

North Central U.S. Climate and Drought Summary and Outlook

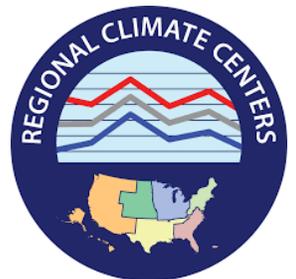
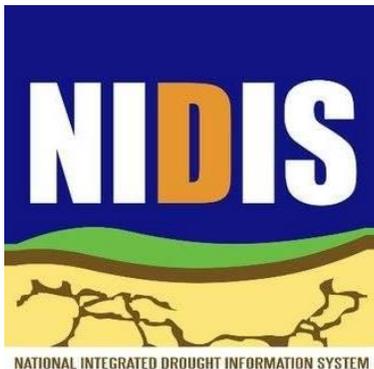
Thursday, August 19, 2021

Zachary Hoylman

Montana Assistant State Climatologist

zachary.hoylman@umontana.edu

406.499.8118



General Information

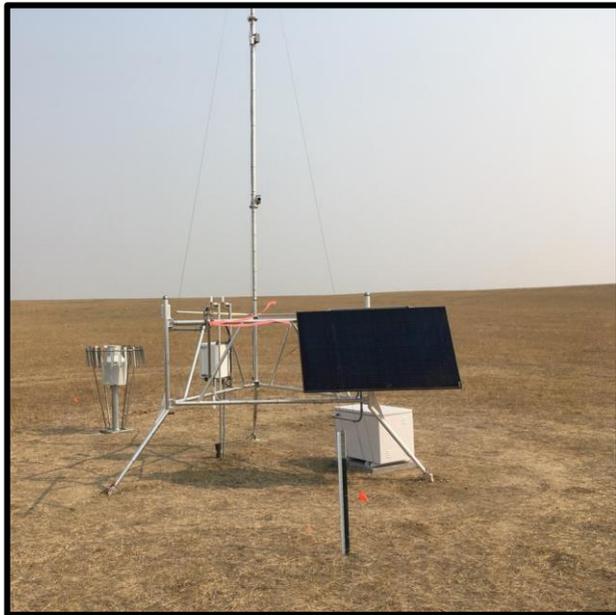
Regional climate services for the North Central U.S., including the Great Plains and Midwest, are provided through partnerships among federal, regional, and state partners:

- National Oceanic and Atmospheric Administration
- U.S. Department of Agriculture
- National Drought Mitigation Center
- Midwestern Regional Climate Center
- American Association of State Climatologists
- State Drought Task Forces

Next webinar: **September 16th 1pm CDT - Brian Fuchs (NDMC)**

Agenda

1. Current climate conditions in a historical context
2. Current and prospective climate impacts
3. Climate outlook
4. Questions and Discussion



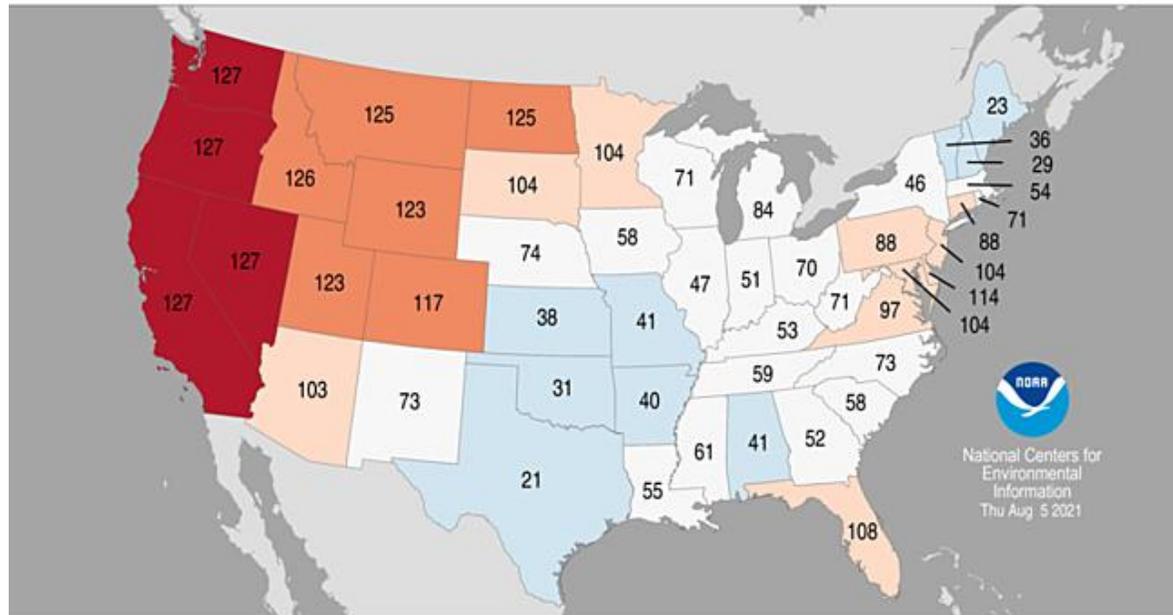
Photos from K. Jencso
& contributors to the
MT drought impacts
reporter

Significant drought in E. MT leads to unprecedented range conditions

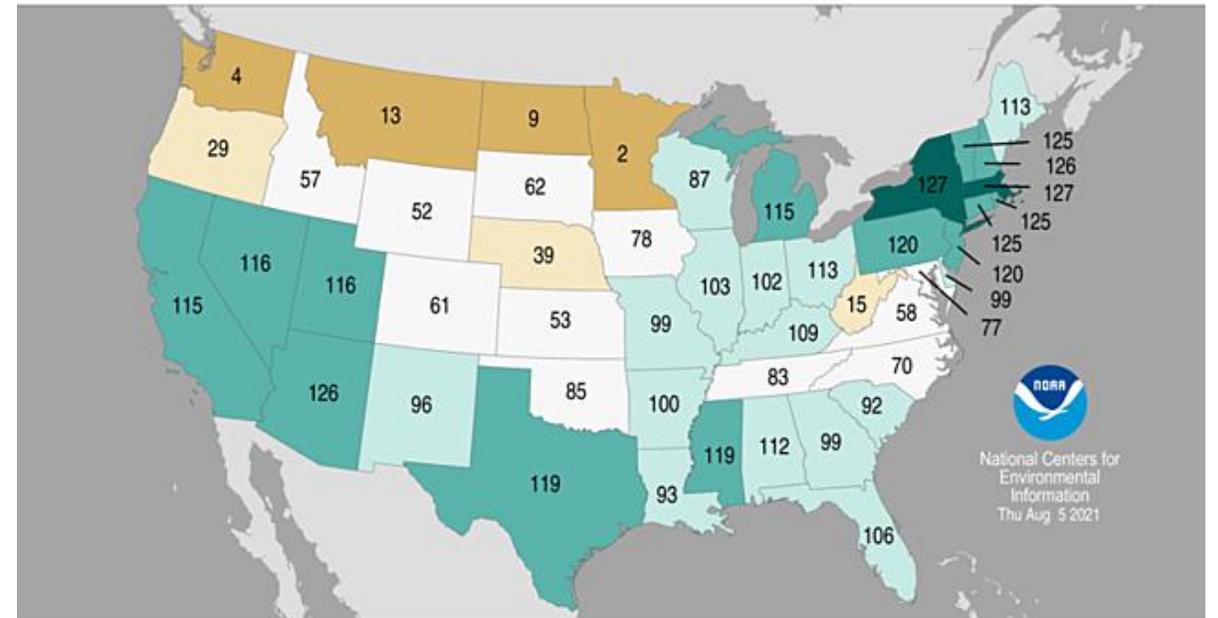
Bone-dry soils at depth down to 1m

State Ranks: July

Statewide Average Temperature Ranks
July 2021
Period: 1895–2021

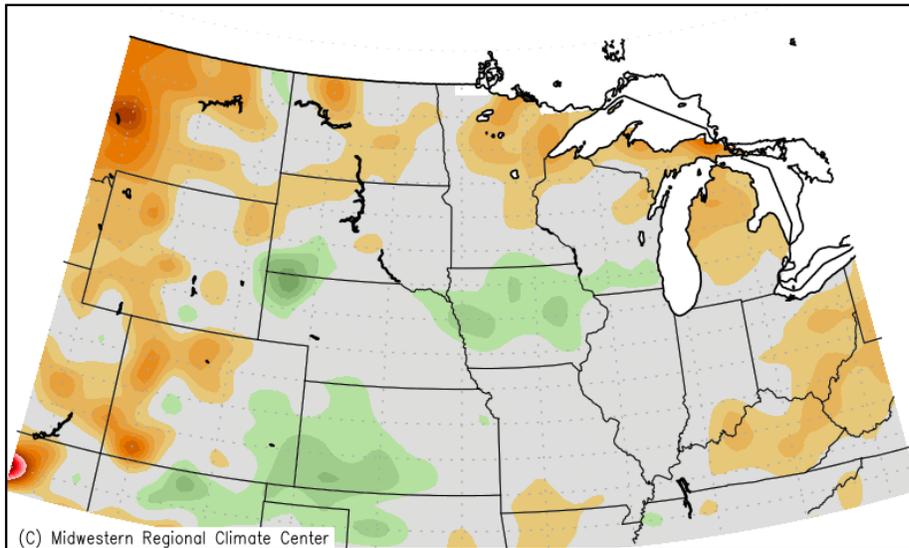


Statewide Precipitation Ranks
July 2021
Period: 1895–2021



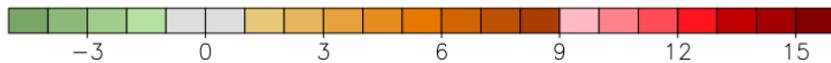
August: Temperature departure from mean

Average Minimum Temp. (°F): Departure from Mean
August 1, 2021 to August 17, 2021



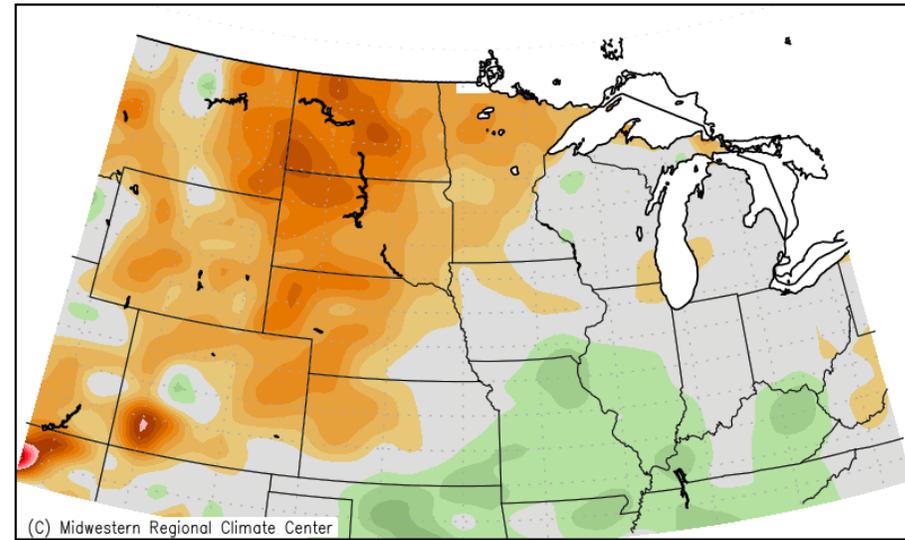
(C) Midwestern Regional Climate Center

Mean period is 1991–2020.



Midwestern Regional Climate Center

Average Maximum Temp. (°F): Departure from Mean
August 1, 2021 to August 17, 2021



(C) Midwestern Regional Climate Center

Mean period is 1991–2020.



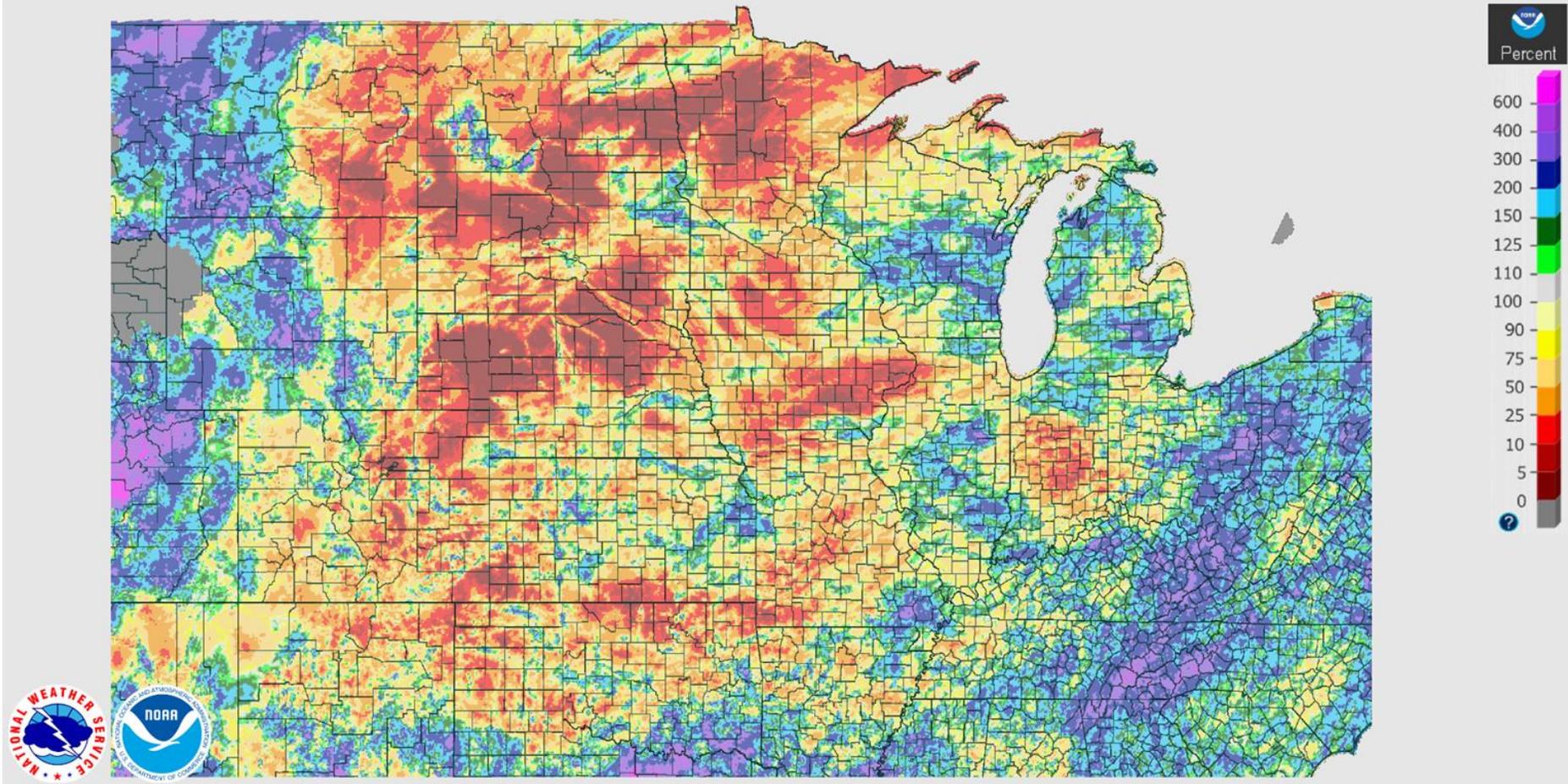
Midwestern Regional Climate Center

August: Precipitation percent of average

August 19, 2021 Month to Date Percent Precipitation

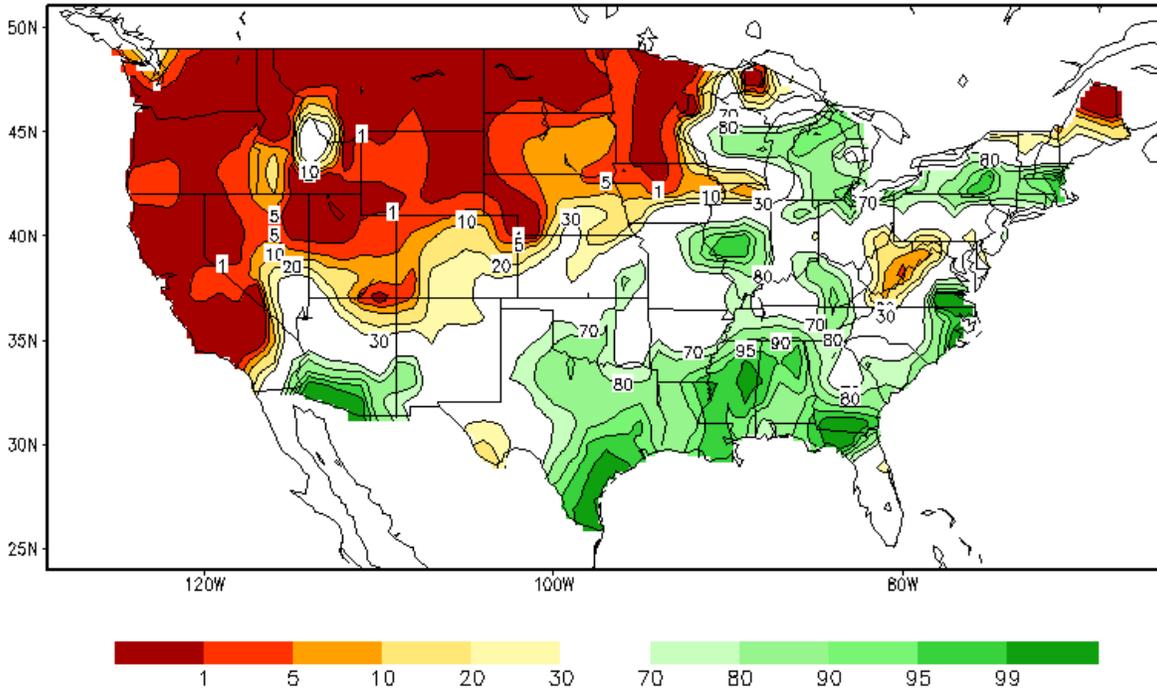
Created on: August 19, 2021 - 14:47 UTC

Valid on: August 19, 2021 12:00 UTC



Soil Moisture

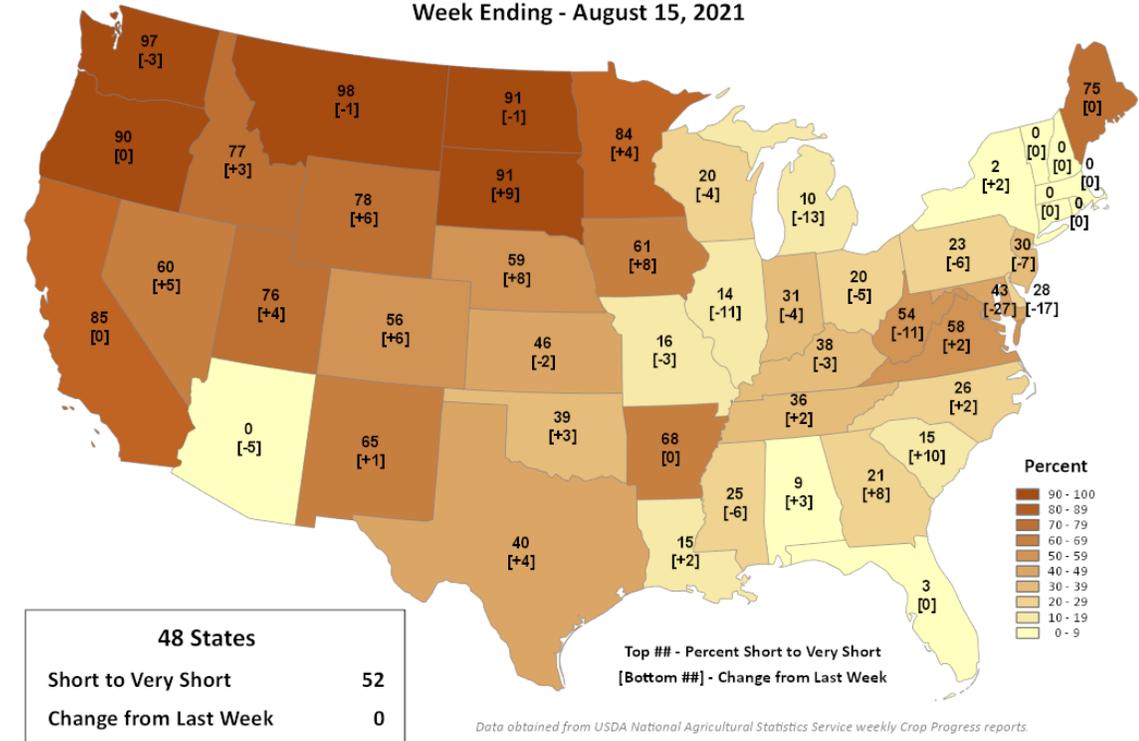
Calculated Soil Moisture Ranking Percentile
AUG 18, 2021



USDA United States
Department of
Agriculture

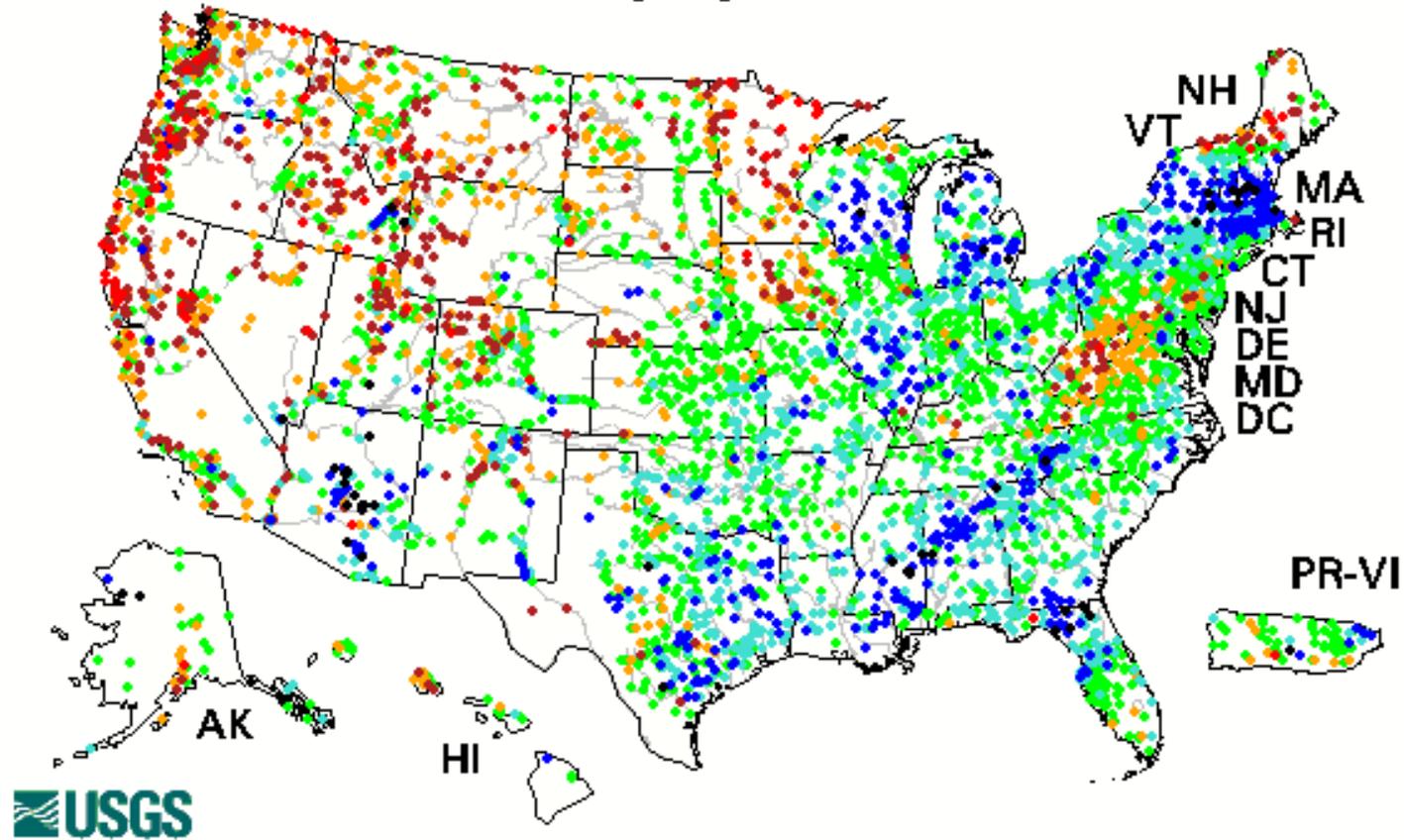
This product was prepared by the
USDA Office of the Chief Economist (OCE)
World Agricultural Outlook Board (WAOB)

Topsoil Moisture
Percent Short to Very Short
Week Ending - August 15, 2021



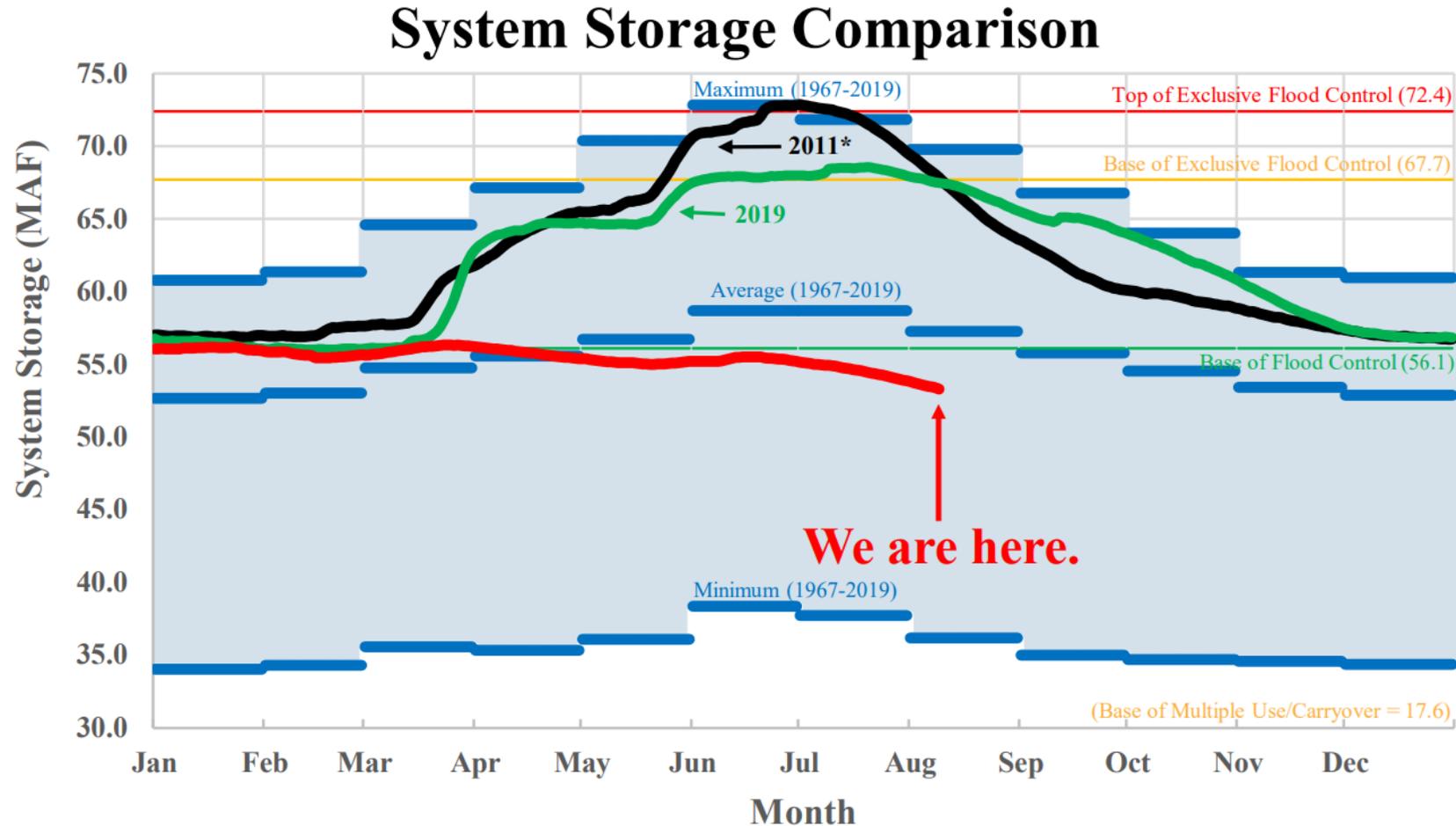
Streamflow

Wednesday, August 18, 2021



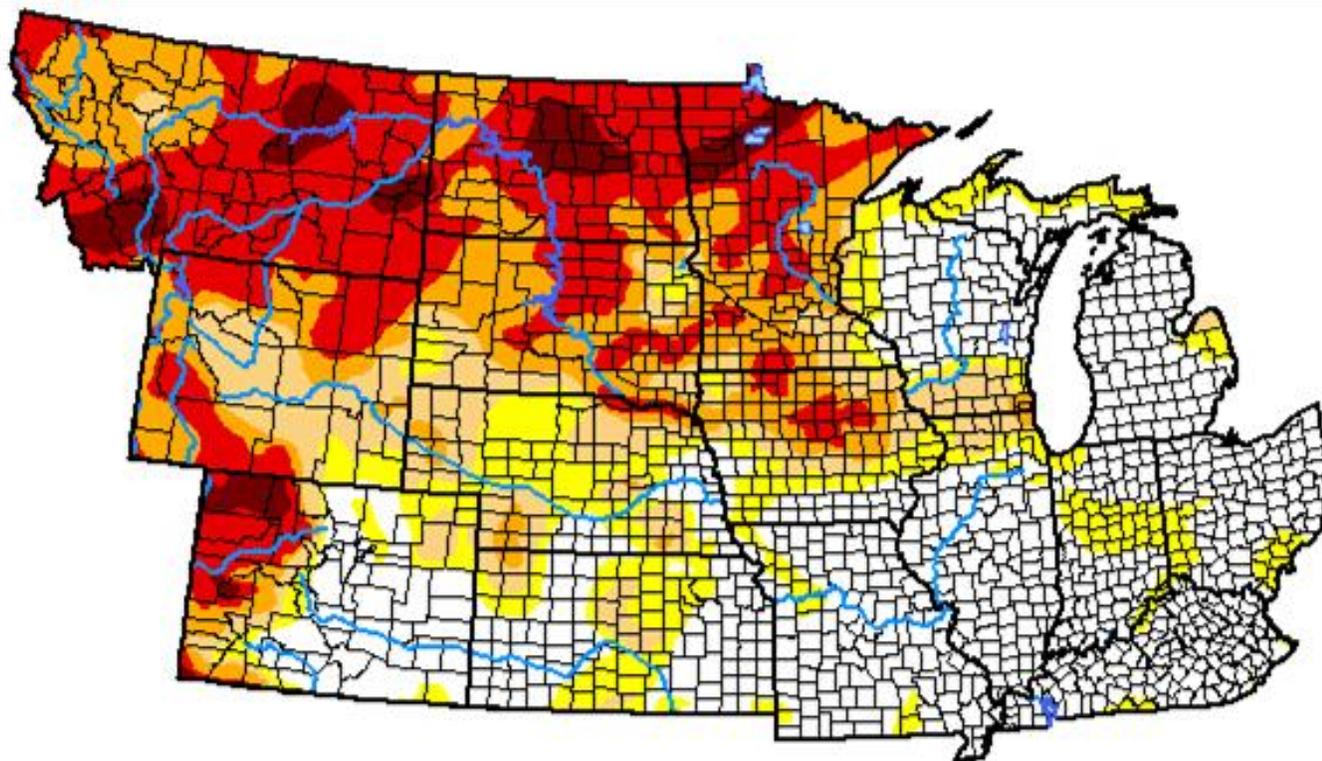
Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

Upper Missouri Reservoir Storage Comparison



U.S. Drought Monitor NWS Central

August 17, 2021
(Released Thursday, Aug. 19, 2021)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	36.03	63.97	51.34	40.21	24.38	3.89
Last Week 08-10-2021	37.10	62.90	50.11	39.05	22.82	3.44
3 Months Ago 05-18-2021	40.78	59.22	39.28	19.29	11.37	2.50
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 08-18-2020	50.53	49.47	25.94	12.16	3.22	0.00

Intensity:



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:

Curtis Riganti
National Drought Mitigation Center



droughtmonitor.unl.edu

Impacts: Exceptional Drought



August 16 - Garfield County, MT
Credit: MT Drought Impacts reporter



August 17 - Pelican Rapids, MN
Credit: Pete Boulay, MNDNR

Severe to exceptional drought across Montana, North Dakota, Minnesota, Wyoming and Colorado.

- Drought has significantly limited forage for livestock - pastures provide very little or no feed. Supplemental feeding is required to maintain livestock condition.
- Prices for feed have risen significantly as demand increases
- Stock ponds require maintenance and water is completely inaccessible
- MT/ND: grasshoppers and blister beetles have decimated hay crops and are pushing cattle producers to sell off herds
- MT: Cold water fisheries at risk
- First ever D4 drought identified in Minnesota
- MN: Lake levels dropping in response to depleted groundwater; water table drop impacts well function, especially in sandy reservoirs
- MT, ND, SD have enacted emergency declarations - waives hours of service restrictions for drivers of commercial vehicles that are transporting hay, water and livestock

Impacts: Pasture and Range

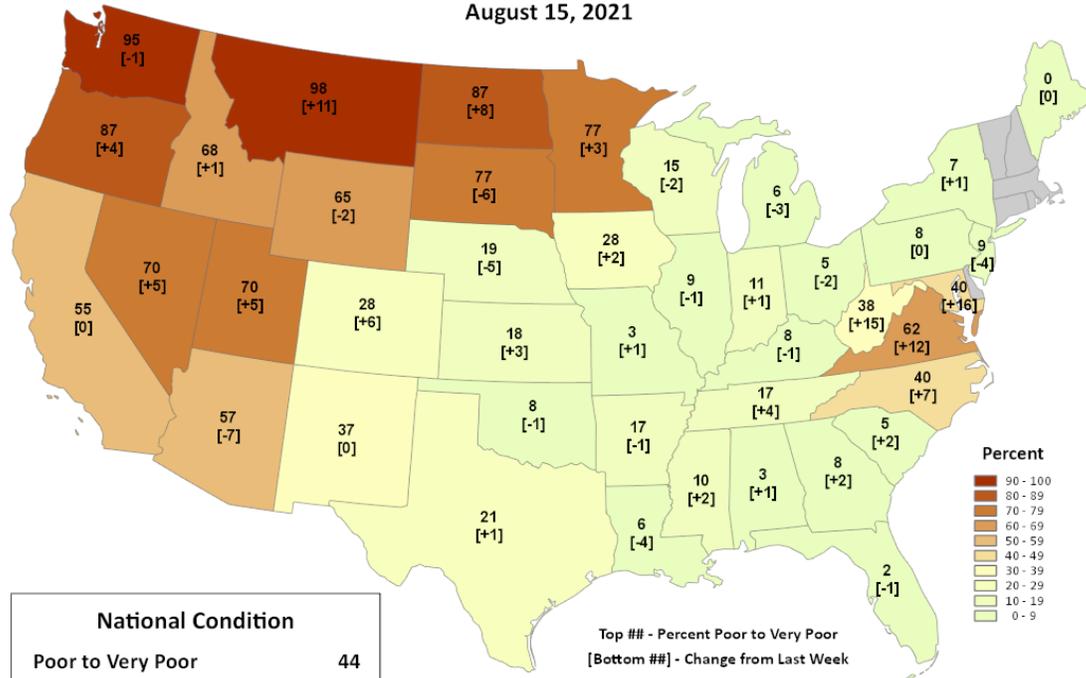


This product was prepared by the
USDA Office of the Chief Economist (OCE)
World Agricultural Outlook Board (WAOB)

Pasture and Range Conditions

Percent Poor to Very Poor

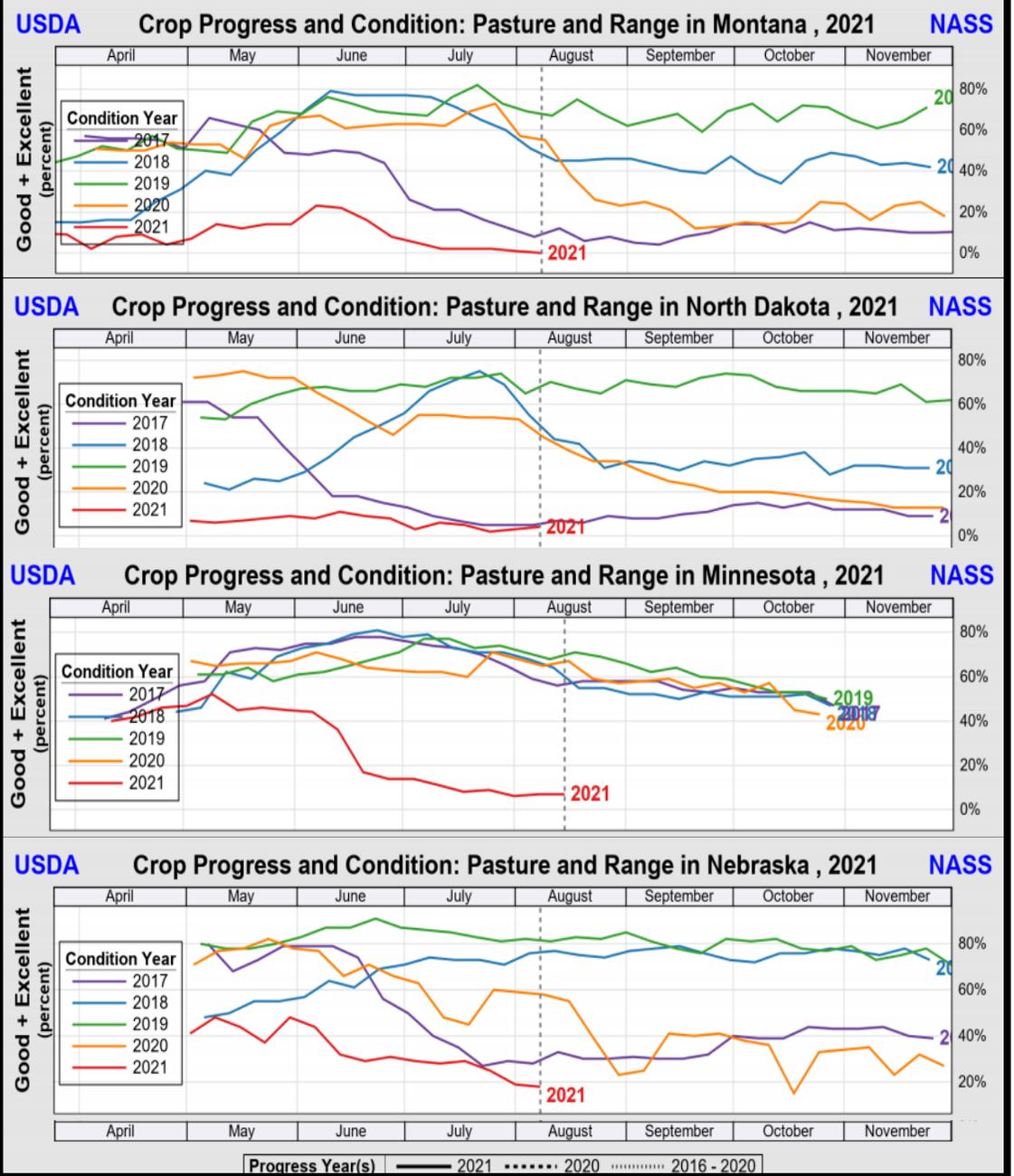
August 15, 2021



National Condition	
Poor to Very Poor	44
Change from Last Week	+1

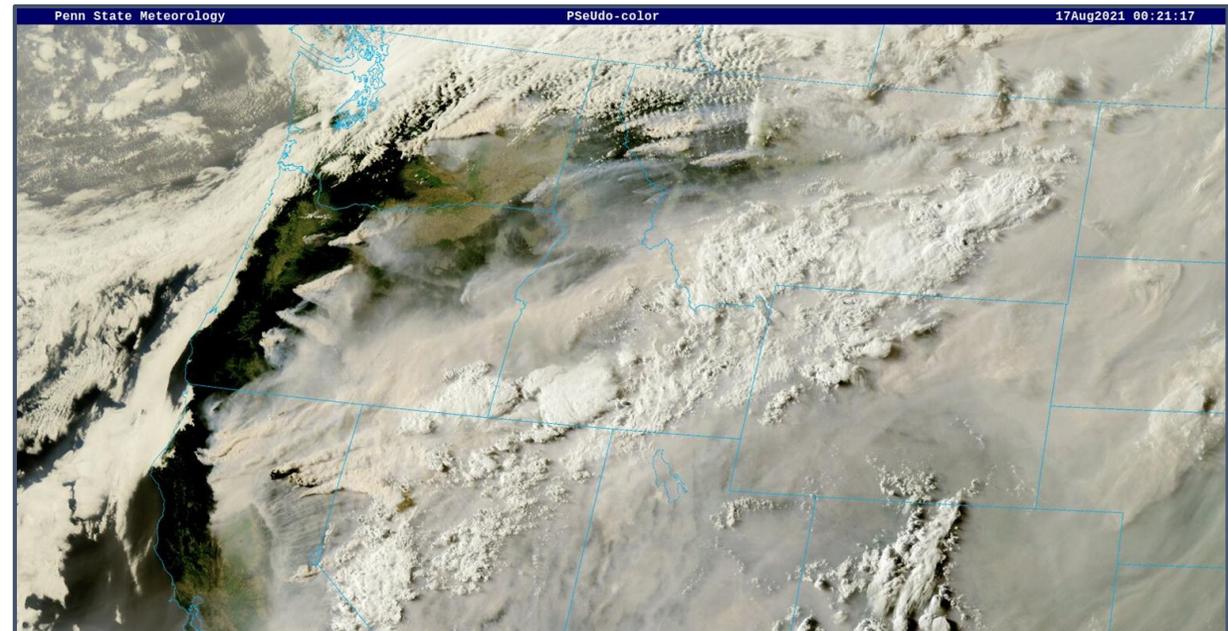
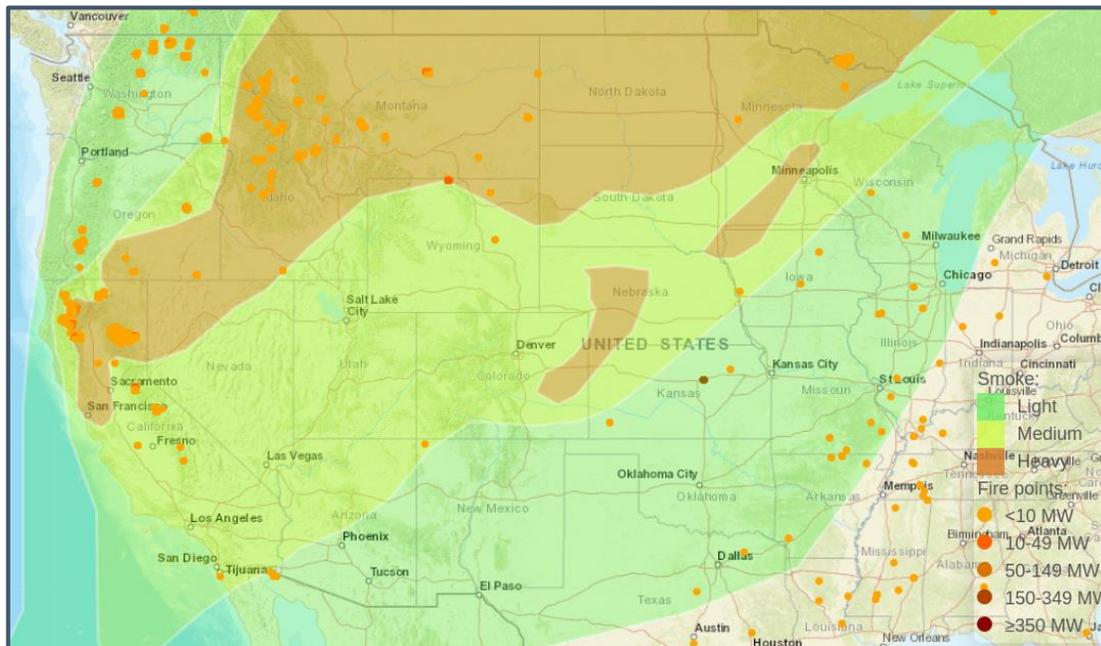
Top ## - Percent Poor to Very Poor
[Bottom ##] - Change from Last Week

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



Impacts: Wildfire and Smoke

- Poor air quality alerts issued across much of the region, especially northern, due to smoke from western and Canadian wildfires
- Recent fires in Minnesota and southeastern Montana prompt evacuations
- Intense precipitation on burned areas caused landslides in Colorado



Impacts: Agriculture Summary



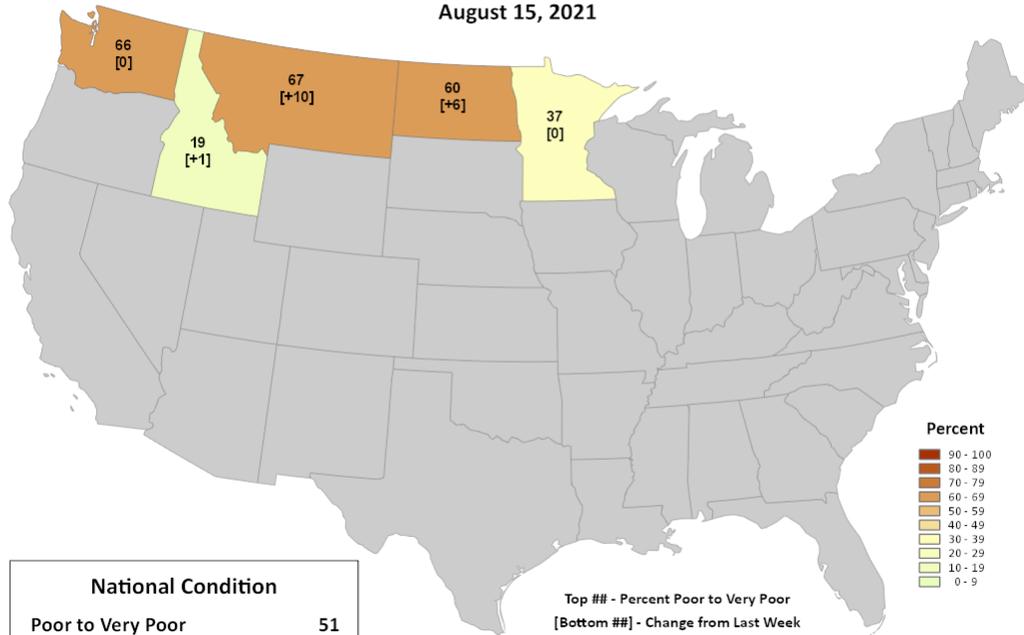
Credit: MT PBS

- Majority of Barley and Spring Wheat acreage in Montana and North Dakota is considered poor to very poor
- Many areas are cutting failed crops for livestock feed
- Minnesota agricultural conditions continue to worsen as the ongoing drought intensifies despite a slower onset
 - August corn yield estimate of 166 bushels for Minnesota would be the lowest since 2014
- In most cases, the percent acreage for most crops considered good to excellent is below levels seen in the 2017 flash drought

Impacts: Barley

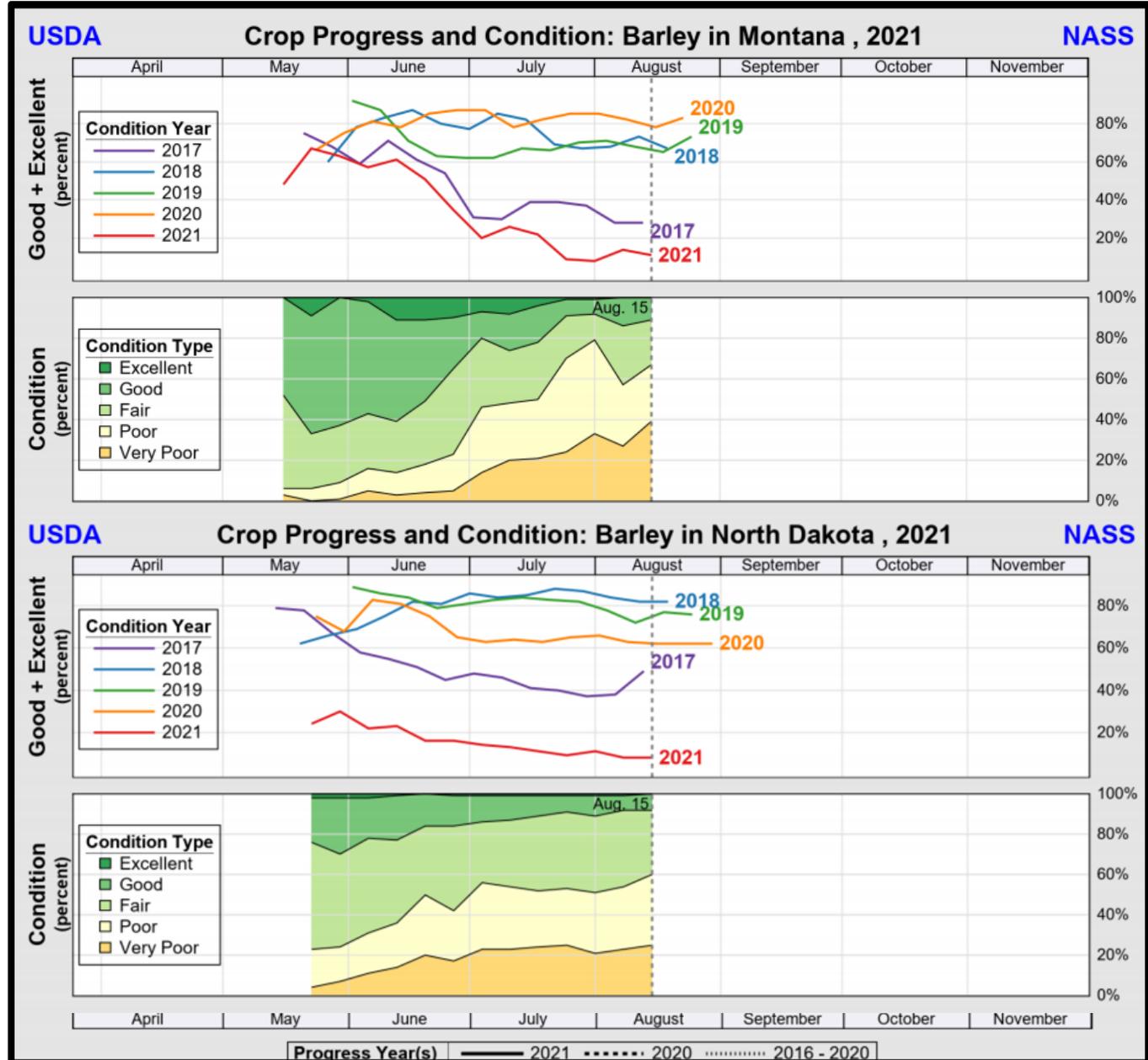
USDA United States Department of Agriculture
This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)

Barley Conditions Percent Poor to Very Poor August 15, 2021



National Condition	
Poor to Very Poor	51
Change from Last Week	+5

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



Impacts: Spring Wheat

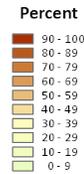
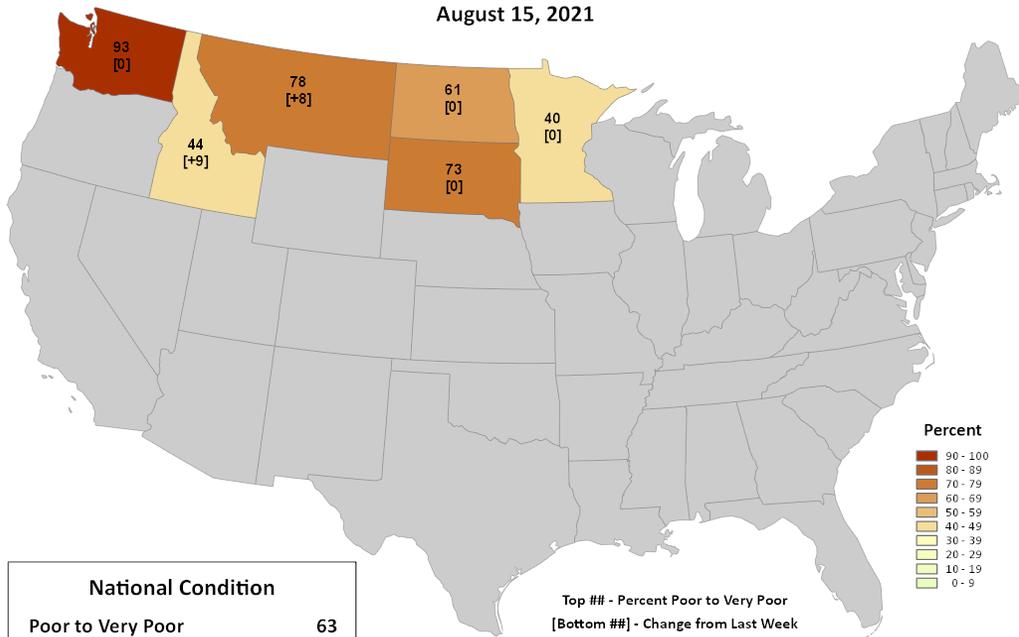


This product was prepared by the
USDA Office of the Chief Economist (OCE)
World Agricultural Outlook Board (WAOB)

Spring Wheat Conditions

Percent Poor to Very Poor

August 15, 2021



National Condition

Poor to Very Poor 63
Change from Last Week +2

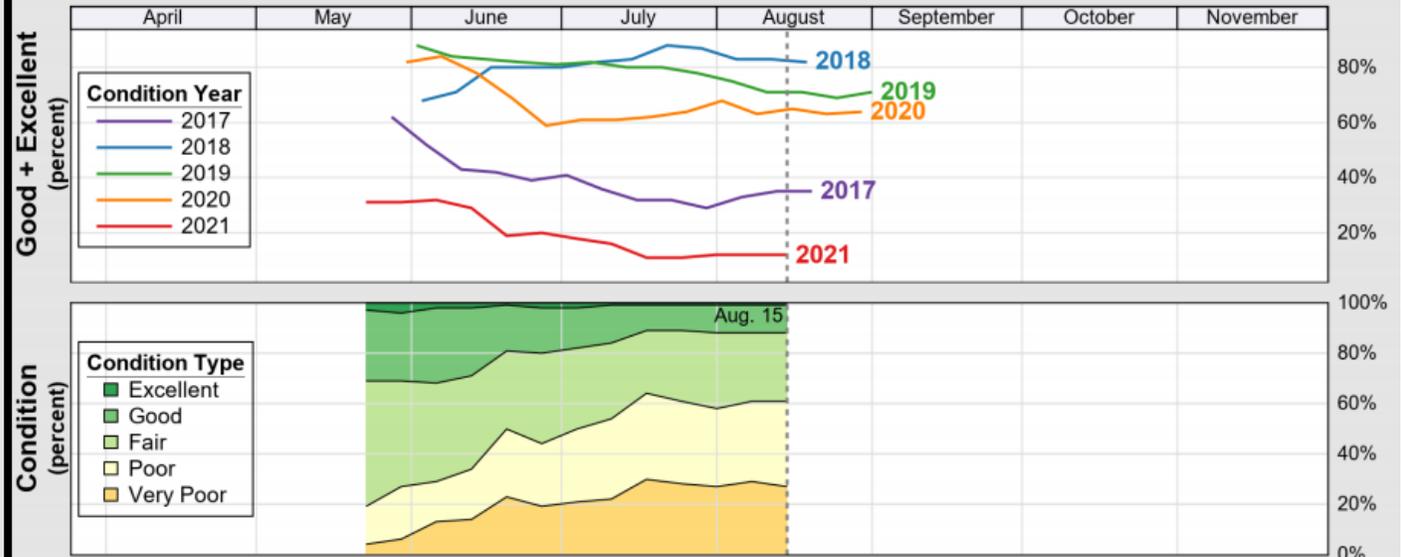
Top ## - Percent Poor to Very Poor
[Bottom ##] - Change from Last Week

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

USDA

Crop Progress and Condition: Spring Wheat in North Dakota, 2021

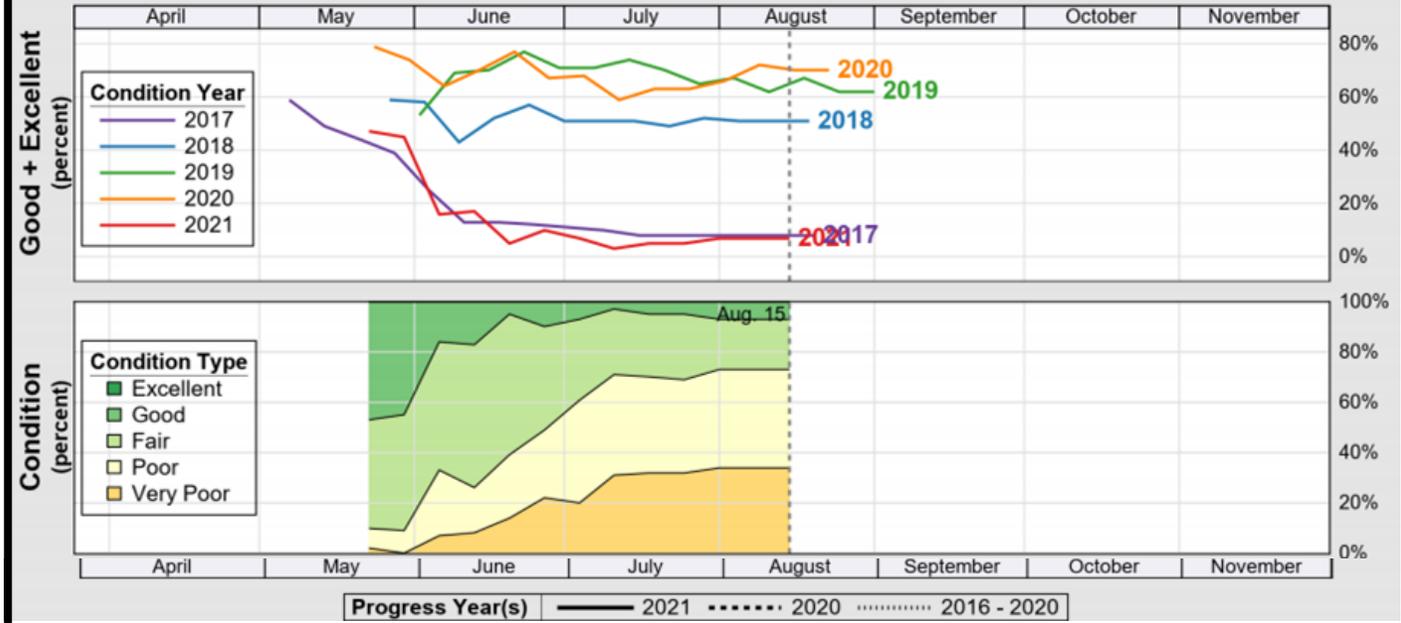
NASS



USDA

Crop Progress and Condition: Spring Wheat in South Dakota, 2021

NASS

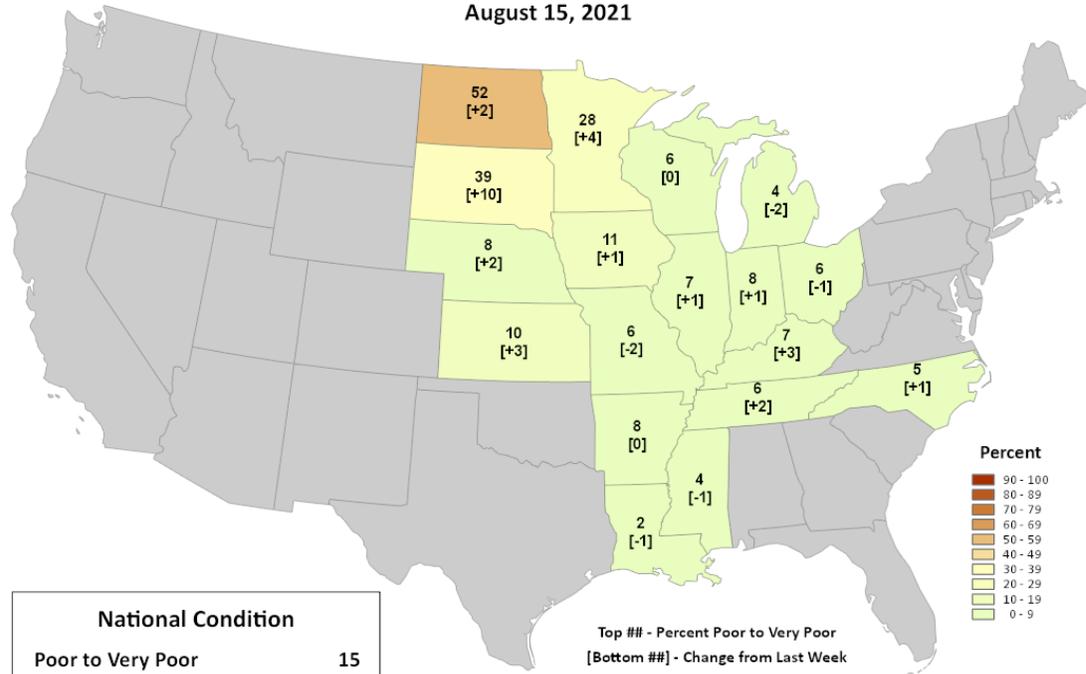


Impacts: Soybeans

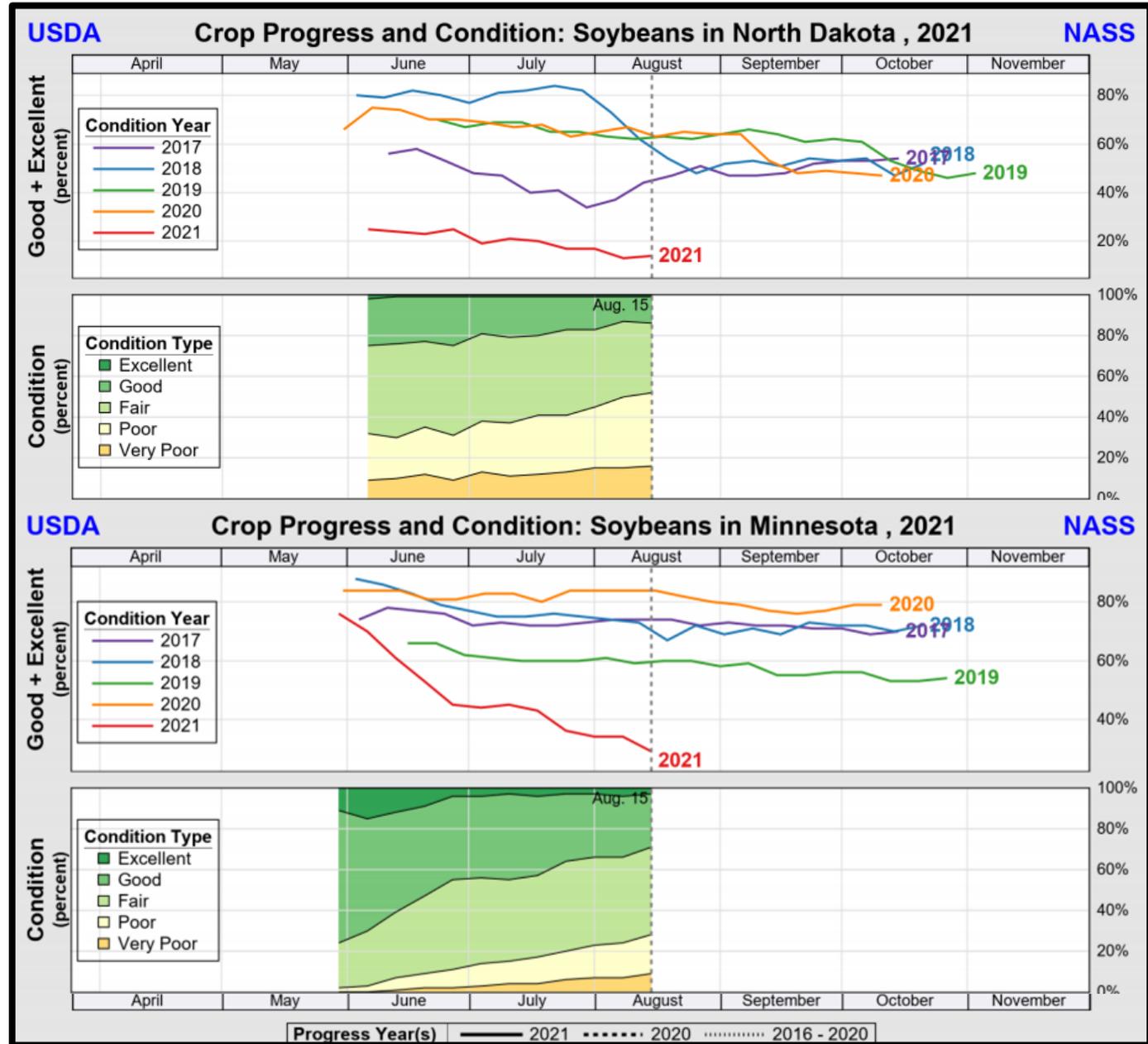


This product was prepared by the
USDA Office of the Chief Economist (OCE)
World Agricultural Outlook Board (WAOB)

Soybean Conditions Percent Poor to Very Poor August 15, 2021



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



Impacts: Mental Health

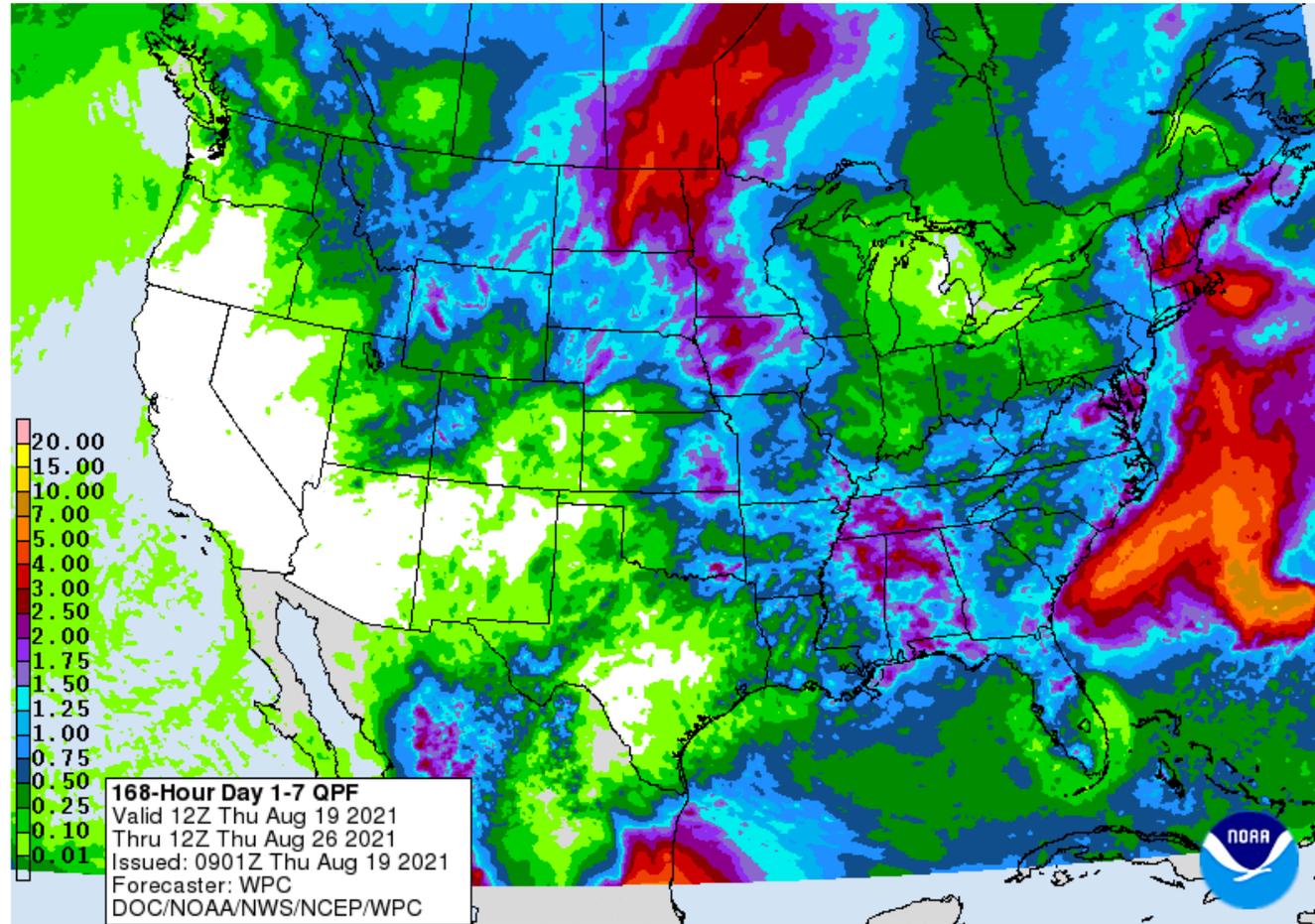


credit: farmers.gov; USDA

Increasing recognition that drought has significant implications for the mental health of producers

- The slow progression of drought is causing long term anxiety and stress
- Economic impacts are affecting the well being of producers, their families and entire communities
- Prolonged periods of heat and smoke and sudden events like local wildfire compound stress related to economics and the progress of crops
- A sense of community loss and displacement results following extreme events such as wildfire and drought

7 Day Quantitative Precipitation Forecast

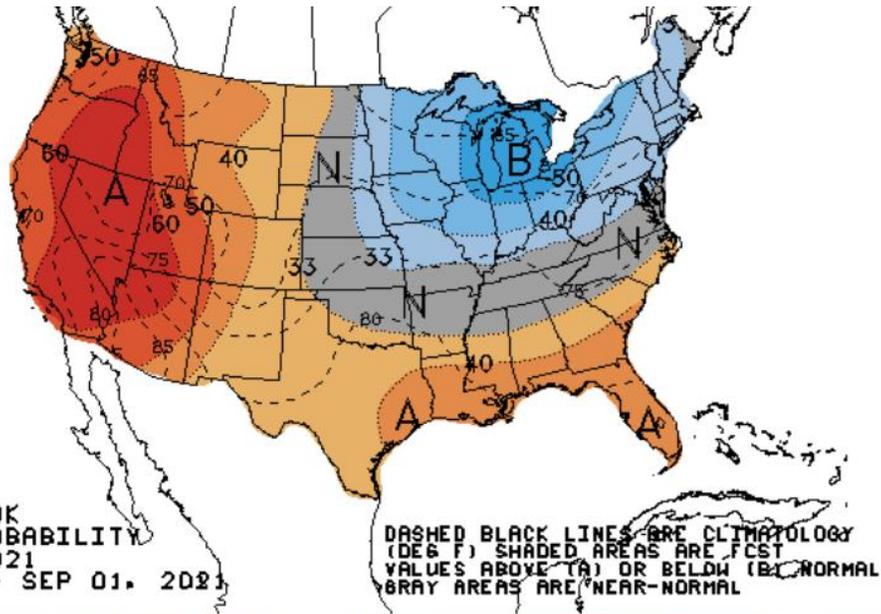


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

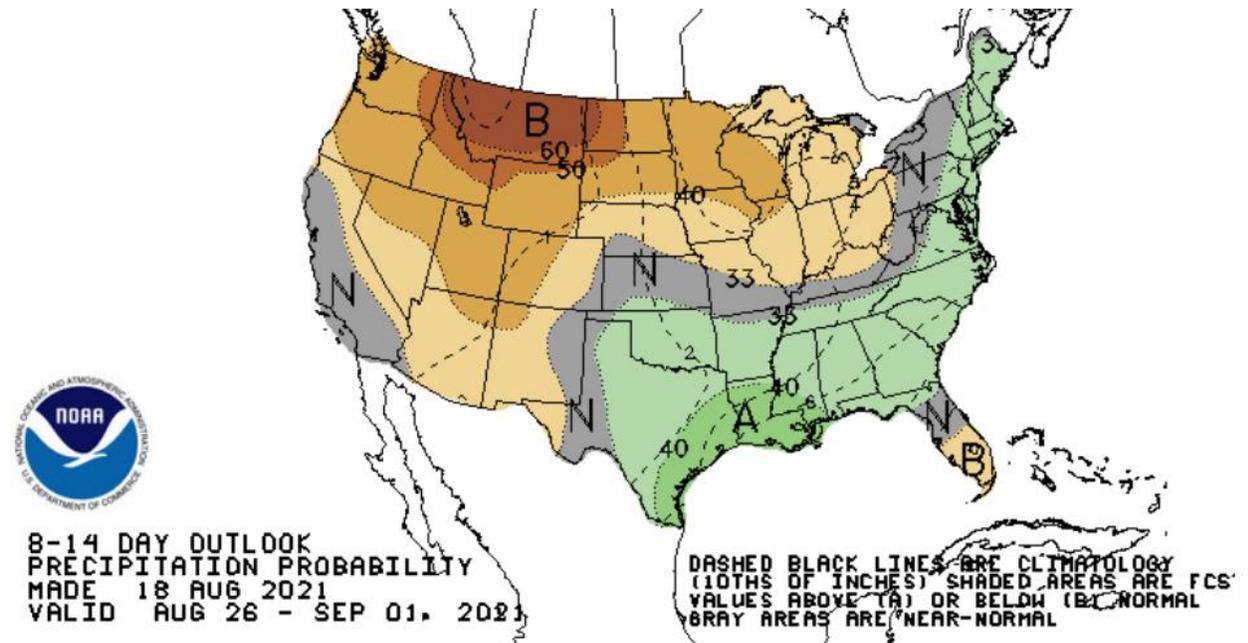
8-14 Day Outlook

Temperature

e

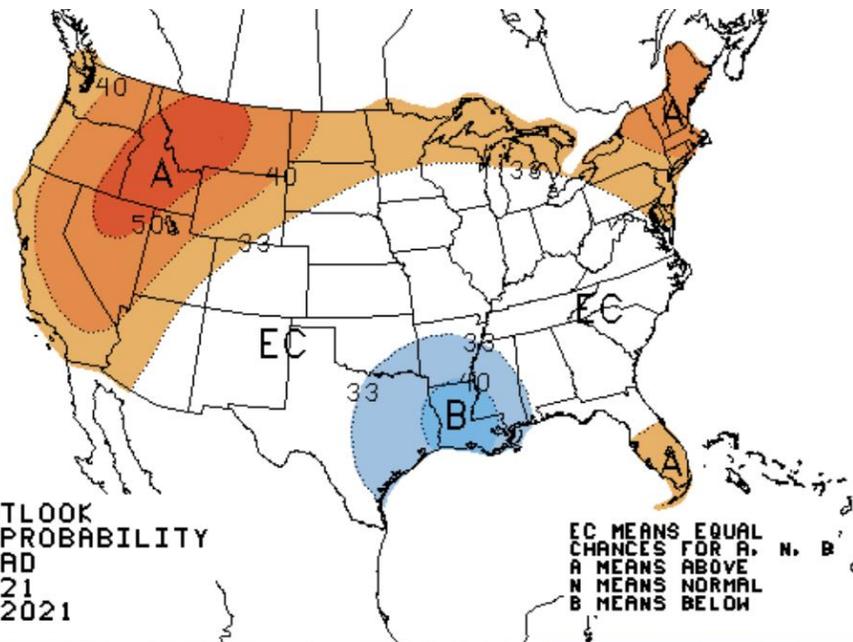


Precipitation

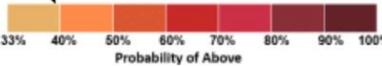
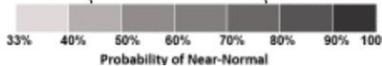
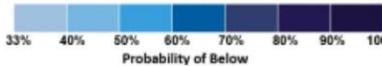


1 Month Outlook

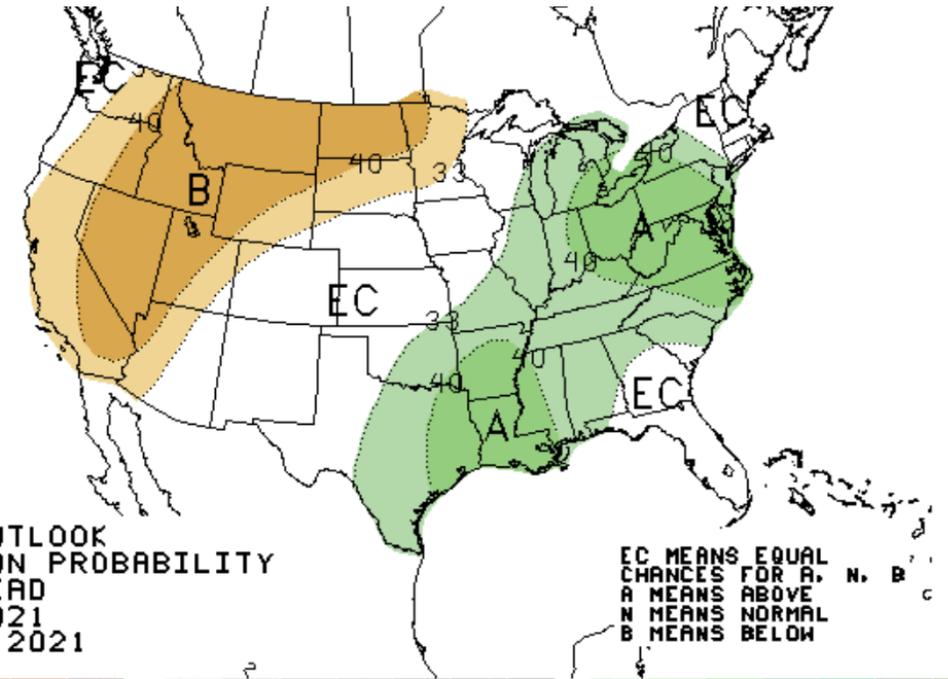
Temperature



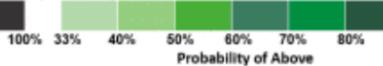
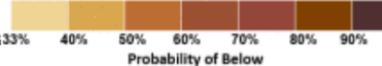
ONE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID SEP 2021
MADE 19 AUG 2021



Precipitation

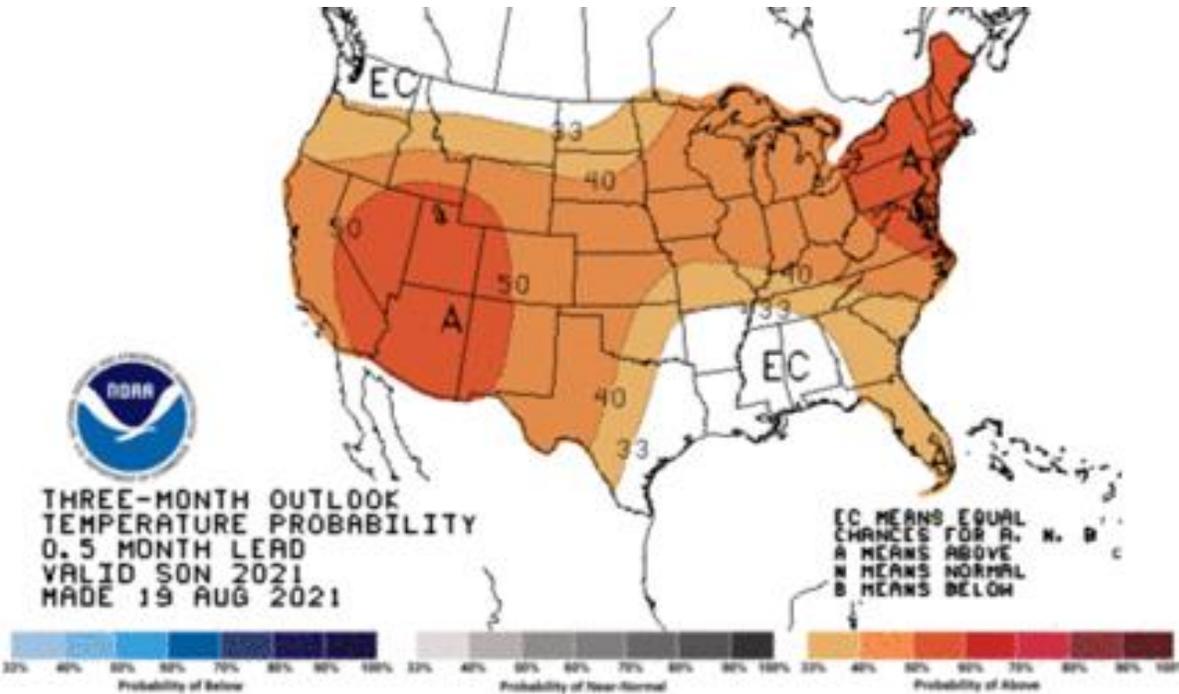


ONE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID SEP 2021
MADE 19 AUG 2021

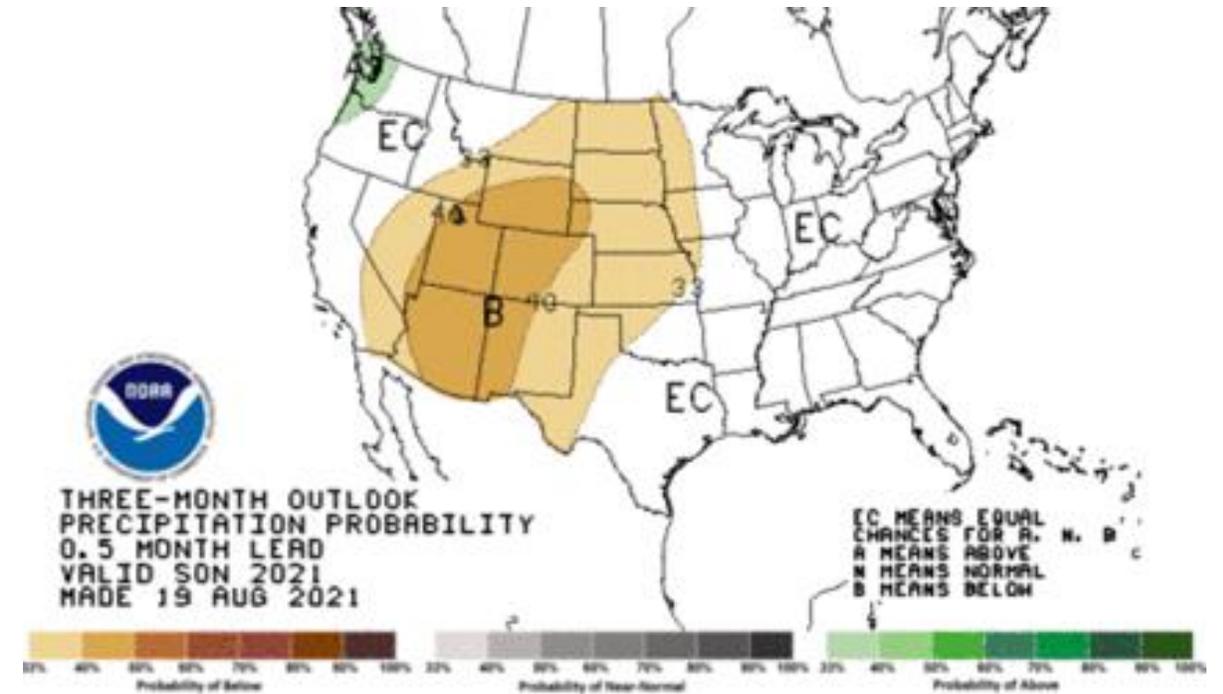


3 Month Outlook

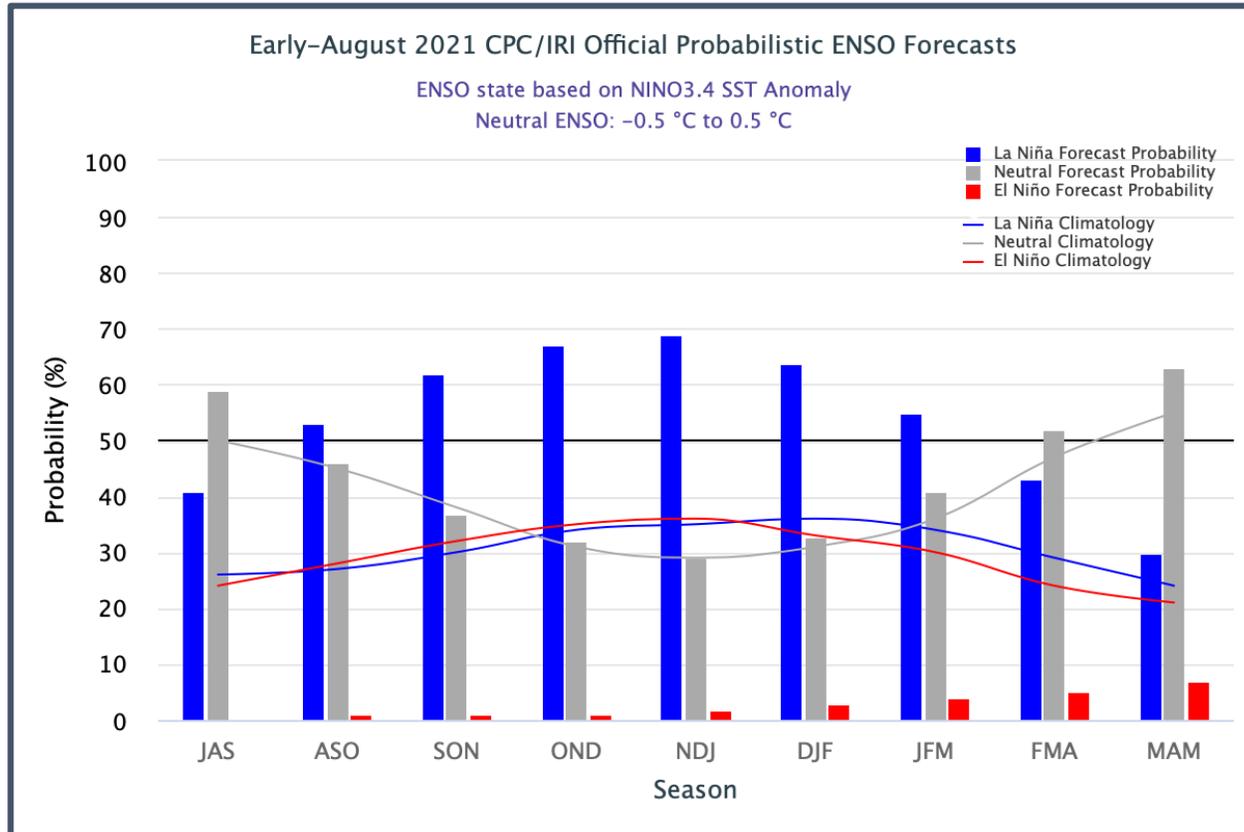
Temperature



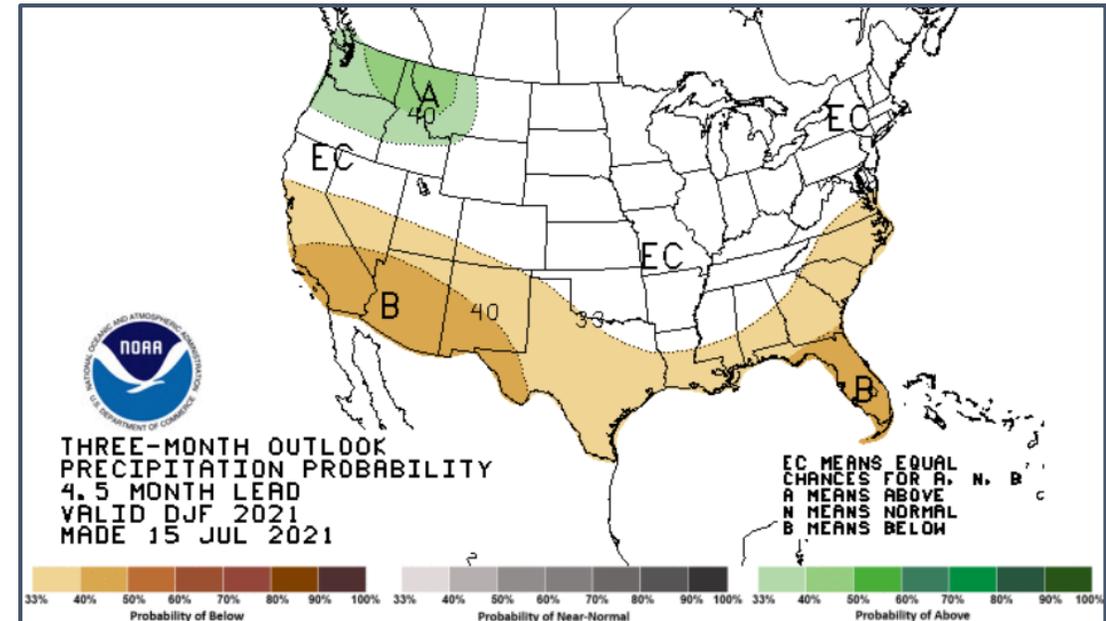
Precipitation



ENSO Forecast



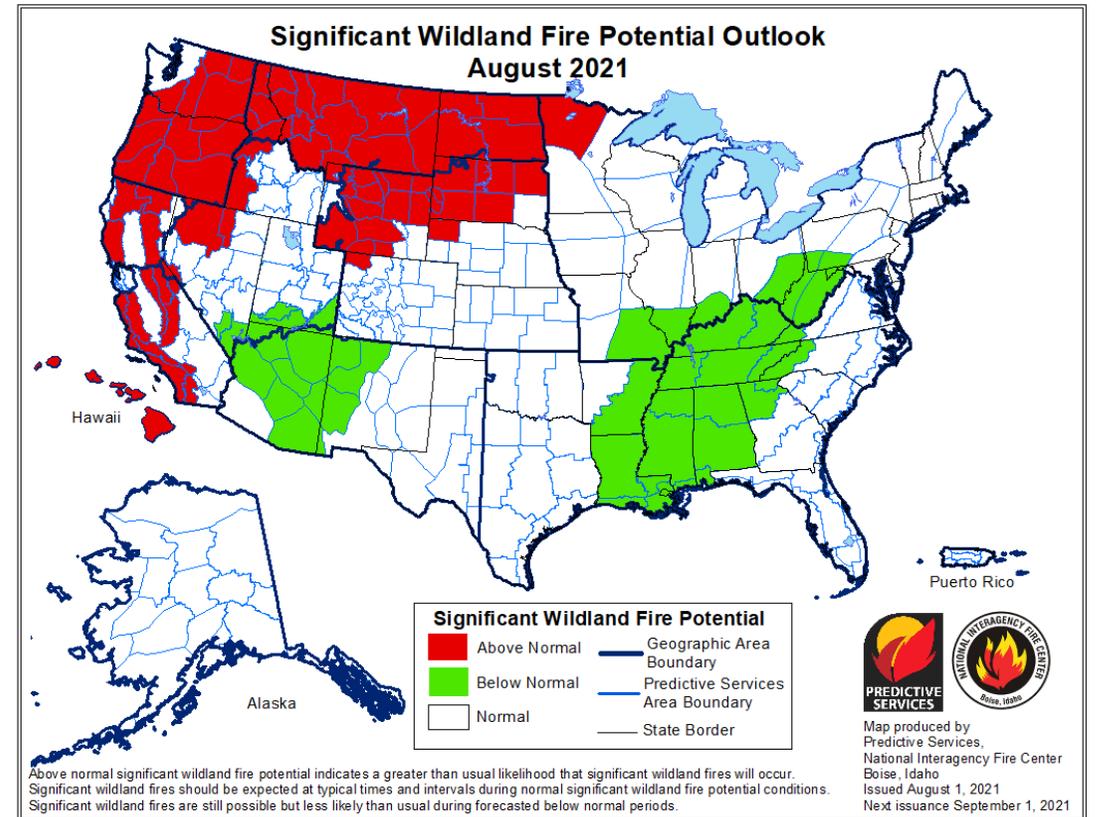
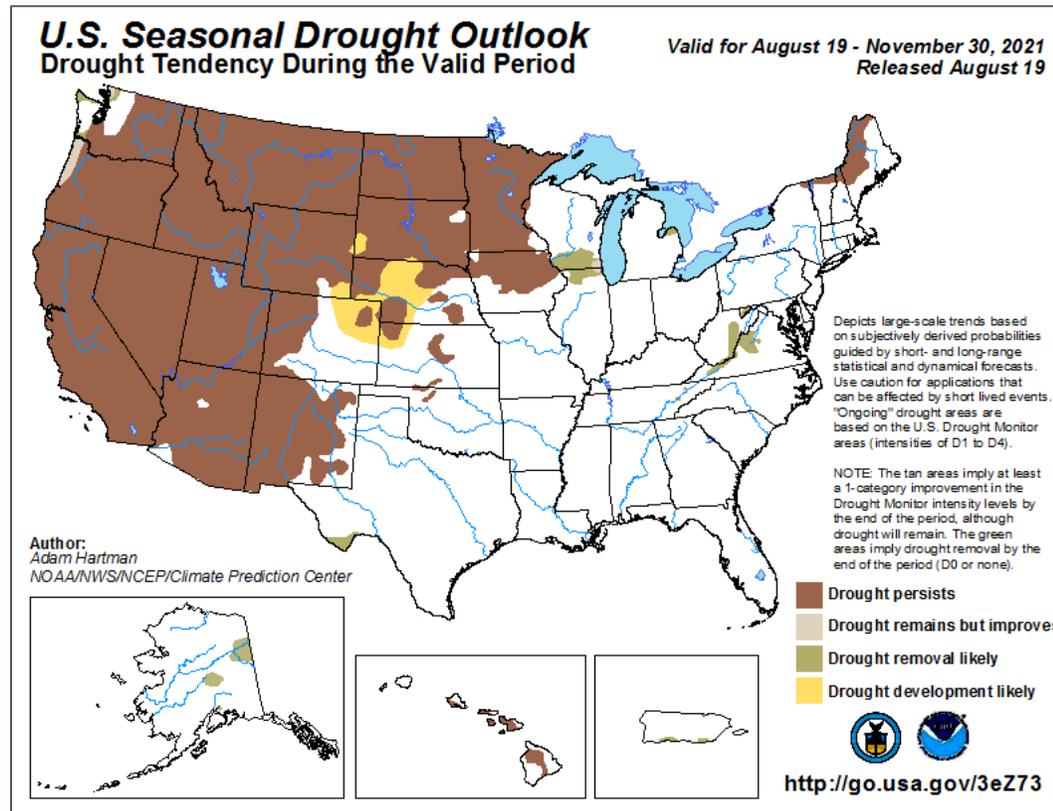
<https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/>



https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=5

ENSO neutral conditions are expected to continue through the summer (JAS). La Niña is then predicted to emerge and strengthen into the early winter (NDJ) and slowly return to neutral by end of winter.

Outlook: Fire & Drought

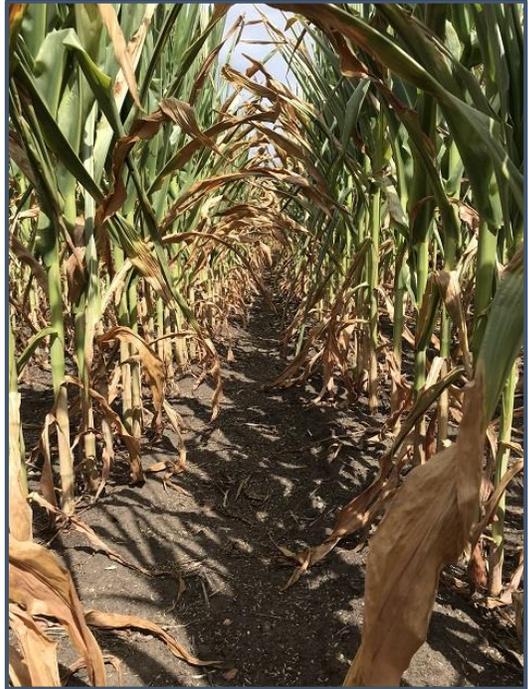


https://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

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

- Drought is expected to persist across the northern portion of the region, with some further development possible in Nebraska and surrounding area
- Prolonged and persistent drought is expected to increase fire potential across this same region

Summary



credit: ISU Extension

- Historical drought conditions have occurred across the northern portions of the region
- Relatively normal moisture conditions exist in the central and southern portions of the region
- Significant agricultural impacts due to the historic drought conditions
- Pasture and range conditions are worse than 2017
- Producers are battling severe drought, grasshoppers, fire and extreme heat
- 7 day QPF suggest there could be some relief in the near future.
- The 1 month and 3 month outlooks are leaning towards continued warm and dry conditions
- Greater probability of La Niña this winter
- Significant drought and wildfire risk is likely to persist

Further Information - Partners

- **Today's Recorded Presentations and :**
- <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu>
- NOAA's National Centers for Environmental Information: <https://www.ncdc.noaa.gov/news/national-centers-environmental-information>
- Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Current Weather Forecasts: www.weather.gov
- Climate Portal: www.climate.gov
- U.S. Drought Portal: www.drought.gov
- National Drought Mitigation Center: <http://drought.unl.edu/>
- State climatologists
 - <http://www.stateclimate.org>
- Regional climate centers
 - <http://mrcc.isws.illinois.edu>
 - <http://www.hprcc.unl.edu>

Questions?

- Climate:

- Zachary Hoylman: zachary.hoylman@umontana.edu, 406-499-8118
- Kelsey Jencso: kelsey.Jencso@umontana.edu, 406-243-6793
- Dennis Todey: Dennis.Todey@usda.gov, 515-294-2013
- Doug Kluck: doug.kluck@noaa.gov, 816-994-3008
- Natalie Umphlett: numphlett2@unl.edu, 402 472-6764
- Brian Fuchs: bfuchs2@unl.edu, 402 472-6775
- Molly Woloszyn: molly.woloszyn@noaa.gov
- Britt Parker: britt.parker@noaa.gov

- Weather:

- crhroc@noaa.gov