

North Central Climate and Drought Outlook

July 21, 2022



Cool Summer Day on Lake Superior
Cook County: Minnesota
Courtesy: Pete Boulay

Pete Boulay, MNDNR State Climatology Office
Peter.Boulay@state.mn.us 651-296-4214



General Information

- **Providing climate services to the Central Region**
 - Collaboration Activity Between:
 - State Climatologists/American Association of State Climatologists (AASC)
 - NOAA NCEI/NWS/OAR/NIDIS
 - USDA Climate Hubs
 - Midwest and High Plains Regional Climate Centers
 - National Drought Mitigation Center
- **Next Regular Climate/Drought Outlook Webinar**
 - August 18, 2022 (1 PM CST): Presenter: Brian Fuchs
- **Recordings of Past Webinars**
- <https://mrcc.purdue.edu/multimedia/webinars.jsp>
- <http://www.hprcc.unl.edu/webinars.php>
- **Open for questions at the end**

Presentation Outline

- Recent Conditions
 - Temperature and precipitation ranks
 - 30-day temperature and precipitation
 - Modeled soil moisture
 - Drought
- Impacts
- Outlooks
 - El Niño-Southern Oscillation
 - Short-term
 - Rest of summer and autumn season



Dryness affecting corn: June 29, 2022
Tippecanoe County, Indiana
Courtesy: Melissa Widhalm



RECENT CONDITIONS

Soybeans

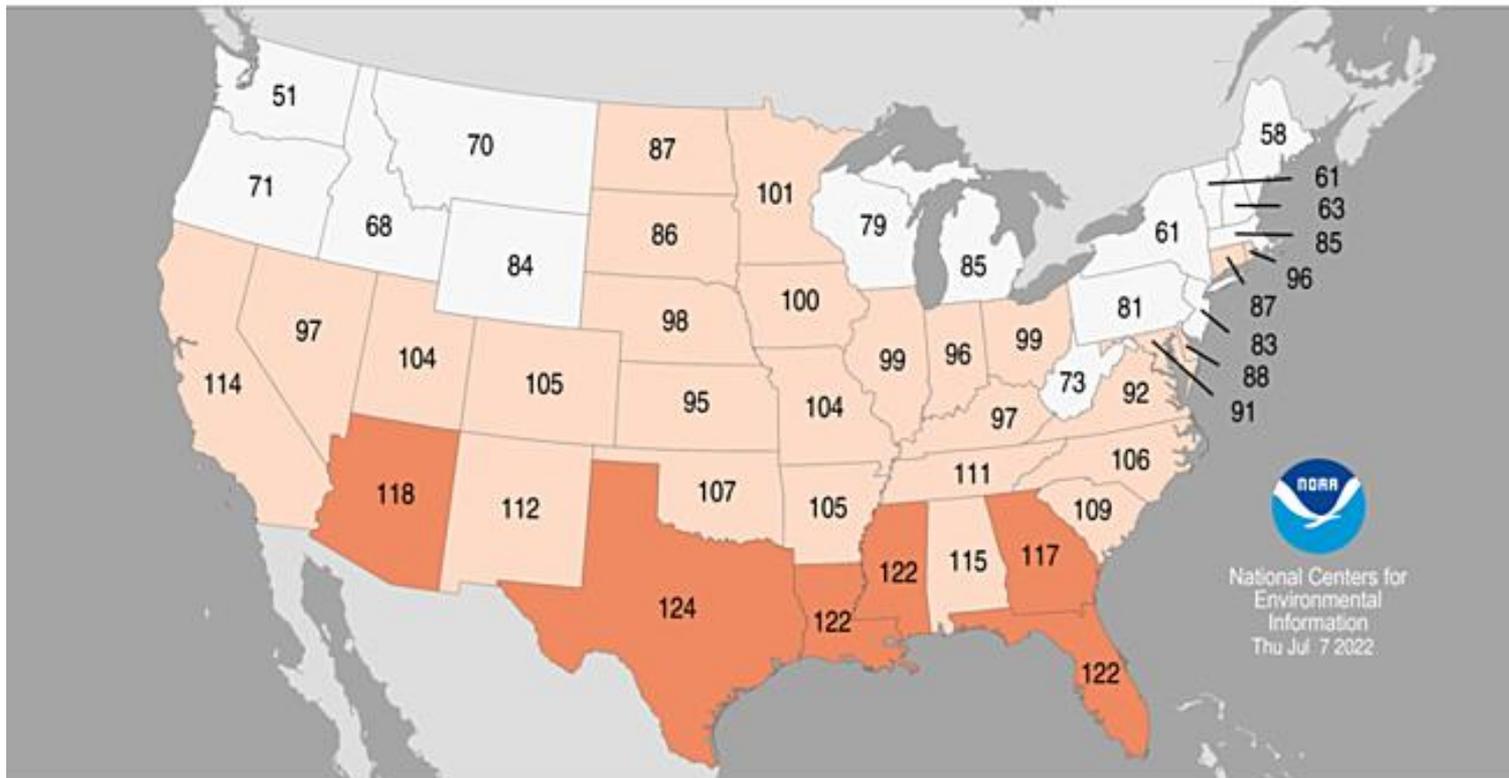
July 8, 2022

U of M St. Paul, MN

Courtesy: Pete Boulay

June 2022 Temperature Ranks

Statewide Average Temperature Ranks
June 2022
Period: 1895–2022



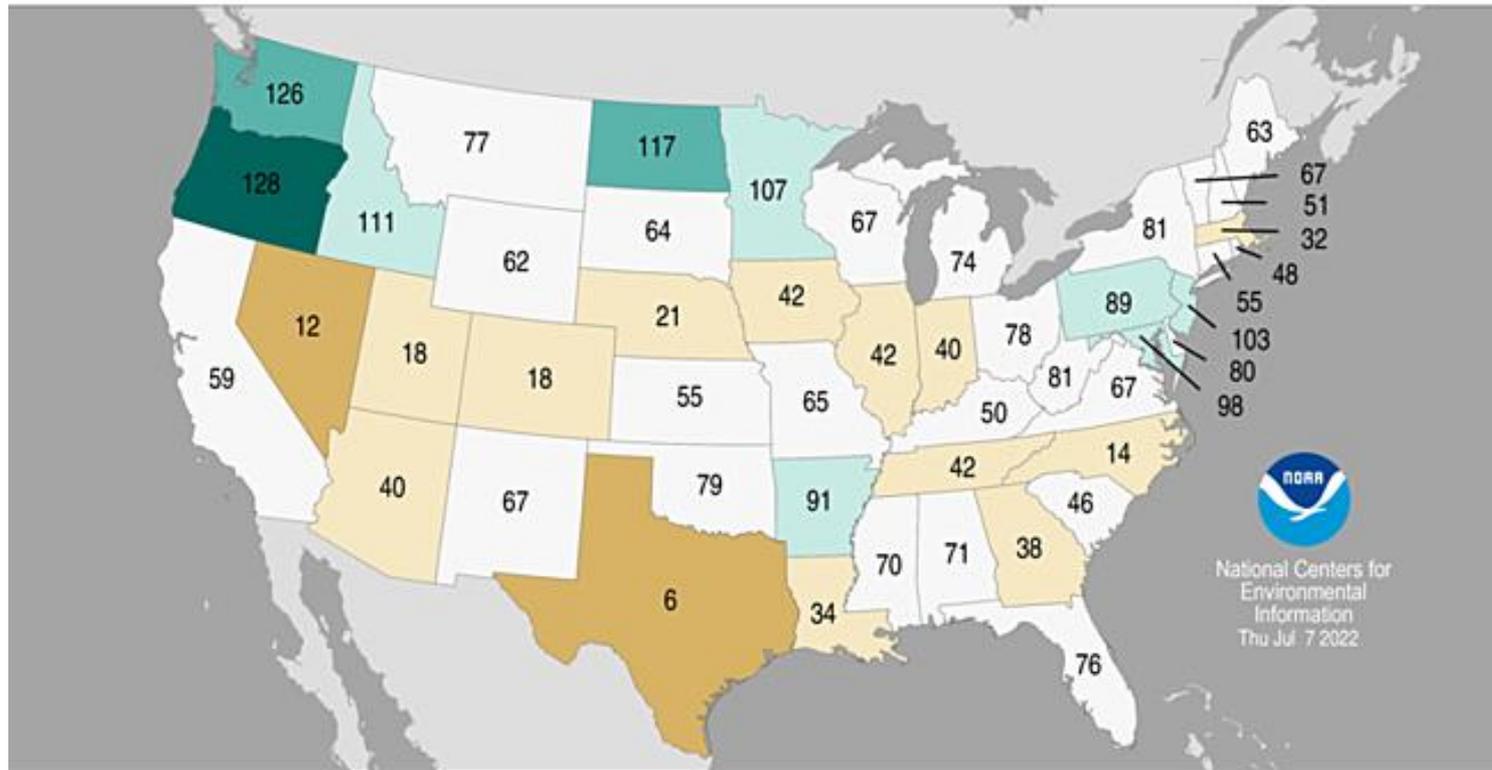
National Centers for
Environmental
Information
Thu Jul 7 2022



2022 April-June Precipitation Ranks

Statewide Precipitation Ranks

April – June 2022
 Period: 1895–2022

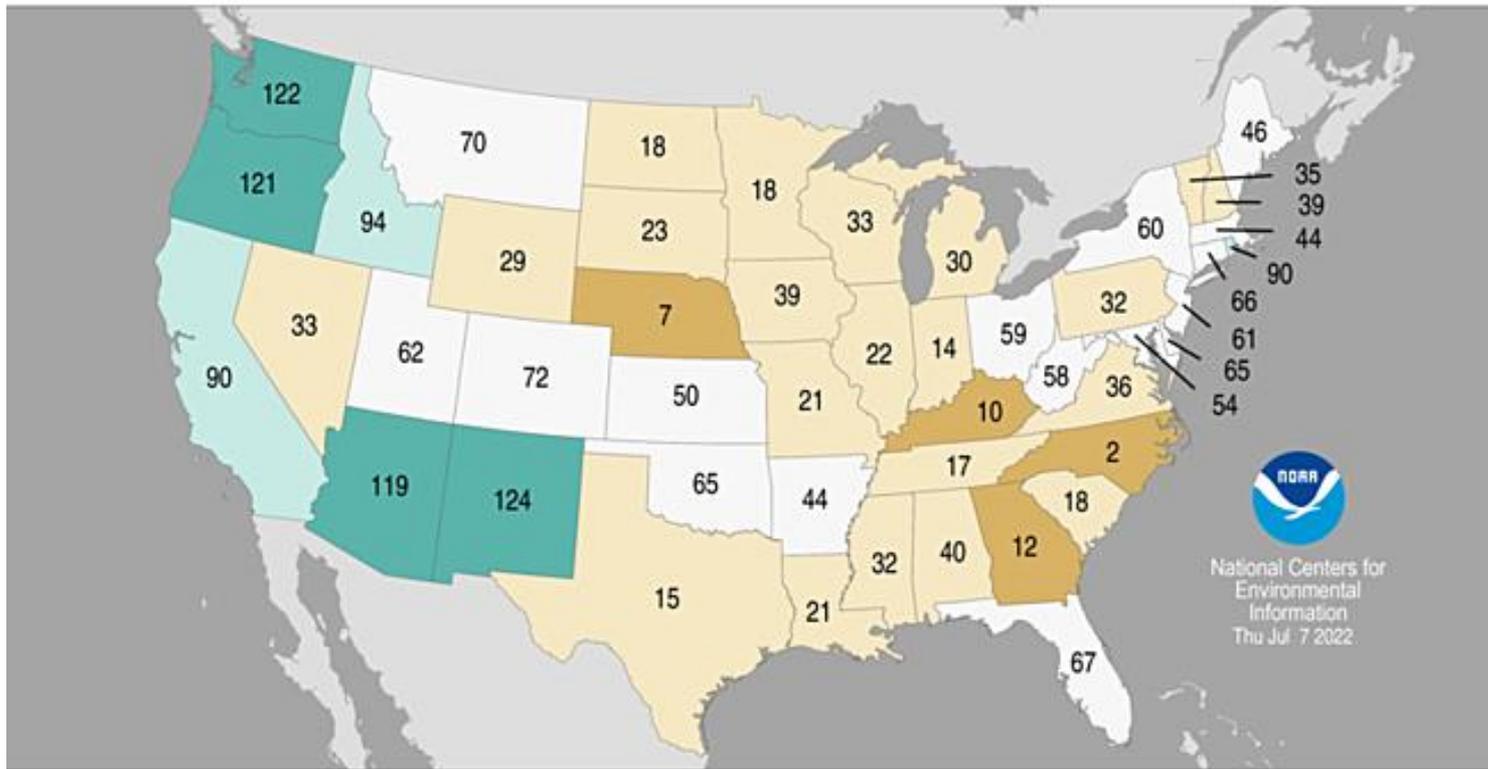


National Centers for
 Environmental
 Information
 Thu Jul 7 2022



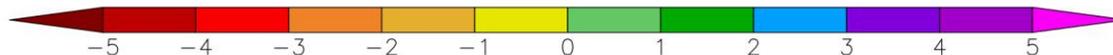
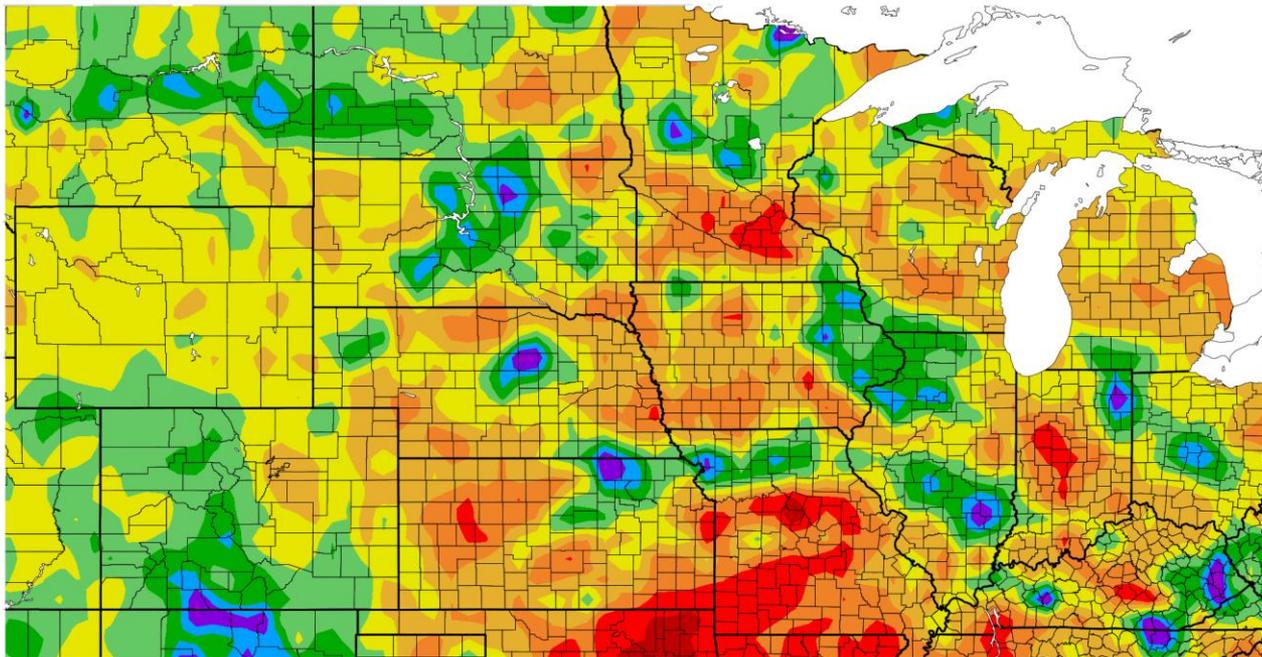
June 2022 Precipitation Ranks

Statewide Precipitation Ranks
 June 2022
 Period: 1895–2022



Dryness continued into July, with exceptions.

Departure from Normal Precipitation (in)
6/21/2022 – 7/20/2022



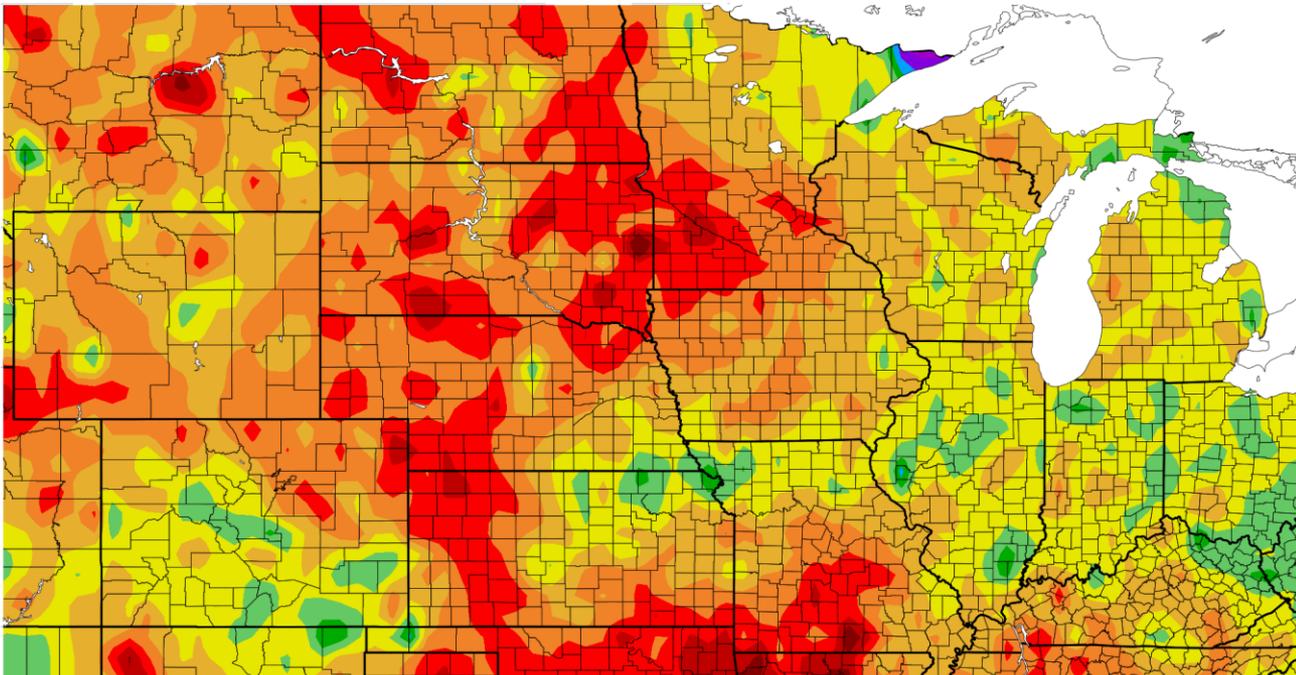
Generated 7/21/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

Near normal temperatures east to very warm west.

Departure from Normal Temperature (F)
6/21/2022 – 7/20/2022



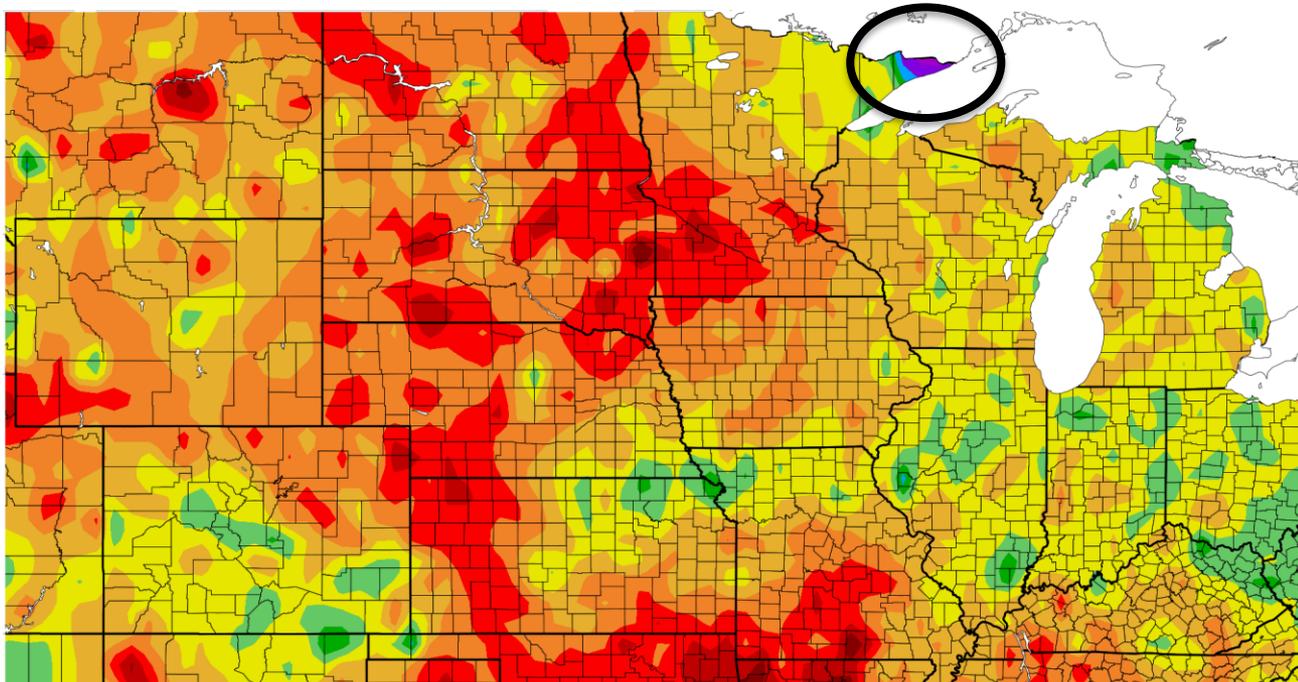
Generated 7/21/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

Cook County Minnesota received free AC.

Departure from Normal Temperature (F)
6/21/2022 – 7/20/2022



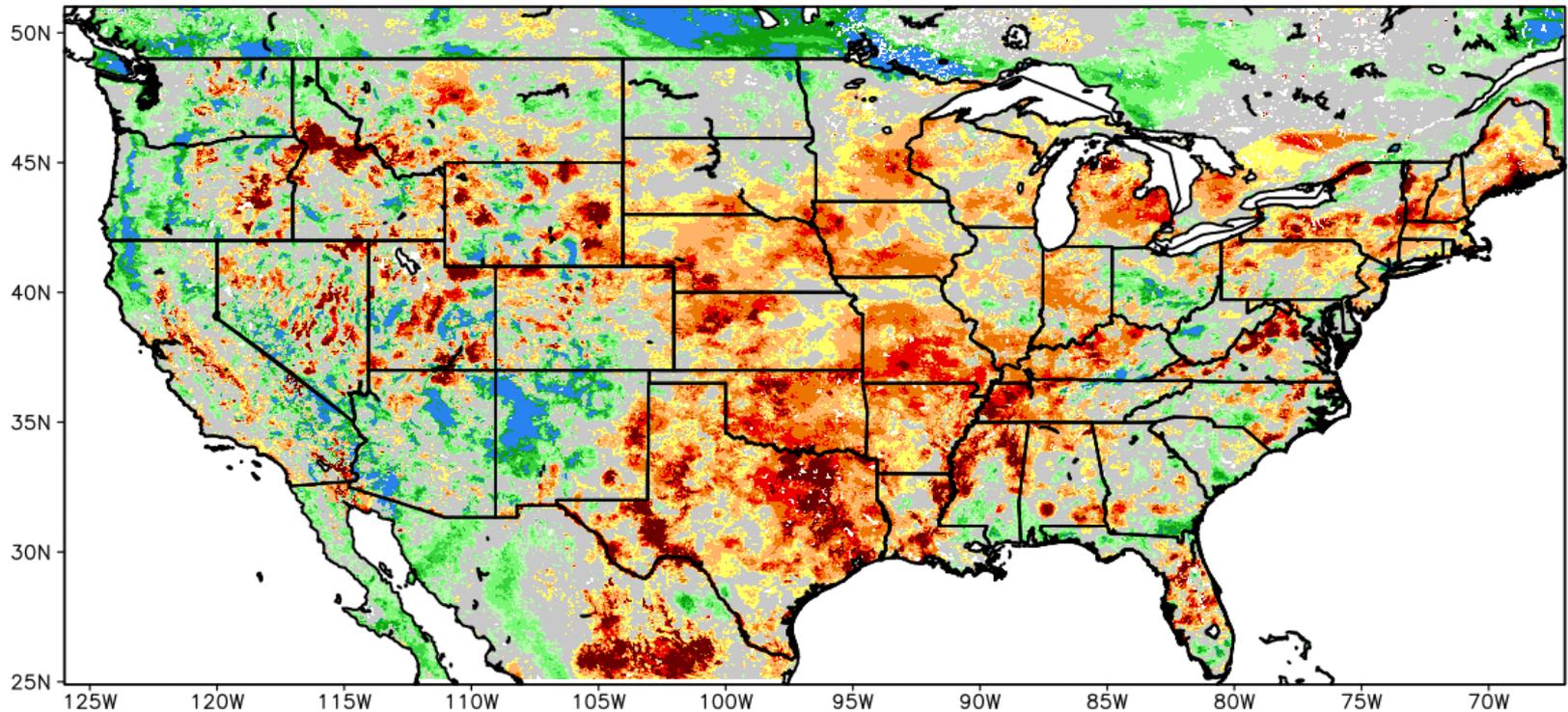
Generated 7/21/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

Calculated Soil Moisture Percentiles

SPoRT-LIS 0-100 cm Soil Moisture percentile valid 19 Jul 2022



NOTE

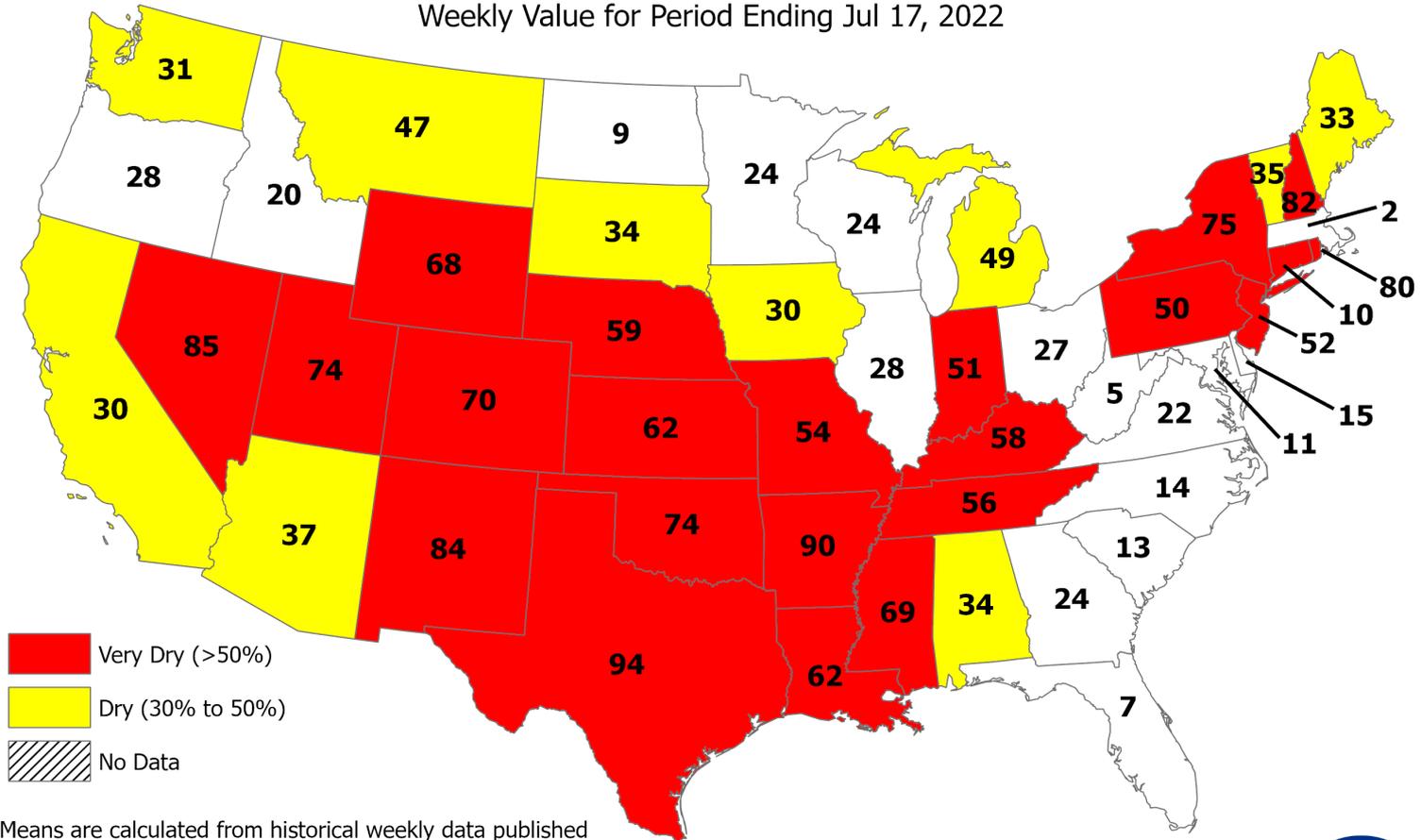
Experimental

https://weather.msfc.nasa.gov/cgi-bin/basicLooper.pl?category=lis_CONUS&initialize=first®ex=vsm0-100percent_20220719

USDA Topsoil Moisture by Short-Very Short

Percent of State Area

Weekly Value for Period Ending Jul 17, 2022



Very Dry (>50%)

Dry (30% to 50%)

No Data

Means are calculated from historical weekly data published by USDA/NASS using the closest date to the equivalent date for this year.

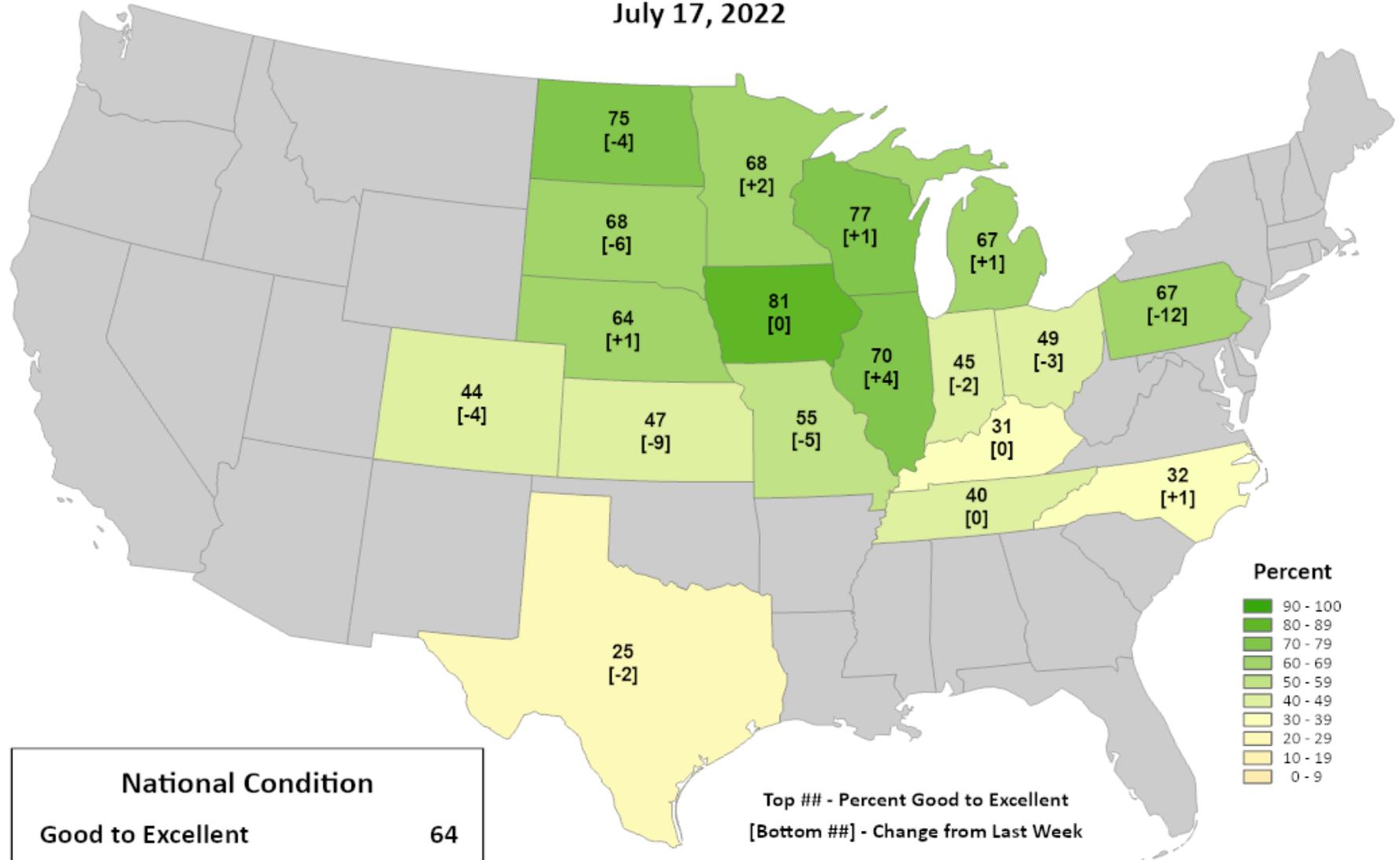
Results are based on the short and very short percentages of topsoil moisture (upper 6 inches) reported by the USDA. Reports are based on subjective observations.



Corn Conditions

Percent Good to Excellent

July 17, 2022

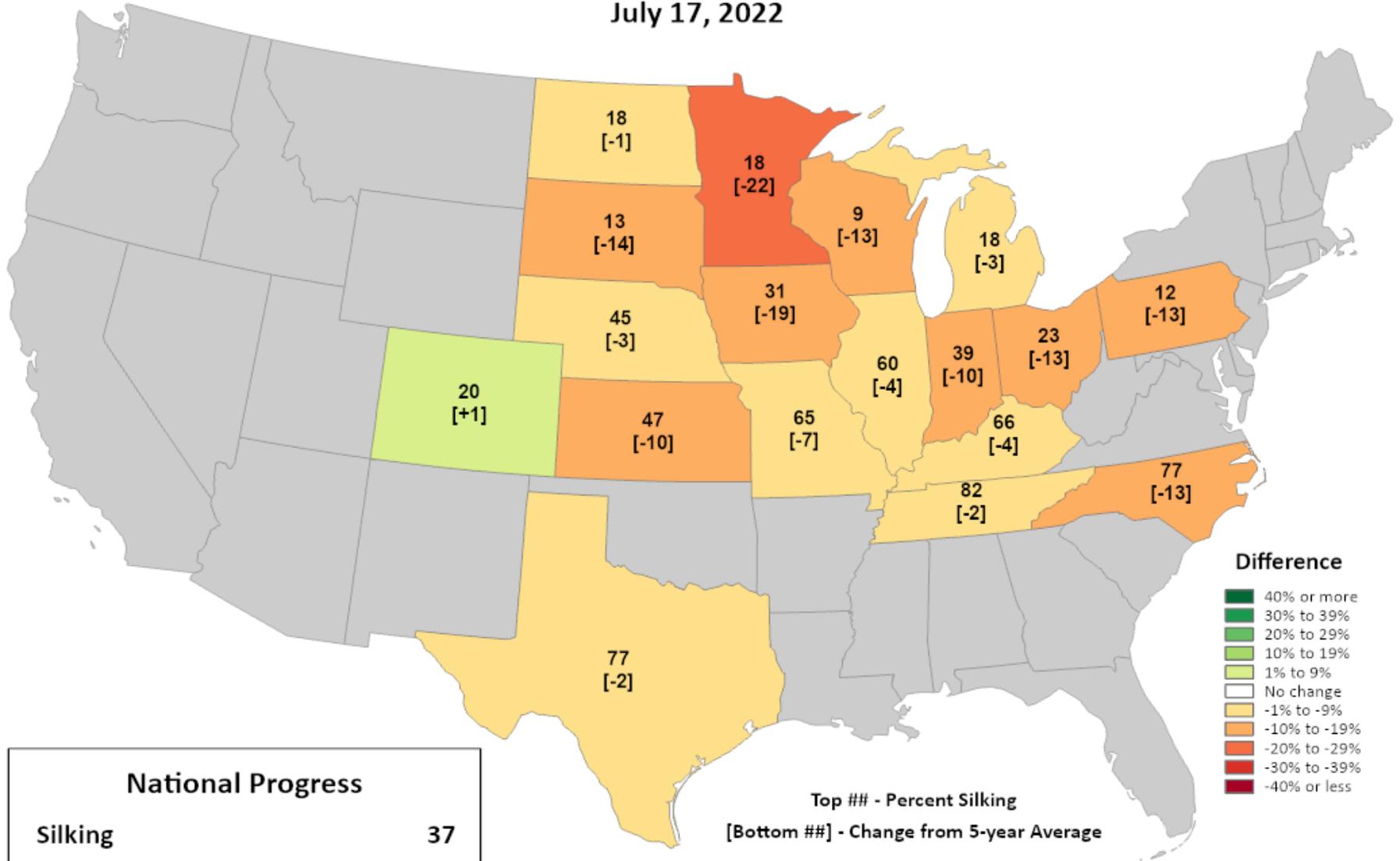


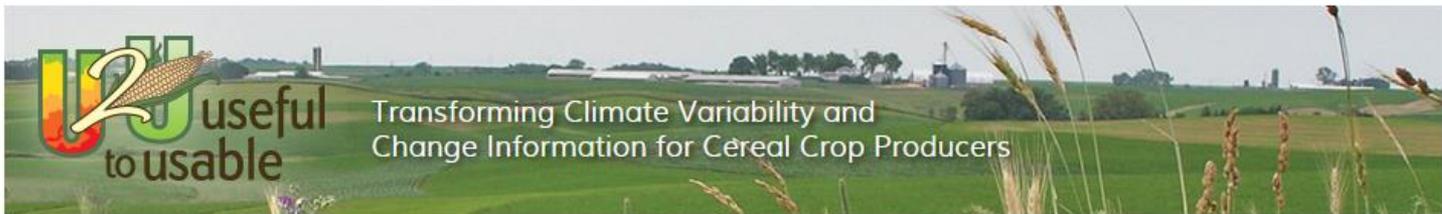
National Condition	
Good to Excellent	64
Change from Last Week	0

Corn Progress

Percent Silking

July 17, 2022





DECISION DASHBOARD

MEDIA CENTER

NEWSLETTER

ABOUT US

U2U Decision Support Tools - Corn GDD

Welcome to the Corn Growing Degree Day (GDD) decision support tool.

This tool puts current conditions into a 30-year historical perspective and offers trend projections through the end of the calendar year. GDD projections, combined with analysis of historical analog data, can help you make decisions about:

- Climate Risks – Identify the likelihood of early and late frosts/freezes.
- Activity Planning – Consider corn hybrid estimated physiological maturity requirements, along with GDD projections when making seed purchasing and other growing season decisions.
- Marketing – Look at historical and projected GDD when considering forward pricing and crop insurance purchases.

While this tool is not meant to be a crystal ball, data and information derived from the tool can be used to make helpful inferences about current conditions, especially when combined with personal experience and localized knowledge. Please note that data is currently limited to states within the U2U project area plus Kentucky & Tennessee.

Map Animations

Feedback?

About GDD

To get started, click on any location within the gray area of the map or use the search feature.



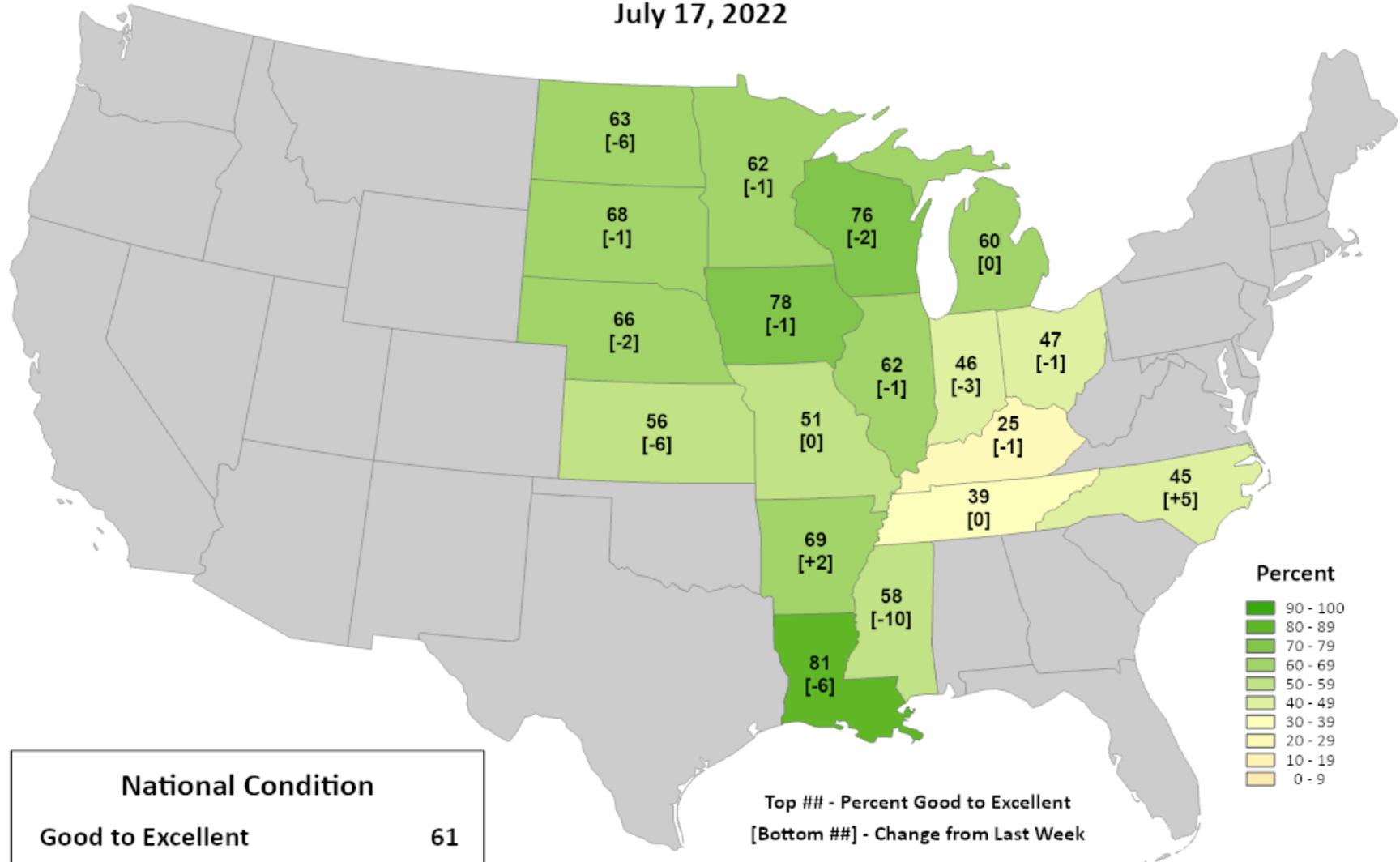
https://mygeohub.org/groups/u2u/purdue_gdd

Soybean Conditions

Percent Good to Excellent

July 17, 2022

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

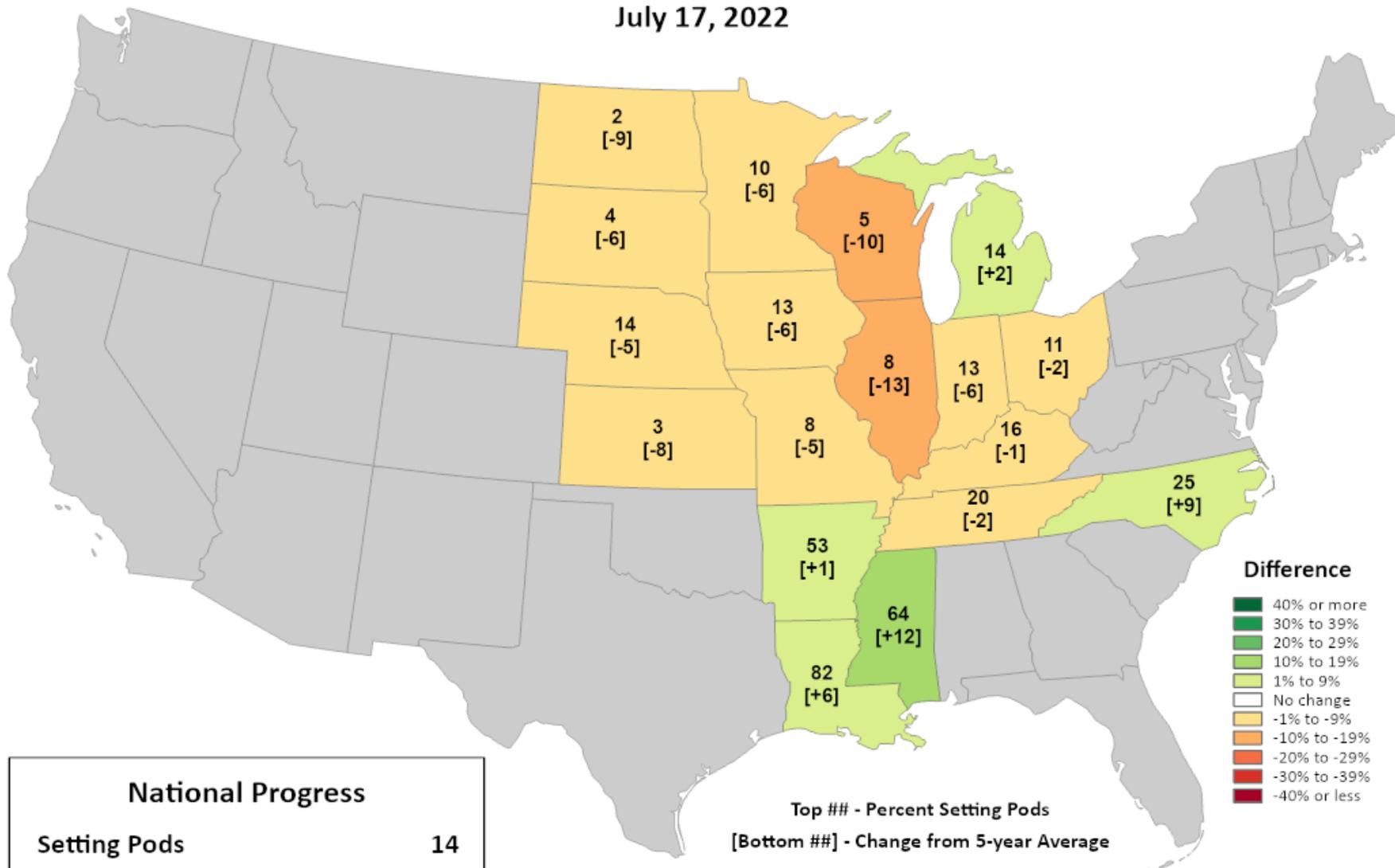


Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

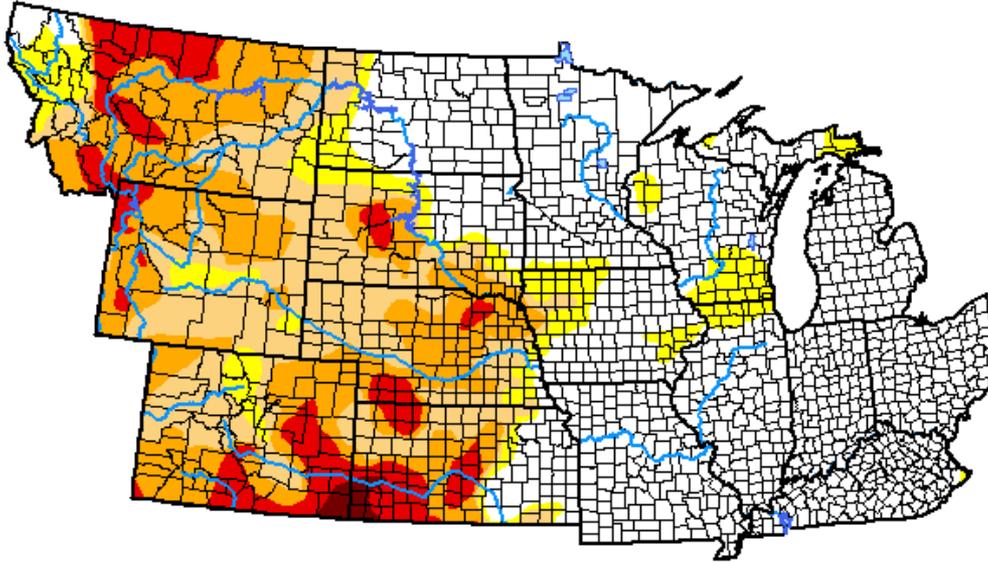
Soybeans Progress

Percent Setting Pods

July 17, 2022



US Drought Monitor... Past Two Months

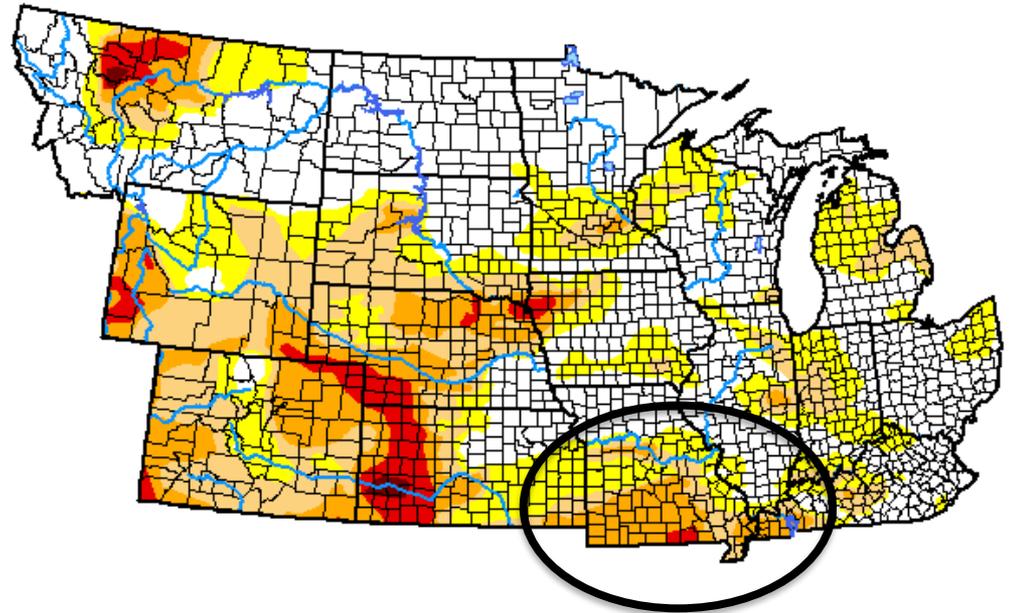


May 17, 2022

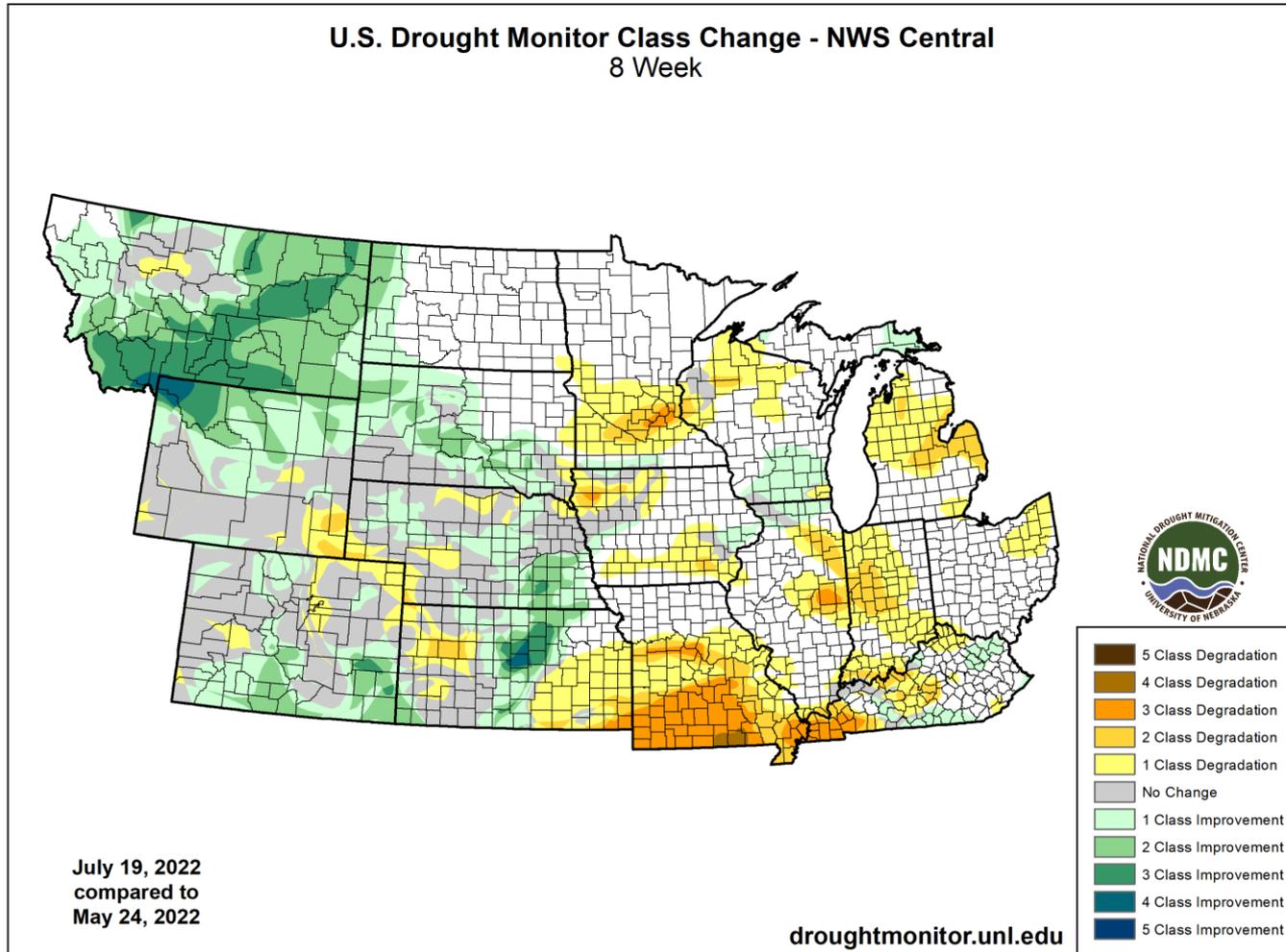
<http://droughtmonitor.unl.edu>

Southern Missouri is having a flash drought and had a one category degradation in the Drought Monitor over the past week.

July 19, 2022



US Drought Monitor... Past Two Months





Cascade River flowing out into Lake Superior: Cook County, MN :
July 6, 2022

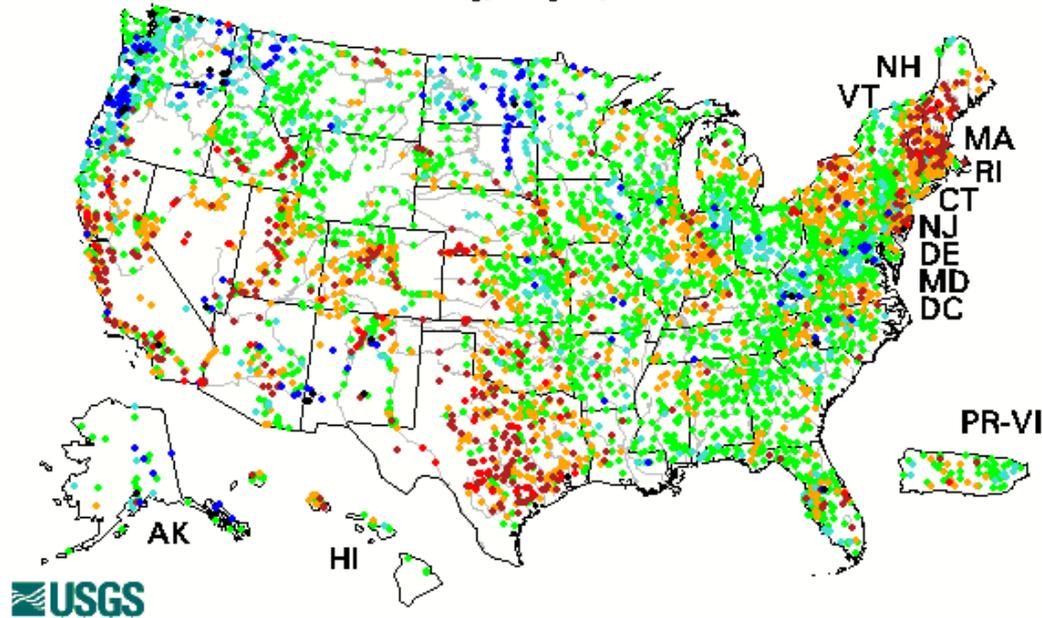
Courtesy Pete Boulay

RIVERS AND STREAMS

Map of 28-day average streamflow compared to historical streamflow for the day of the year (United States)

United States or Water-Resources Regions

Tuesday, July 19, 2022



Search USGS streamgage

Choose a data retrieval option and select a location on the map

- List of all stations in state, State map, or Nearest stations

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

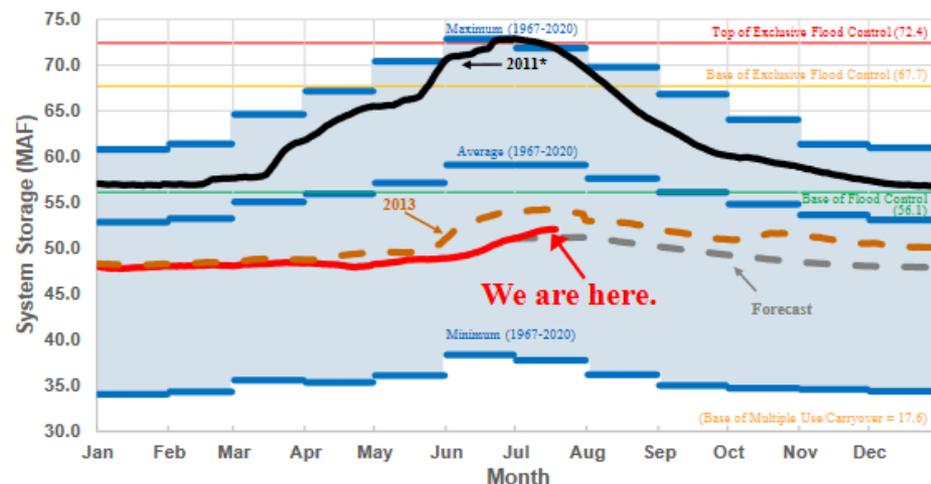
<https://waterwatch.usgs.gov/index.php?r=us&m=pa28d&w=map>



Mainstem Reservoir Status:

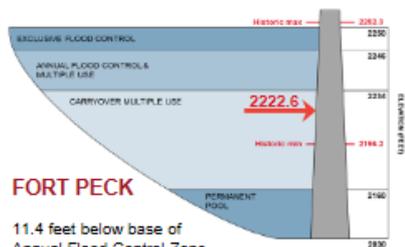
- ❖ System storage is 52.1 MAF, 0.2 MAF more than last week (upper right quadrant). Current and projected System storage is shown on the plot.
- ❖ For current and forecasted pool levels and releases for each mainstem project ([click here](#)).
- ❖ The Gavins Point release will be adjusted to meet the current service level of 500 cfs above minimum service, per the Master Manual. Releases are currently 22,500 cfs. The release schedule for Gavins Point is provided in our daily forecast ([click here](#)).
- ❖ Mountain snowpack in both reaches has melted. Most of the mountain snowpack melted during June.
- ❖ Extreme heat is expected to continue to impact the lower Basin, and a rapid onset of drought conditions is possible in some areas (lower right quadrant).
- ❖ Refer to the 3-Week Forecast ([click here](#)) for the most up-to-date System information – pool levels, inflows, and releases.

System Storage Comparison



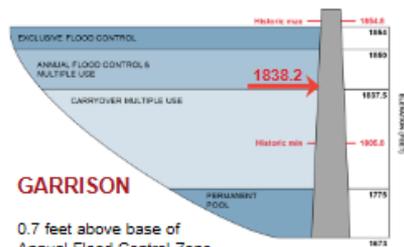
*In January 2011, the Base of Flood Control was 56.8 MAF, and the Top of Exclusive Flood Control was 73.1 MAF.

Current Reservoir Levels



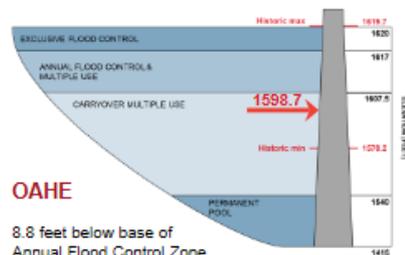
FORT PECK

11.4 feet below base of Annual Flood Control Zone.



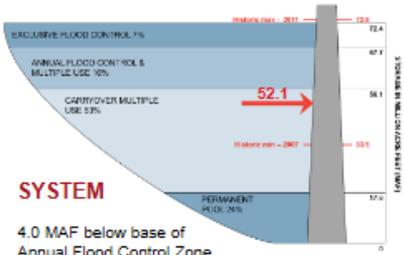
GARRISON

0.7 feet above base of Annual Flood Control Zone.



OAHE

8.8 feet below base of Annual Flood Control Zone.



SYSTEM

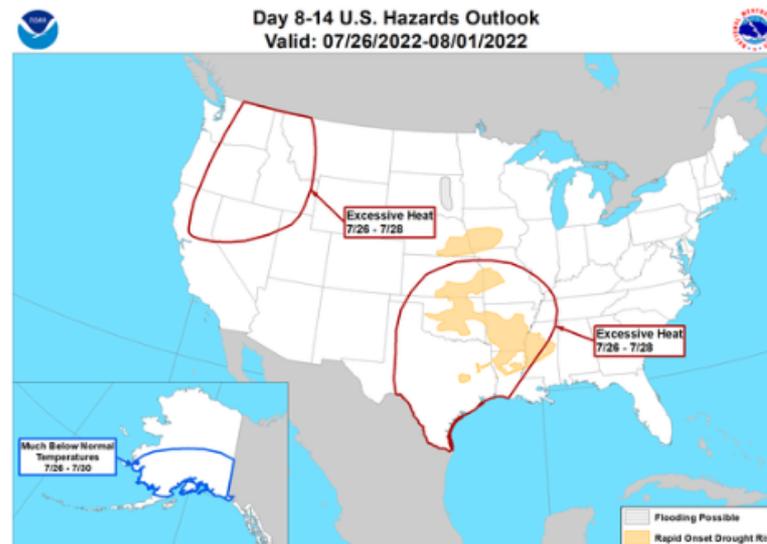
4.0 MAF below base of Annual Flood Control Zone.

[Click Here](#) for Latest 3-Week Forecast

[Click Here](#) for Comparison Plots

NOAA U.S. Hazards Outlook

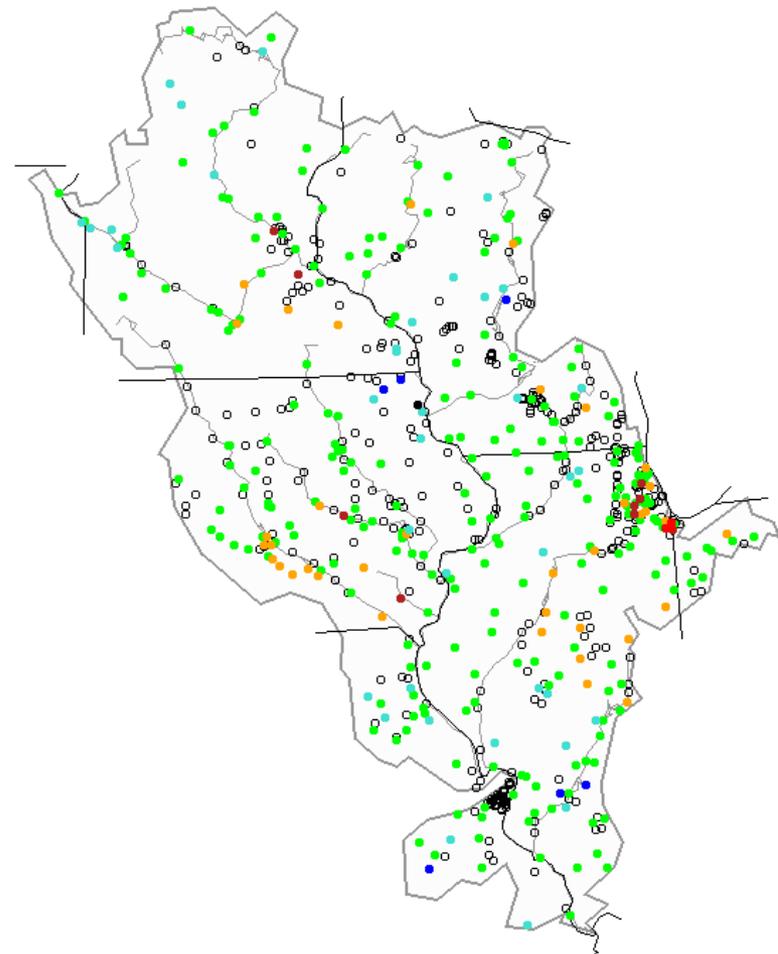
Day 8-14 U.S. Hazards Outlook
 Valid: 07/26/2022-08/01/2022



Climate Prediction Center
 Made: 07/18/2022 3PM EDT

Follow us:
www.cpc.ncep.noaa.gov

- Mississippi River
- Map of real time streamflow.
- Mississippi in normal range, smaller streams vary



Search USGS streamgage

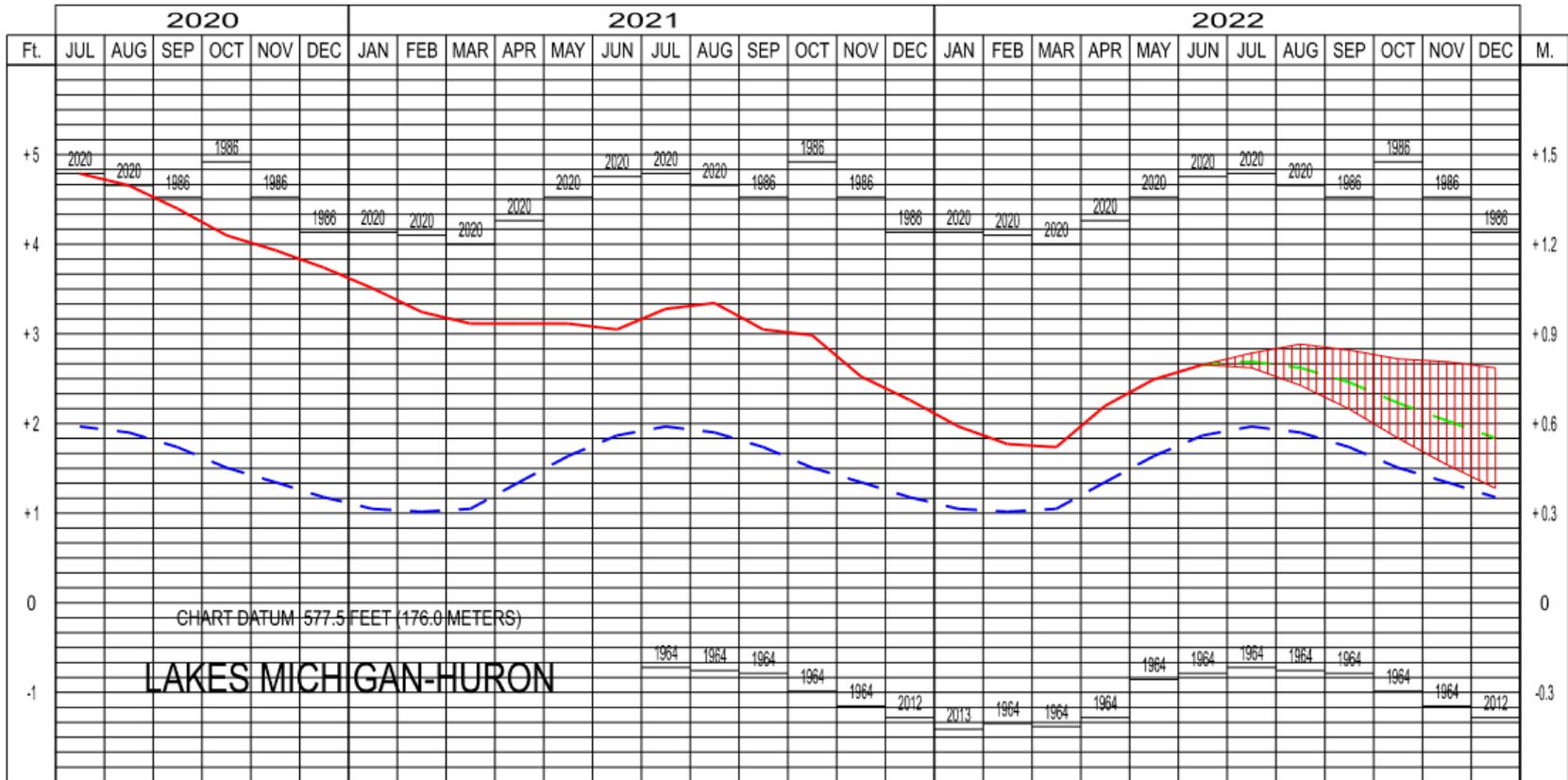
Choose a data retrieval option and select a location on the map

Single station
 Peak flow

Explanation - Percentile classes							
							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

https://waterwatch.usgs.gov/new/index.php?id=real&sid=w__map&r=07

LAKES MICHIGAN-HURON WATER LEVELS - JULY 2022



State Impacts



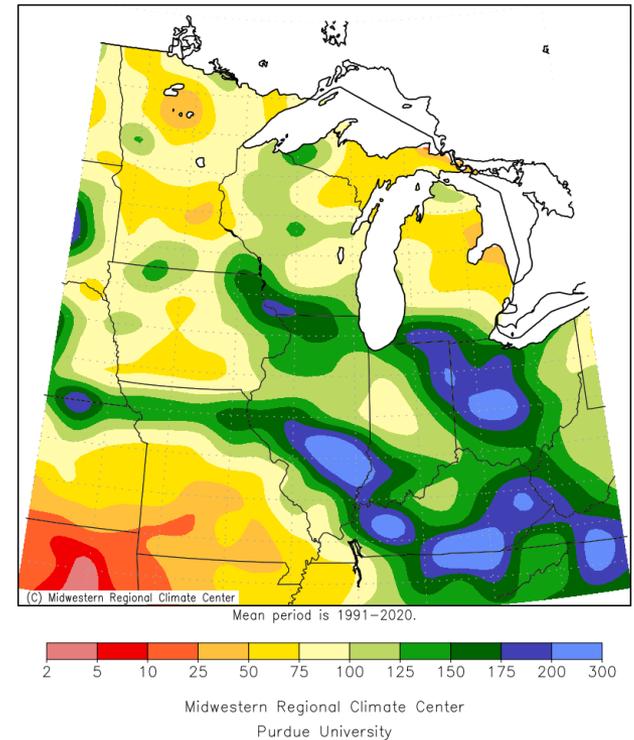
Road buckling in Champaign Illinois: July 6, 2022
-Courtesy WCIA News



Dried up pond in Clark County, Kansas
-Courtesy Chip Redmond

- Kentucky and Ohio
 - Drought problems in OH after spring wetness.
 - Temperatures not too bad.
 - Smaller than average algal bloom predicted for lake Erie.
 - Drought developing in Western Kentucky.

Accumulated Precipitation: Percent of Mean
July 1, 2022 to July 19, 2022

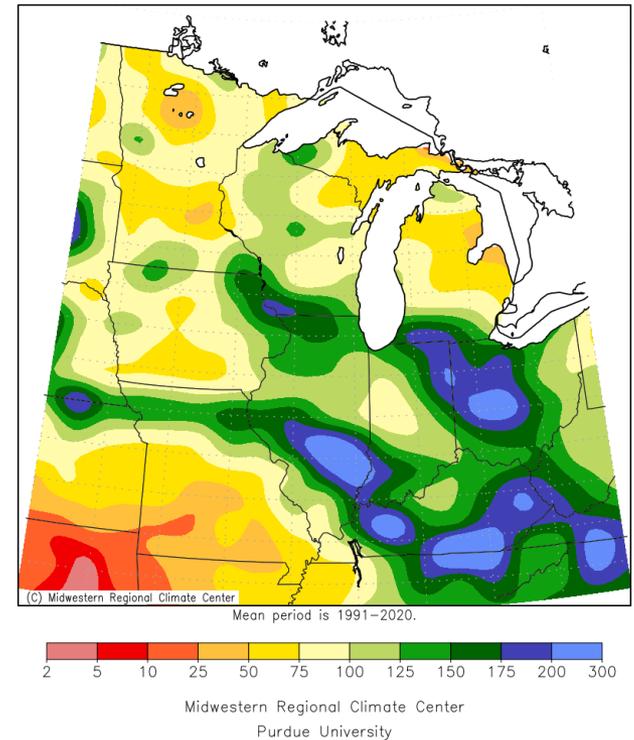


- Indiana
 - Rapid drying in June, some beneficial rains in July.
 - Earlier planted corn doing better than late.

Tree showing stress
and brown lawn.
-Courtesy Melissa
Widhalm

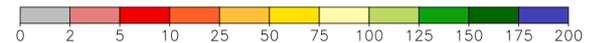
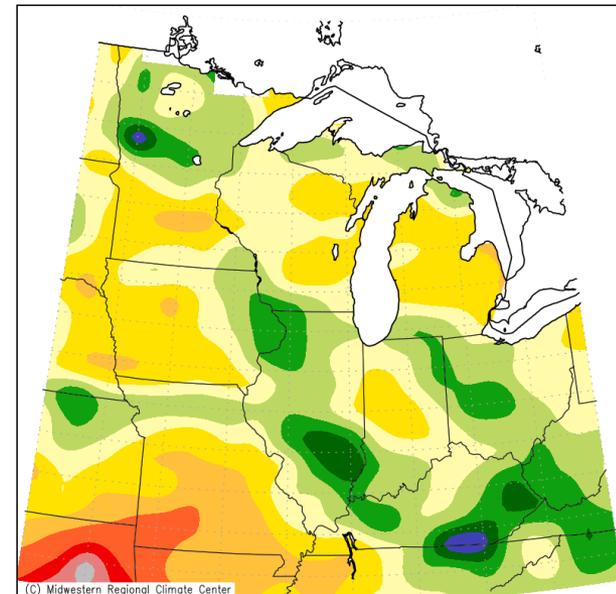


Accumulated Precipitation: Percent of Mean
July 1, 2022 to July 19, 2022



- Michigan
 - Dry last 30 days, except far north and in the UP.
 - Temperatures near normal last 30 days.

Accumulated Precipitation: Percent of Mean
June 20, 2022 to July 19, 2022



- Illinois
 - Champaign-Urbana 4th driest June on record. Mixed drought impacts on crops.
 - 70+ mph wind gusts with multiple rounds of storms in Northern Illinois.



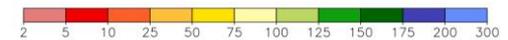
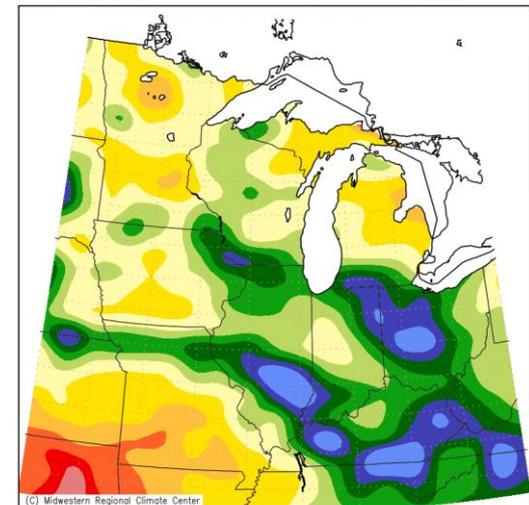
*Crispy Lawn in Champaign, IL
Courtesy: Trent Ford*



*Storm Damage: NW of Rockford, IL
July 4, 2022.
Courtesy: Toni Wasson*

- Iowa and Missouri
 - Iowa crops look good. Corn is tasseling, a bit of stress in corn north part of Iowa.
 - July 5th derecho brought needed rain to northern Iowa.

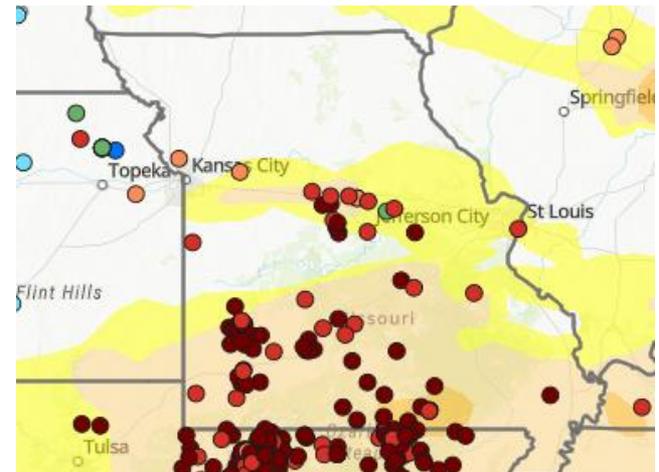
Accumulated Precipitation: Percent of Mean
July 1, 2022 to July 19, 2022



- Iowa and Missouri

- Iowa crops look good. Corn is tasseling, a bit of stress in corn north part of Iowa.
- July 5th derecho brought needed rain to northern Iowa.
- Southern Missouri is in Moderate to Severe Drought with many impacts noted on vegetation.

Drought Condition Monitoring Reports
*Courtesy: National Drought Mitigation
Center, University of Nebraska*



- Minnesota
 - Central and north sufficient moisture
 - Top two feet of soil drying out southwest
 - Some beneficial rains in south July 6 and July 14, really helped corn and soybeans.

Small, but intense thunderstorm near
Elk River, Minnesota: July 12, 2022
Courtesy: Fred Bowen: Minnesota DNR

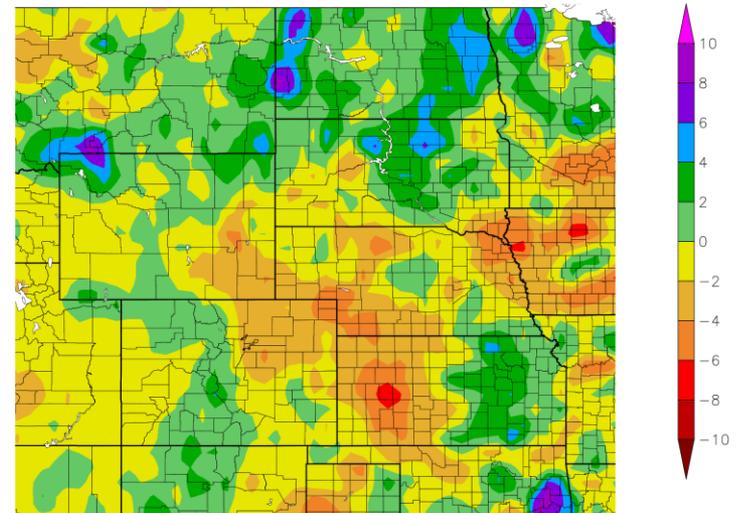


- South and North Dakota
 - North Dakota: things are quite green.
 - Precipitation over past 90 days still a surplus.
 - South Dakota: hit or miss precipitation last 30 days and quite warm.
 - Drought issues along border with Nebraska.

90 -Day departure of normal precipitation

Courtesy: High Plains Regional Climate Center

Departure from Normal Precipitation (in)
4/21/2022 – 7/19/2022



- **Kansas and Nebraska**

- Hot and dry, with extreme heat 20+ max of 100 or more in western Kansas in July. Warmest July on record in places?
- Elevated fire risk.
- Sorghum stressed in southwestern Kansas, ponds dry.

Desiccated Sorghum in Haskell County
in southwest Kansas.

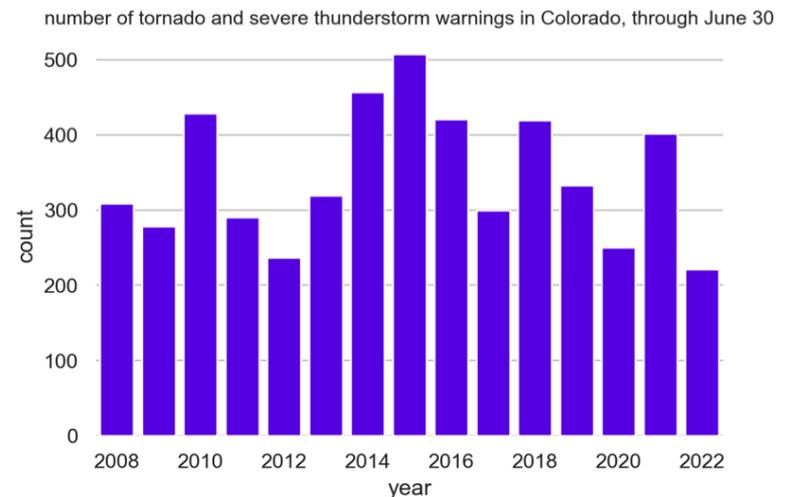
July, 2022

Courtesy: Chip Redmond



- Colorado
 - Hit with heat extremes. One of hottest heat waves on record. Record high minimums.
 - Heavy rains fell on Cameron Peak Fire Burn Scar on July 15 caused two deaths.
 - Counts of severe thunderstorm warnings though June 30 are lowest in fifteen years.

Colorado Severe
Thunderstorm Warnings
Courtesy: Becky Bolinger

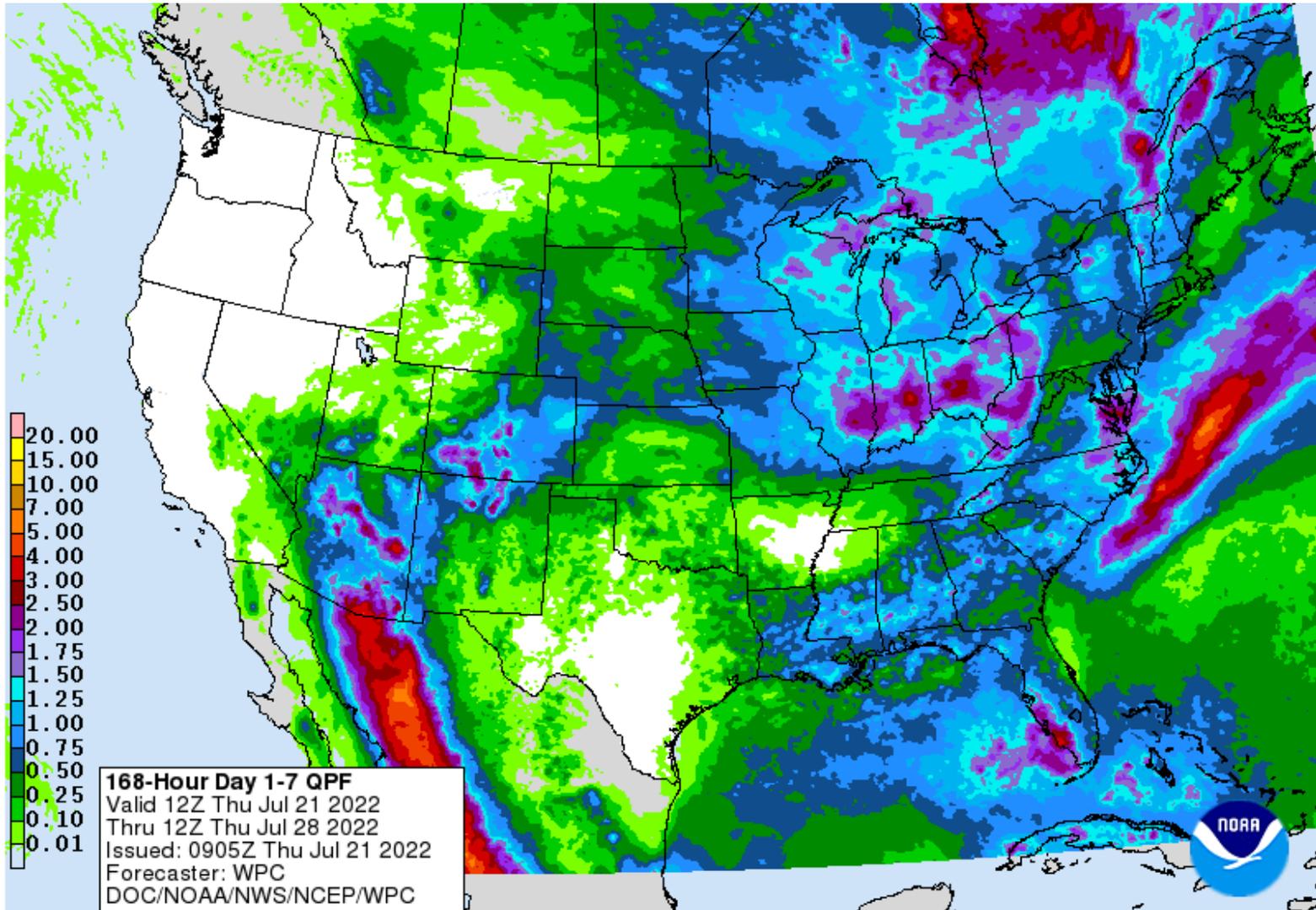


Climate Outlooks

- 7-day QPF
- 8-14 day outlook
- August temperature and precipitation
- Sep-Nov temperature and precipitation

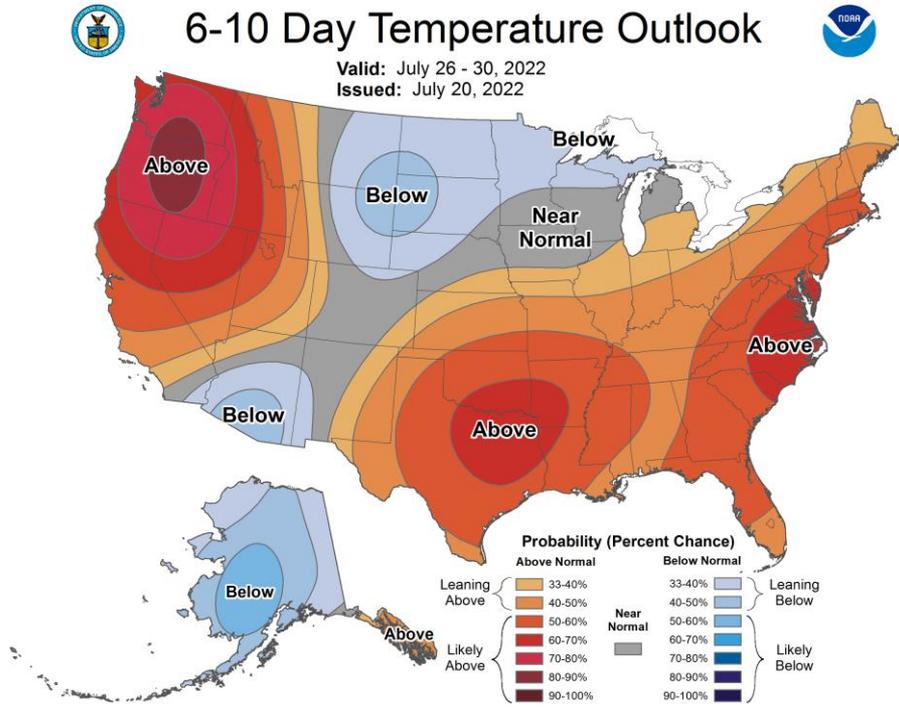
7-day Quantitative Precipitation Forecast

Valid: 21-28 July

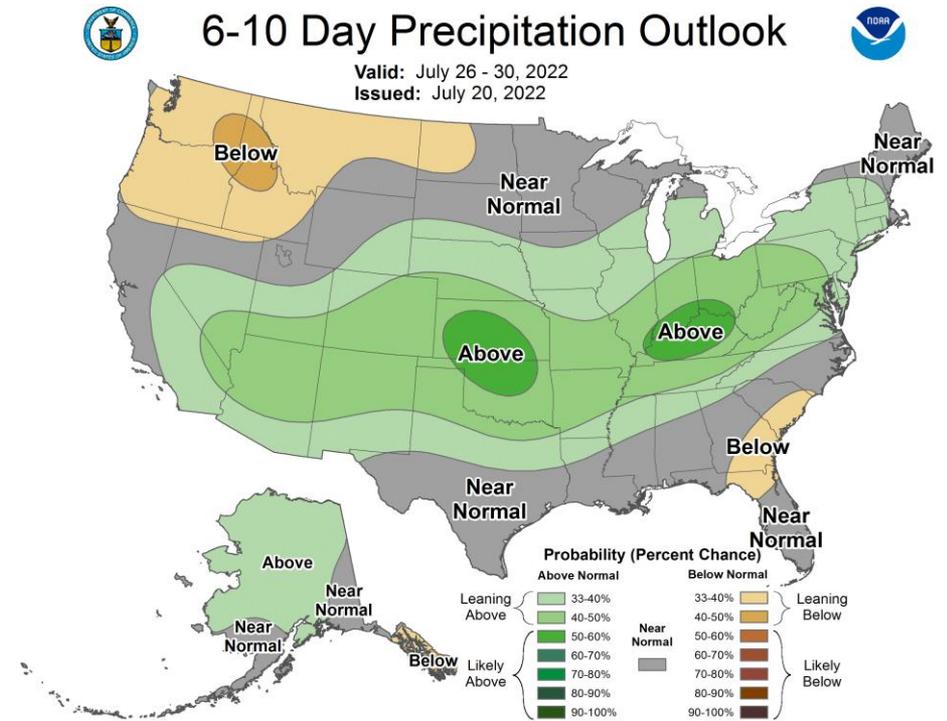


<https://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

6-10 Day (July 26-30) Outlook



Temperature



Precipitation

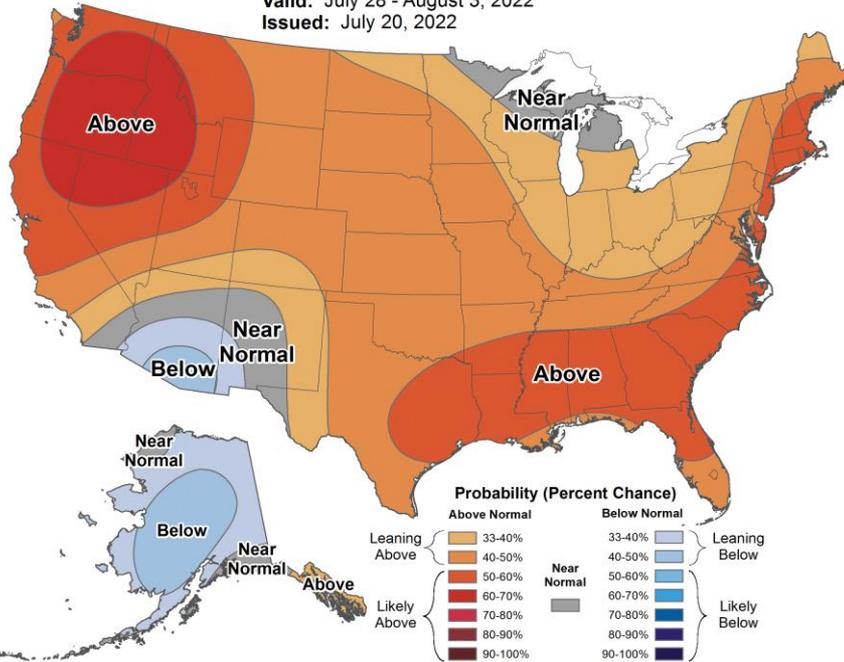
8-14 Day Outlook



8-14 Day Temperature Outlook



Valid: July 28 - August 3, 2022
 Issued: July 20, 2022



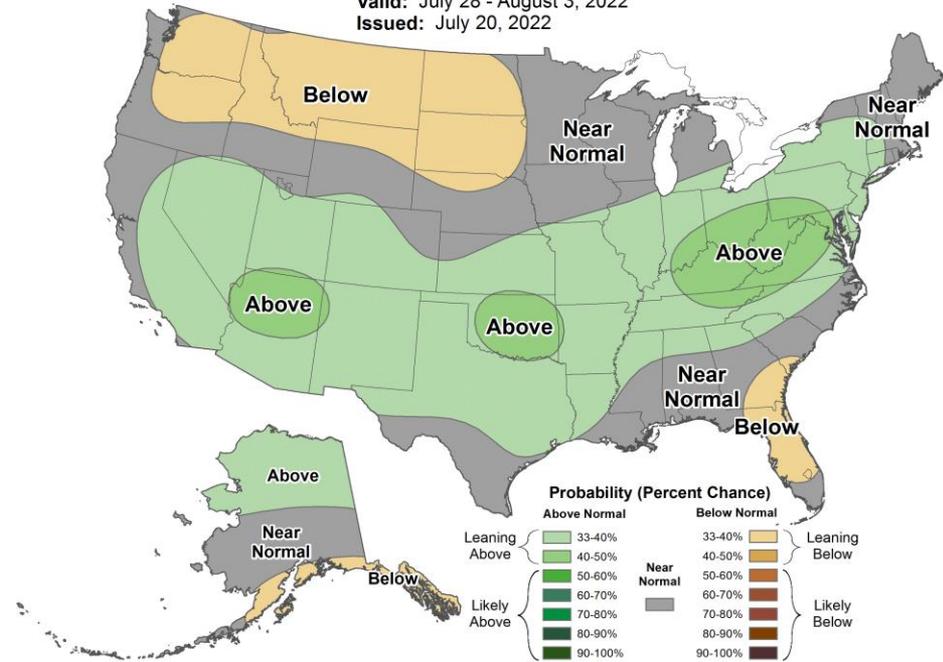
Temperature



8-14 Day Precipitation Outlook

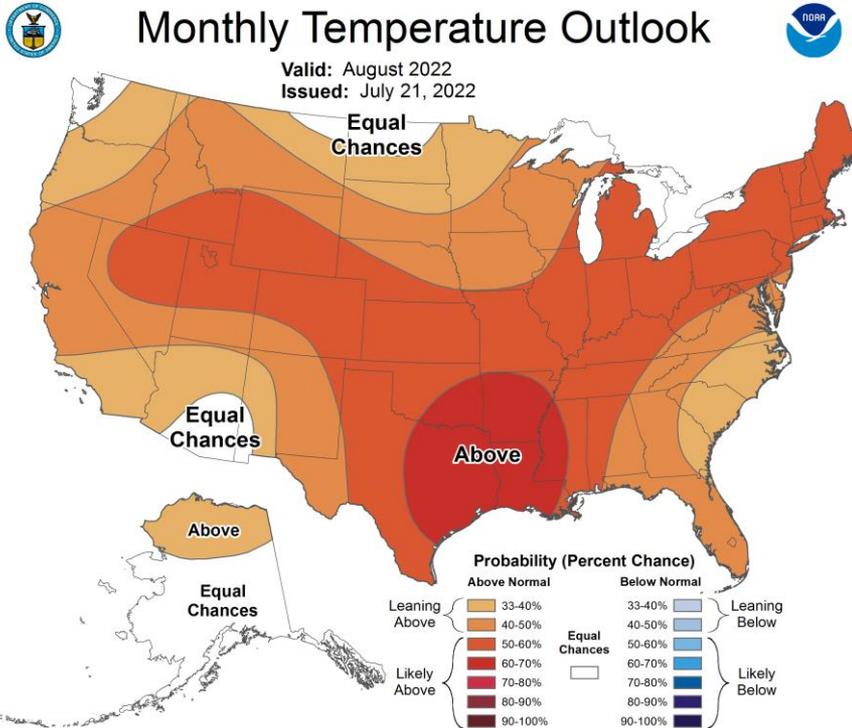


Valid: July 28 - August 3, 2022
 Issued: July 20, 2022

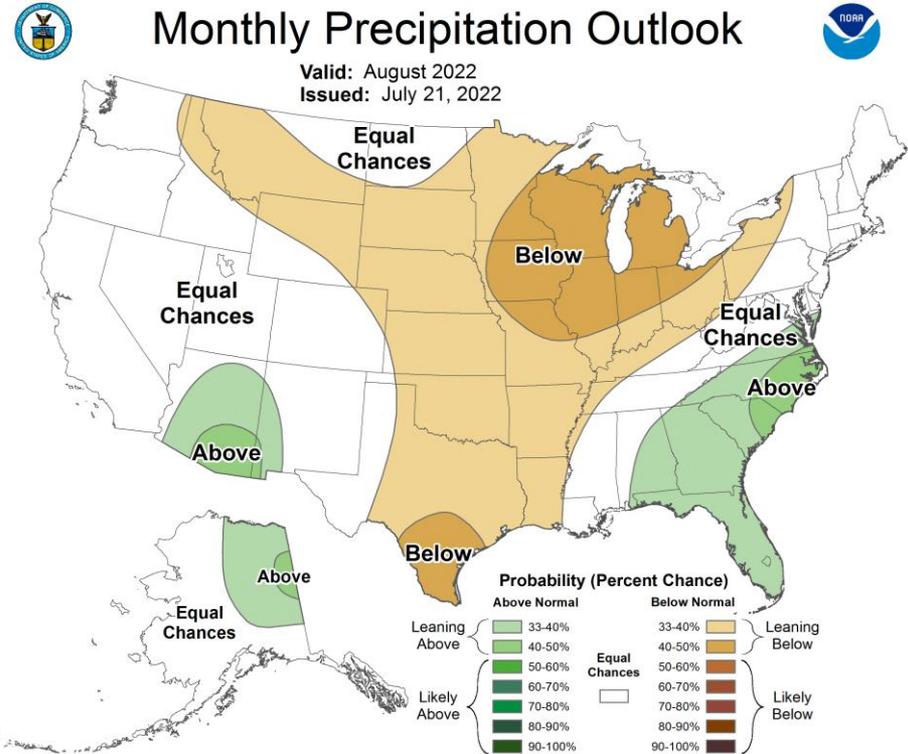


Precipitation

August Outlook



Temperature

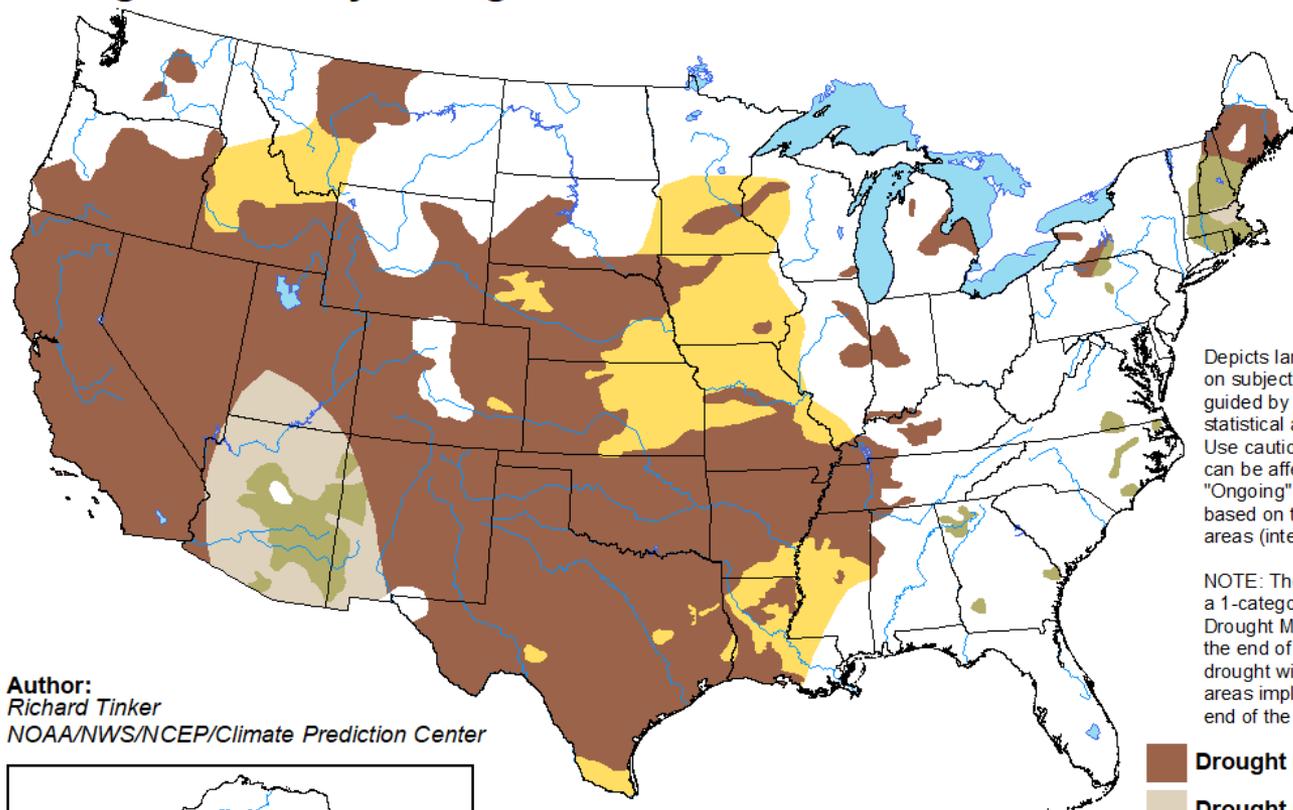


Precipitation

Seasonal Drought Outlook

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

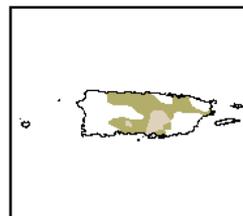
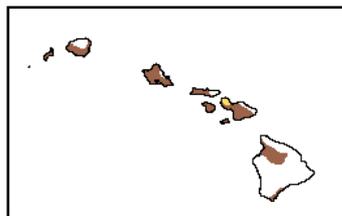
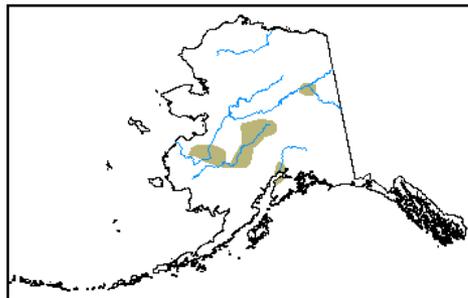
Valid for July 21 - October 31, 2022
Released July 21



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).

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



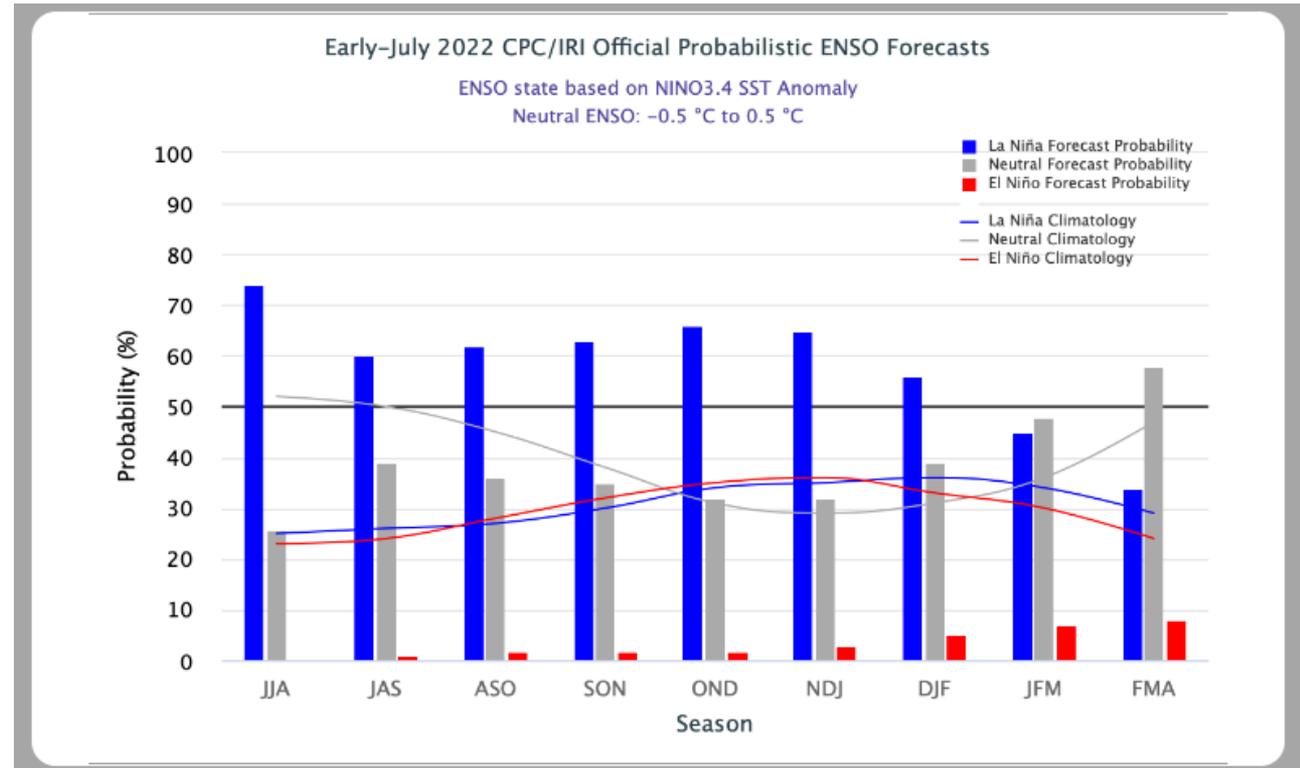
-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



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

EL NIÑO/SOUTHERN OSCILLATION (ENSO)

Under a La Niña advisory, which means greater than 50% chance of La Niña. Chances of La Niña persisting into early winter are 62-66% chance. Chances of El Niño for this winter less than 10%.



Outlook Summary

- A brief break in the heat, then the warmth returns.
- Above normal temperatures continue through the autumn.
- A tendency for below normal precipitation to persist into the autumn.
- Drought issues are likely to continue, but not universal.

Further Information - Partners

- **Today's and Past Recorded Presentations:**

- <https://mrcc.purdue.edu/multimedia/webinars.jsp>

- <https://hprcc.unl.edu/webinars.php>

NOAA's National Centers for Environmental Information: 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>

- State climatologists

- <http://www.stateclimate.org>

- Regional climate centers

- <https://mrcc.purdue.edu/>

- <http://www.hprcc.unl.edu>

Thank You and Questions?

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Sunset on Long Lake, WI
June 29,2022
Courtesy Pete Boulay

