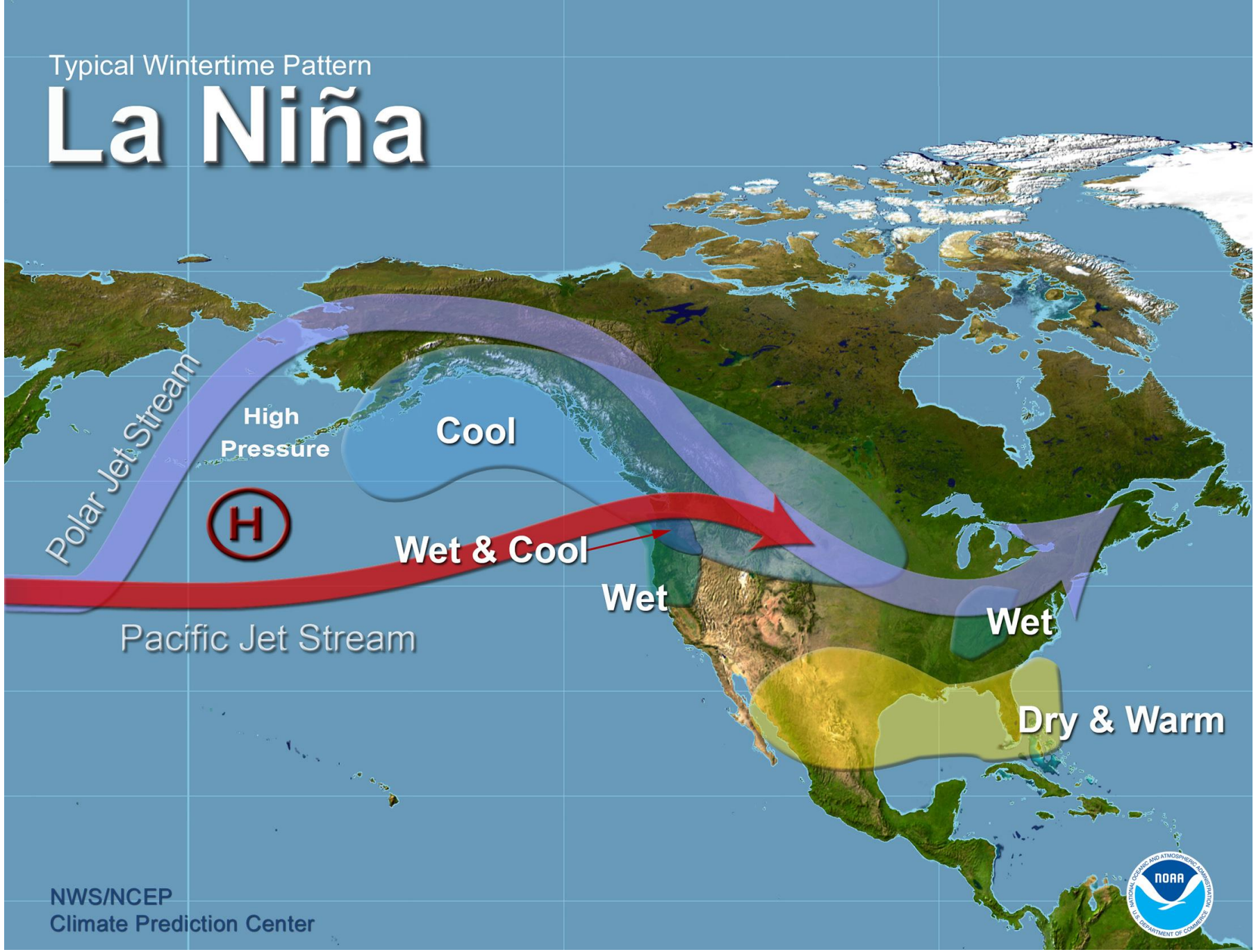
La Nina Advisory has been issued





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

What does a typical La Nina pattern mean?

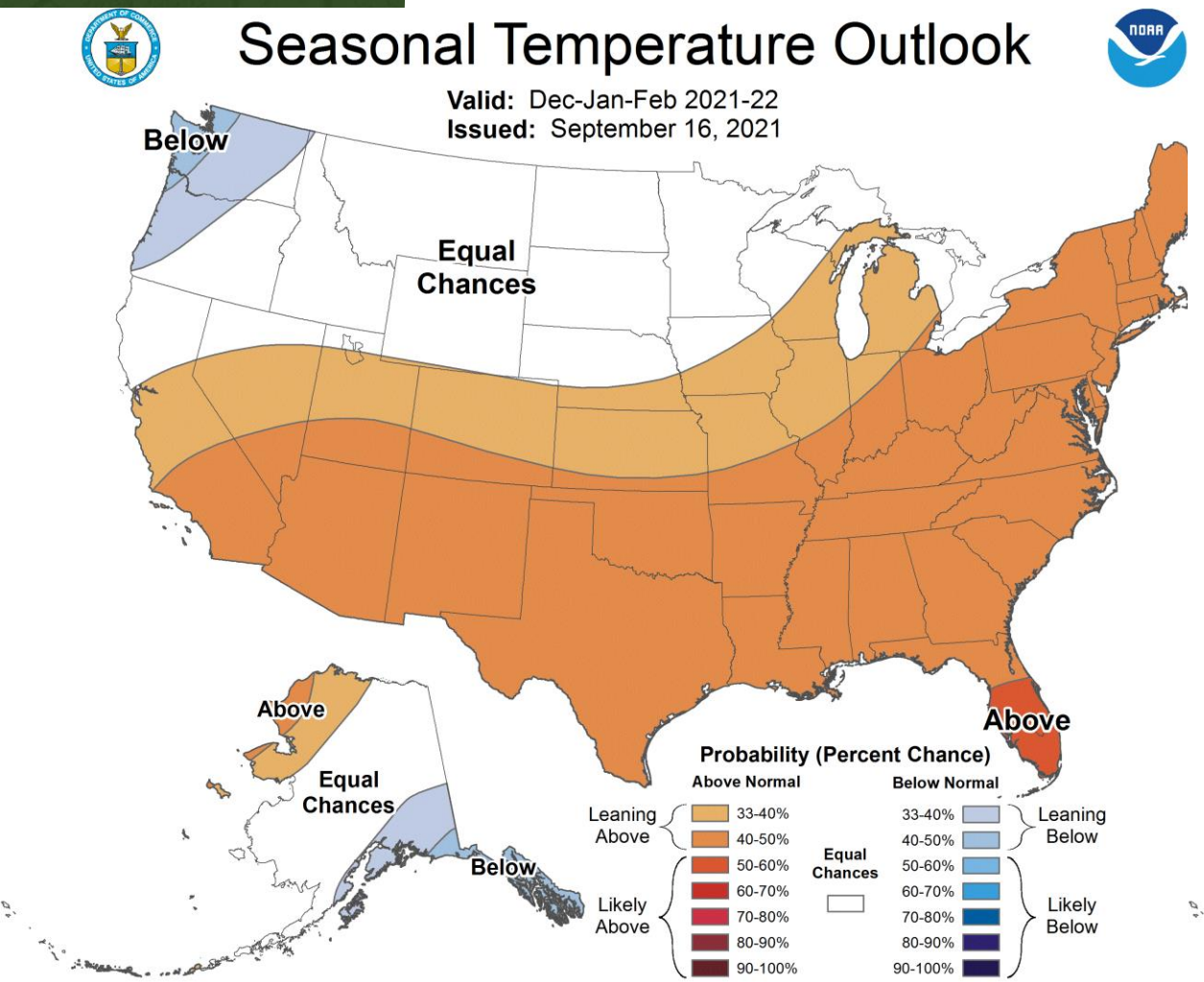


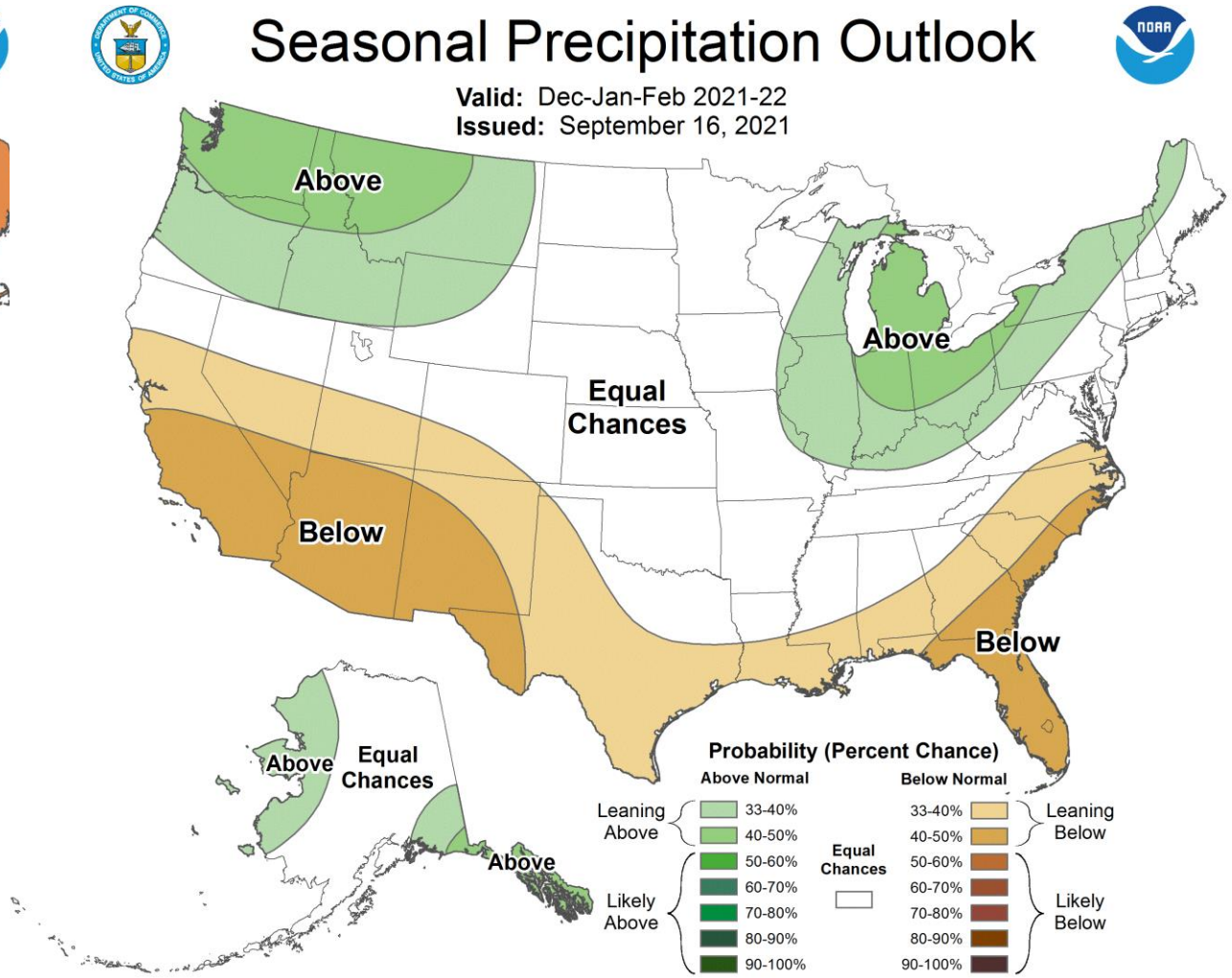
https://www.pmel.noaa.gov/elnino/sites/default/files/thumbnails/image/LaNina-Jet-Wintertime-Pattern.jpg

The official winter outlook will come out on 10/21/21 and will be discussed next month

Winter Outlook (December-February, 2021-22)

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

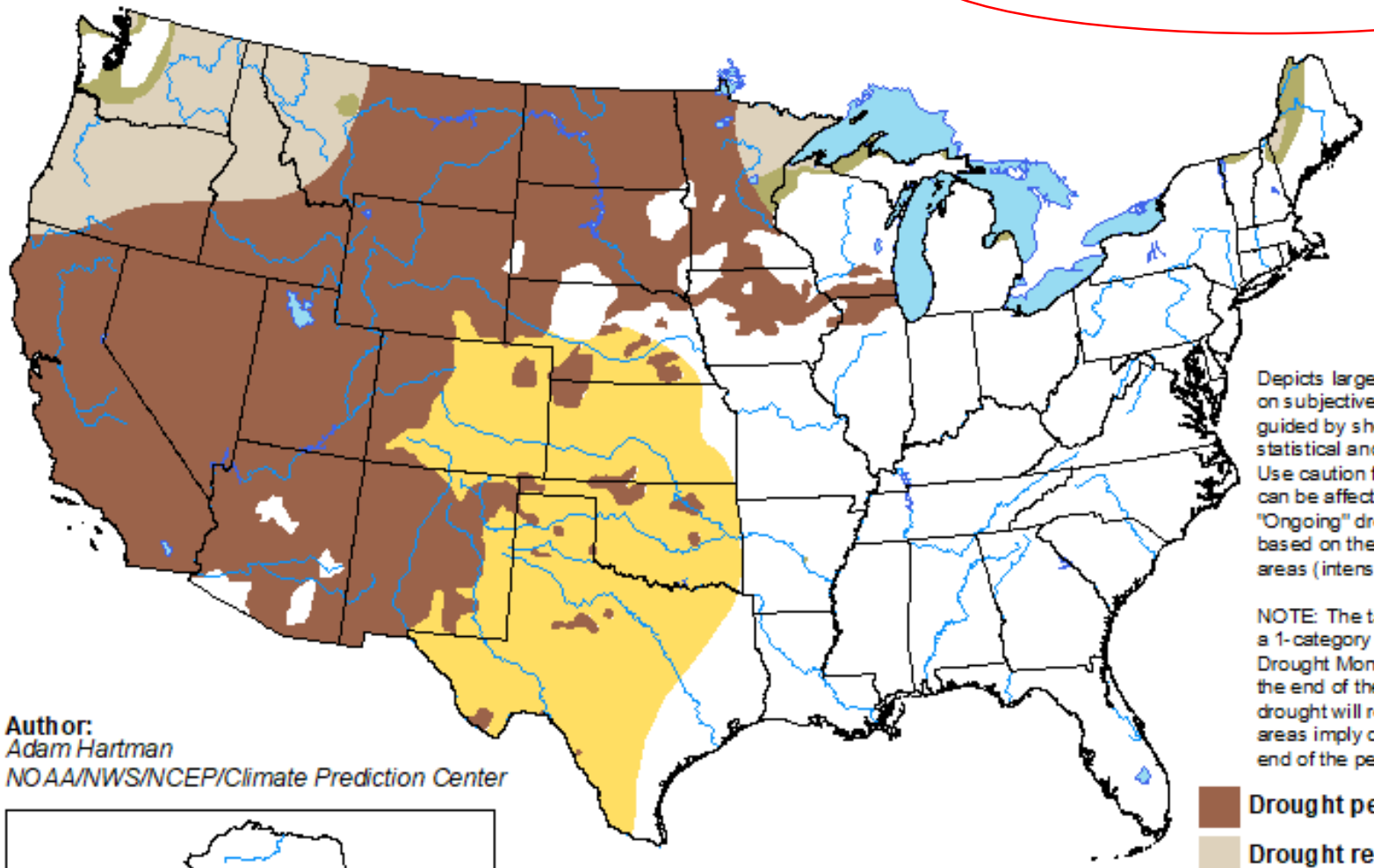




U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for September 16 - December 31, 2021
Released September 16

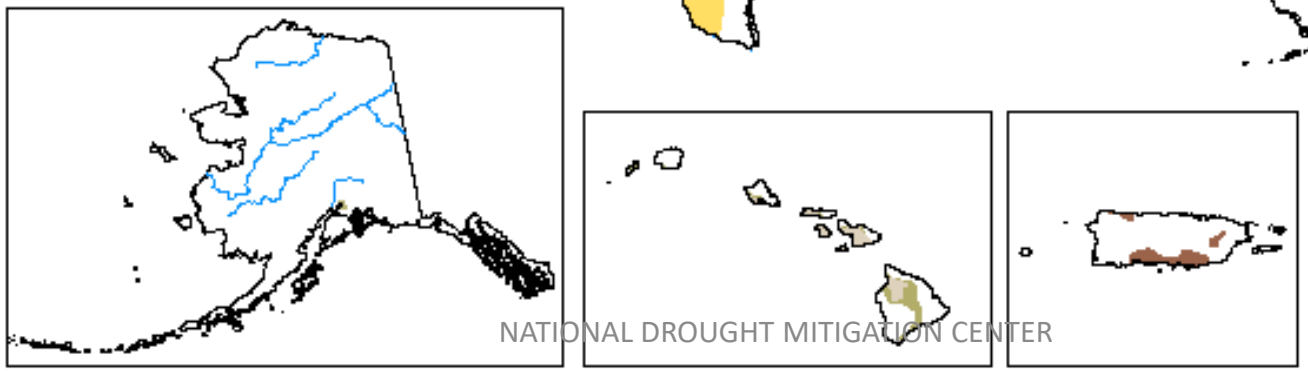


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

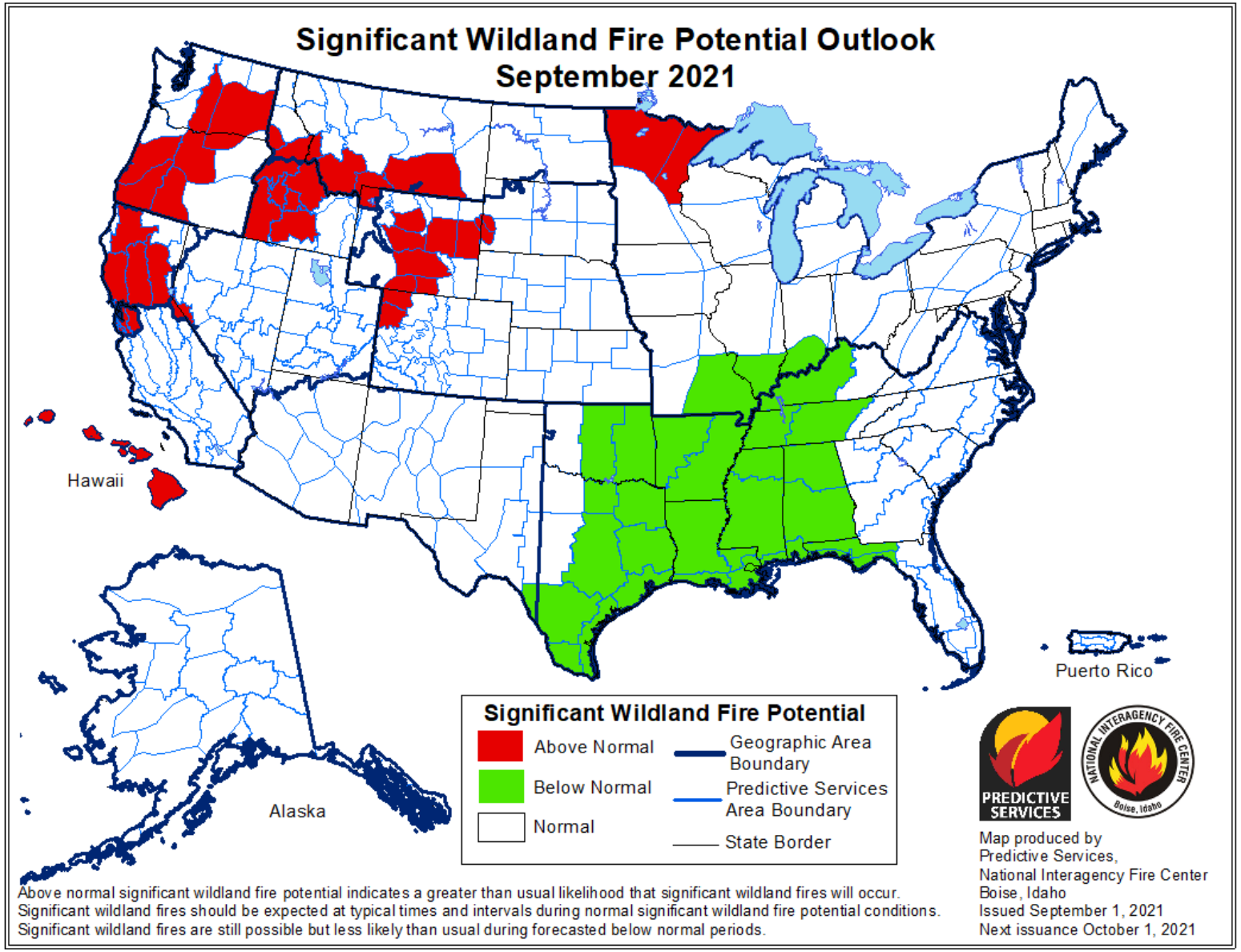
Author:
Adam Hartman
NOAA/NWS/NCEP/Climate Prediction Center



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

Wildland Fire Potential

https://www.predictiveservices.nifc.gov/outlooks/month1_outlook.png



Summary

- Late summer moisture is helping overall conditions in some area of the region
- Some severe weather in the Dakotas and upper Midwest brought with it hail that has multiple impacts (crops, property, wildlife)
- Crops are progressing on schedule to ahead of schedule through much of the region with good grain dry down conditions anticipated
- Warmer than normal conditions should dominate the region through the end of the year
- The precipitation signal is showing better chances of above normal precipitation over the eastern portions of the region
- Fall soil moisture recharge will be very important to drought prospects as we go into winter with a high likelihood of drought developing in central to southern Plains

FOR ADDITIONAL INFORMATION

Presentations Archive	http://www.hprcc.unl.edu https://mrcc.illinois.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
U.S. Drought Portal	www.drought.gov
National Drought Mitigation Center	drought.unl.edu
State Climatologists	www.stateclimate.org
Regional Climate Centers	www.hprcc.unl.edu and mrcc.illinois.edu

Thank you !

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