



North Central U.S. Climate and Drought Outlook

MARTHA D SHULSKI
MSHULSKI3@UNL.EDU
402-472-6711

SCHOOL OF NATURAL
RESOURCES
UNIVERSITY OF NEBRASKA
LINCOLN

General Information

Providing climate services to the North Central US

Collaborative Activity Among:

NOAA NCEI/NWS/OAR/NIDIS/

USDA Climate Hubs

American Association of State Climatologists

Midwestern and High Plains Regional Climate Centers

National Drought Mitigation Center

Next Regular Climate/Drought Outlook Webinar

August 20th, 2020 (1 PM CDT) Stuart Foster, State Climatologist of Kentucky

Access to Future Climate Webinars and Information

<http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars>

<https://mrcc.illinois.edu/multimedia/webinars.jsp>

<http://www.hprcc.unl.edu/webinars.php>

Open for questions at the end

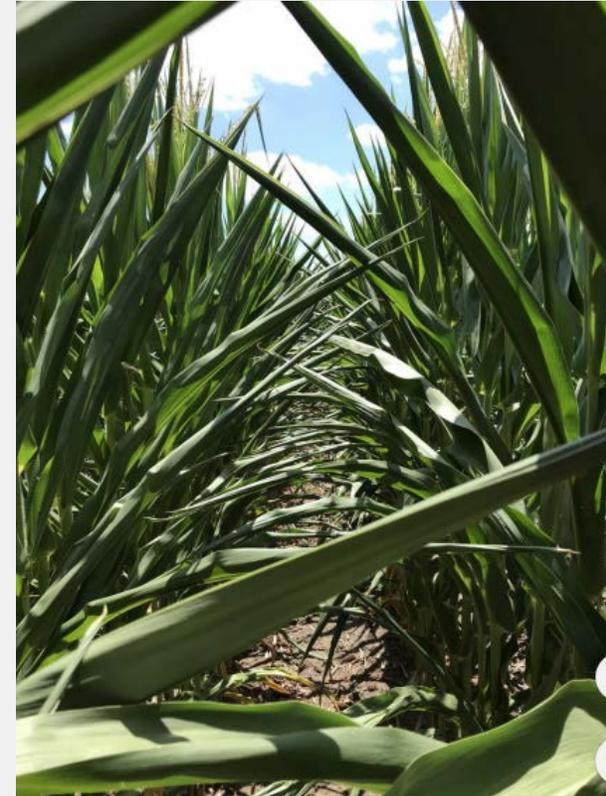


Today's webinar

- **Recap and recent conditions**
- **Impacts – increasing dryness taking a toll**
- **Outlook – excessive heat in the near-term**



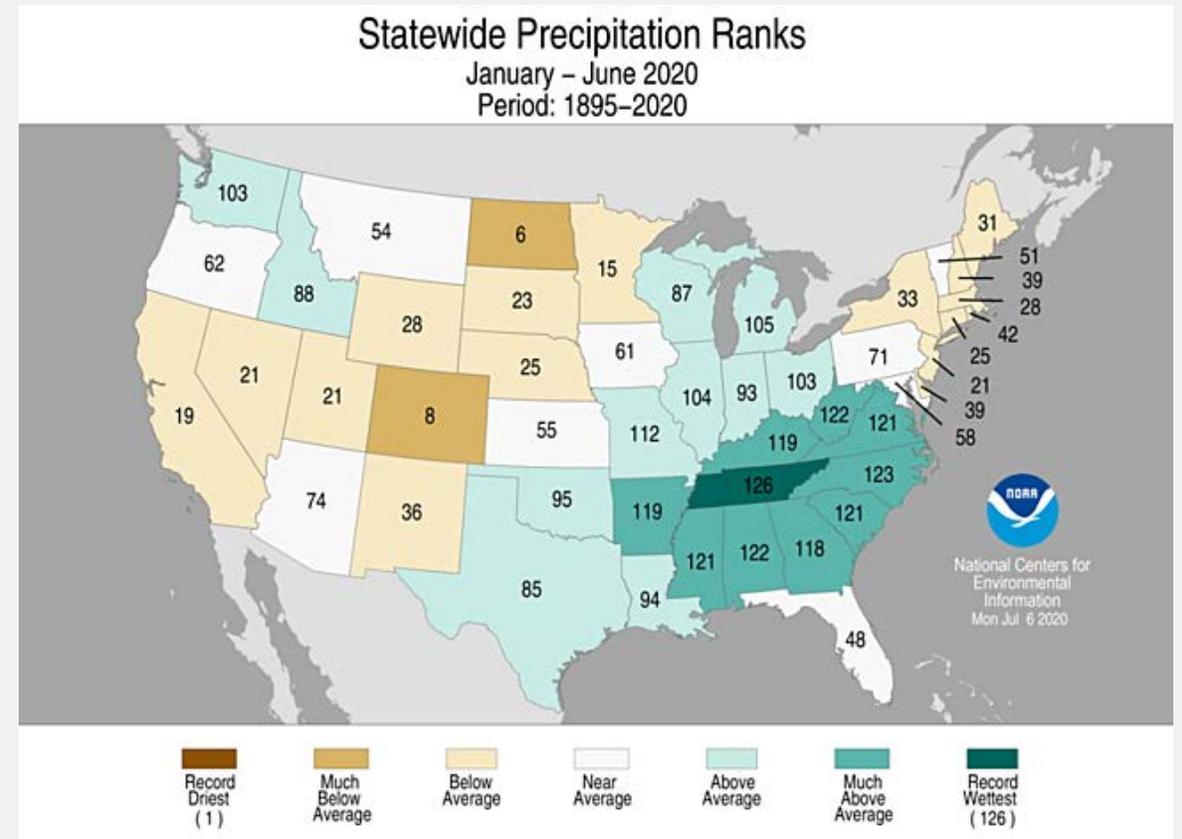
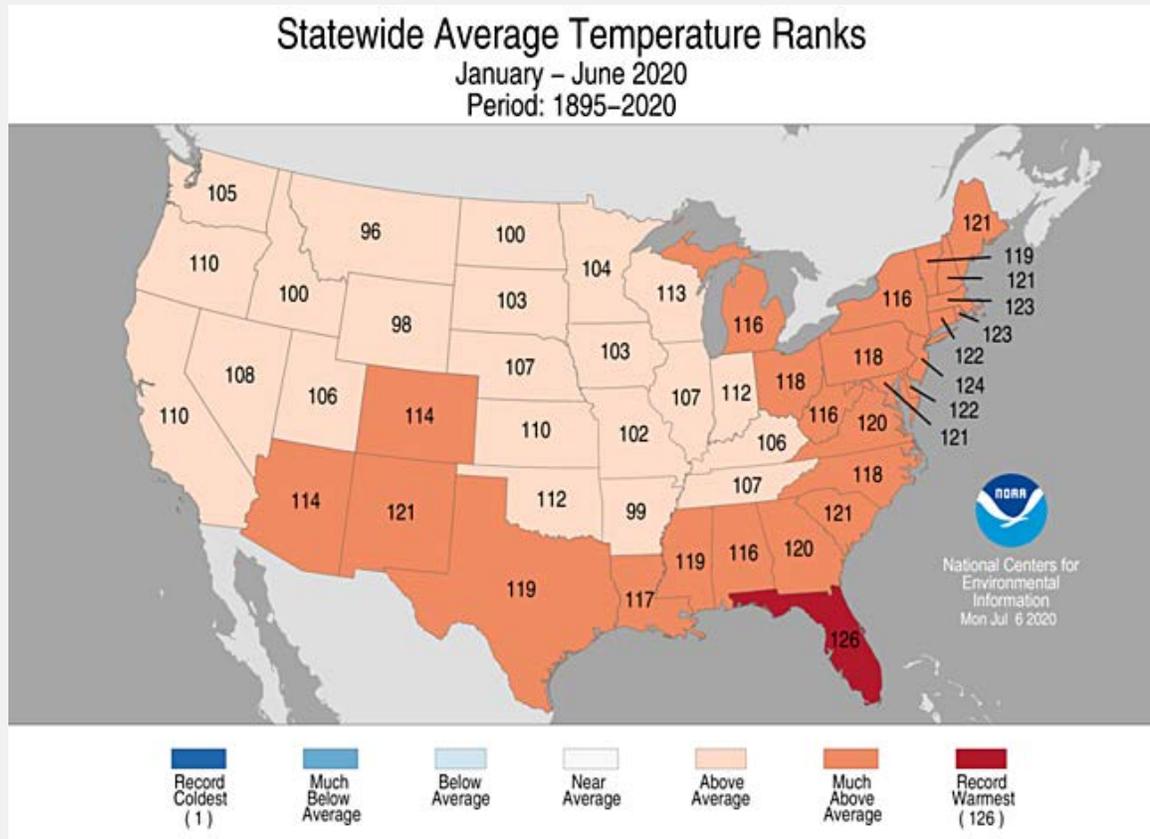
4-7" of rain in central IL, Jul 15
Roanoke, IL. Photo courtesy Miles Chiotti



Stressed corn in Iowa
Courtesy Meaghan Anderson, ISU

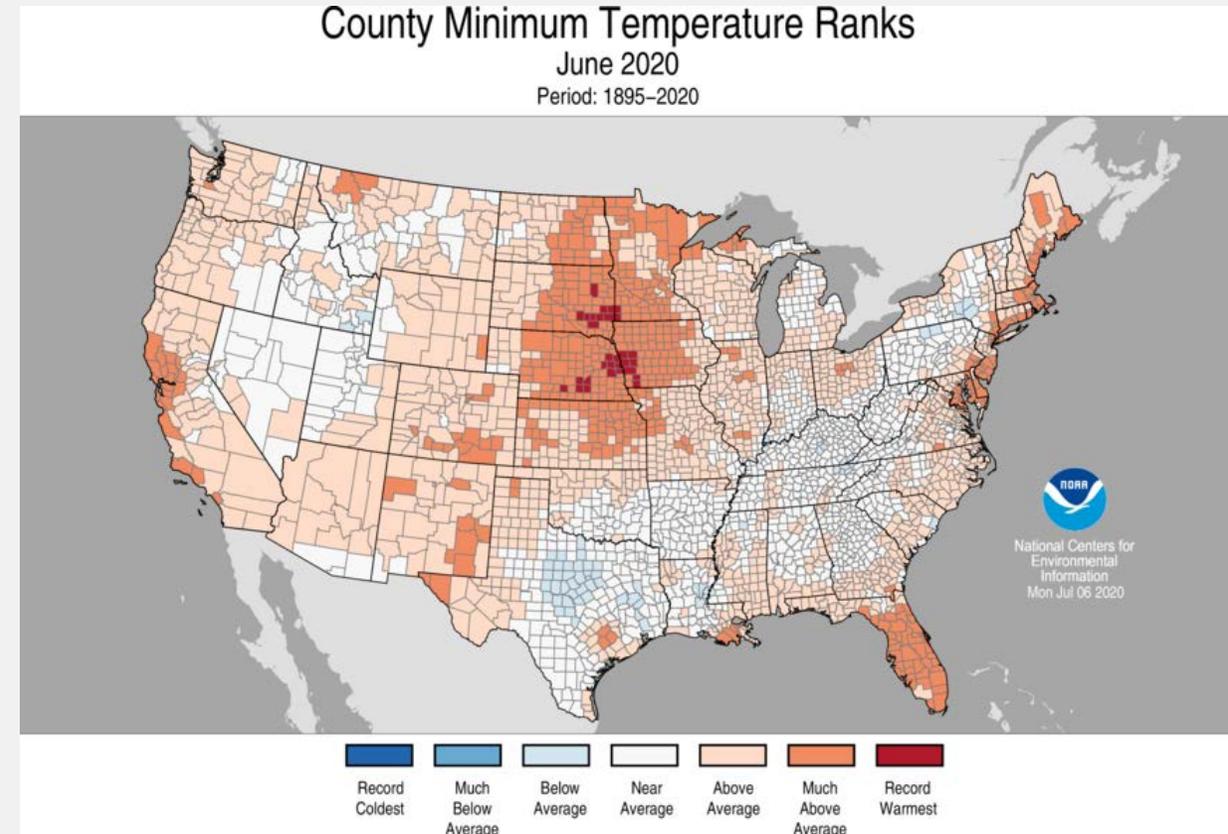
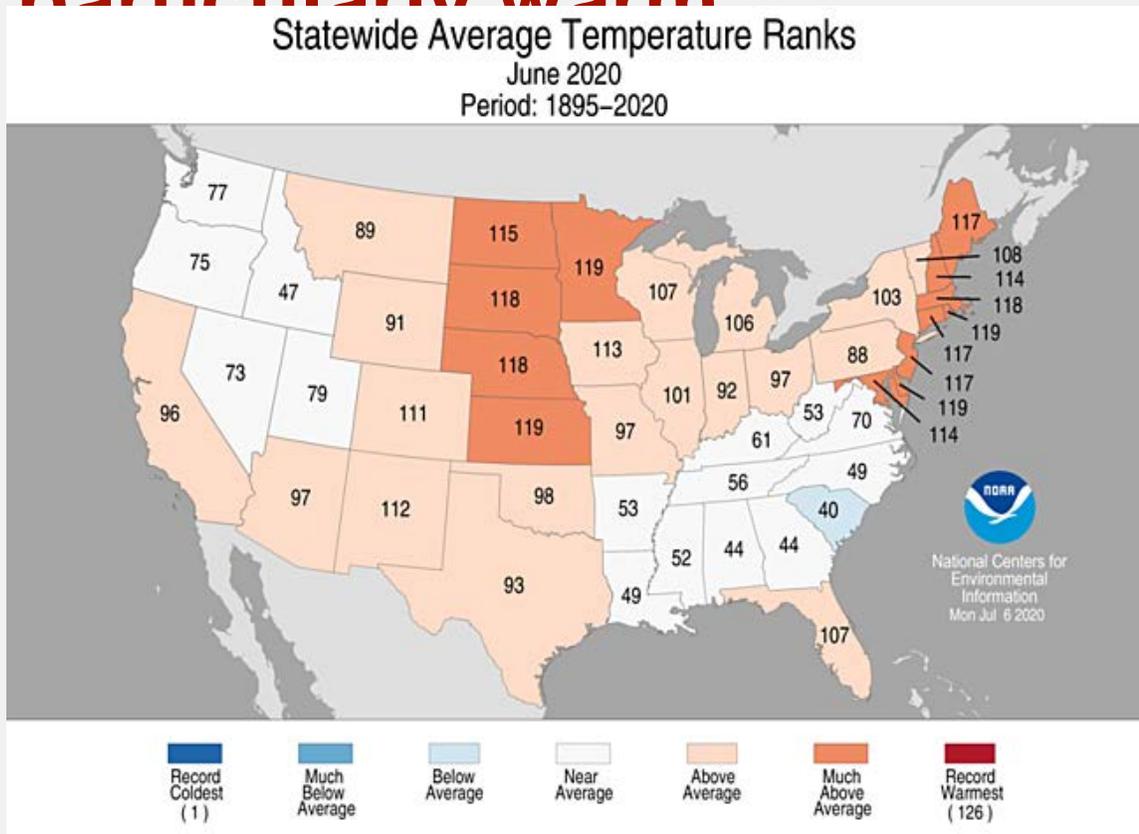
Recap

2020 YTD | above to much above average temperatures; dryness in the west, wet east



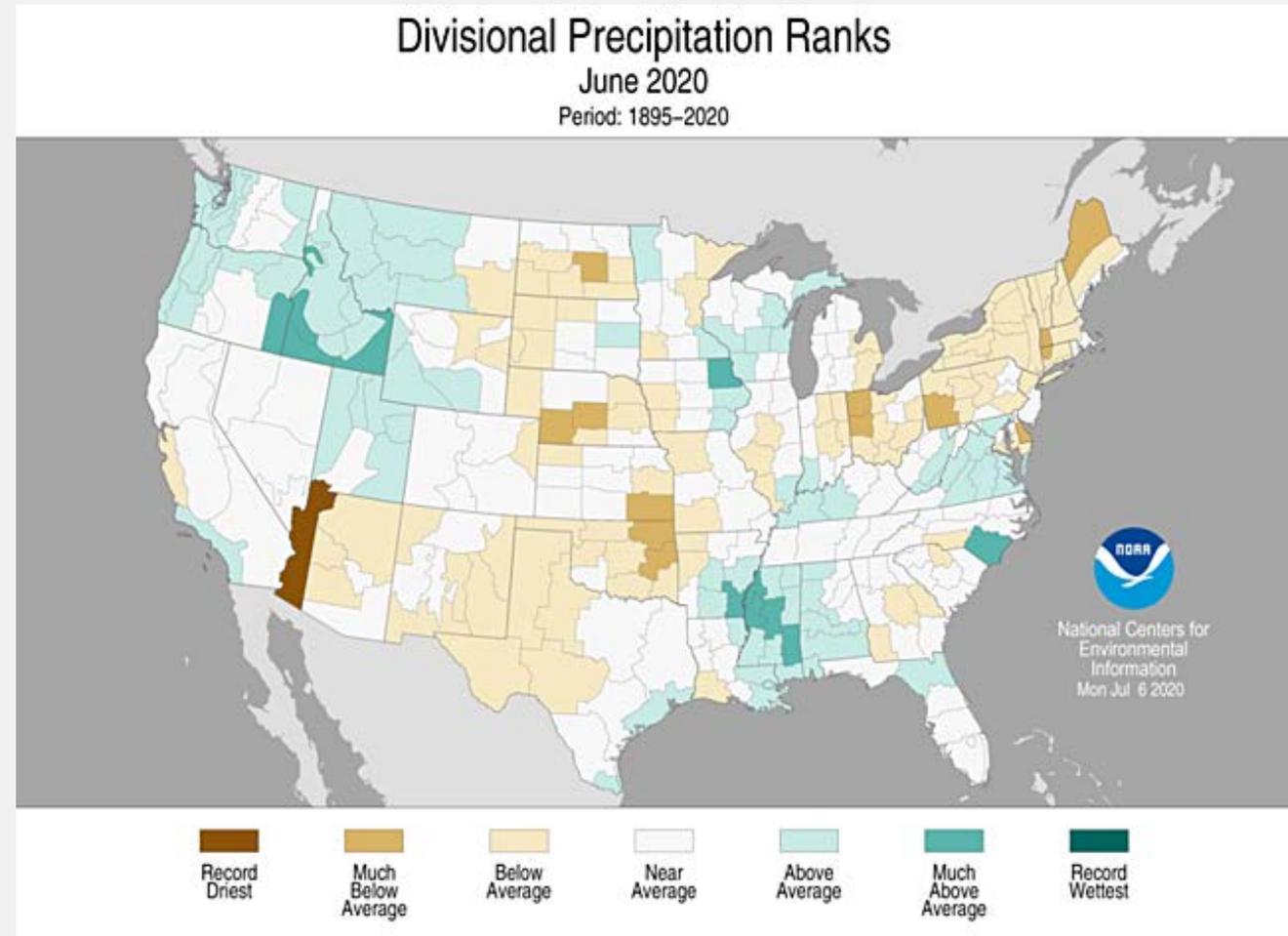
Recap

June temperature | rapid and dramatic switch from May;
top 10 warmest for central Plains; nighttime lows
particularly warm



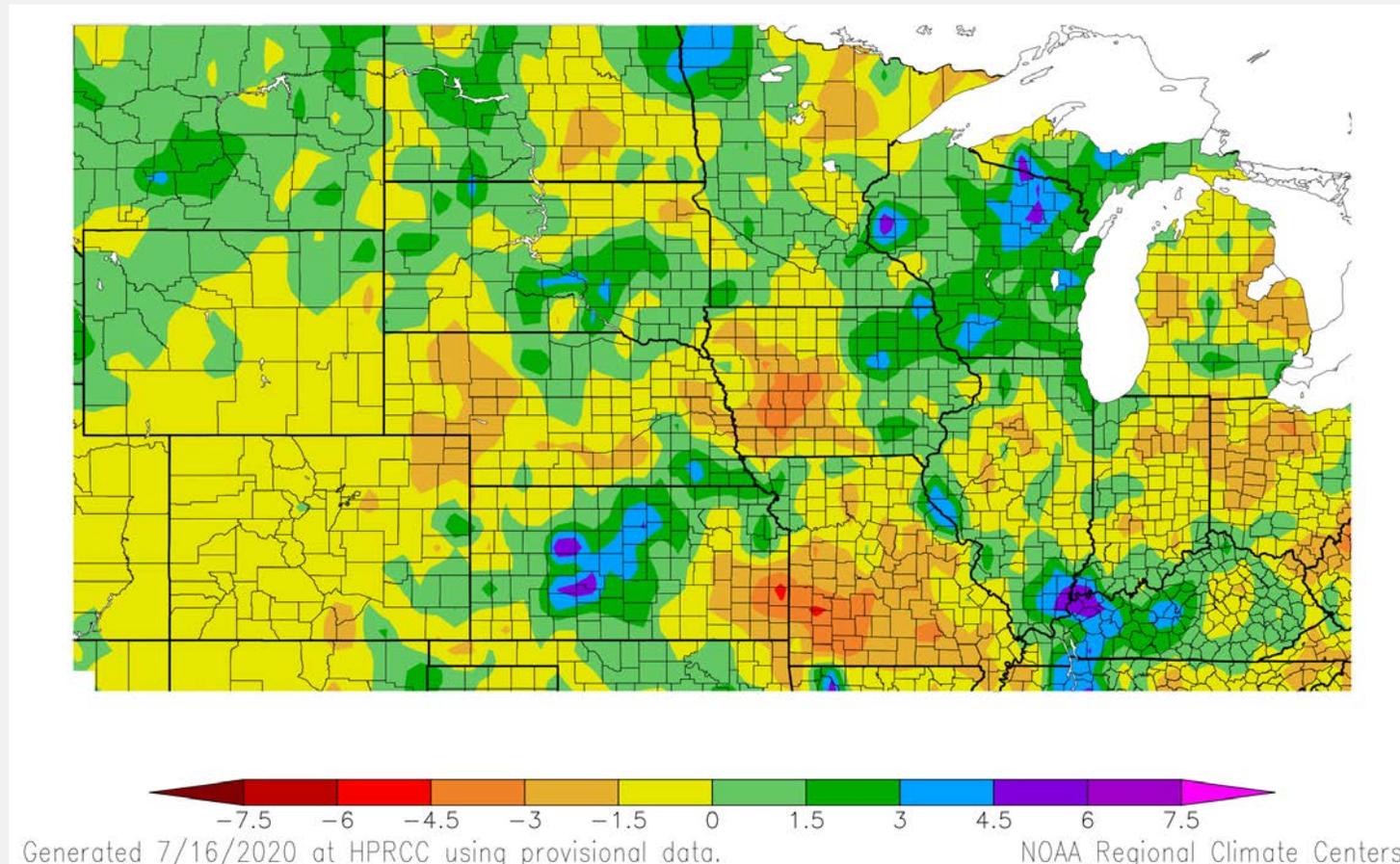
Recap

- June precipitation |
- mixed areas of moisture and deficits
- predominant dryness with more localized exceptions



Recap

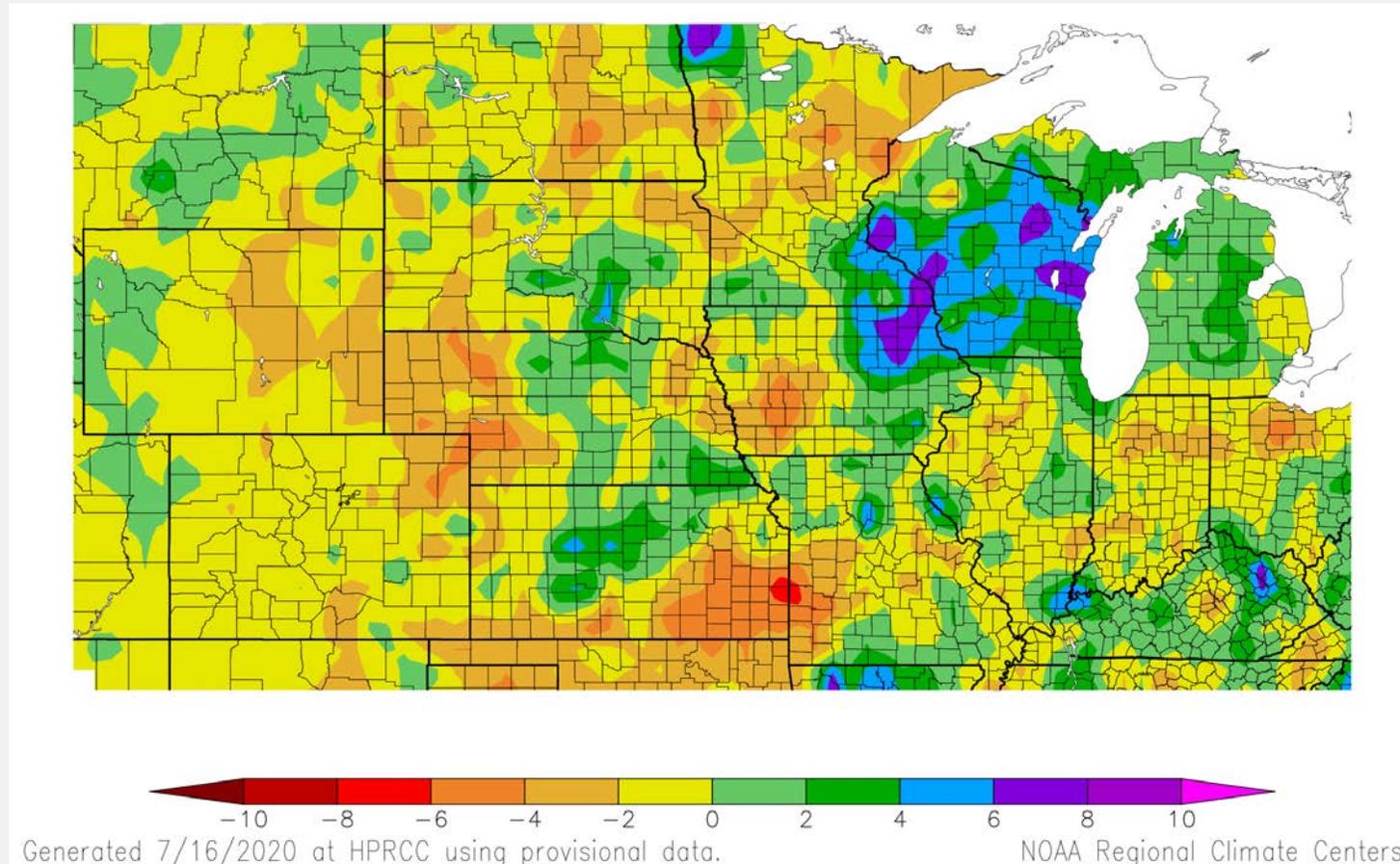
Precipitation | developing areas of dryness



30 day precipitation
departure from normal
16 Jun – 15 Jul

Recap

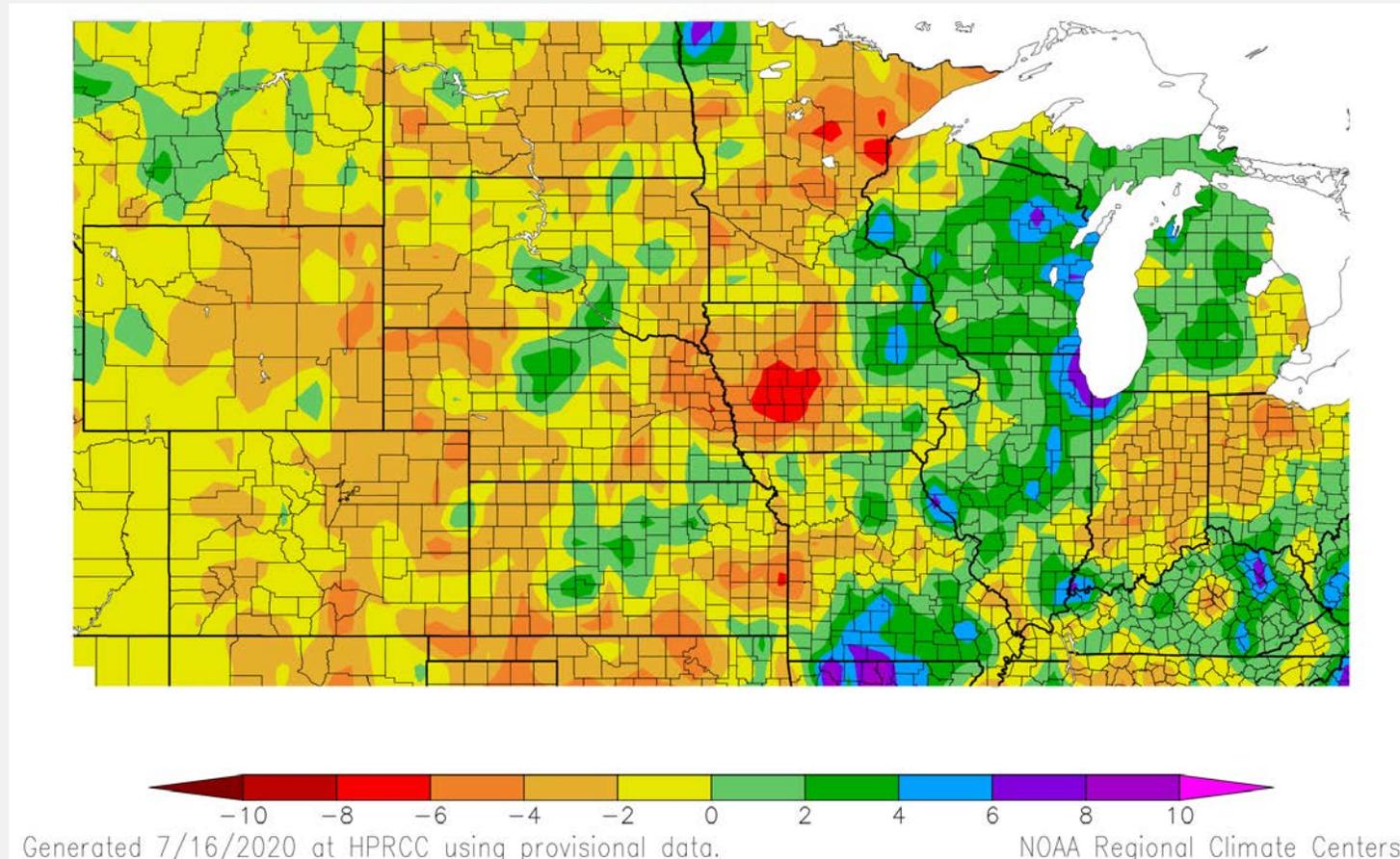
Precipitation | developing areas of dryness



60 day precipitation
departure from normal
17 May – 15 Jul

Recap

Precipitation | developing areas of dryness

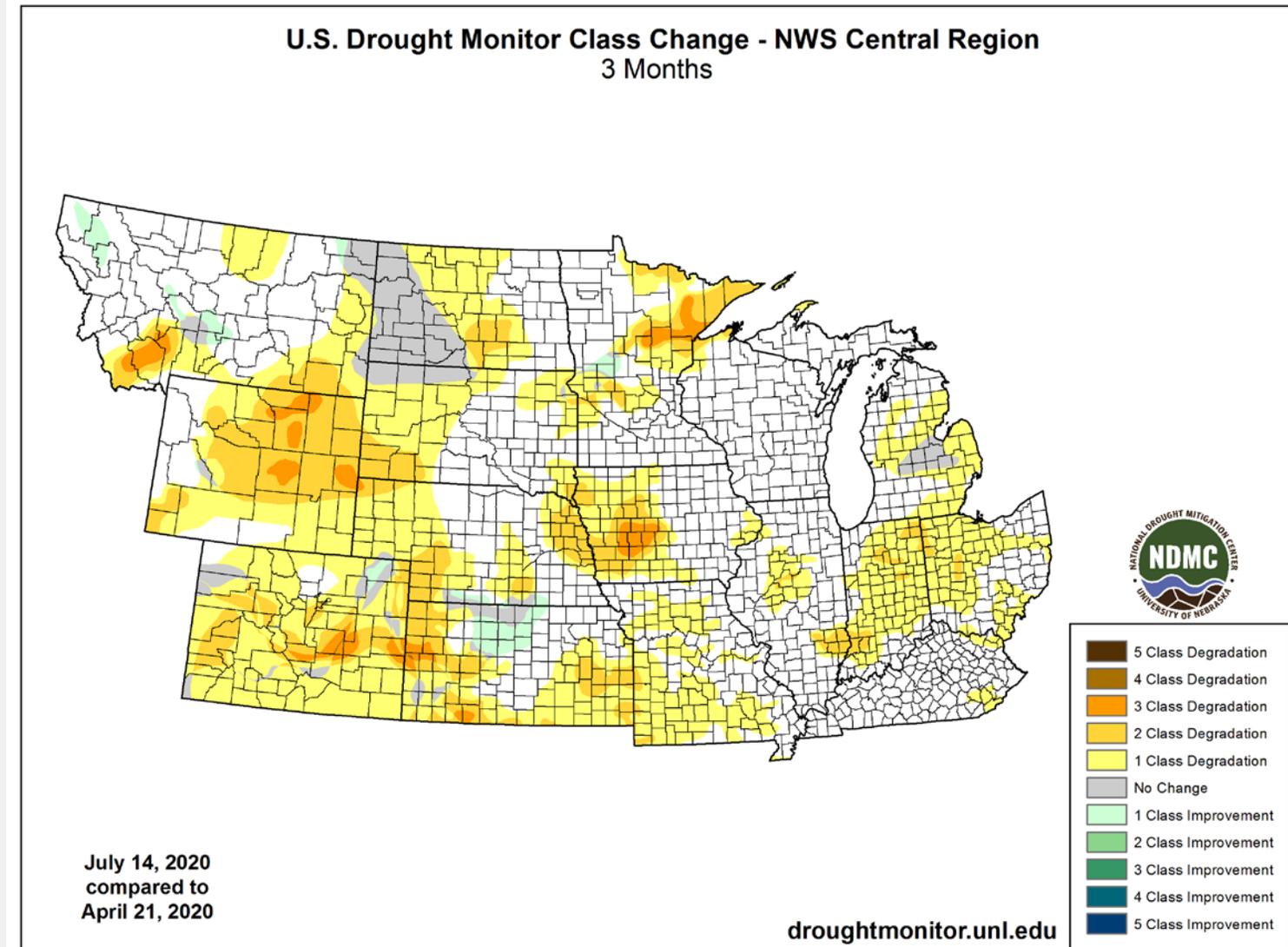


90 day precipitation
departure from normal
17 Apr – 15 Jul

Recap

Drought |

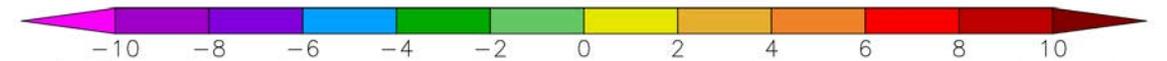
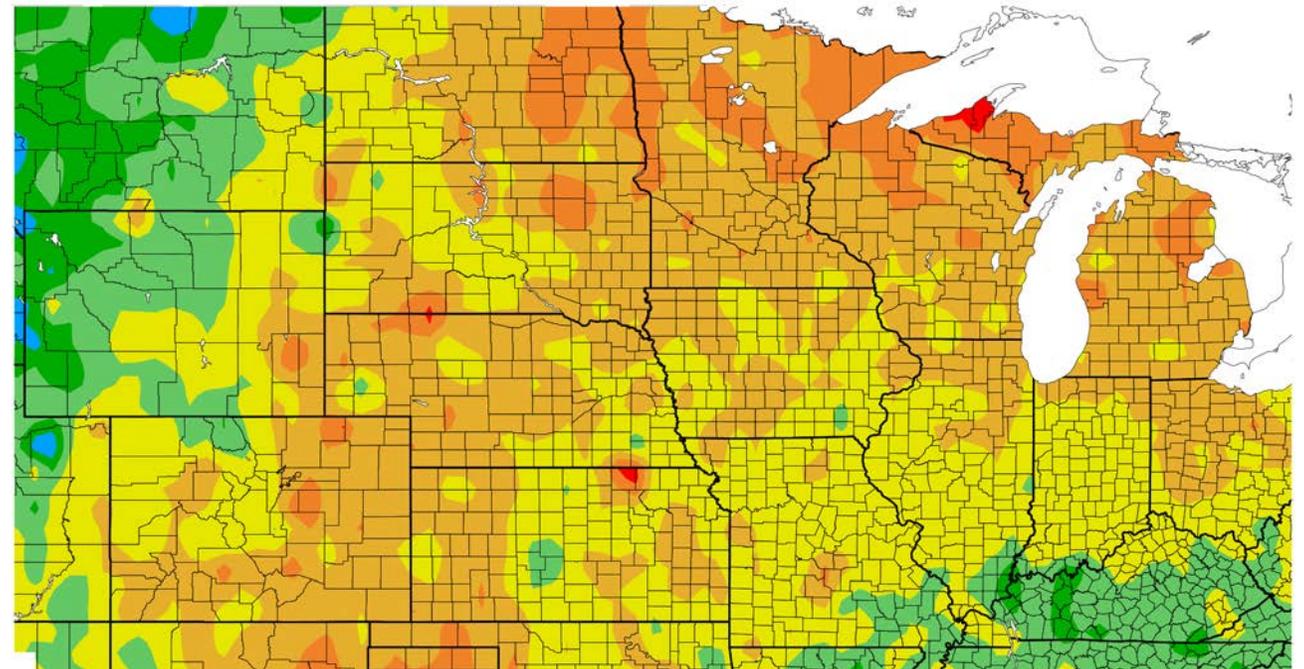
- one to three class degradations over the past 90 days



Recent conditions

- 30 day temperatures |
- **continued warmth for central portion of the region**

Departure from Normal Temperature (F)
6/15/2020 – 7/14/2020

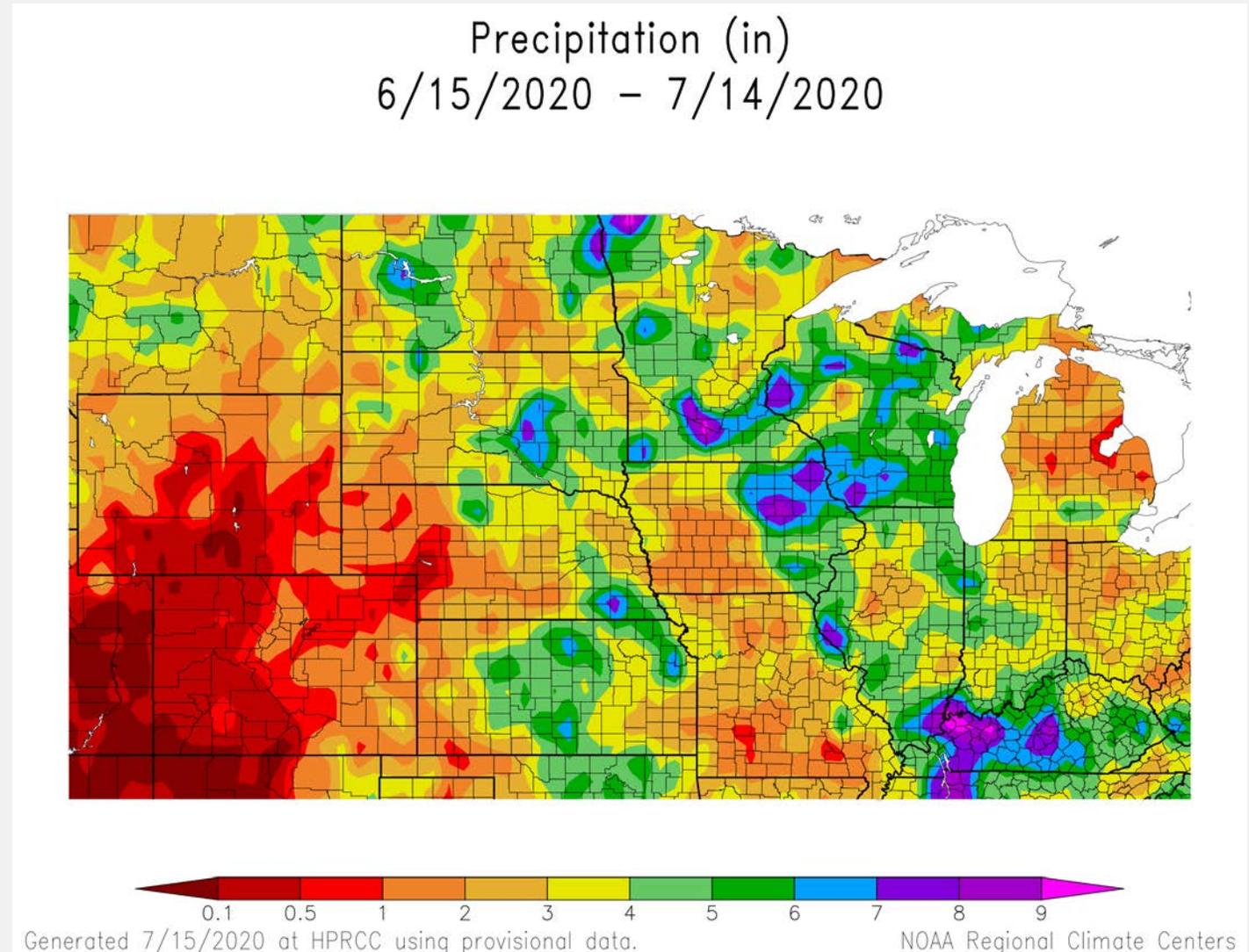


Generated 7/15/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

Recent conditions

- 30 day precipitation |
- localized areas of heavy precipitation
- notable dryness in the west



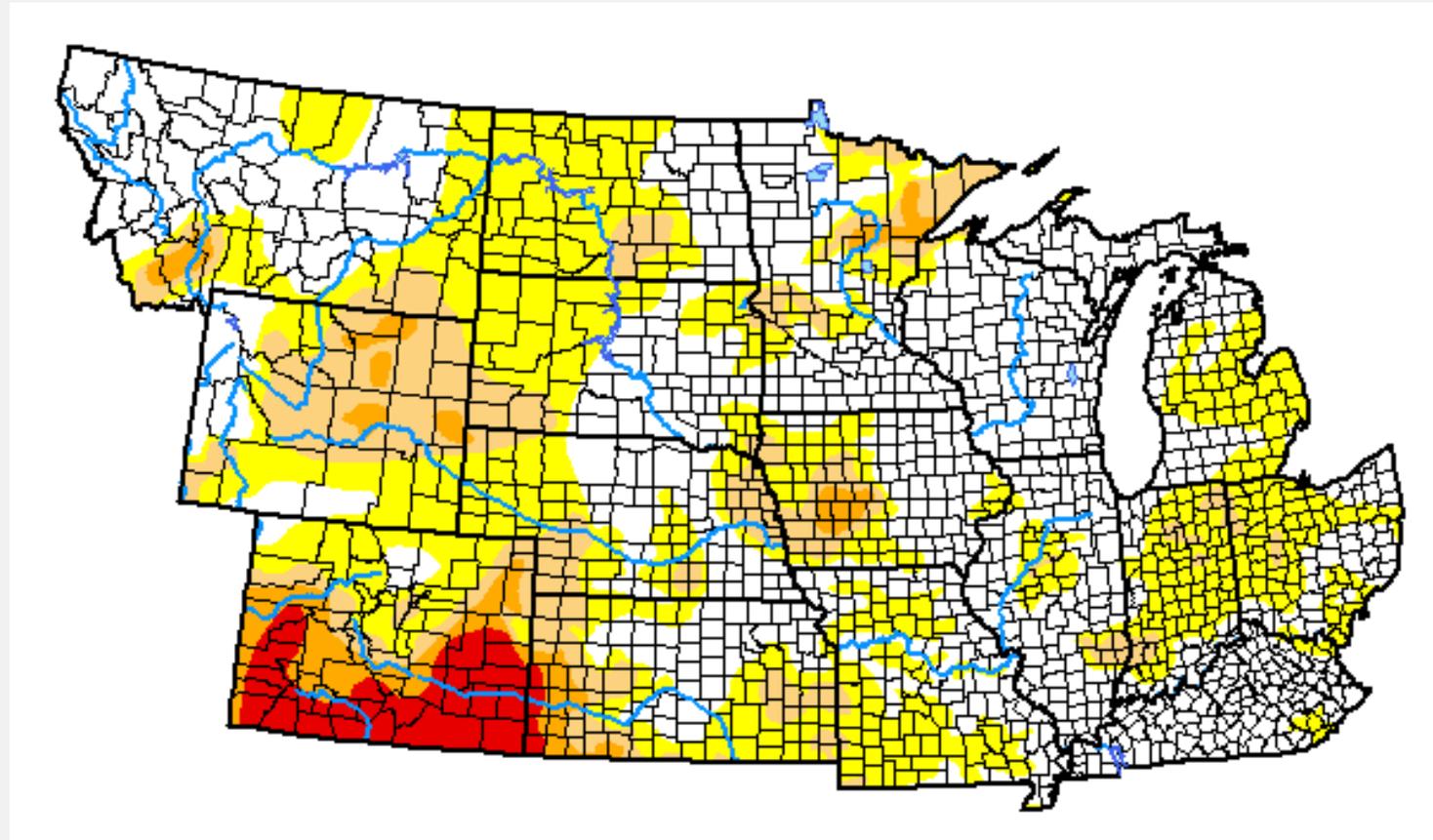
Recent conditions

Drought | half the region now in D0-D4, mostly in the west; extreme drought (D3) in southern CO; pockets of severe drought (D2) in WY, MN, IA

Drought Conditions (Percent Area)

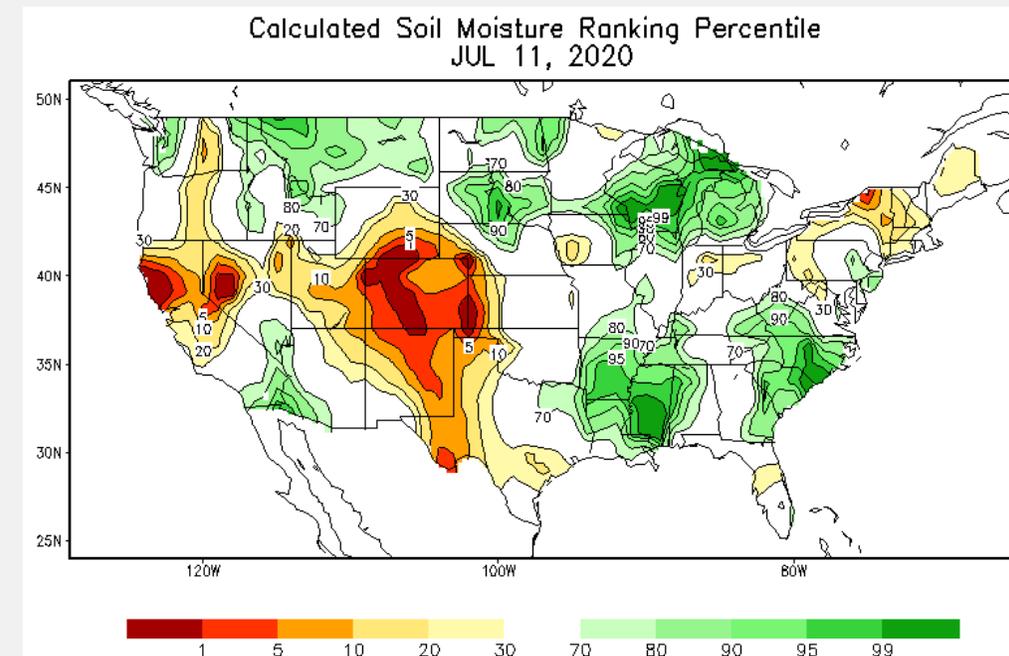
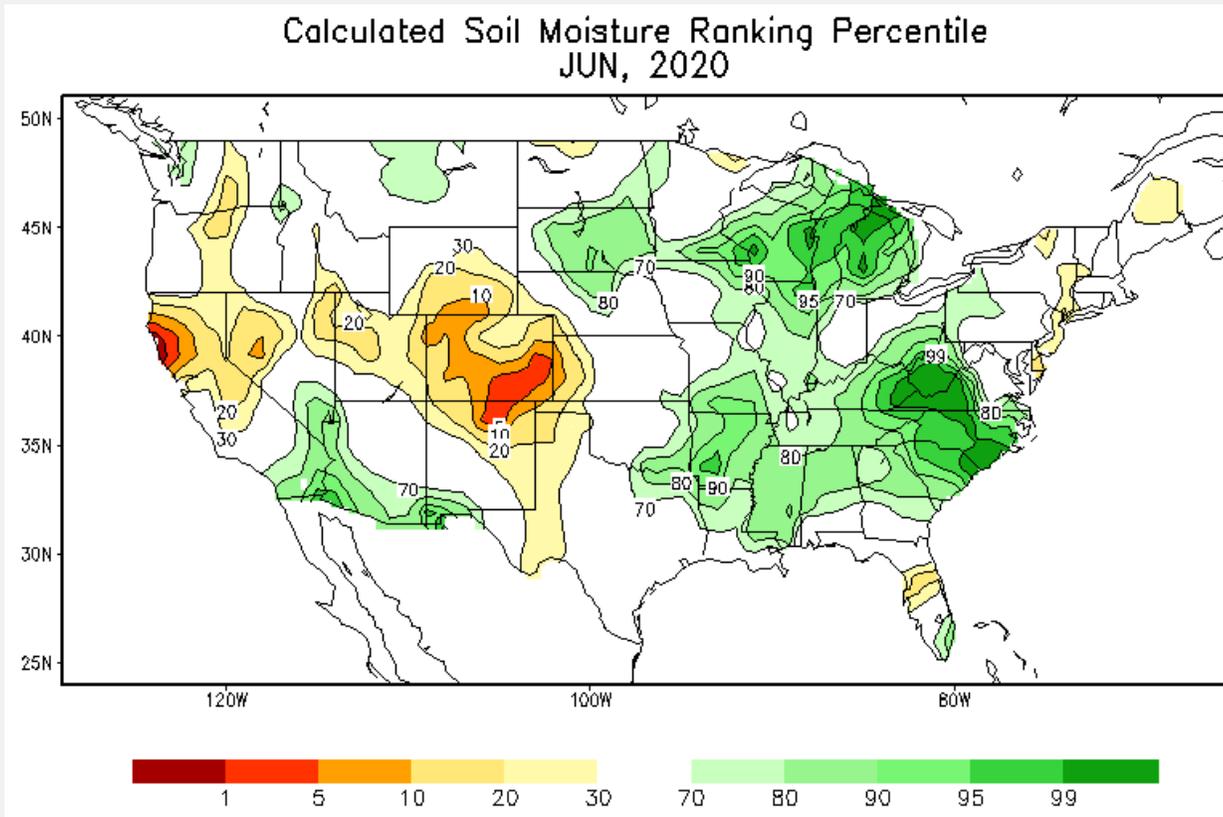
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.45	52.55	19.58	7.46	3.53	0.00
Last Week <i>07-07-2020</i>	52.19	47.81	19.33	6.89	3.26	0.00
3 Months Ago <i>04-14-2020</i>	90.45	9.55	5.26	1.33	0.00	0.00
Start of Calendar Year <i>12-31-2019</i>	87.81	12.19	5.33	2.11	0.00	0.00
Start of Water Year <i>10-01-2019</i>	79.05	20.95	8.02	2.19	0.14	0.00
One Year Ago <i>07-16-2019</i>	95.54	4.46	0.70	0.06	0.00	0.00

Intensity:



Soils

Soil moisture | June conditions show distinct areas of dryness in the west, wet in the east; recent expansion and development of these conditions

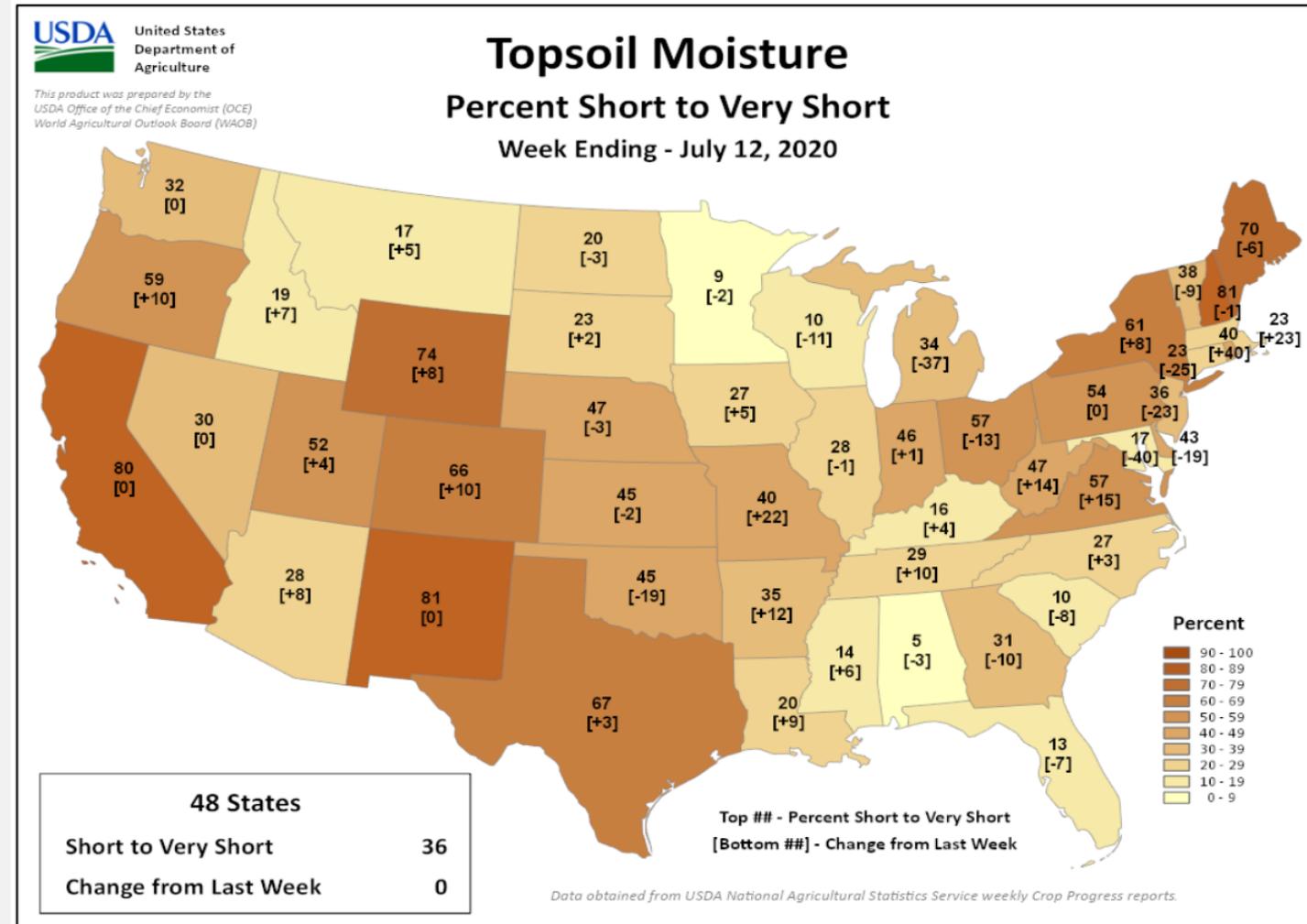


Soils

Soil moisture |

- topsoil (6") moisture worsening for many states
- subsoil also showing declines

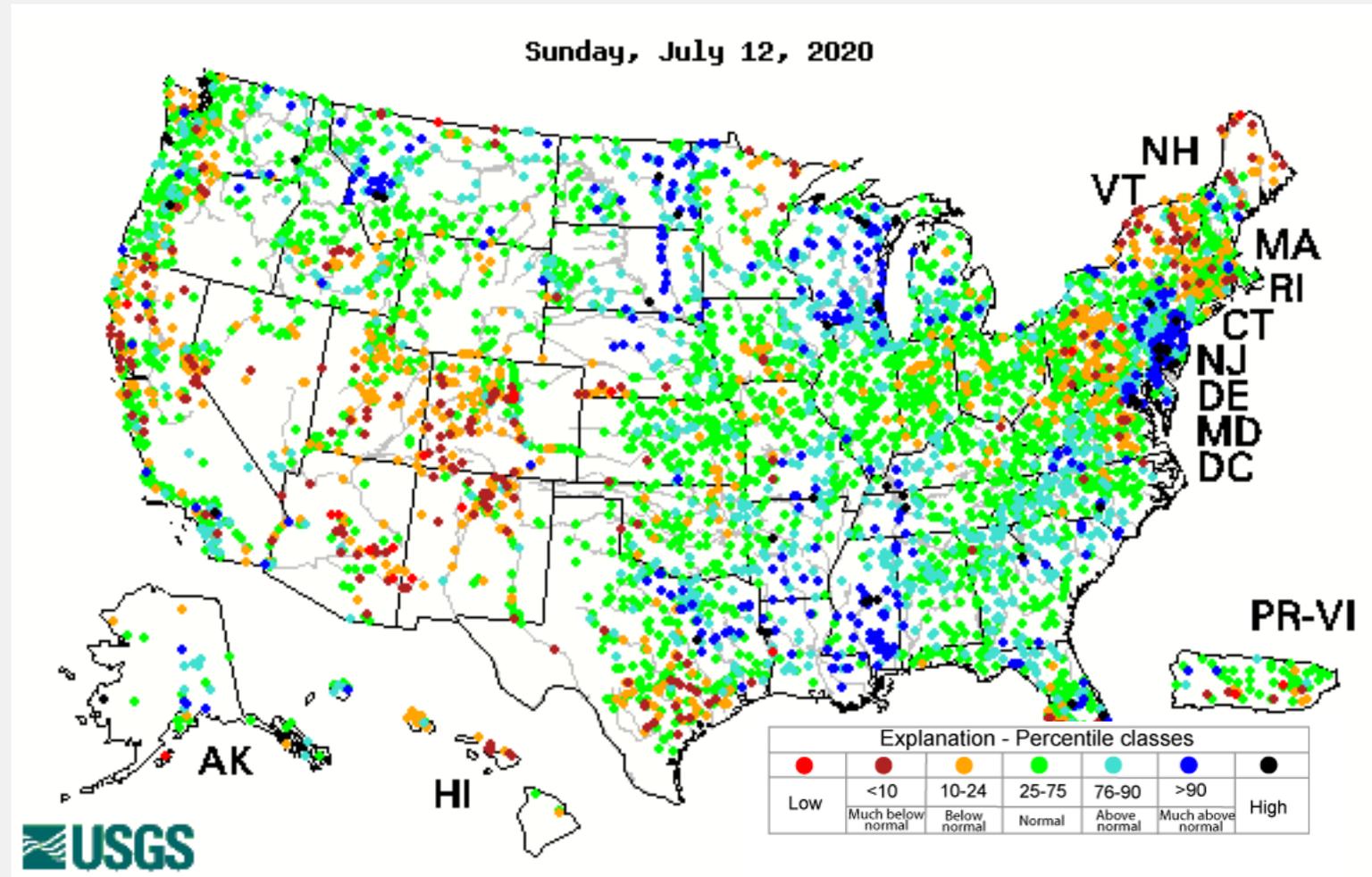
* short-very short: normal crop growth curtailed visible signs of stress



Hydrology

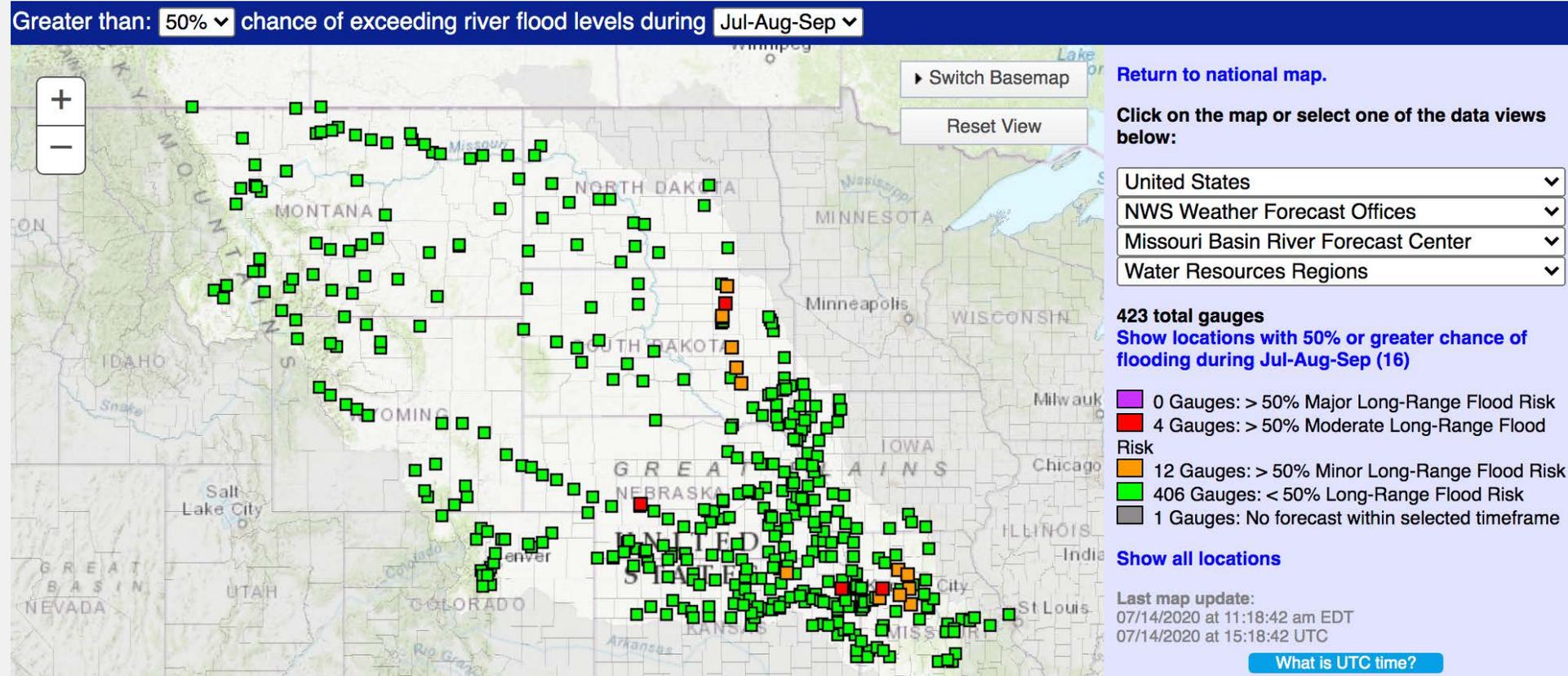
River flows |

- localized declines
- much above normal in areas that have seen good rainfall



Hydrology

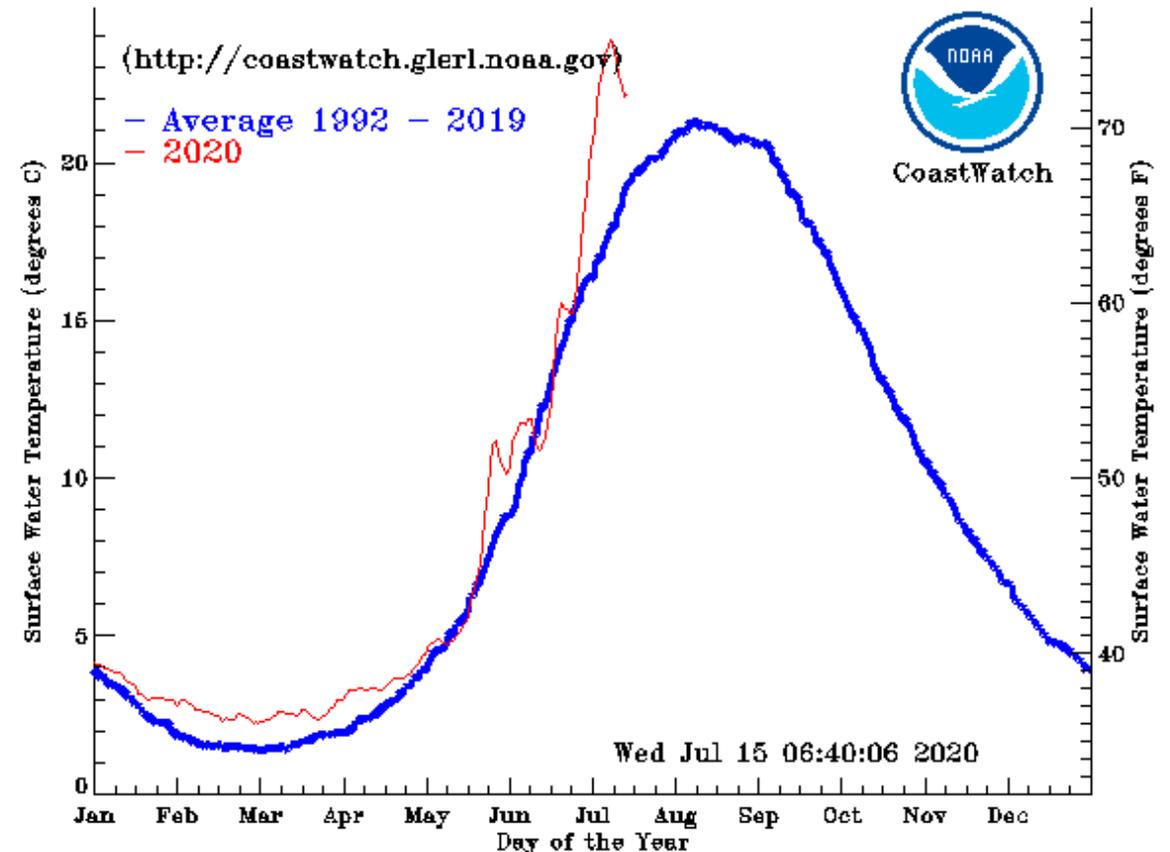
Flooding | - James R., SD



Great Lakes |

- warmth across all the lakes, running about 4°F above average
- Lake levels are also high impacting surrounding area

Lake Michigan Average Great Lakes Surface Environmental Analysis (GLSEA)
Surface Water Temperature Compared to Current Year

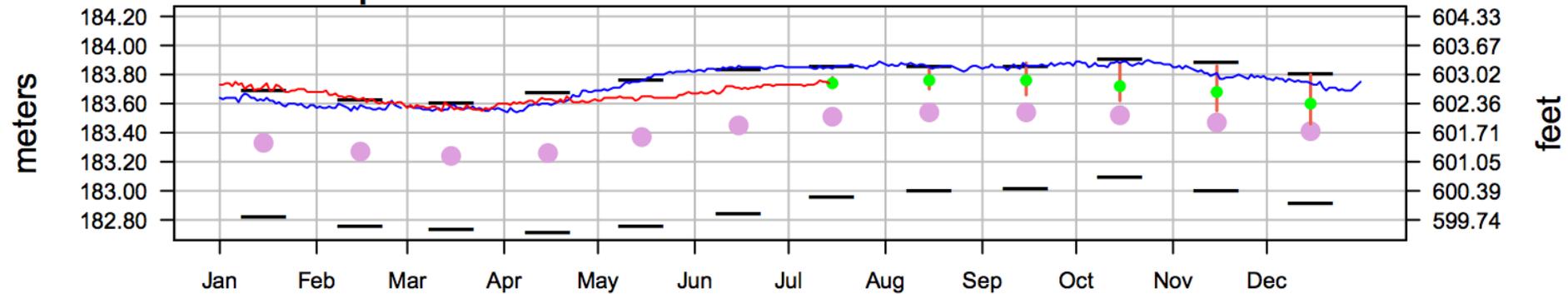




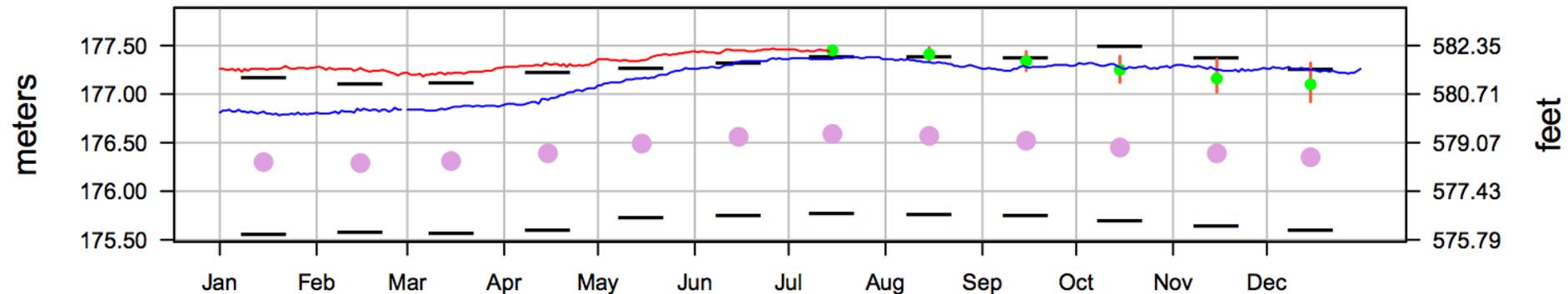
Daily Great Lakes Water Levels

- 2020
- 2019
- Coordinated Forecast
- LTA Monthly Mean
- Record High/Low Monthly Mean

Lake Superior



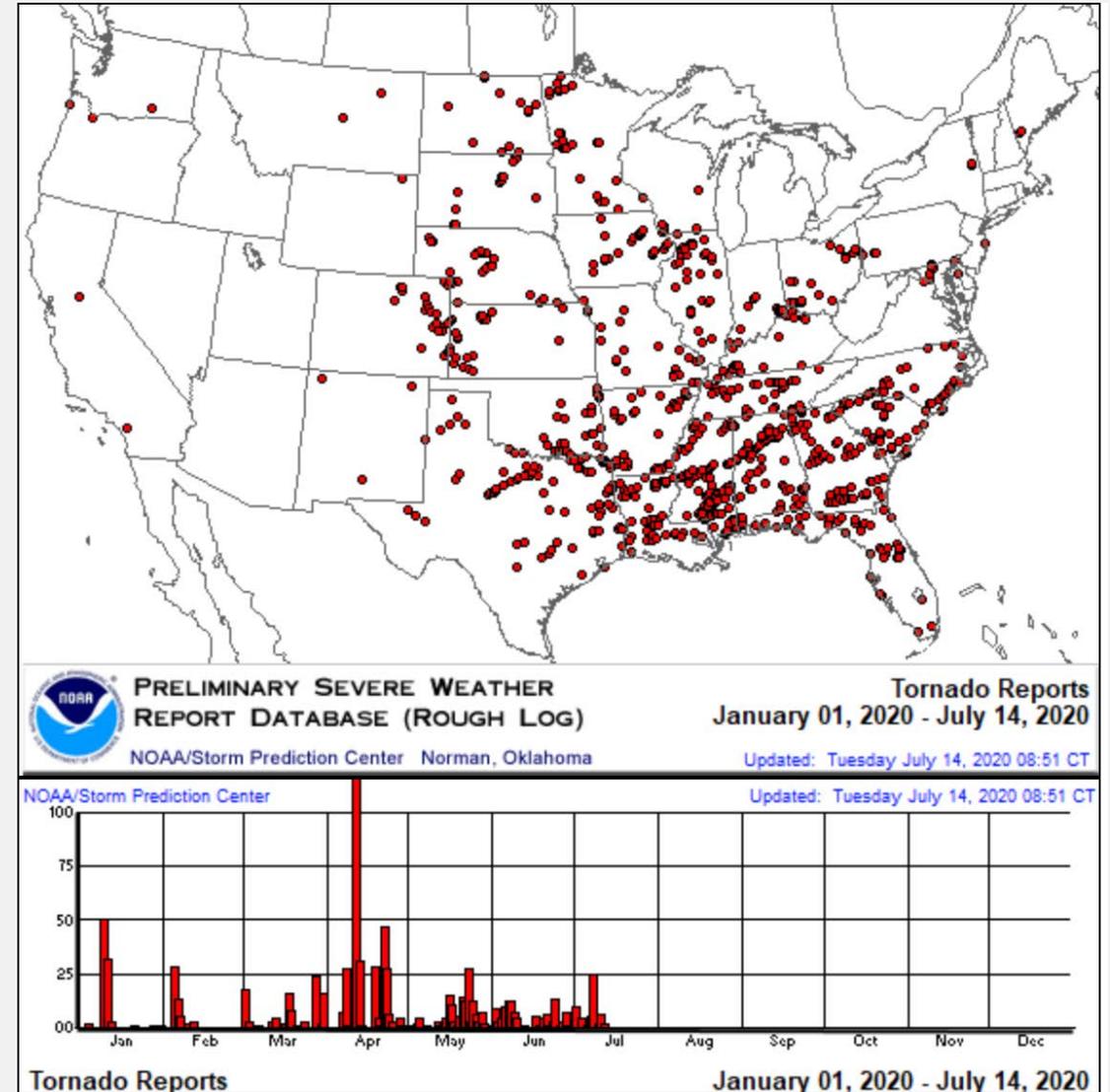
Lake Mich-Huron



Severe weather

Tornado |

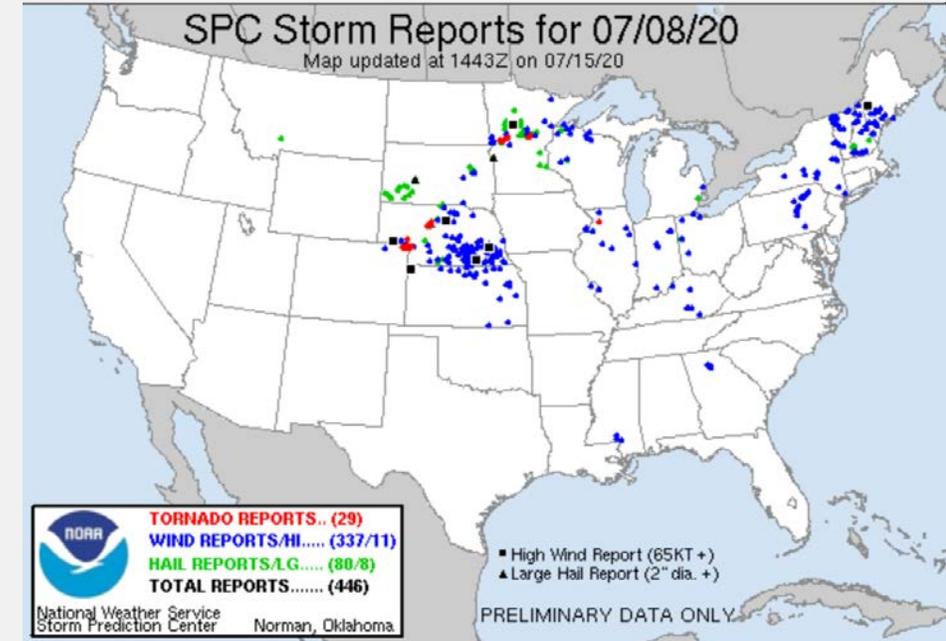
- we are not without severe weather, *but*
 - trending lower than average during June for tornados
 - only 1 in IL and IA
-
- July 8 outbreak, first EF4 tornado in MN in a decade



Severe weather

High wind |

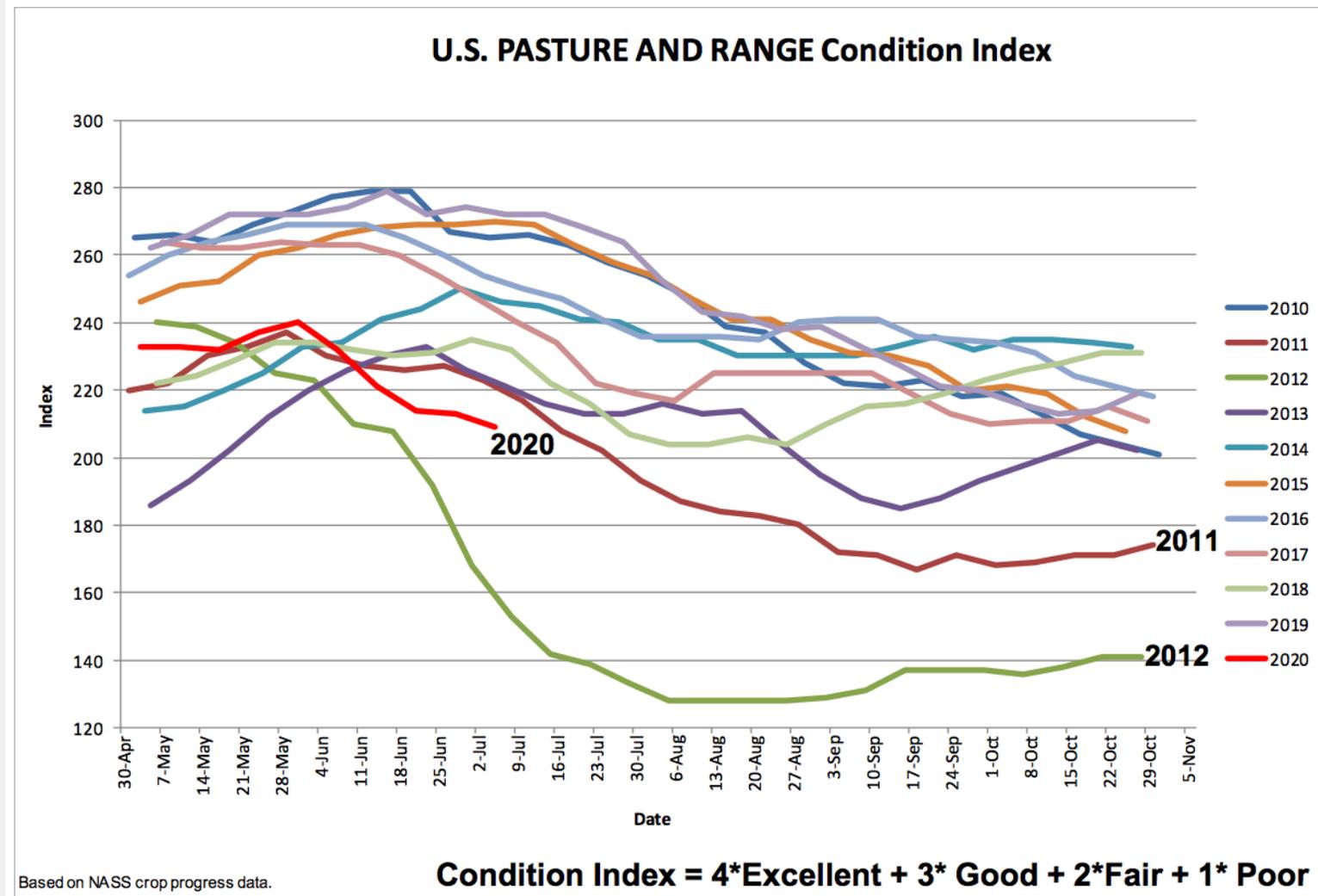
- gusts above 80 mph
- significant impacts to corn reported in southcentral Nebraska



- Severe weather also July 11 (high wind, hail) impacting crops in MN-IA-IL-IN

Agriculture

Pasture and Range |
- overall condition for
the U.S. is worst
since 2012



Agriculture

Pasture and Range |
- particularly bad in
the south and west
- declining conditions

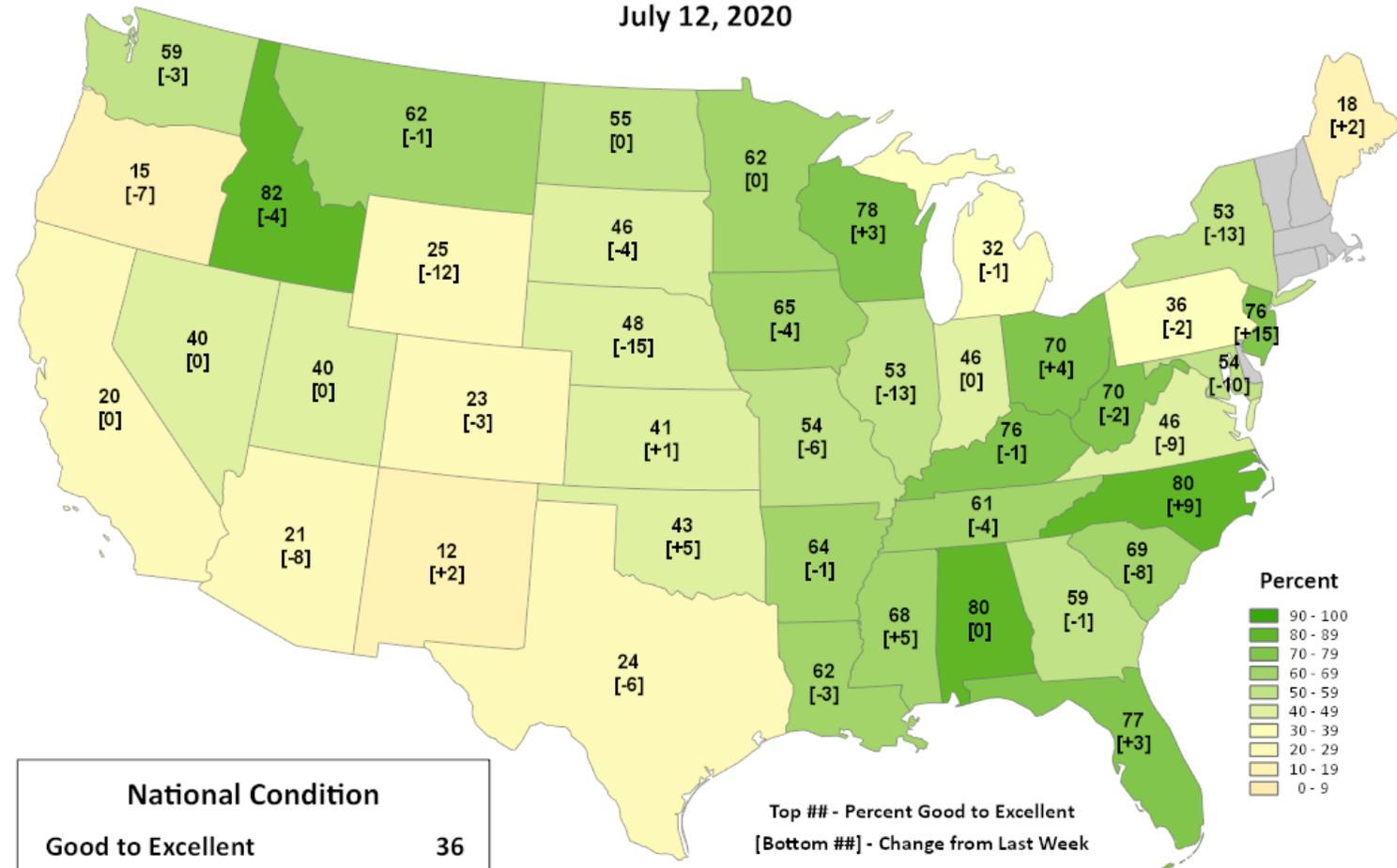


This product was prepared by the
USDA Office of the Chief Economist (OCE)
World Agricultural Outlook Board (WAOB)

Pasture and Range Conditions

Percent Good to Excellent

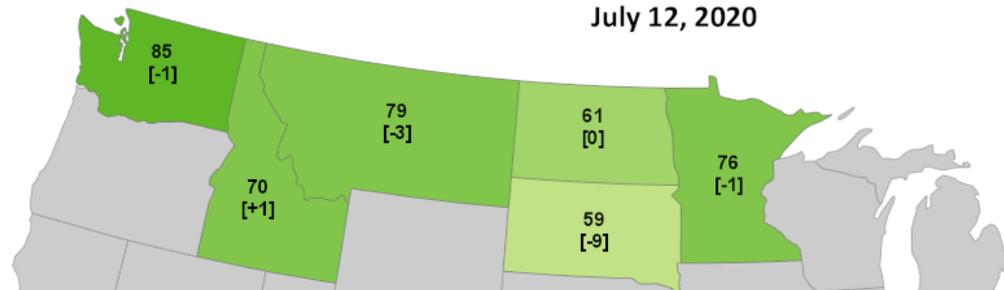
July 12, 2020



Spring Wheat Conditions

Percent Good to Excellent

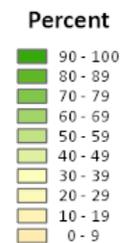
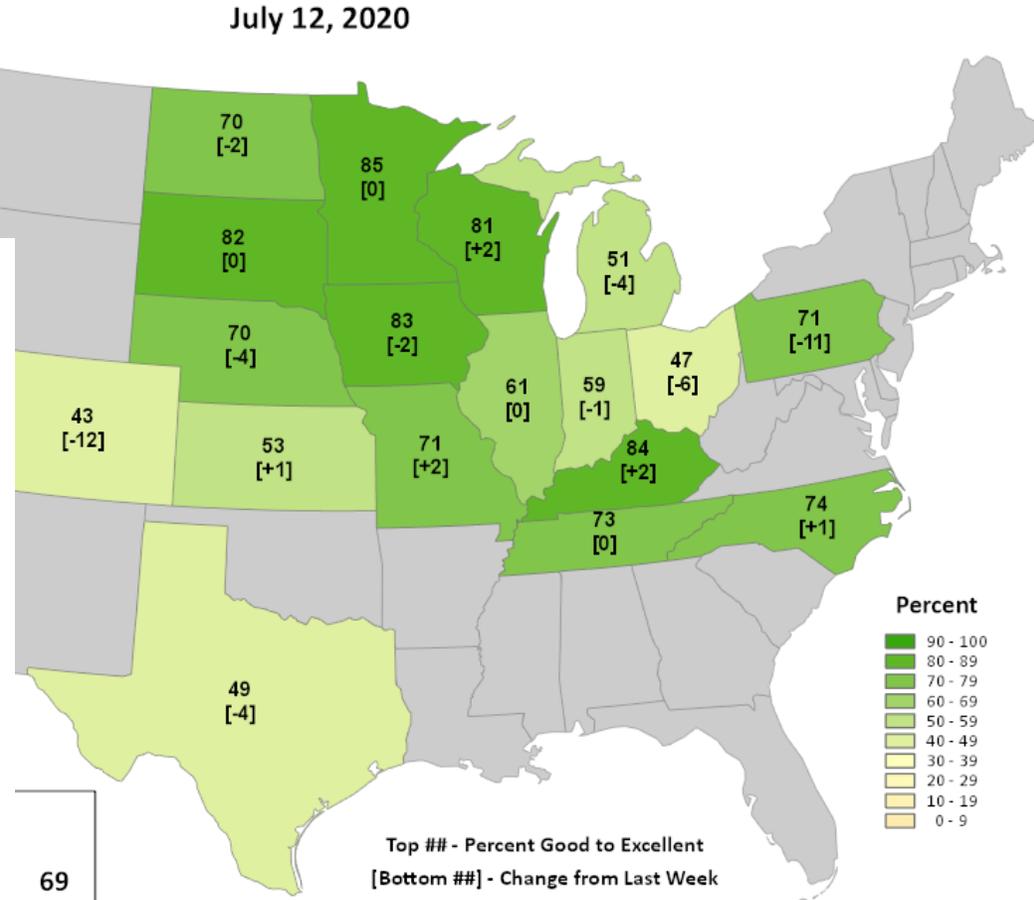
July 12, 2020



Corn Conditions

Percent Good to Excellent

July 12, 2020



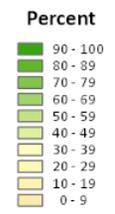
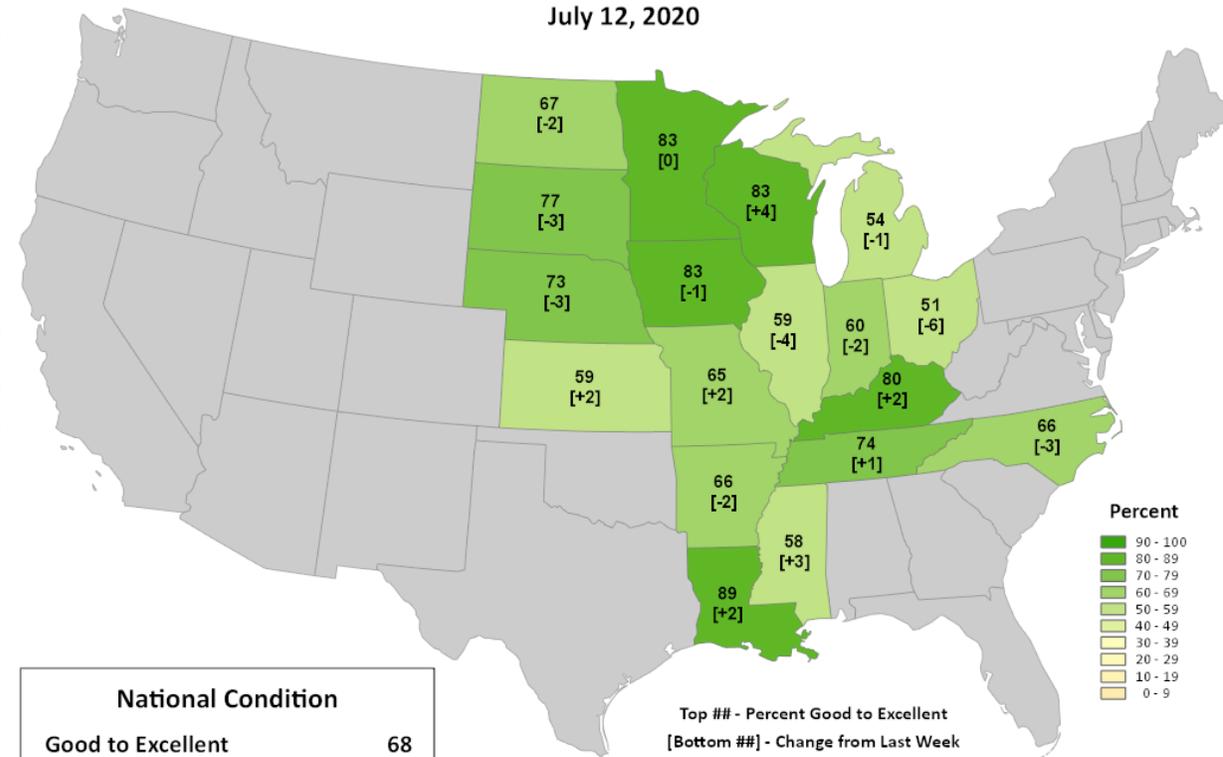
Top ## - Percent Good to Excellent
[Bottom ##] - Change from Last Week

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

Soybean Conditions

Percent Good to Excellent

July 12, 2020



Top ## - Percent Good to Excellent
[Bottom ##] - Change from Last Week

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

National Condition	
Good to Excellent	68
Change from Last Week	-3

National
Good to Excellent
Change from Last Week

69
-2

Agriculture

Dryness issues |

- Impacts seen in Iowa 'pineapple corn'
- brown lawns

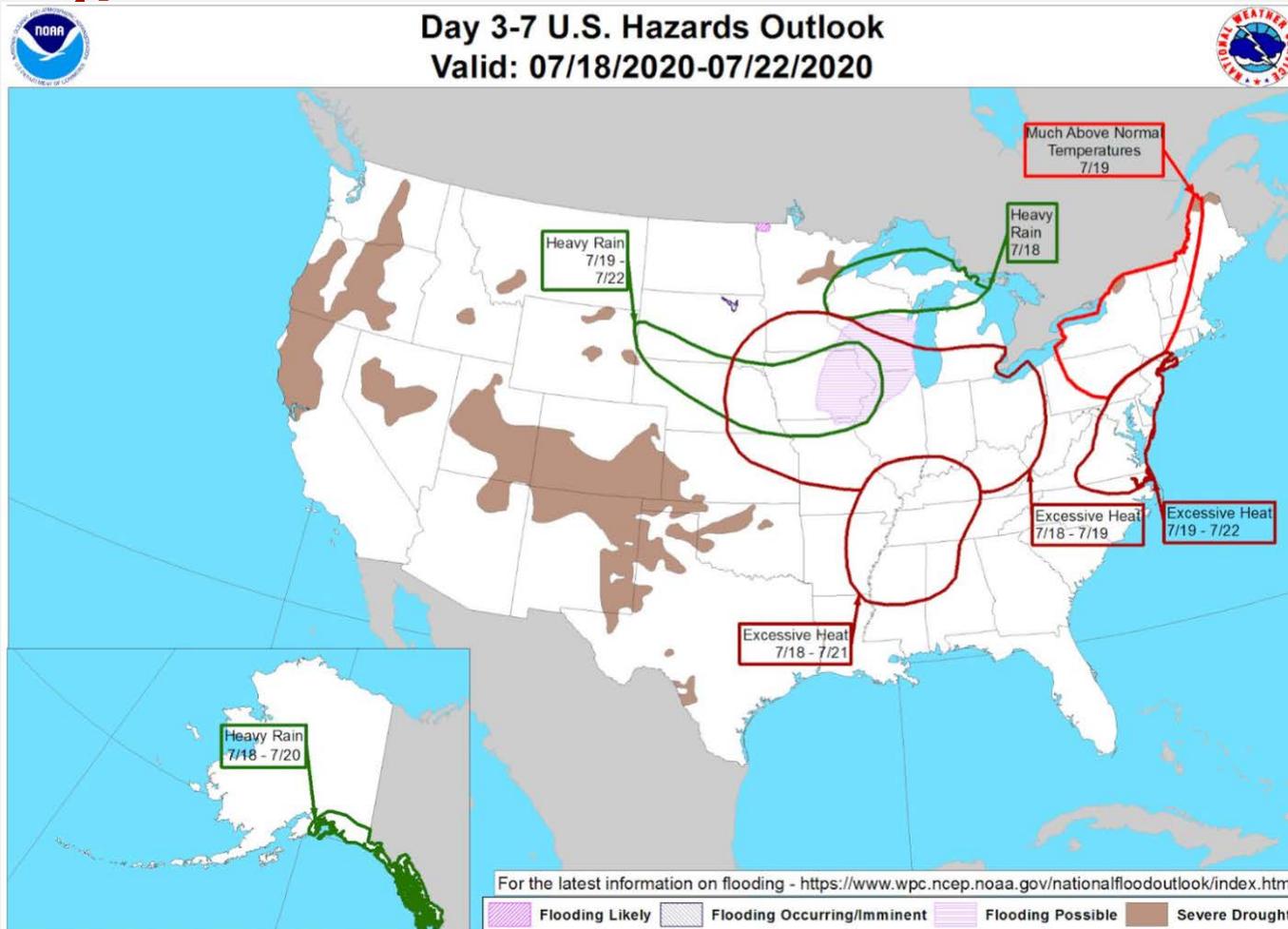


West central Iowa
Photos courtesy Craig Cogil

Near-term hazards

- Slight to moderate risk of excessive heat; heavy rain for some

p



Weather Prediction Center

Made: 07/15/2020 3PM EDT

Follow us:

www.wpc.ncep.noaa.gov

Highway buckling due to heat

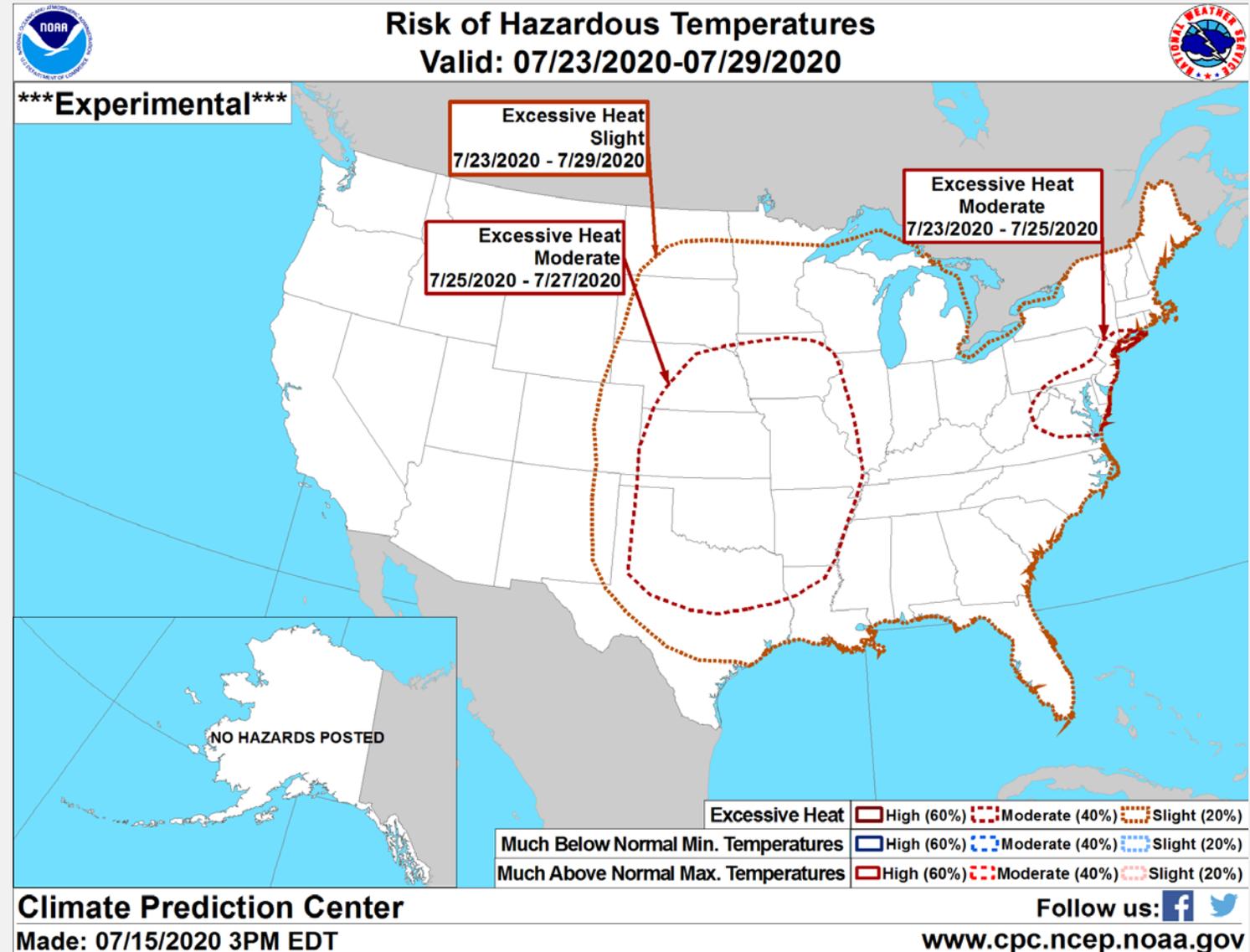


Photo courtesy Trenton Ford

Source: Illinois DOT

Near-term hazards

- Slight to moderate risk of excessive heat for eastern two-thirds of the region
- Impacts to human health, livestock, crops



Heat impacts

Heat during corn pollination |

- a lot of corn around the region is tasseling
- high temperatures, particularly at night is harmful for reproduction
- harmful to grain fill leading to reduced or lost yields

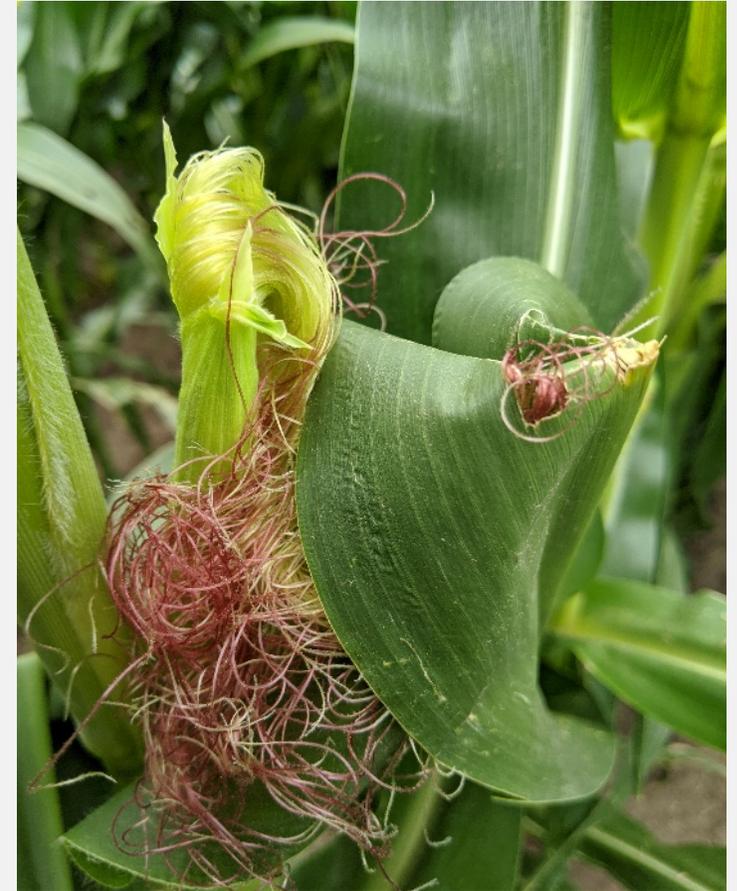
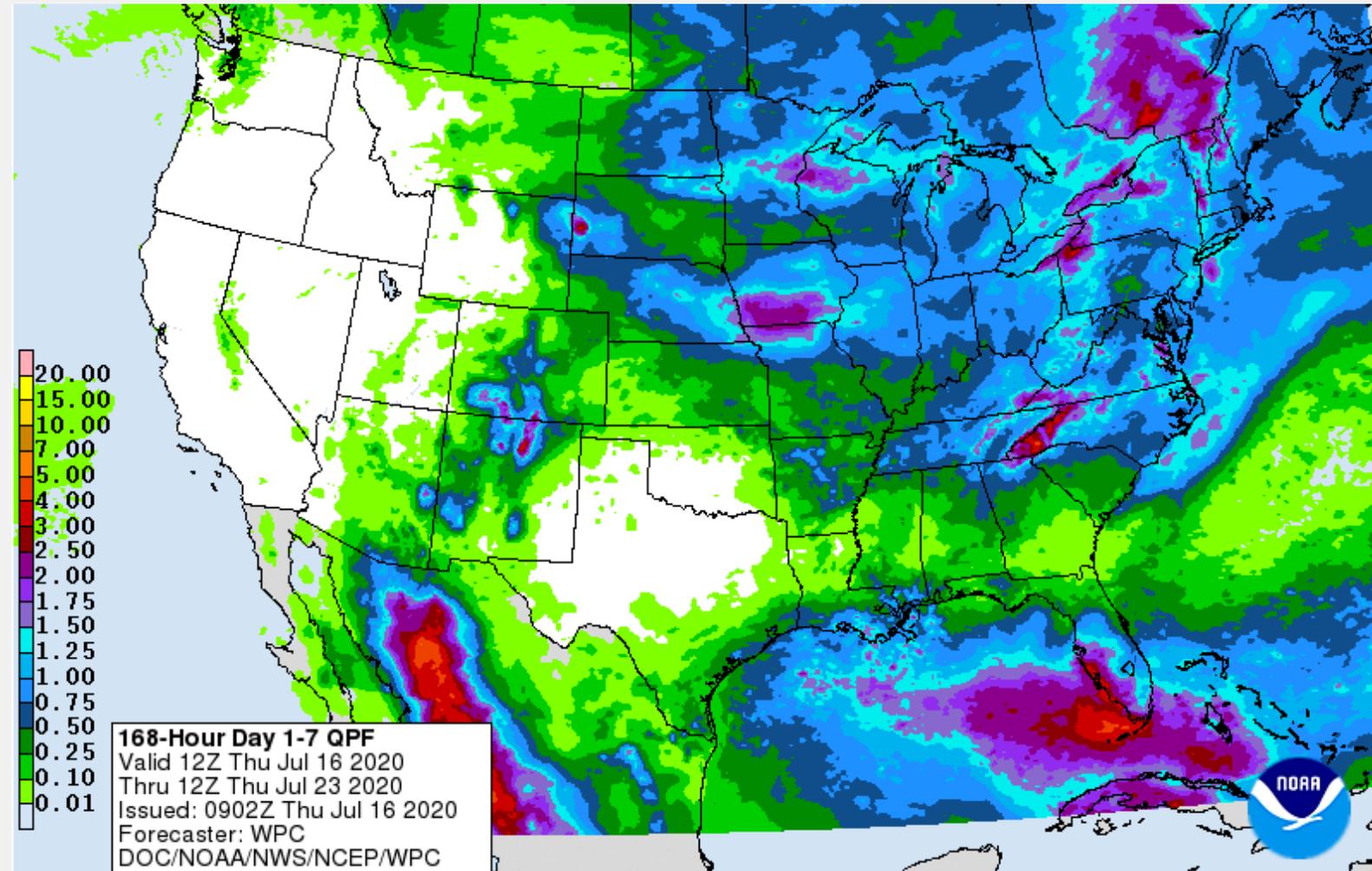


Photo courtesy Jenny Rees
Nebraska Extension

Precipitation outlook

NEBRASKA STATE
CLIMATE OFFICE

- eastern portions of the region and isolated areas in the west will see the greatest amounts



ENSO status

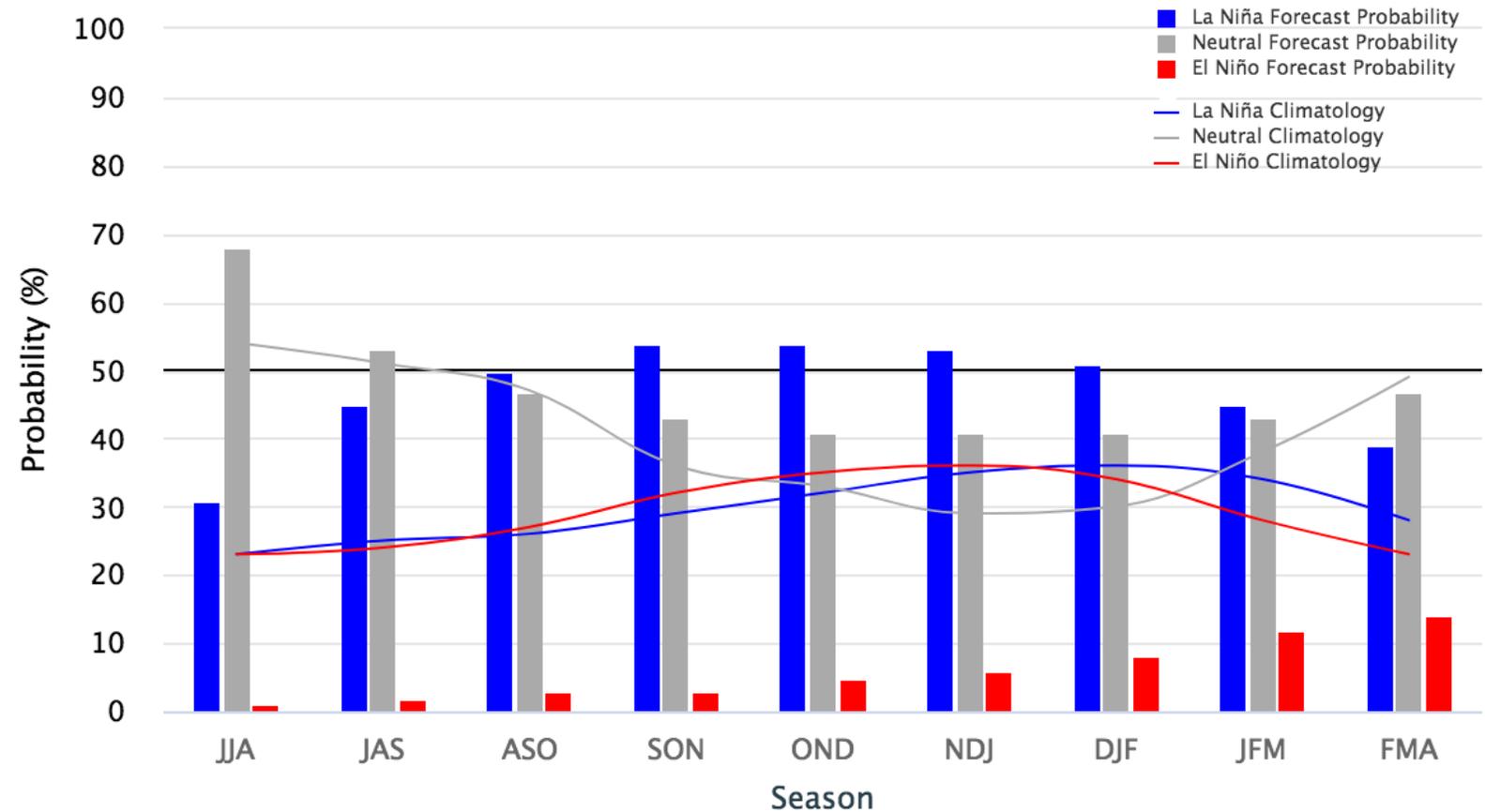
La Niña |

- **shift from neutral to La Niña probability by fall**
- **watch is now posted**

Early-July 2020 CPC/IRI Official Probabilistic ENSO Forecasts

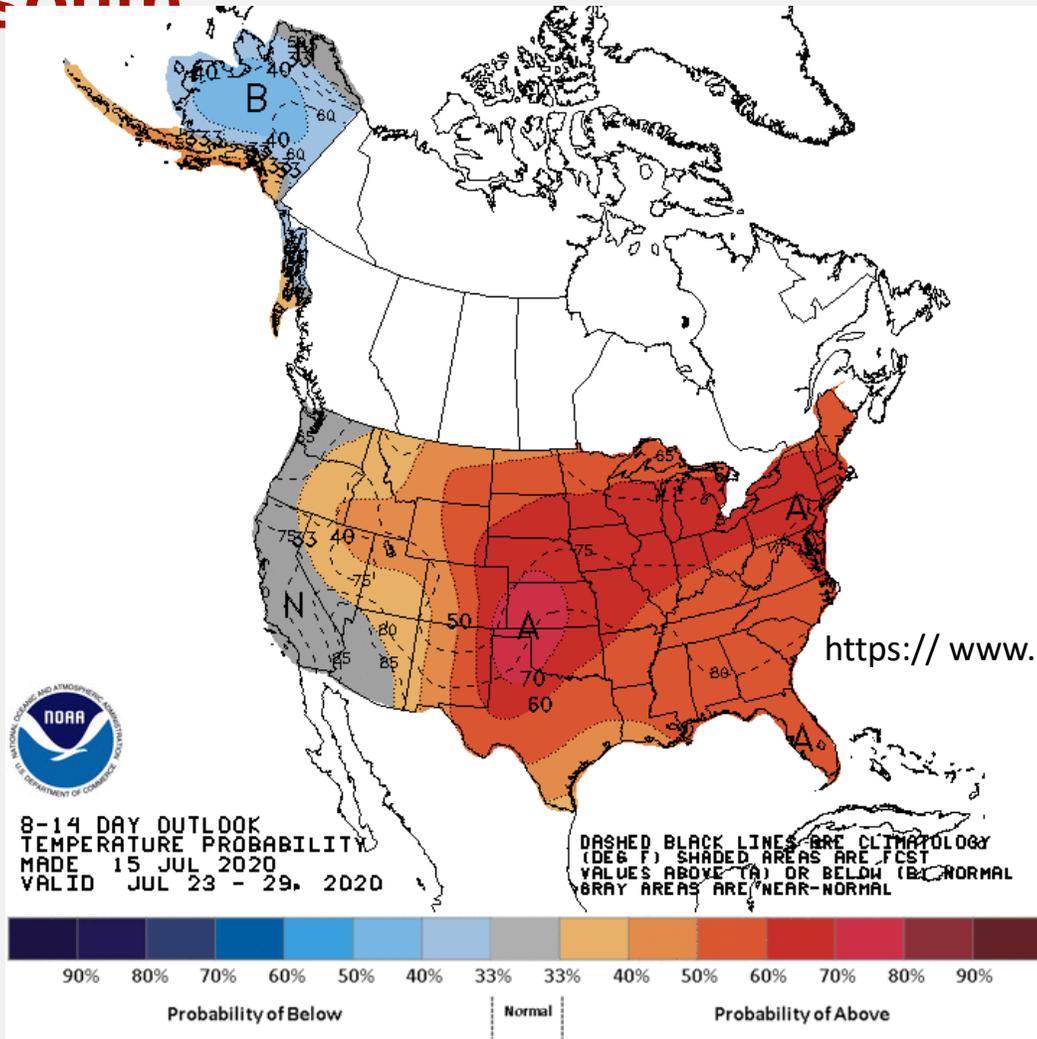
ENSO state based on NINO3.4 SST Anomaly

Neutral ENSO: $-0.5\text{ }^{\circ}\text{C}$ to $0.5\text{ }^{\circ}\text{C}$

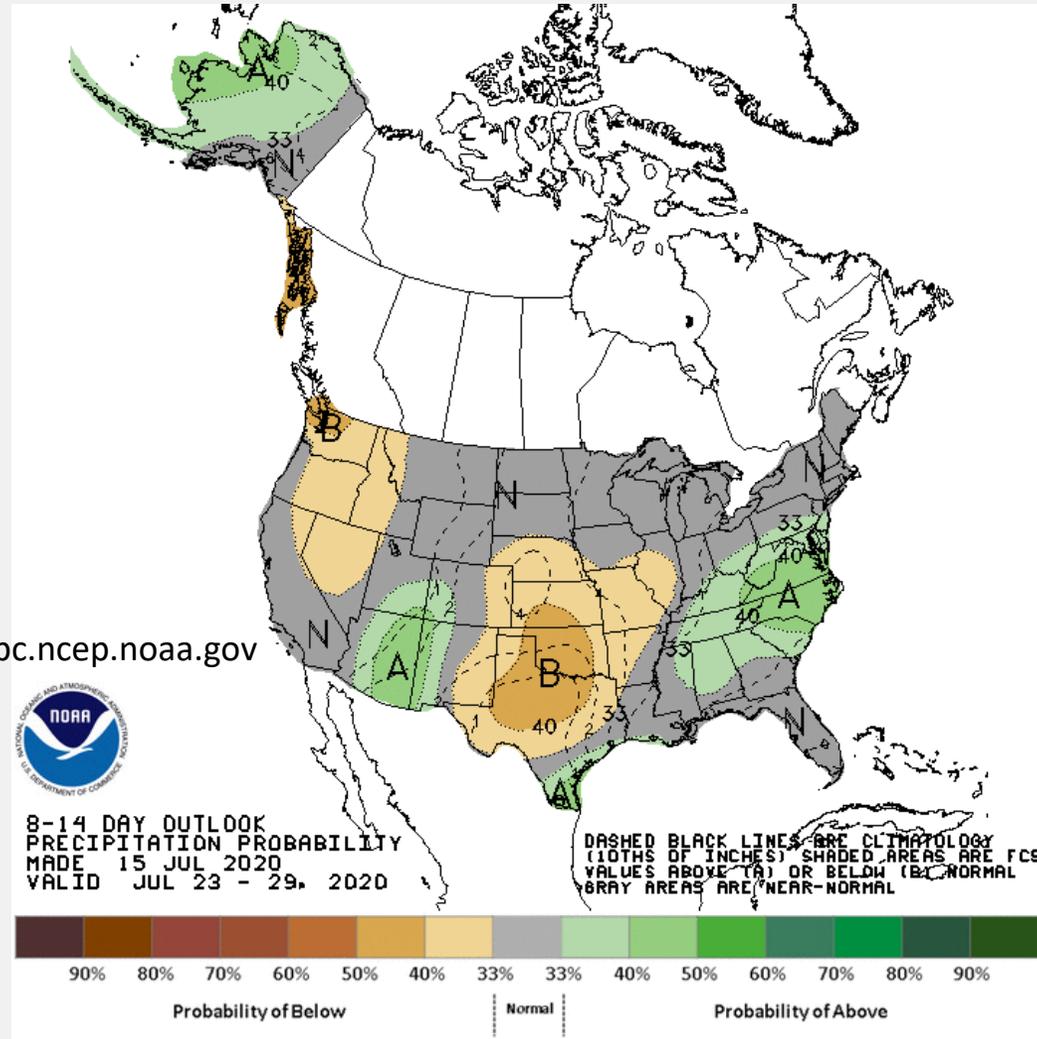


Climate outlook

- probability weighted to above normal temps, dryness in the south

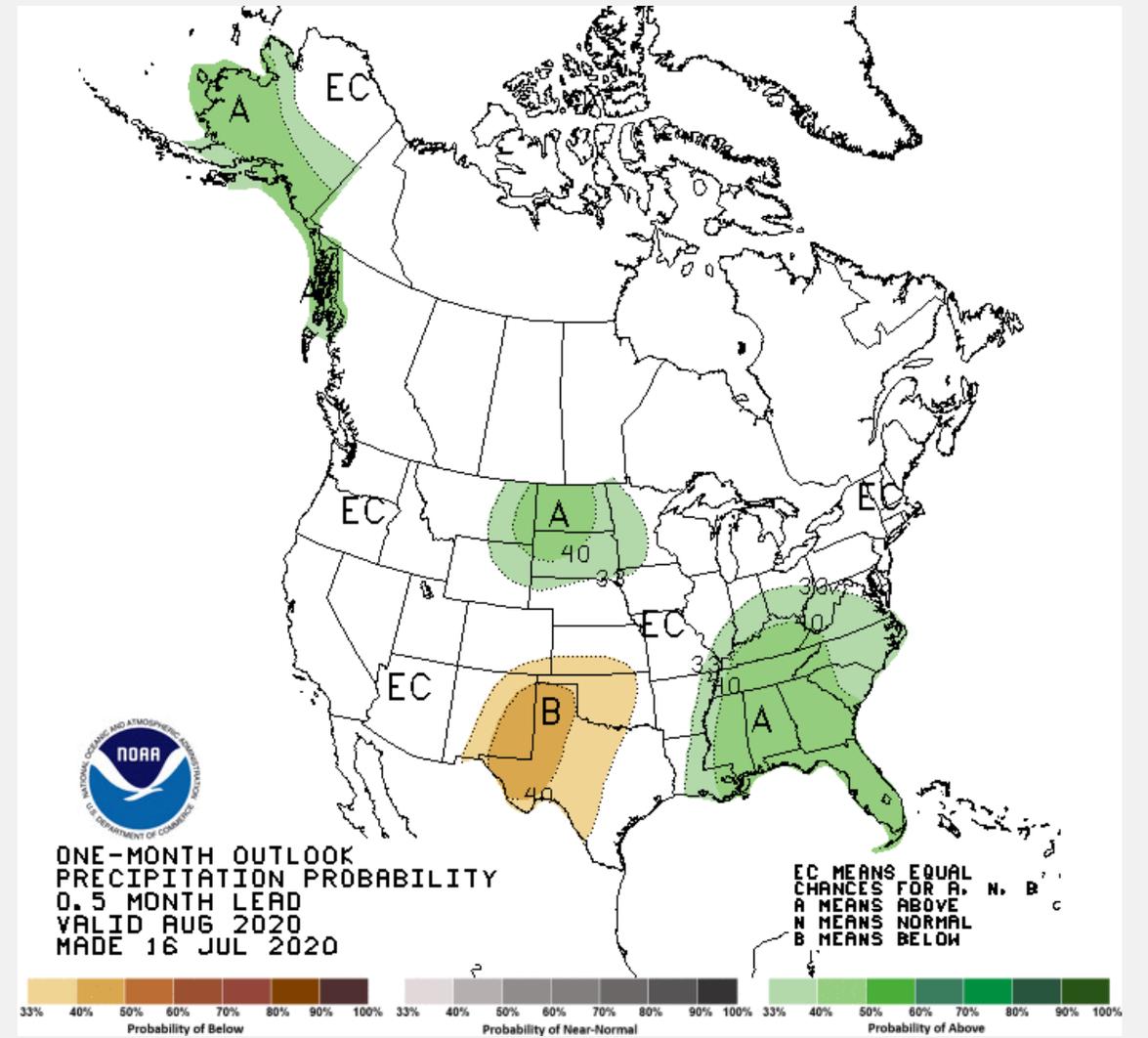
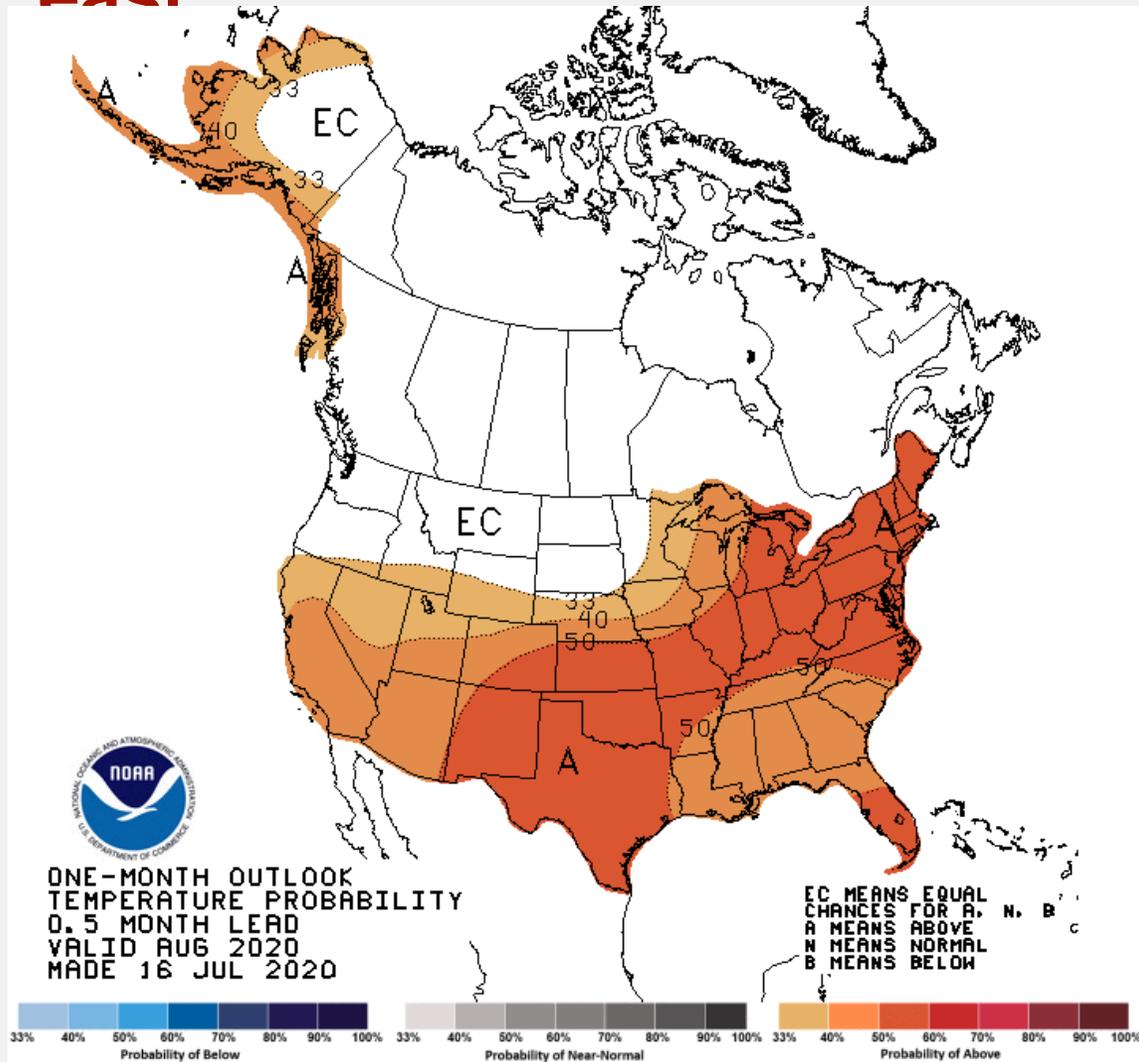


[https:// www.cpc.ncep.noaa.gov](https://www.cpc.ncep.noaa.gov)



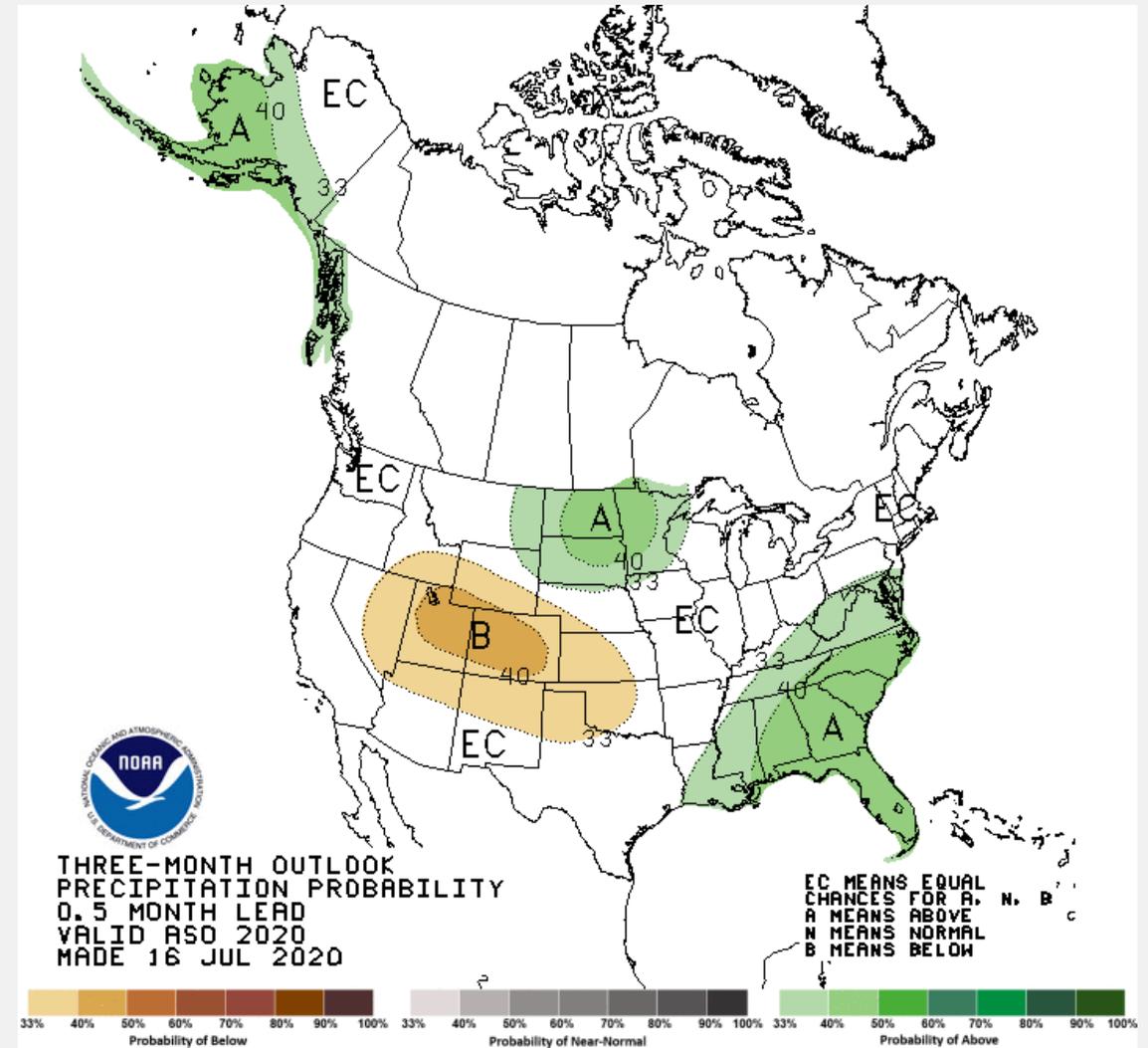
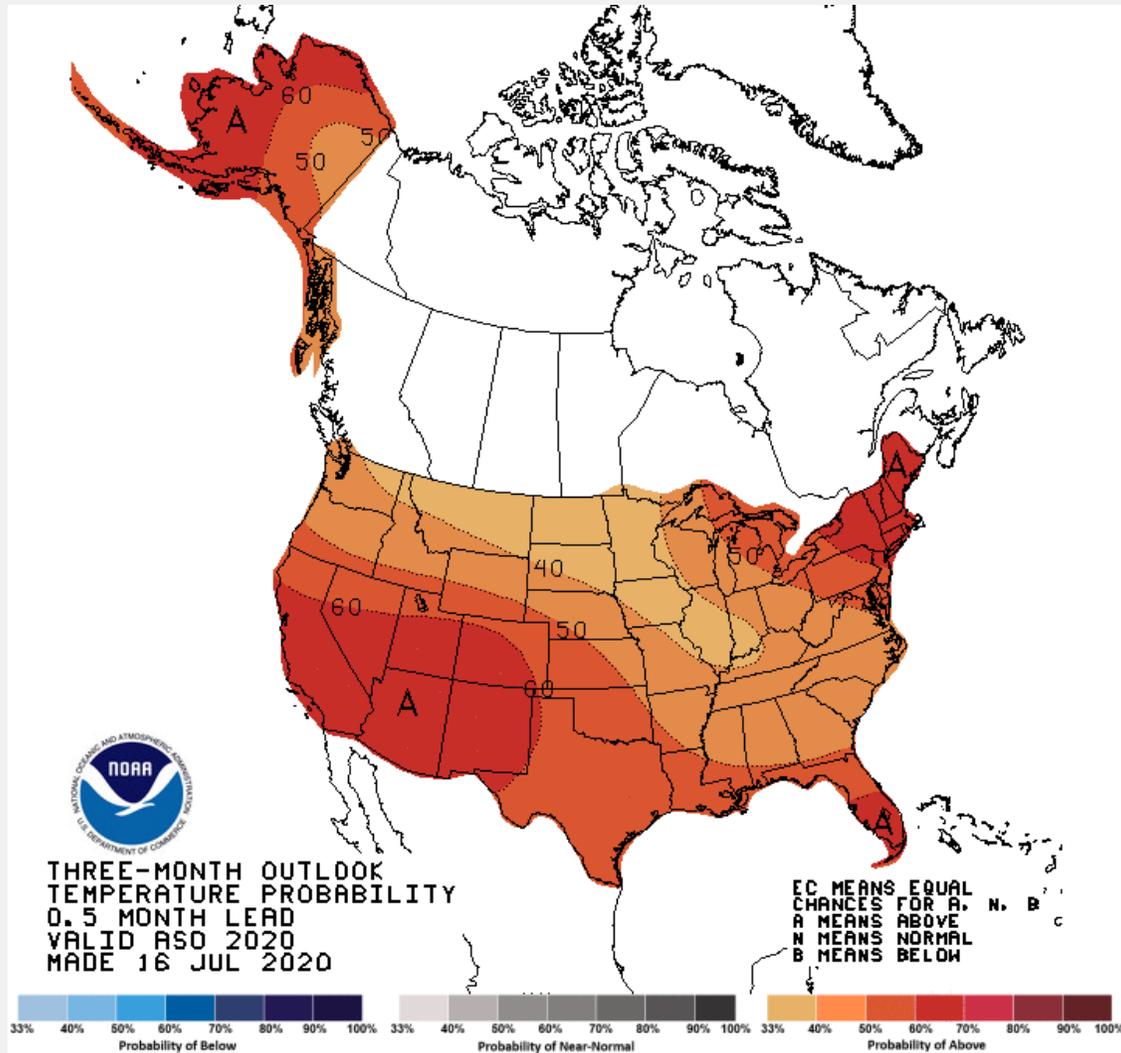
August outlook

- Warm signal for much of region; some wet signals north and east



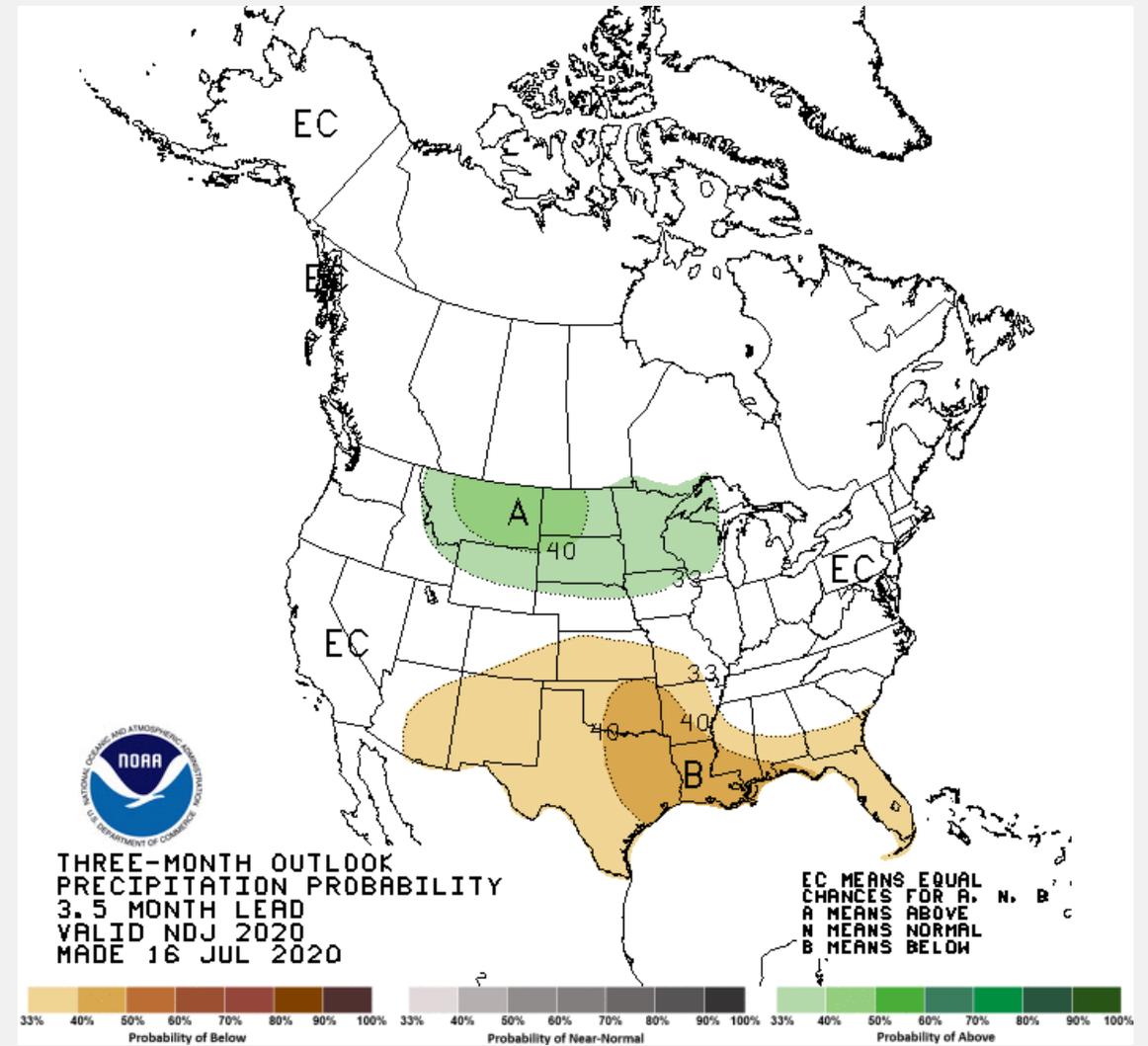
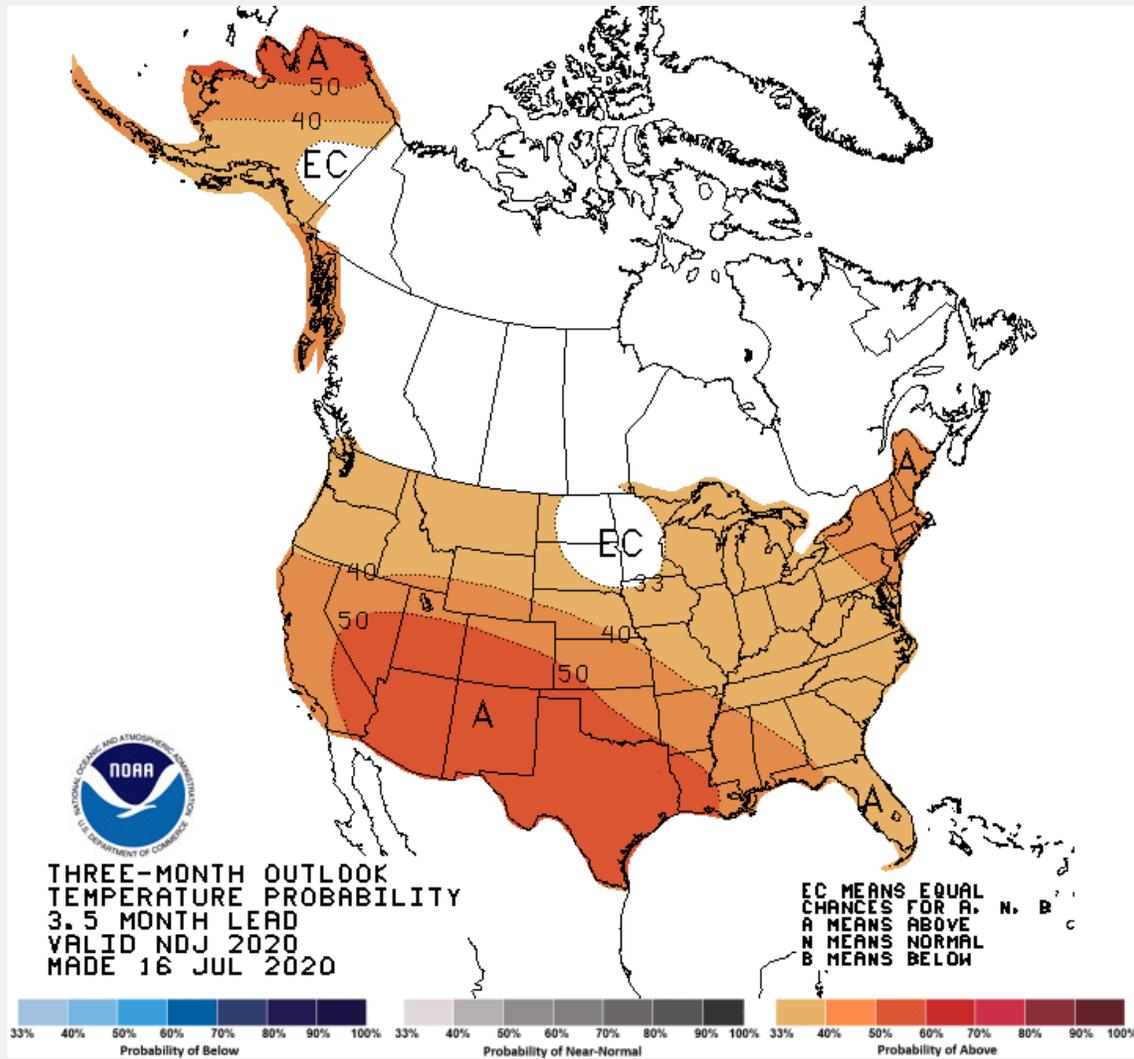
Aug-Sep-Oct outlook

- Warm signal across region; wet in the north, dry in southwest



Nov-Dec-Jan outlook

- Warm signal continuation; wet in the north, dry in the south

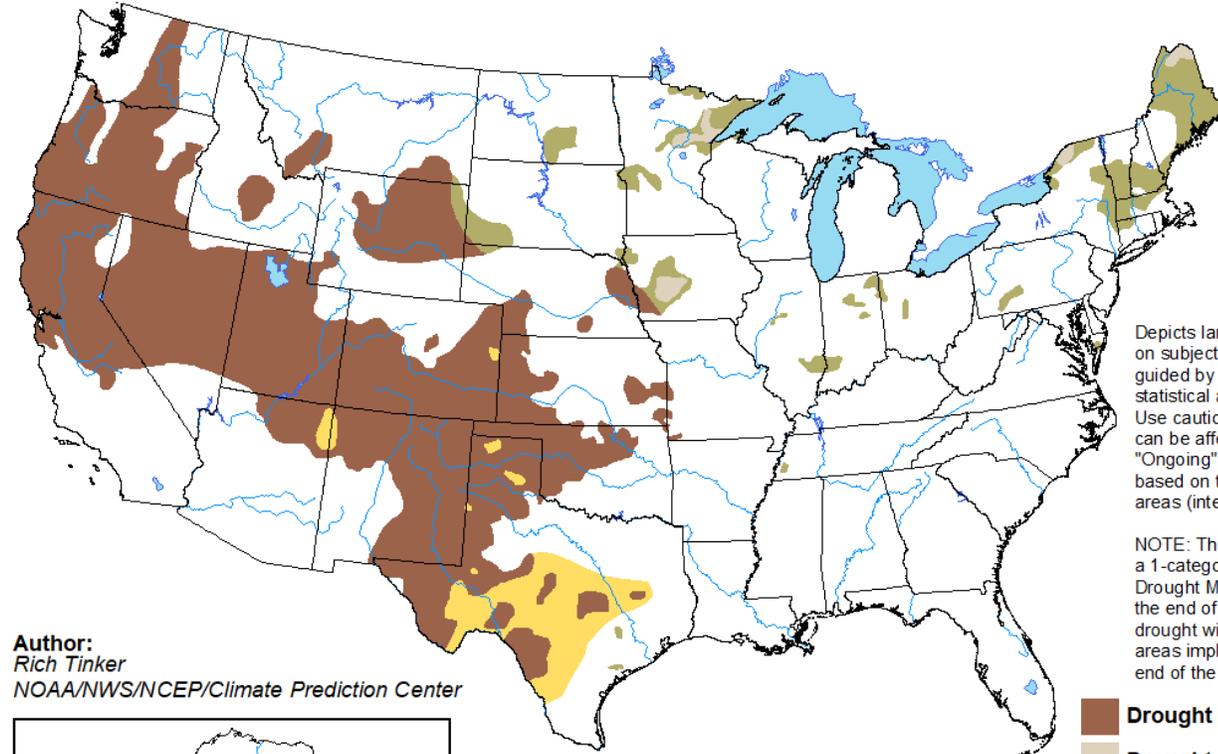


Drought outlook

- improvements in eastern portion, north and SW SD, NE WY
- persistence in the central and west

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for July 16 - October 31, 2020
Released July 16



Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center

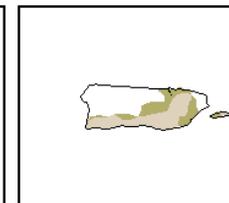
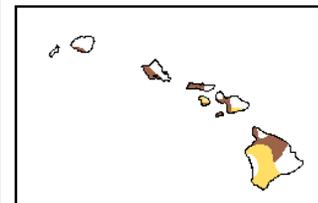
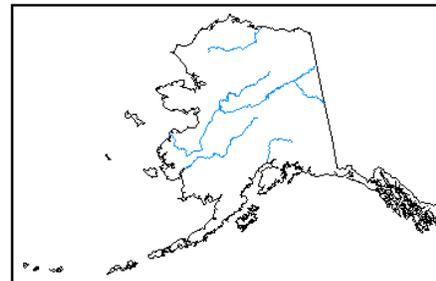
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

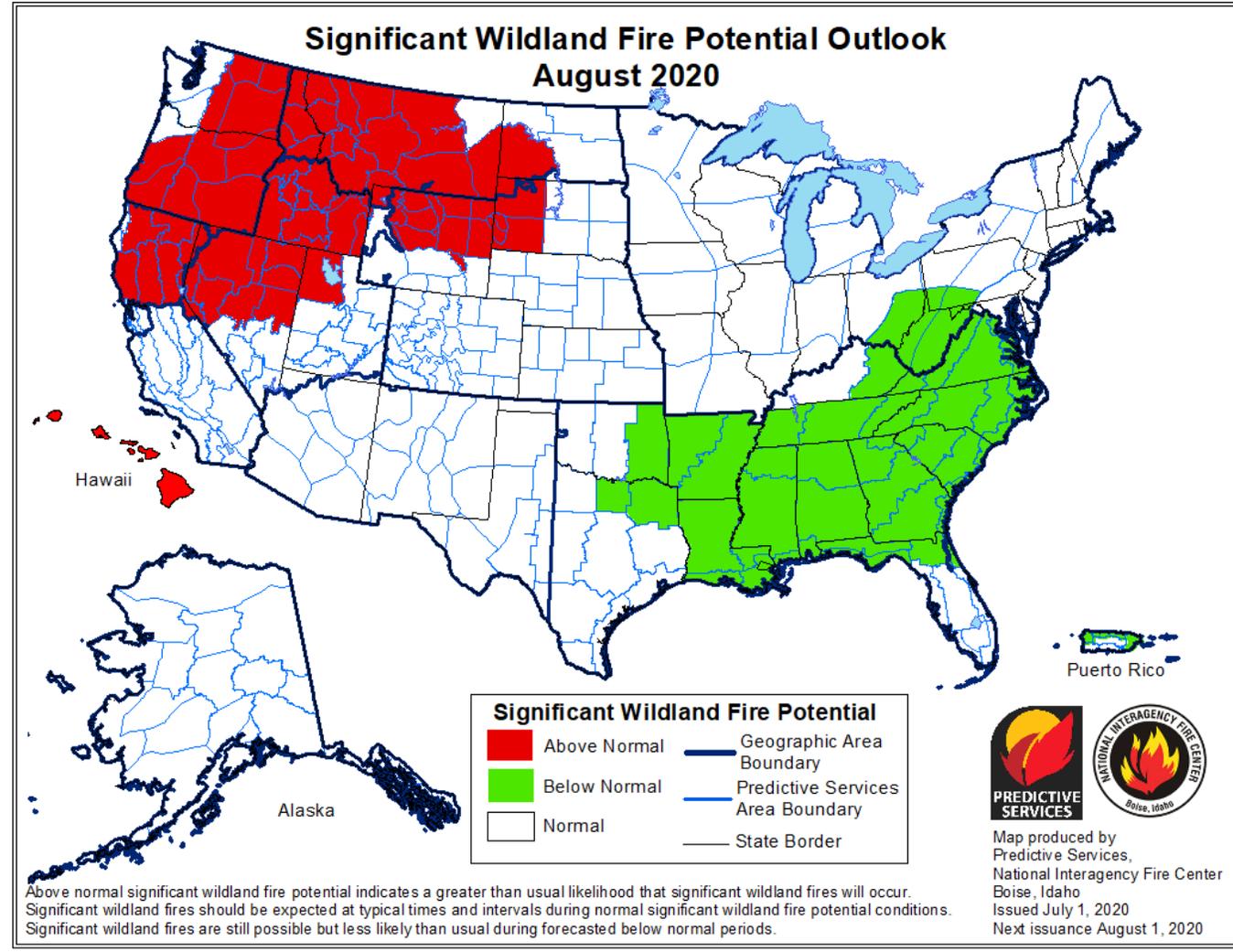
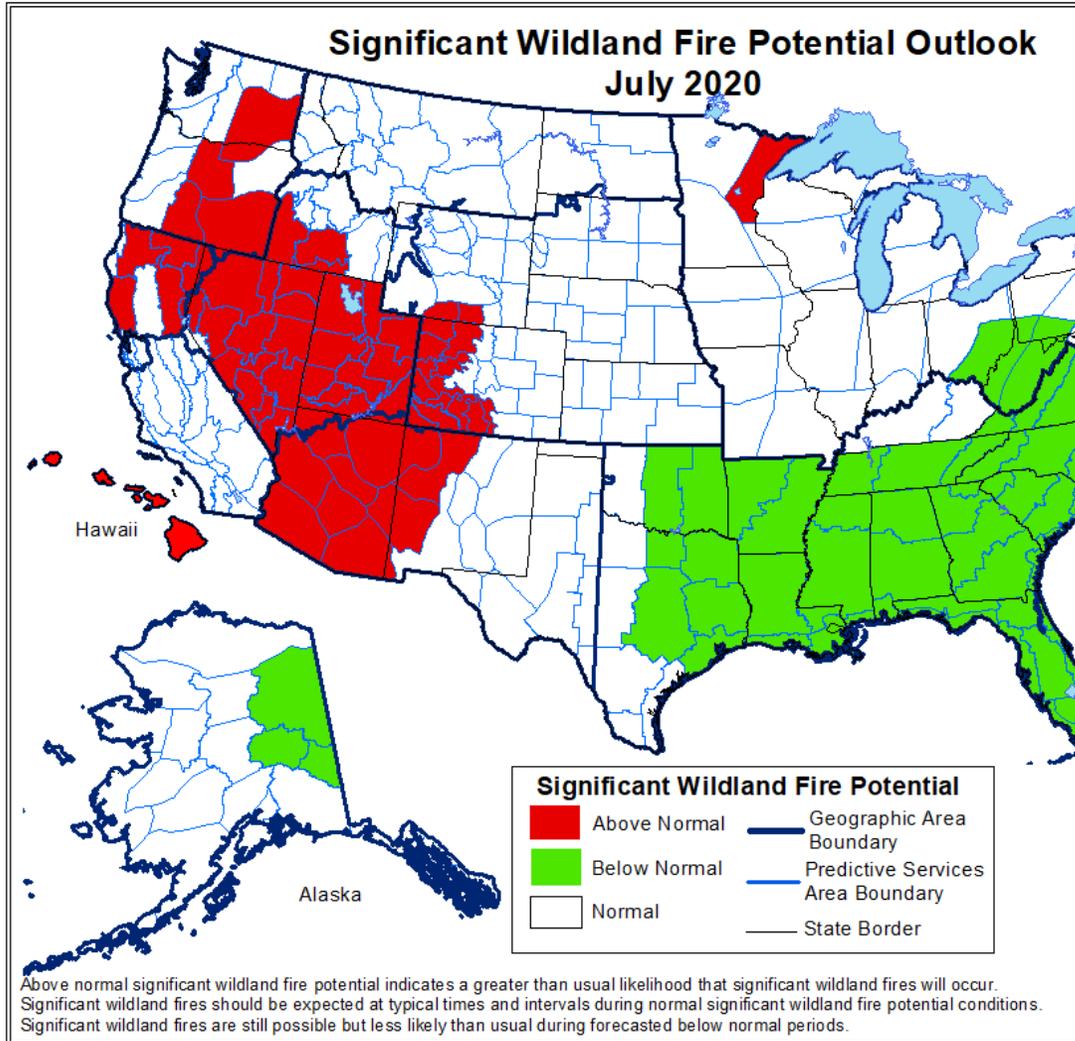
-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



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



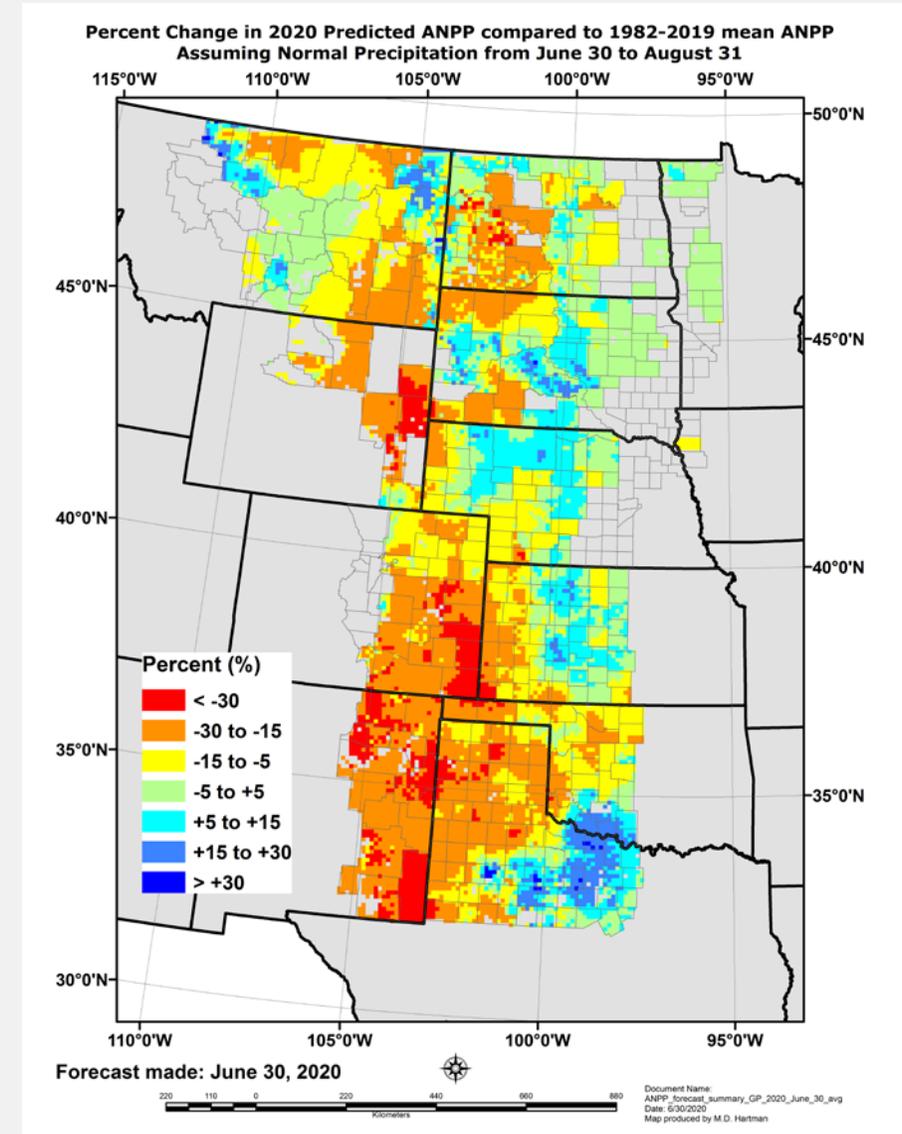
Wildfire potential outlook



Map produced by
Predictive Services,
National Interagency Fire Center
Boise, Idaho
Issued July 1, 2020
Next issuance August 1, 2020

Grassland production

- Assuming normal precipitation for July and August, grass production shows regional variability
- Reduced productivity in the west, above normal in the east



<https://grasscast.unl.edu/>



Key impacts

- **Increasing pattern of dryness across the region in which half is abnormally dry or worse.**
- **Slow start to severe weather season, but picking up lately.**
- **Range and pasture conditions showing declines.**
- **Corn generally at pollination, expect impacts with upcoming heat, humidity and high night temperatures.**
- **Soybeans will be impacted more if heat continues**
- **Take precautions for excessive heat.**



Outlook summary

- **Warm signal expected to continue with generally above average temperatures for the monthly and seasonal outlooks.**
- **Wet signal hangs on in the northern tier of the region while dryness has the highest probability in the south.**
- **La Niña watch issued with slight probabilities through the winter and spring.**

For additional information

Recording of today's and past presentations:

<https://mrcc.illinois.edu/multimedia/webinars.jsp> <http://www.hprcc.unl.edu>

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 mrcc.illinois.edu



July 11th storm in MN

Photo courtesy Pete Boulay, Minnesota DNR

Questions

- **Martha Shulski:** mshulski3@unl.edu, 402-472-6711
- **Dennis Todey:** dennis.todey@usda.gov, 515-294-2013
- **Doug Kluck:** doug.kluck@noaa.gov, 816-994-3008
- **Mike Timlin:** mtimlin@illinois.edu; 217-333-8506
- **Natalie Umphlett:** numphlett2@unl.edu, 402 472-6764
- **Brian Fuchs:** bfuchs2@unl.edu, 402 472-6775



Photo courtesy Mark Junker
Sac and Fox Tribe



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 @MSHULSKI3

