North Central US Climate-Drought Outlook 5 August 2021 ** Special**

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515-294-2013

Photo:
Ray Wolf
NWS Quad Cities

Photo taken Feb 19, 2013

United States Department of Agriculture
Midwest Climate Hub

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
    - National Integrated Drought Information System

- **Next Regular Climate/Drought Outlook Webinar**
  - August 19, 2021 (1 PM CDT) Montana State Climate Office

- **Access to Future Climate Webinars and Information**
- https://www.drought.gov/events/north-central-us-monthly-climate-and-drought-summary-and-outlook-9

  - https://mrcc.illinois.edu/multimedia/webinars.jsp
  - https://hprcc.unl.edu/webinars.php
- **Open for questions at the end (enter them along the way).**

Agenda

- **Current Conditions**
- **Impacts**
  - **Hydro**
  - **Ag**
  - **Fire/Smoke**
- **Outlooks**
  - **Near-term**
  - **Autumn**
  - **Drought**

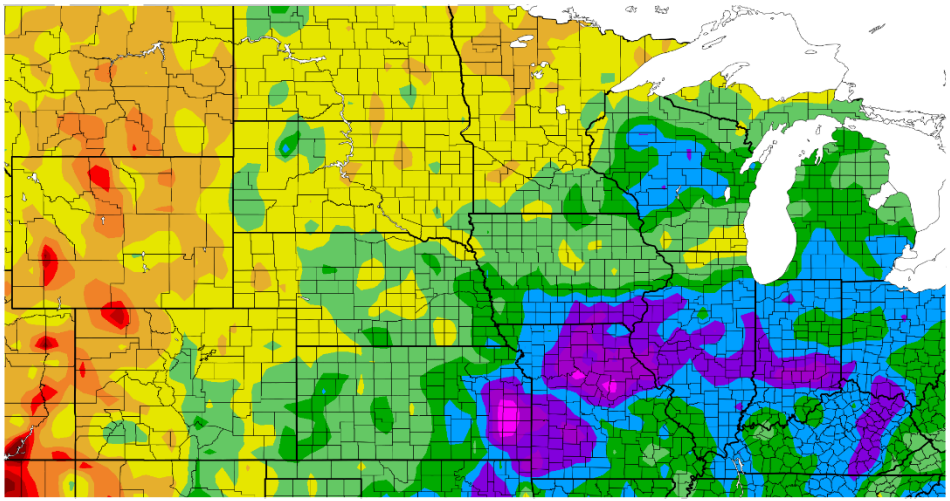
Photo:
Dennis Todey Boone, IA 2 June 2021

Photo:
CMOR Foster County ND

REVIEW/CURRENT CONDITIONS

Last 90 days Precipitation

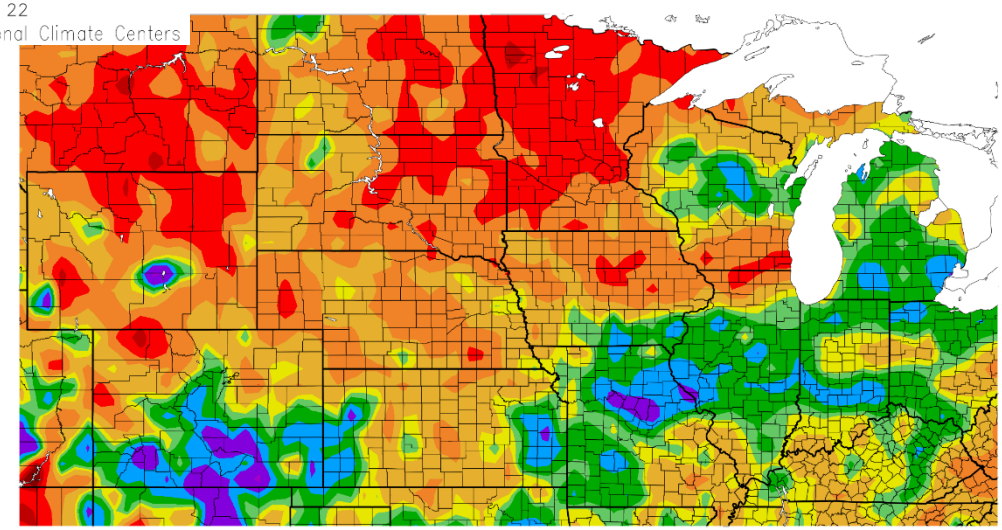
Precipitation (in)
5/5/2021 – 8/2/2021



Generated 8/3/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

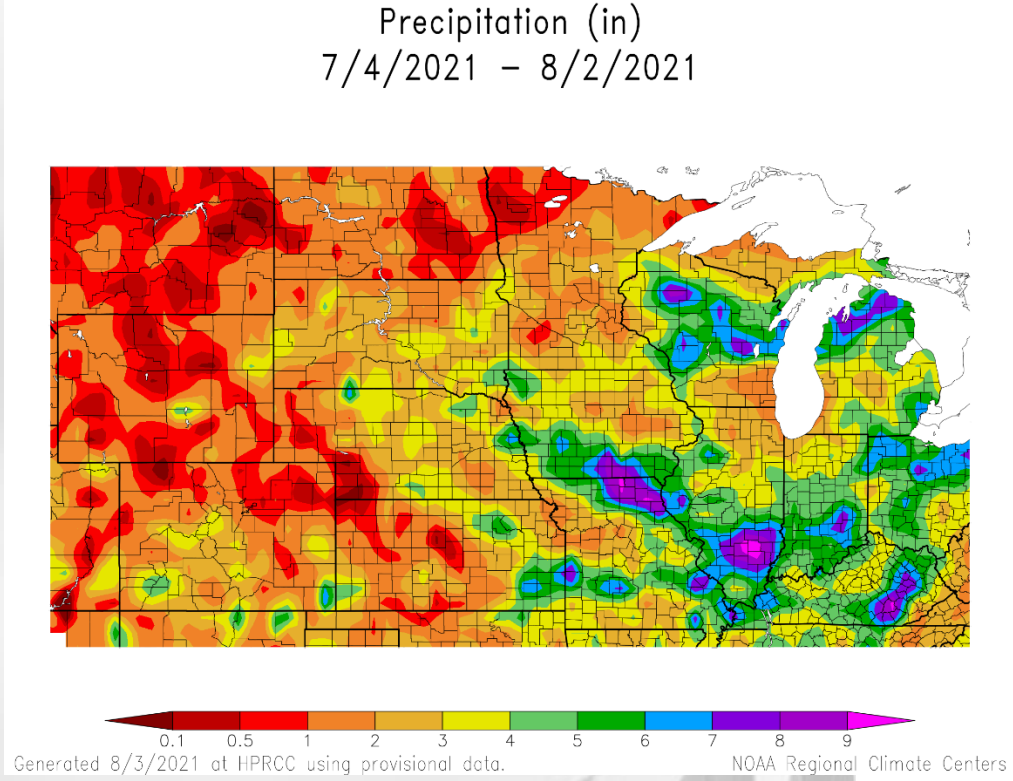
- Very dry northern plains/central plains
- Wetter MO to MI

Percent of Normal Precipitation (%)
5/5/2021 – 8/2/2021

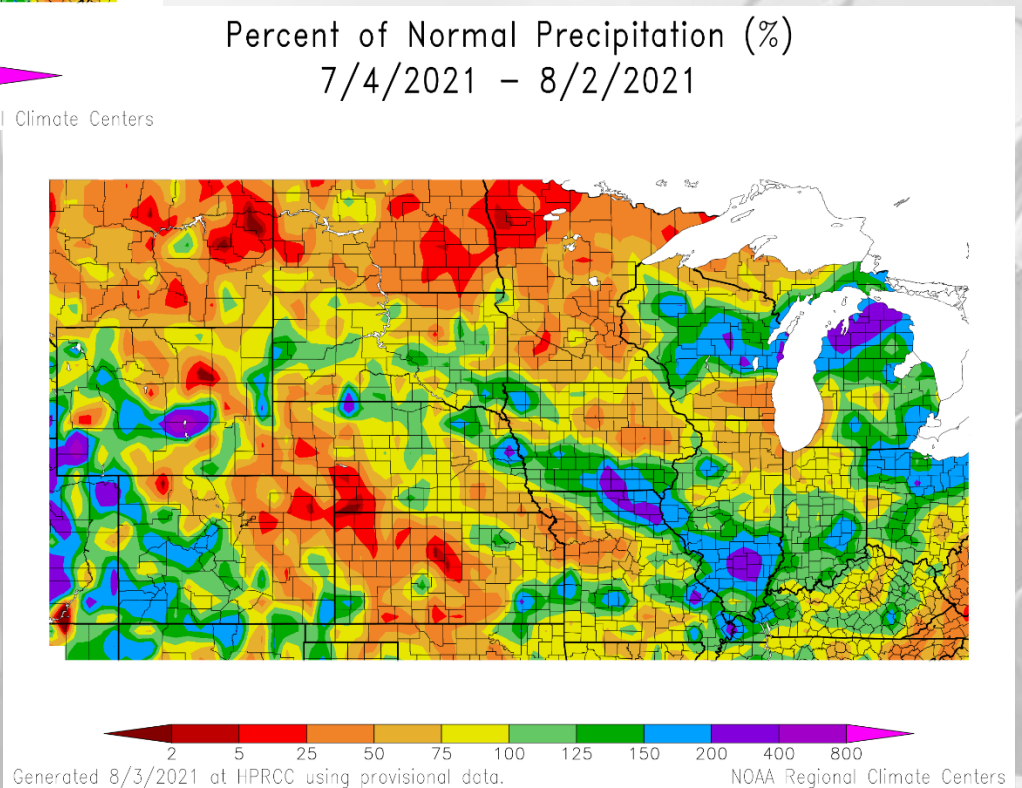


Generated 8/3/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

Last 30 days Precipitation

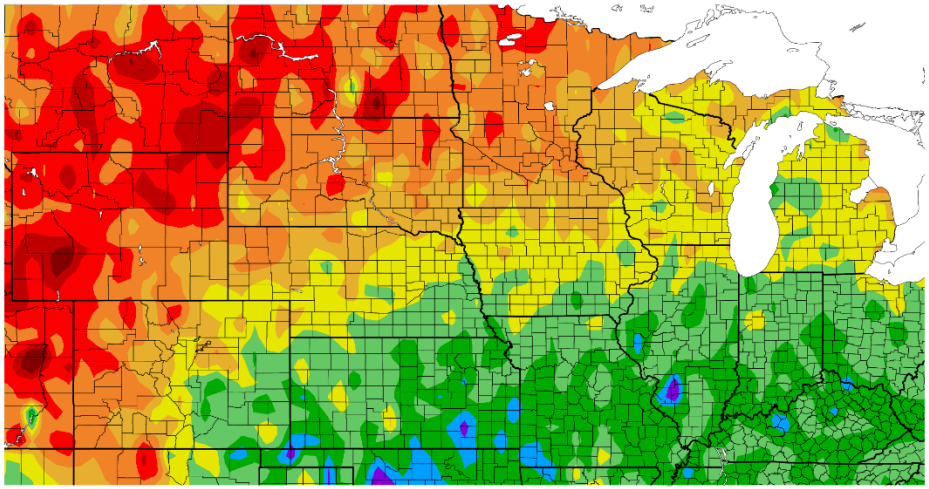


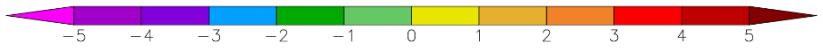
- Mixed precipitation (typical summer)
- Dry northern plains/central plains
- Pockets of wet
- Improved conditions nrn Plains a little.



Last 90/30 days Temperature

Departure from Normal Temperature (F)
5/5/2021 – 8/2/2021

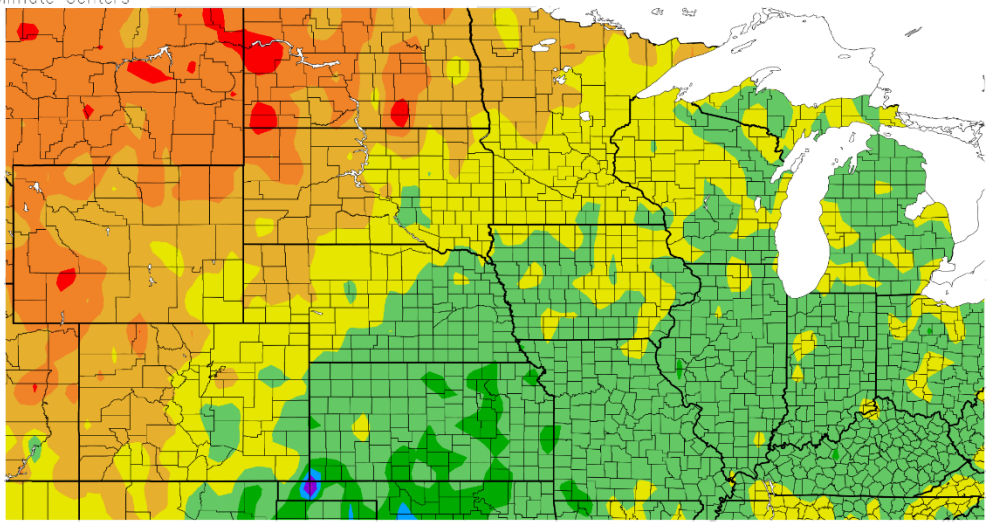




Generated 8/3/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

- North and Plains mostly warmer.
- 30 days not as hot

Departure from Normal Temperature (F)
7/4/2021 – 8/2/2021

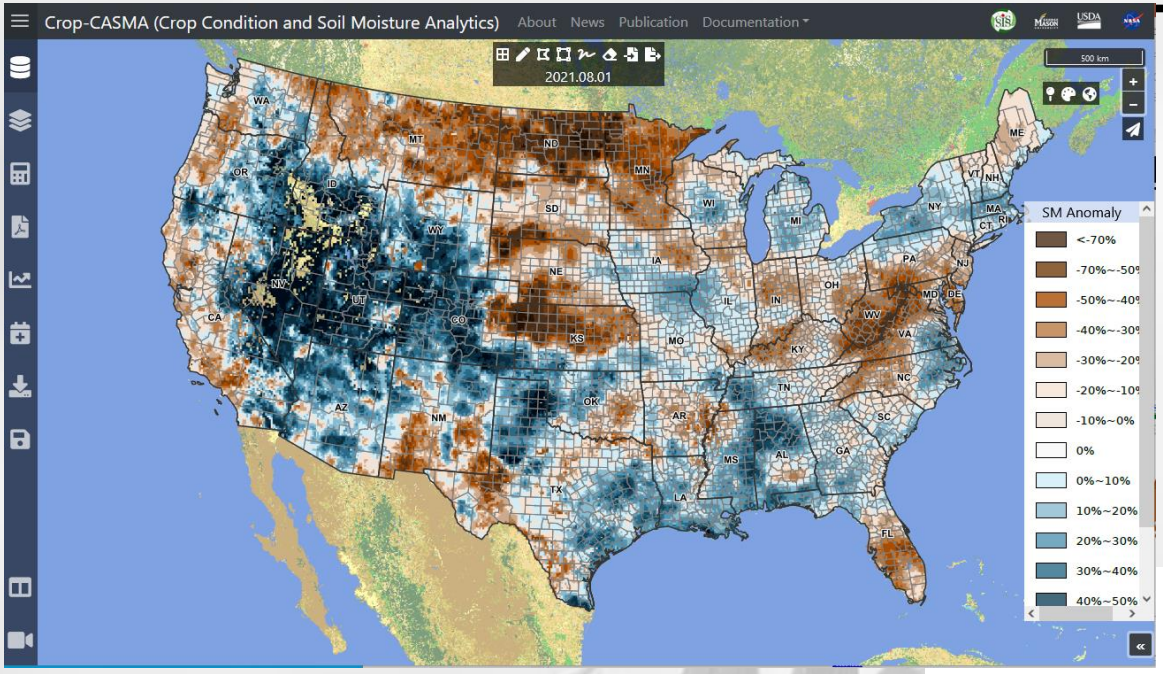


Generated 8/3/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

HYDROLOGY

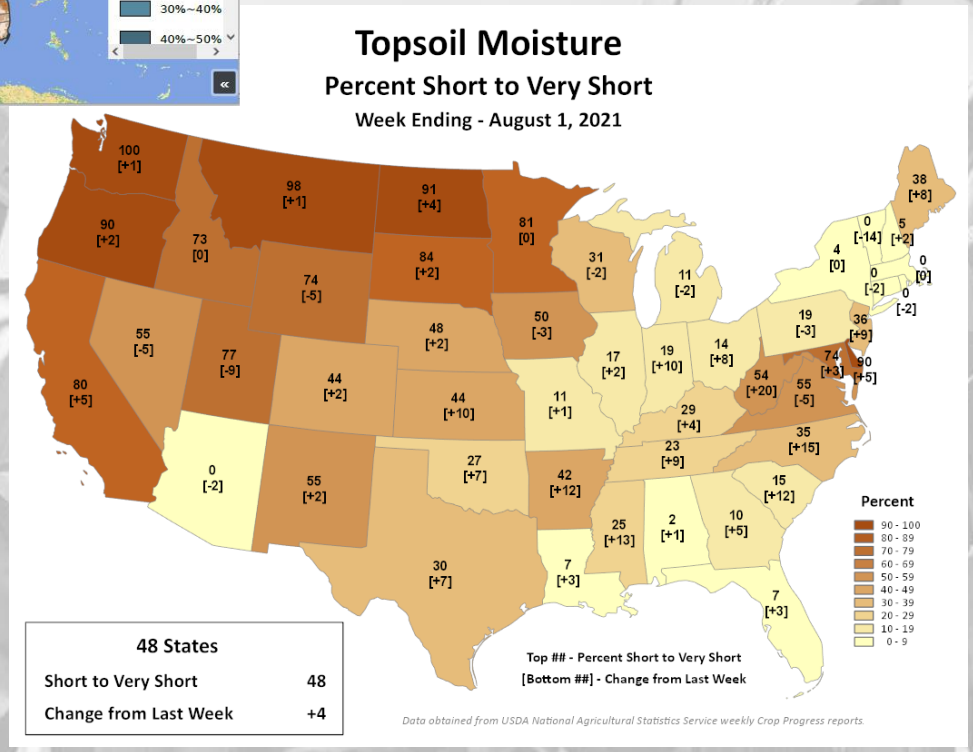
Photo:
CMOR Pipestem Creek ND

Soil Moisture



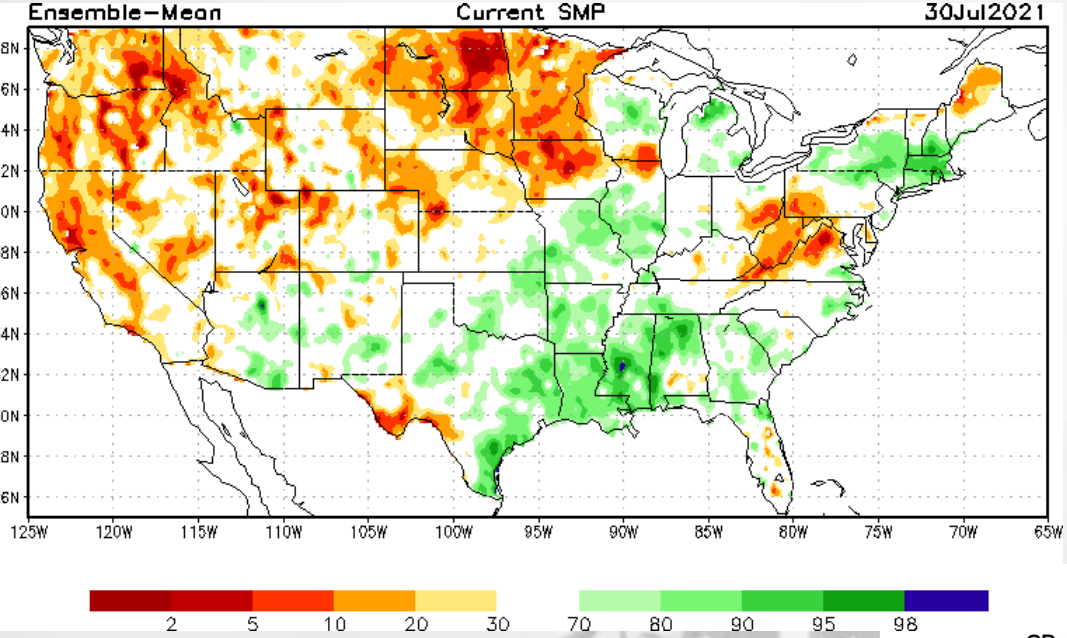
- Dry nrn plains consistently
- Varying results eastern Corn Belt.

- NASS topsoil reports extensive S-VS



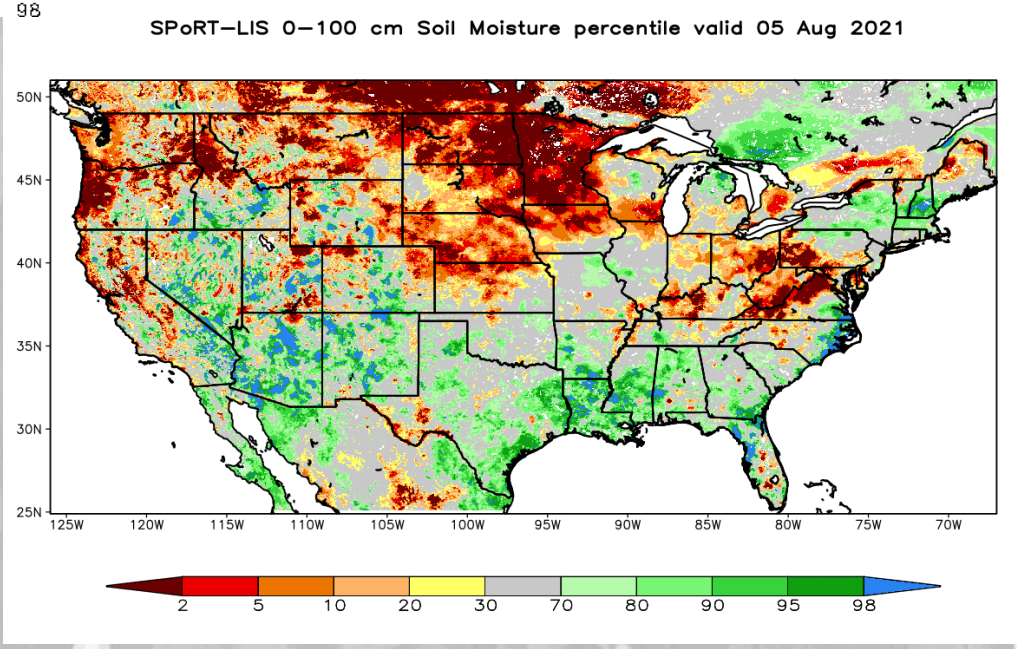
http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#
https://cloud.csiss.gmu.edu/Crop-CASMA/
https://weather.msfc.nasa.gov/sport/case_studies/lis_CONUS.html

Soil Moisture



- Dry nrn plains consistently
- Varying results eastern Corn Belt.

- Decreasing area of moderate to wet.



http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#

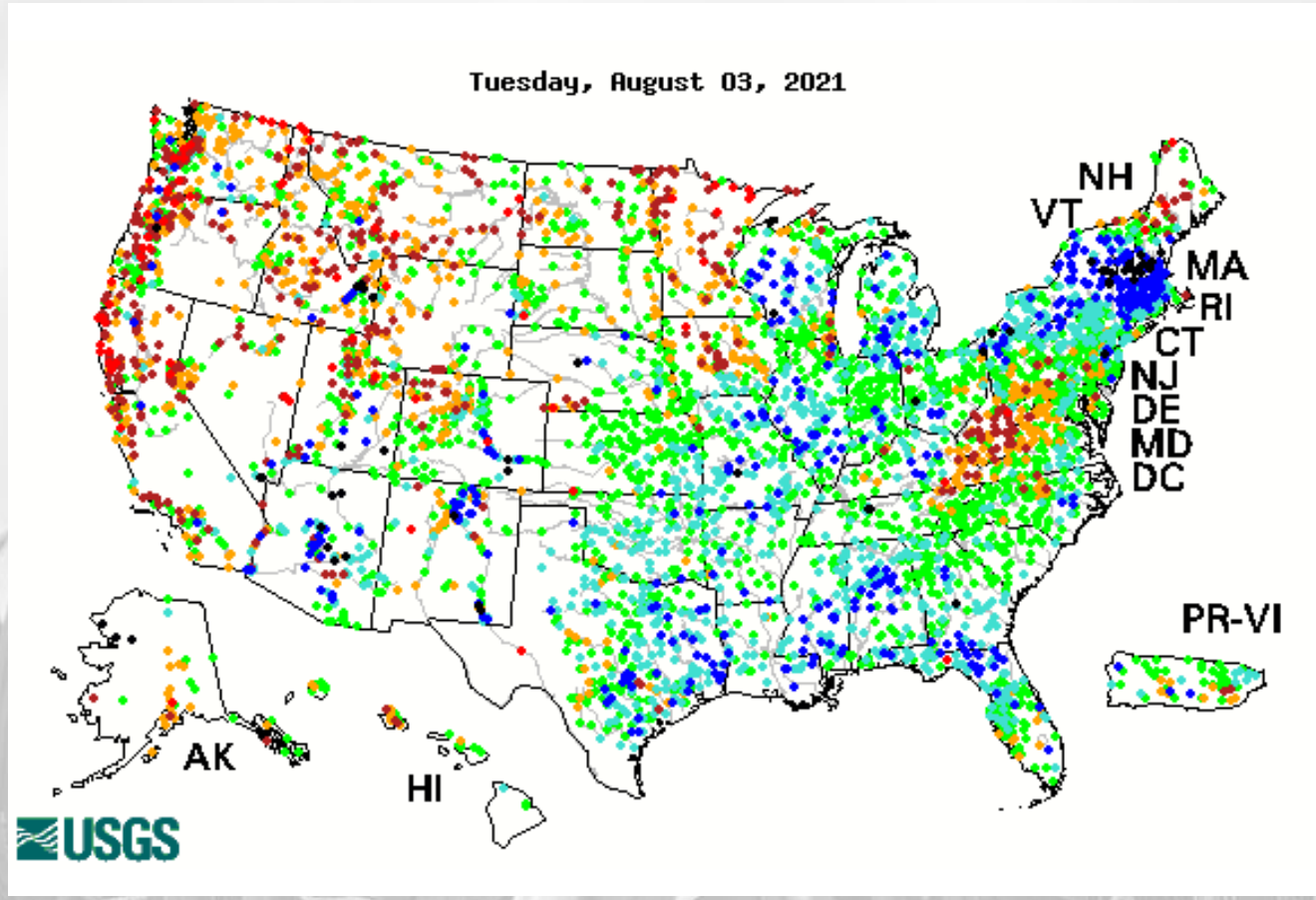
https://cloud.csiss.gmu.edu/Crop-CASMA/

https://weather.msfc.nasa.gov/sport/case_studies/lis_CONUS.html

7-Day Average Streamflow

Tuesday, 3 August 2021

- Streamflows moderate to above eastern states
- Mostly dry western states
- Much below in some areas.



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

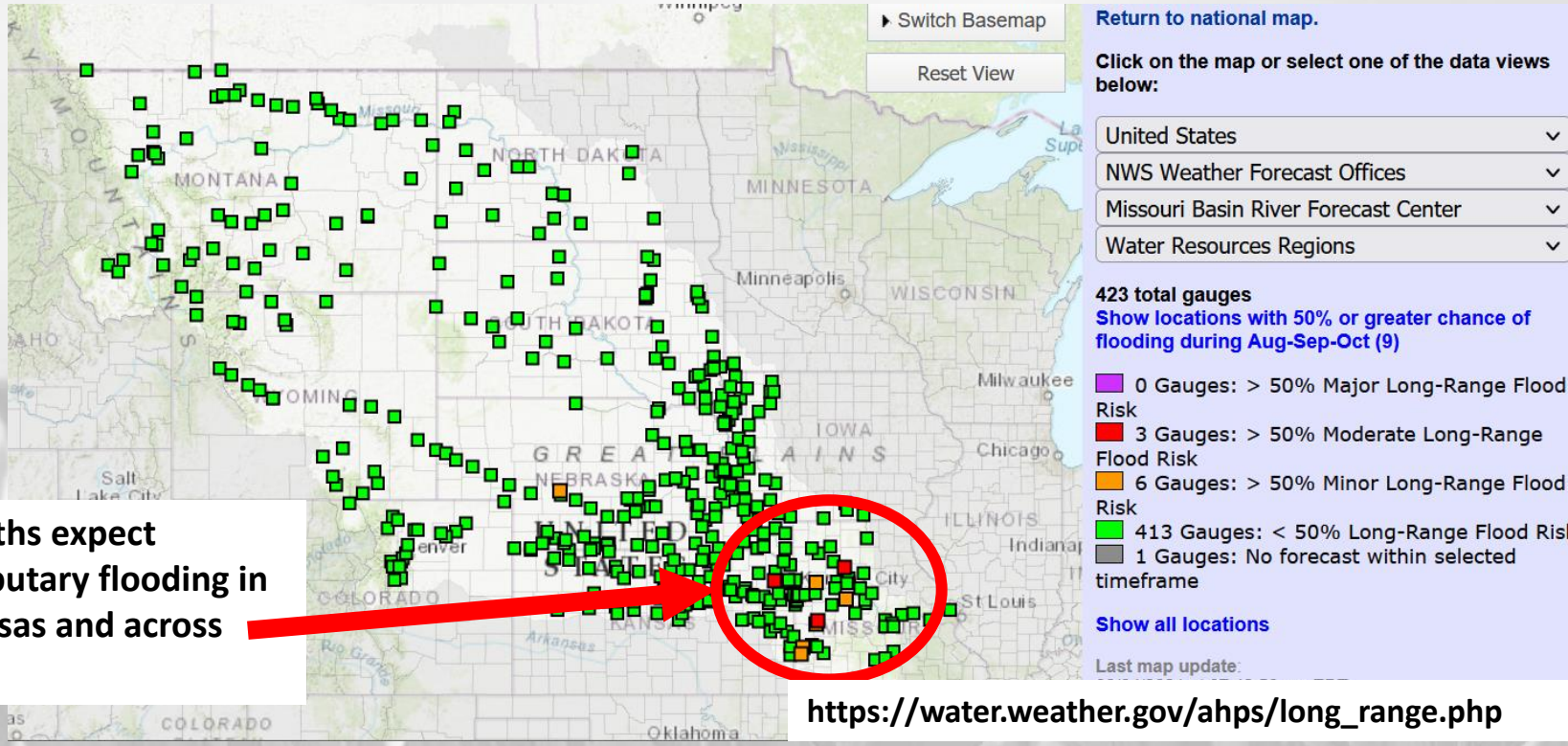
http://waterwatch.usgs.gov/index.php?id=pa07d

Various water issues

- Serious water quality problems in Dakotas (livestock). Water supply also.
- Fish kills Vermillion River (SE SD)
- Water limited other areas
  - Sioux Falls
  - Des Moines area
  - Some irritation shut-off/reductions plains
- USACE Missouri River – reduced flows

River Flood Outlook

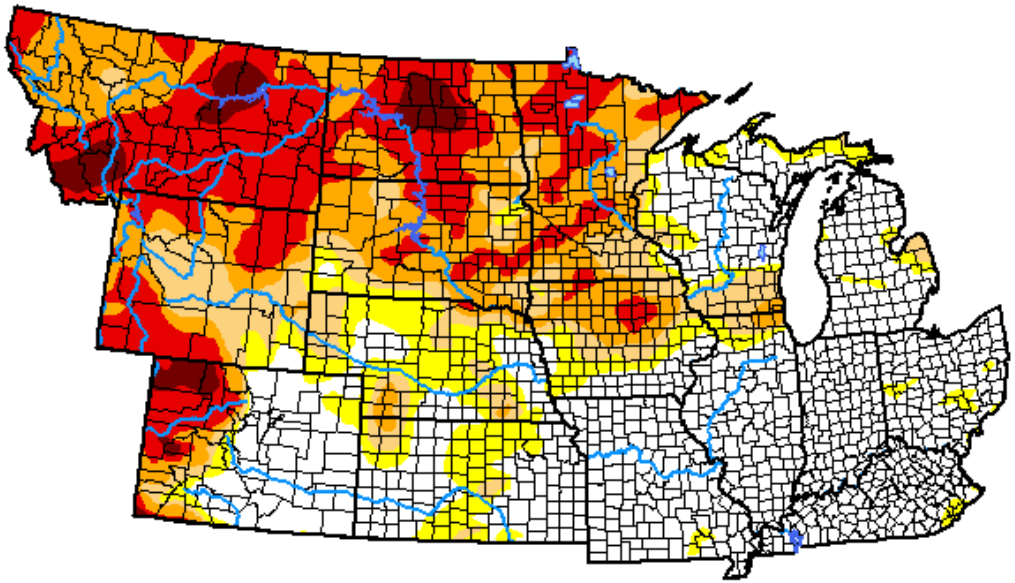
AUGUST-SEPTEMBER-OCTOBER



Next 3 months expect episodic tributary flooding in eastern Kansas and across Missouri

https://water.weather.gov/ahps/long_range.php

U.S. Drought Monitor
NWS Central



August 3, 2021
(Released Thursday, Aug. 5, 2021)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	39.82	60.18	49.52	39.09	21.50	2.88
Last Week *07-27-2021*	40.75	59.25	49.65	36.48	17.49	2.76
3 Months Ago *05-04-2021*	33.42	66.58	44.03	21.34	11.82	1.48
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 *08-04-2020*	51.06	48.94	23.79	9.90	3.16	0.00

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:

Richard Tinker
CPC/NOAA/NWS/NCEP

droughtmonitor.unl.edu

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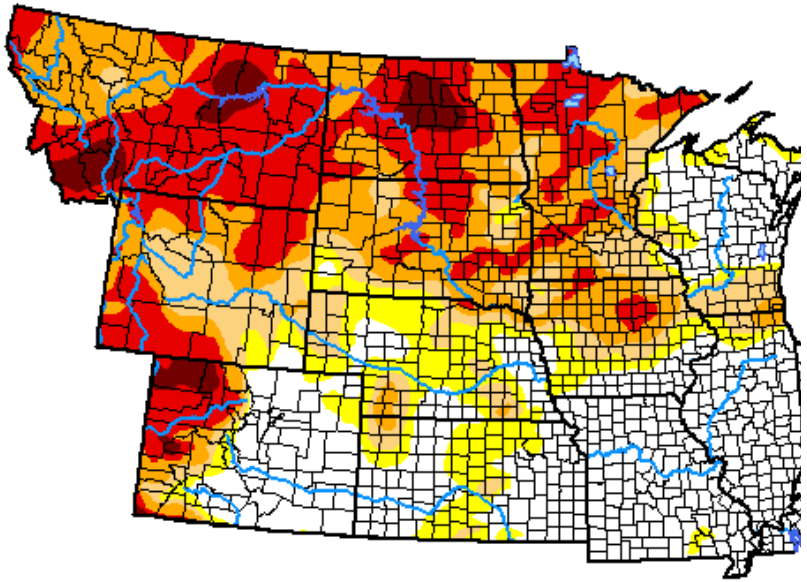

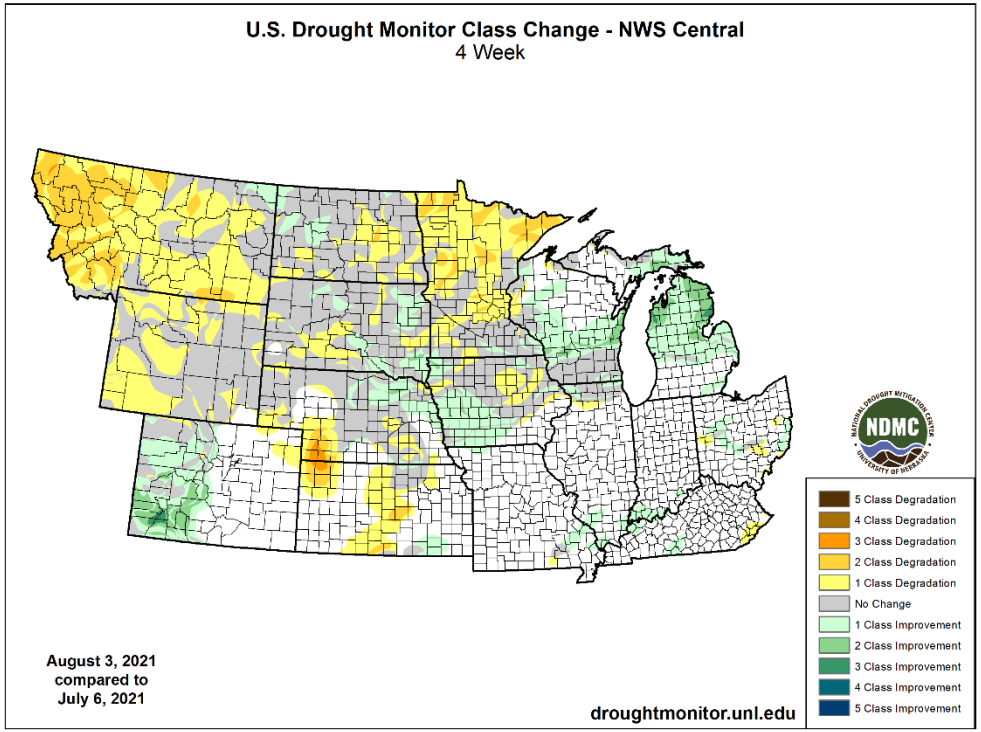

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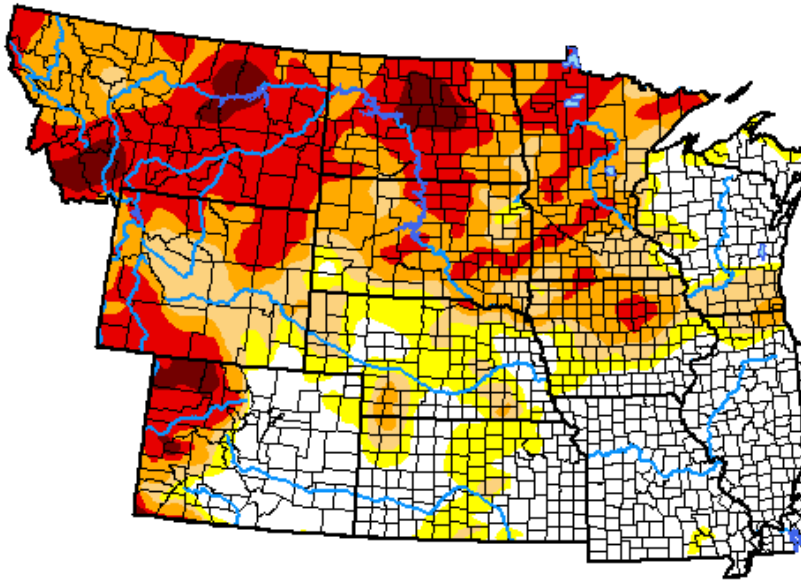
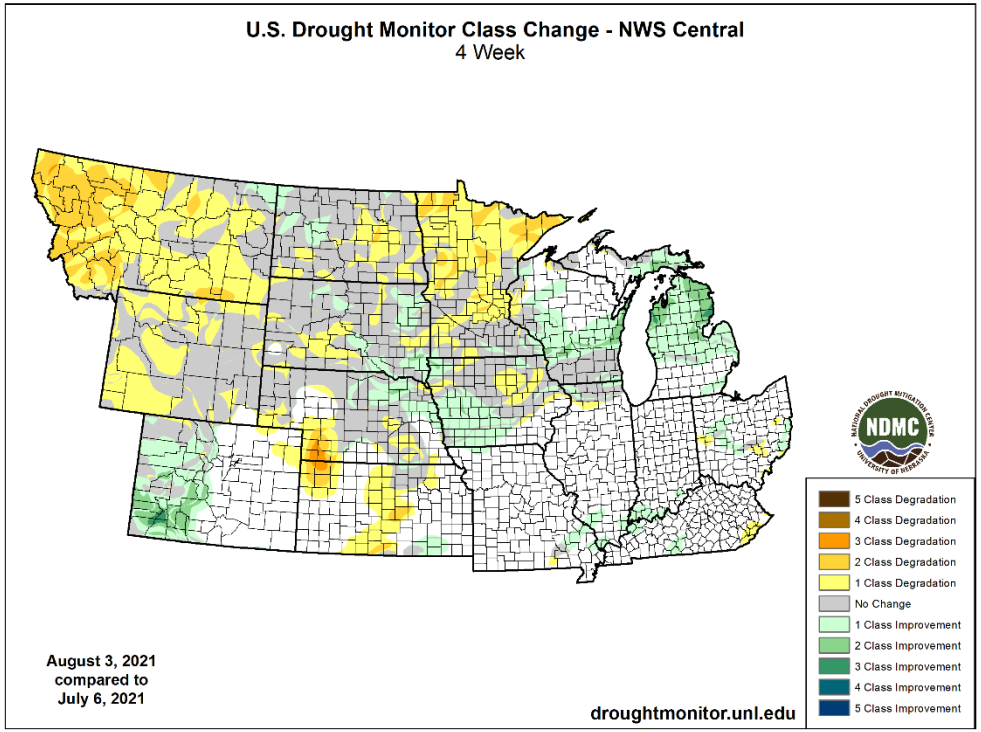


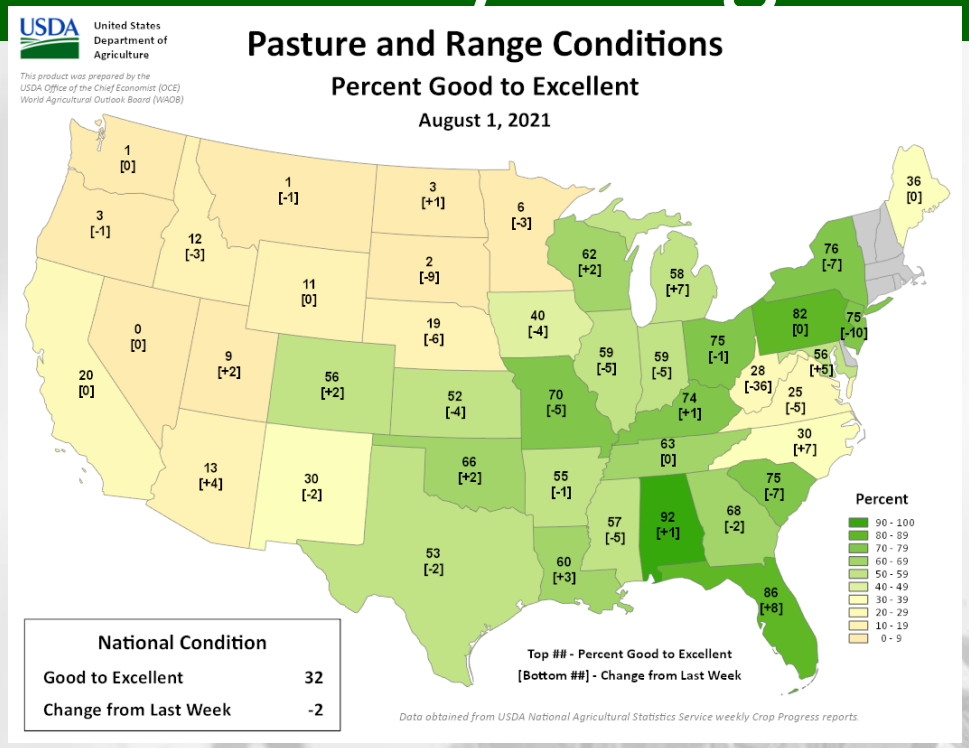
Largest regional coverage since spring 2013 (end of 2012 drought)



AGRICULTURE

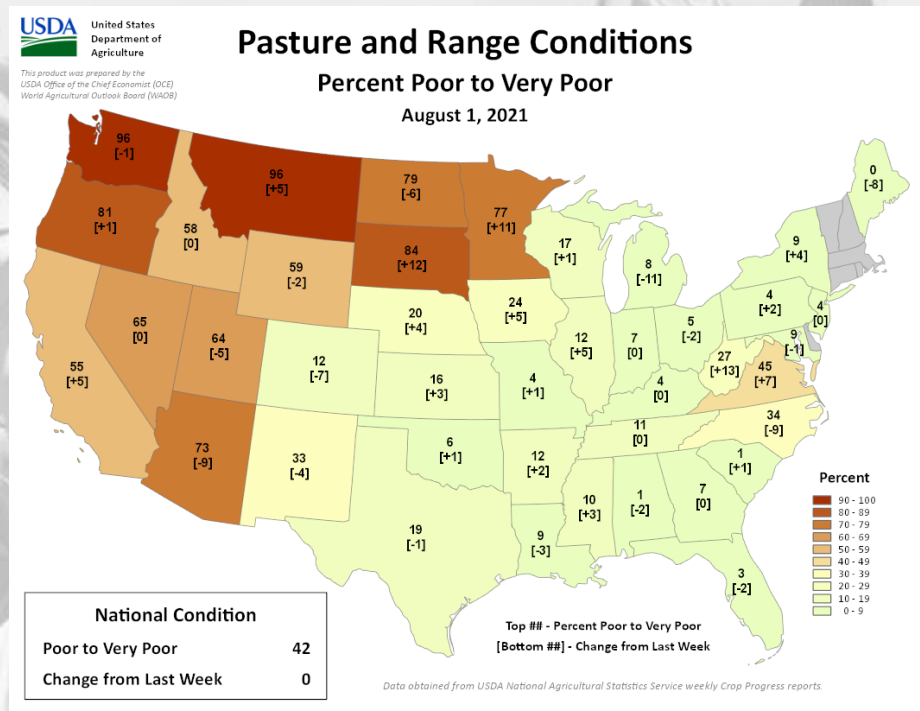
Photo:
Romulo Lollato – KSU

Pasture/Range Conditions (NASS)



Pasture and range conditions worsened slightly again nationally. Several central US states worsening. Similar general pattern.

Rangeland G-E (NASS): National 32% (-2%). Condition P-VP – National 42% (0%).



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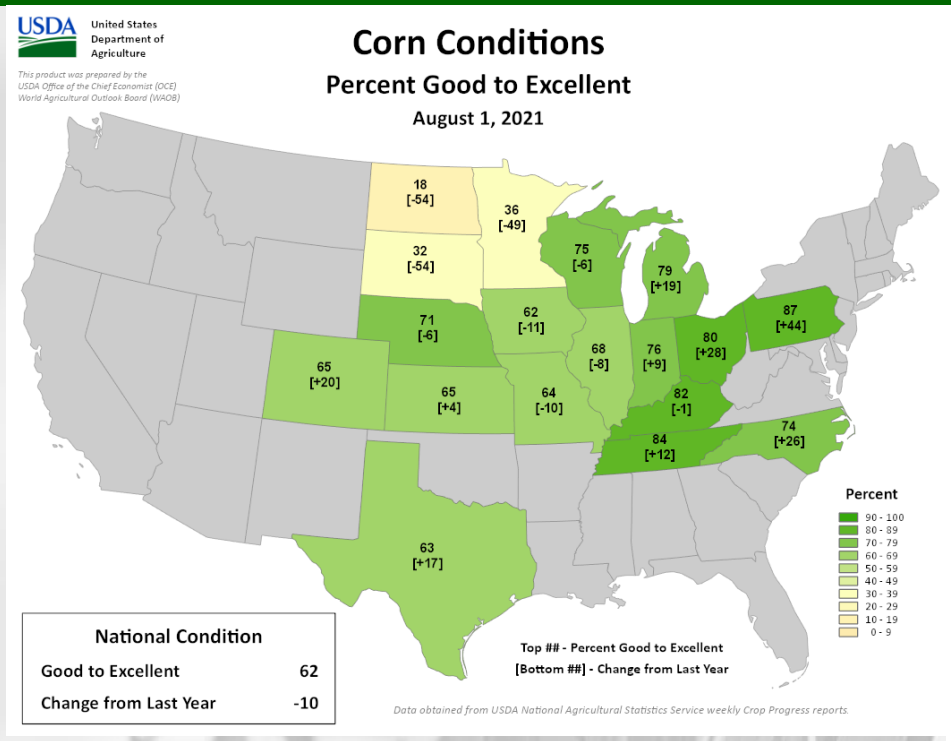
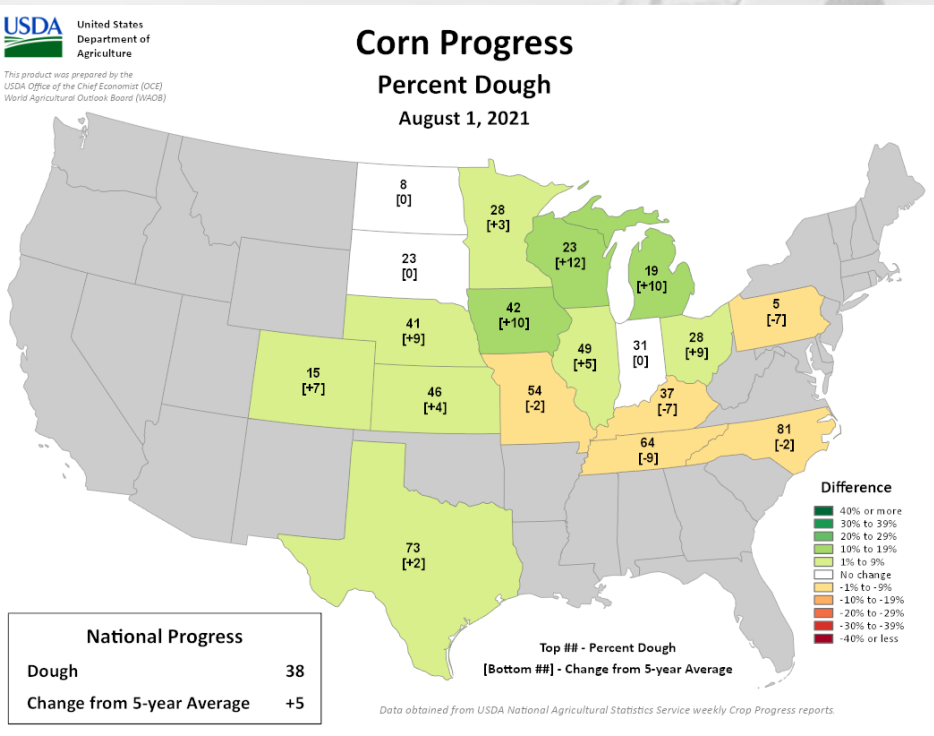
Corn Conditions (NASS)



Crop conditions (corn) continues poor north/west. Progress ahead of average - dough in early stages nationally.

Corn condition (NASS): Good-excellent - National 62% (-10%). Dough - National 38% (+5%).



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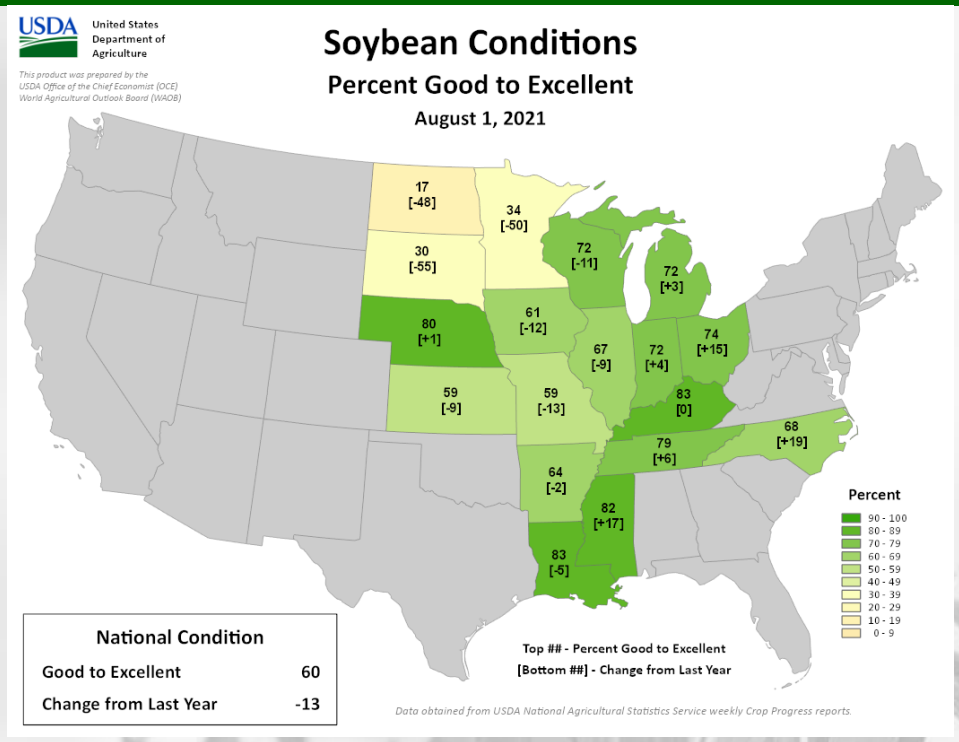
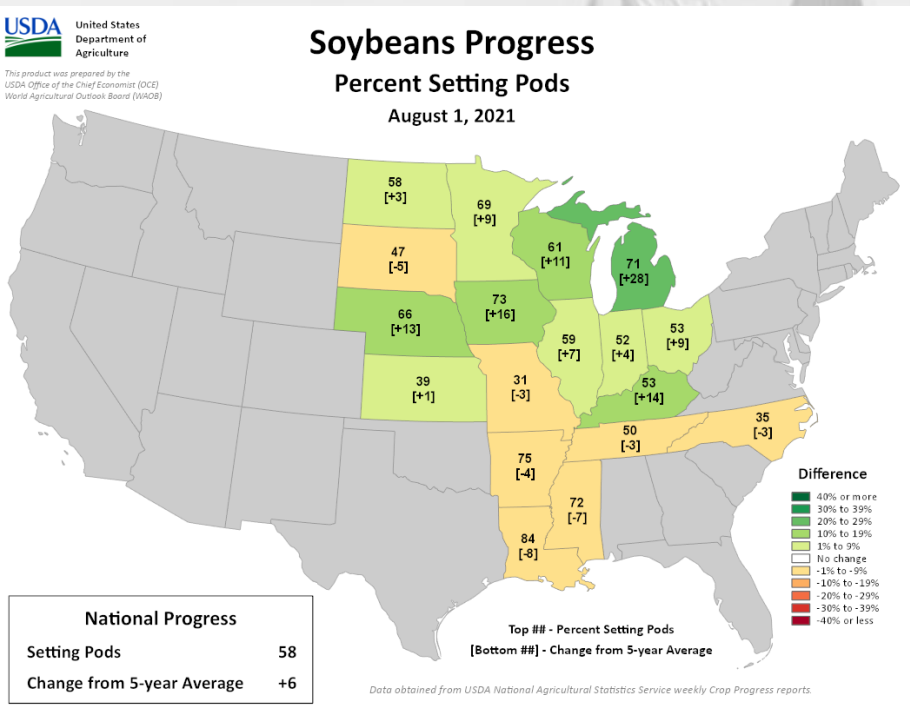
Soybean Conditions (NASS)



Crop progress (soybean) similar to corn – worst to north. Ahead 5 year avg setting pods.

Soybean condition (NASS): Good-excellent - National 60% (-13%). Setting pods - National 58% (+6%).



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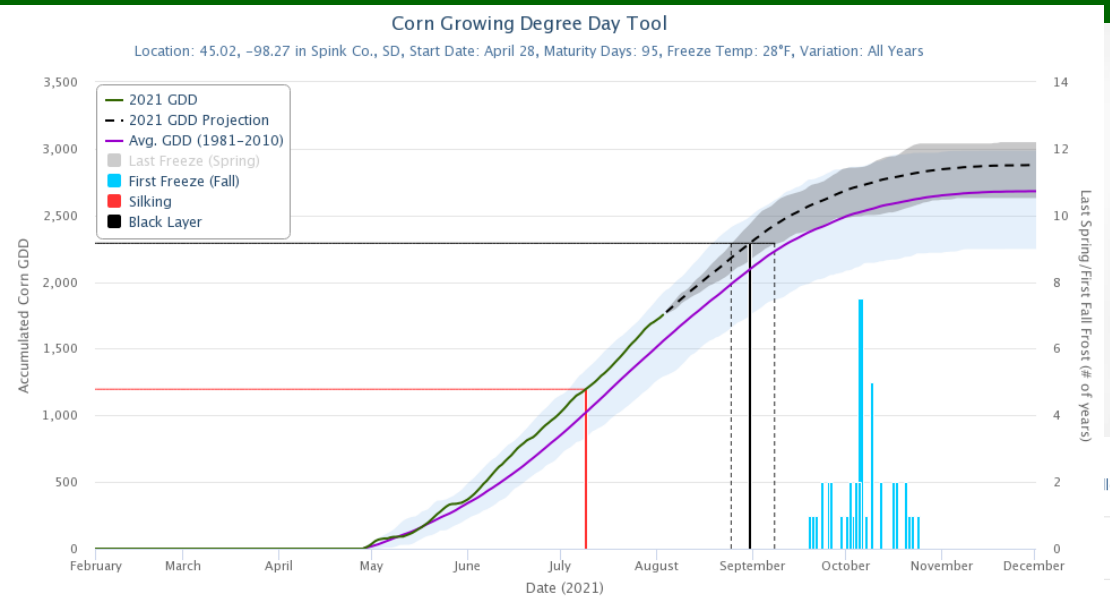
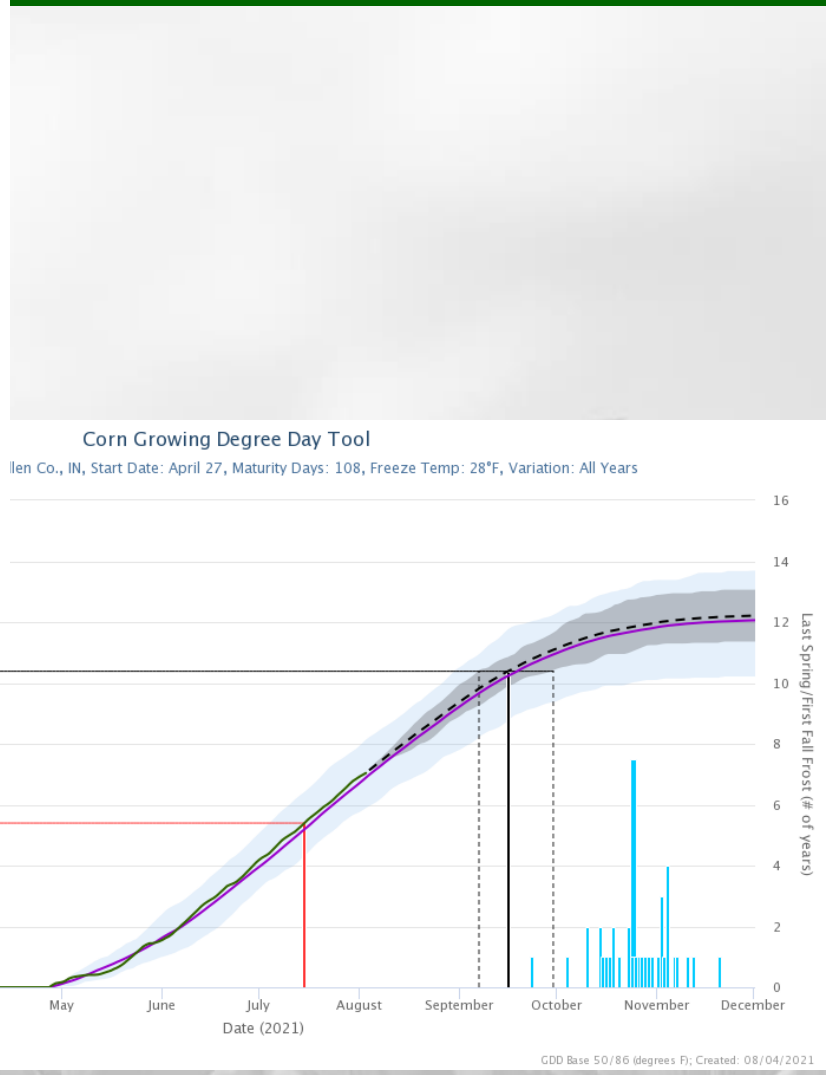
GDDs (Spink, SD-NE SD Allen Co-NE IN)





https://hprcc.unl.edu/agroclimate/gdd

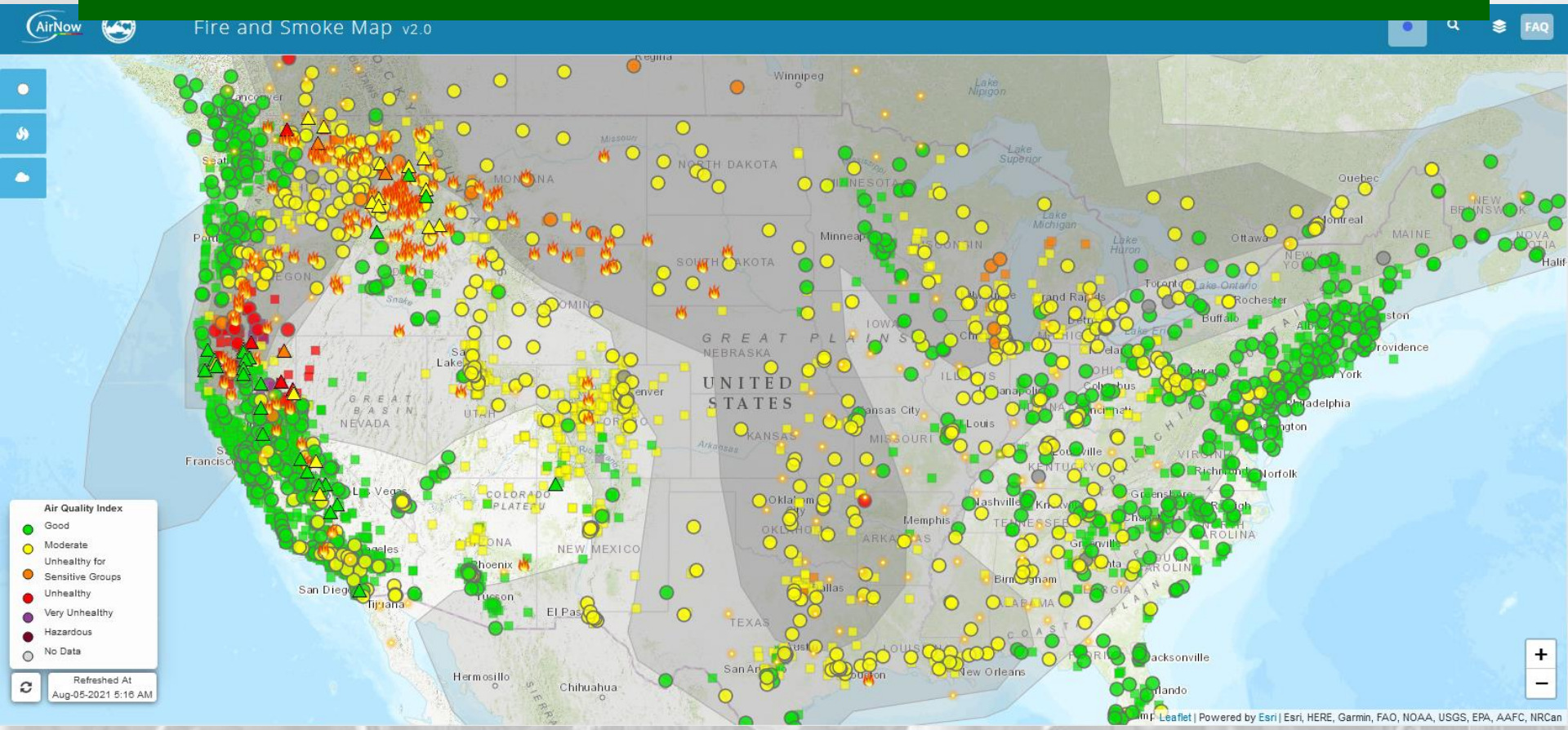
https://mrcc.illinois.edu/U2U/gdd/

NW Corn belt well above average accumulation. Eastern Corn Belt slightly above average.

Various ag issues

- Some disease east row and specialty crops – mostly good overall
- Crops central Corn Belt look good considering stress already
- Spring wheat lowest yield since late 1980s – much cut for hay
- Nitrate issues-some livestock deaths
- Forage availability – survey 25% in ND
- SD Winter wheat fairly good
- Cattle sales 13% ahead of last year (sell-offs)
- Water and feed for livestock – issues.

SMOKE AND WILDFIRE



https://fire.airnow.gov/#

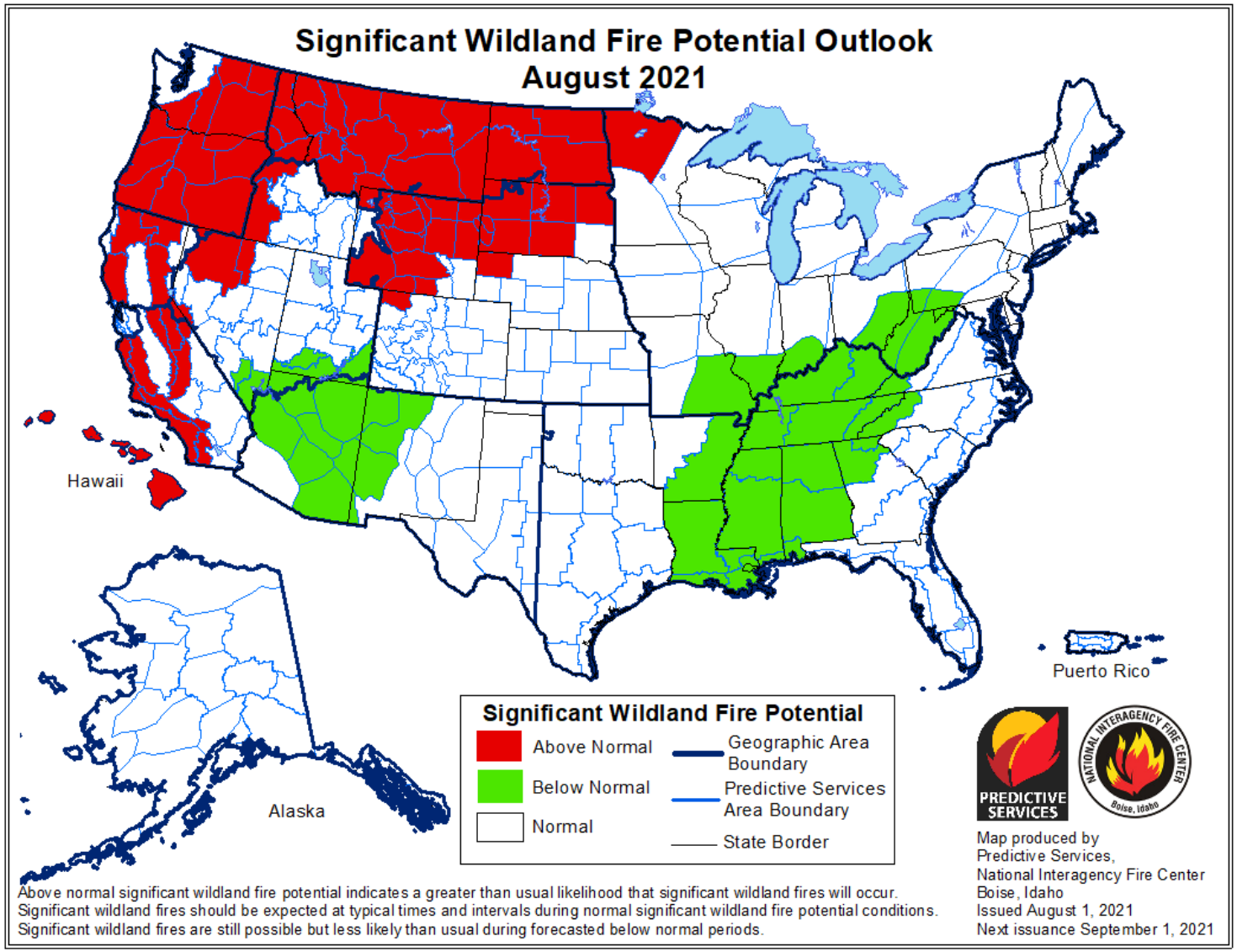
FIRES

- Most major fires still west and NW US
- A number of smaller fires across northern plains-some 10Ks acres
- Need to continue monitoring with dryness/heat
- Outlooks little help (harvest)

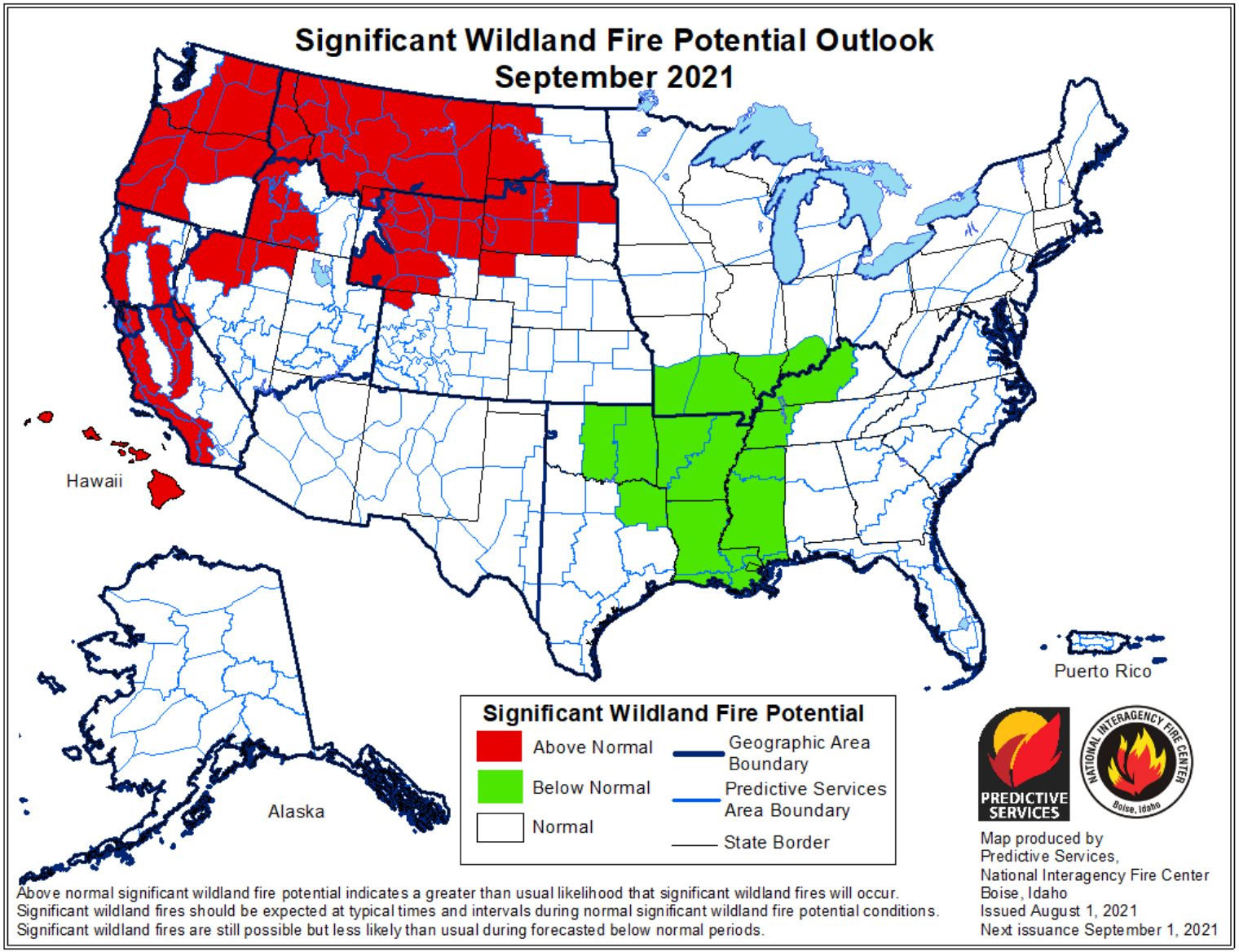
SMOKE

- Varying levels of concern for human health – continue to monitor changes
- Agricultural (crop) – complicated
  - Reduced solar radiation
  - Also reduces max temperatures
  - New work – might be beneficial (diffused radiation)

WILDFIRE POTENTIAL



WILDFIRE POTENTIAL



OUTLOOKS

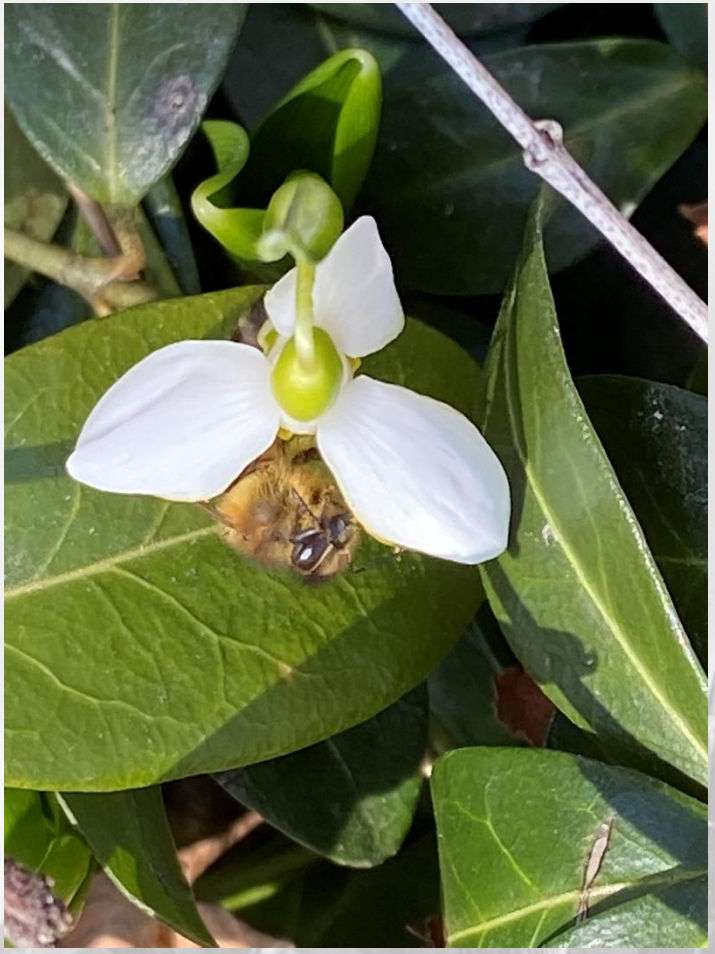


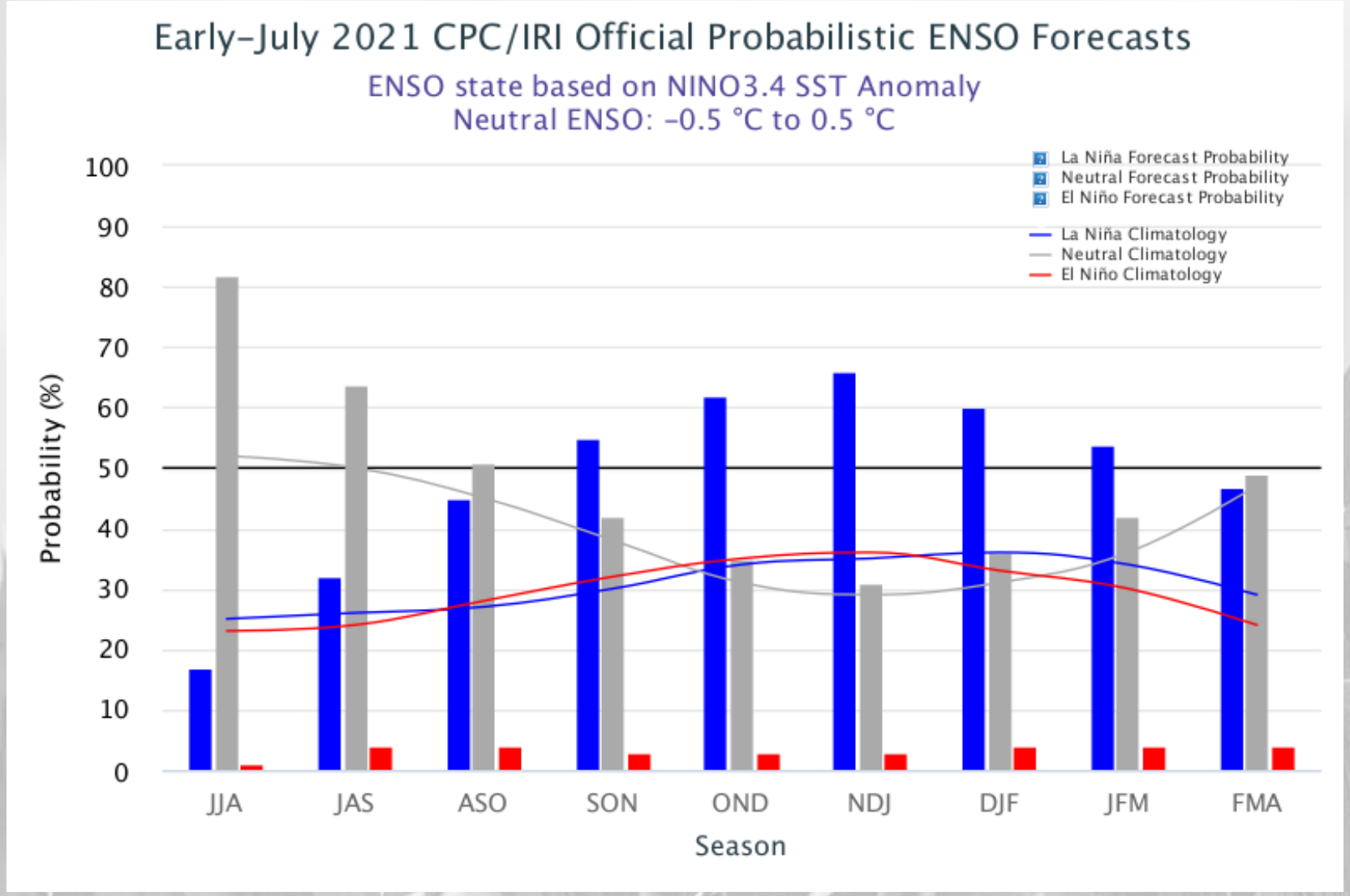
Photo: Ray Wolf
NWS Quad Cities

Climate Outlooks

- **La Niña status…..**
- **7-day precipitation forecast**
- **8-14 day outlook**
- **August**
- **Seasonal/Autumn season**

Photo:
Natalie Umphlett – UNL HPRCC
Lincoln, NE

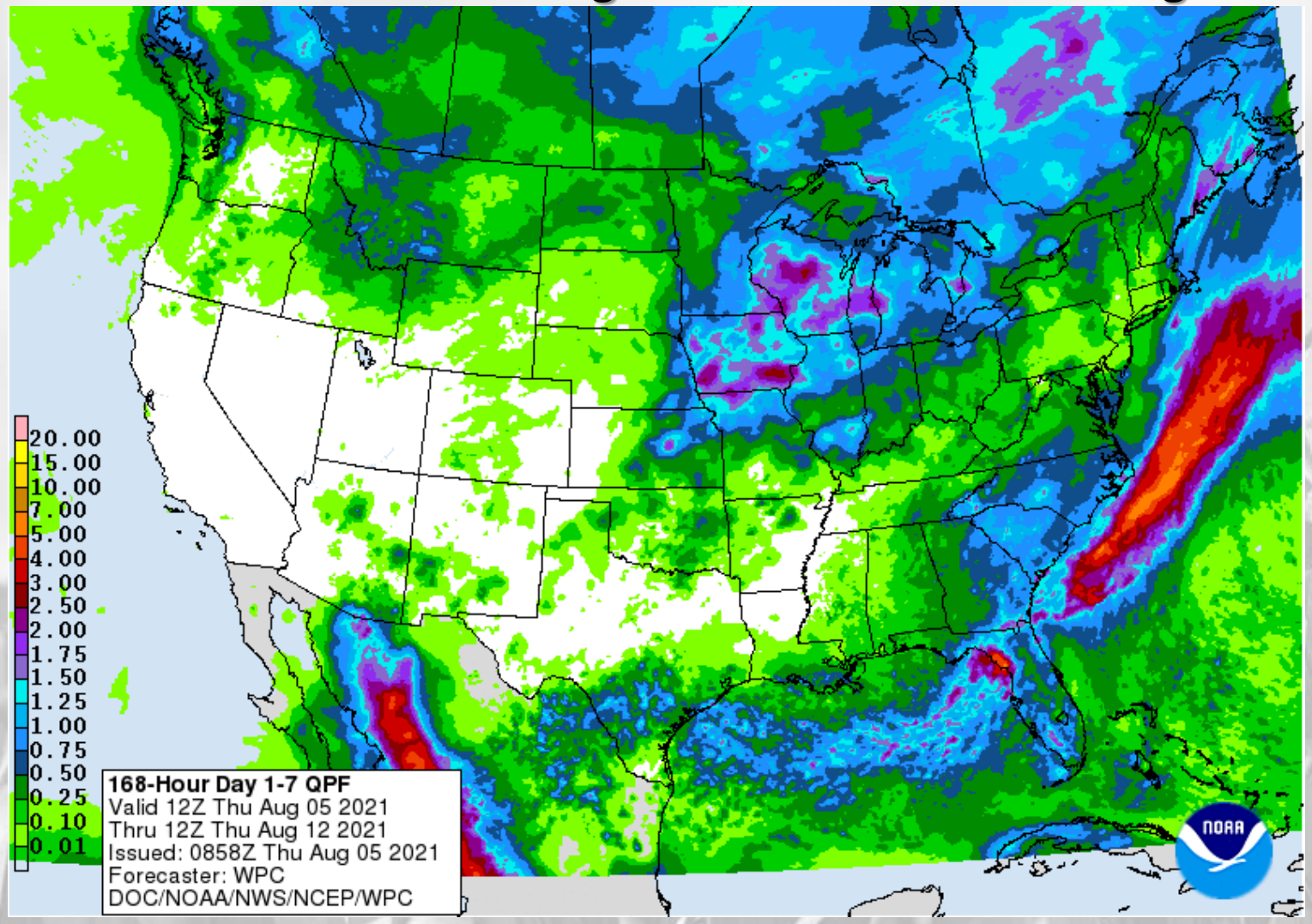
ENSO Outlook Status



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

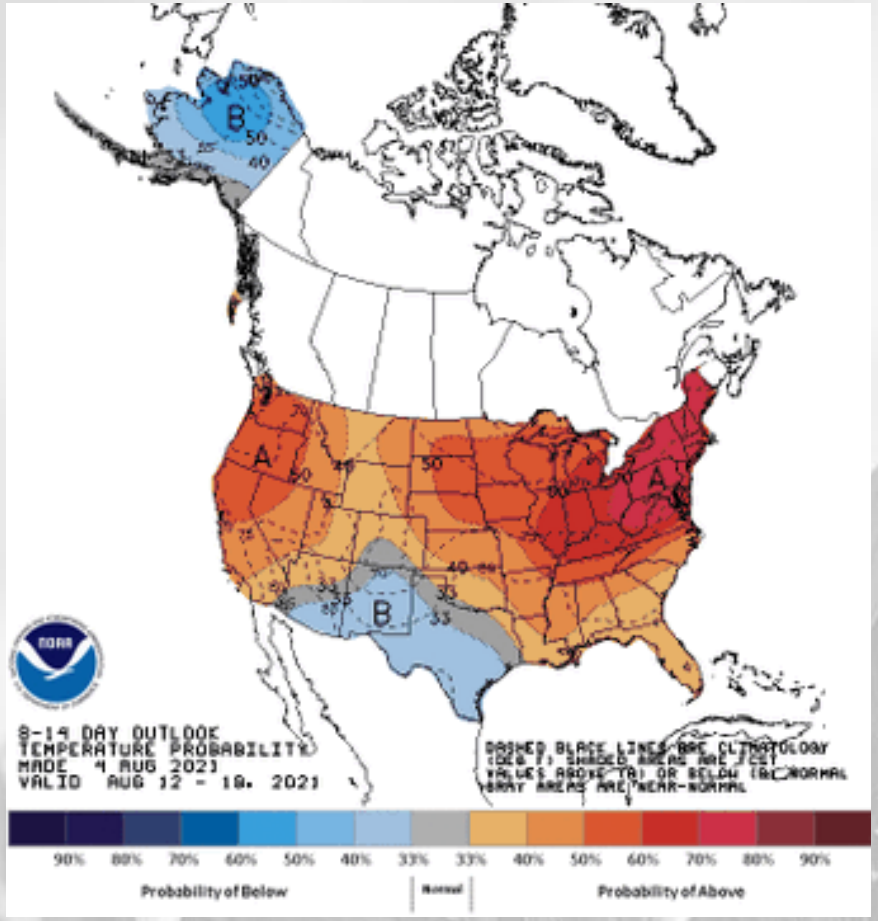
7-day Quantitative Precipitation Forecast

Valid: 7 AM CT Thu 5 August – 7 AM CT Thu 12 August

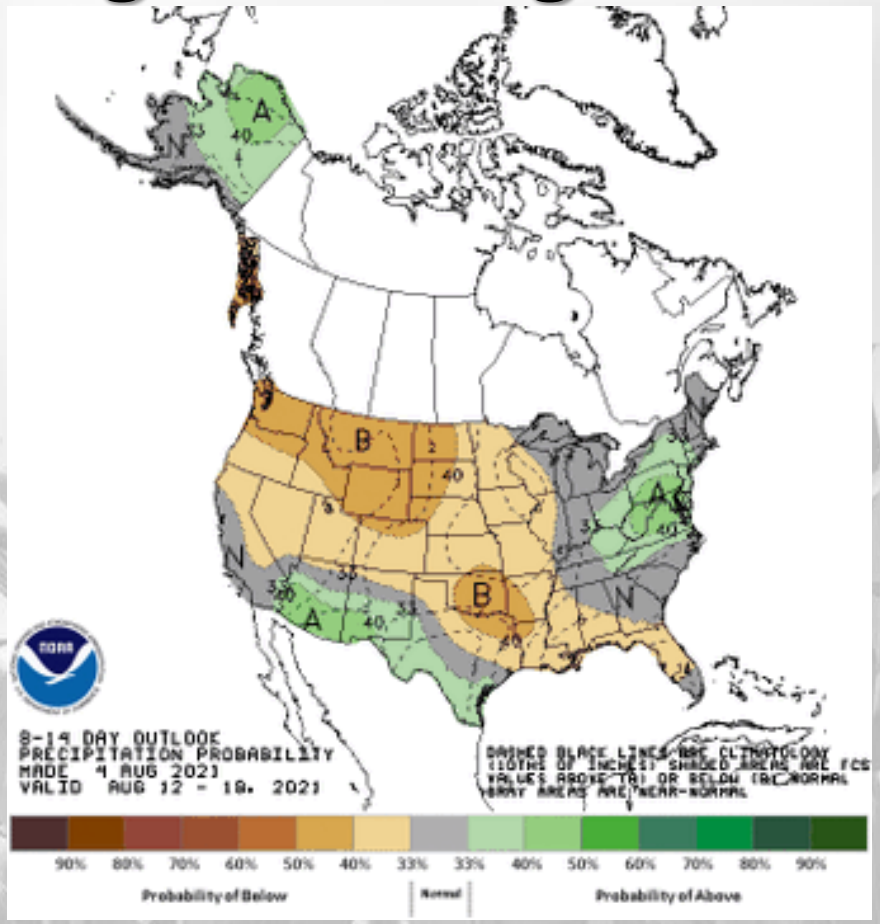


http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml

Temperature and Precipitation Probabilities for 12 Aug. – 18 Aug. 2021



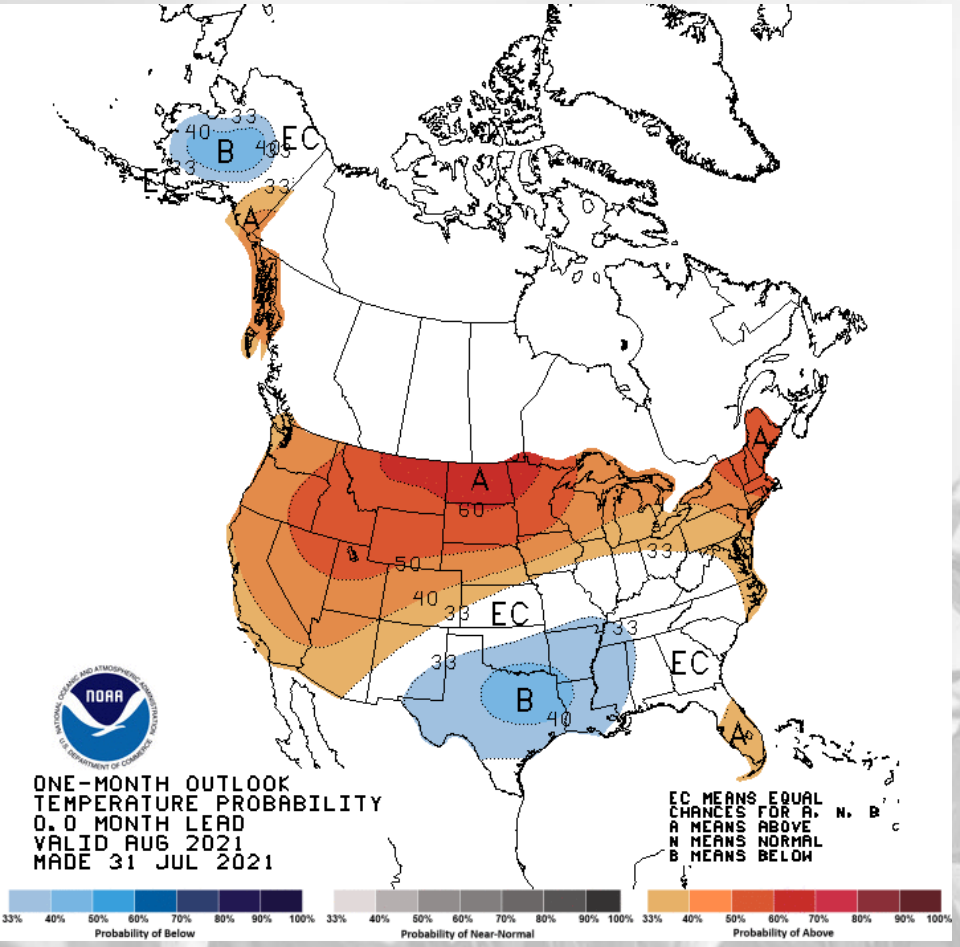
Temperature



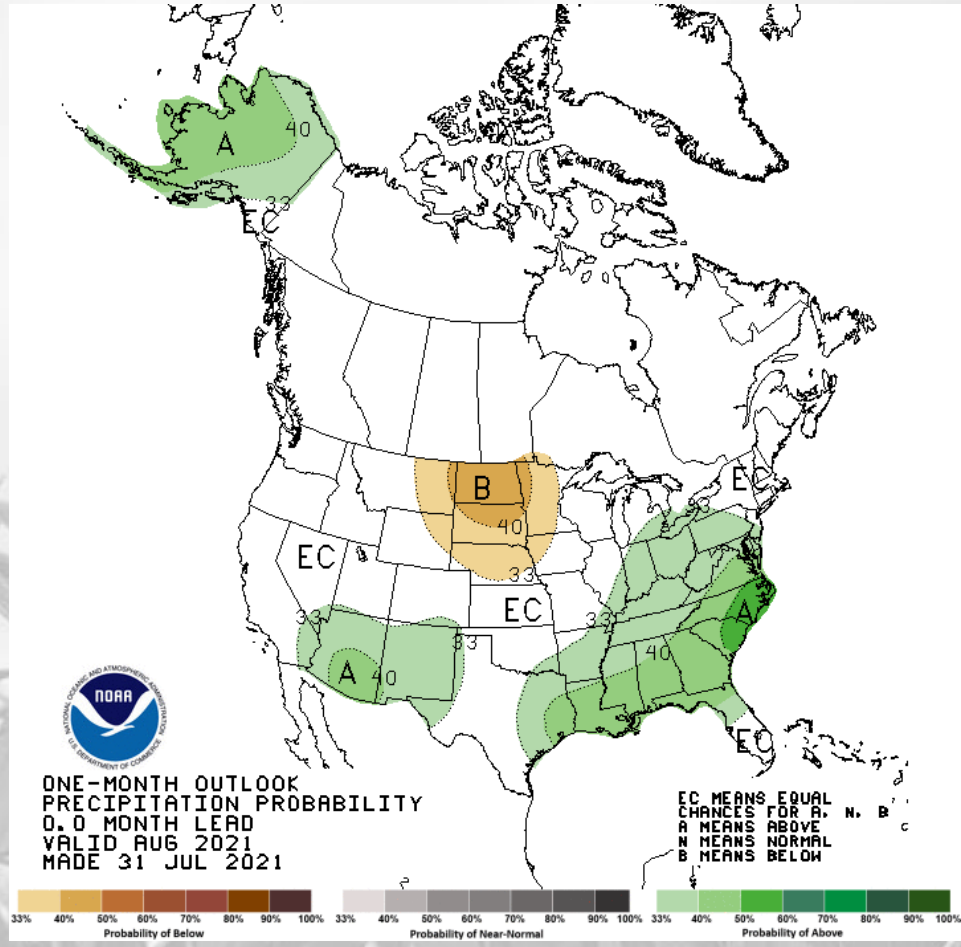
Precipitation

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

August Temperature and Precipitation Probabilities



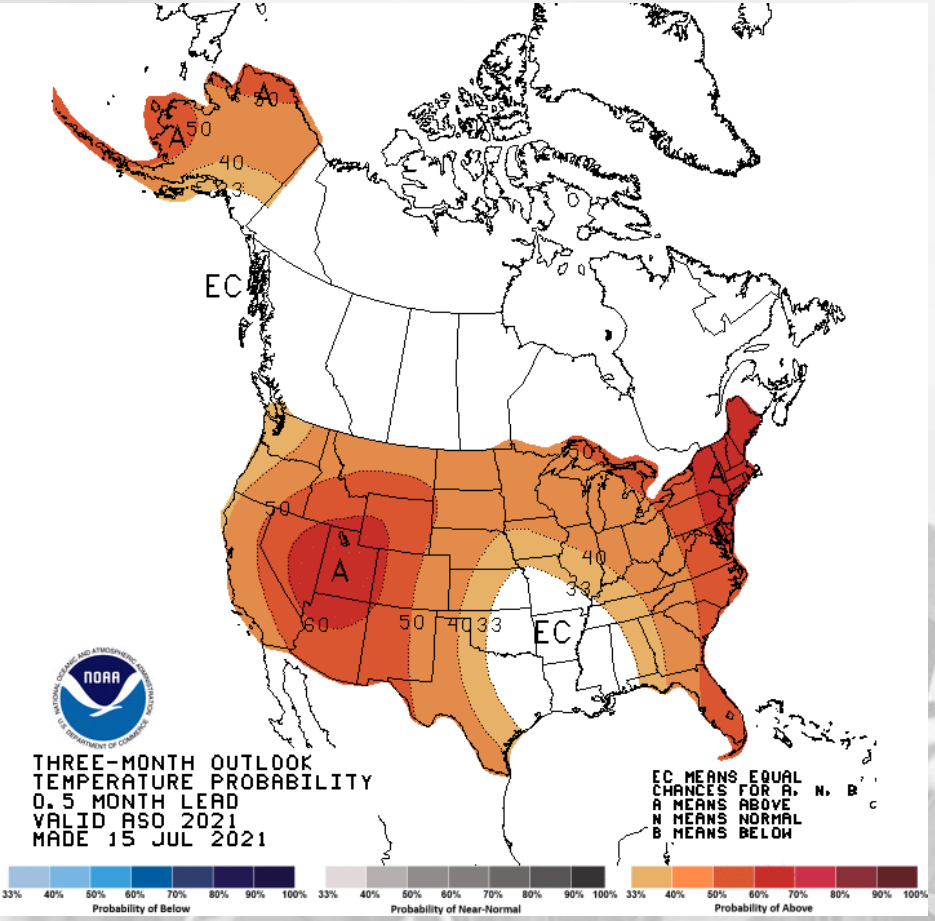
Temperature

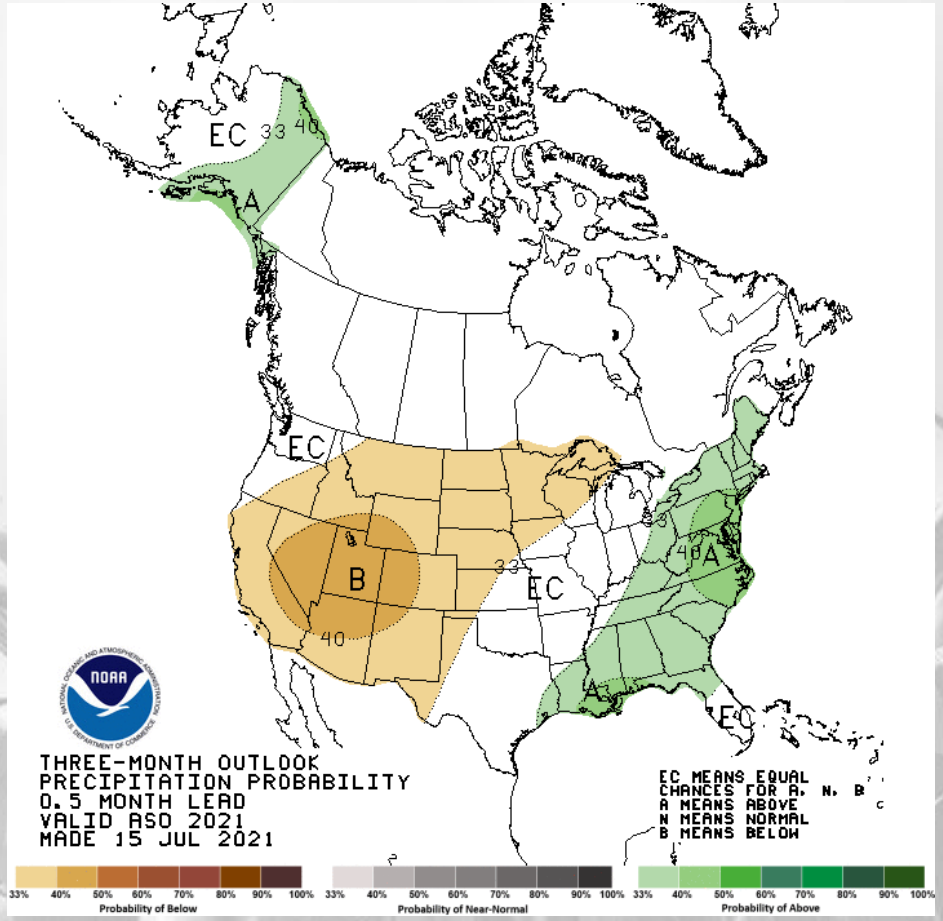


Precipitation

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

August-October Temperature and Precipitation Probabilities

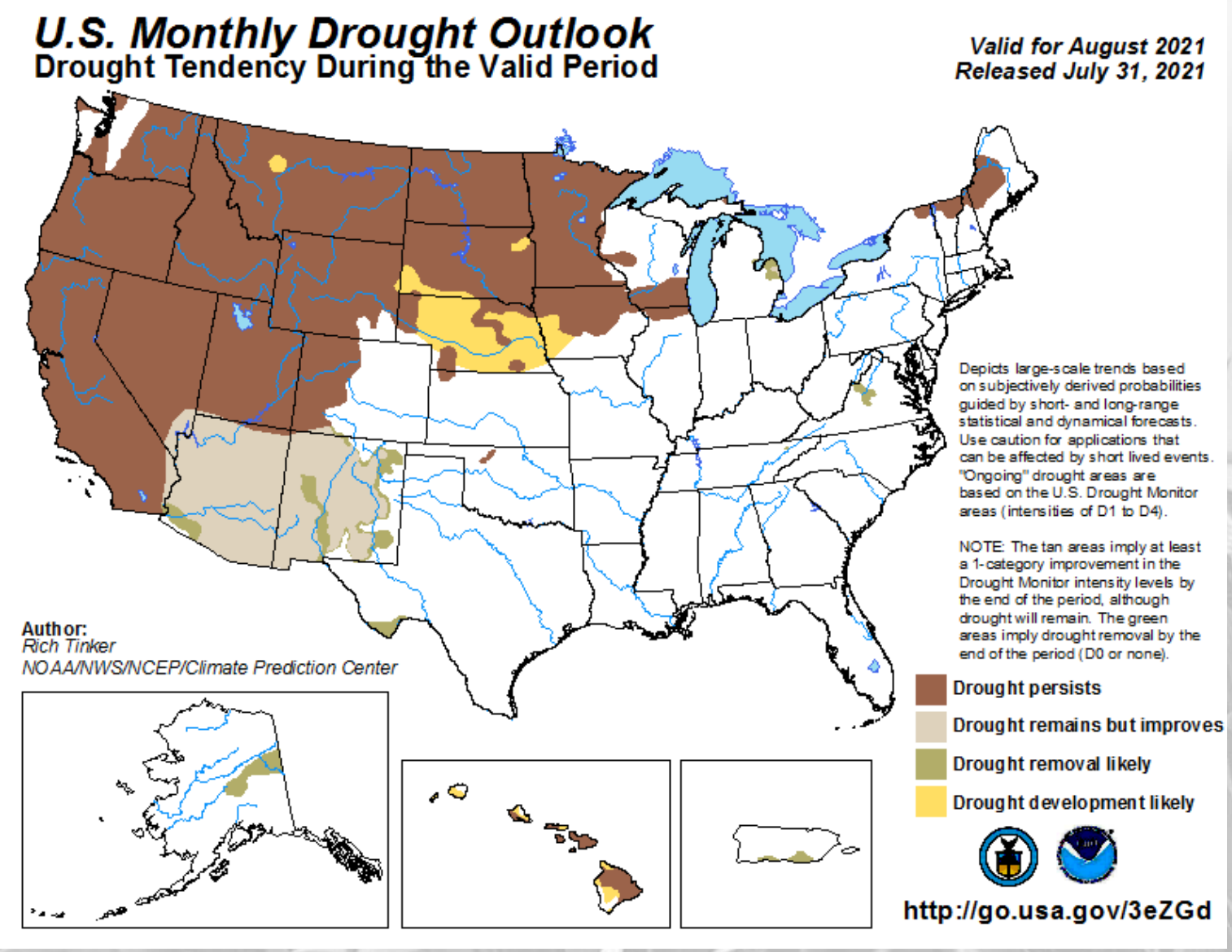




Temperature **Precipitation**

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=2

Drought Outlook through 31 August



http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif/

Summary - Conditions

* Mostly warmer than average north/west – cooler to south/east.
* Generally dry in plains with a little recent improvement
* Worsening central plains and some places eastward
* East generally good.

* Drought issues persist northern Plains. Smaller pockets elsewhere.
* Various water issues – mostly west
* Small wetness issues
* Fire/smoke problems many areas

Summary - Outlooks

* Not major changes seen
* Into August mostly warmer and western areas slightly likely drier.
* Eastern areas mixed signals but likely better overall
* Drought should persist and possibly expand into central plains.

* Crops will mimic this – generally better east and worse to the west.

Further Information - Partners

- **Today's and Past Recorded Presentations and :**
  - https://mrcc.illinois.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/
- State climatologists
  - http://www.stateclimate.org
- Regional climate centers
  - http://mrcc.isws.illinois.edu
  - http://www.hprcc.unl.edu

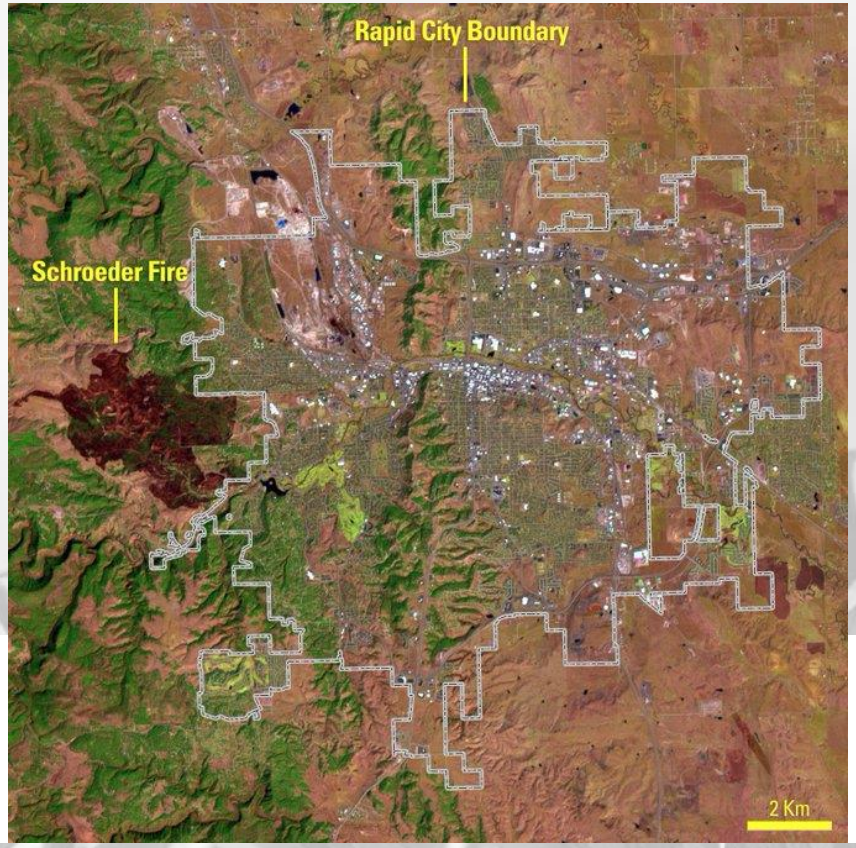
Thank You and Questions?

- Questions:
  - **Climate:**
  - 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
  - Molly Woloszyn molly.woloszyn@noaa.gov, 217 244-7612
  - **Weather:**
  - crhroc@noaa.gov

For More Information

@dennistodey

https://www.climatehubs.usda.gov/hubs/midwest



Dennis Todey, Director
515-294-2013
Dennis.todey@ars.usda.gov

National Laboratory for Agriculture and the Environment
Attn: Midwest Climate Hub
1015 N University Blvd
Ames, Iowa 50011-3611

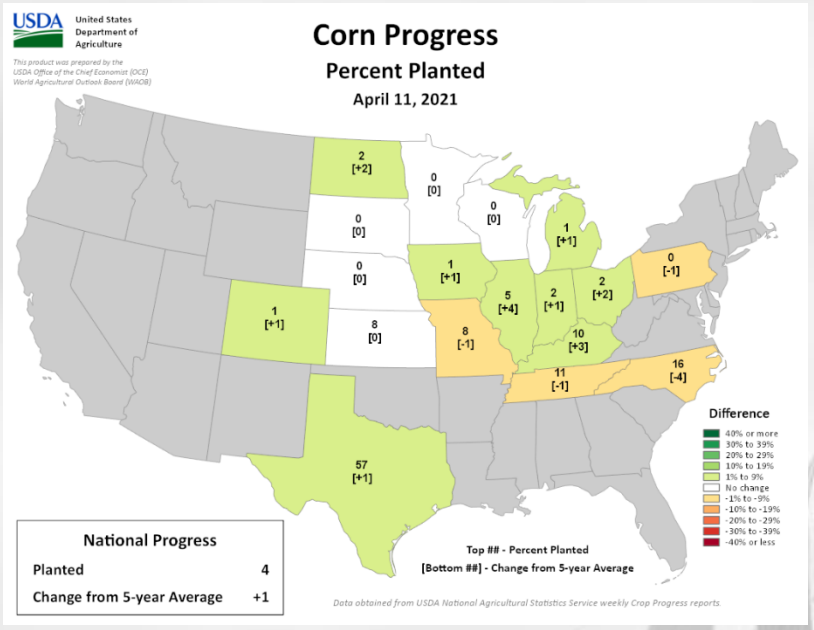
USDA Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

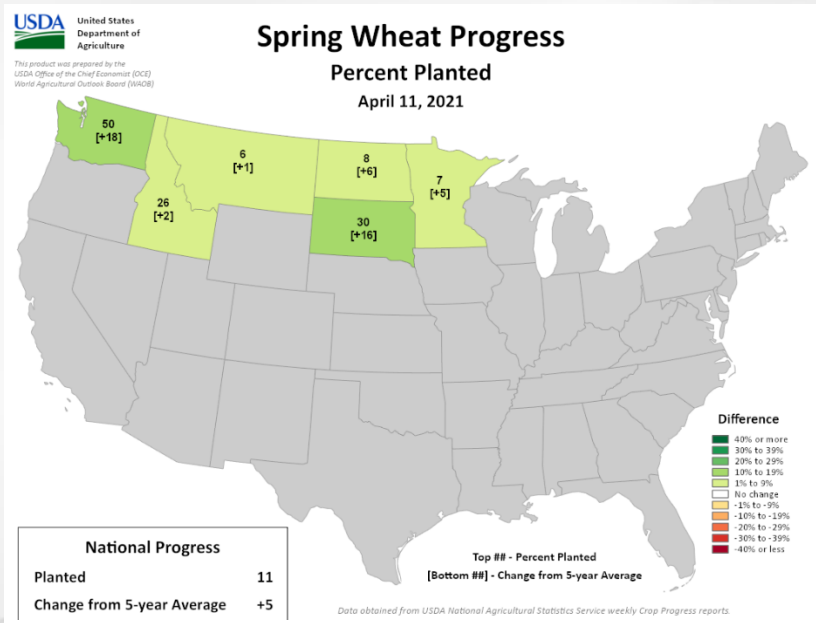
March Precip Details

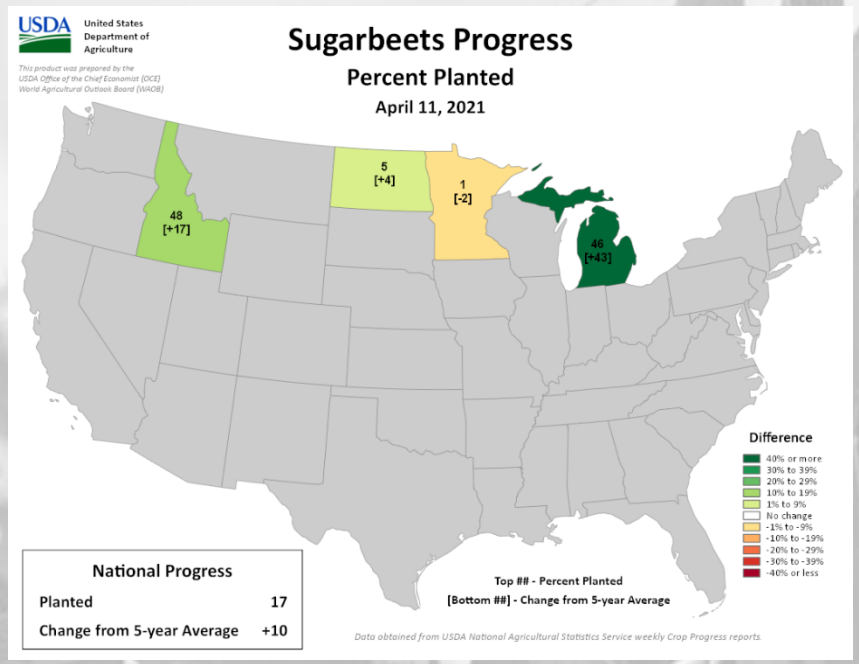
- Wettest March on record
  - Caspar, WY
  - Goodland, KS
  - Grand Island, NE
- Driest March
  - Dickinson, ND
  - Bismarck (3rd)
  - Mobridge, SD (4th)
- Snowiest March
  - Caspar, WY
  - Denver, CO

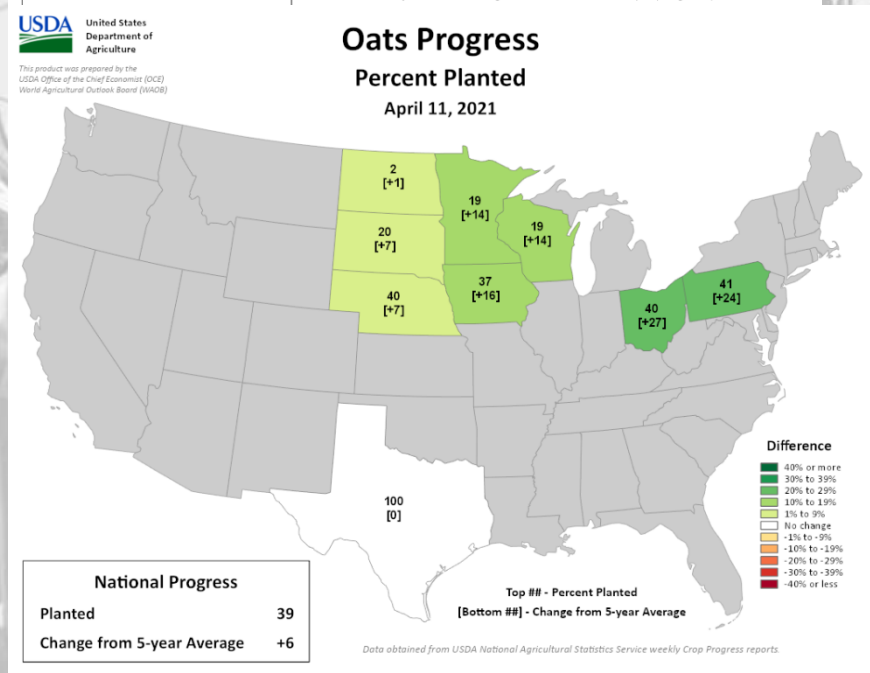
Photo: Ray Wolf
NWS Quad Cities

USDA NASS Crop Progress





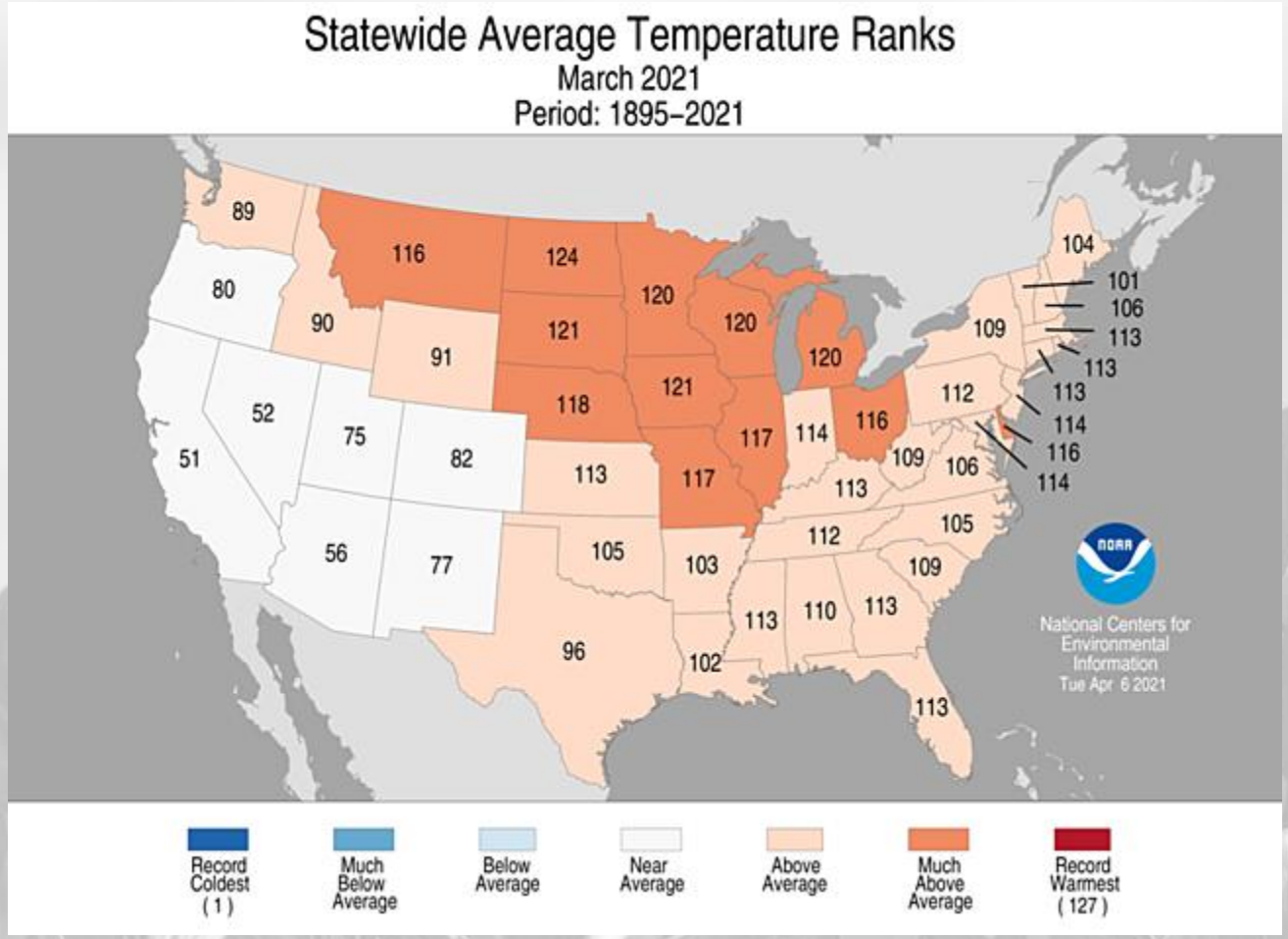




March Temperature Recap

After a cold period in February March was very warm through the central US.

Top 10 warmest in most states in the region.

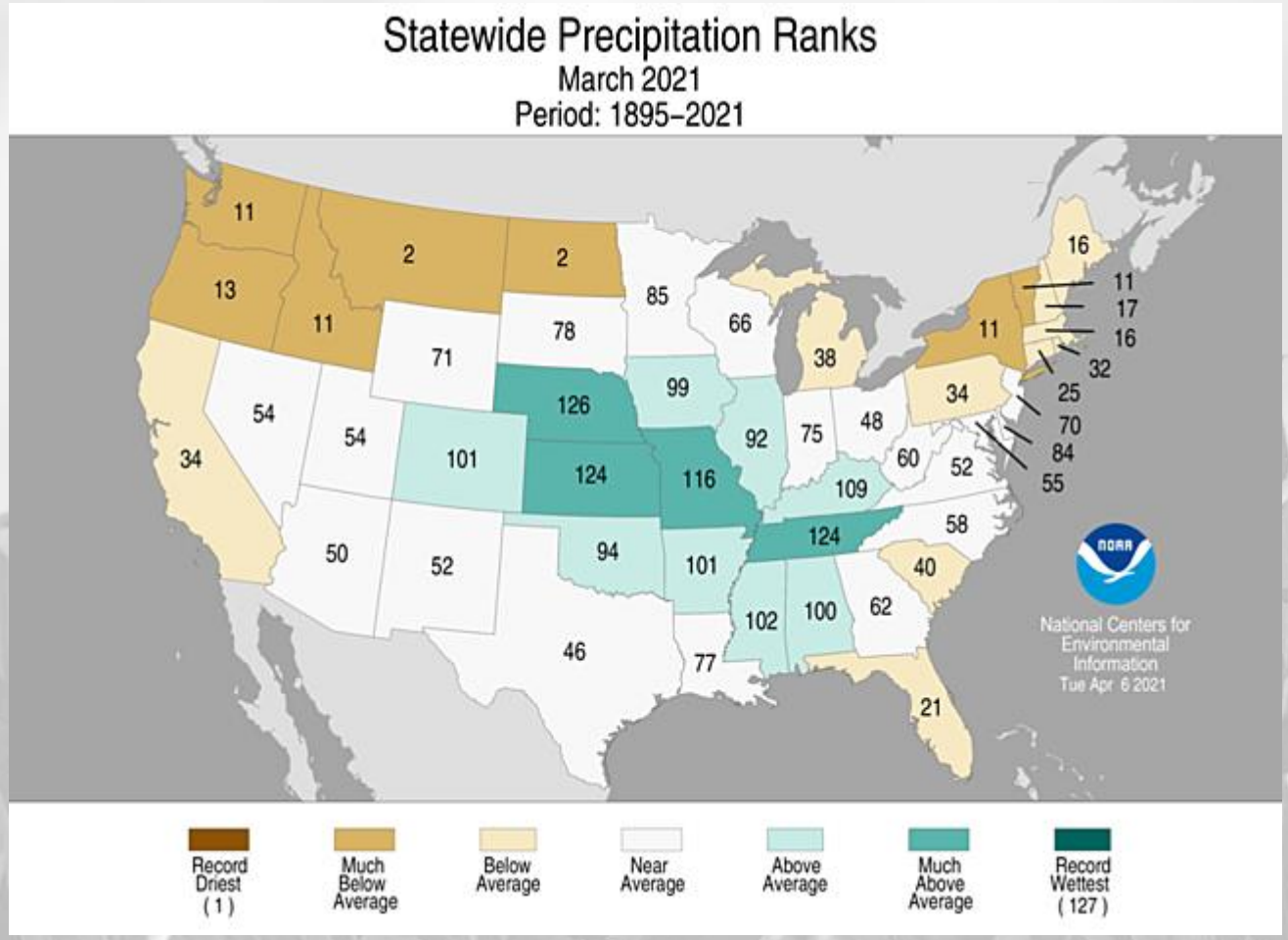


http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

March Precipitation Recap

Strong contrast across the region in precipitation. Wet to the south and dry to the north.

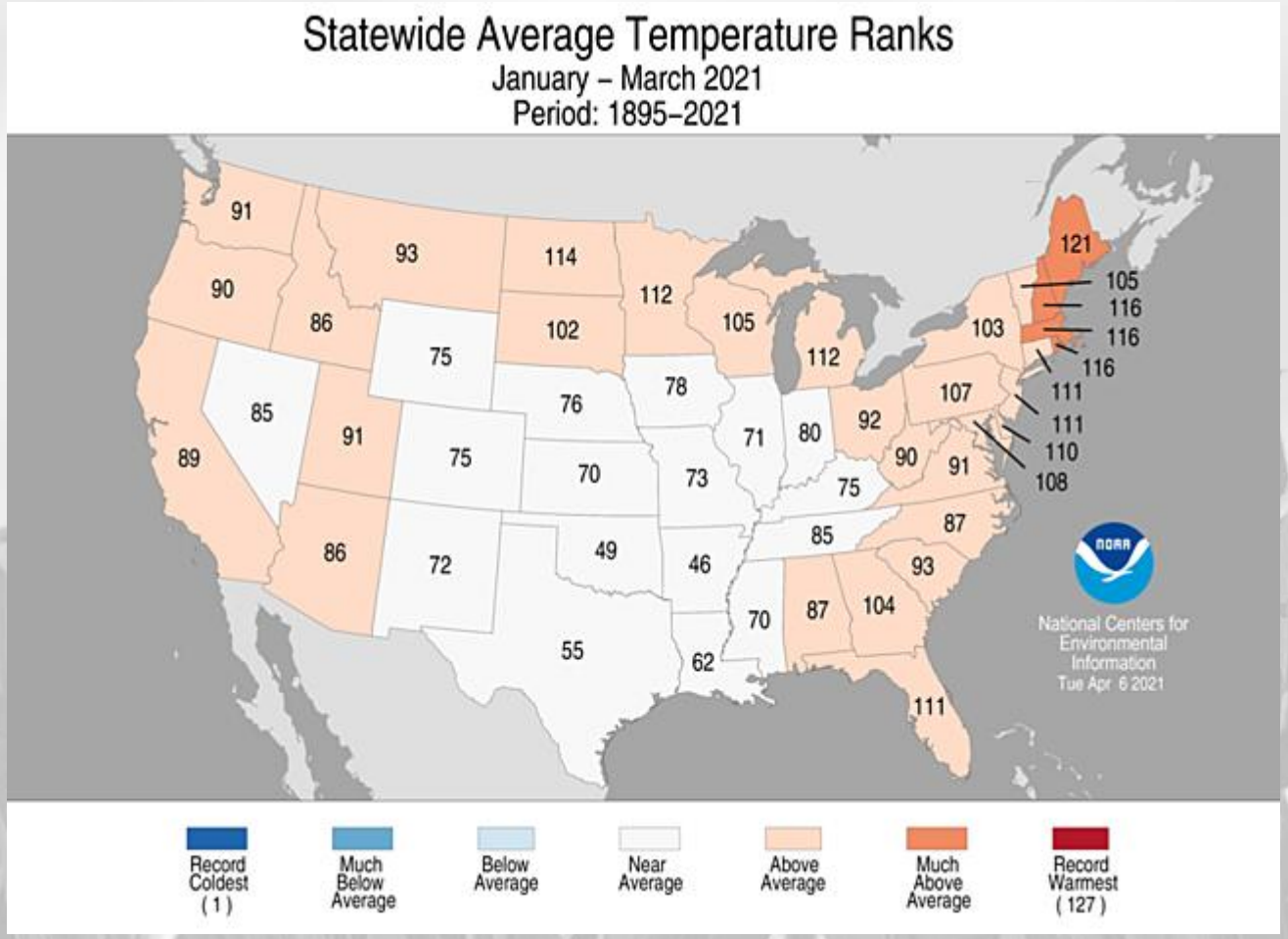
Top 5 wettest NE/KS. Top 5 driest ND/MT.



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

January-March Temperature Recap

Cold February had a large impact across the south, while northern areas stayed relatively warm.

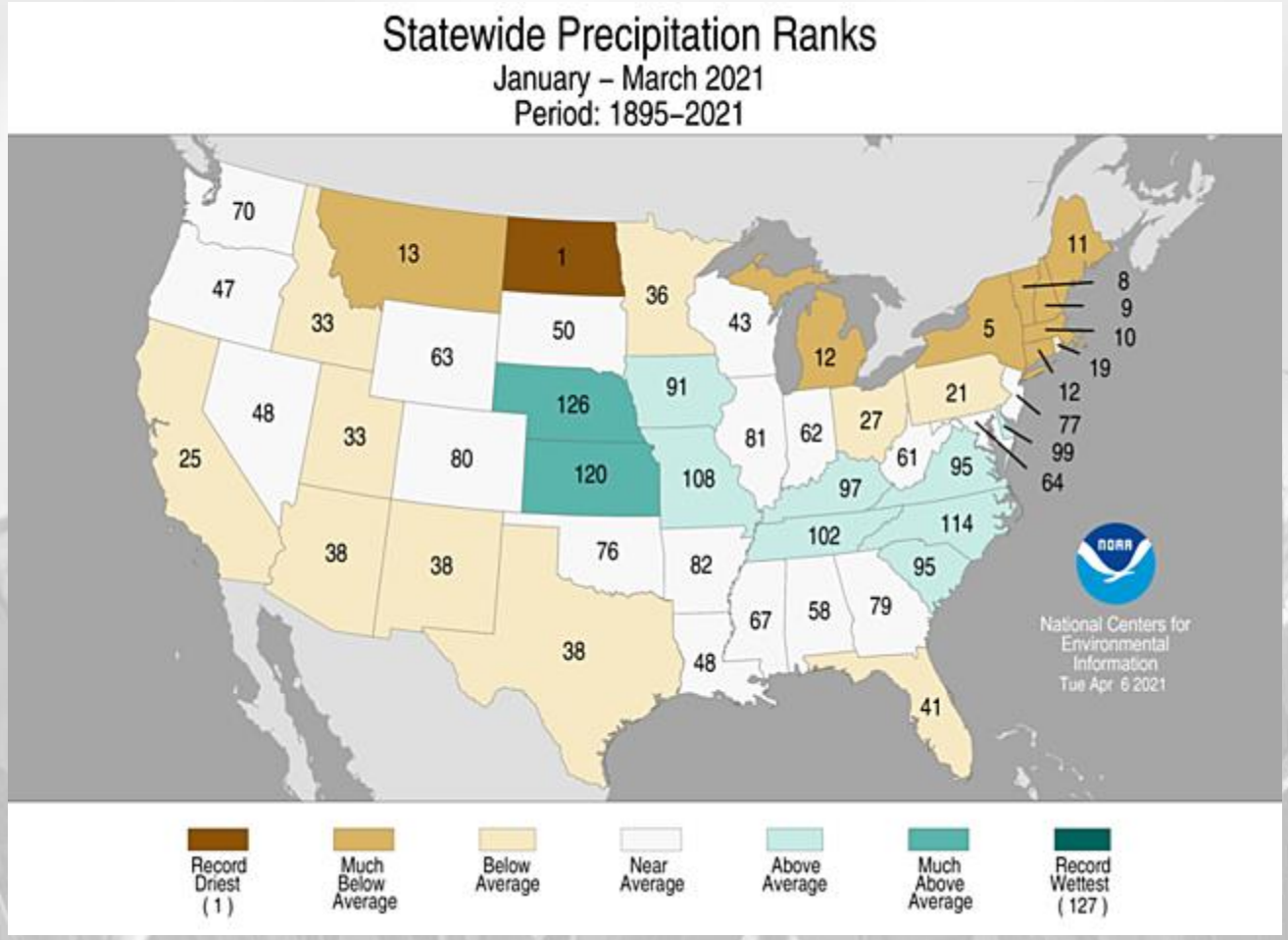


http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

January-March Precipitation Recap

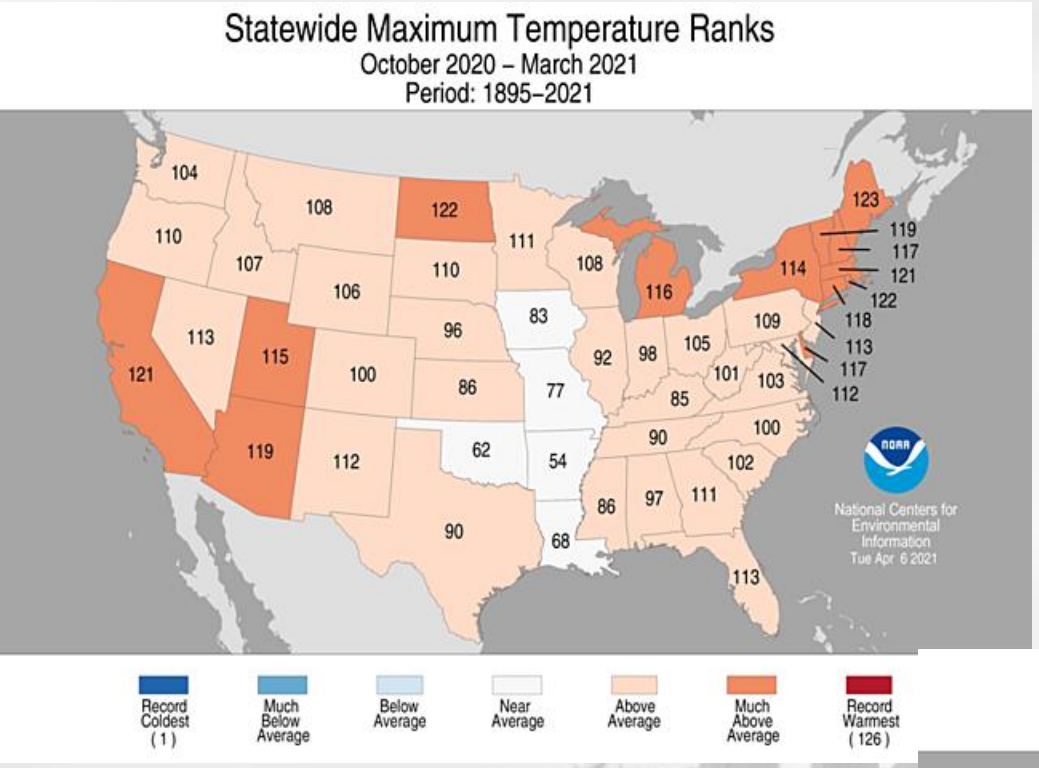
Precipitation contrast shows again Jan.-Mar. Wet across central areas and dry to north.

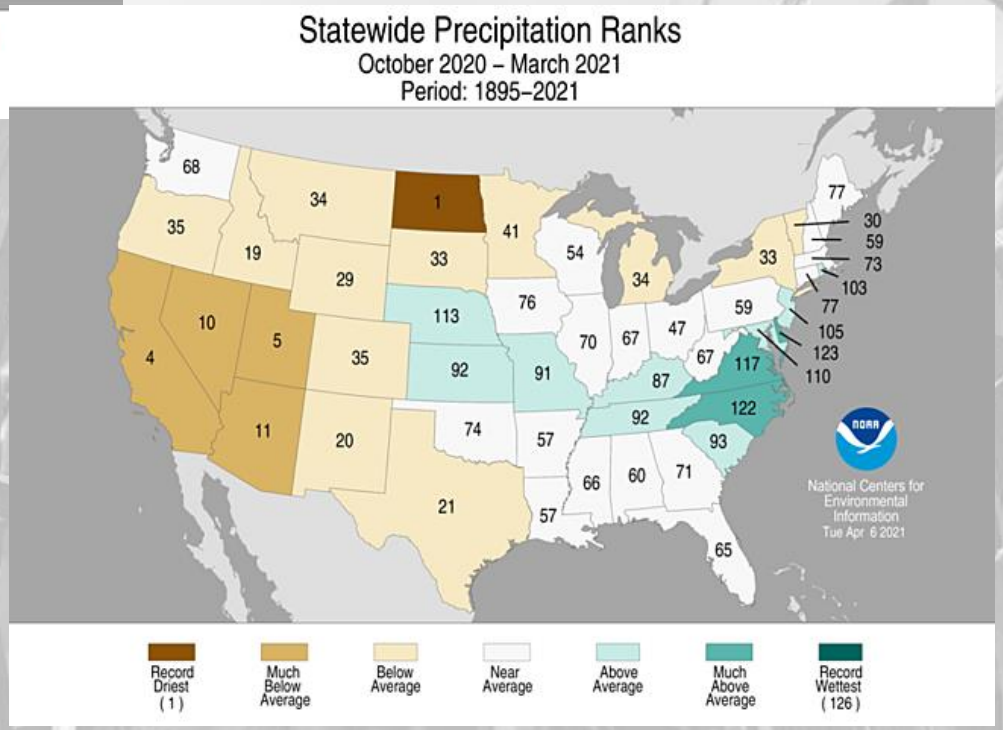
Second wettest on record for Nebraska, driest on record for North Dakota.



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

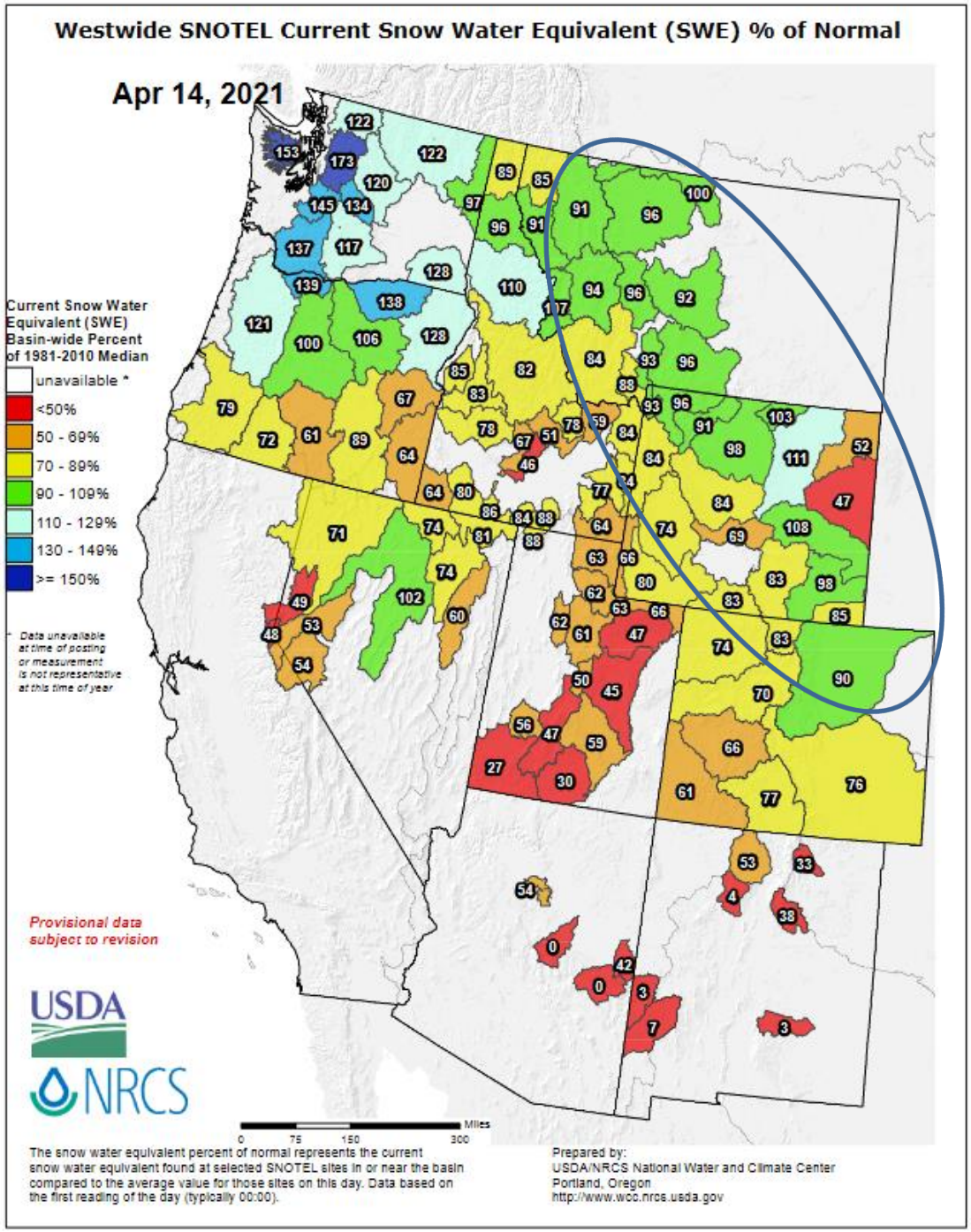
October-March





Generally warmer than average and dry across the north and west again.

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

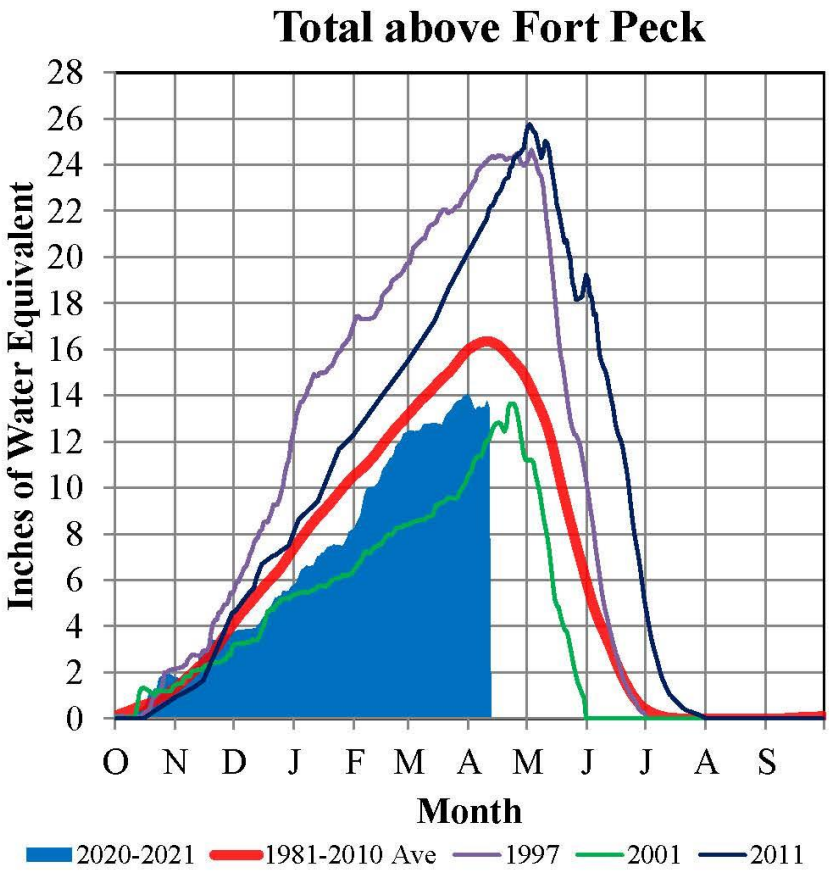


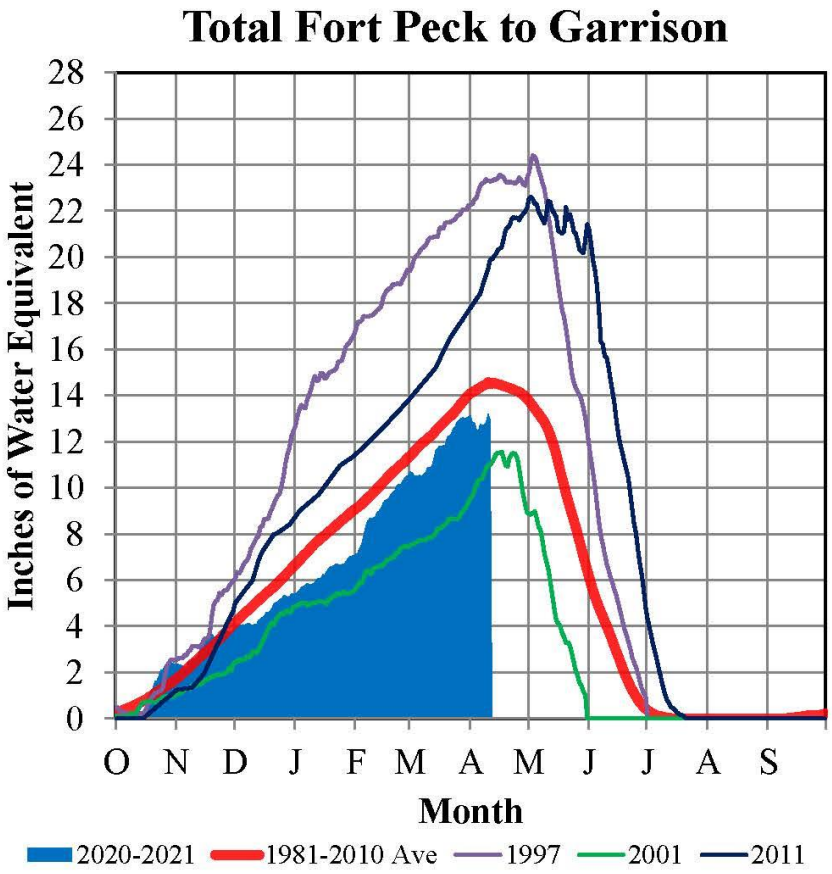
NRCS Snow Water Equivalent

- Most front range close to average.
- Melting out early.

Missouri River Basin – Mountain Snowpack Water Content 2020-2021 with comparison plots from 1997*, 2001*, and 2011

11-Apr-2021

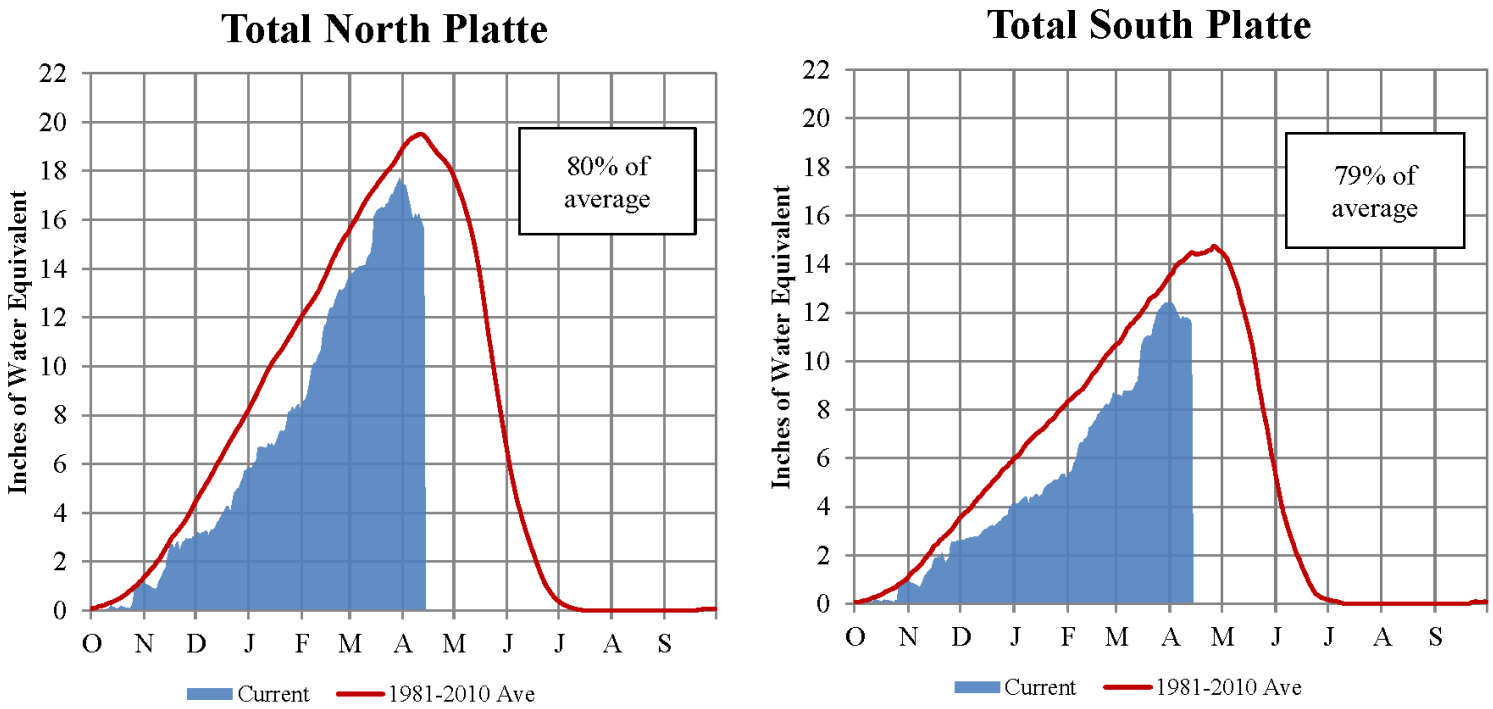




On April 11, 2021 the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach was 13.5", 82% of the April 11 average. On April 11, 2021 the mountain SWE in the "Fort Peck to Garrison" reach was 13.0", 89% of the April 11 average. The normal peak for both reaches is near April 15.

Provisional data. Subject to revision.

Platte River Basin - Mountain Snowpack Water Content
Water Year 2020-2021
April 14, 2021

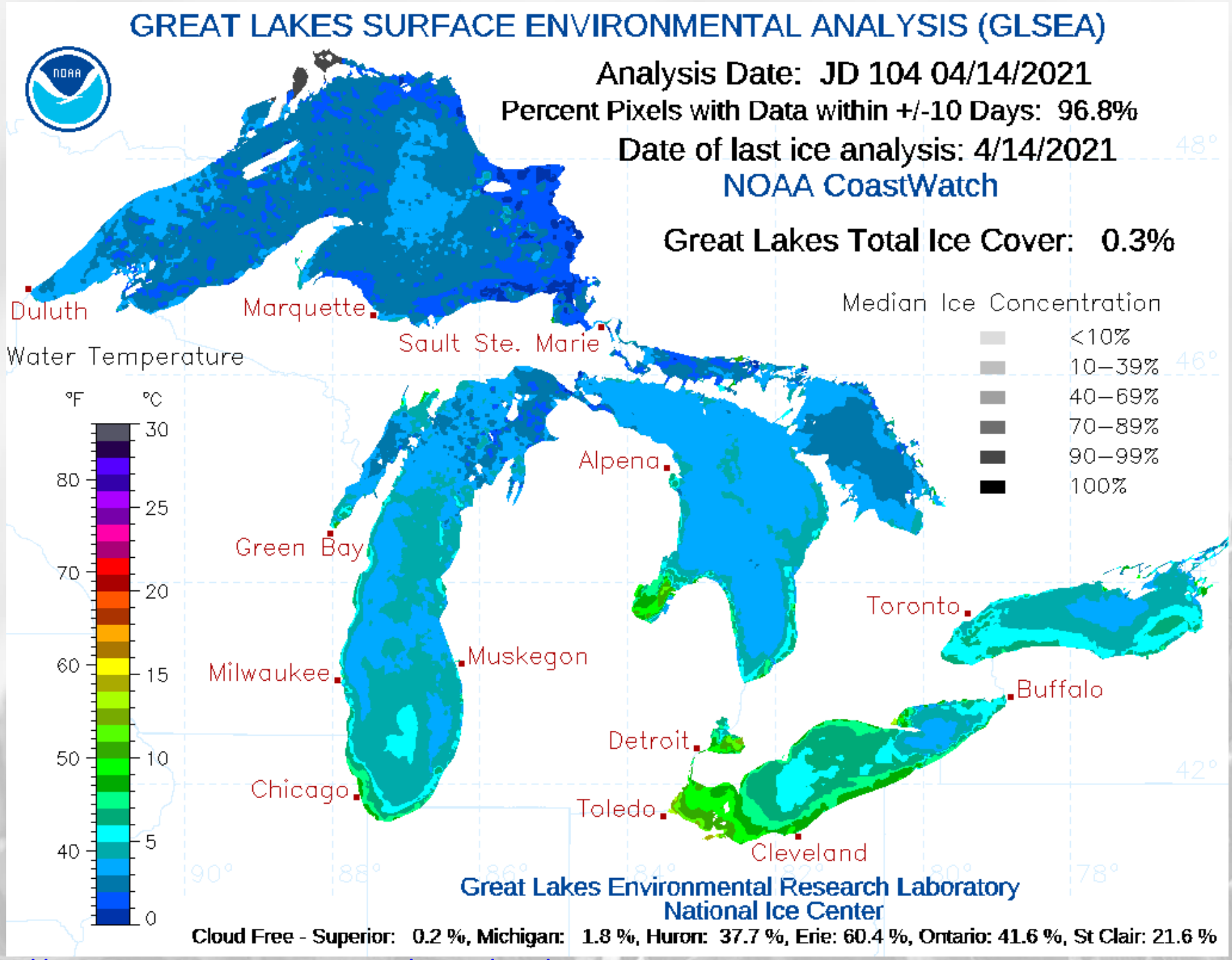


The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of April 13, 2021, the mountain snowpack SWE in the "Total North Platte" reach is currently 15.6", 80% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 11.5", 79% of average.

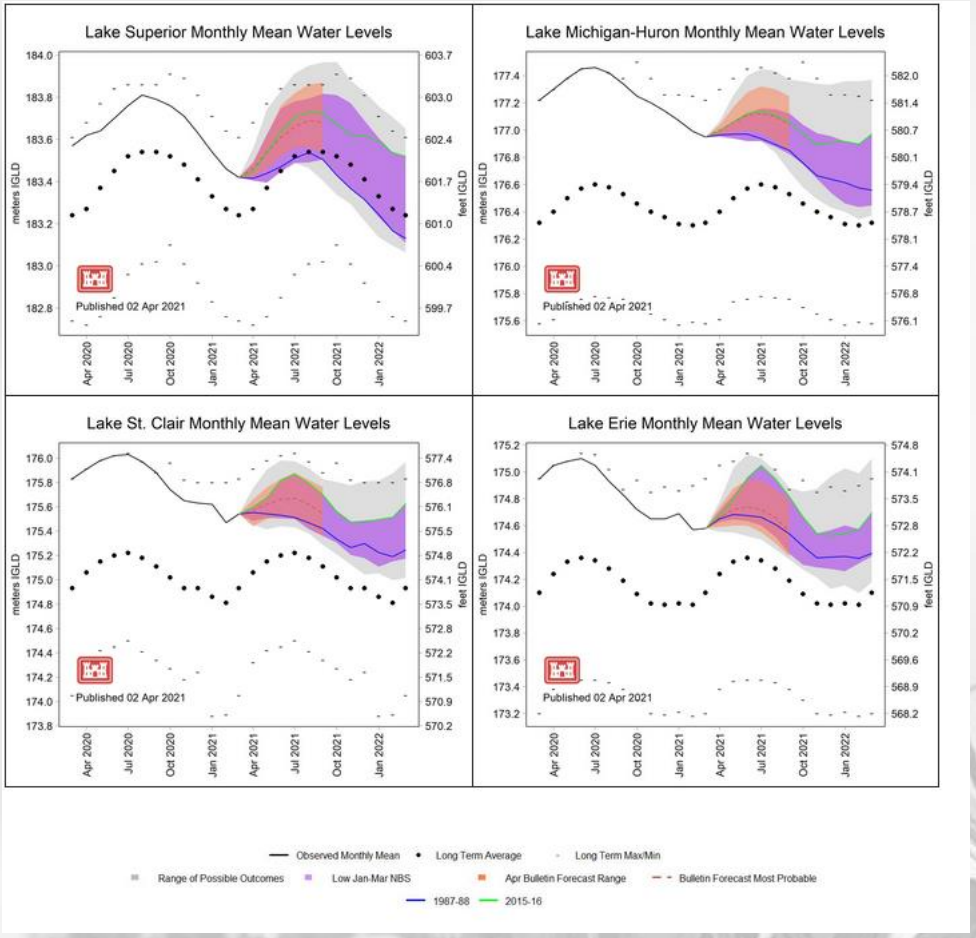
Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

https://www.nwd-mr.usace.army.mil/rcc/reports/platte_snow.png



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

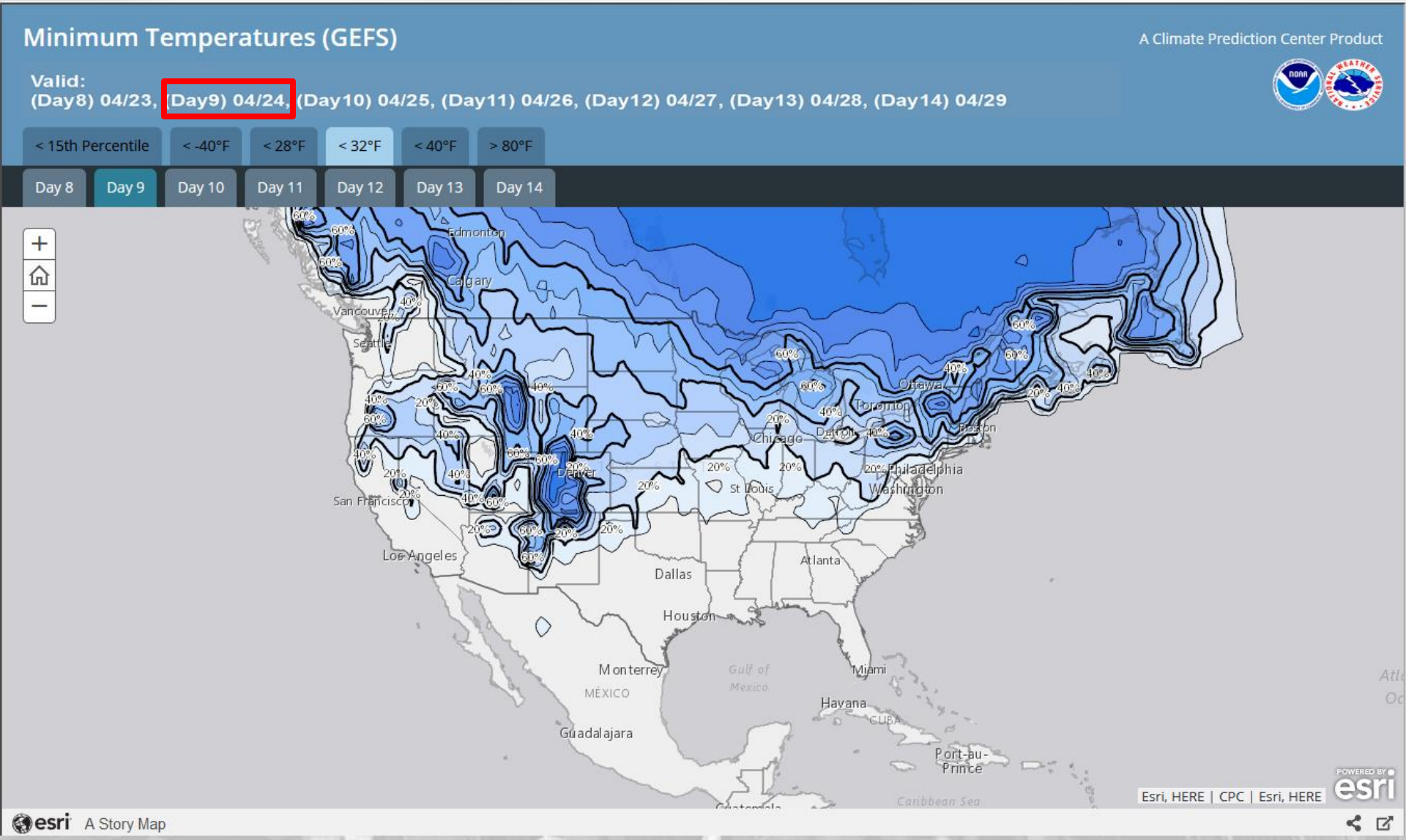


Great Lakes Levels

- Lower lakes up slightly
- Others generally falling from record level but still above averages.
- Dryness in region contributing.
- Possible rebound, but unlikely back to record levels.

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

Risk of Temperature < 32 F

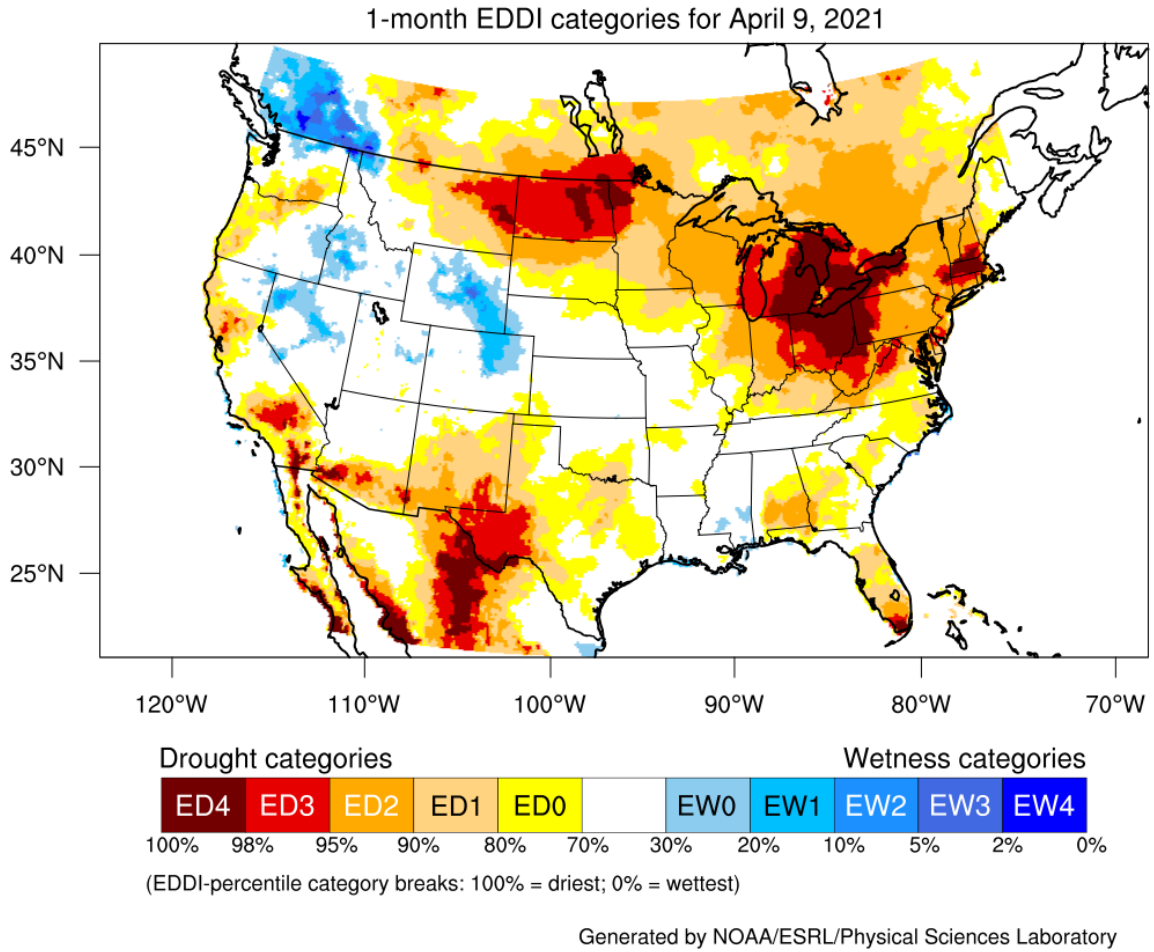


Other Crop Impacts

Frozen soybeans IL Chelsea Harbach, Director of the U of I Northwestern Illinois Ag R&D Center

- Other crop reports
  - Some small grain/cover crop damage in Northern Plains
  - Row crops mostly unaffected (corn, soybeans, others). Some early planted soybeans in IL probably lost.
  - Not emerged from soil or can recover from freeze

EDDI – Evaporative Demand Index



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