North Central Climate & Drought Outlook
June 16, 2022

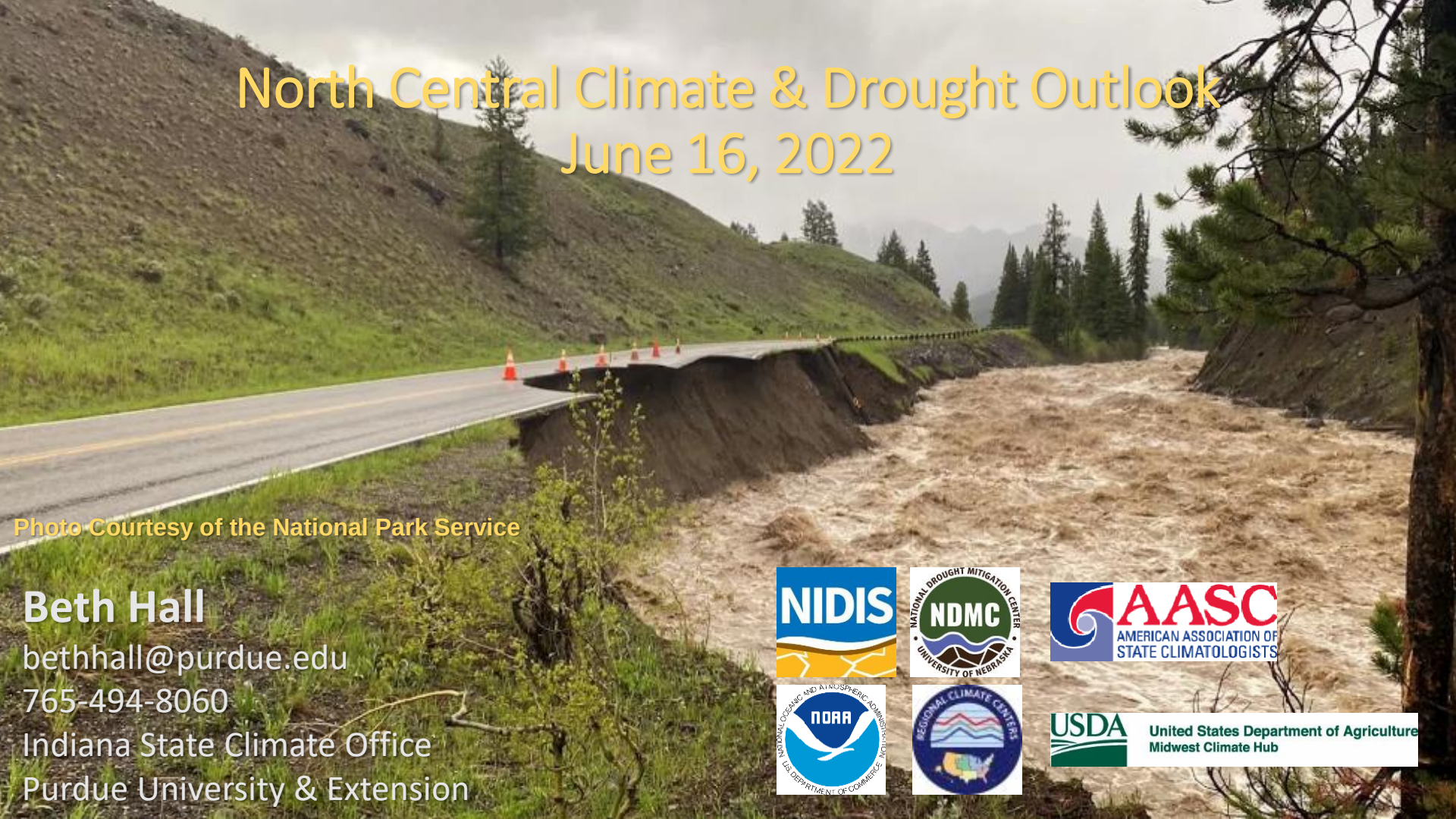

Photo Courtesy of the National Park Service

Beth Hall
bethhall@purdue.edu
765-494-8060
Indiana State Climate Office
Purdue University & Extension

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General Information

Providing climate services to the North Central US

Collaboration Activity Among:

NOAA NCEI/NWS/OAR/NIDIS

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

July 21(1 PM CDT) Pete Boulay – Minnesota Assistant State Climatologist

Access to Archived Webinars and Information

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

MRCC: https://mrcc.purdue.edu/multimedia/webinars.jsp

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

Open for questions at the end (Enter them along the way)

Outline

Recent Climate Conditions

Recent Events

Impacts: Extreme events, hydrological, agricultural

Outlooks: Short-term, July, and summer / early fall updates; La Niña?

Photo Courtesy of Hans Schmitz – Purdue Extension/CCSI

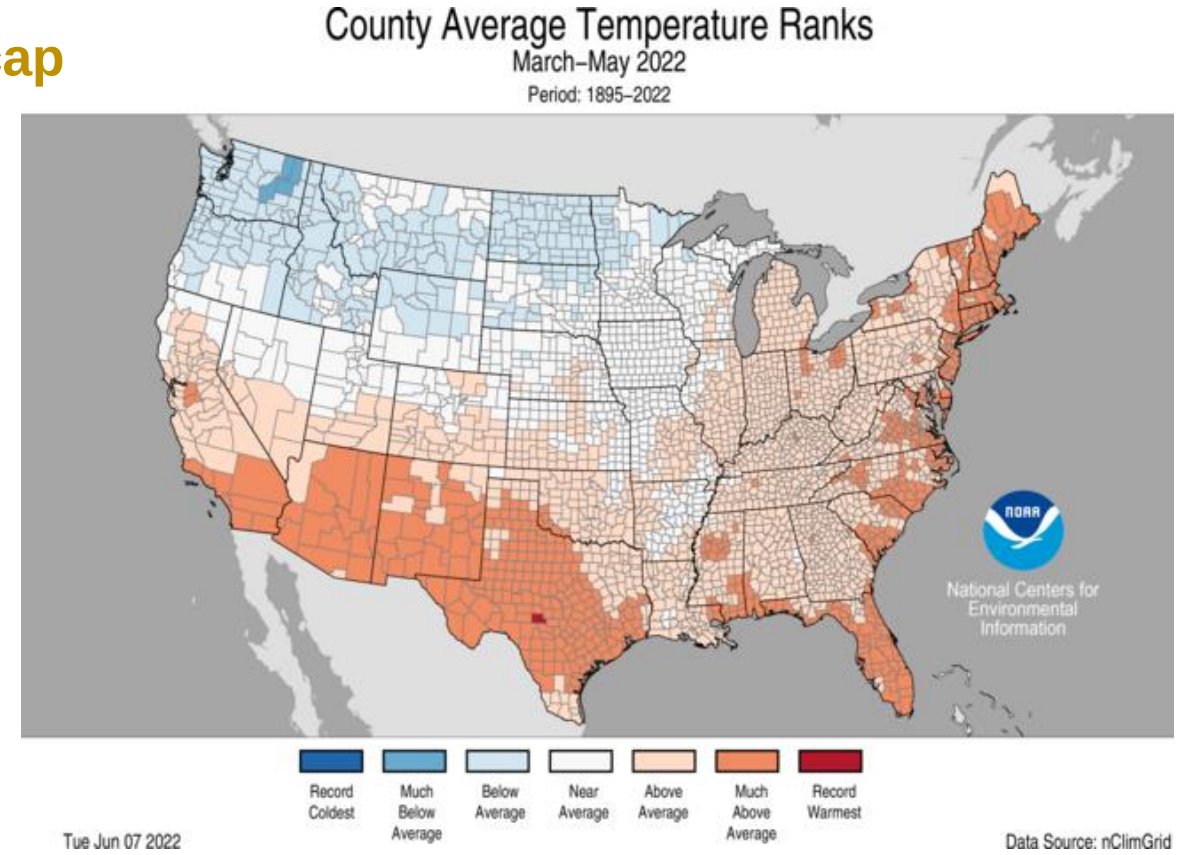
RECENT CLIMATE CONDITIONS

Purdue College of Agriculture

Recent Climate Conditions

March-May Temperature Recap

- *Below average across the far north*
- *Average for much of the North Central Region*
- *Above Average east*

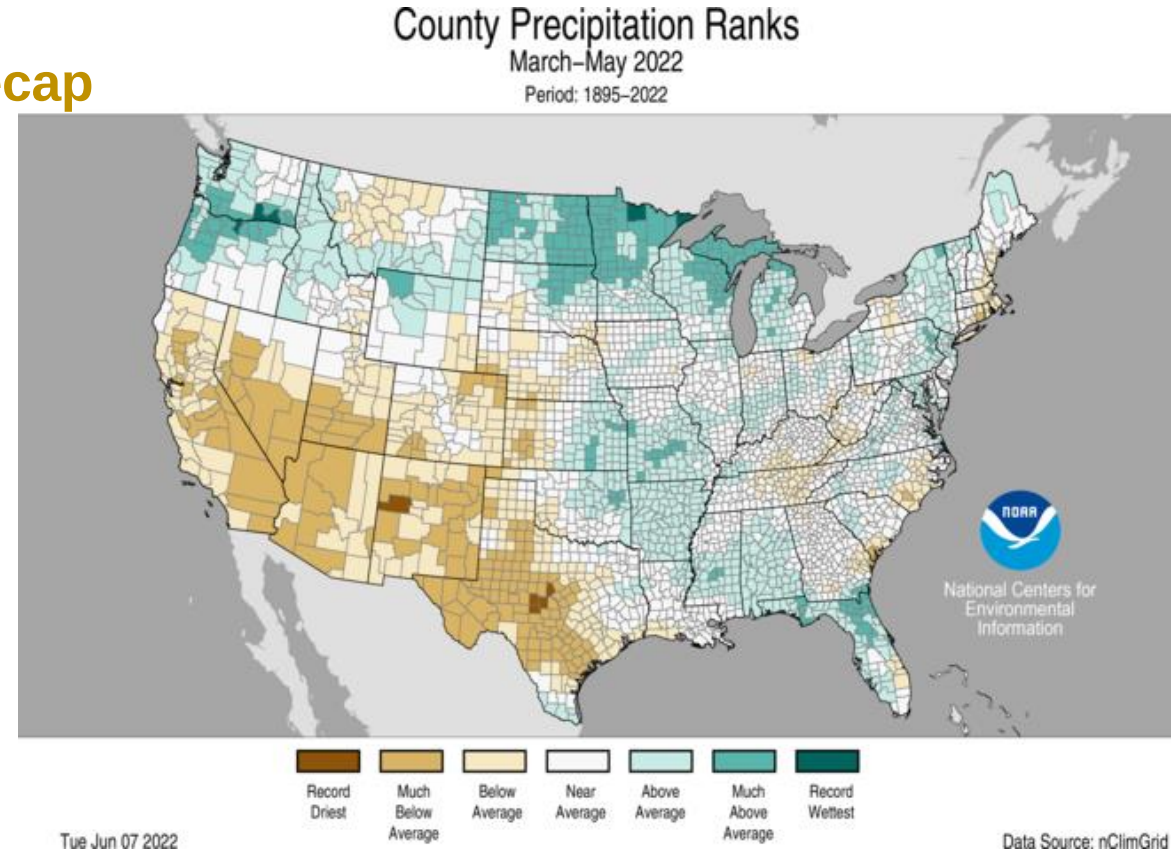


Source: http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

Recent Climate Conditions

March-May Precipitation Recap

- *Very wet – northern states*
  - *Top 5: MN, ND*
- *Normal/wet elsewhere*

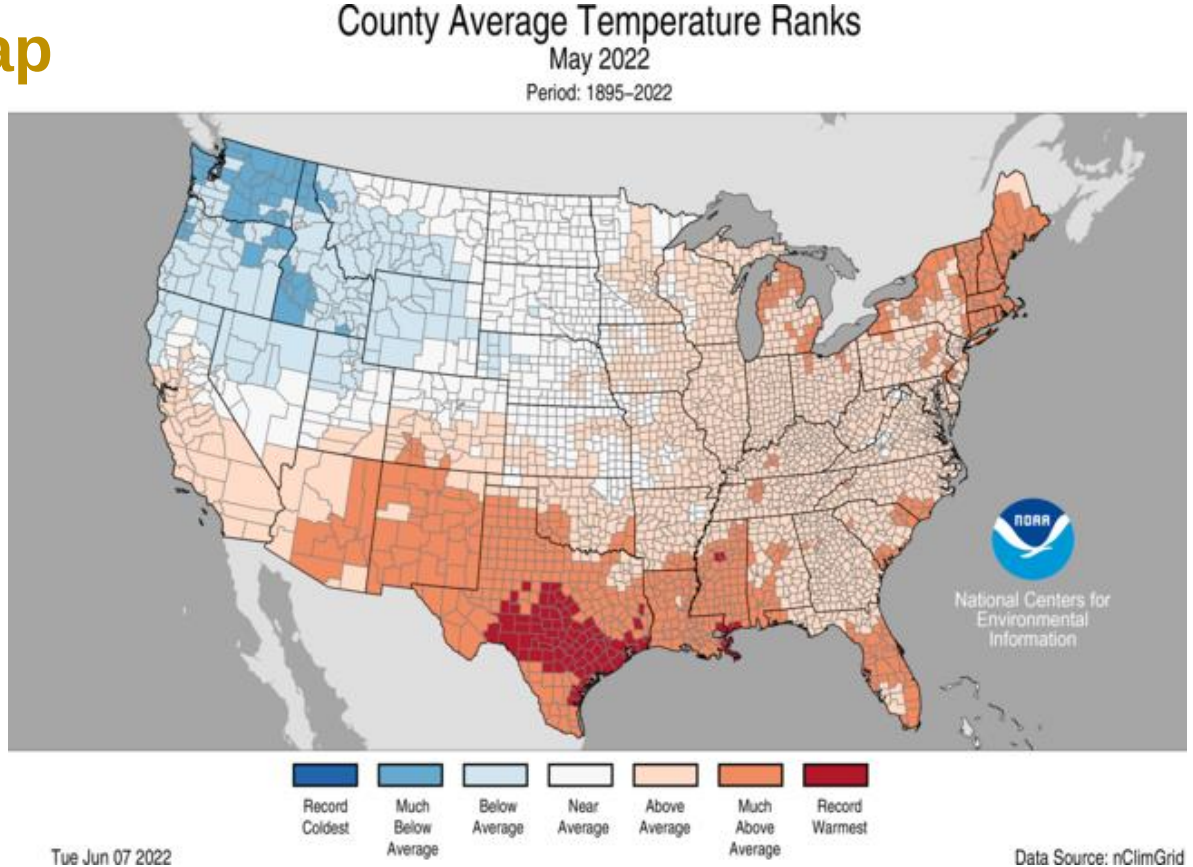


Source: http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

Recent Climate Conditions

May Temperature Recap

- *Above average - Midwest*
- *Near normal - High Plains*
- *Below average -- northwest*

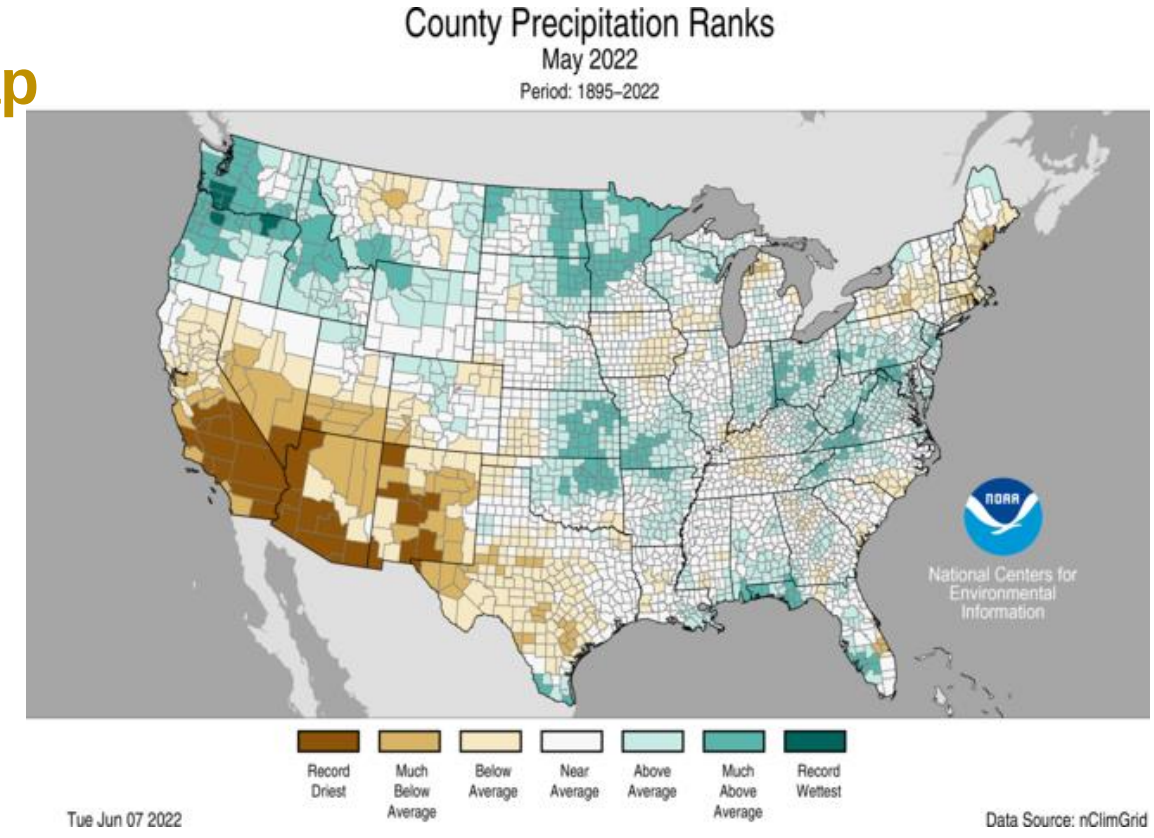


Source: http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

Recent Climate Conditions

May Precipitation Recap

- *Mixed coverage*
- *Near normal / slightly above normal*
- *No extreme, record May*

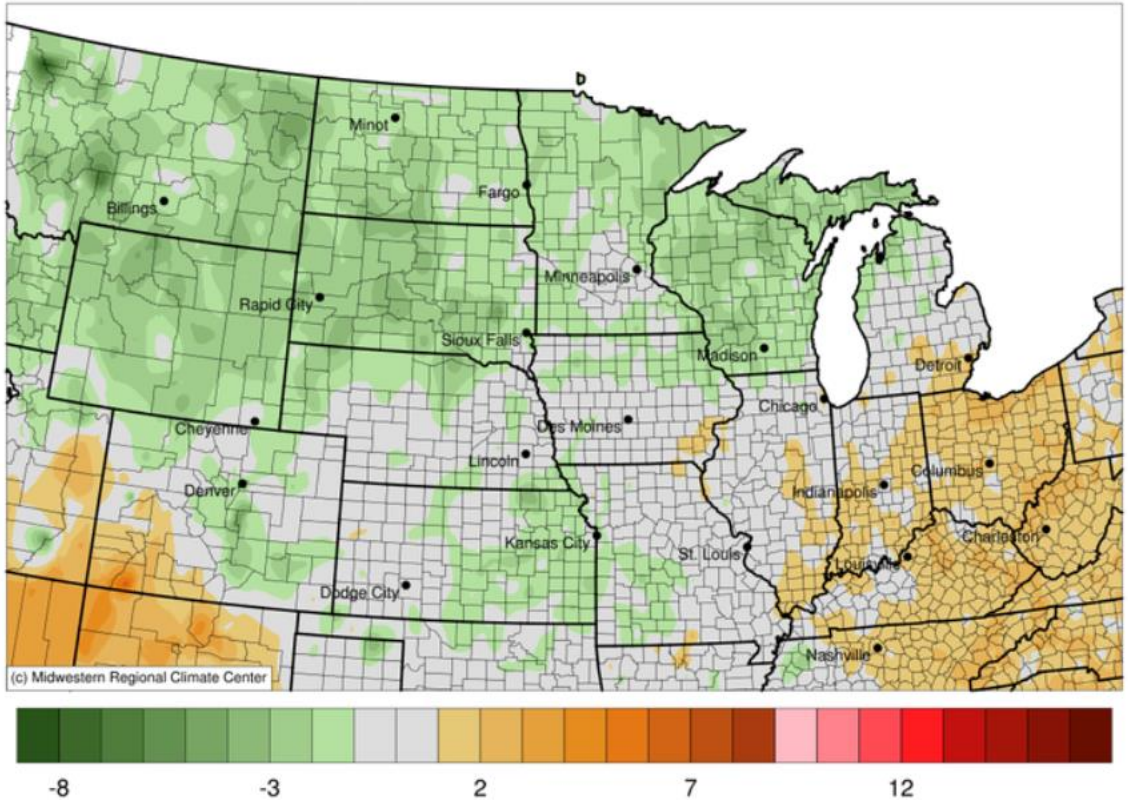


Source: http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

Recent Climate Conditions

May 17, 2022 – June 16, 2022

Temperature departures (F) from average



Last 30 Days: Temperature

Cooler – north, northwest

Slightly warmer – eastern

Generally normal elsewhere

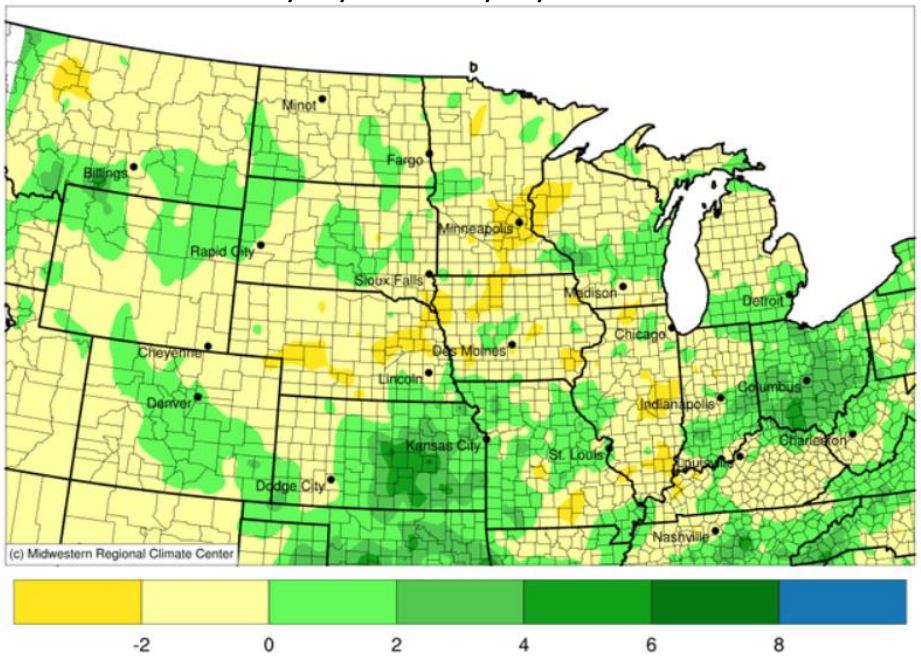
Source: https://mrcc.purdue.edu/CLIMATE/

Recent Climate Conditions

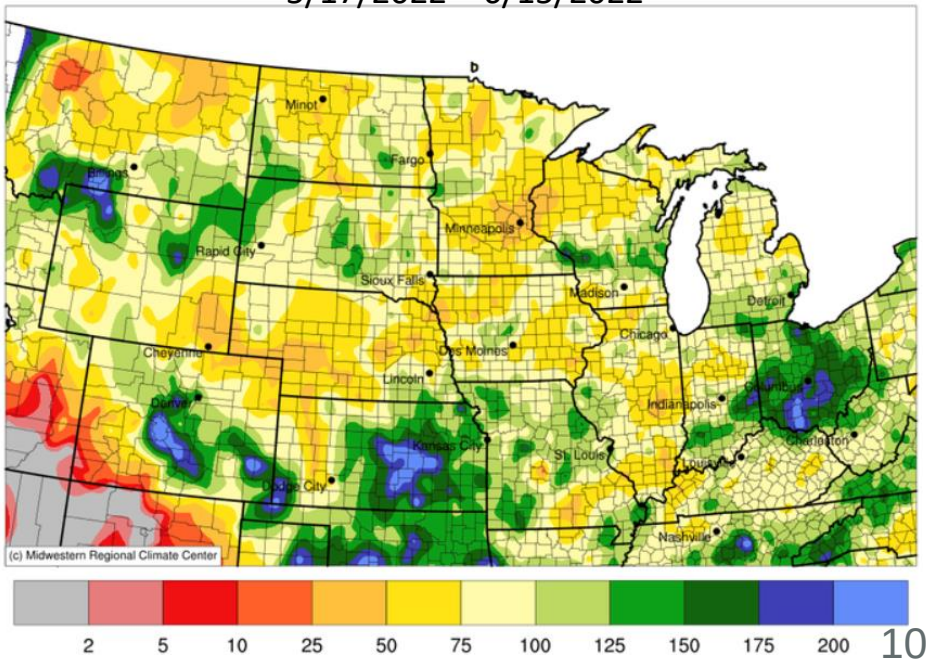
Last 30 Days: Precipitation

- *Heavier rainfall – OH, east KS*
- *Drier pockets – NE, IA, IL, MN, north WI*
  - *Beneficial – ND, MN*
  - *Not helpful - NE*

Precipitation Departure from Normal
5/17/2022 – 6/15/2022

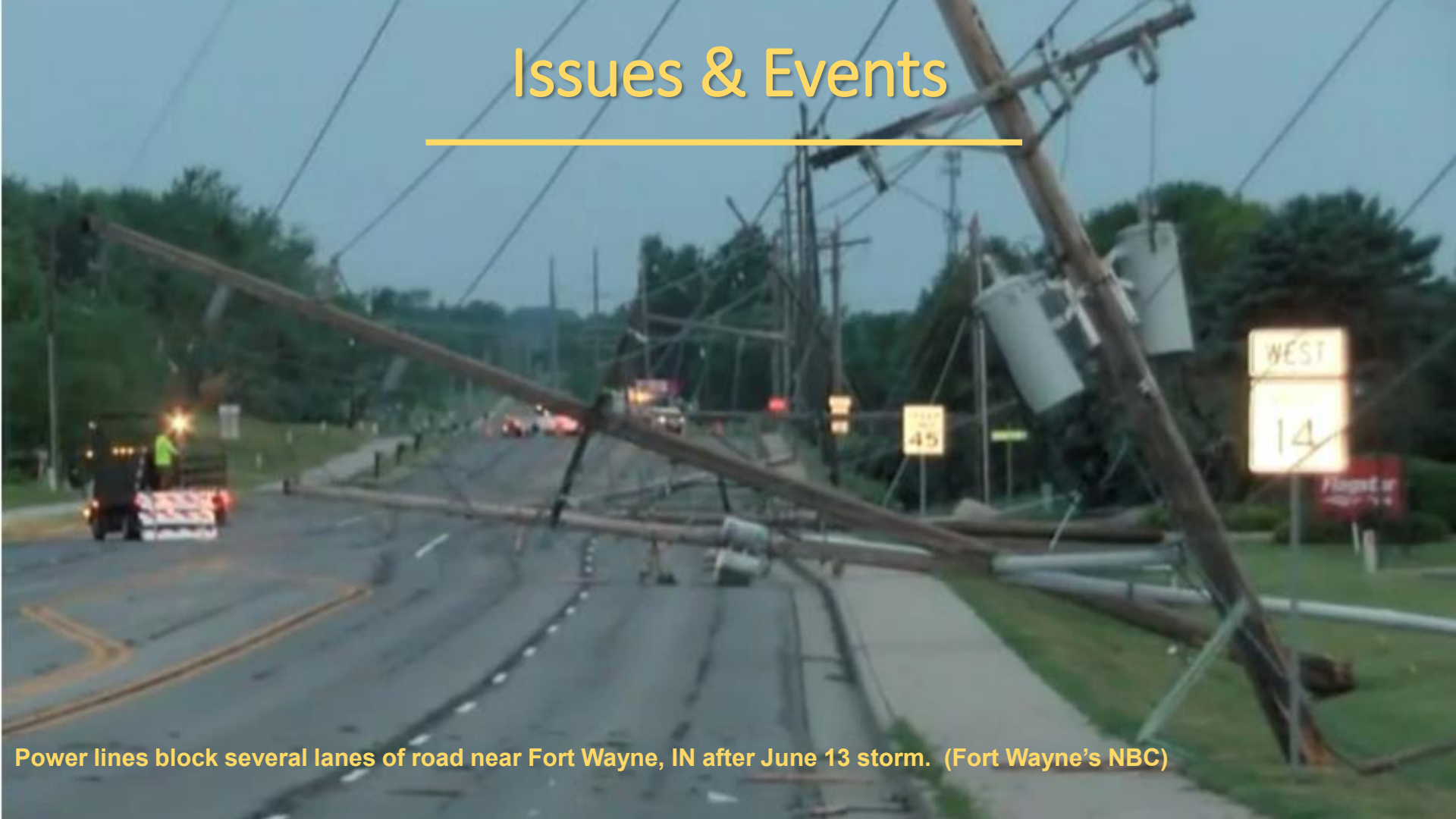


Precipitation Percent of Normal
5/17/2022 – 6/15/2022



Source: https://mrcc.purdue.edu/CLIMATE/

Issues & Events



Power lines block several lanes of road near Fort Wayne, IN after June 13 storm. (Fort Wayne's NBC)

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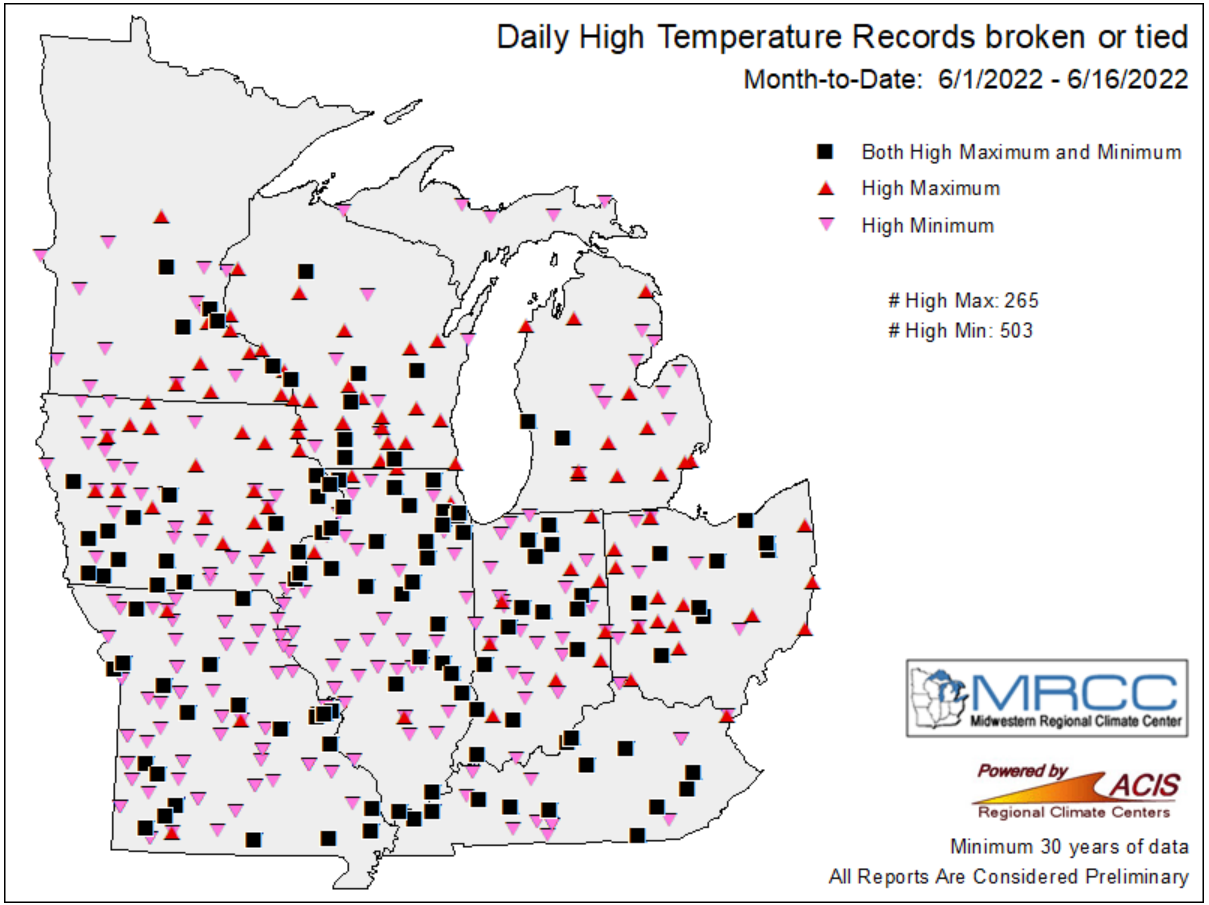
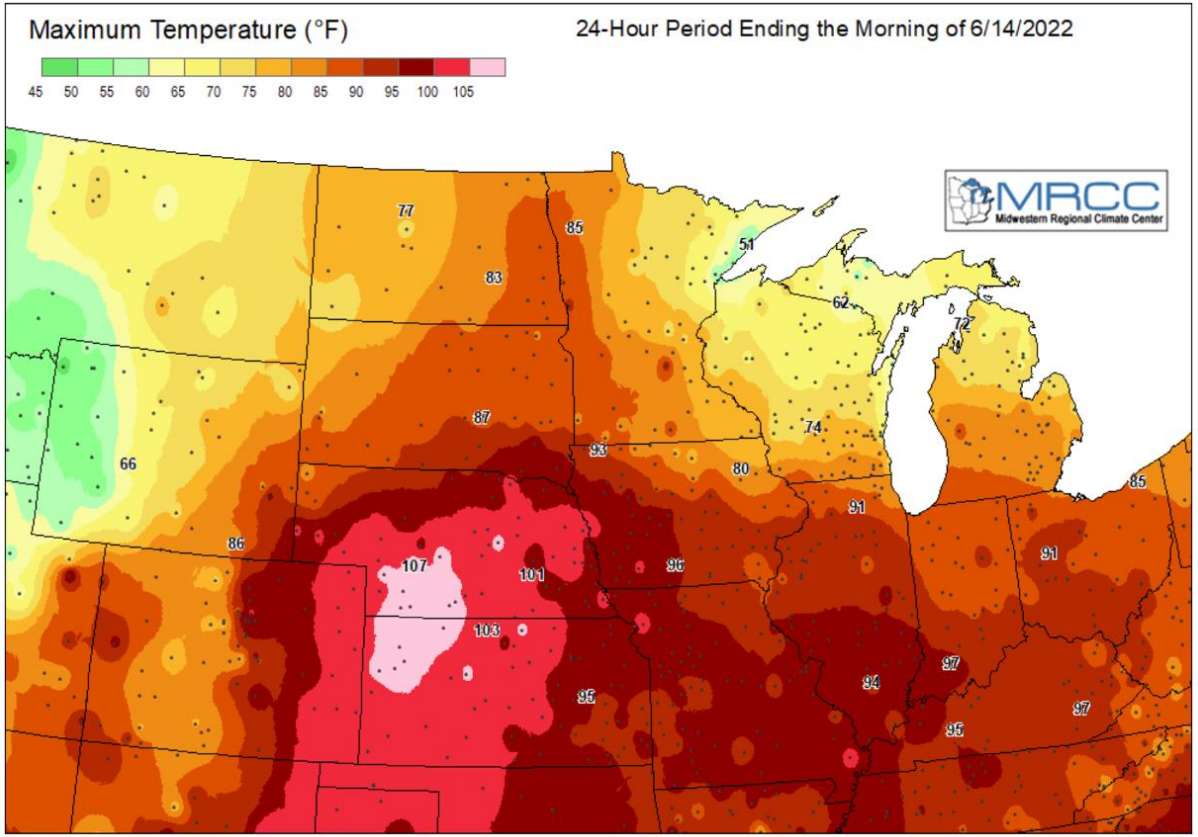
Extreme Heat



Extreme Heat

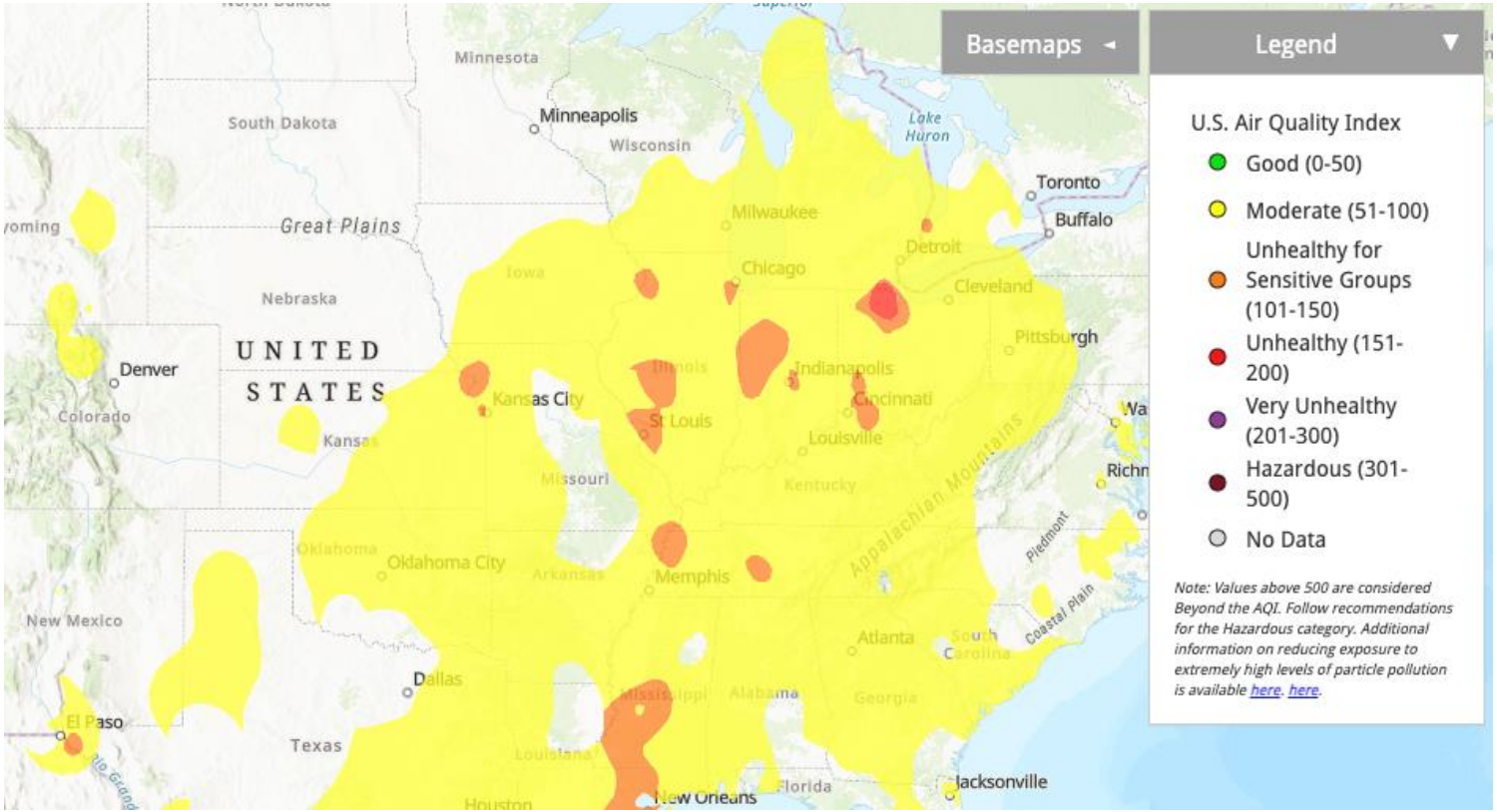
- *Chicago Midway AP reaches 100° (6/15/22).*
  - *First time since July 2012*
- *Consecutive days Td > 80F*
- *Consecutive hours T > 80F*
- *Human, livestock stress*
  - *Significant cattle loss*
- *Energy / electrical system strain*

Td = Dew-point temperature



Air Quality

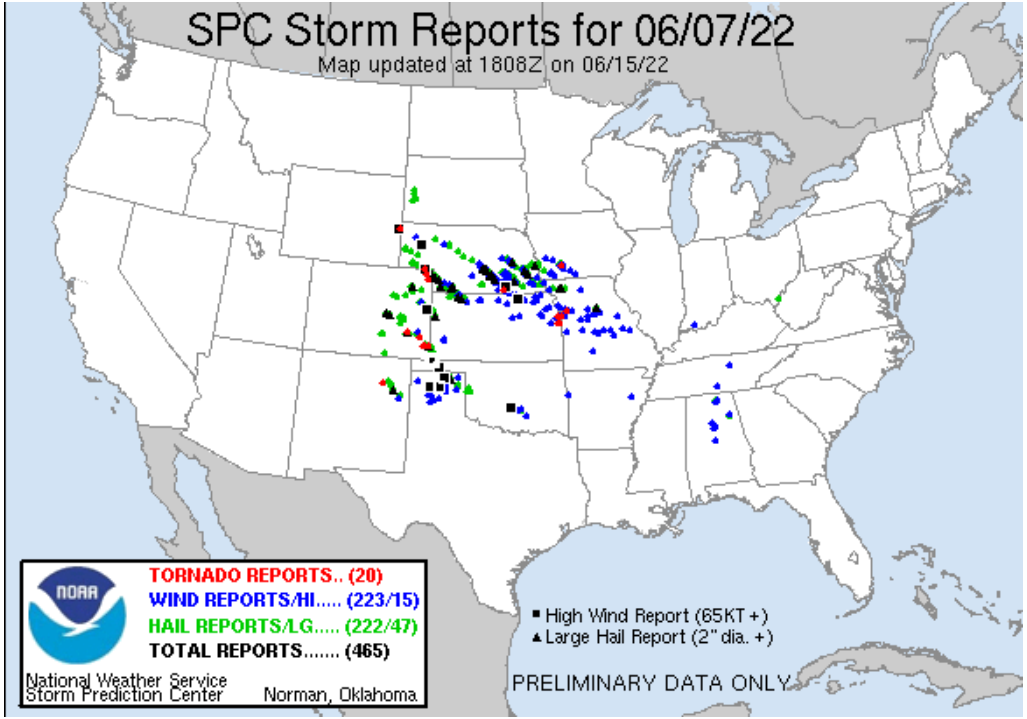
June 15, 2022



Source: AirNow Interactive Map (epa.gov)

Severe Weather Outbreaks

Tornado damage, Clark County, SD.

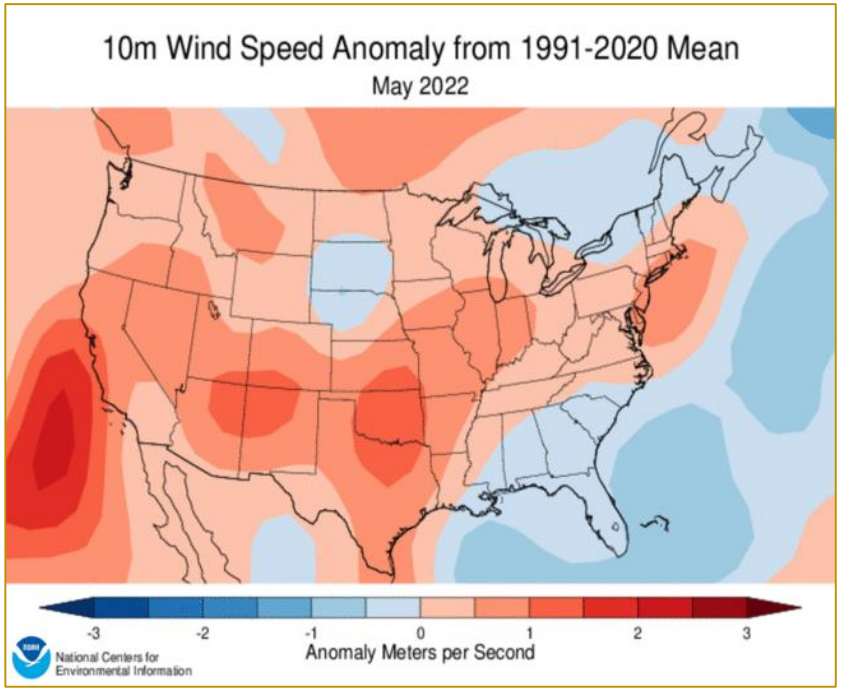


Severe Weather Outbreaks

June 11, 2022. Nebraska hail. Photo by Jason Thavenet. Nebraska News 8 (ABC)

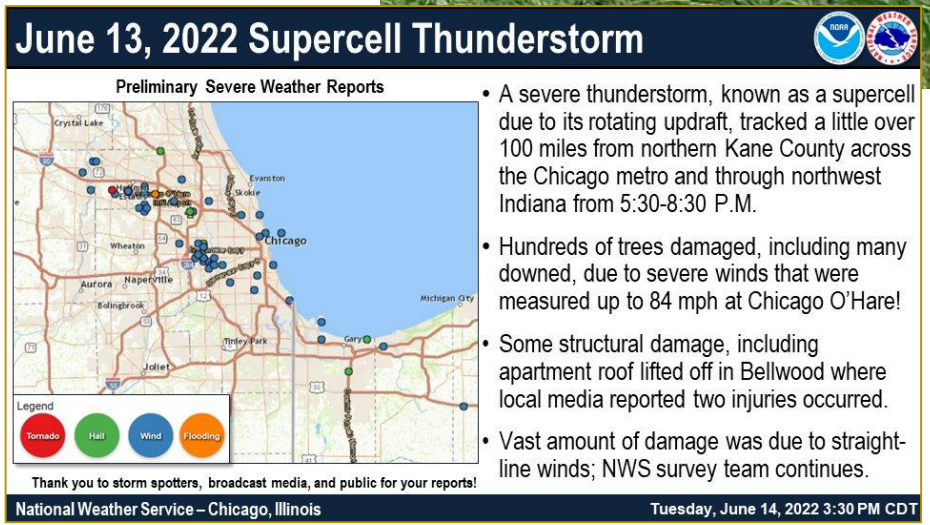
Storm damage from Memorial Day, Eagle Bend, MN

Wind and Other Issues



1 m/sec = ~2.2 mph
2 mph anomalies for a month are on the high side.

Ohio derecho
June 13, 2022
Credit: Dan Ledyard



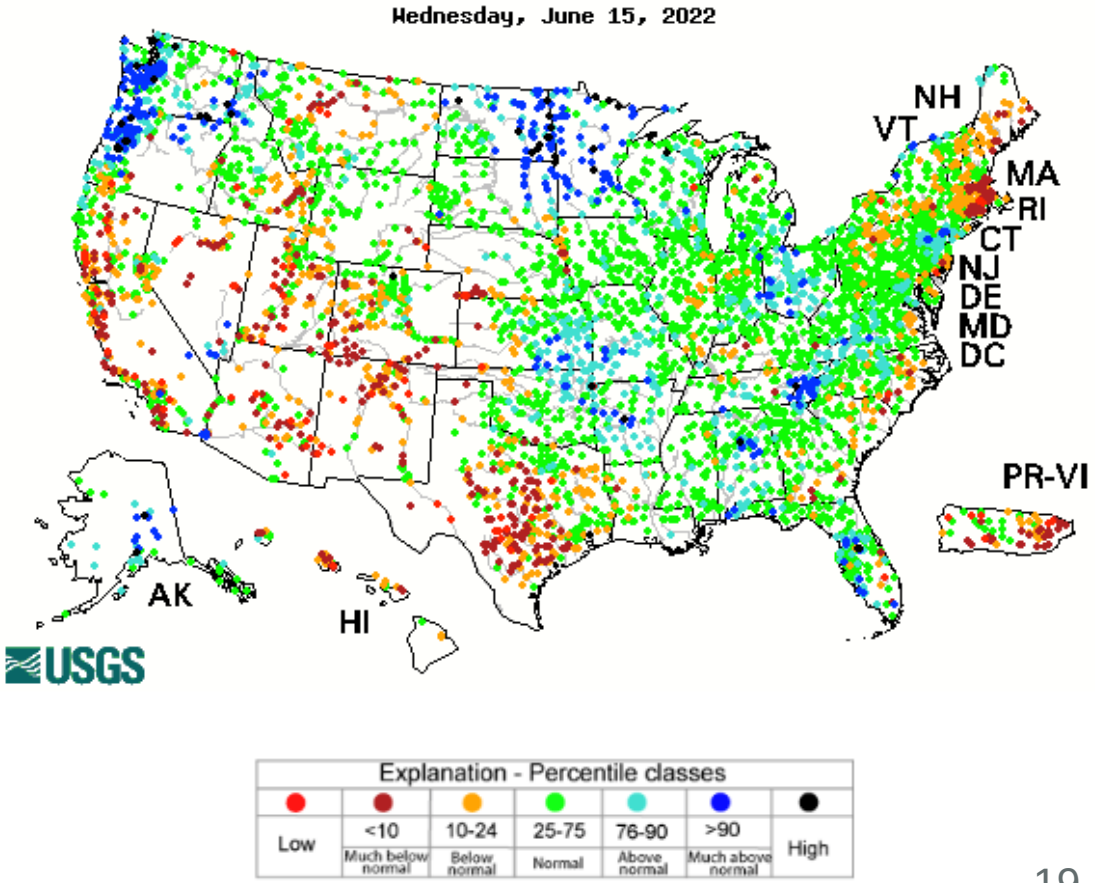
https://www.ncdc.noaa.gov/societal-impacts/wind/maps/202204

HYDROLOGIC IMPACTS

Northeast SD. Photo Courtesy of Diane Mann-Klager; BIA

28-Day Stream Flows

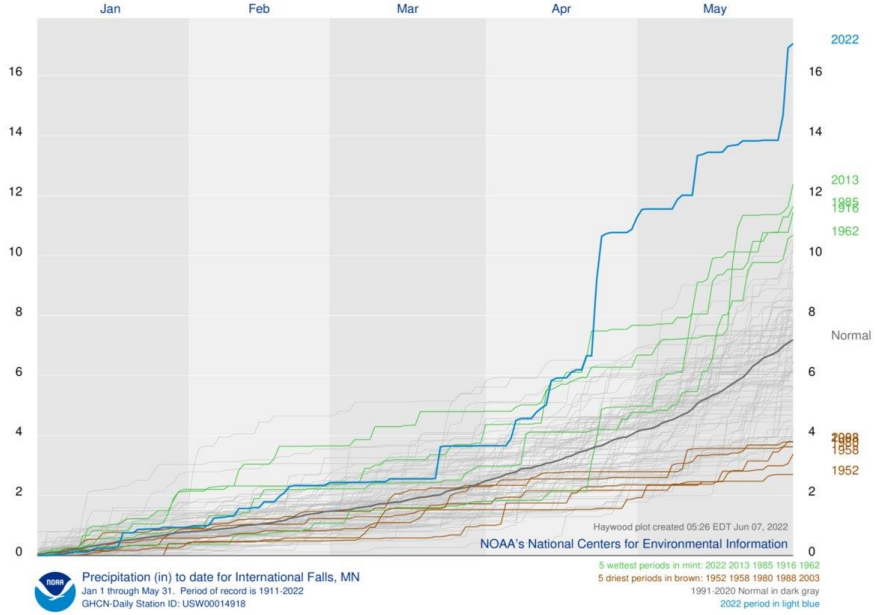
- High end flows – MN, eastern Dakotas; southeast KS / southwest MO; parts of OH
- Low-end flows – western KS, NE, KY; Illiana



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

Water Issues

- ***Rainy Lake, River (northern MN):*** *Damaged homes and buisiness*
- ***Northern MN:*** *International Falls - record precipitation to date with 100 years of record*
  (https://www.weather.gov/dlh/RainyRiverBasin)



Flooded lake house on Rainy Lake on the International Falls, MN side.

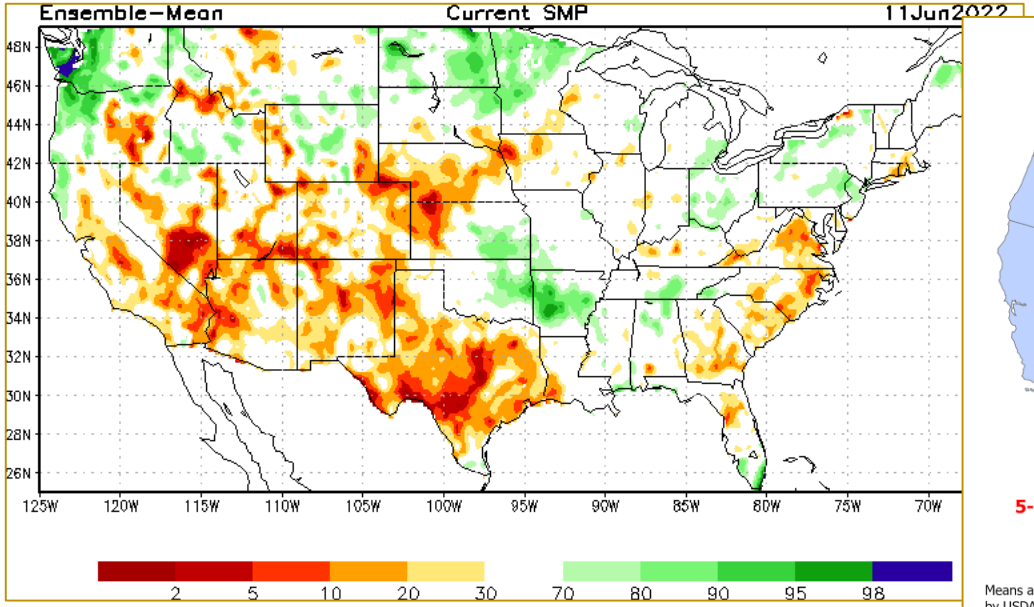
North shore of Rainy Lake near Fort Frances, Ontario (across from International Falls, MN). Photo credit to Mary Ellen Kennedy. Lake of the Woods, Rainy Lake, Namakan Lake, and all of those lakes up in that vicinity are top 2 or record high lake levels.

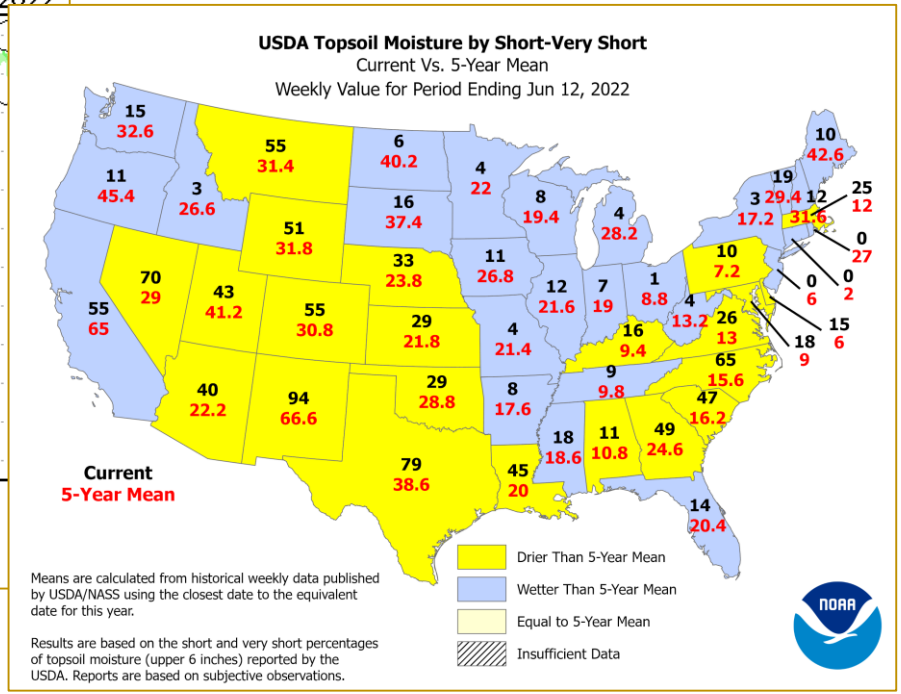
Water Issues

Yellowstone River flooding

- Lots of rain on snow
- Washed out roads
- Billings water plant shut down
- All time record flow

Soil Moisture

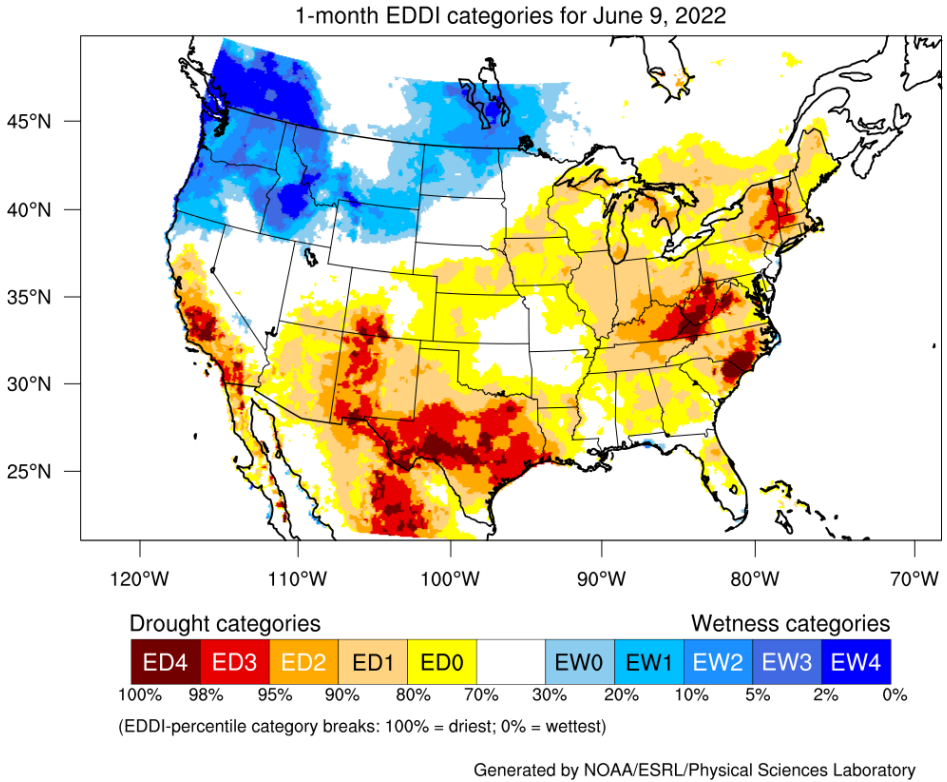




- *Dry soils – west KS/NE, CO, parts of WY / MT, northwest IA*
- *Topsoil moisture on wet side except for KY, NE, KS*

http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#
https://www.cpc.ncep.noaa.gov/products/monitoring_and_data/5yrcomp.gif

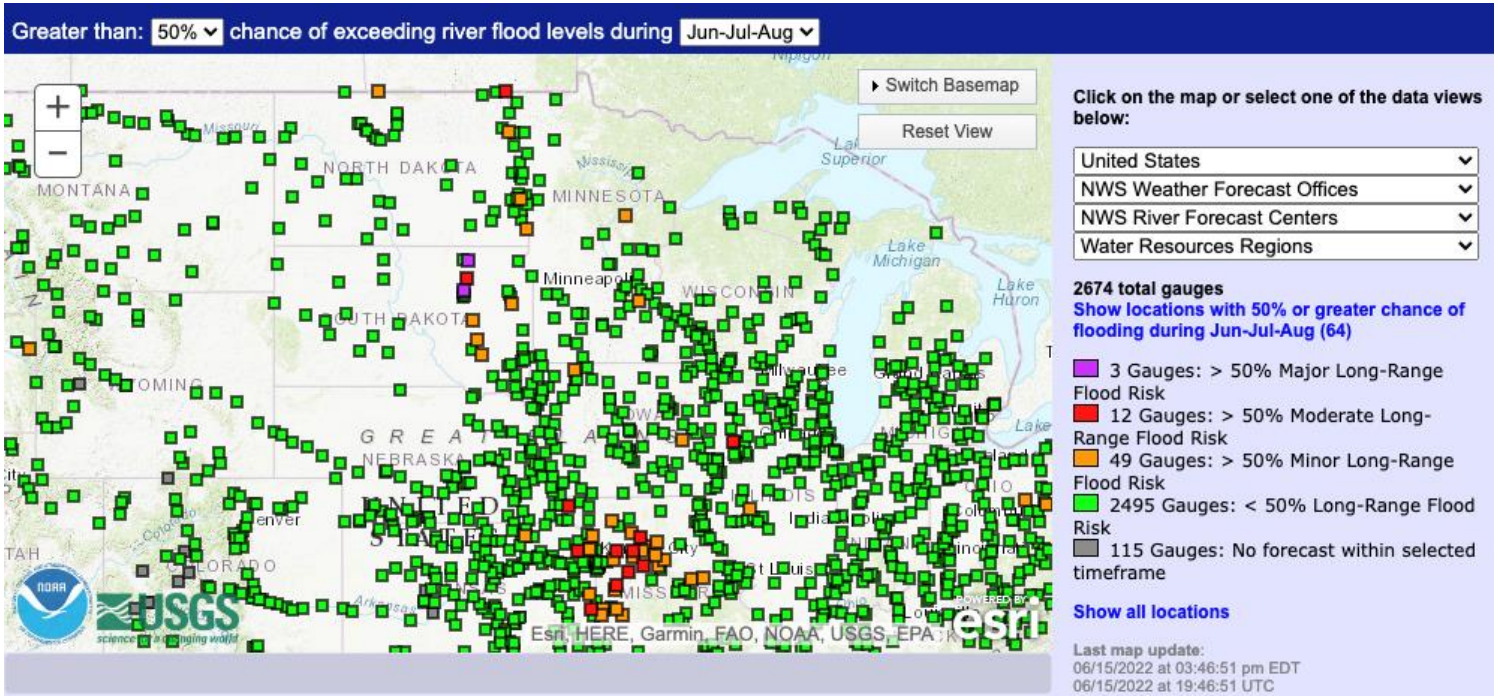
Evaporative Demand Drought Index (EDDI)



- *"Thirst of the atmosphere" or precursor for water stress*
- *Limited demand across ND westward*
- *Increasing demand – Midwest, KS, NE*

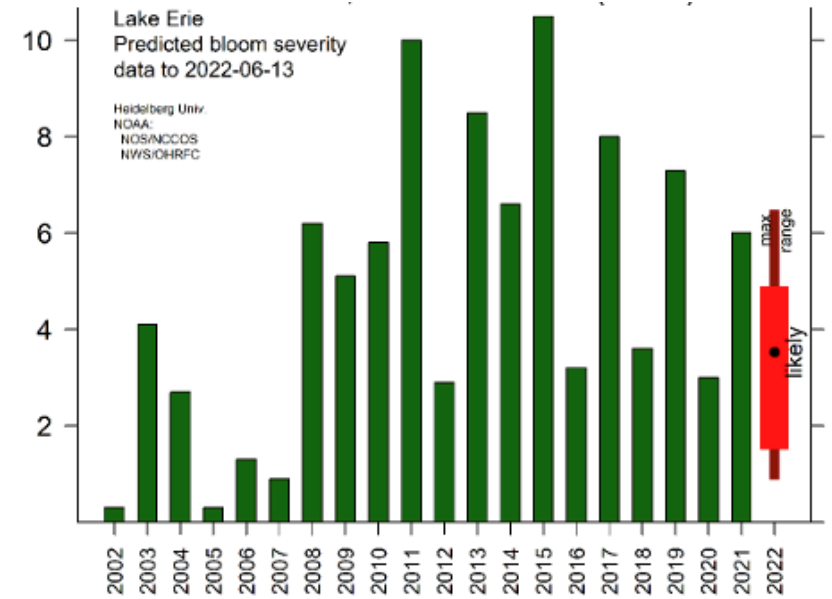
Source: https://www.esrl.noaa.gov/psd/eddi/

Streamflow Runoff forecasts

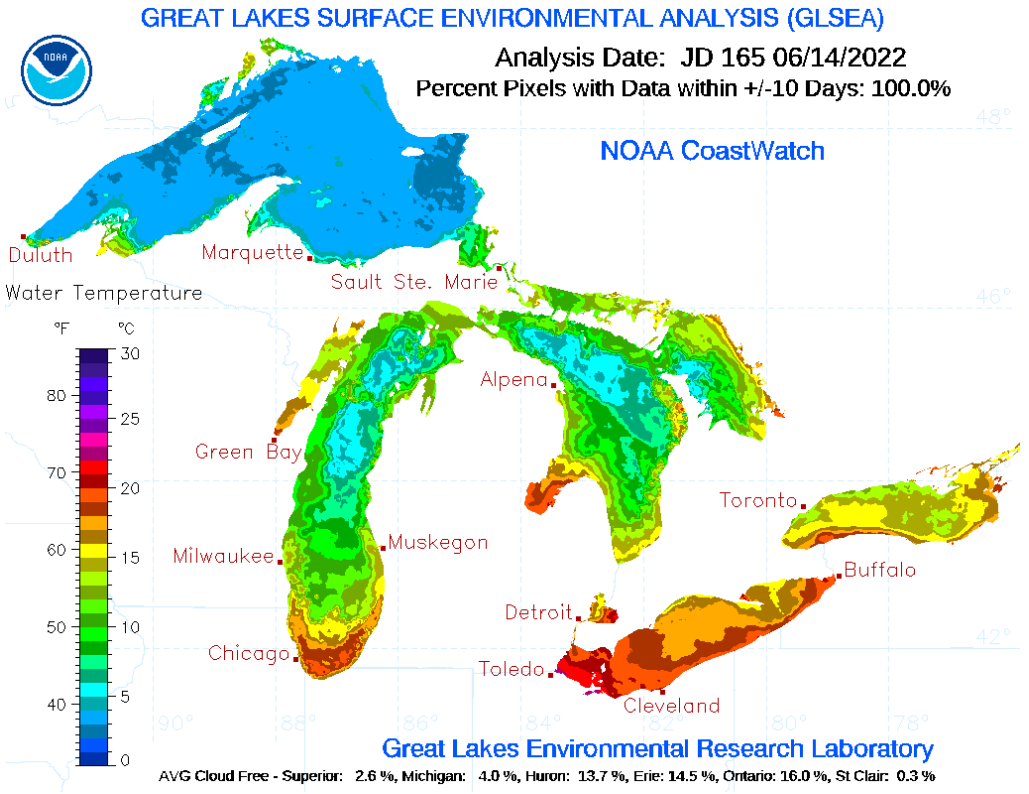


- *Moderate risks downstream*
- *Convective storms – lots of localized rain*
- *James River – ongoing flood*

Great Lakes



- Less severe than 2021
- If precipitation stays near normal, expecting 2022 ~ 2020

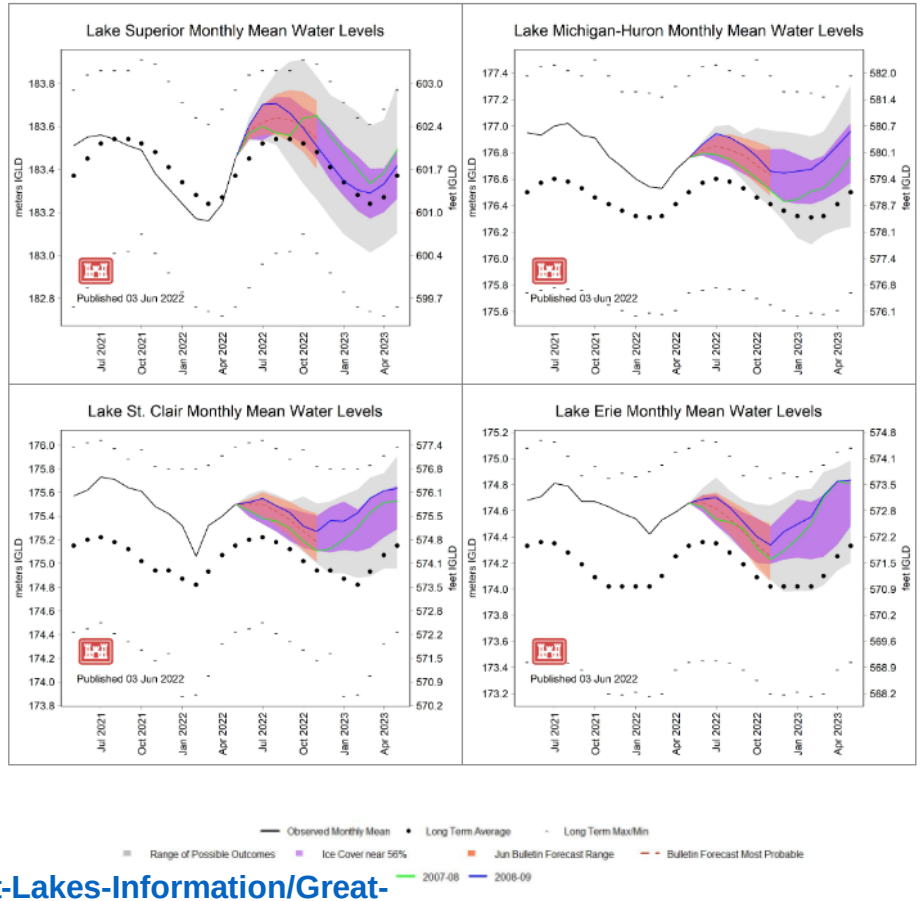


https://nccospublicstor.blob.core.windows.net/hab-data/bulletins/lake-erie/current/bulletin_current.pdf

https://coastwatch.glerl.noaa.gov/glsea/cur/glsea_cur.png

Great Lakes

Relatively normal levels



https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Level-Future-Scenarios/

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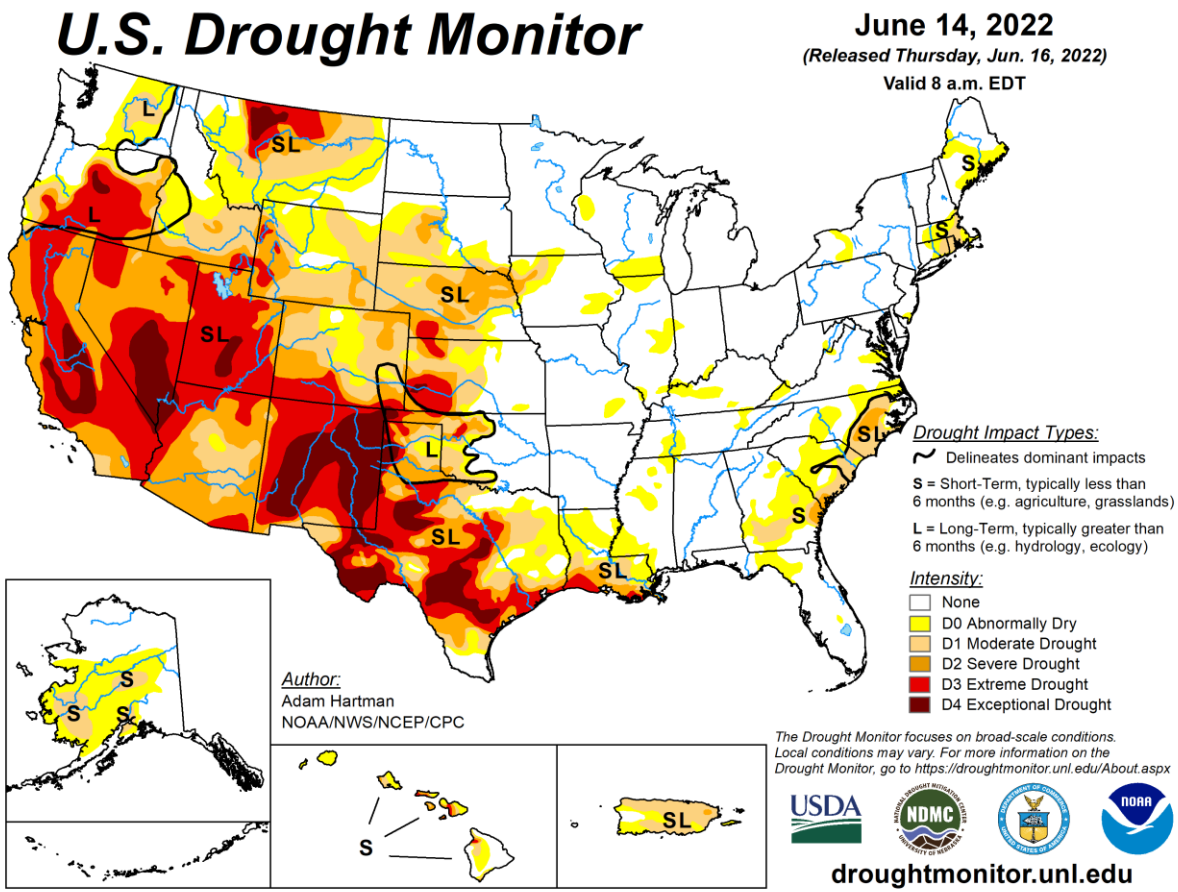
U.S. Drought Monitor



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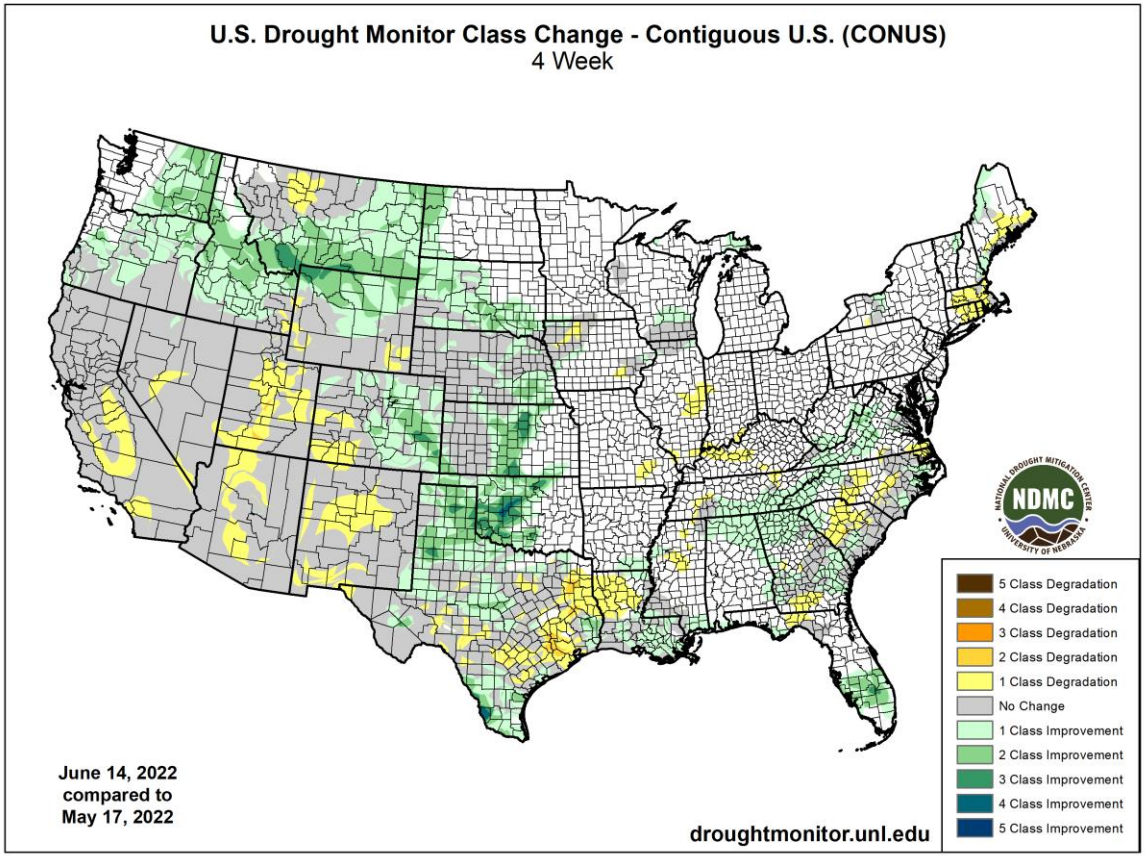
U.S. Drought Monitor



AGRICULTURAL IMPACTS

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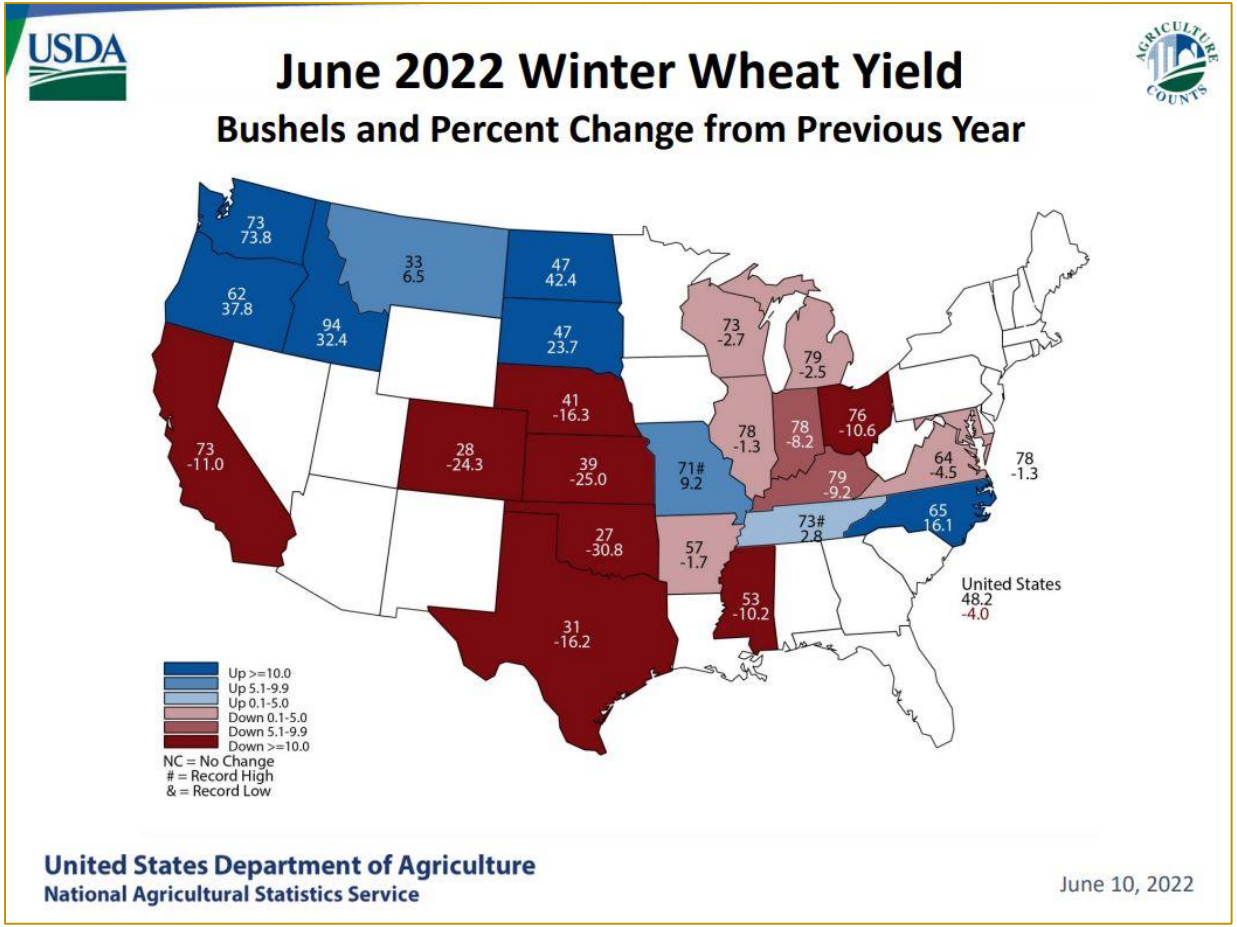
USDA NASS Crop Progress

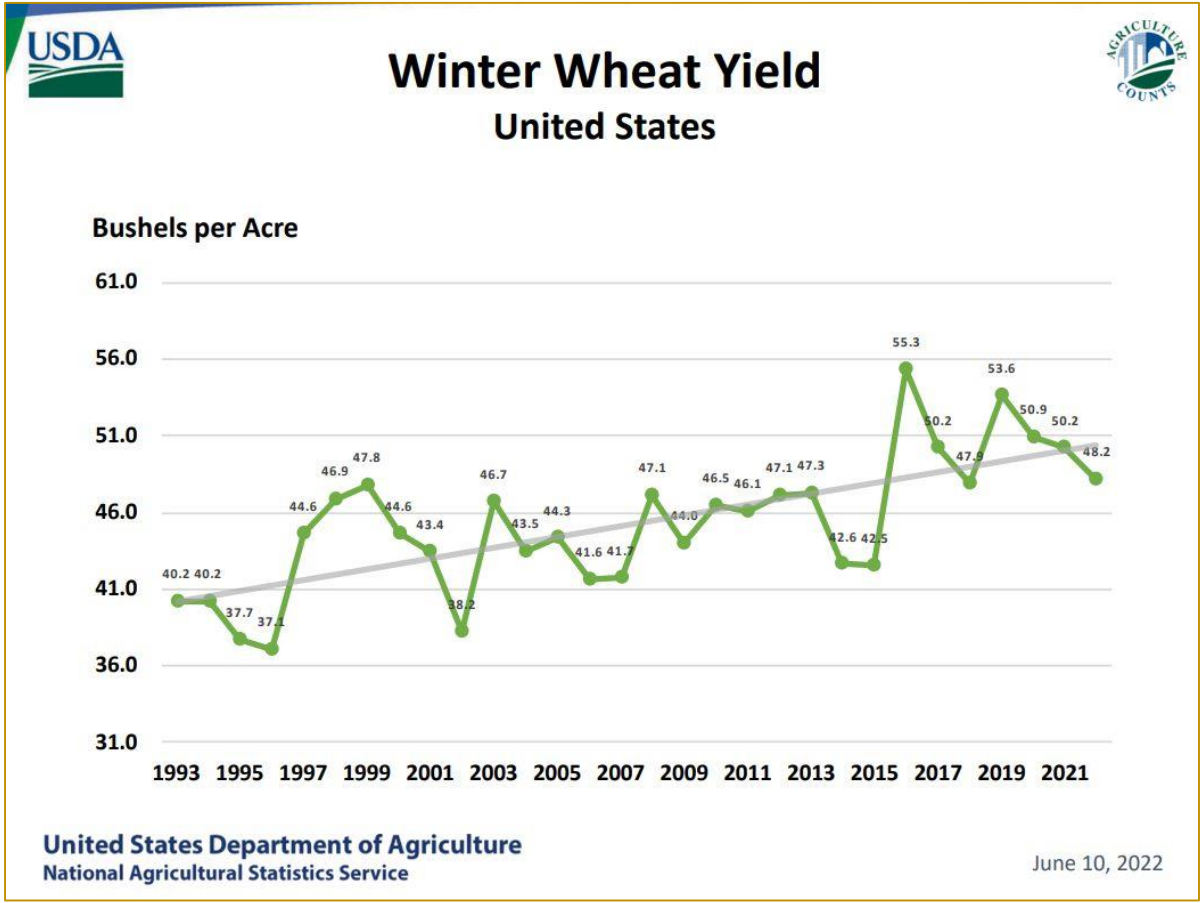
Winter Wheat



Thanks to Brad Rippey – USDA OCE Washington D.C.

USDA NASS Crop Progress

Winter Wheat



Thanks to Brad Rippey – USDA OCE Washington D.C.

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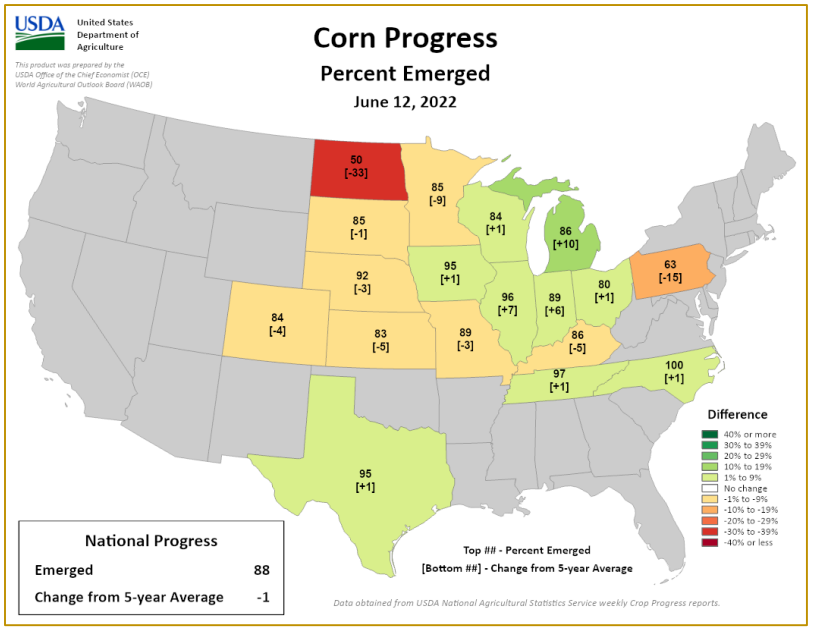
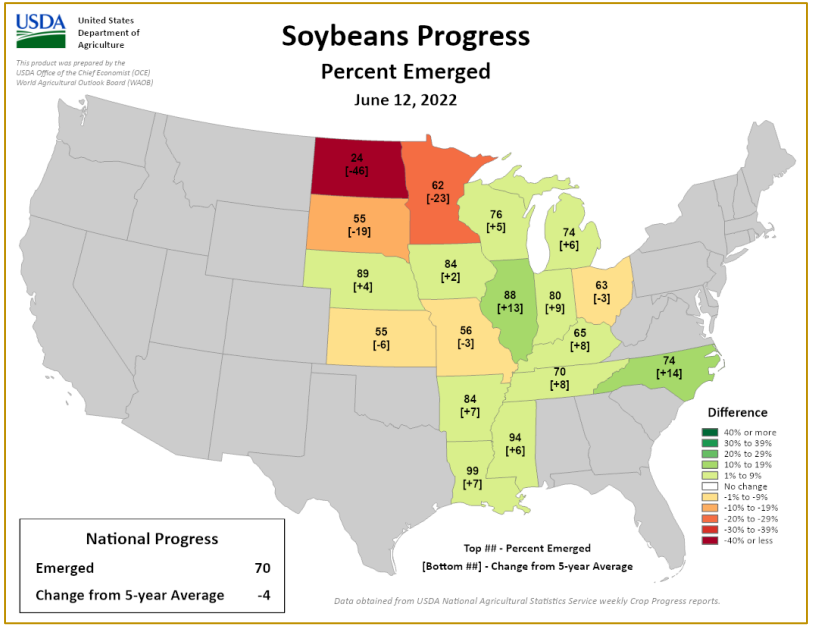
USDA NASS Crop Progress

Corn/Soy





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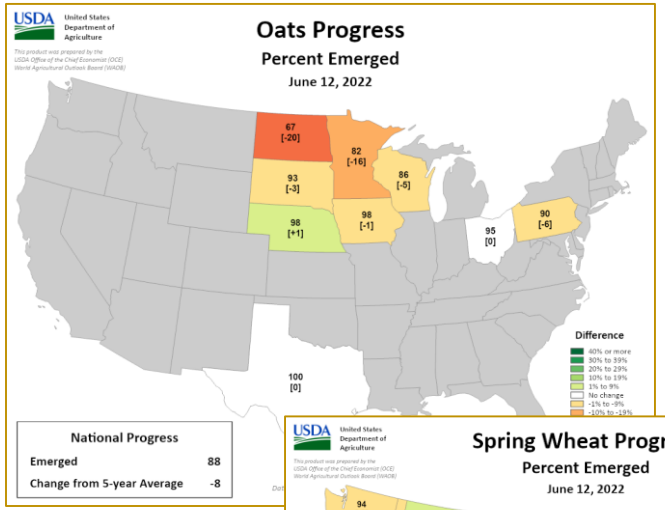
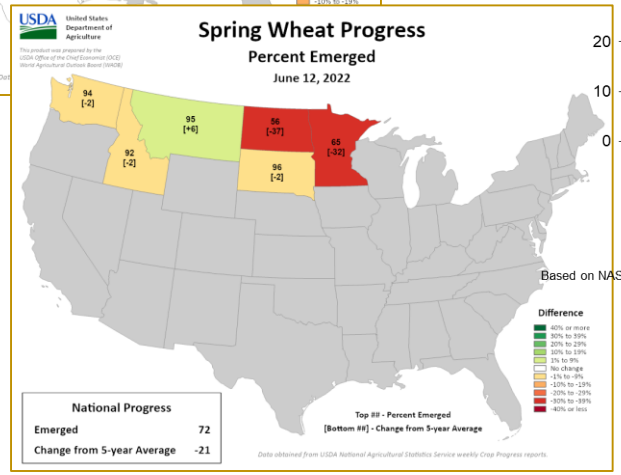
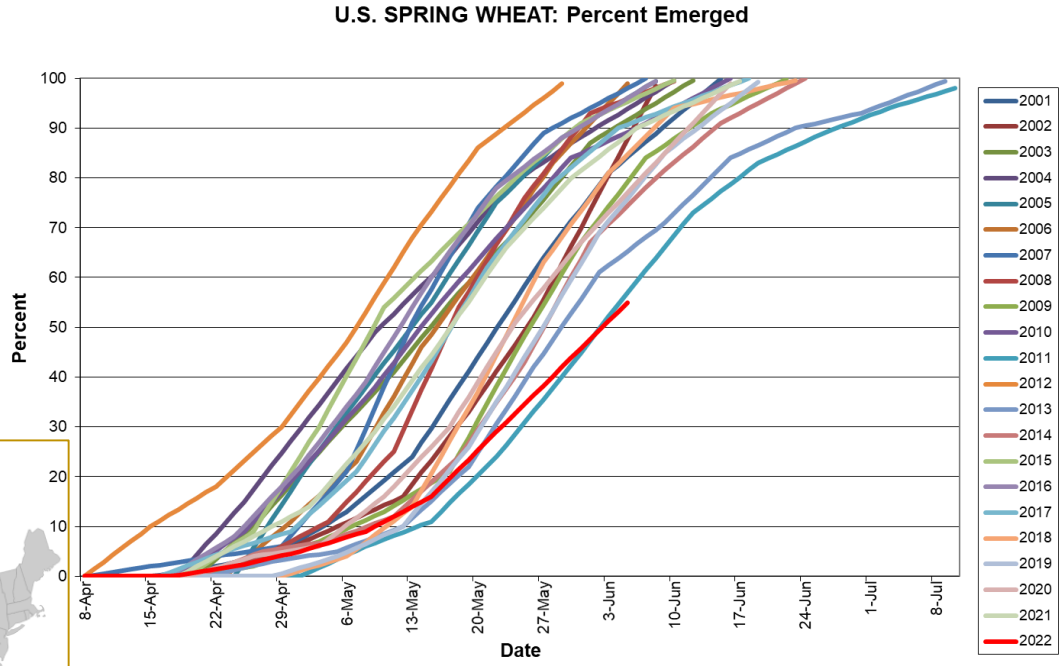
USDA NASS Crop Progress





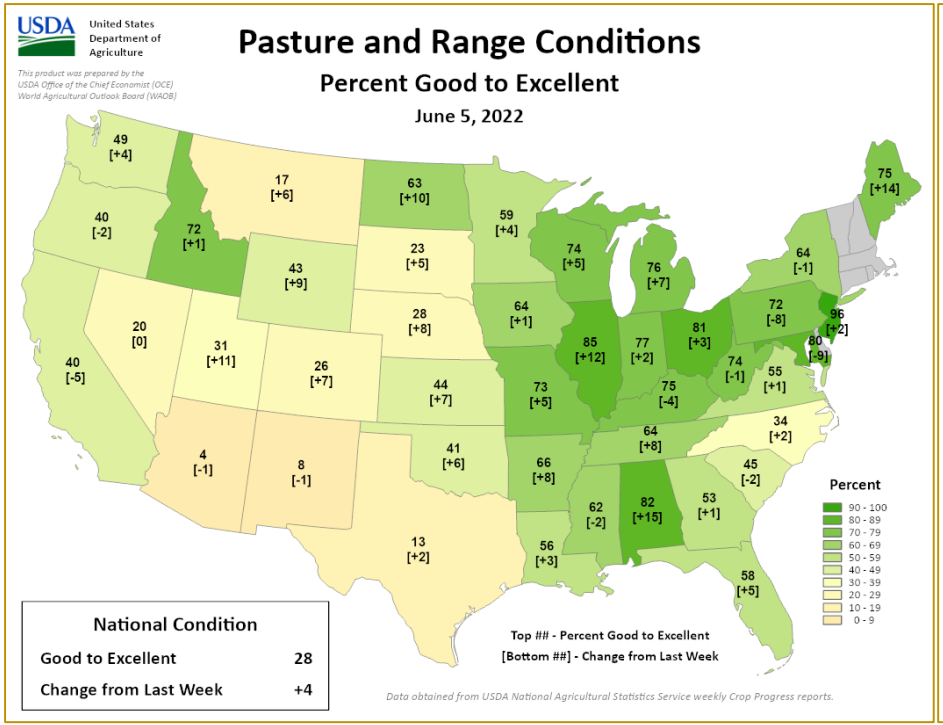


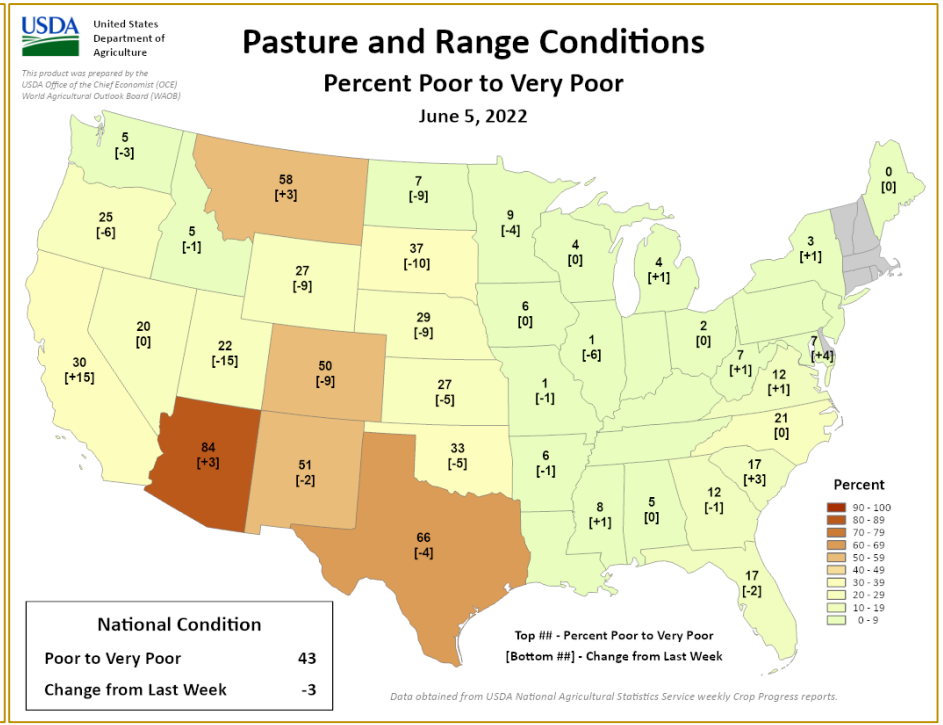
Based on NASS crop progress data.

U.S. spring wheat planting pace through June 5 is the second slowest of the 21st century.

Thanks to Brad Rippey – USDA OCE Washington D.C.

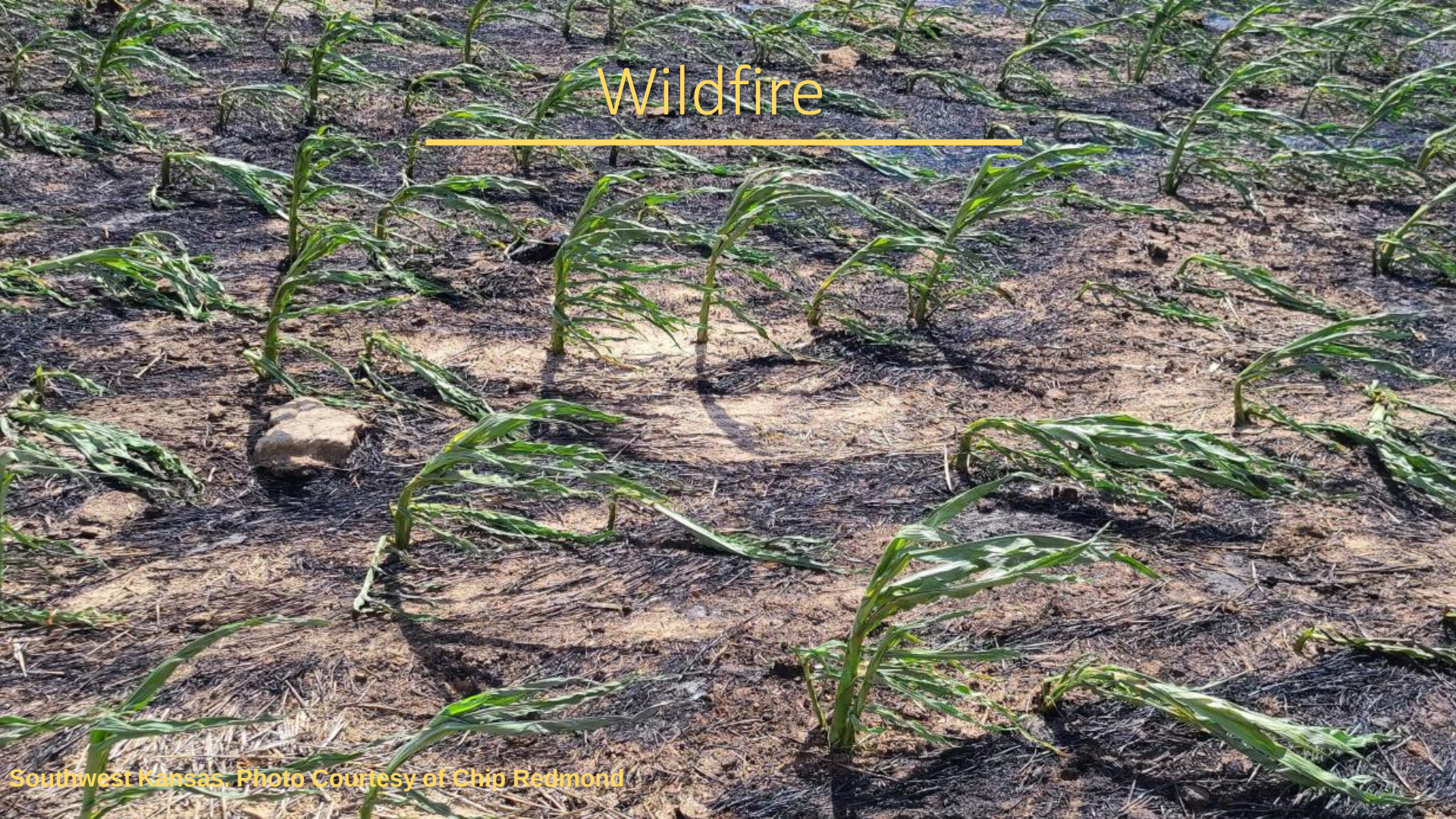
Pastures & Range





- *Some improvement with rains*
- *Still problems in CO/MO; not great in plains (but better)*

Wildfire



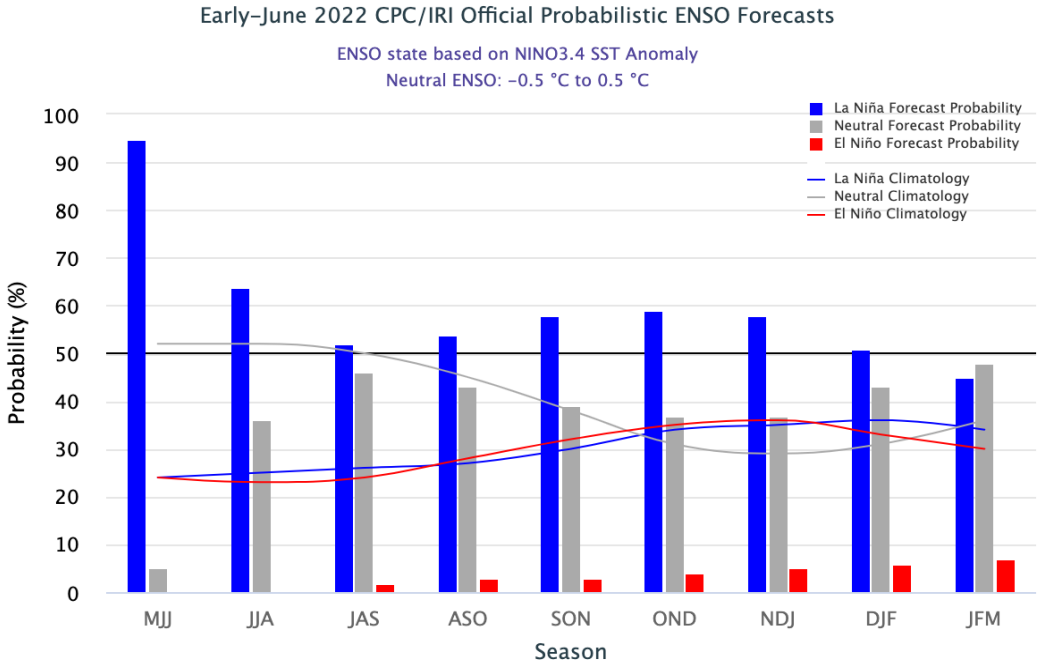
Southwest Kansas. Photo Courtesy of Chip Redmond

Finney County, KS – June 13, 2022

Nebraska fire (Chip Redmond)

Outlooks

ENSO Status & Projection



- *La Niña sticking around*
- *Weak La Niña expected to continue, possibly strengthen again this fall/winter*
- *Uncertain level of influence*

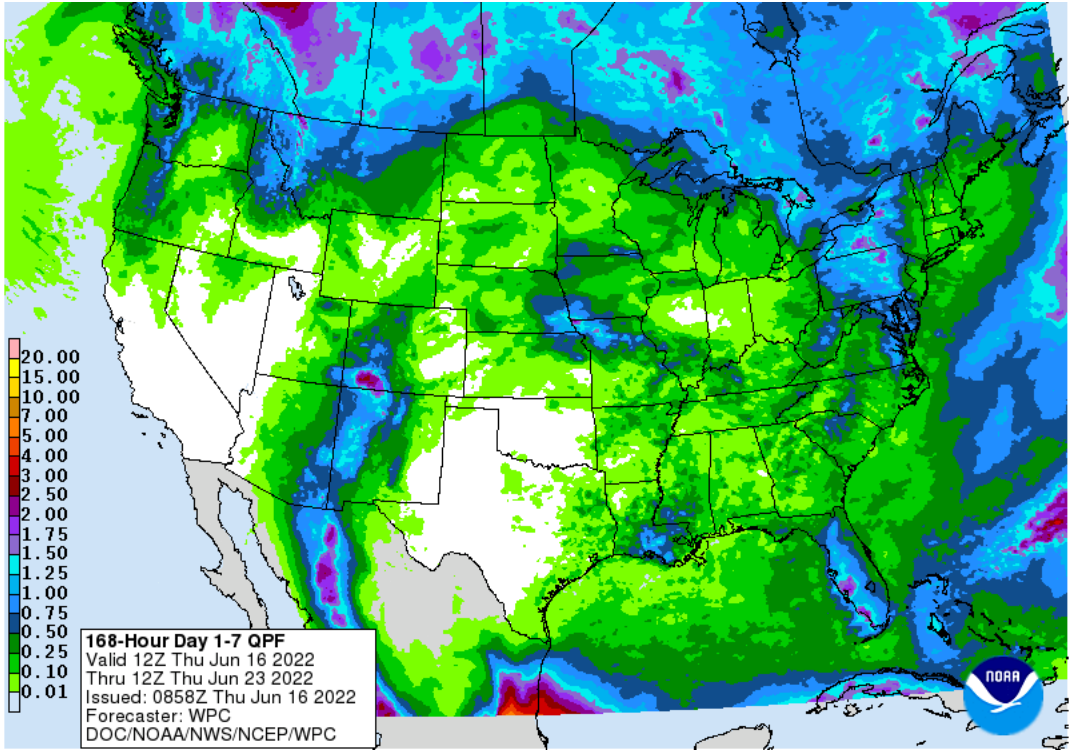
Source: https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml#discussion

7-Day Precipitation Forecast

Valid Thu June 16-23

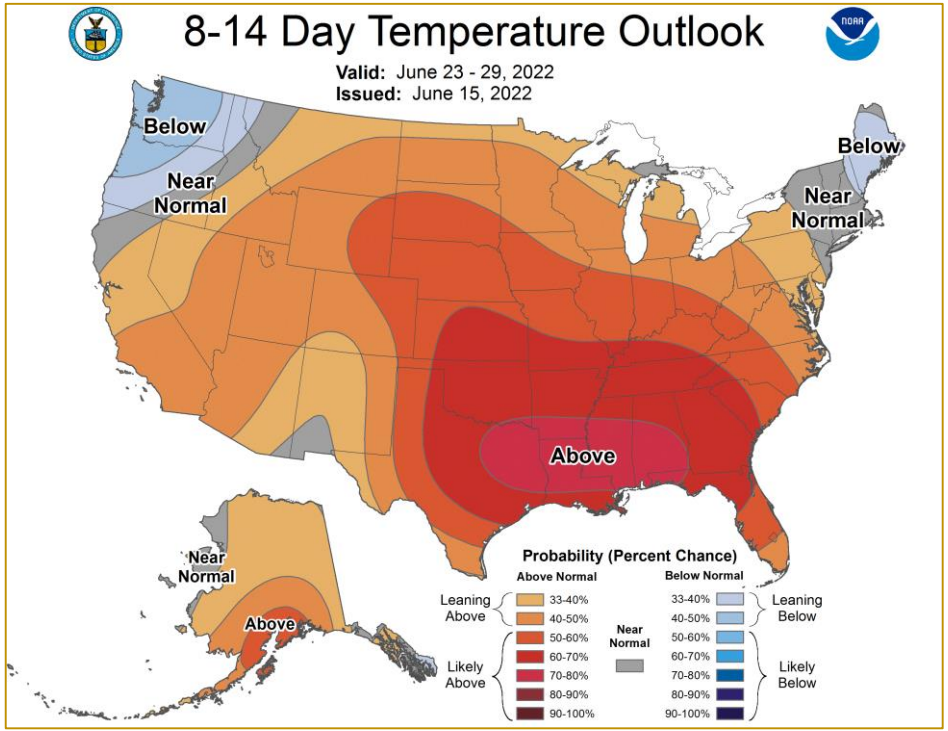
- *Low rain amounts over broad areas*
- *Highest rain predicted at NE-IA-MO – potential flooding risks*
- *ET expected to exceed precipitation*

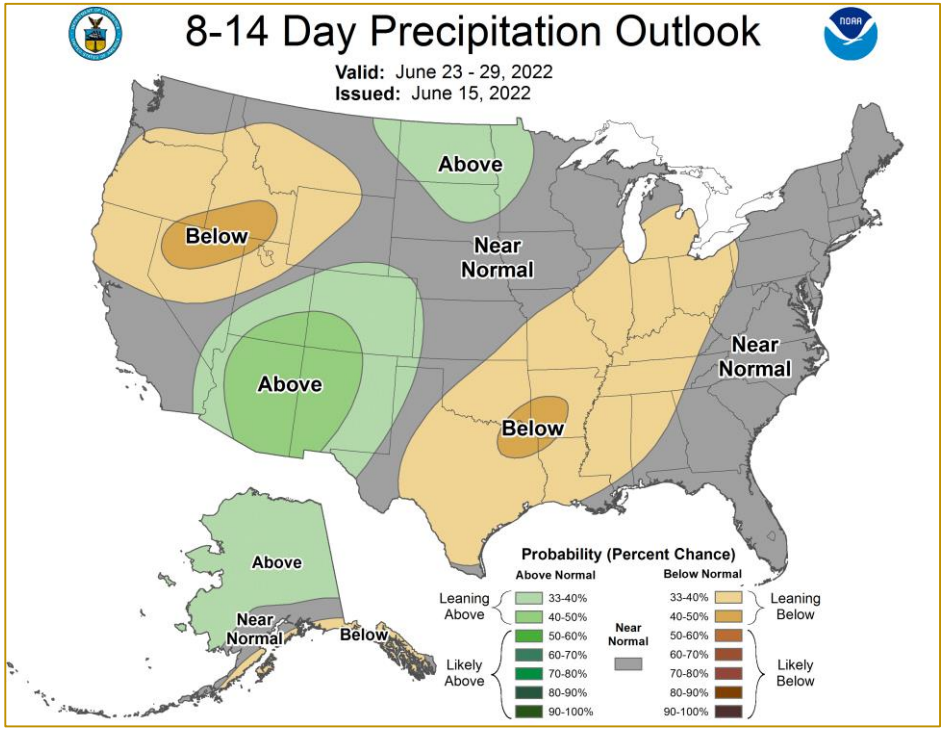
ET = evapotranspiration



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

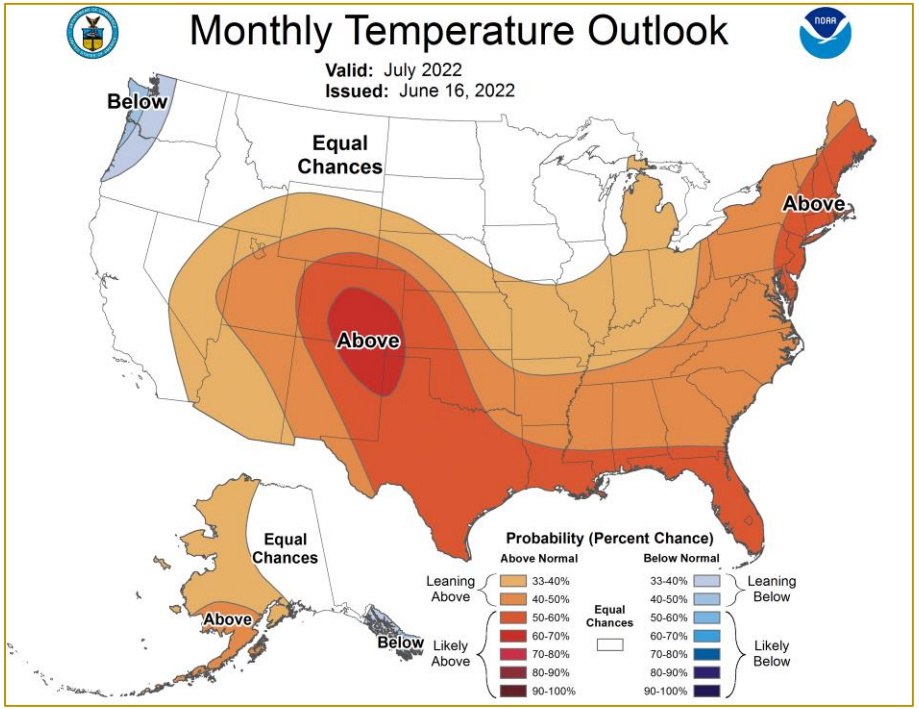
8-14 Day Outlooks

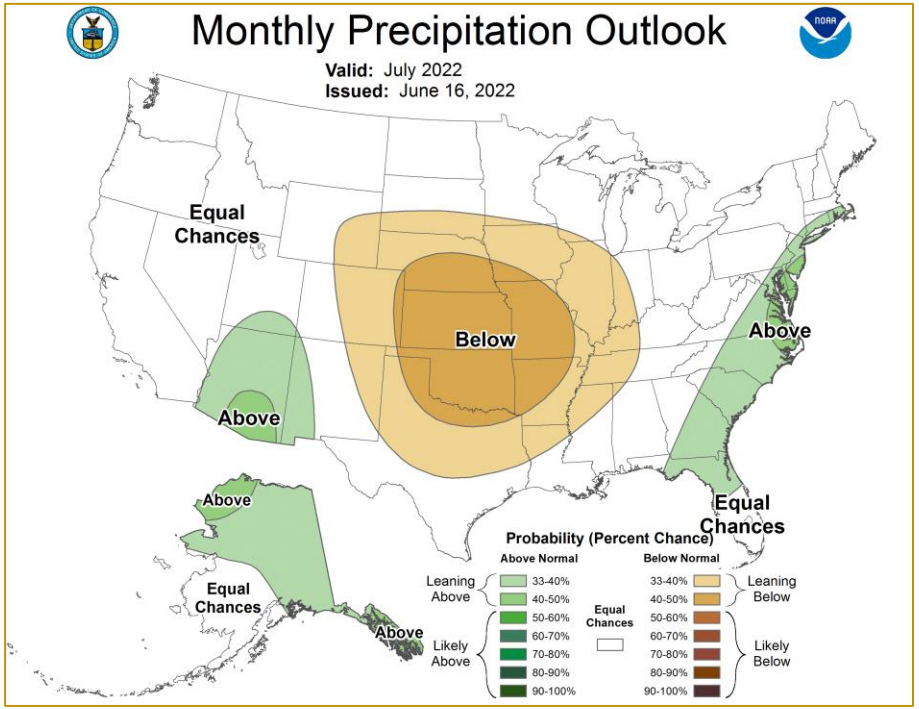




Source: http://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php

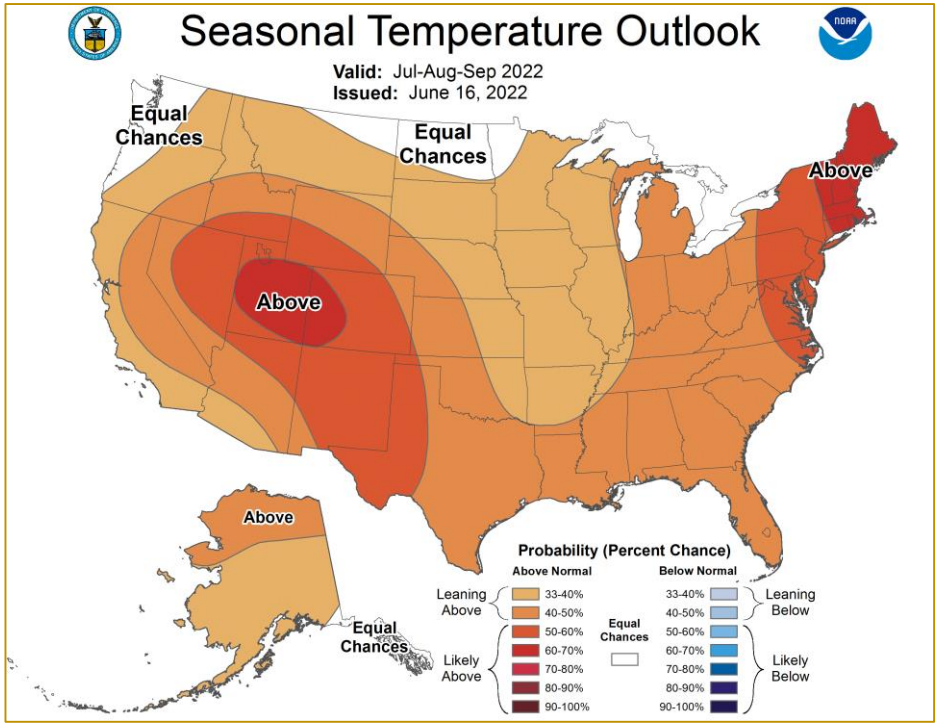
July Outlooks

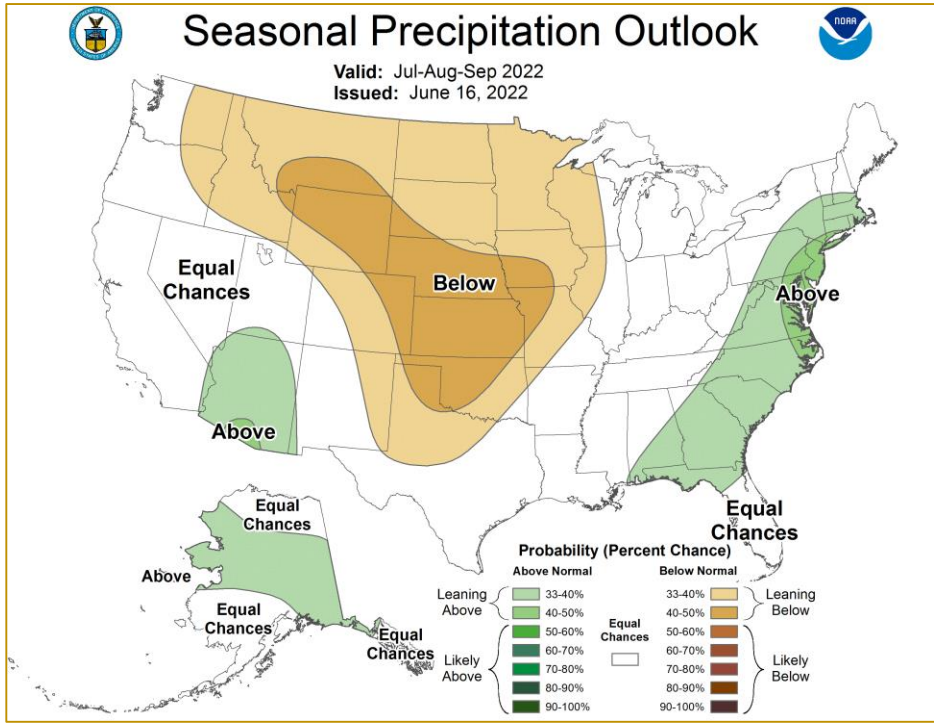




https://www.cpc.ncep.noaa.gov/products/predictions/814day/

July-August-September Outlooks





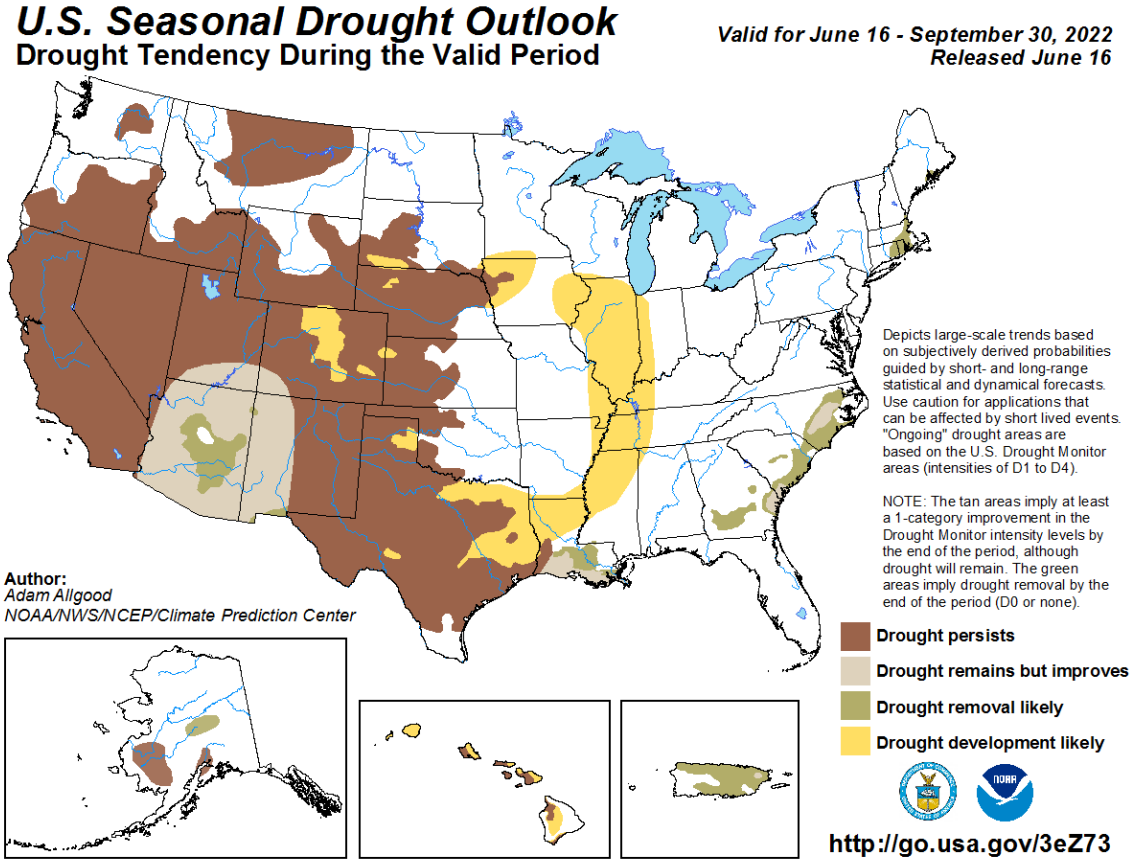
https://www.cpc.ncep.noaa.gov/products/predictions/long_range/

Drought Outlook

Drought development likely:

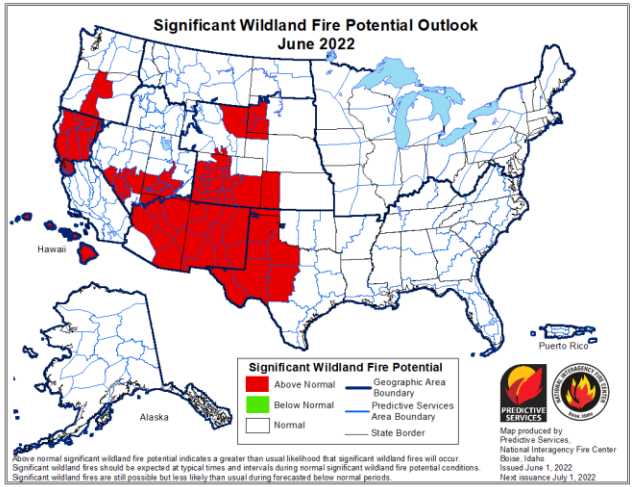
- *Northwest IA*
- *Eastern IA*
- *Illinois*

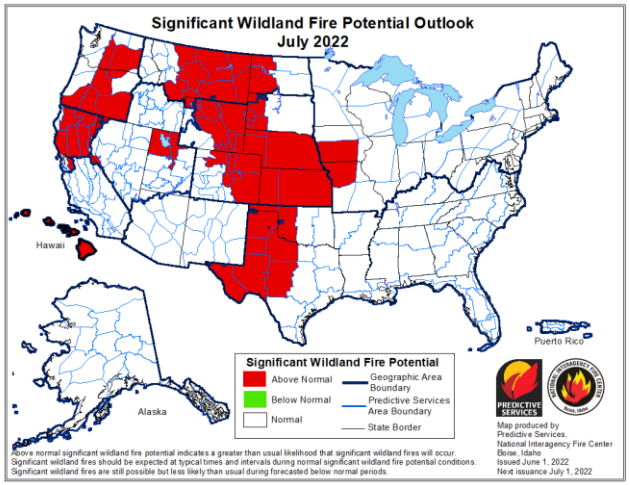
Development where soils are drier

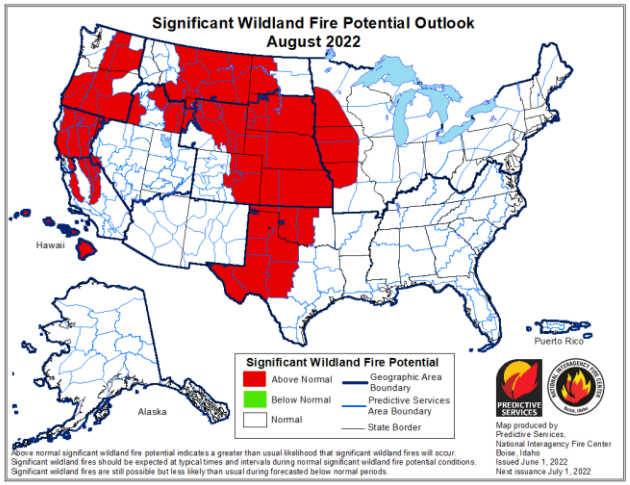


https://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.png

Wildland Fire Potential Outlooks







- High wildland fire danger expands in July, August
- High Plains states, MN, IA, MO most at risk

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

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Summary – Current Conditions

- **May temperatures were near normal in northern states; warmer in Midwest**
- **Precipitation near normal or slightly wetter than normal**
- **Where cooler and wetter → delayed planting**
- **Ongoing flooding issues for the Red River, James River, and Northern Minnesota**

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Summary - Outlooks

- **La Niña conditions persist through summer**

- **Increased probabilities of:**
  - **Warmer than normal average temperatures**
  - **Rapid intensification of drought**
  - **Convective / localized flooding**

Links

Today's and Past Recorded Presentations
https://mrcc.purdue.edu/multimedia/webinars.jsp
https://hprcc.unl.edu/webinars.php

NOAA's National Climatic Data Center: www.ncdc.noaa.gov
Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
Climate Portal: www.climate.gov
U.S. Drought Portal: www.drought.gov
National Drought Mitigation Center: http://drought.unl.edu/
USDA Climate Hubs https://www.climatehubs.usda.gov/
State climatologists: http://www.stateclimate.org
Regional climate centers: http://mrcc.purdue.edu and http://www.hprcc.unl.edu

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