USDA Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

Growing Season 2022 – Look Out for La Niña

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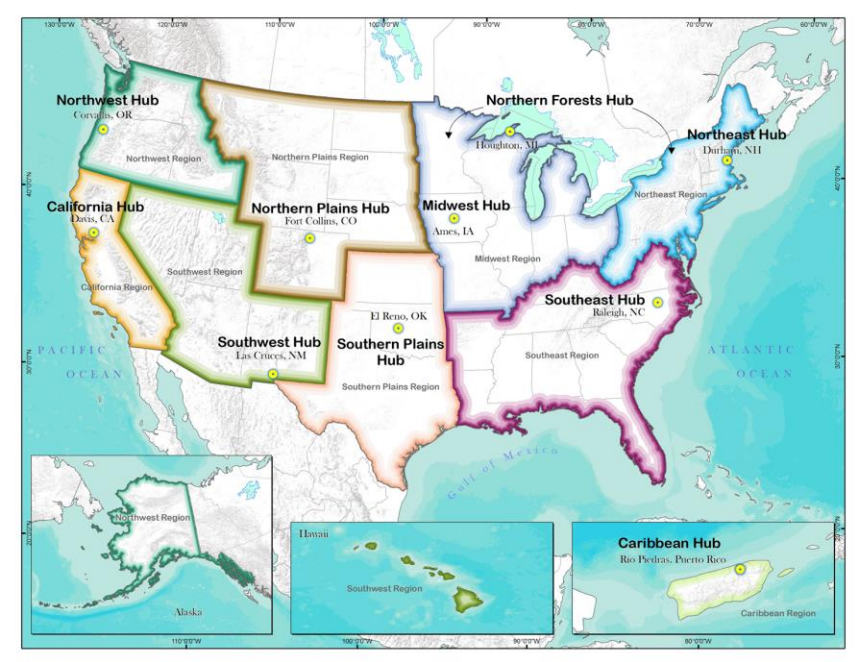
Topics

- A brief Background of USDA Climate Hubs
  - The need, mission
  - More on the Midwest Climate Hub
- Current situation
- Outlooks
- Resources of the USDA Midwest Climate Hub
  - Website
  - For more Information

Intro to Climate Hub Work



Assessments and Syntheses
delivering relevant information

Outreach and Education
enabling climate-informed decisions

Technical Support
facilitating engagement, discovery and exchange

Agricultural Research Service

NRCS

Here in the Midwest…

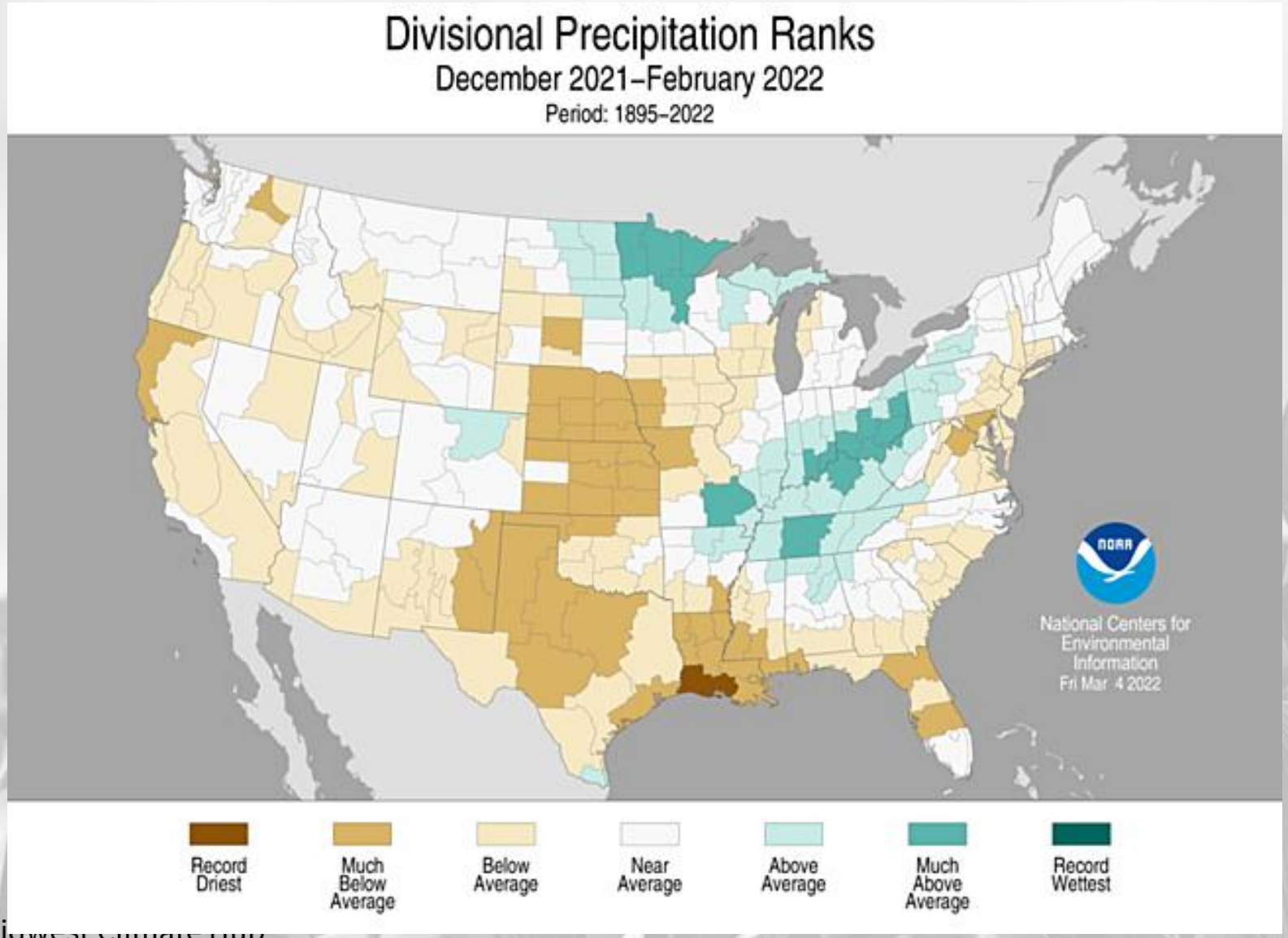
Our Goal

To provide information to help producers cope with climate change through **linkages of research, education and partnerships** in a region that represents one of the **most intense areas of agricultural production** in the world.

2020 to now

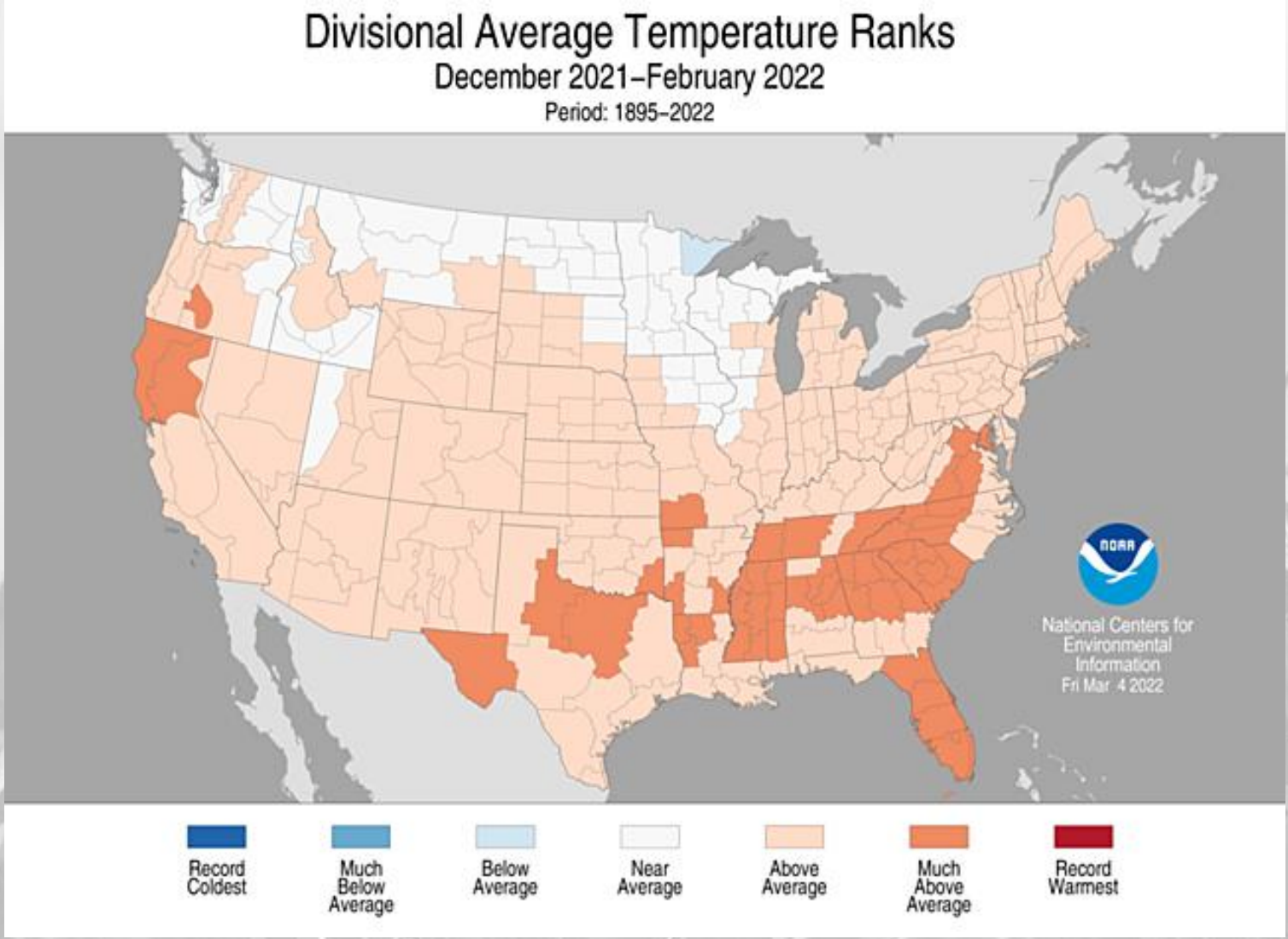
BRIEF LOOK BACK

Winter 2021-22 Precipitation Ranks



https://www.ncei.noaa.gov/access/monitoring/us-maps/

Winter 2021-22 Temperature Ranks



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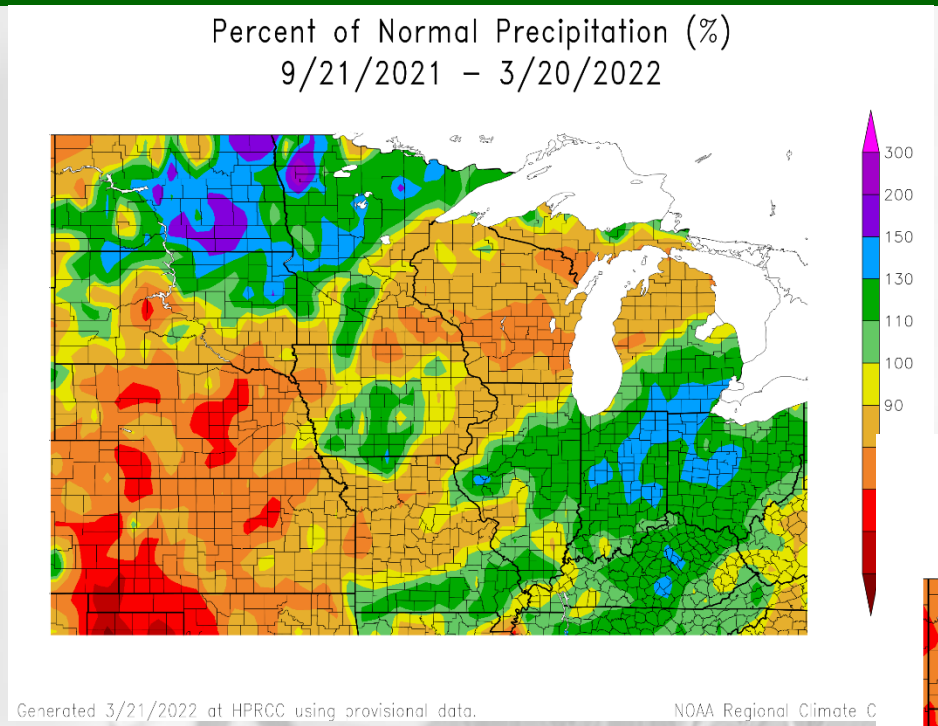
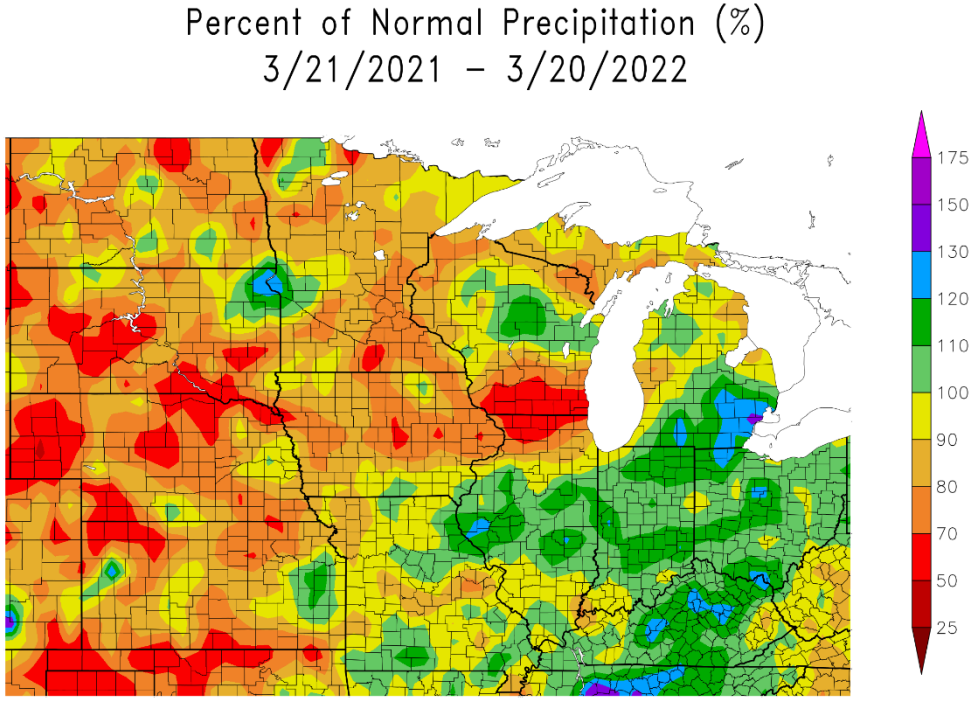
https://www.ncdc.noaa.gov/temp-and-precip/us-maps/

6/12 month Precip. % Avg.



Mostly dry over Iowa longer term.
Wetter east.



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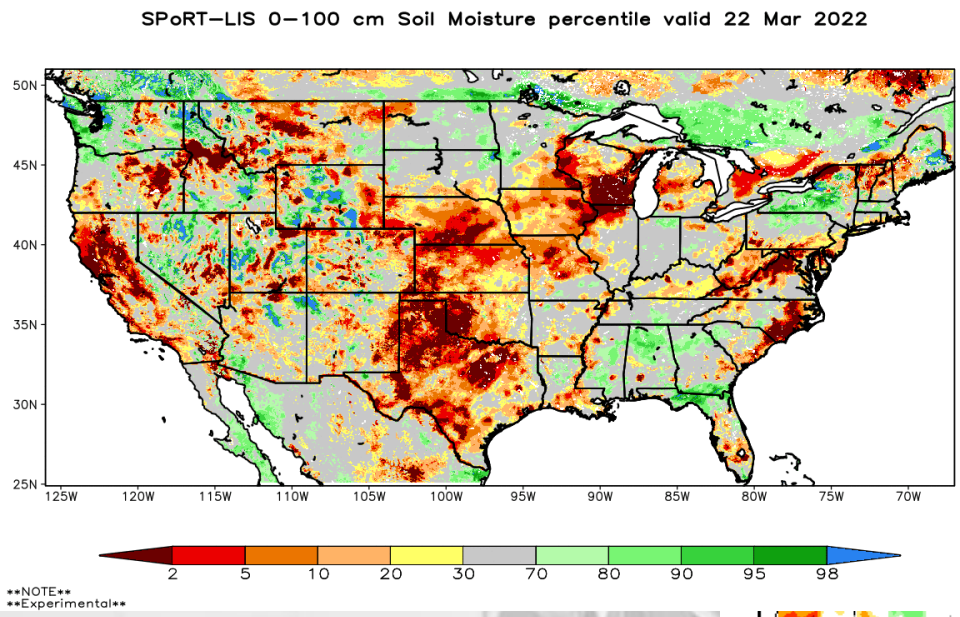
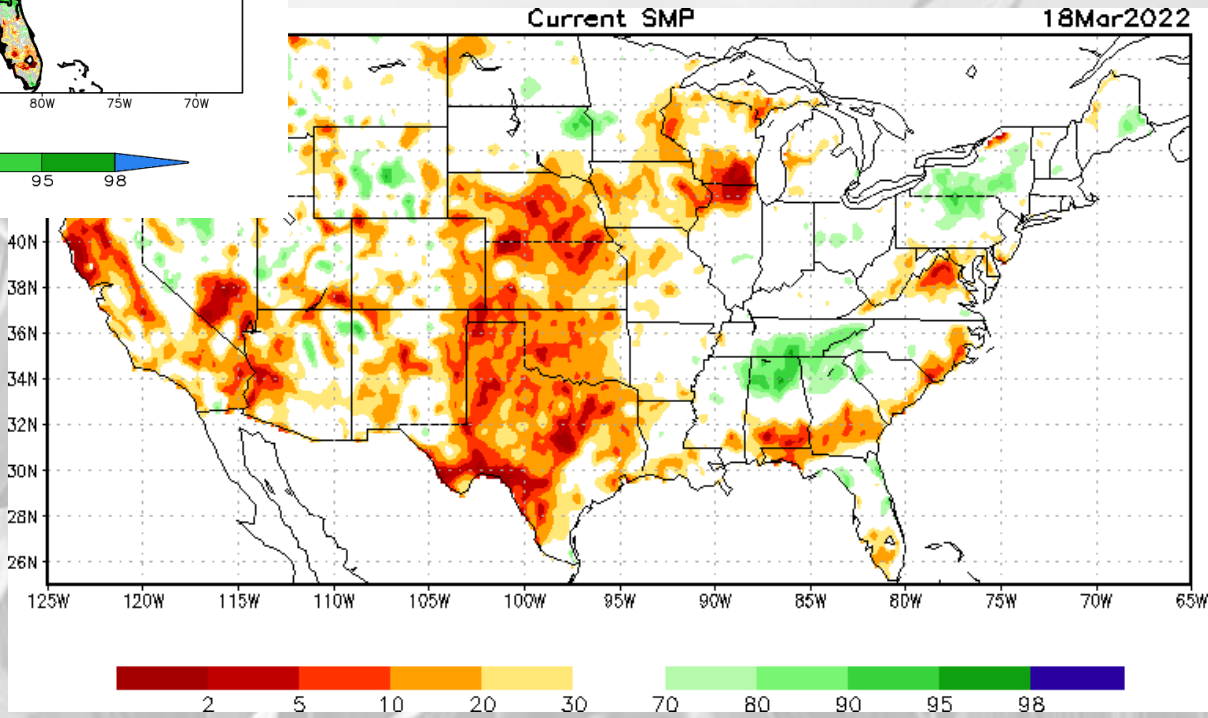
https://hpr

Soil Moisture



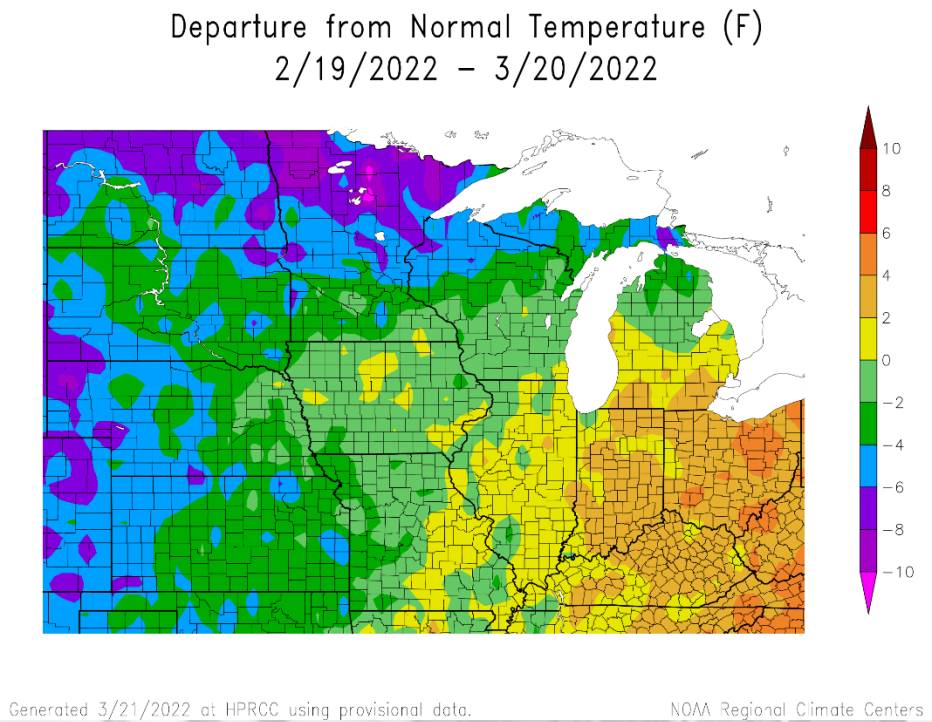
Assessing soil moisture difficult this year – regionally.
Some consistent areas.



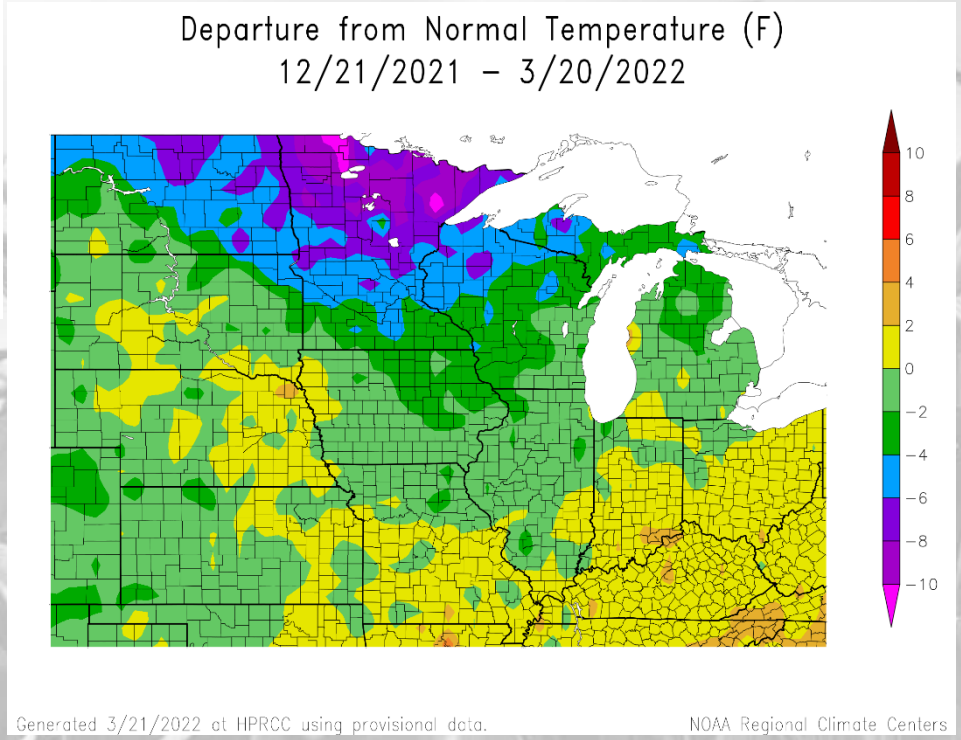
https://weather.msfc.nasa.gov/sport/case_studies/lis_CONUS.html

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

90/30 Day Temperatures



Warmer than average last 90 days north. Cold due to extreme event last 30 days.



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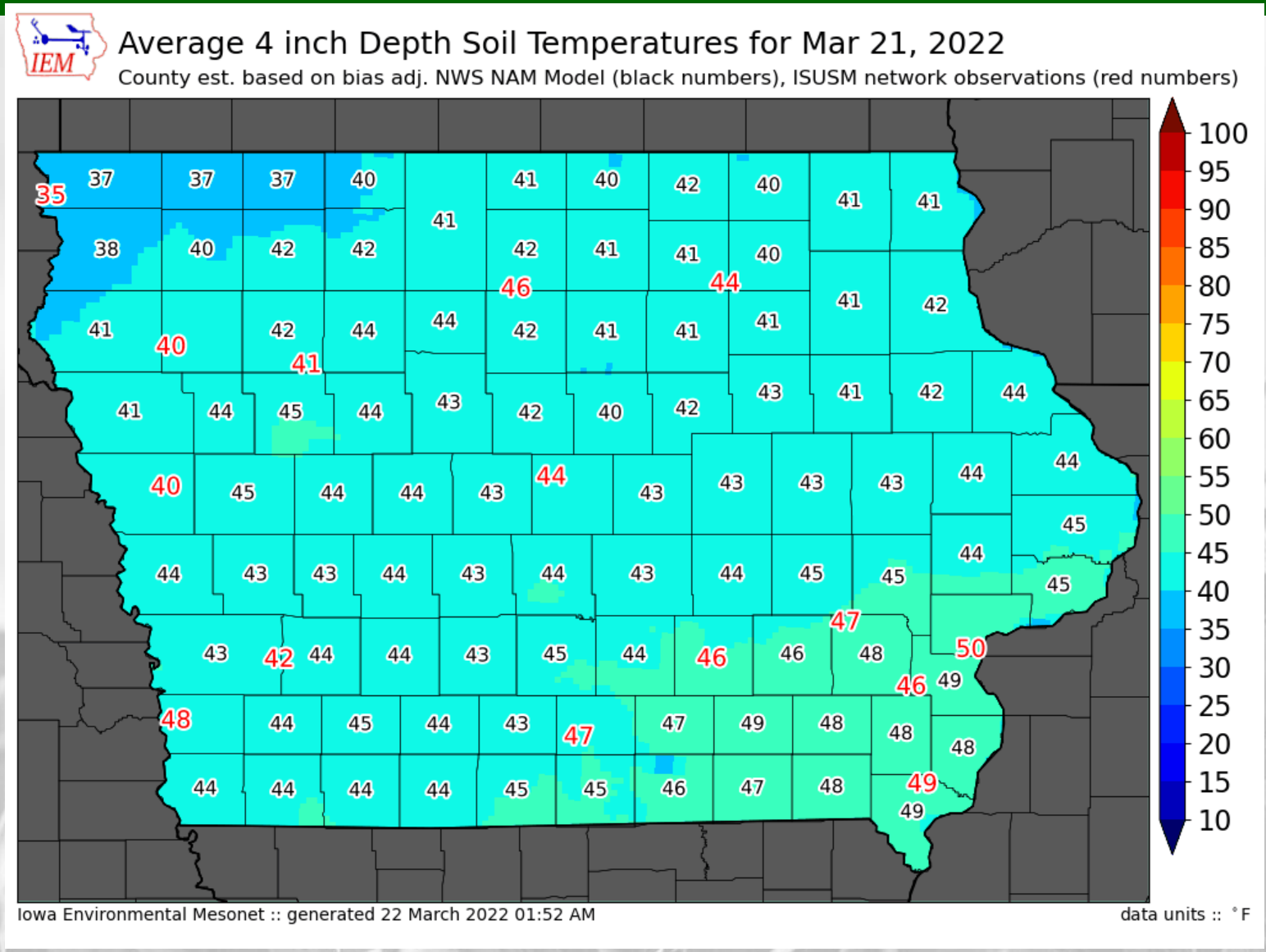
https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

Where are we right now?

CURRENT CONDITIONS

Soil Temps

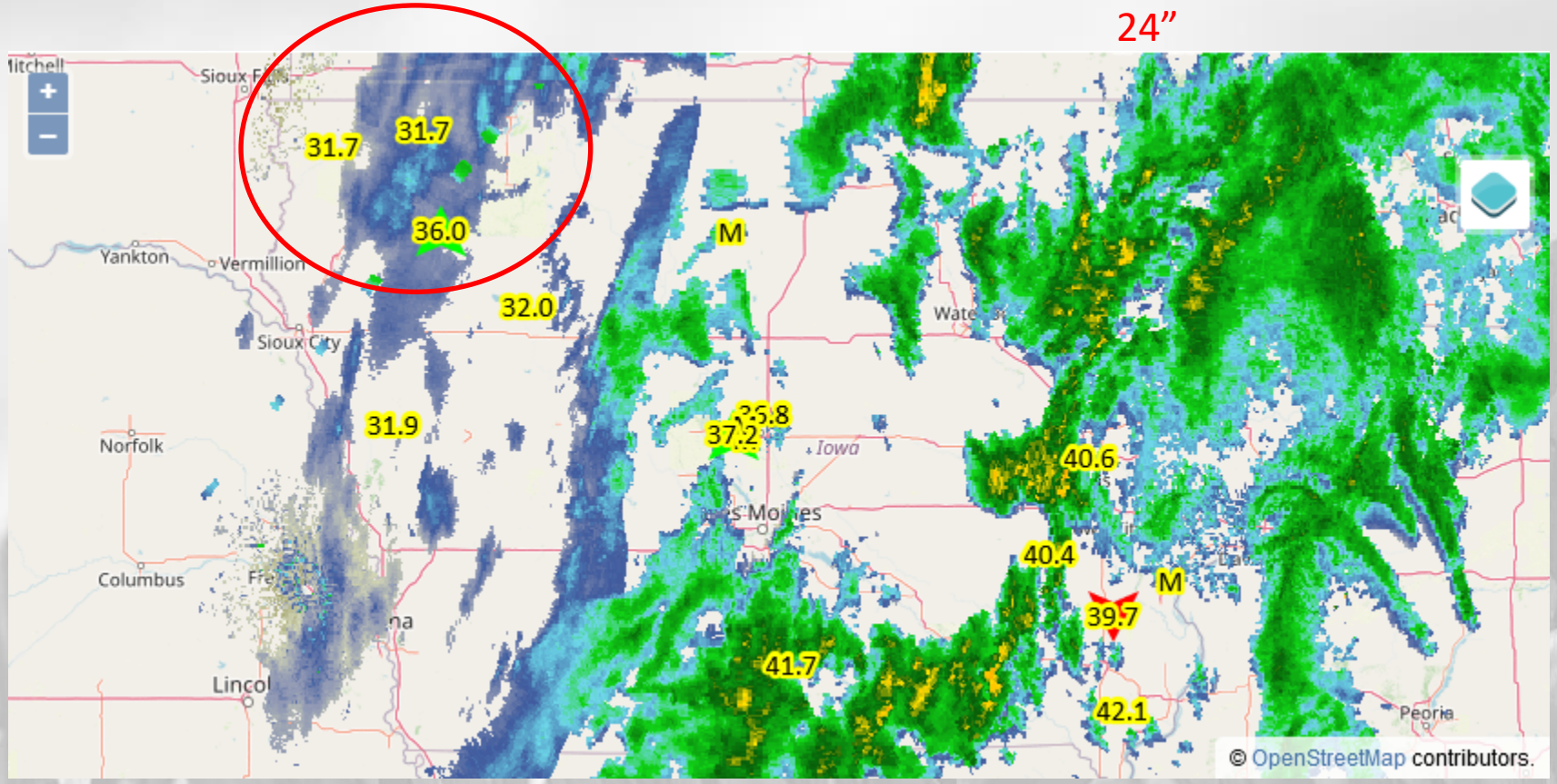


https://mesonet.agron.iastate.edu/agclimate/soilt.php

Frost Depths

Still some frost at depth in NW IA.

24”



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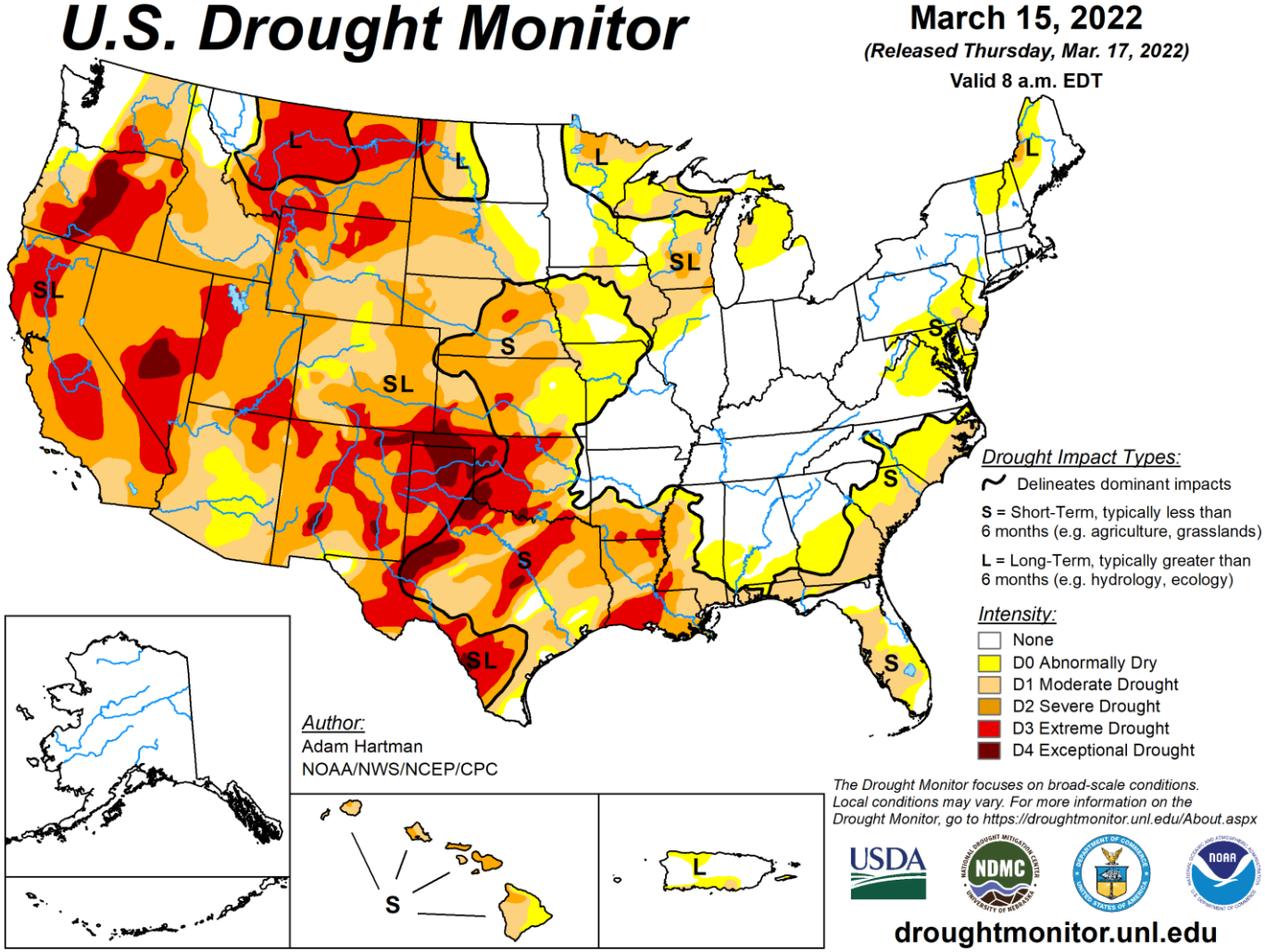
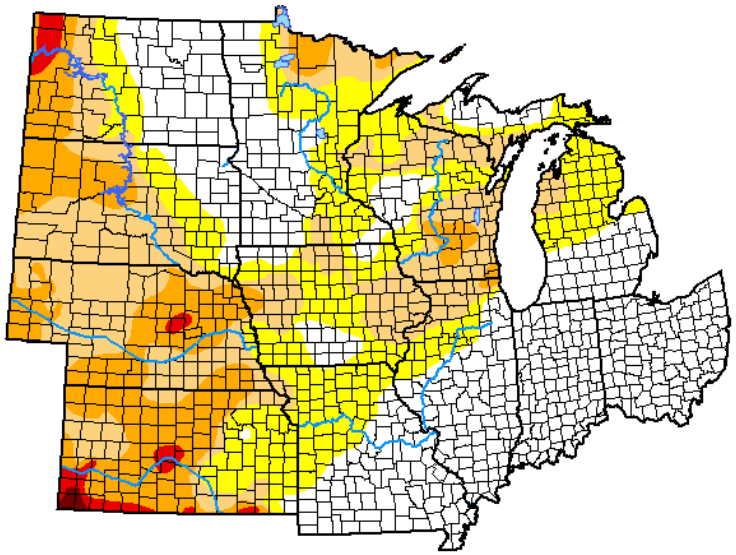
https://mesonet.agron.iastate.edu/agclimate

US Drought Monitor



Severe drought conditions throughout much of western US.

US Drought Monitor



U.S. Drought Monitor

North Central States

March 15, 2022

(Released Thursday, Mar. 17, 2022)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.33	61.67	39.22	16.49	1.67	0.18
Last Week 03-08-2022	38.30	61.70	39.19	14.86	1.25	0.18
3 Months Ago 12-14-2021	44.02	55.98	26.74	9.67	1.32	0.00
Start of Calendar Year 01-04-2022	44.51	55.49	27.55	7.10	1.31	0.00
Start of Water Year 09-28-2021	39.88	60.12	38.68	24.50	9.27	0.04
One Year Ago 03-16-2021	33.97	66.03	28.80	14.02	1.75	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:

Adam Hartman

NOAA/NWS/NCEP/CPC

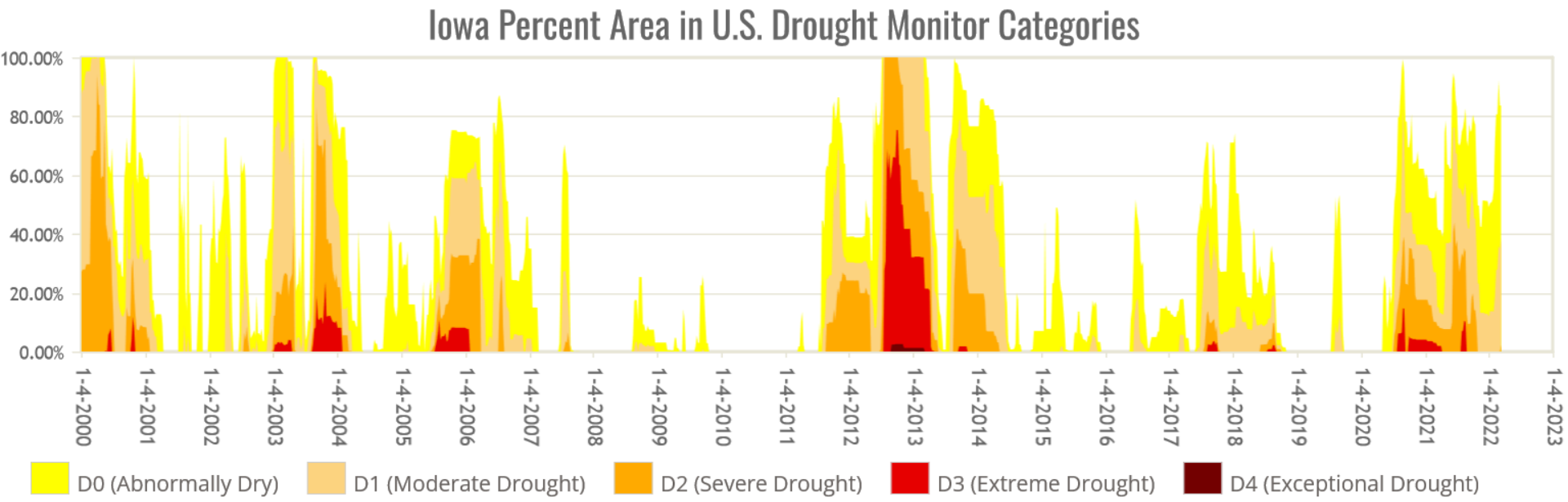
droughtmonitor.unl.edu

Drought areas in Plains extending through Iowa to around Great Lakes.

Last week's map. Full changes may not occur until next week – precip falling around cut-off time.

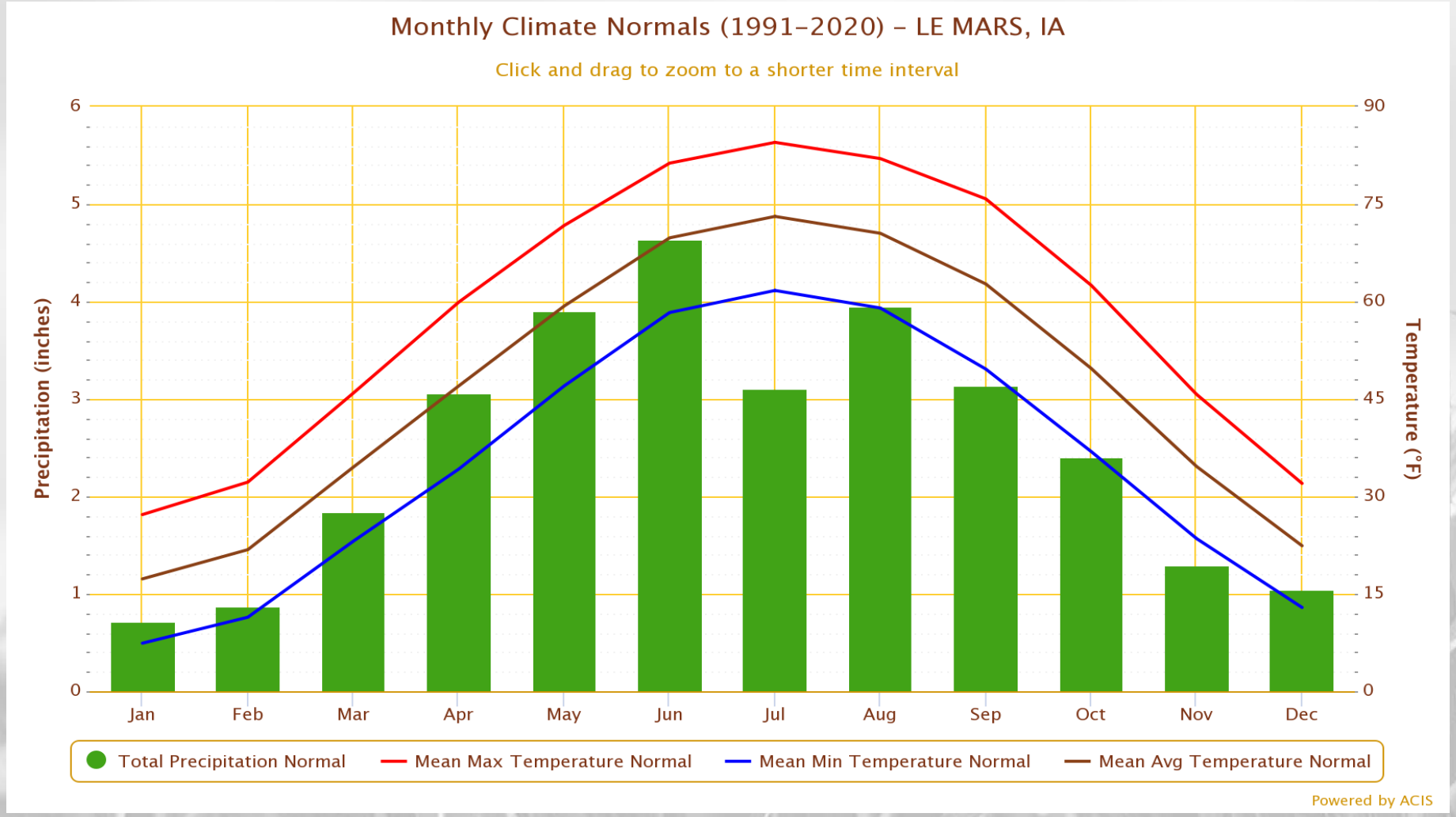
http://droughtmonitor.unl.edu/

US Drought Monitor-Iowa

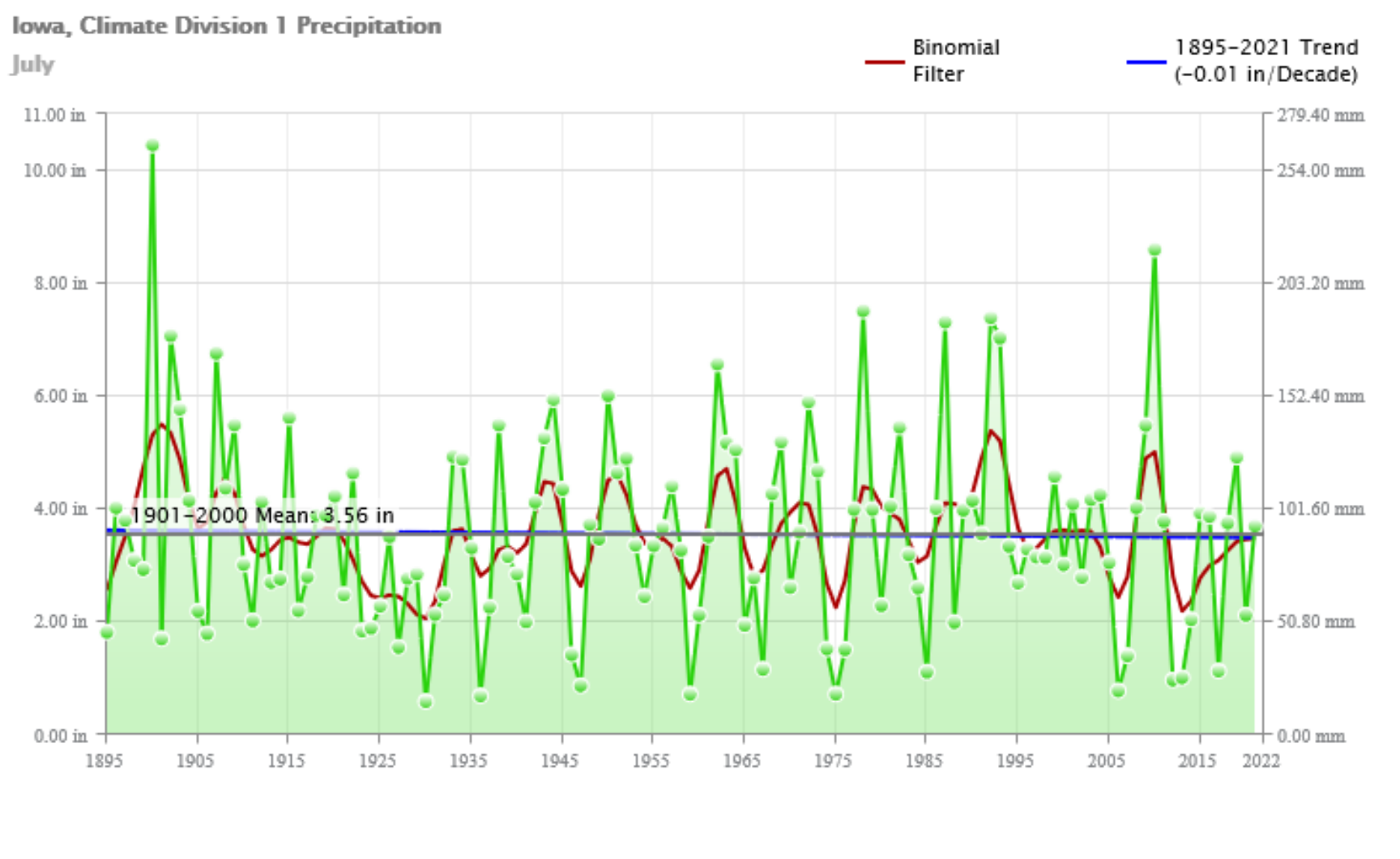


http://droughtmonitor.unl.edu/

30 Year Climatology (Le Mars)

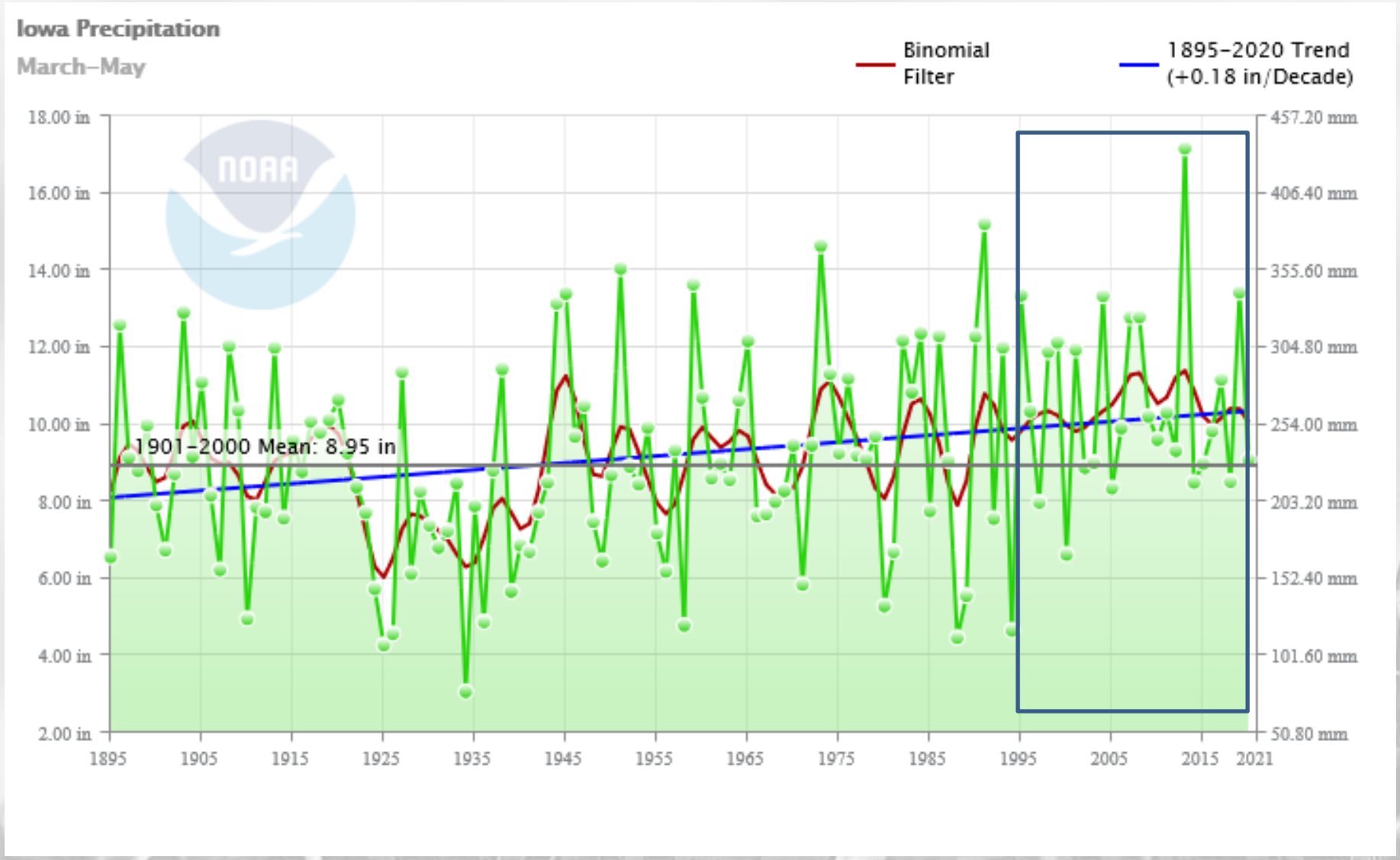


July Precipitation Trend NW IA



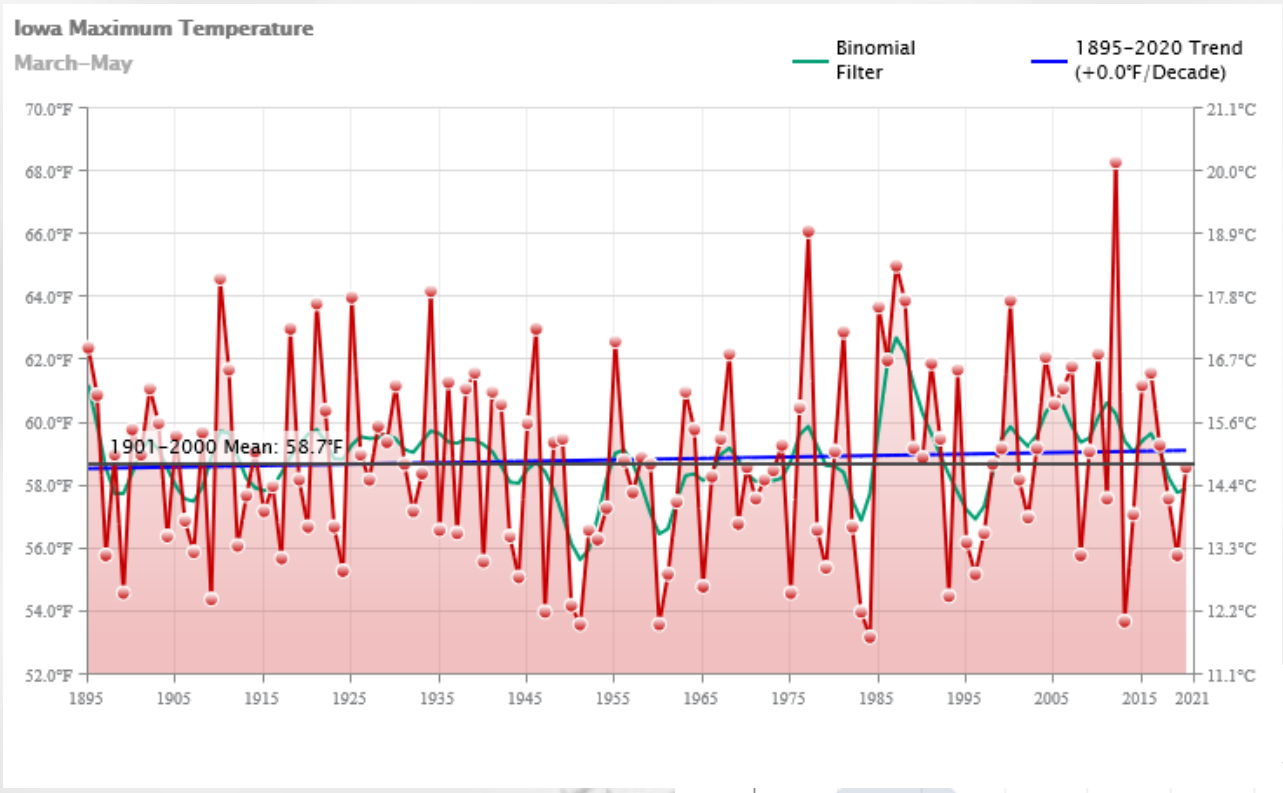
What about this season?

OUTLOOK BACKGROUND

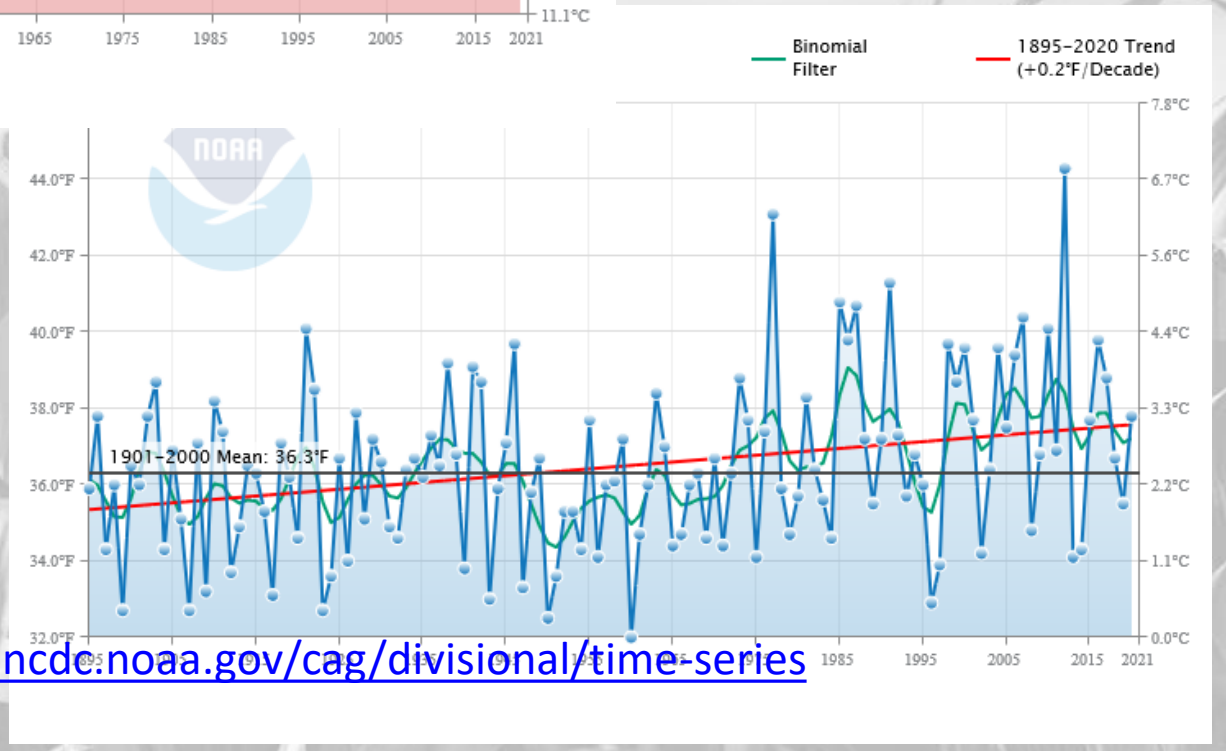


Overall trend is wetter springs – fewer dry springs.

https://www.ncdc.noaa.gov/cag/divisional/time-series



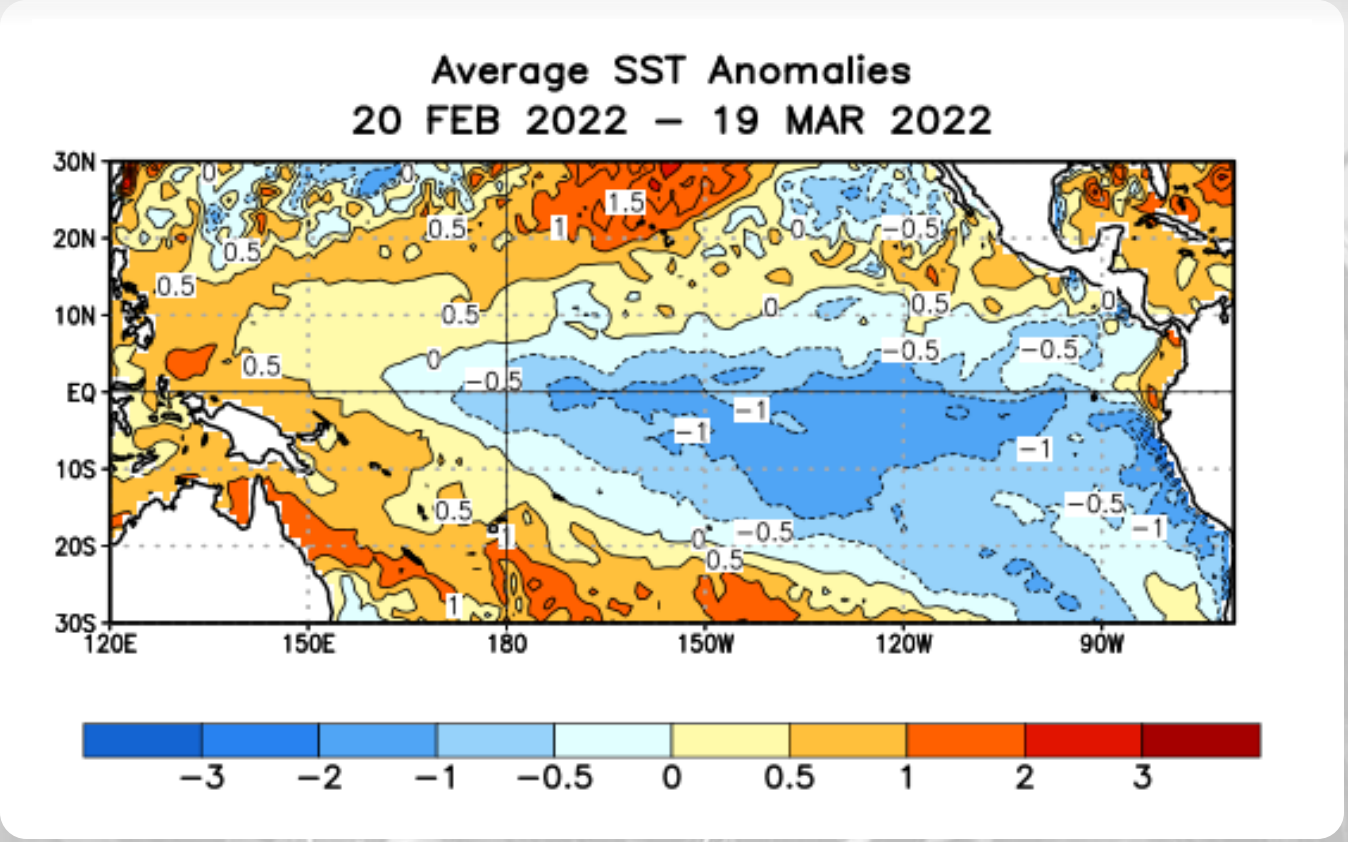
Spring temperatures – warmer overnights – flat trend in daytime.



https://www.ncdc.noaa.gov/cag/divisional/time-series

SST Departures (°C) in the Tropical Pacific During the Last Four Weeks

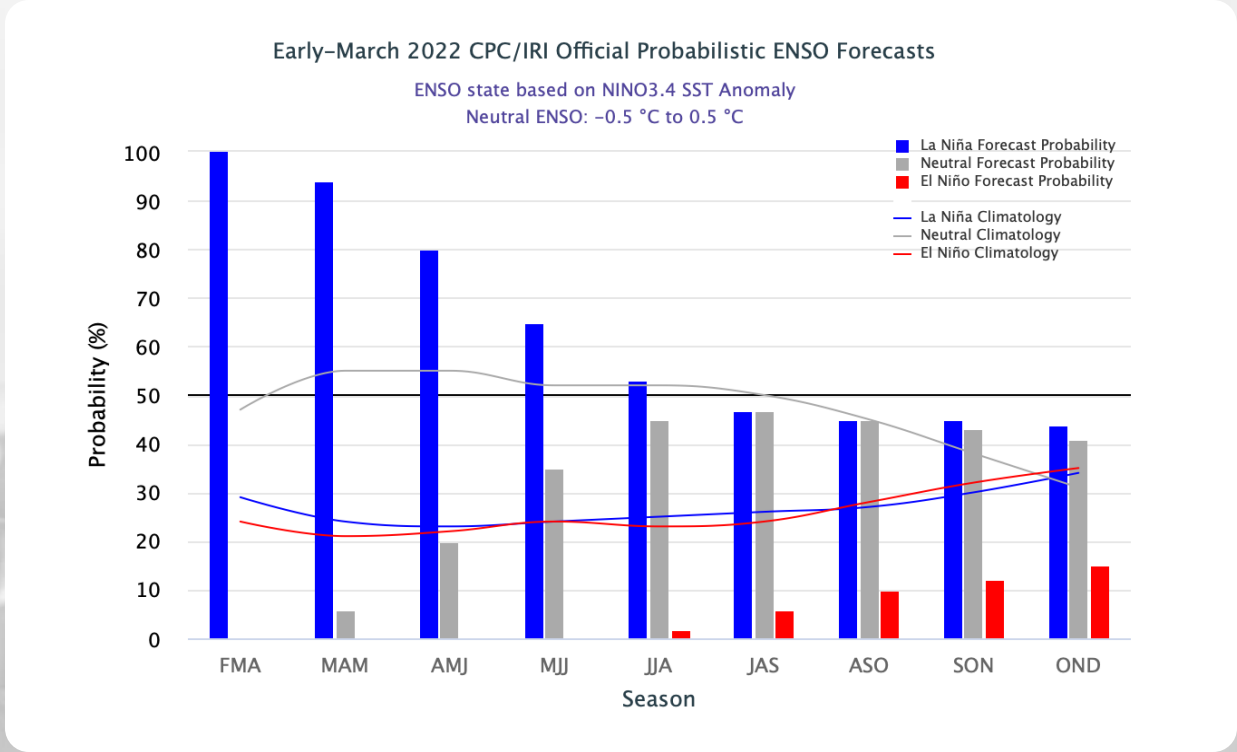
In the last four weeks, equatorial SSTs were below average across the east-central and central Pacific Ocean and were above average in the western Pacific Ocean and near South America.



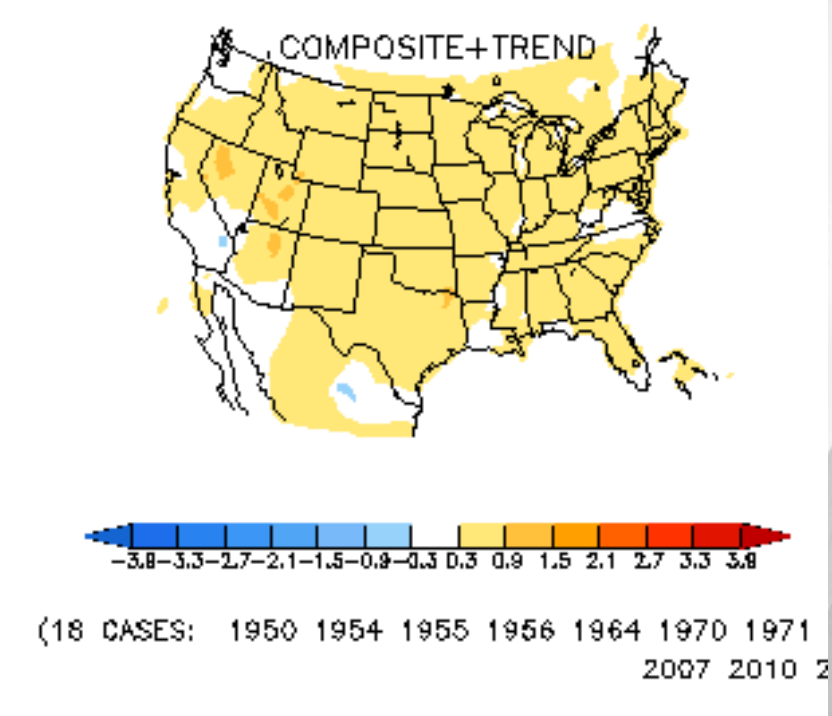
CPC/IRI Probabilistic ENSO Outlook

Updated: 10 March 2022

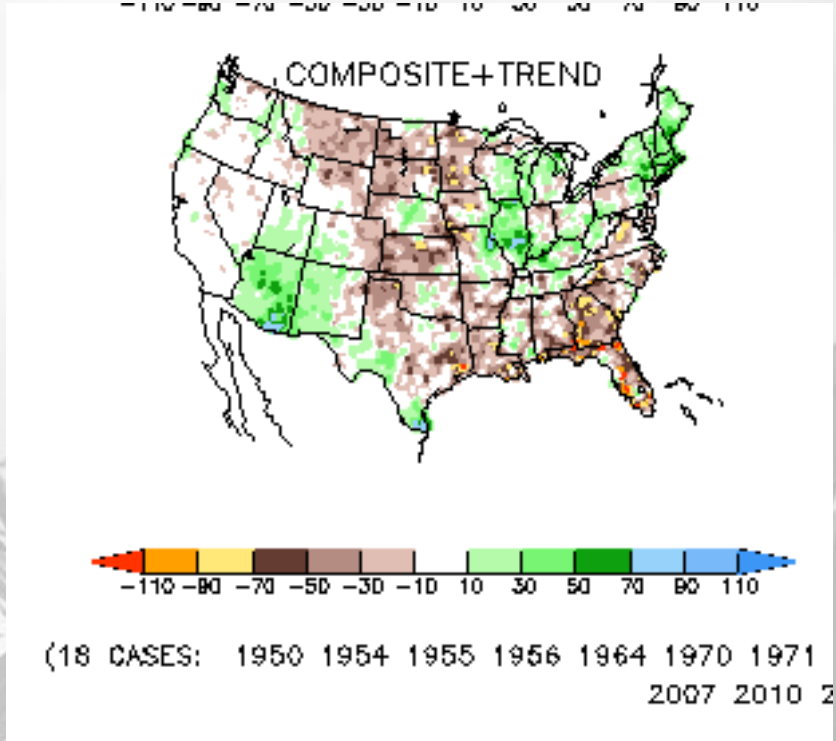
La Niña is favored to continue into the Northern Hemisphere summer (53% chance during June-August 2022), with a 40-50% chance of La Niña or ENSO-neutral thereafter.



July Anomalies During La Niña



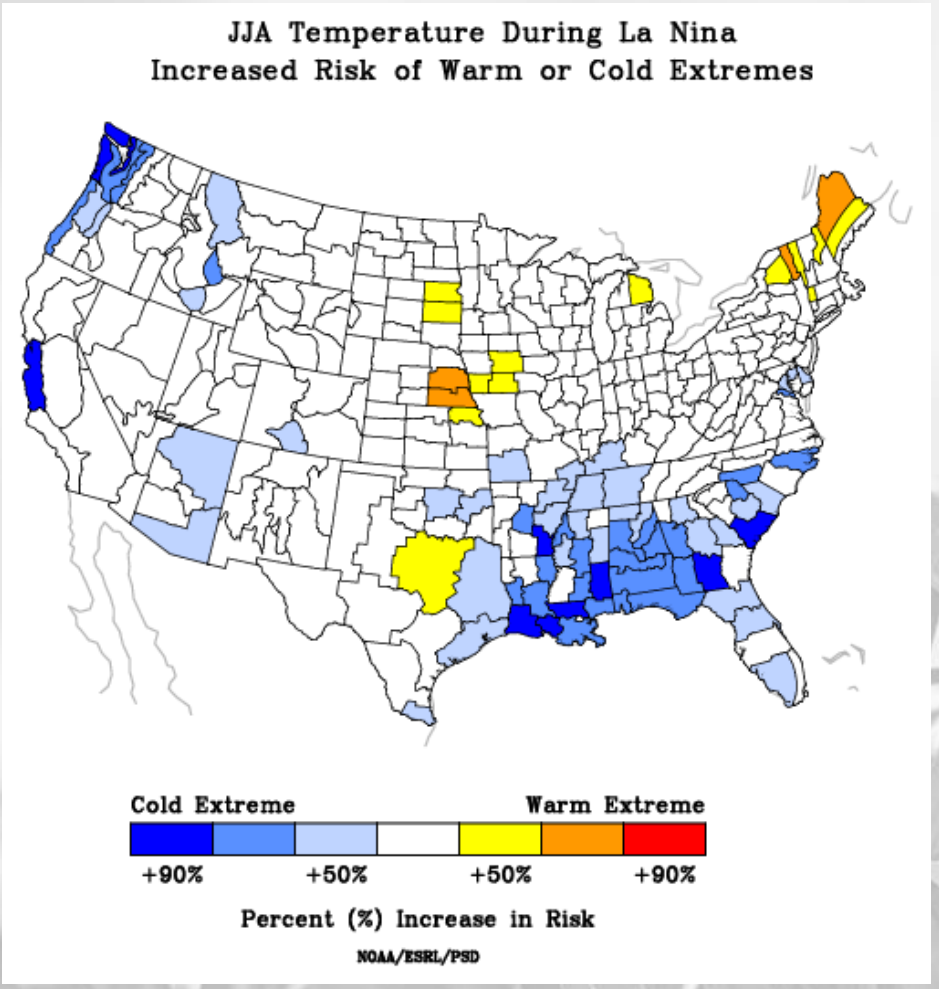
Temperature (C)

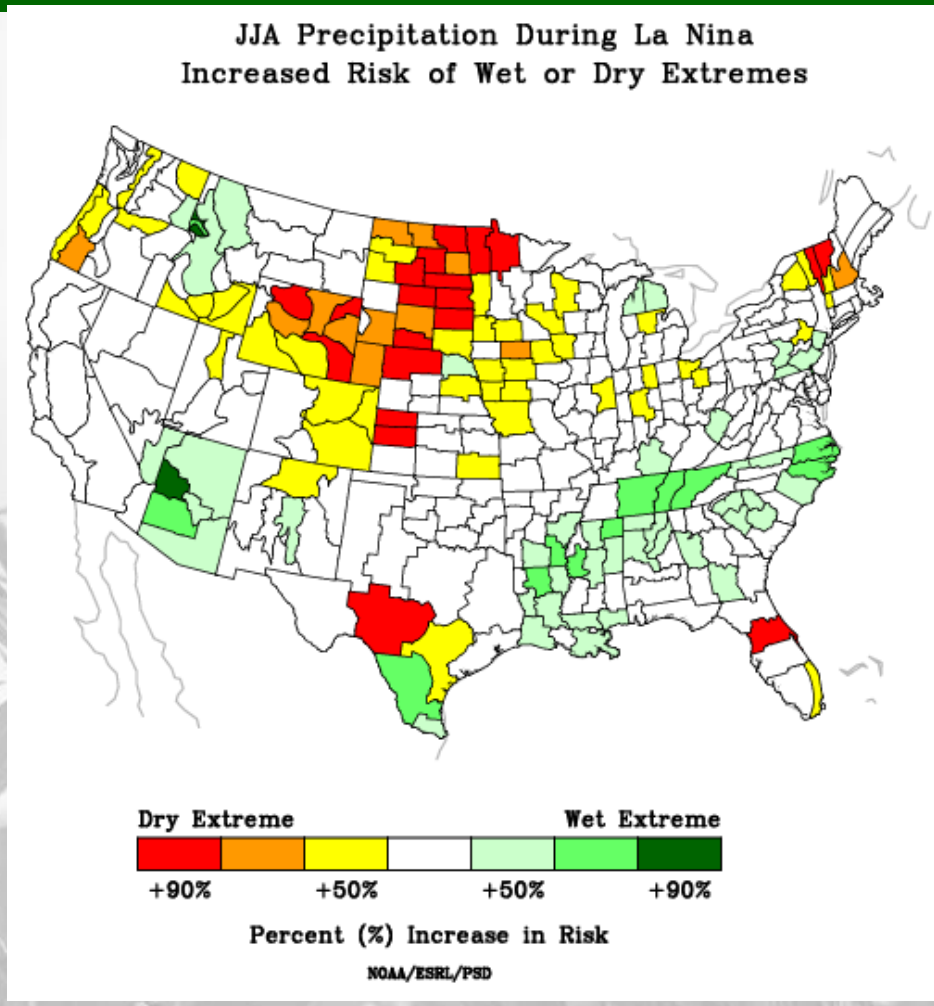


Precipitation (mm)

http://www.cpc.noaa.gov/products/predictions/long_range/seasonal.php?lead=4

June-Aug. Risk During La Niña



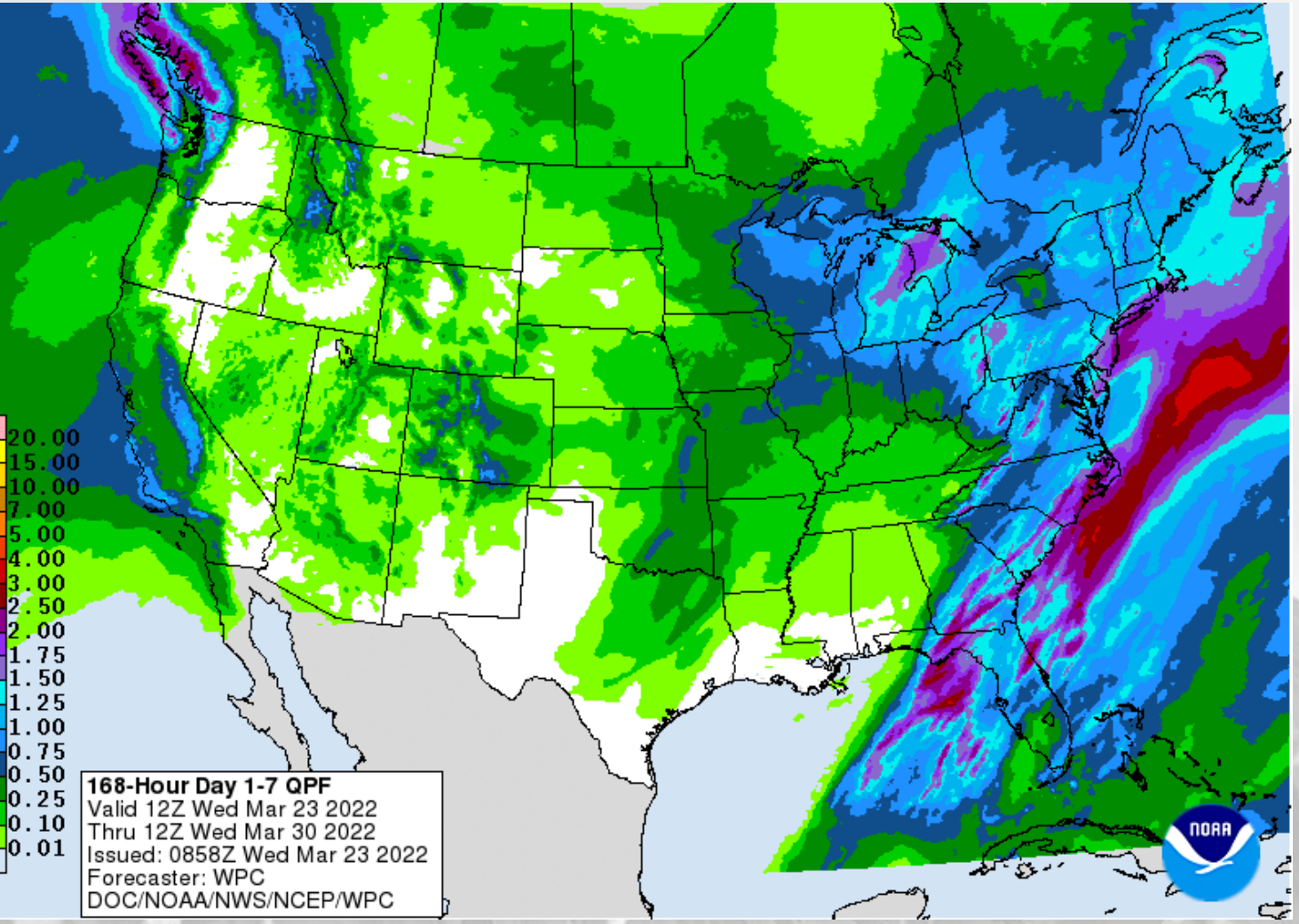


https://psl.noaa.gov/enso/climaterisks/

What about this season?

CURRENT OUTLOOKS

7 Day Forecast Precip.



Quieter after current system moved away from area.

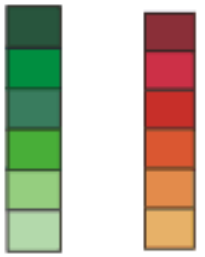
http://www.wpc.ncep.noaa.gov/qpf/p168i.gif?1484935973

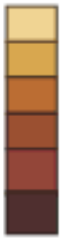
NOAA-NWS Outlooks

- Based probabilities (chances that we are wetter/drier/warmer/colder than averages)
- Incorporate various pieces of science
  - Computer models
  - Ocean effects (La Niña, etc.)
  - Trends

https://www.cpc.ncep.noaa.gov/

Understanding Probability Outlooks

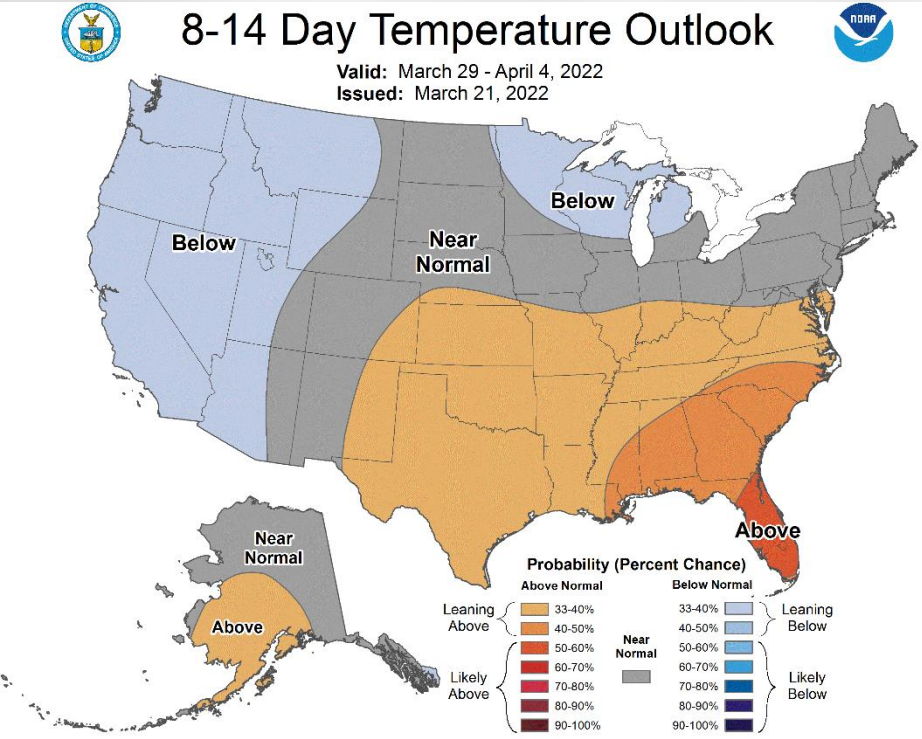


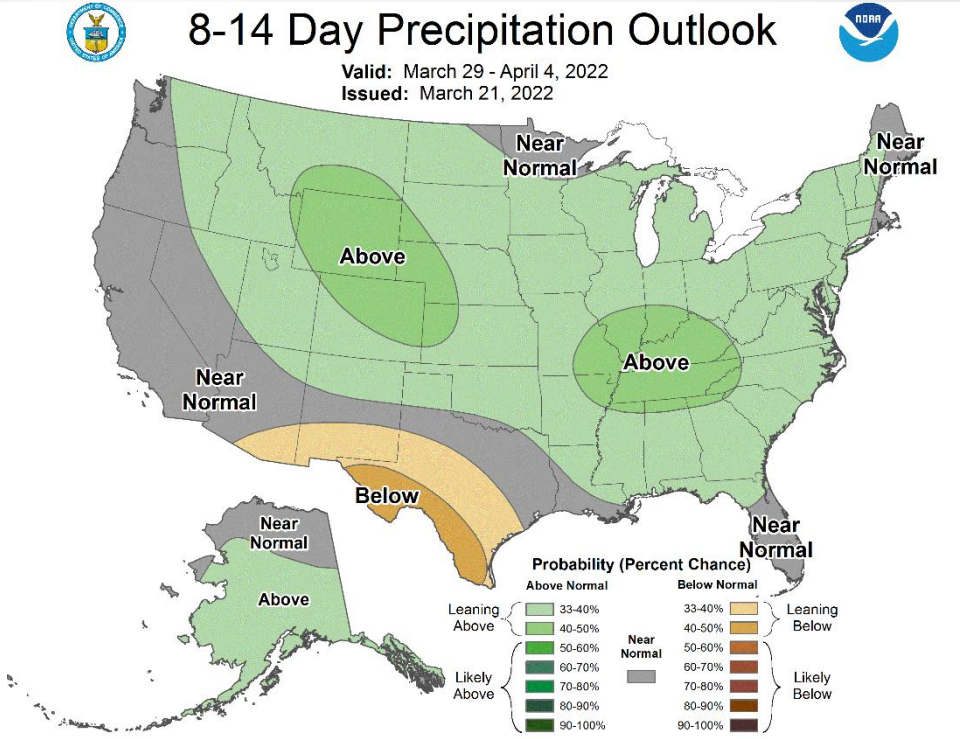


Precip	Temp	Probability of Occurence			Most likely category
		Above	Near	Below	
		80.0%-90.0%	16.7%-06.7%	03.3%	"Above"
		70.0%-80.0%	26.7%-16.7%	03.3%	"Above"
		60.0%-70.0%	33.3%-26.7%	06.7%-03.3%	"Above"
		50.0%-60.0%	33.3%	16.7%-06.7%	"Above"
		40.0%-50.0%	33.3%	26.7%-16.7%	"Above"
		33.3%-40.0%	33.3%	33.3%-26.7%	"Above"
		33.3%-30.0%	33.3%-40.0%	33.3%-30.0%	"Near Normal"
		30.0%-25.0%	40.0%-50.0%	30.0%-25.0%	"Near Normal"
		33.3%-26.7%	33.3%	33.3%-40.0%	"Below"
		26.7%-16.7%	33.3%	40.0%-50.0%	"Below"
		16.7%-06.7%	33.3%	50.0%-60.0%	"Below"
		06.7%-03.3%	33.3%-26.7%	60.0%-70.0%	"Below"
		03.3%	26.7%-16.7%	70.0%-80.0%	"Below"
		03.3%	16.7%-06.7%	80.0%-90.0%	"Below"
		33.3%	33.3%	33.3%	"Equal Chances"

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

8-14 Day Temp and Precip. Outlook

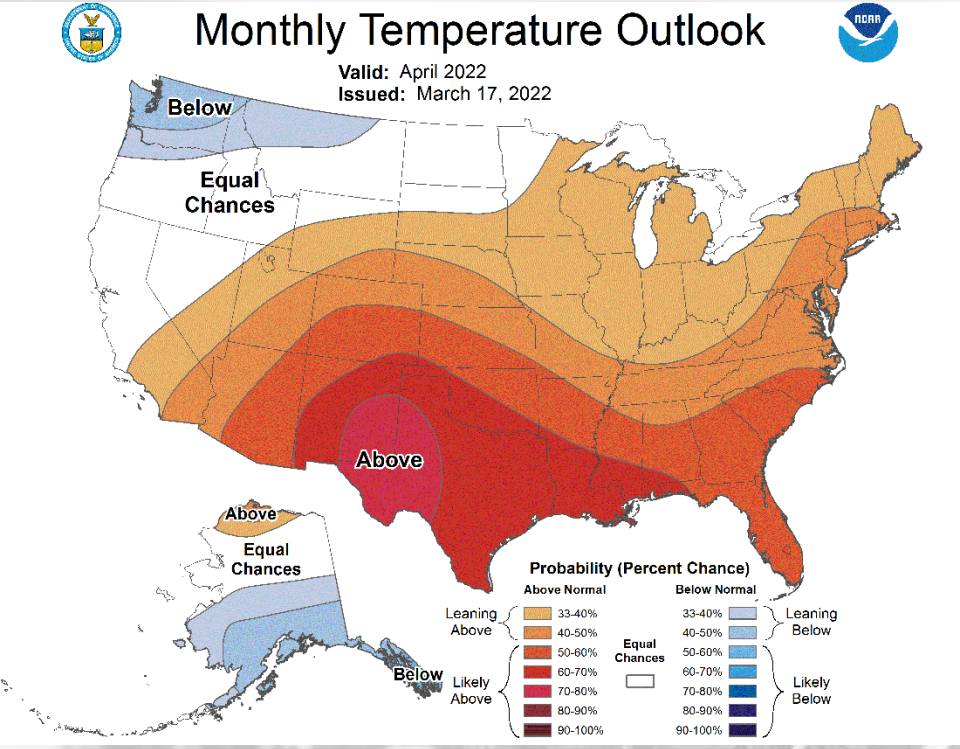


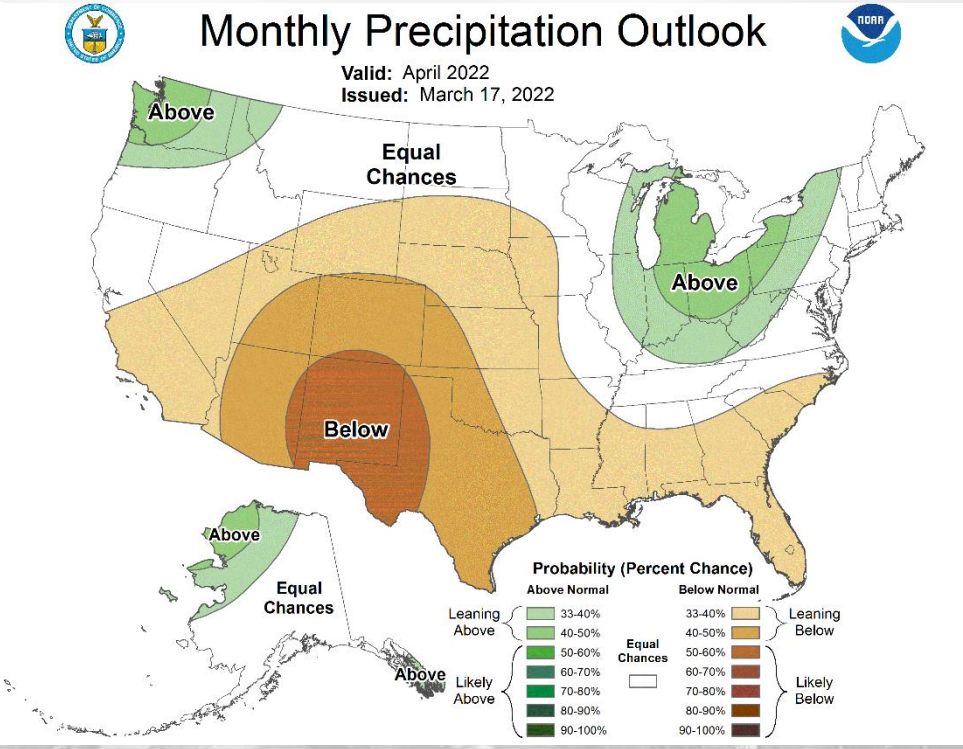


http://www.cpc.ncep.noaa.gov/

Warmth coming early next week and then moderating again.
More precipitation chances in week 2 outlook.

30 Day Temp and Precip. Outlook





http://www.cpc.ncep.noaa.gov/

30-day outlook for April *(updated Thursday 17 March)* – La Niña influence continues. Iowa slightly more likely to be warmer than average. Precipitation chances mixed with slightly increased chances of drier west.

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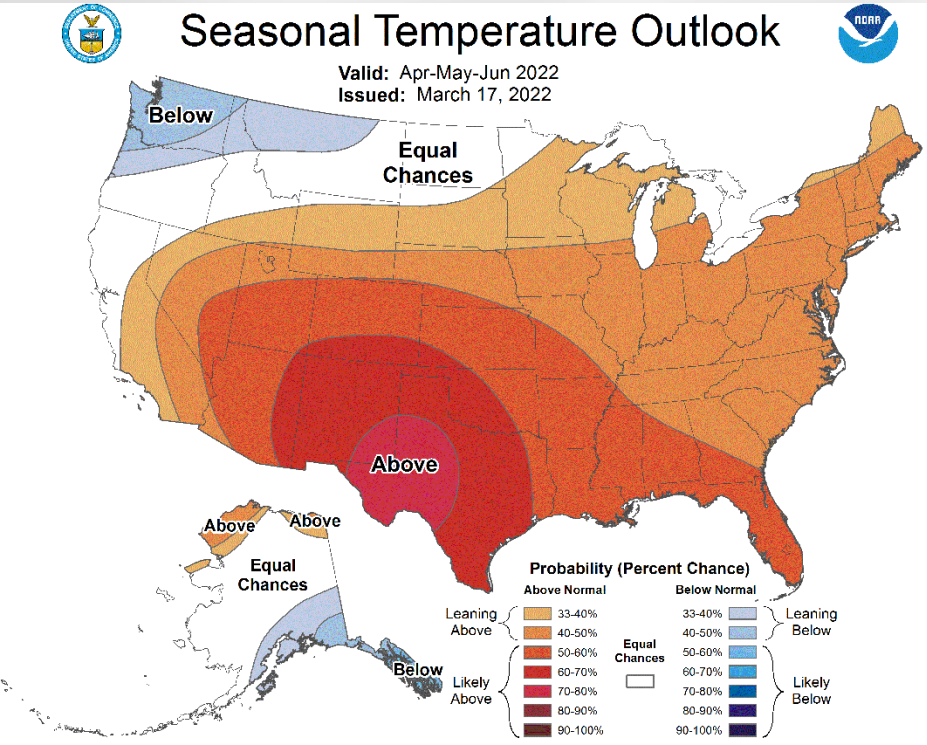
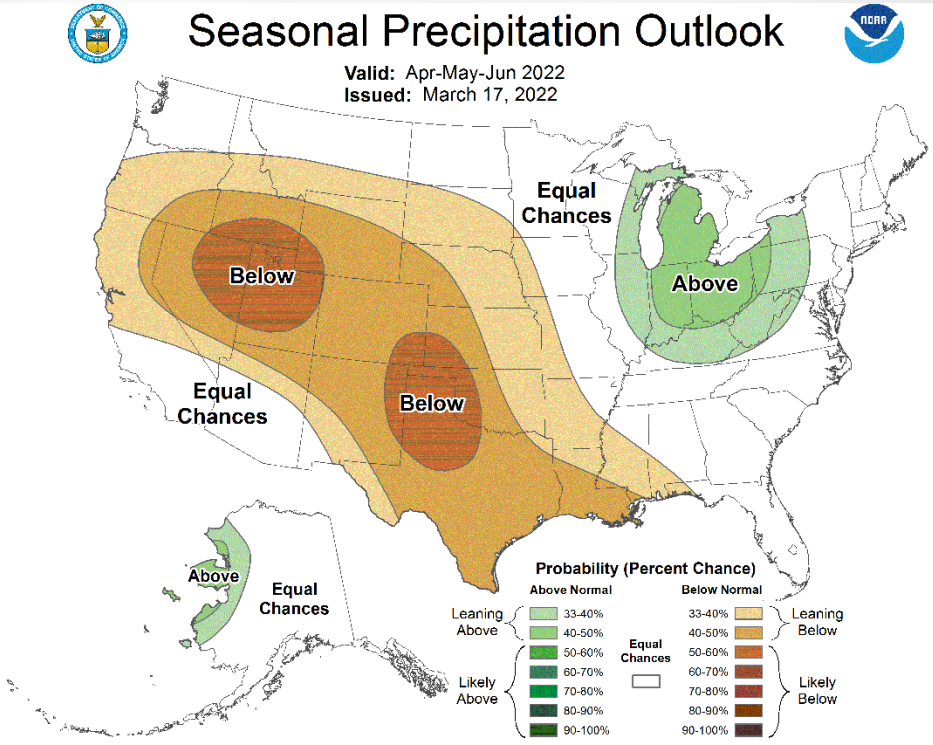
90 Day Temp and Precip. Outlook

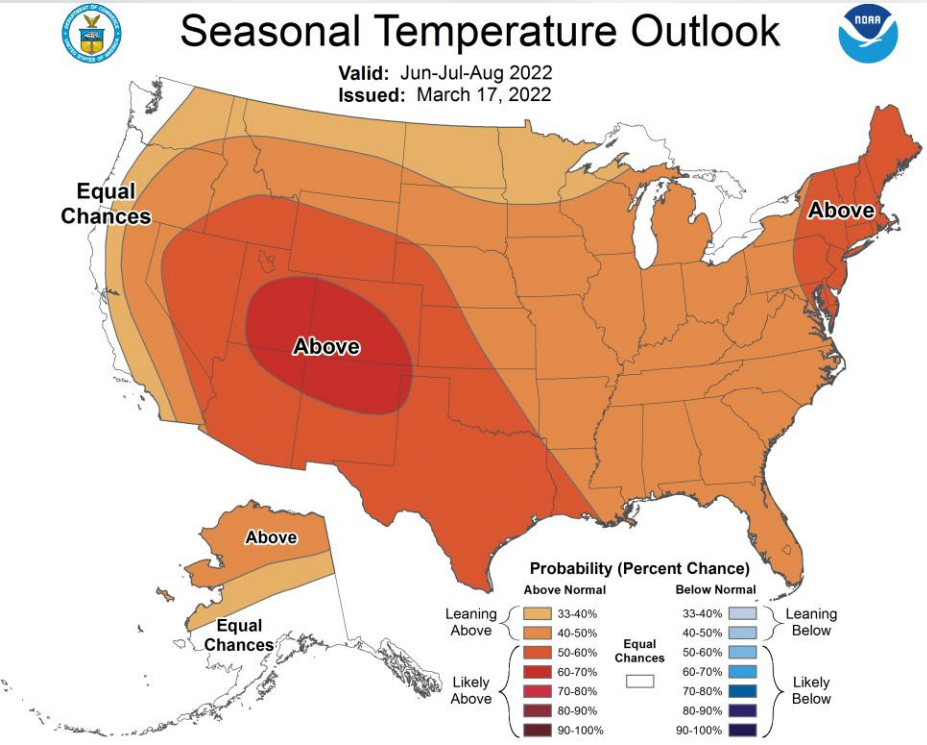


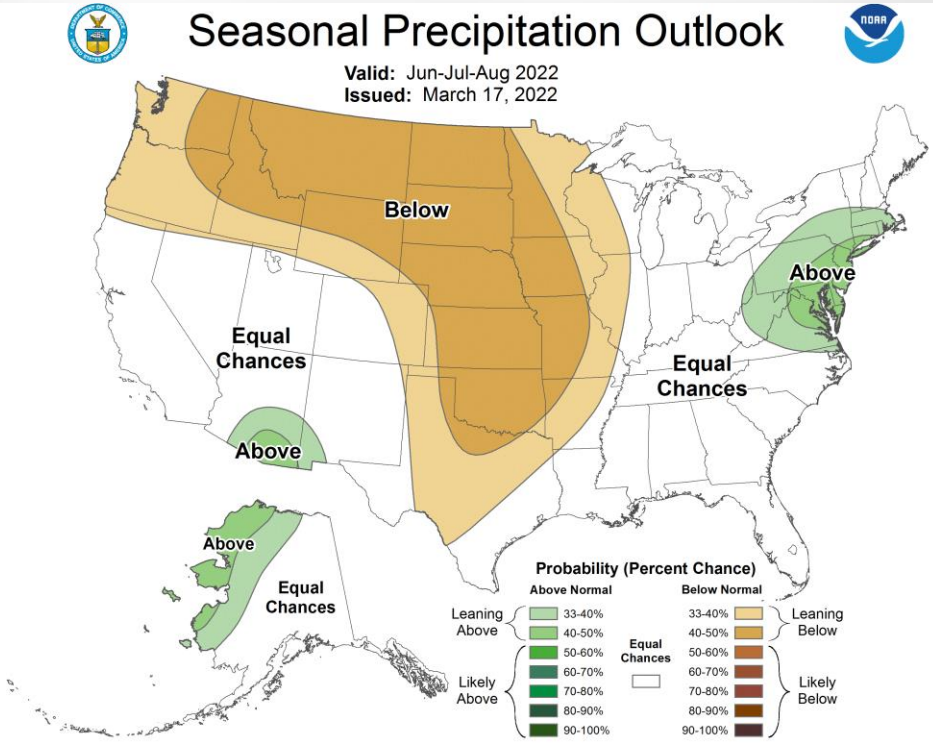


http://www.cpc.ncep.noaa.gov/

April-June outlook *(updated Thursday 17 March)*: La Niña influence likely to continue into early summer. Outlooks driven by that and soil moisture connections. Major concerns about ongoing drought-heat in Plains. Maybe wetter eastern Corn Belt. Iowa could see some drought influence ongoing.

Summer Temp and Precip. Outlook





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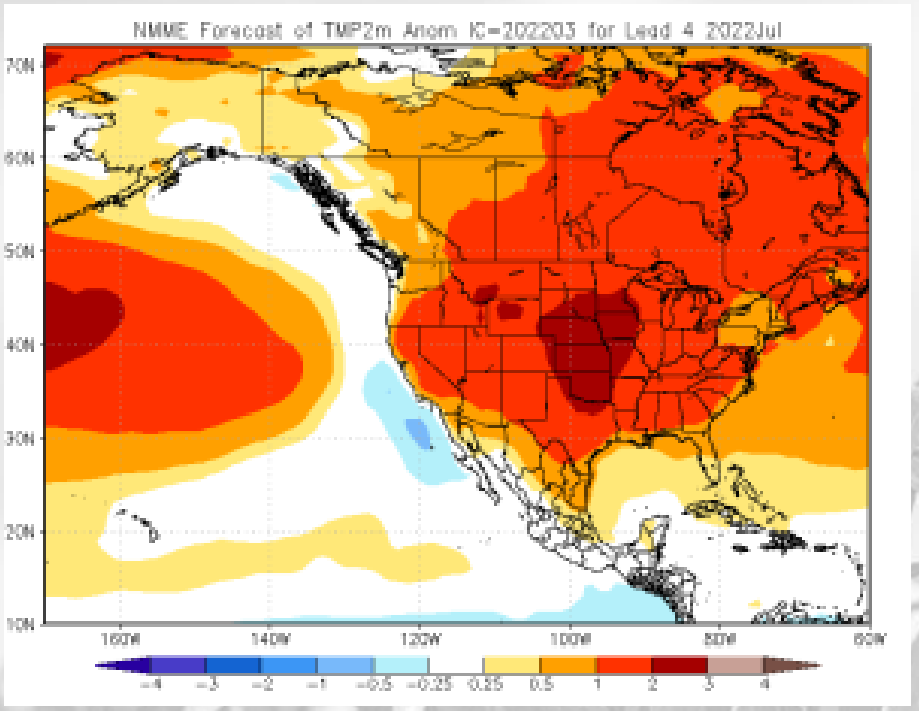
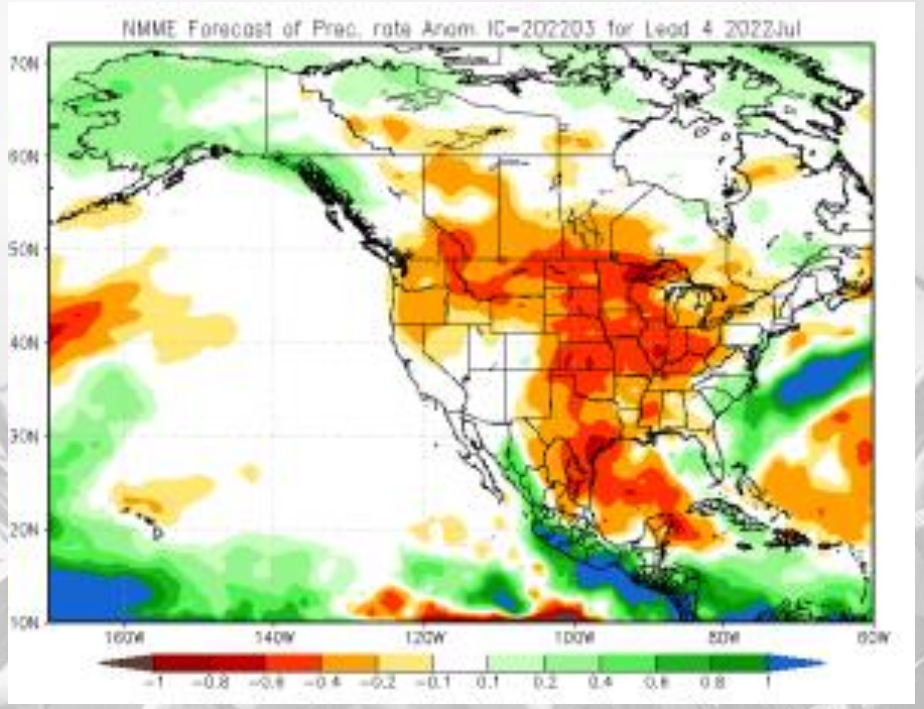
April-June outlook *(updated Thursday 17 March)*: La Niña influence likely to continue into early summer. Outlooks driven by that and soil moisture connections. Major concerns about ongoing drought-heat in Plains. Maybe wetter eastern Corn Belt. Iowa could see some drought influence ongoing.

July Computer Outlooks 2022



Temperature (C)



Precipitation (mm)

https://www.cpc.ncep.noaa.gov/products/NMME/current/ustmp2m_Lead3.html

Take Home Messages

- Conditions improving in IA for early season.
  - Risk wetter eastern Corn Belt
  - Drought risk continues parts of Iowa and Plains
- La Niña will continue into summer – influencing outlooks
- Warmer and drier more likely summer Iowa and west.
- Drought risk quite high Plains. Iowa in some level of risk. Less risk to east (right now).

Crop/Planting Issues

- Planting season:
  - Soils some moisture now – still drier NW
  - Warming decently – slowed by precip/cooler temps
  - Still a little frost at depth NW IA

- Considerations:
  - Planting rates – back off a little?
  - Reduce tillage – moisture losses
  - Reduce N rates?
- Marketing likely to continue being “interesting.”
- La Nina year yields near to below trend – unlikely to be a great year, but can be OK.

Midwest and Great Plains Climate-Drought Outlook 18 April 2019

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515-294-2013

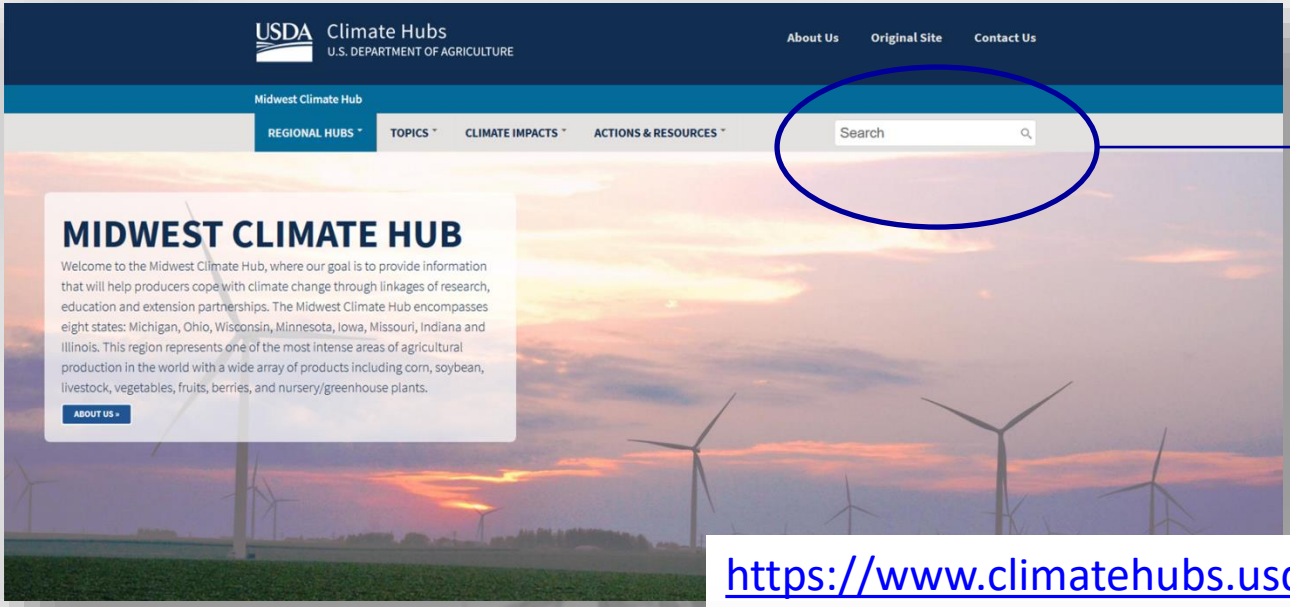
Photo: Justin Glisan

AASC AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS

USDA United States Department of Agriculture Midwest Climate Hub

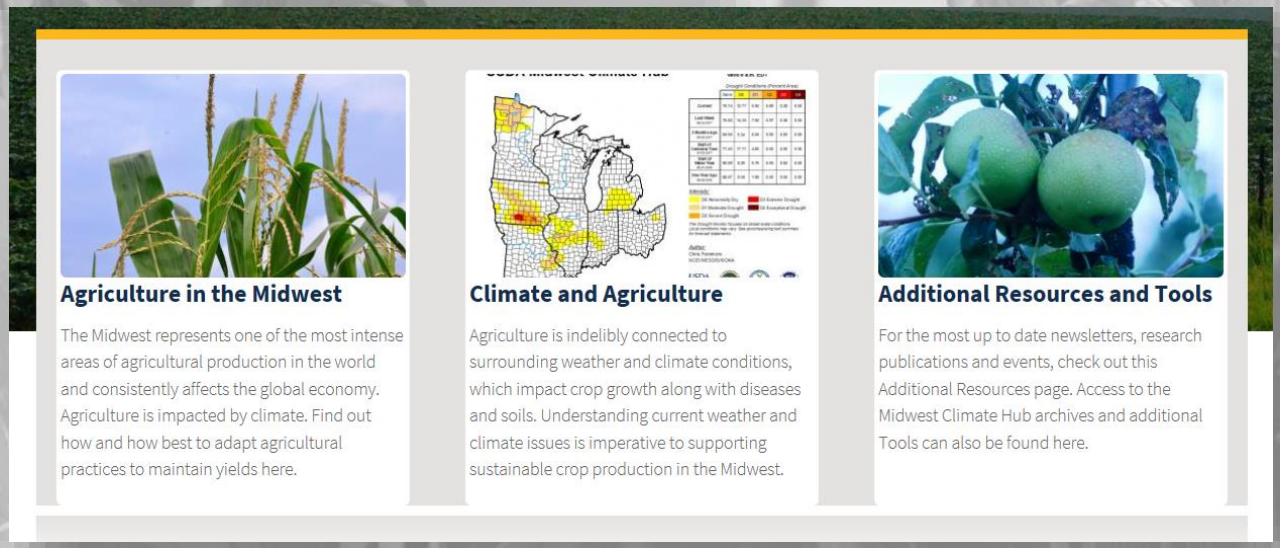
Free – Sign up at:
https://www.drought.gov/events/north-central-us-monthly-climate-and-drought-summary-and-outlook-4
https://drought.gov/dews/midwest

Resources: Website



Search for tools, research and events by Region, Topic, type of crop, or climate Impact.

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



For More Information

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

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National Laboratory for Agriculture and the Environment
Attn: Midwest Climate Hub
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USDA Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

Climate Change Indicators for Agriculture

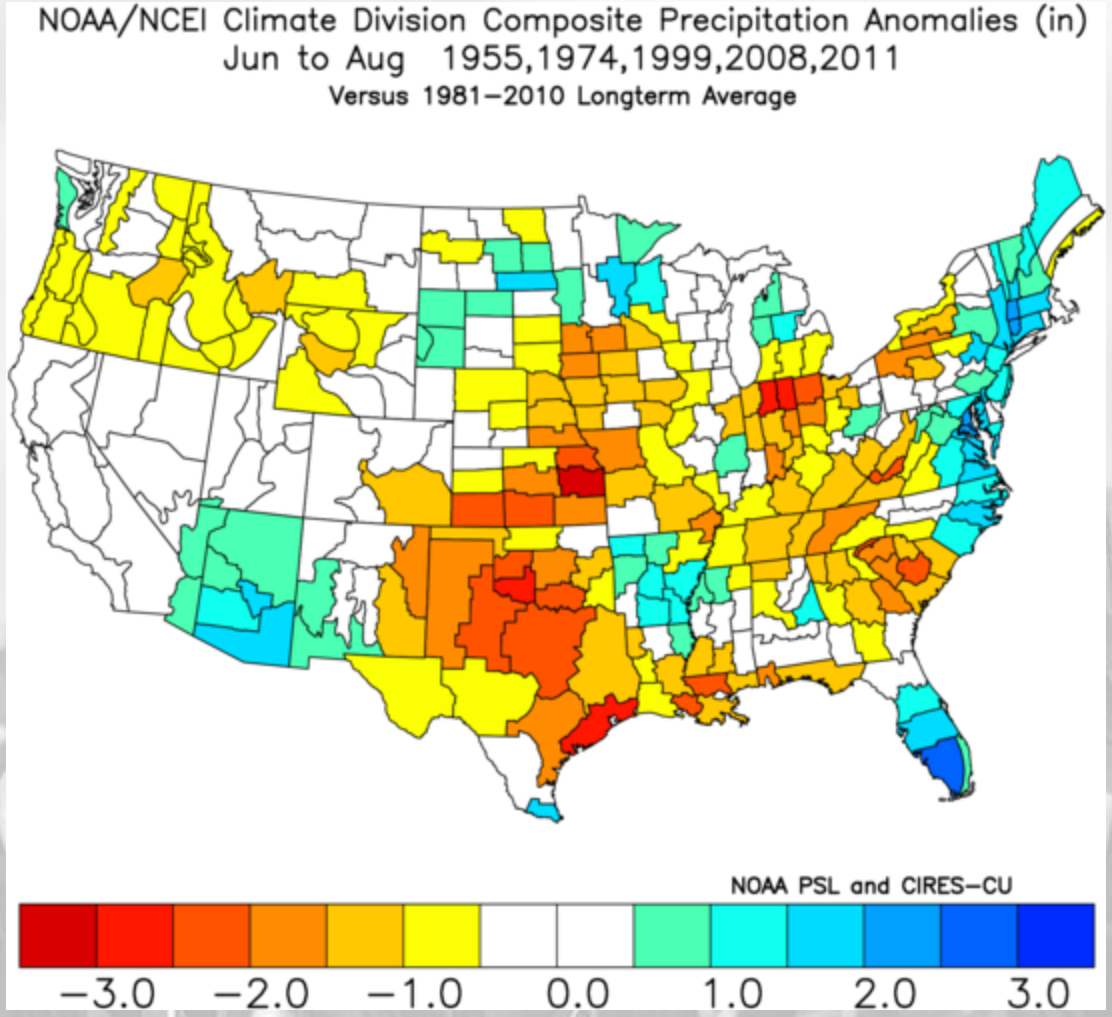
ISU Extension Agronomy Fall Meeting

22 September 2020

Dennis Todey
USDA Midwest Climate Hub

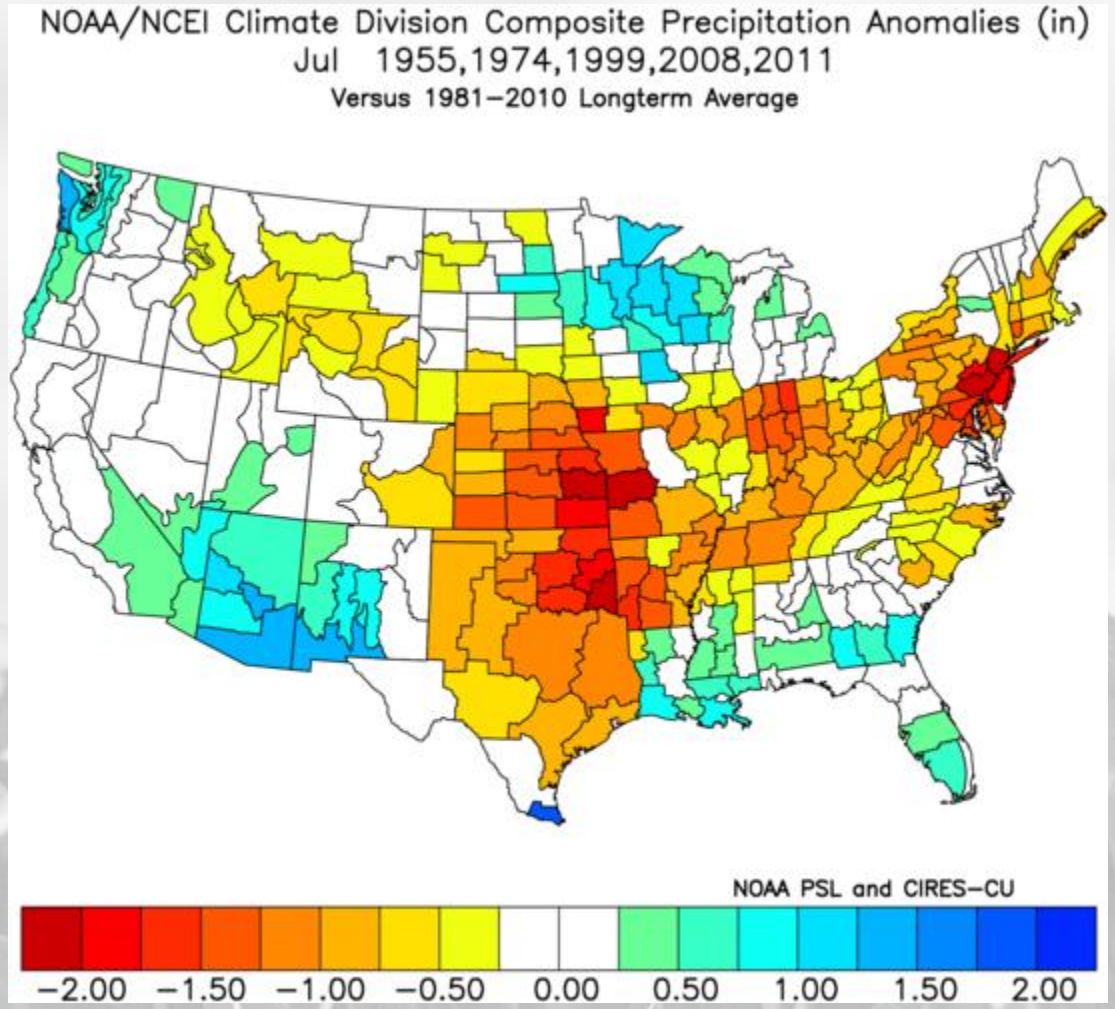
https://www.usda.gov/sites/default/files/documents/climate_indicators_for_agriculture.pdf

June-August Precipitation During Double-Dip La Niña



https://psl.noaa.gov/cgi-bin/data/usclimdivs/climdiv.pl

July Precipitation During Double-Dip La Niña



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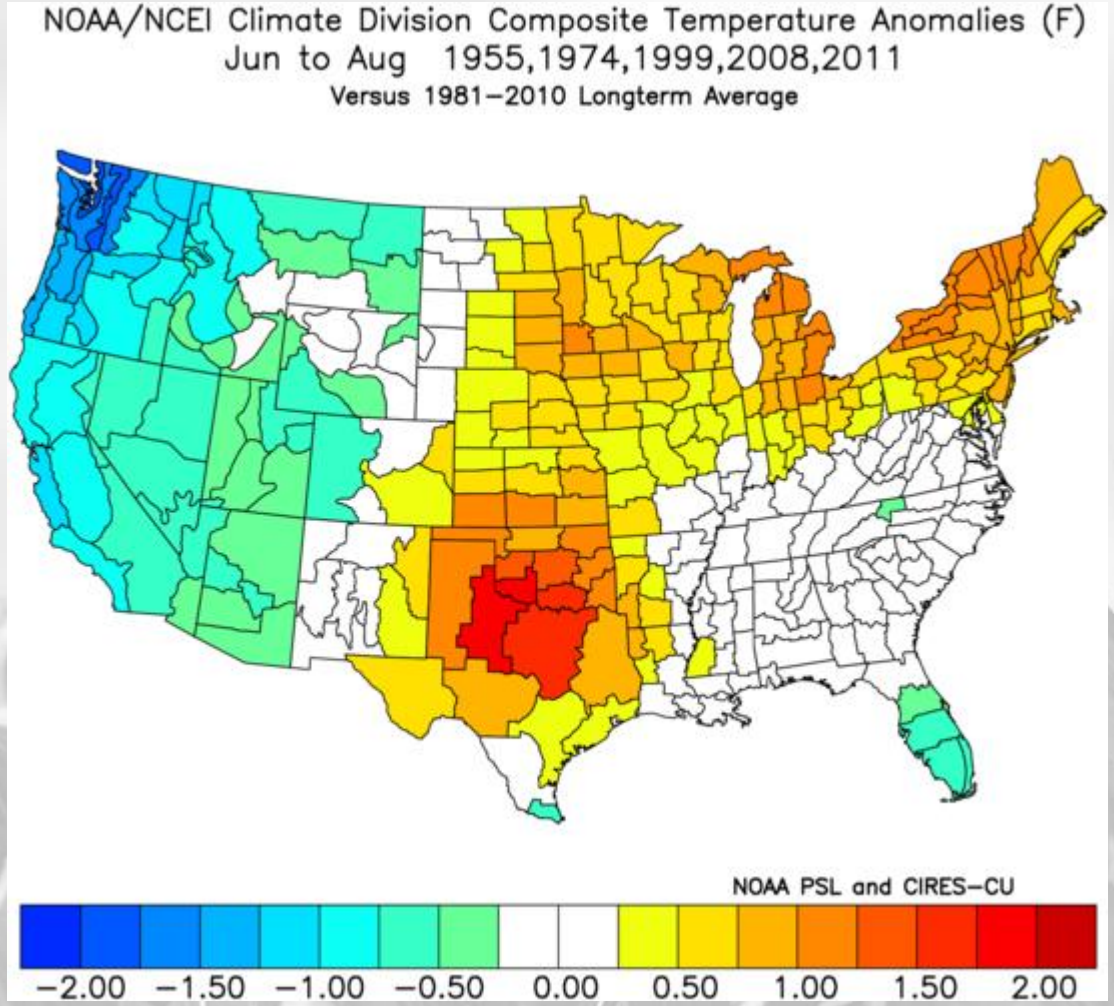
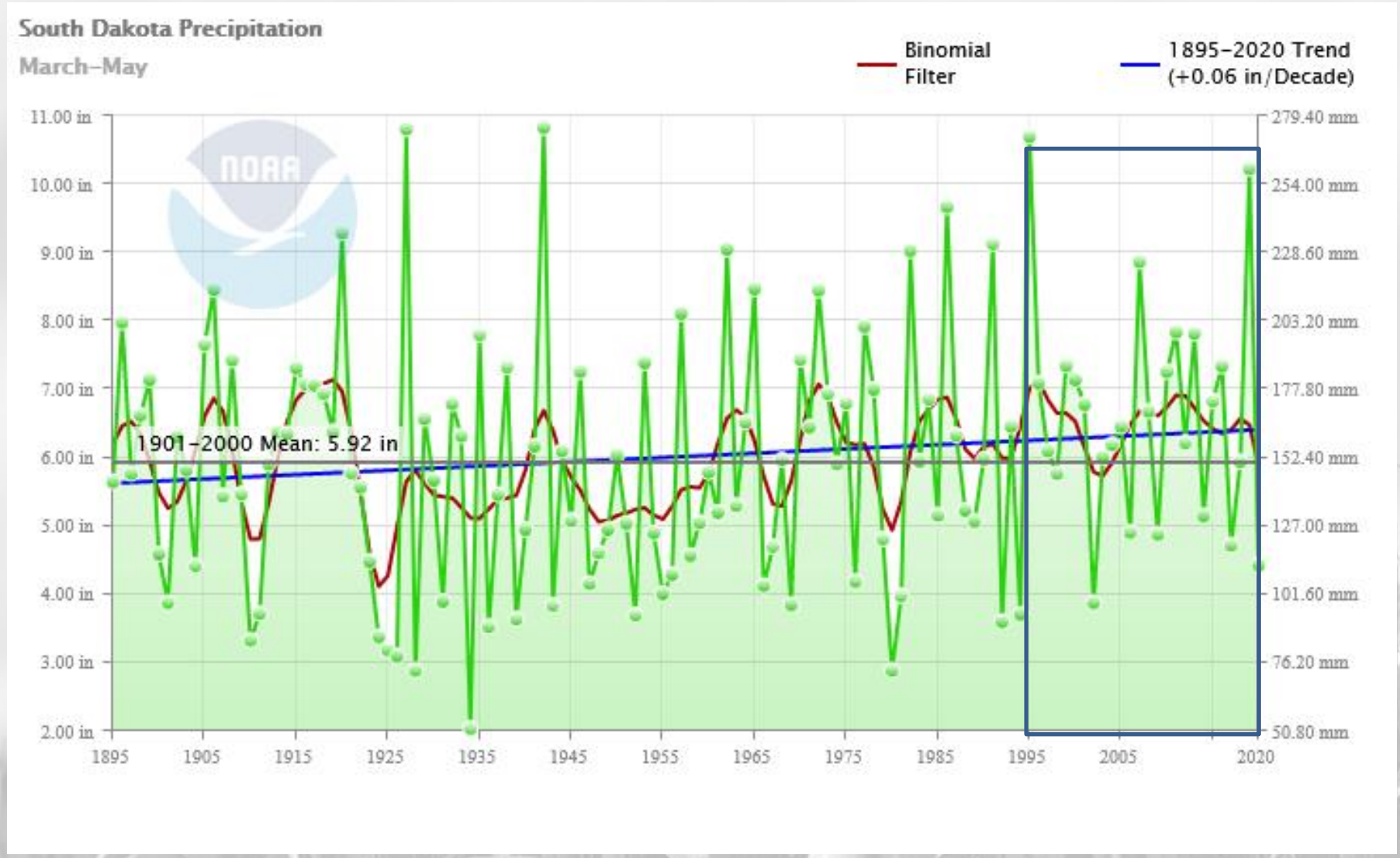
June-August Temperature During Double-Dip La Niña



https://psl.noaa.gov/cgi-bin/data/usclimdivs/climdiv.pl

Using data to make decisions

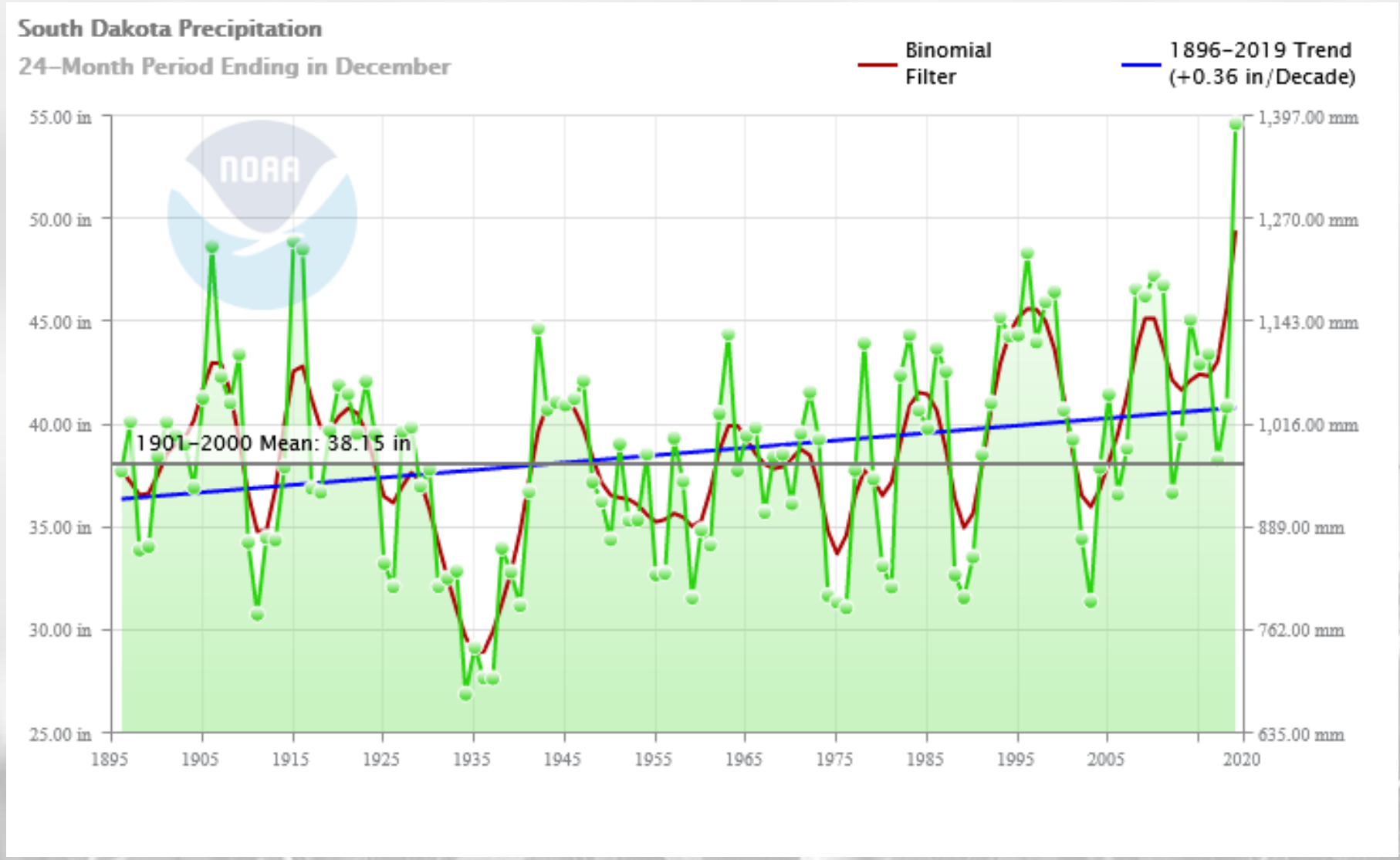
LONG TERM IMPACTS - AGRICULTURE



Something working in our favor.

Only 7 of last 25 years below long term average.

https://www.ncdc.noaa.gov/cag/divisional/time-series



Records for last 24 months outstripping previous highs 54.65" several 48.x 1914-15, 1905-06, 1915-16, 1995-96

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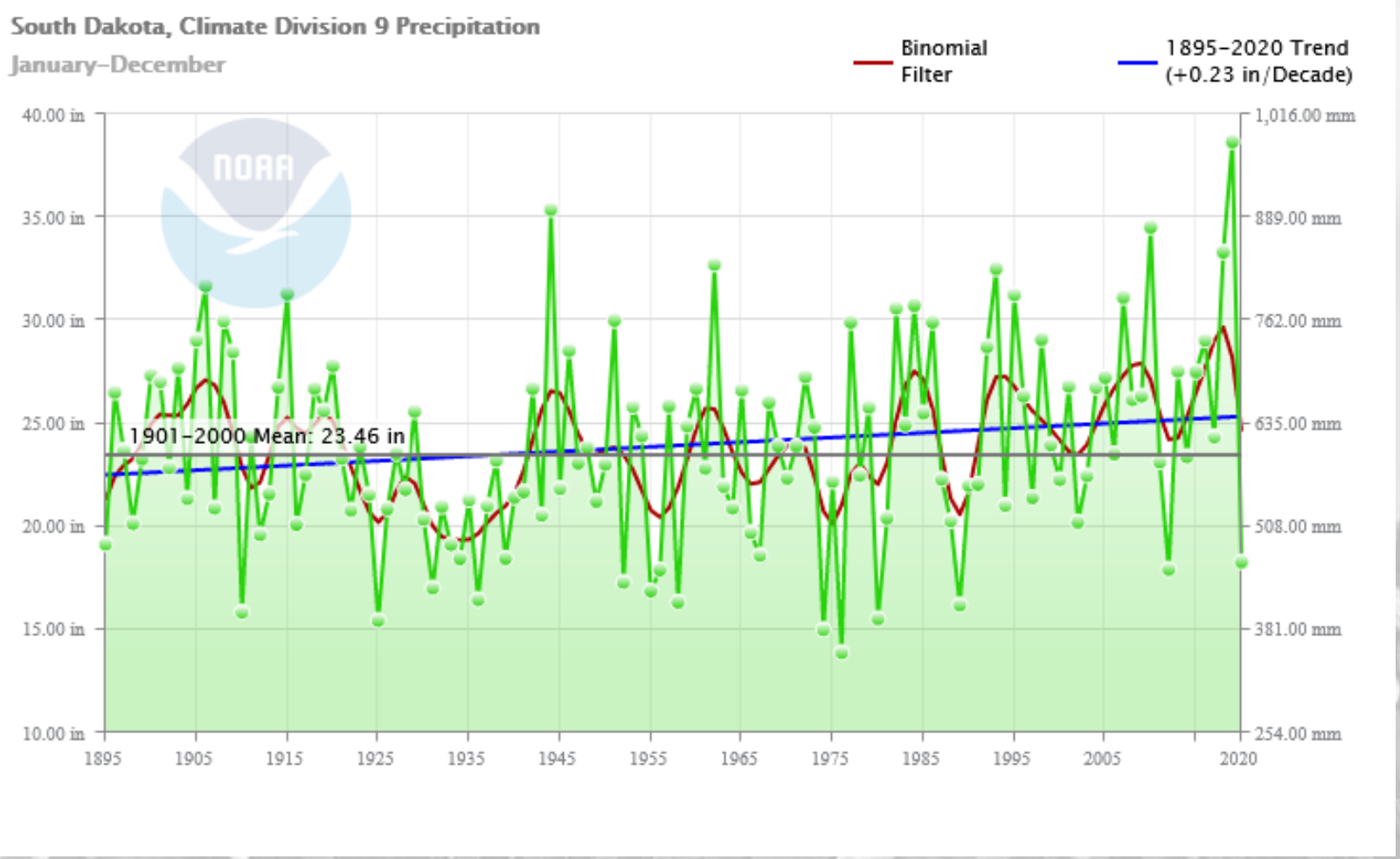


SE SD Dropped from 38.67” in 2019 to 18.29” in 2020.

https://www.ncdc.noaa.gov/cag/divisional/time-series

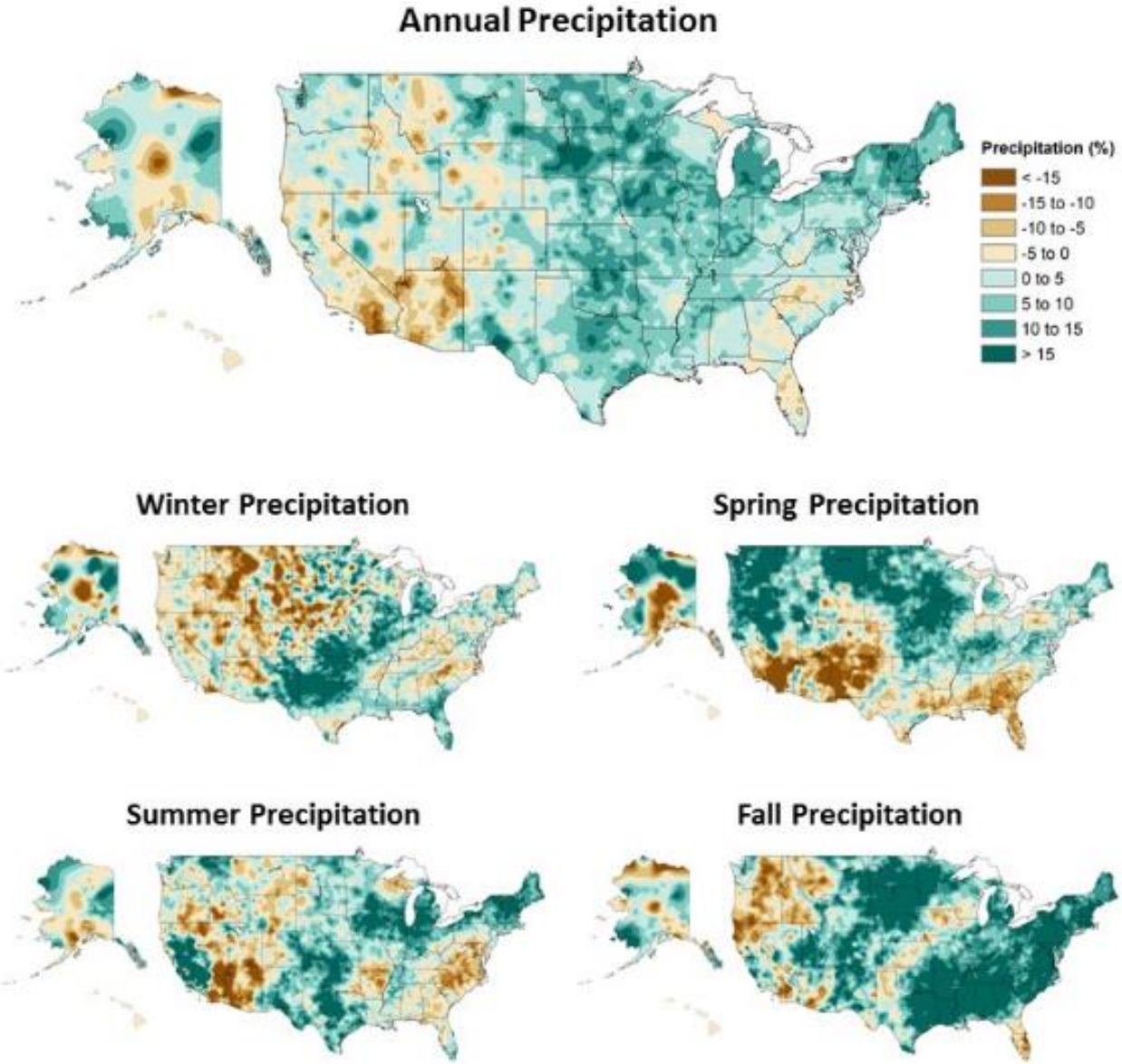
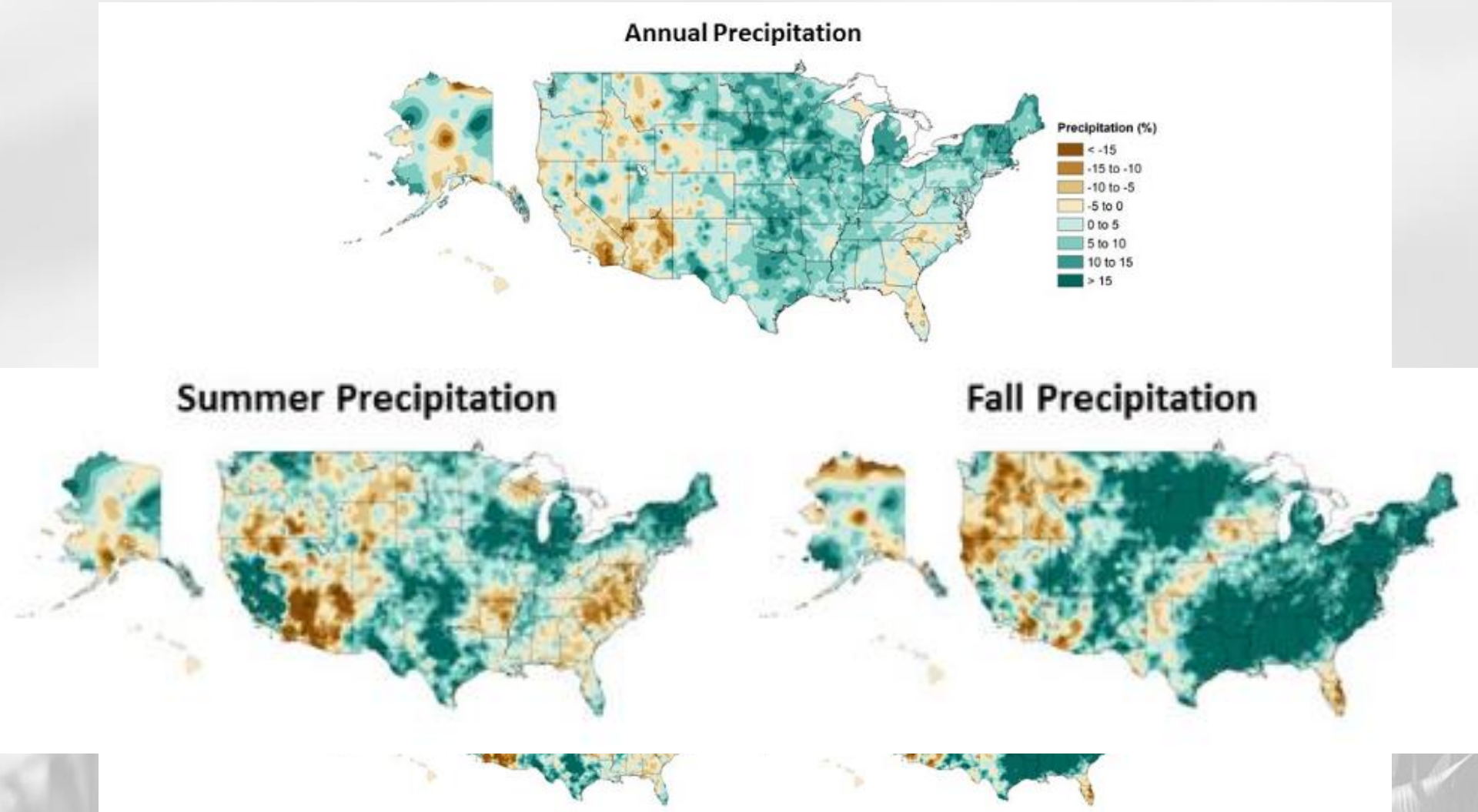


Figure 7.1: Annual and seasonal changes in precipitation over the United States. Changes are the average for present-day (1986–2015) minus the average for the first half of the last century (1901–1960 for the contiguous United States, 1925–1960 for Alaska and Hawai'i) divided by the average for the first half of the century. (Figure source: [top panel] adapted from Peterson et al. 2013,[78] © American Meteorological Society. Used with permission; [bottom four panels] NOAA NCEI, data source: nCLIMDiv].



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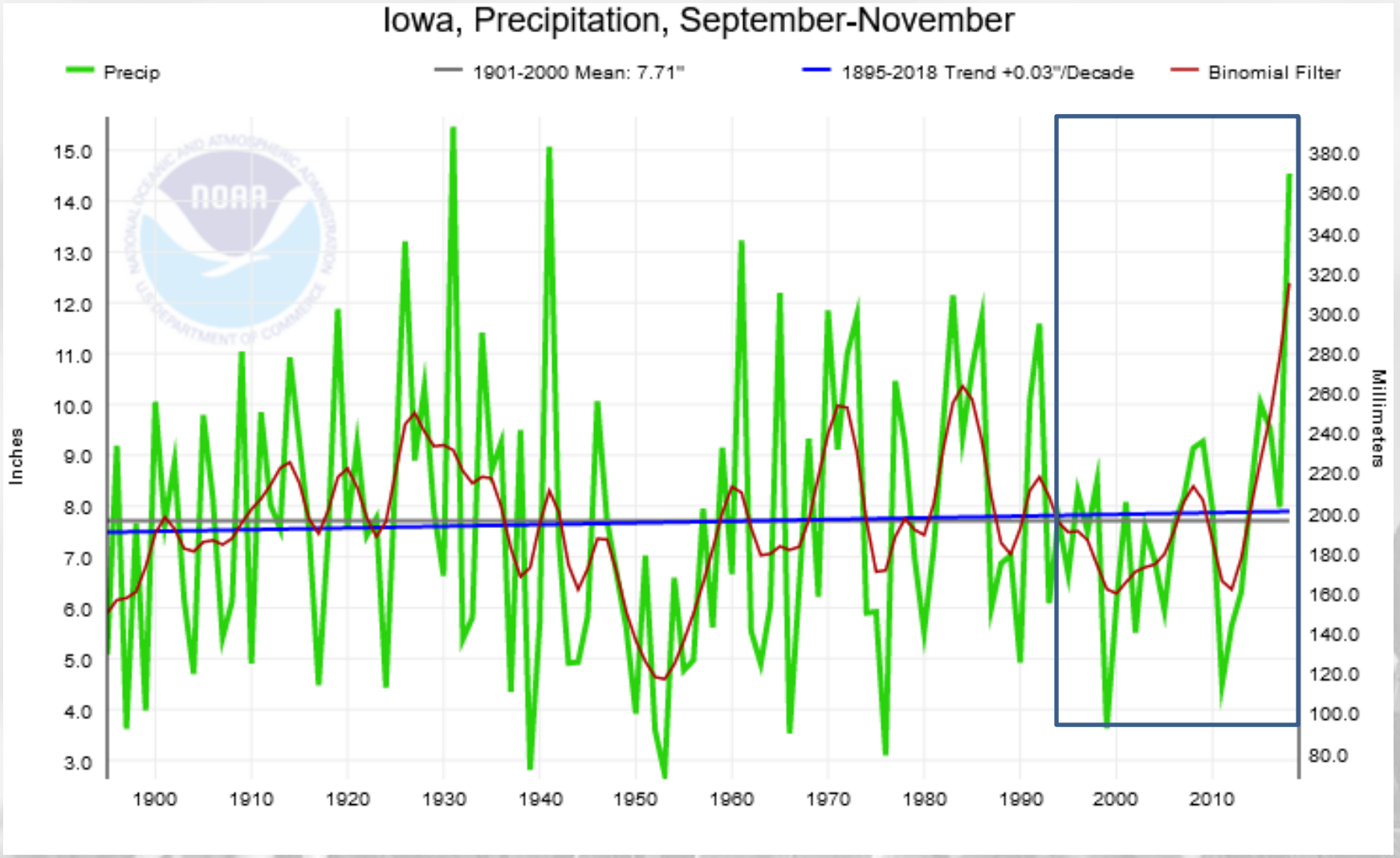


Only 5 of last 25 years below long term average.

https://www.ncdc.noaa.gov/cag/divisional/time-series

Issues from Precip Changes

- Variable across the corn belt
- Increasing precip totals (especially off-season)
- More soil/nutrient loss potential
- Soil loss
  - Reducing tillage
  - Cover crops
- Nutrient loss
  - 4Rs
- Planting/harvesting issues
- Increased need for drainage

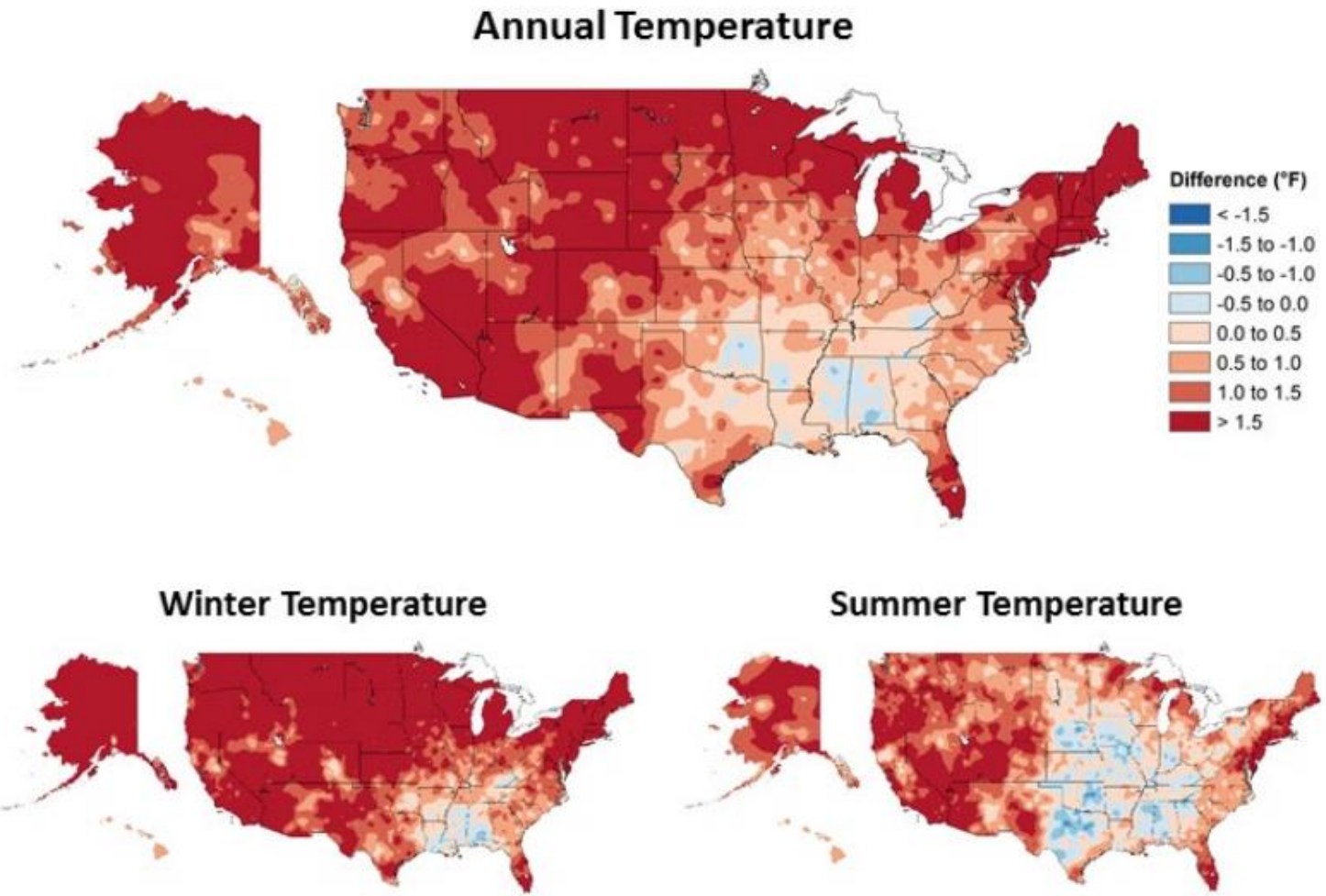
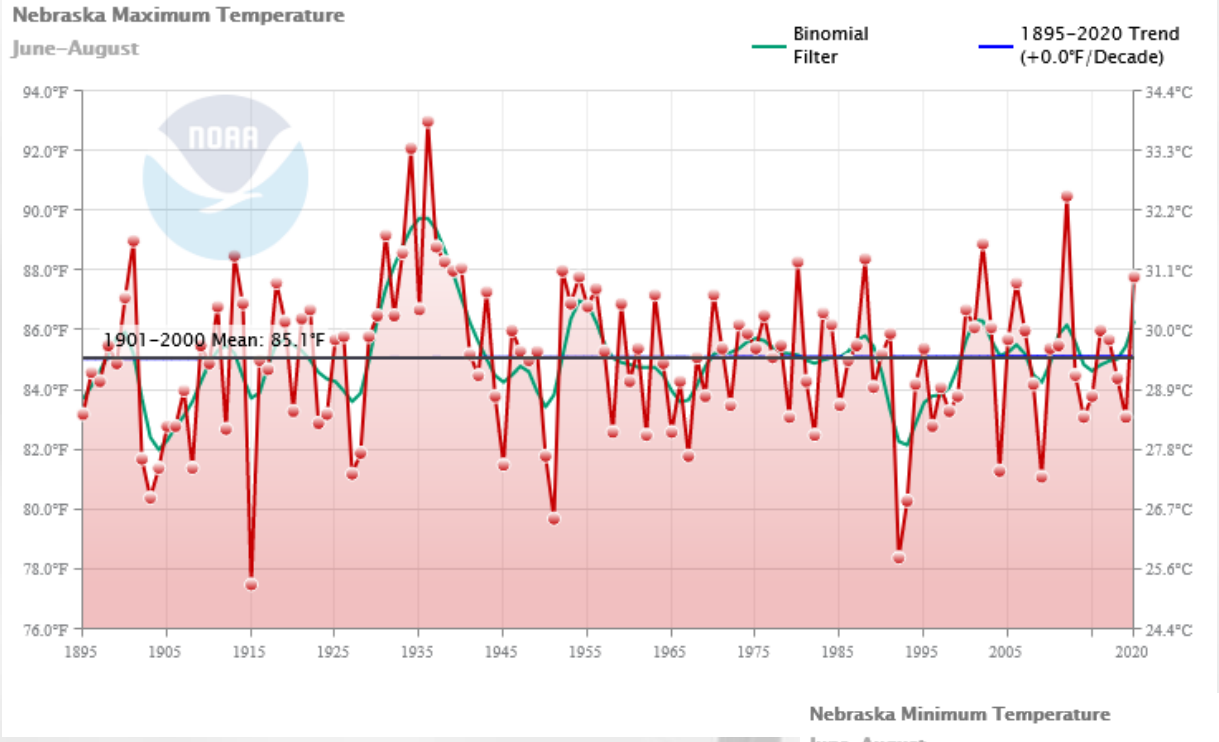
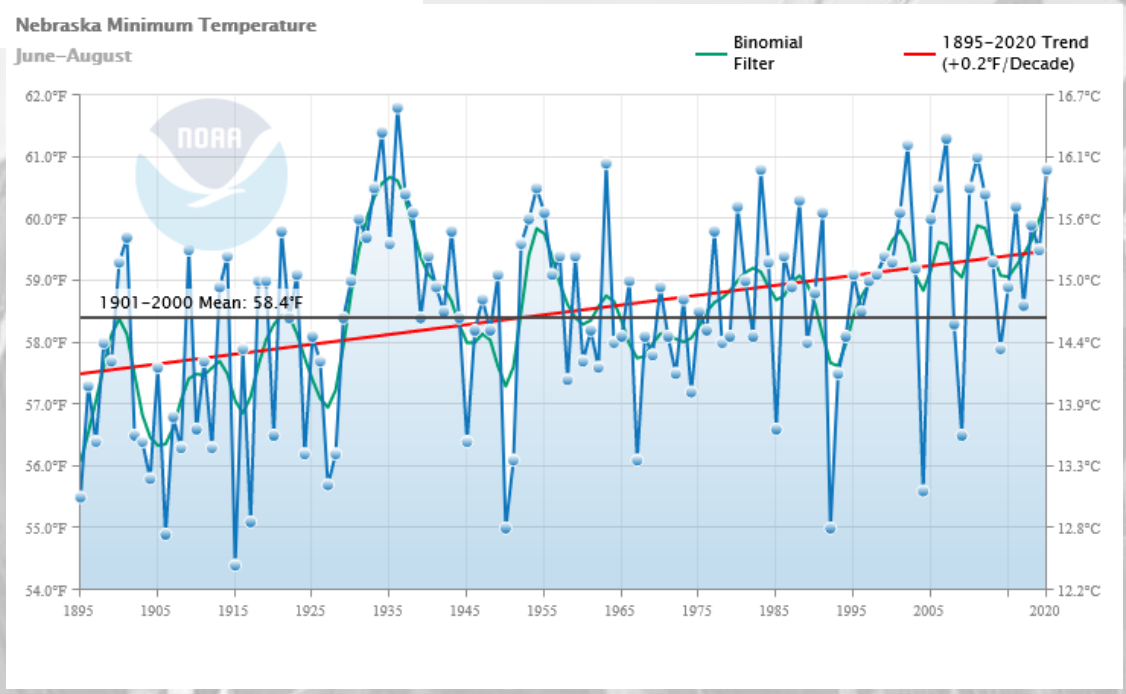


Figure 6.1. Observed changes in annual, winter, and summer temperature (°F). Changes are the difference between rage for present-day (1986–2016) and the average for the first half of the last century (1901–1960 for the con- United States, 1925–1960 for Alaska and Hawai'i). Estimates are derived from the nClimDiv dataset.[1,2] (Figure NOAA/NCEI).



Summers warming more by overnight lows than by daytime highs.

More moisture in the air keeps nights warmer.



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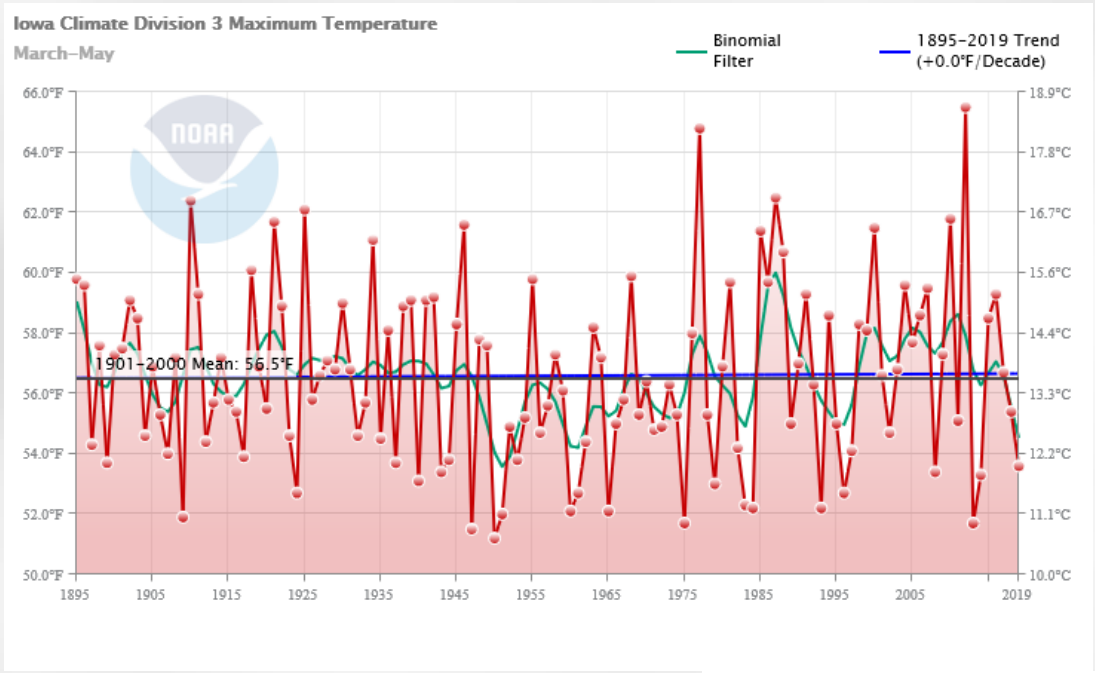

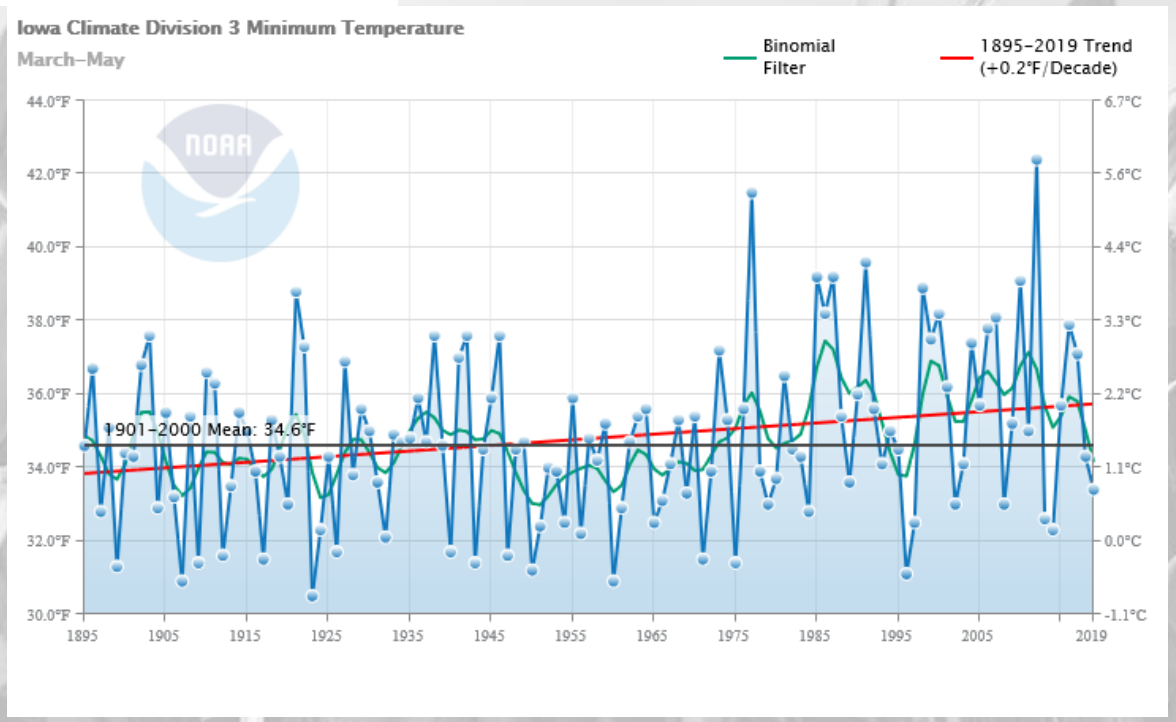

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