USDA Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

Weather/Climate Review/Outlook 2019

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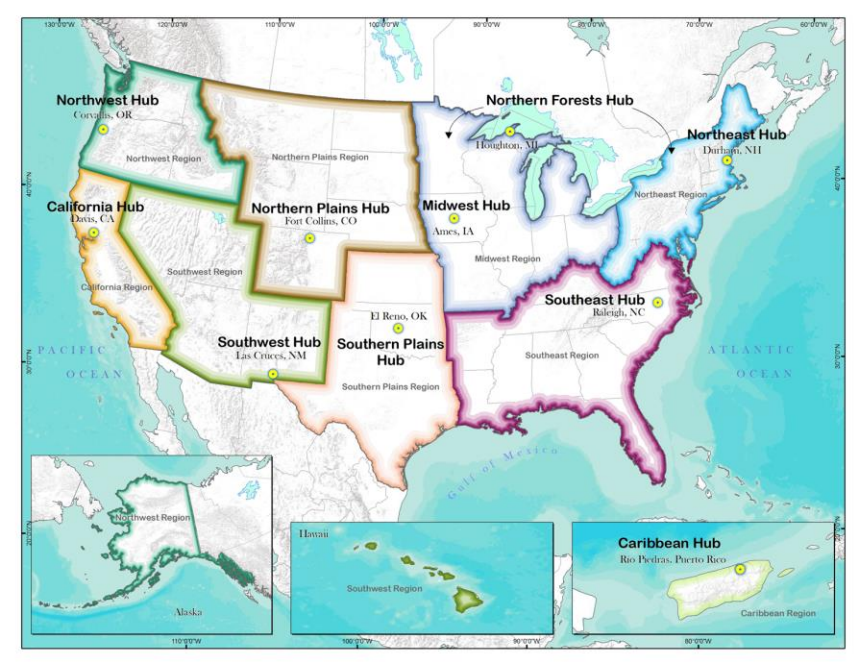
Topics

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

Intro to Climate Hub Work



Assessments and Syntheses
delivering relevant information

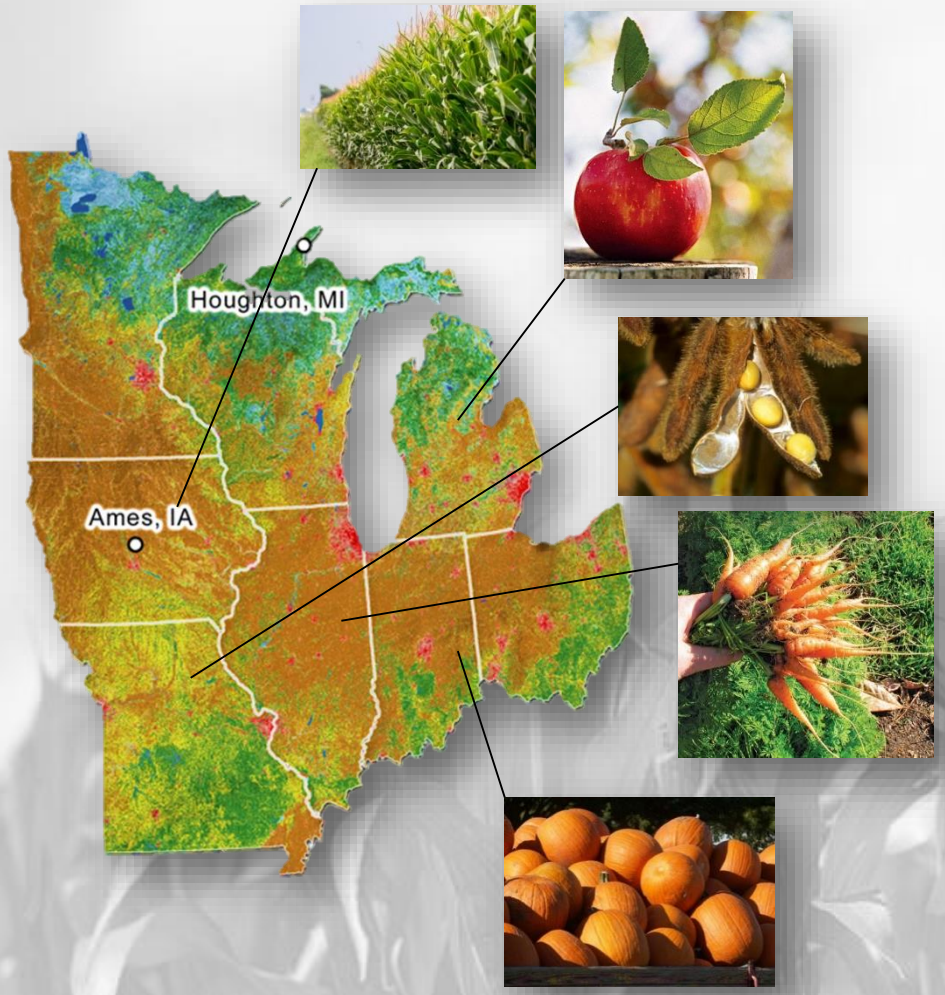
Outreach and Education
enabling climate-informed decisions

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.

MCH Thematic Areas

Assessments and Syntheses
delivering relevant information

USDA NIFA
United States Department of Agriculture
National Institute of Food and Agriculture

AMERICAN FRUIT GROWER

U.S. Global Change Research Program
National Climate Assessment

AMERICAN Vegetable GROWER

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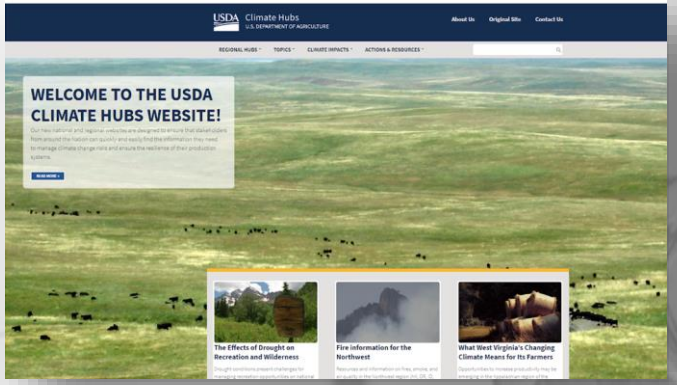
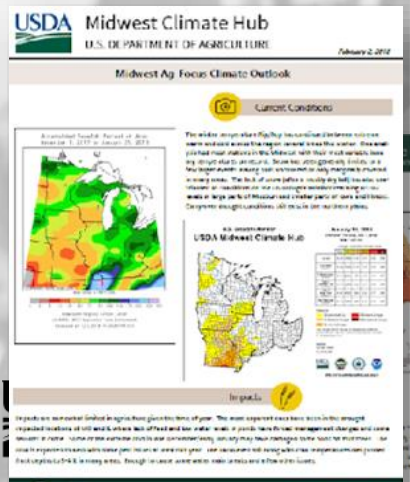
MCH Thematic Areas

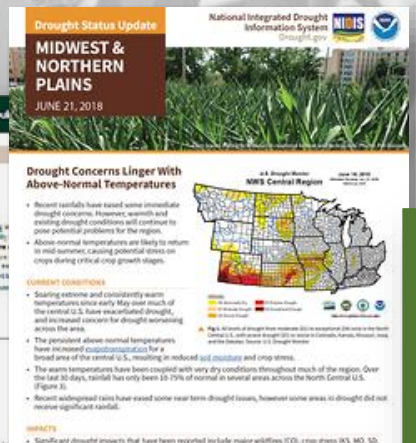
Outreach and Education
enabling climate-informed decisions

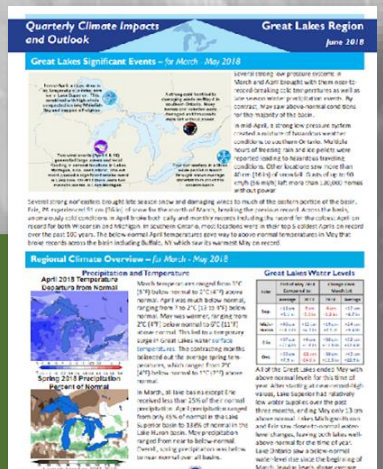
MAC-T

Midwest Agriculture and Climate Team

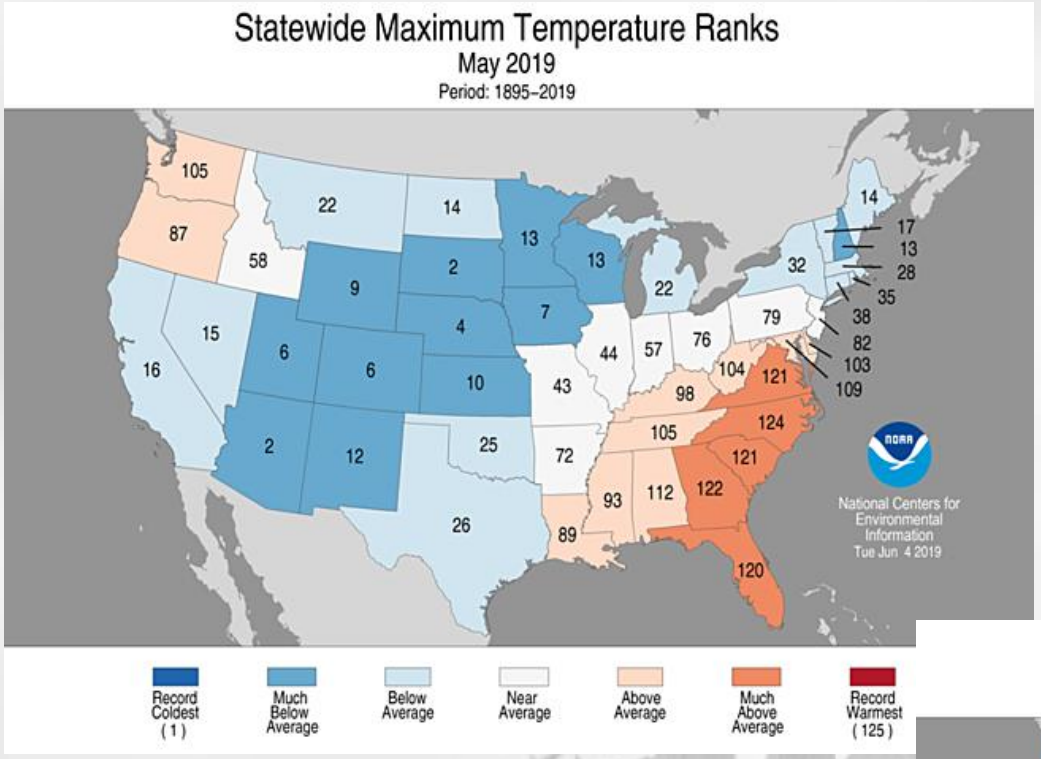


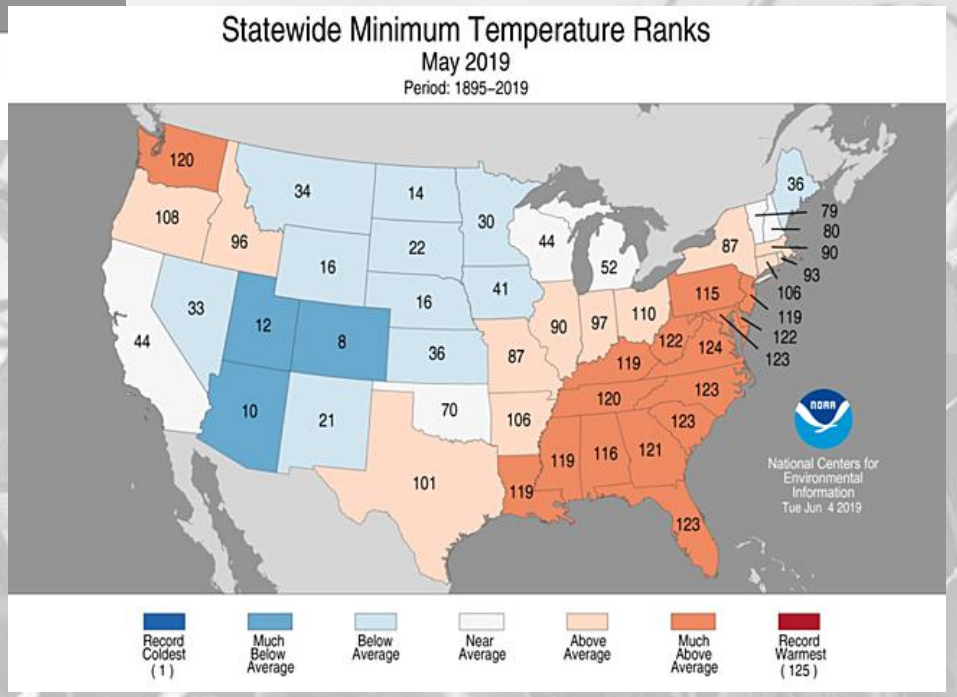






May Temperature

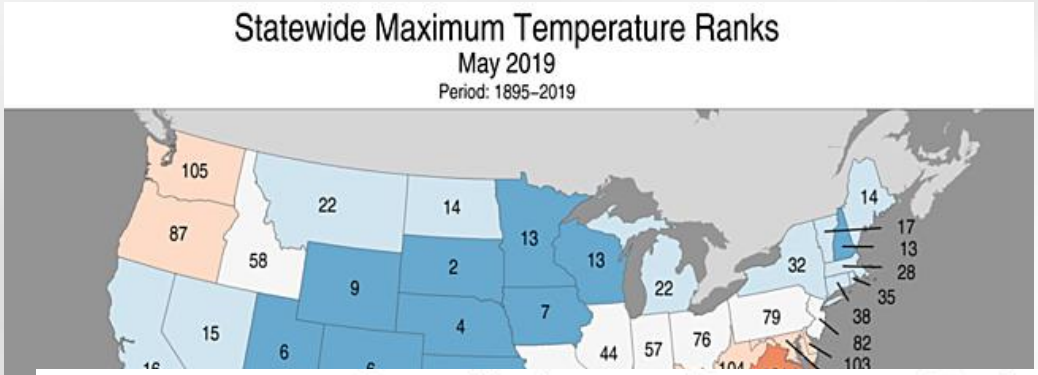


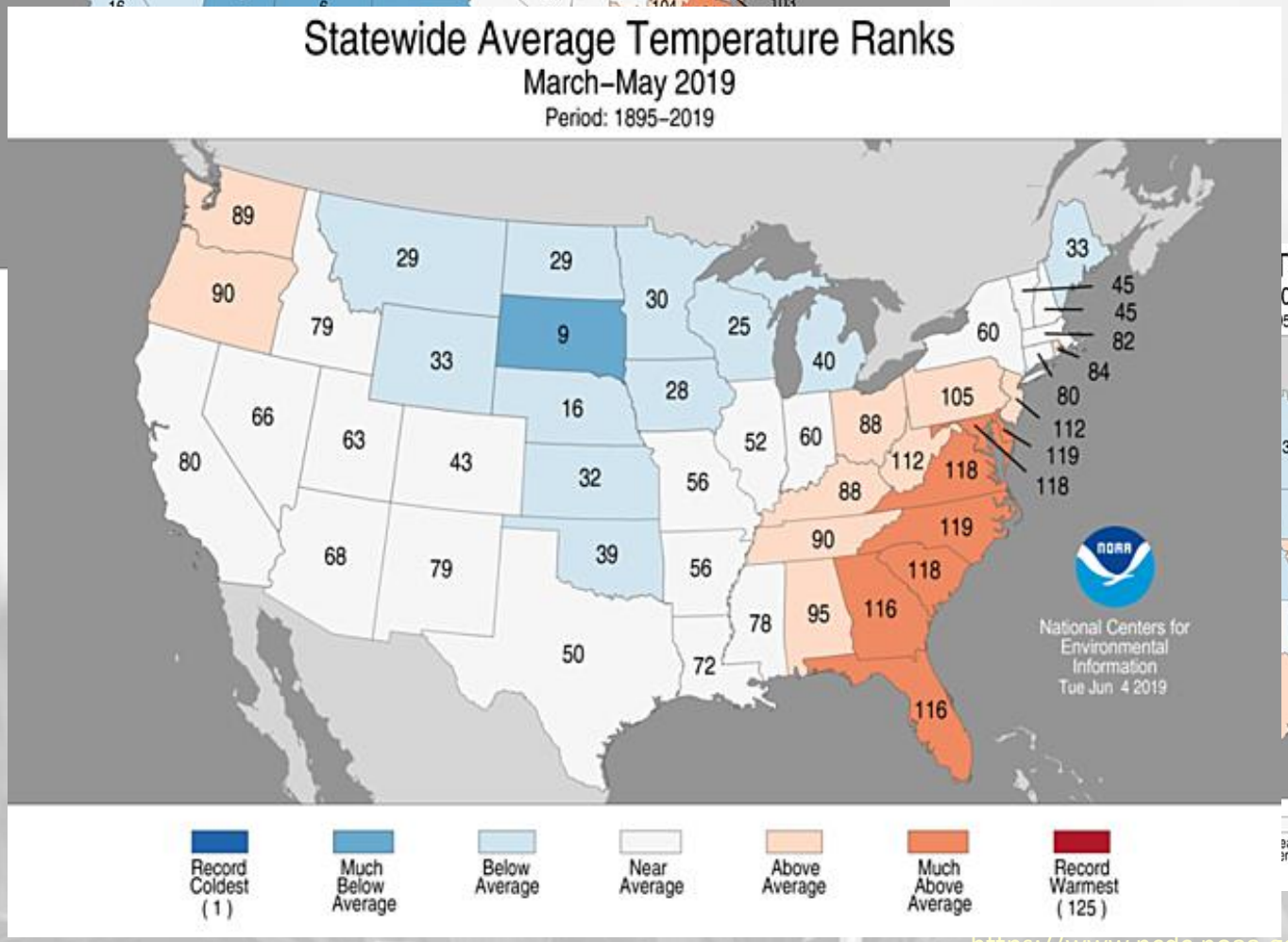


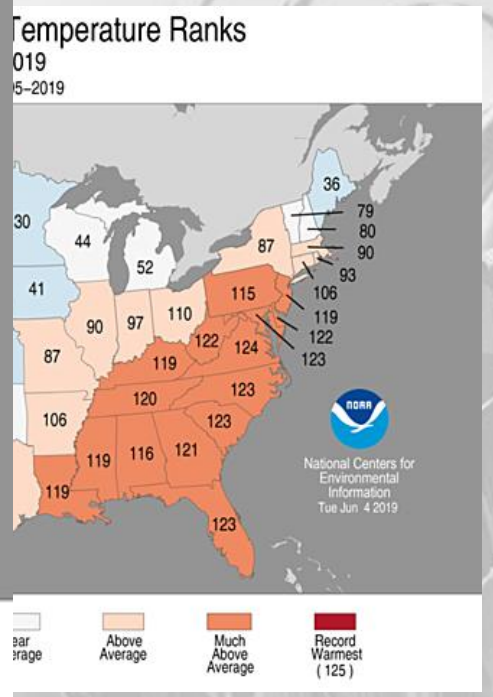
- May temperatures mostly colder than average. Signal more in the max temps.
- Top 10 coldest average highs central/western US.
- Warmer minimums eastern US

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

Spring Temperature

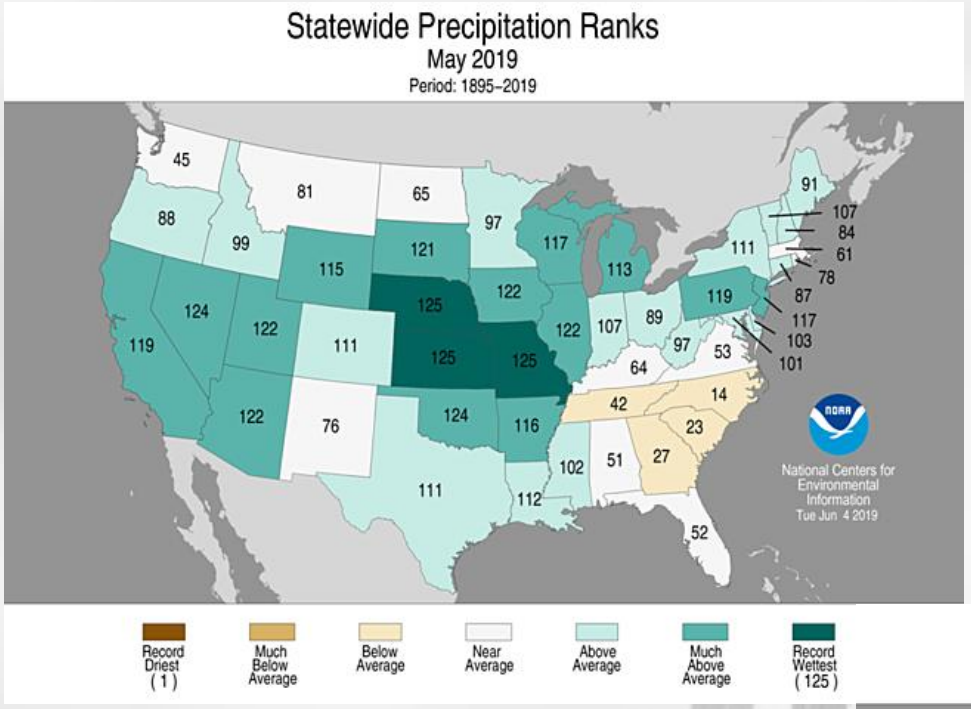


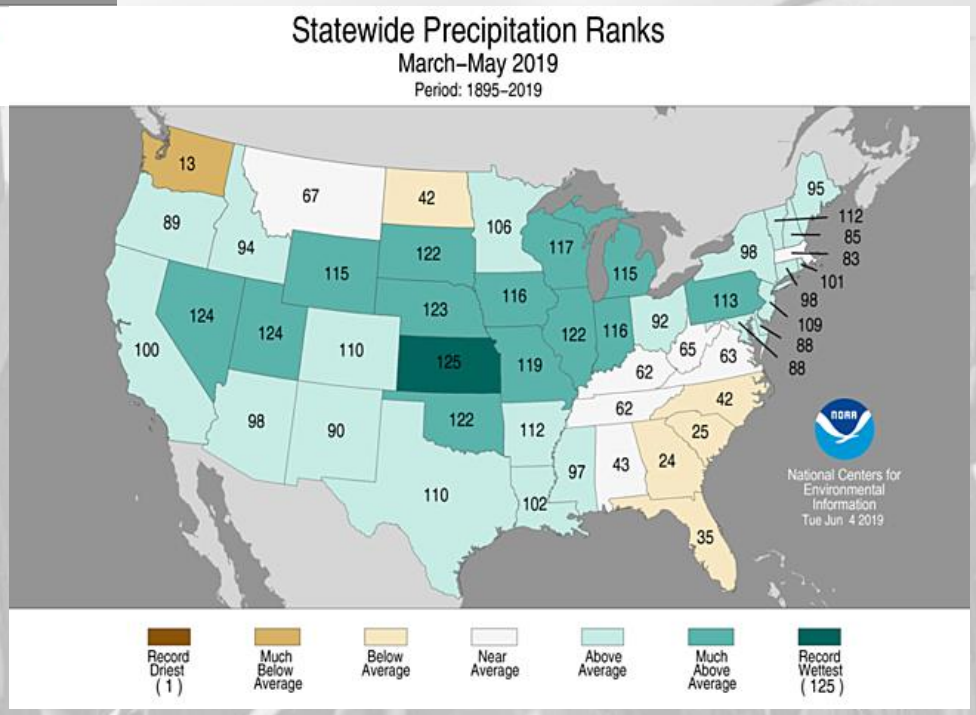




https://www.ncdc.noaa.gov/temp-and-precip/us-maps/

May/Spring Precipitation

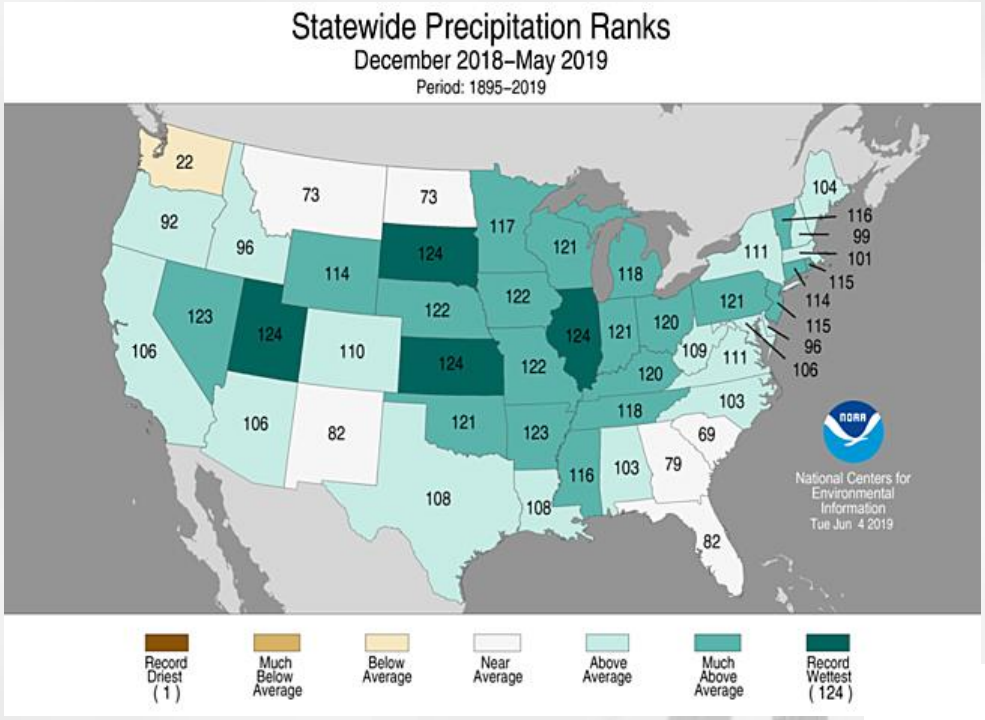


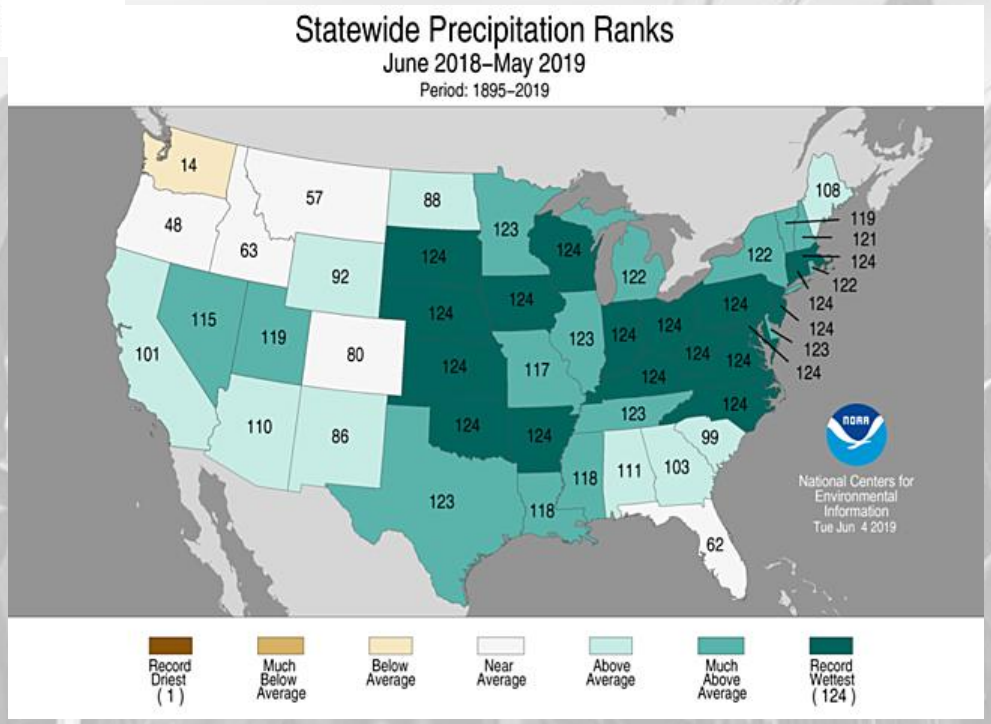


- May and spring precipitation well above average through middle US
- Top 10 and wettest all time for a few states at these time scales

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

6/12 Month Precipitation

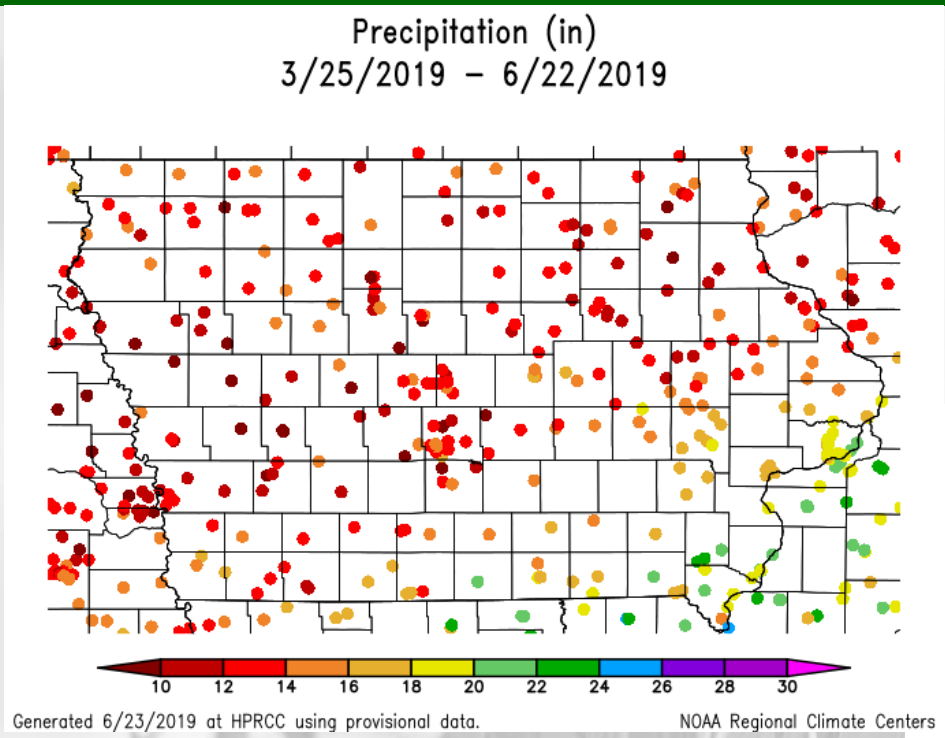




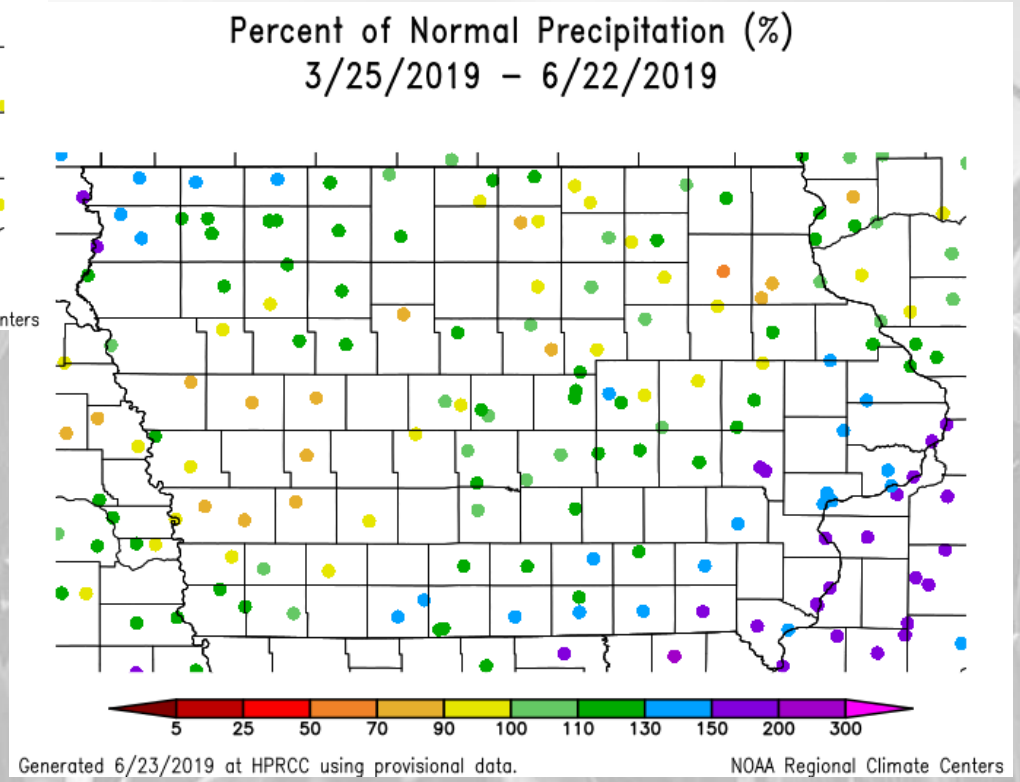
- Extended period of wetness back to a year.
- Top 10/record wettest in states back to a year.
- Wetness problems are long term issues.
- Iowa wettest June-May period on record (124 years)

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

90 Day Precip. Total/% Avg.



10-22” last 90 days. West central to north – pockets less than 70% average. Around 150% SE.



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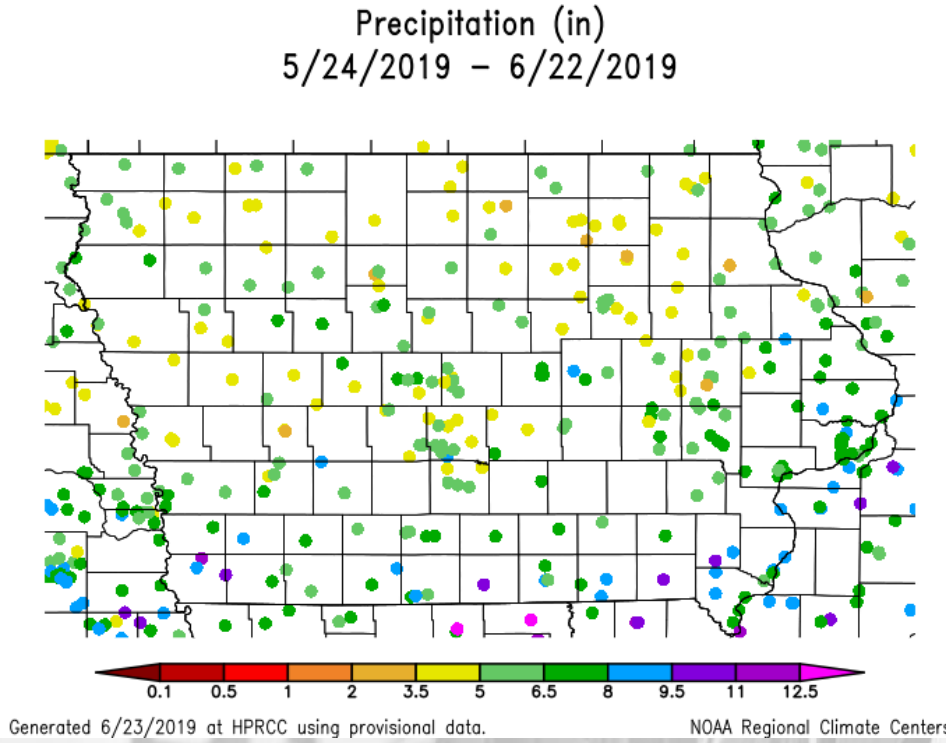
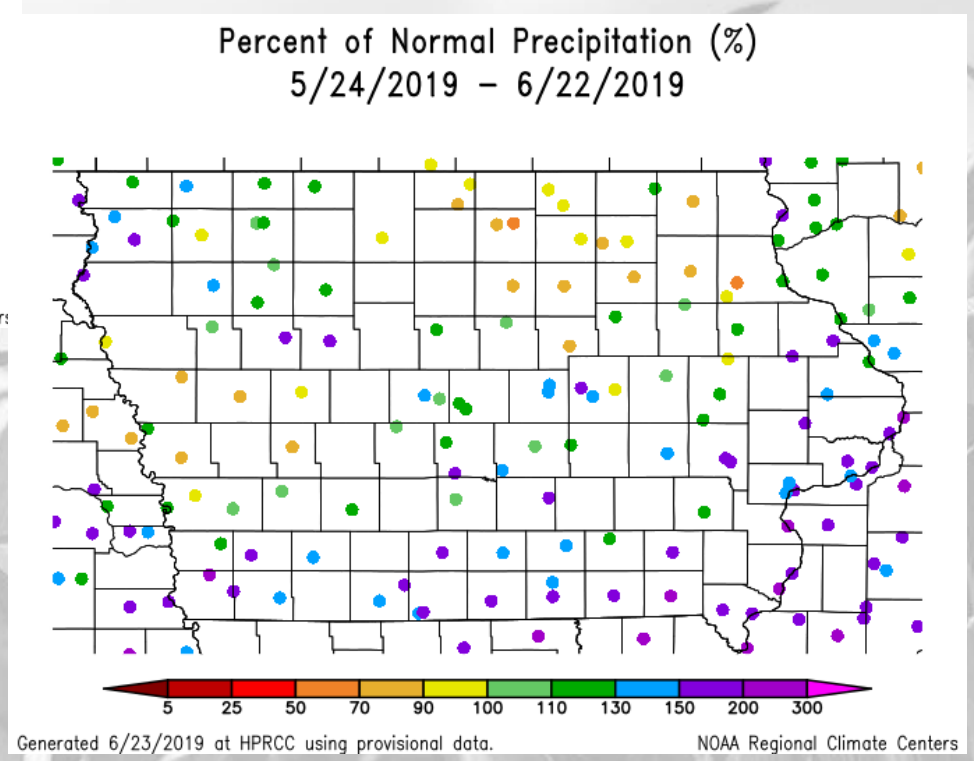
https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

30 Day Precip. Total/% Avg.

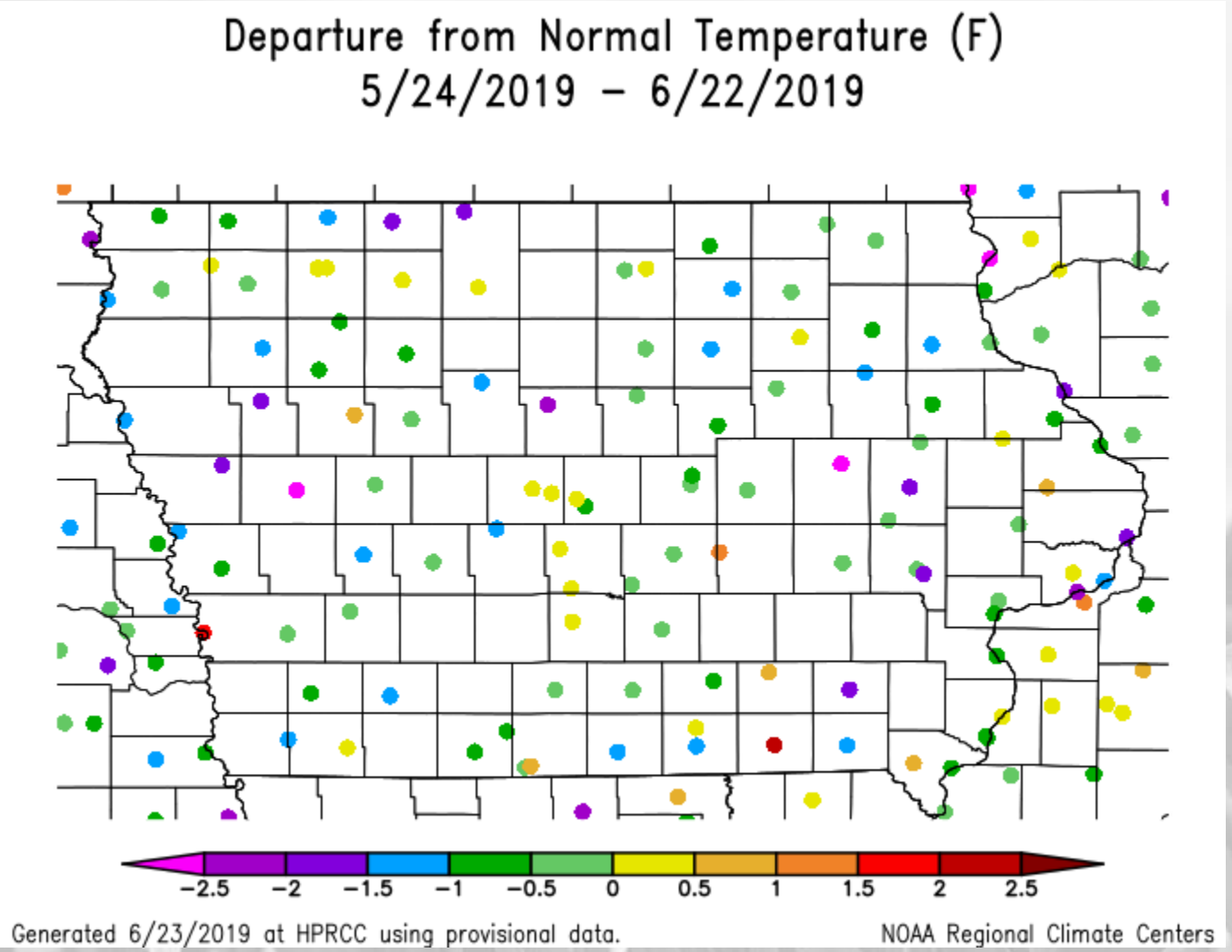


Totals less than 5” across northern IA to near 11” in the SE and SW. 150-200% of average in the south and far NW. Pockets below 70% avg. WC and NE.



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

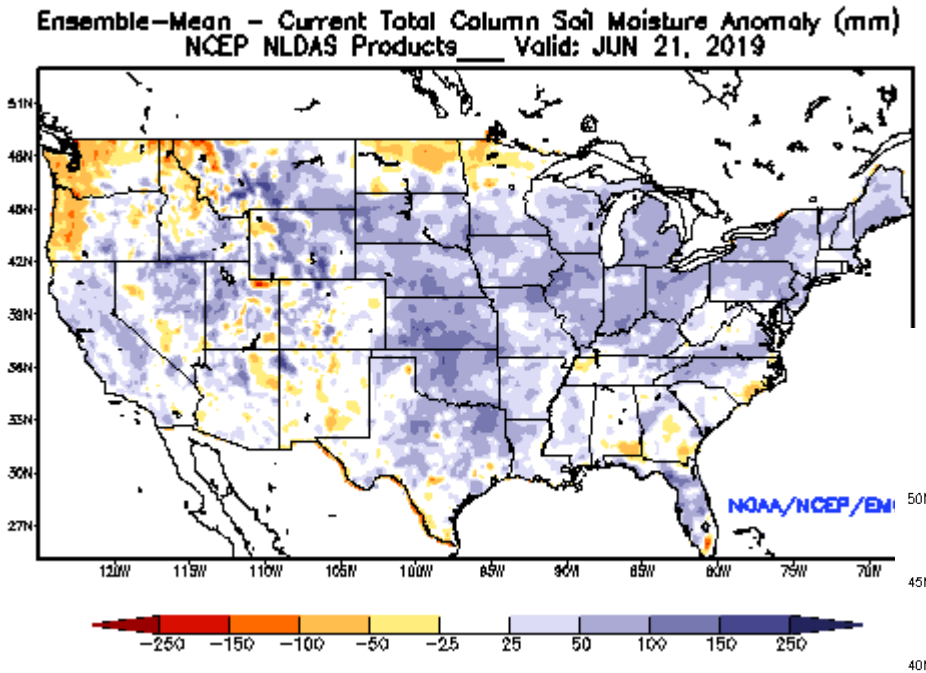
30 Day Temperatures



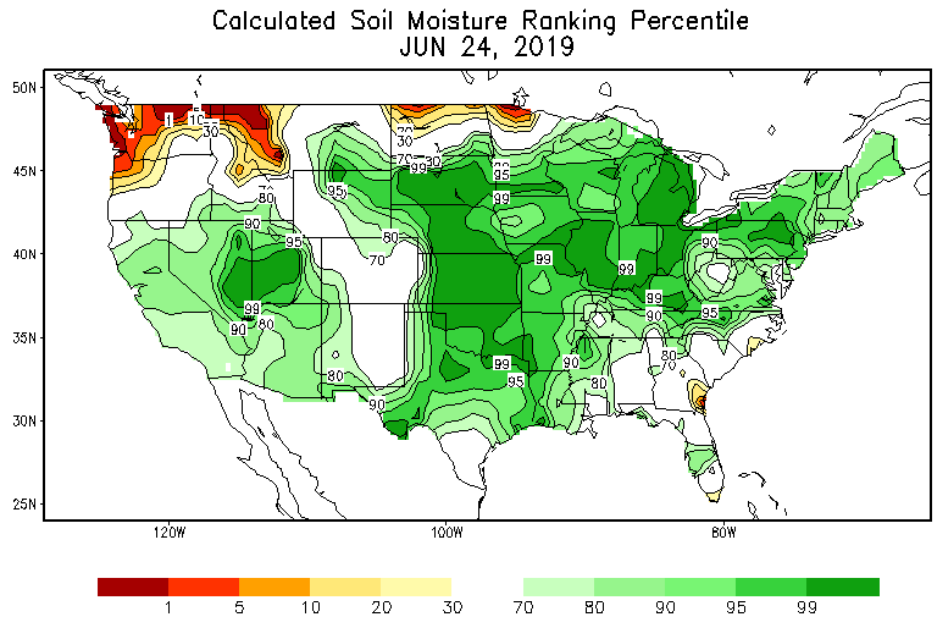
Close to average (+/- 1 F) for much of the state. Mostly slightly below avg.

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

Soil Moisture



Soil moisture several inches above average – 95th percentile (basically still very wet)



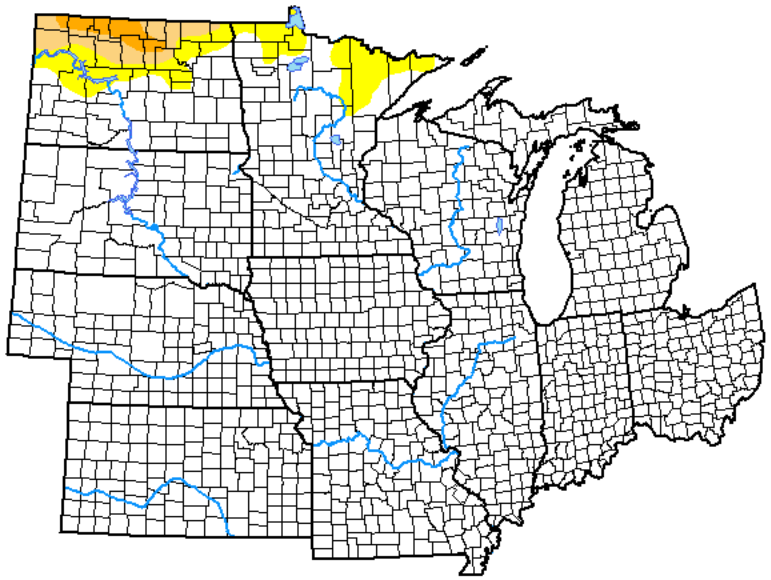
https://www.emc.ncep.noaa.gov/mmb/nldas/drought/

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

US Drought Monitor

U.S. Drought Monitor

North Central



June 18, 2019

(Released Thursday, Jun. 20, 2019)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	94.22	5.78	2.00	0.63	0.00	0.00
Last Week *06-11-2019*	95.25	4.75	1.60	0.00	0.00	0.00
3 Months Ago *03-19-2019*	99.84	0.16	0.00	0.00	0.00	0.00
Start of Calendar Year *01-01-2019*	95.93	4.07	1.43	0.00	0.00	0.00
Start of Water Year *09-25-2018*	73.15	26.85	12.92	4.07	0.97	0.05
One Year Ago *06-19-2018*	69.73	30.27	13.70	5.63	0.77	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. See accompanying text summary for forecast statements.

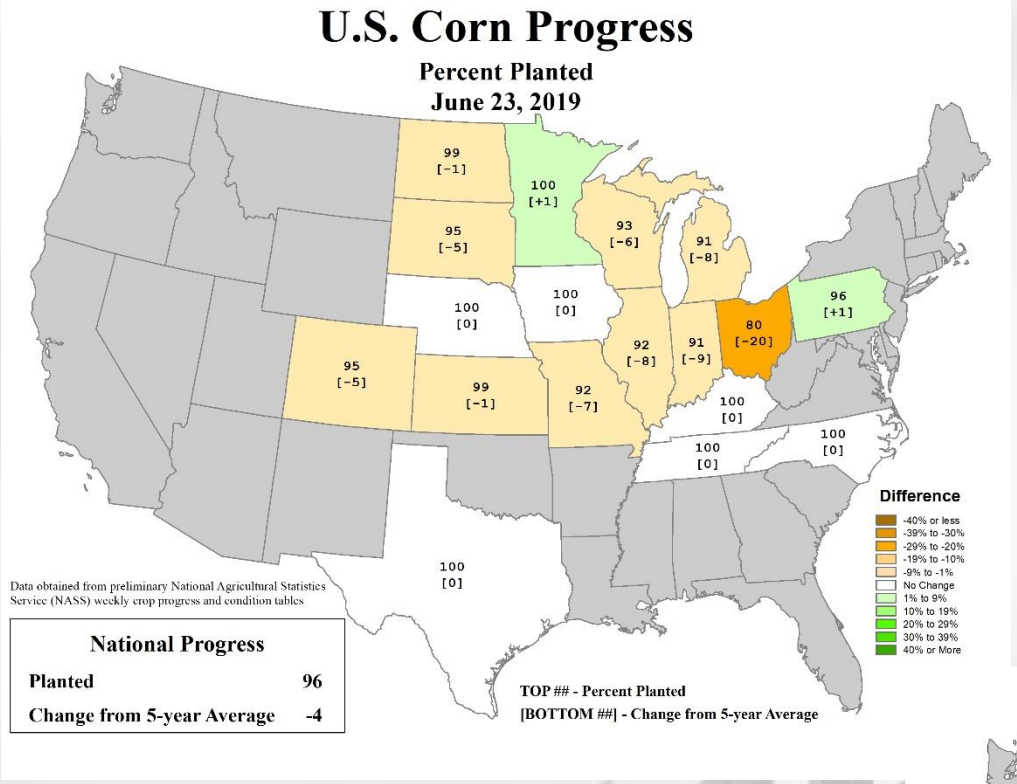
Author:
Brad Pugh
CPC/NOAA

droughtmonitor.unl.edu

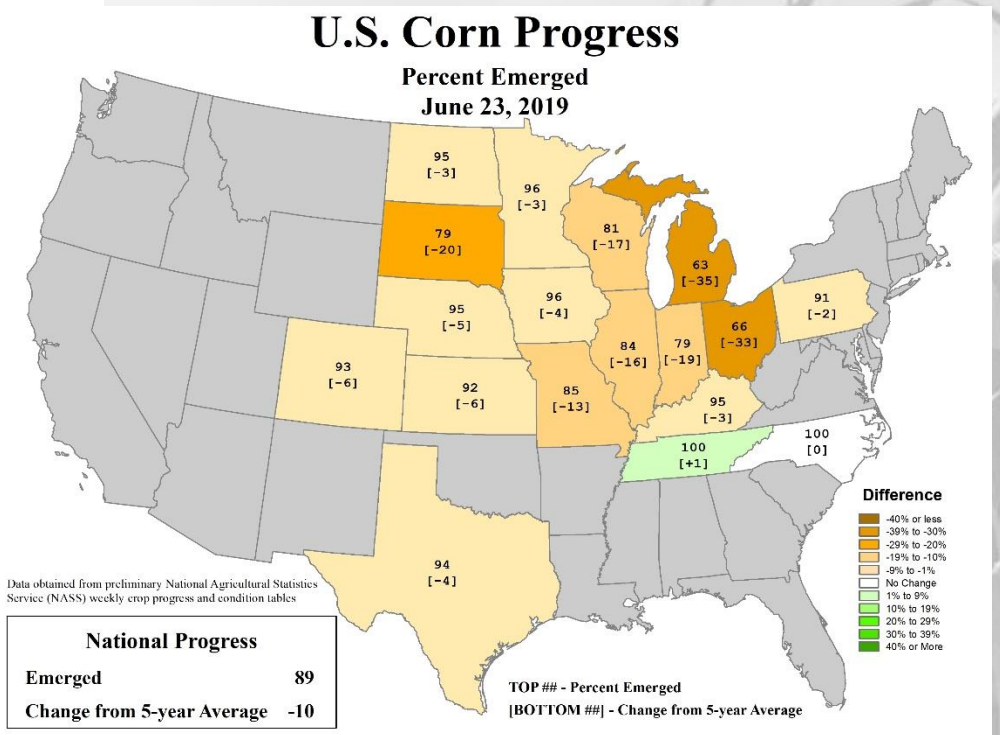
D0 pockets in Minnesota. Northern North Dakota in D1/D2.

http://droughtmonitor.unl.edu/

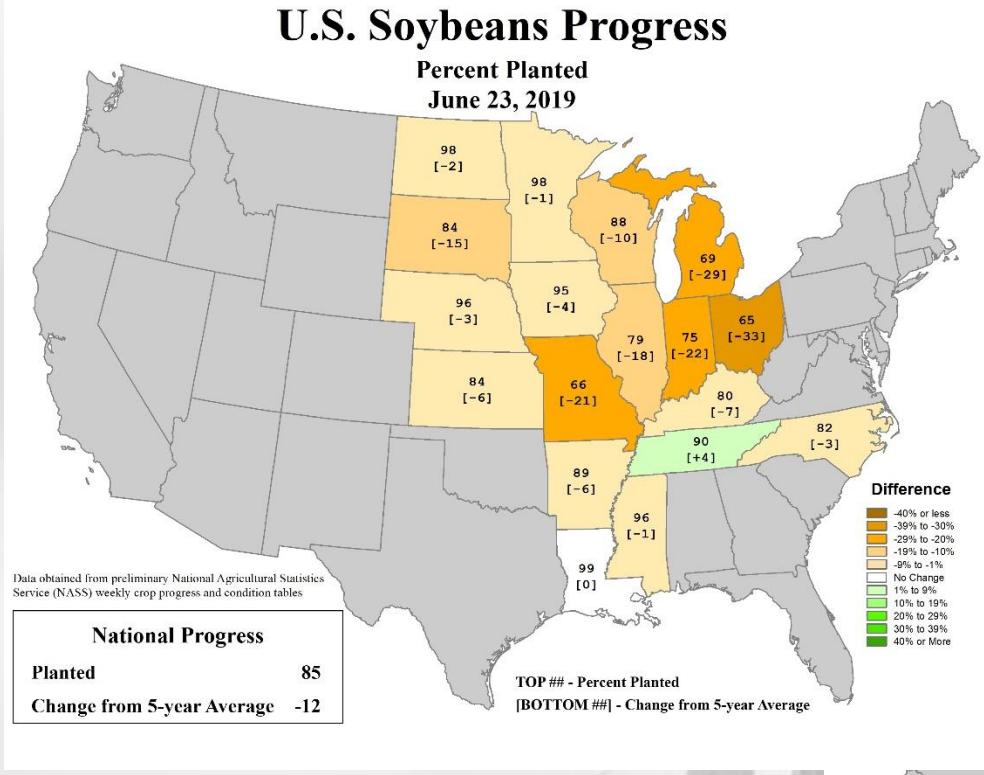
USDA NASS Crop Progress (through June 23)



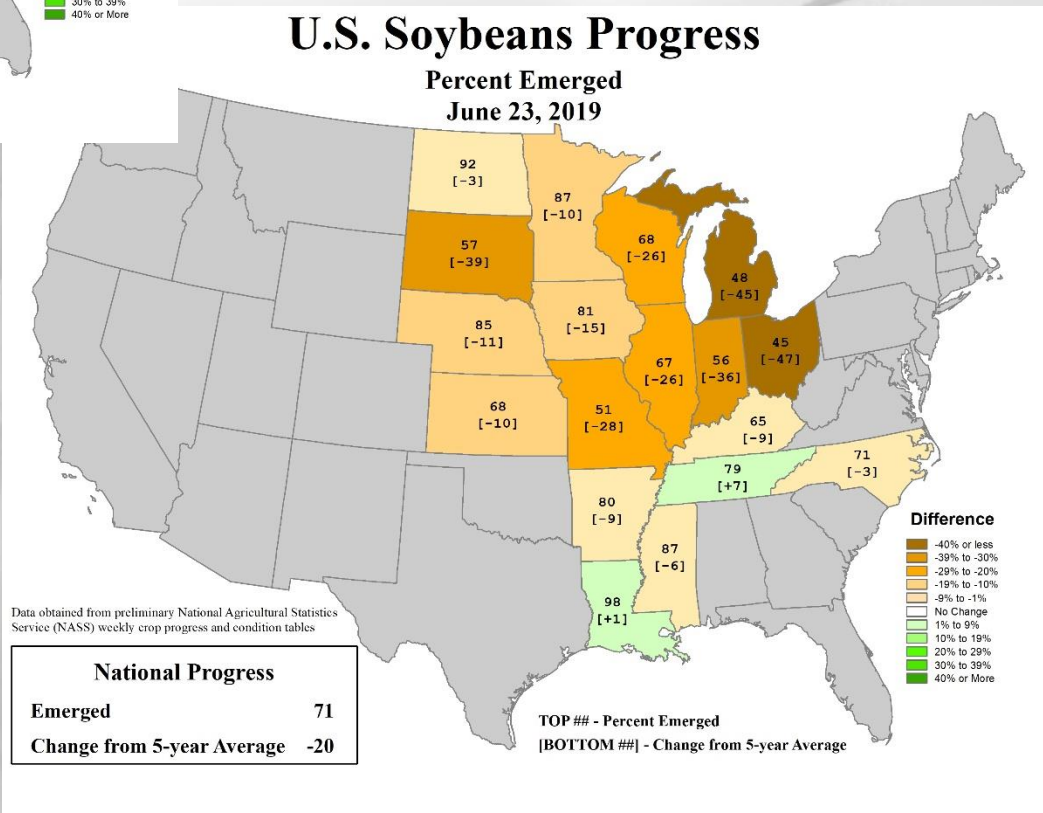
Corn progress nationally through June 23 (96% planted -4%; 89% -10%). Iowa better than many states (100%; 96% -4%).



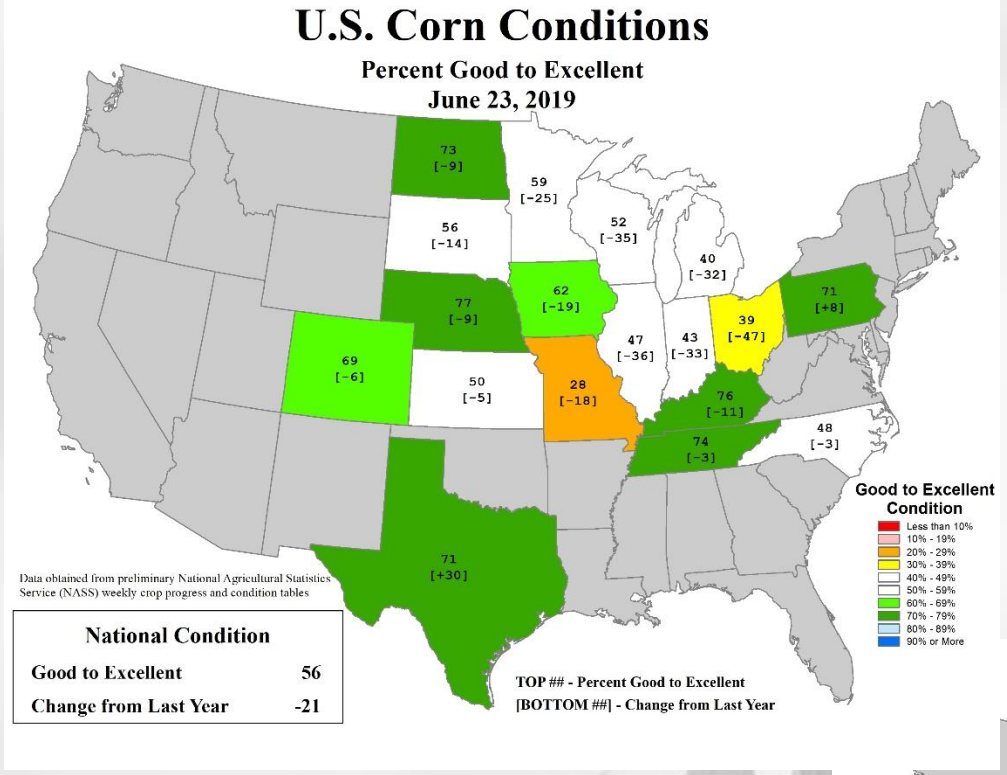
USDA NASS Crop Progress (through June 23)



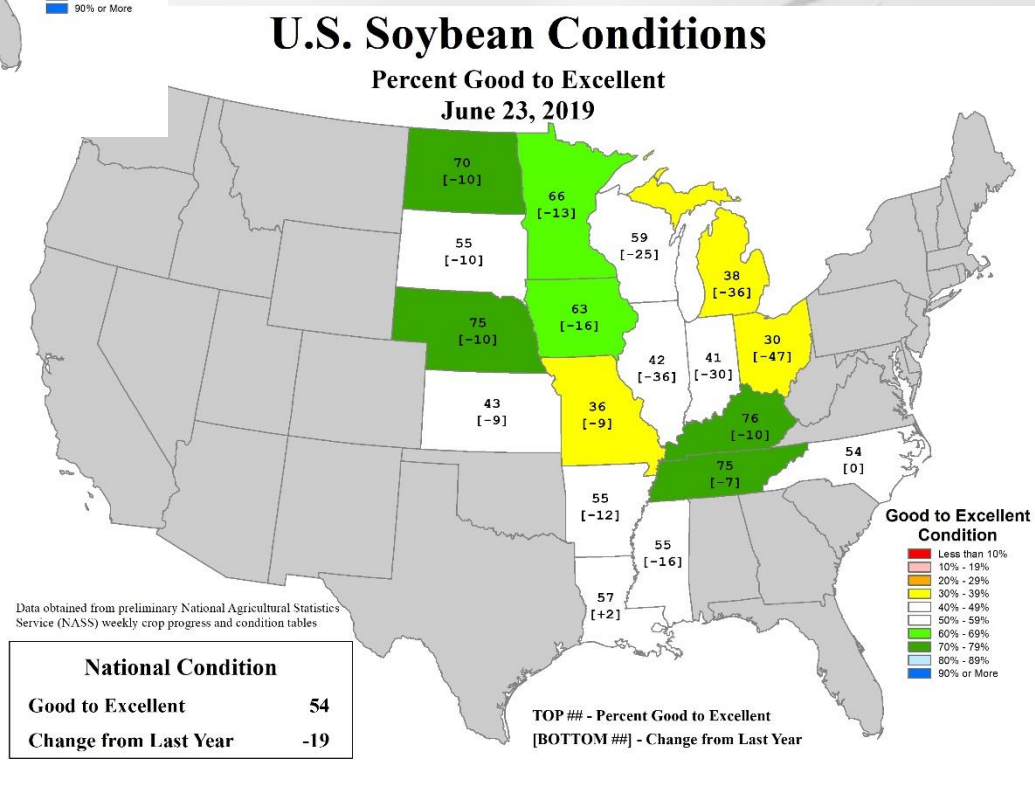
Bean progress nationally through June 23 (85% planted -12%; 71% -20%). Iowa still better than many states (95% -4%; 81% -15%).



USDA NASS Crop Condition (through June 23)

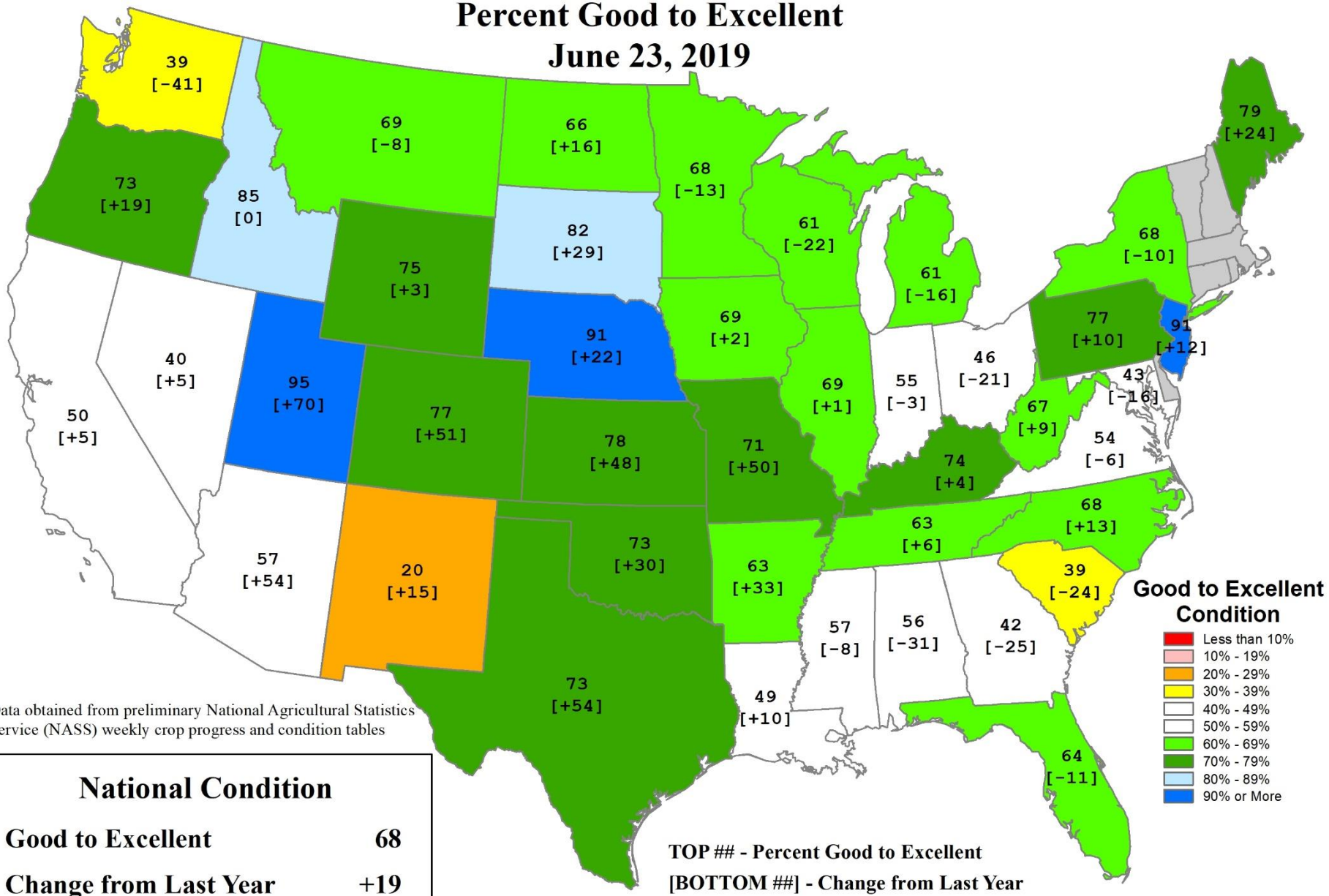


Condition indexed similar to 2012 and 1993 at this point. 2012 was dropping quickly.



U.S. Pasture and Range Conditions

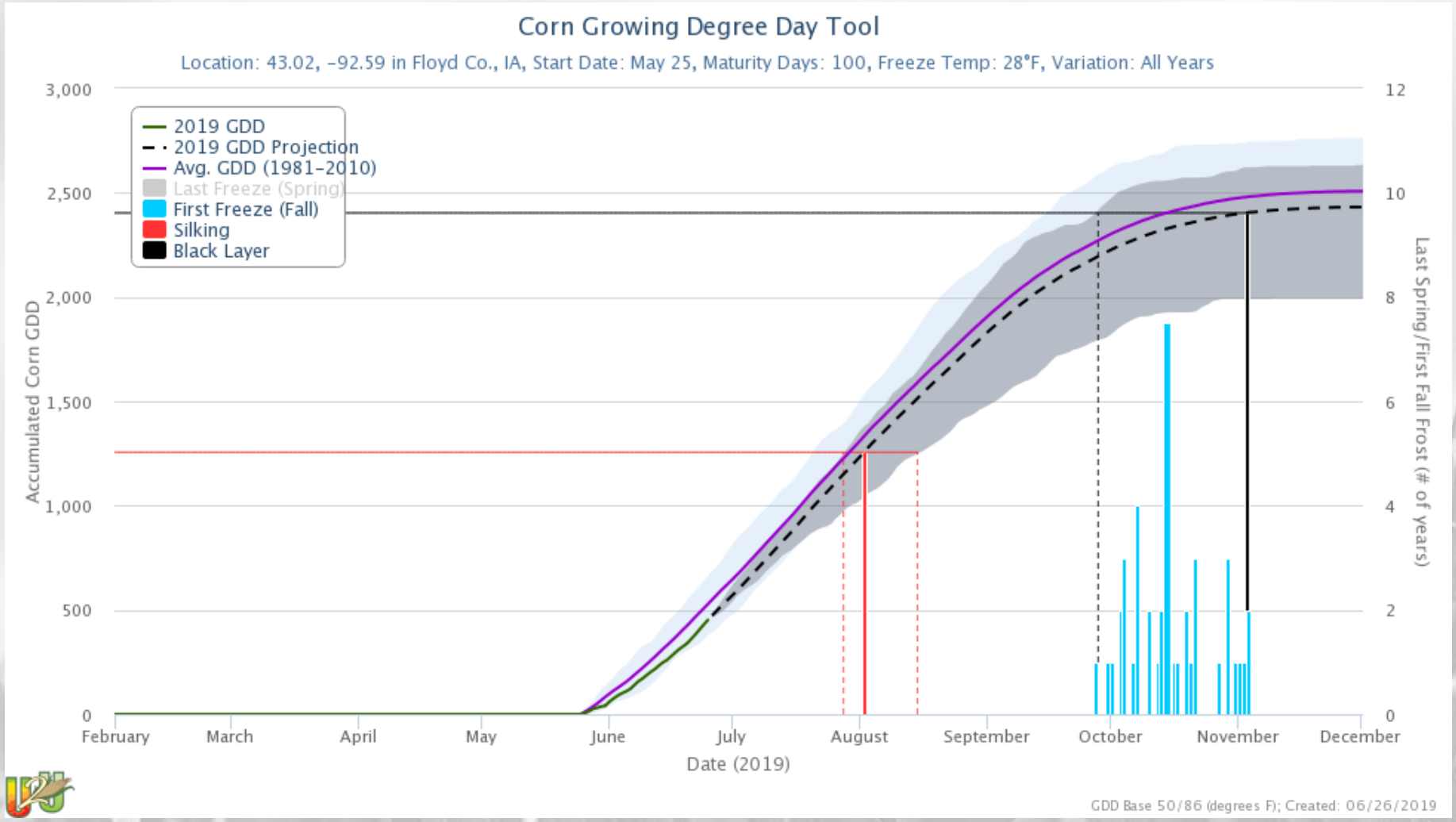
Percent Good to Excellent
June 23, 2019



Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Condition	
Good to Excellent	68
Change from Last Year	+19

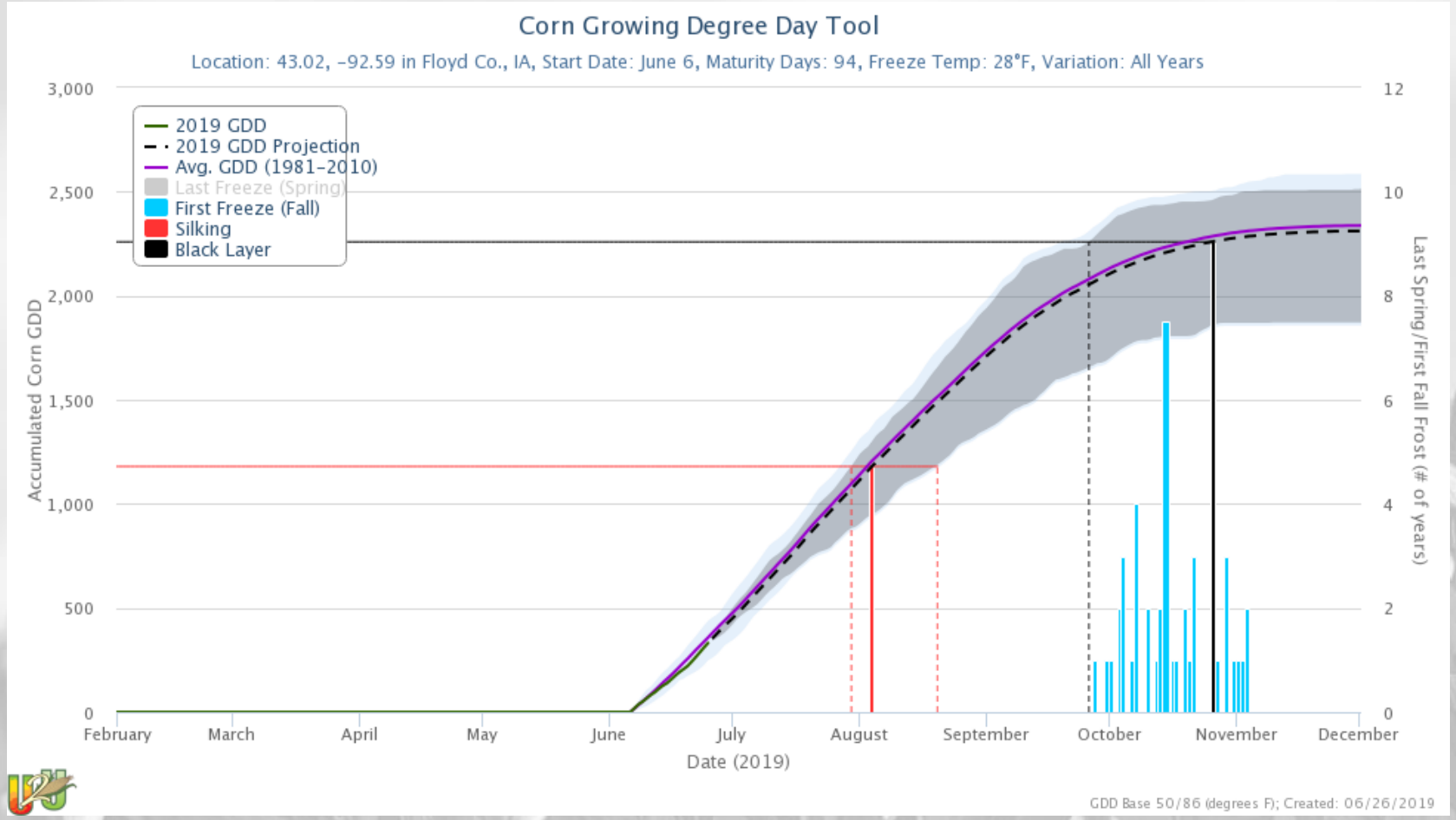
GDD Accumulation – Floyd County



Note: Both versions working.

http://mrcc.isws.illinois.edu/U2U/gdd/ or https://hprcc.unl.edu/gdd.php

GDD Accumulation – Floyd County



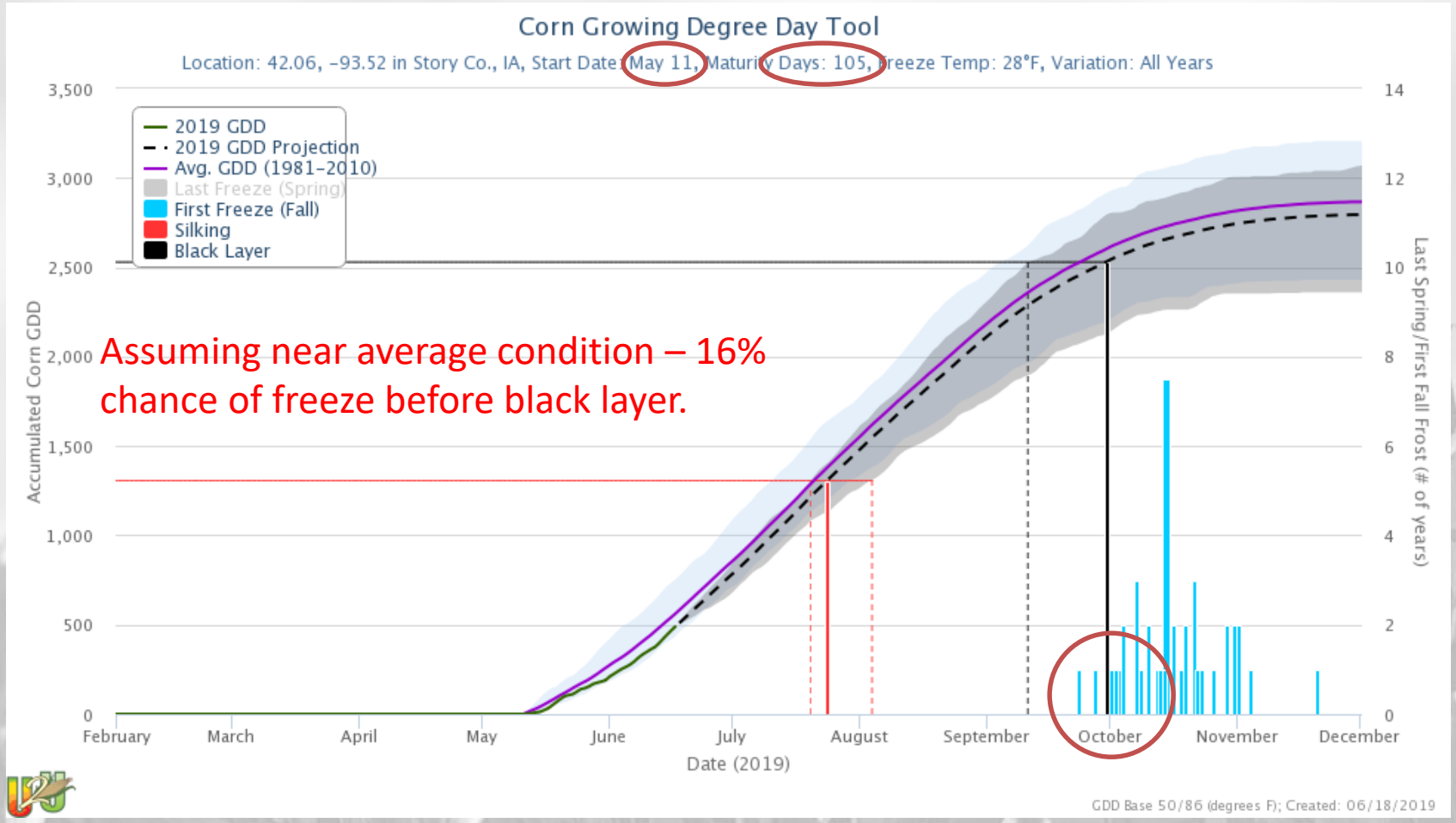
Note: Both versions working.

http://mrcc.isws.illinois.edu/U2U/gdd/ or https://hprcc.unl.edu/gdd.php

Assumptions

- Assumes avg. GDD accumulation rest of season (that is a big question right now)
- Does not incorporate shortening of GDD requirement for late planted corn.

GDD Accumulation – Story County

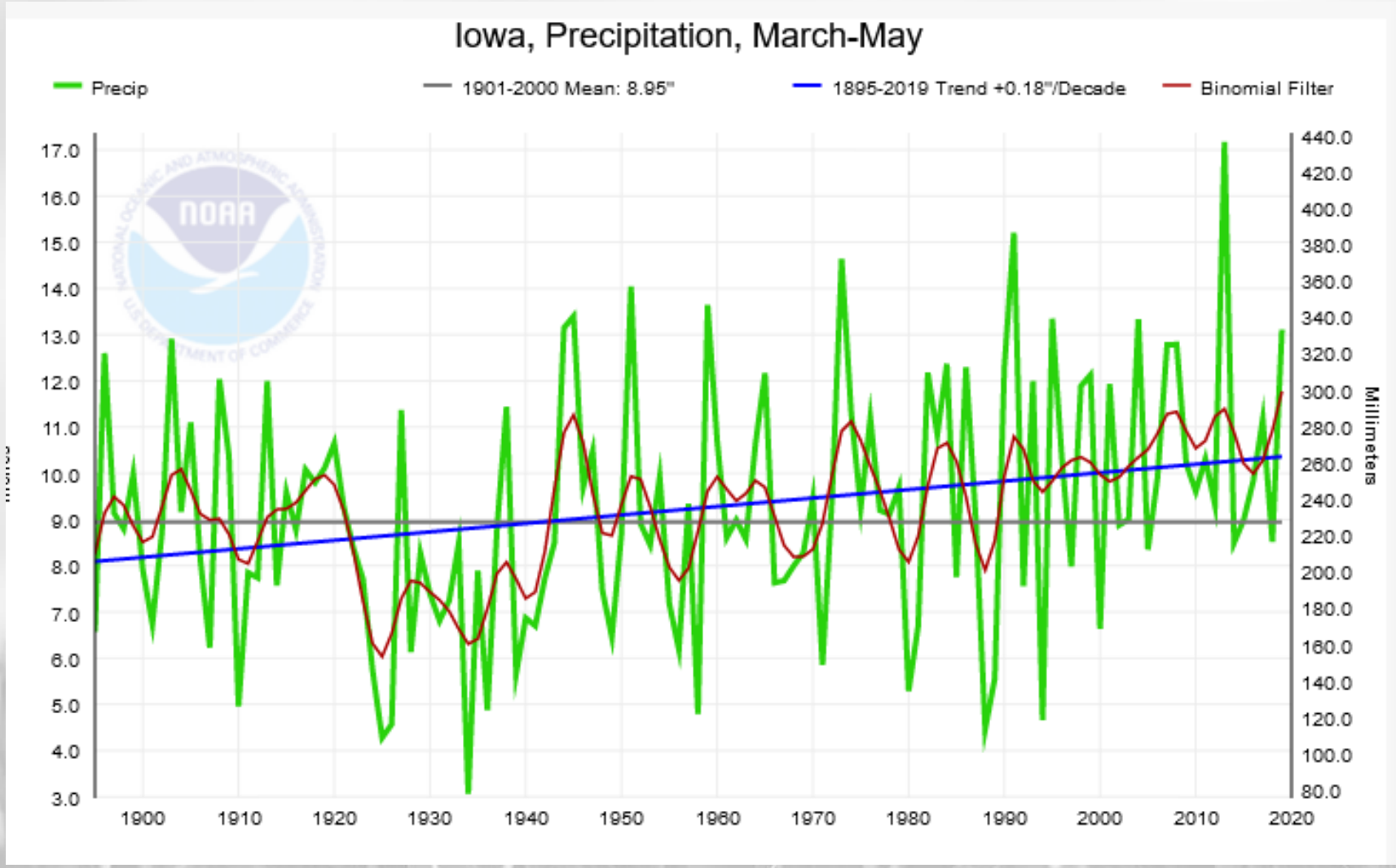


http://mrcc.isws.illinois.edu/U2U/gdd/ or https://hprcc.unl.edu/gdd.php

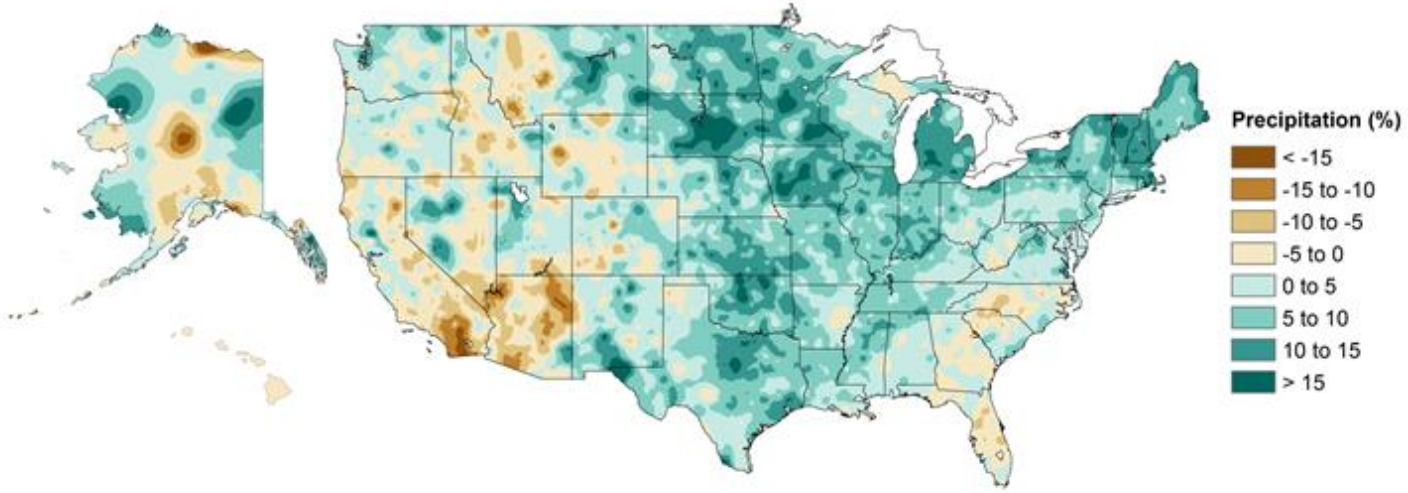
Crop/Harvest issues

- Growing season:
  - Slow development
  - Disease
  - Weed issues
  - Lack of sunlight (don’t have good data on this)
- Harvest:
  - Some potential freeze concerns
  - More likely lots of immature high moisture corn
- GDD Tool - Keep checking back on progress

Crop/Harvest issues

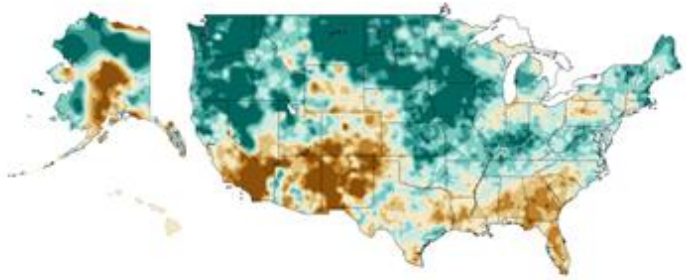


Annual Precipitation

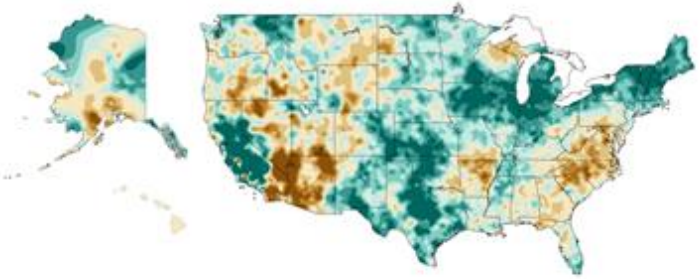


Winter Precipitation

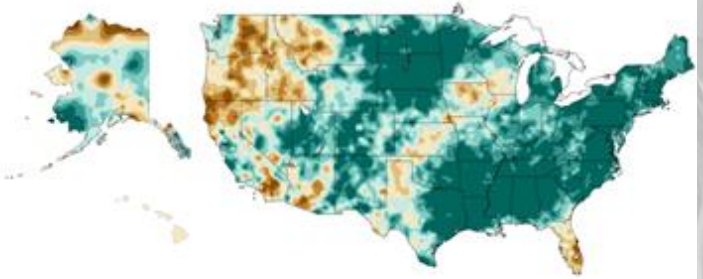
Spring Precipitation



Summer Precipitation



Fall Precipitation



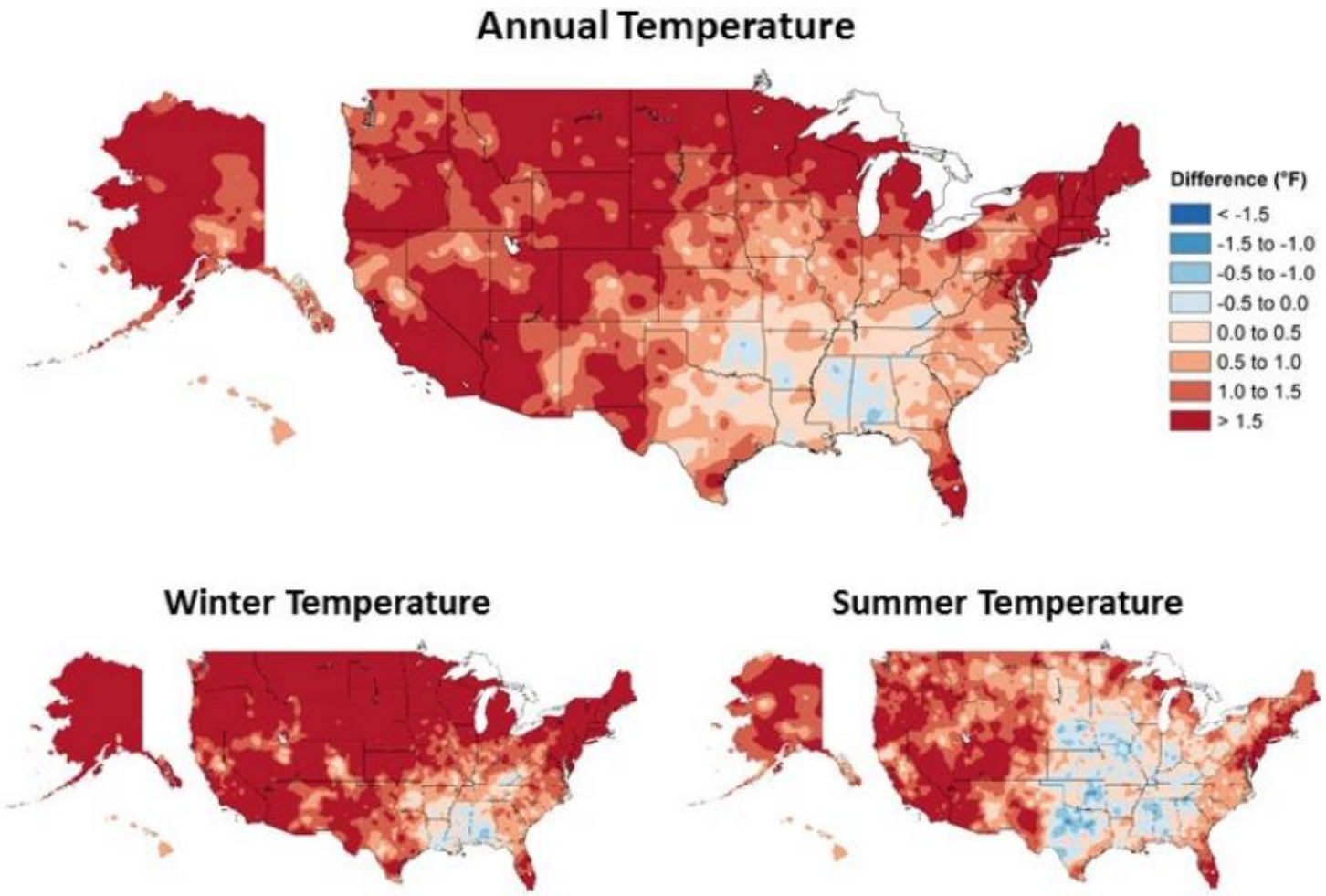
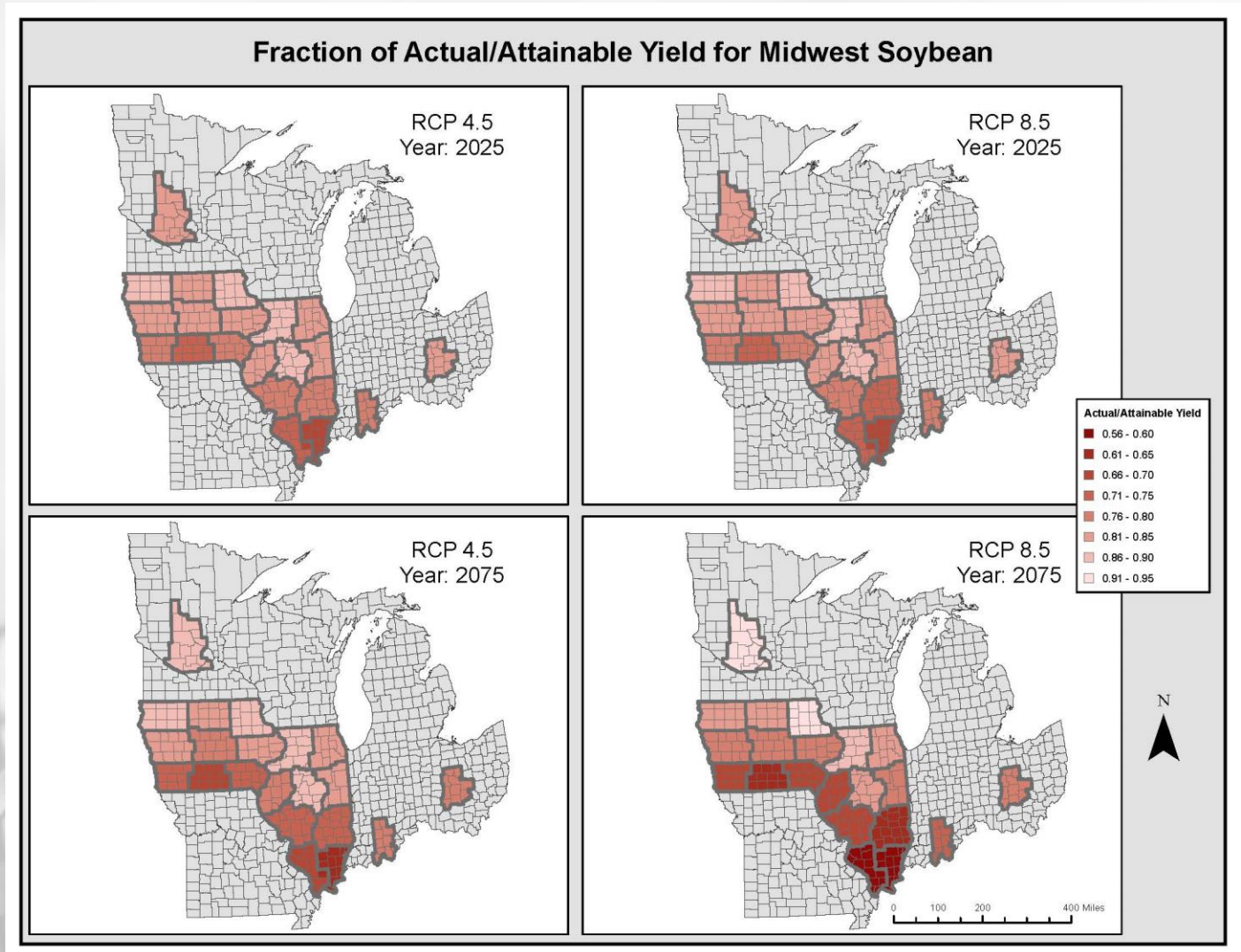
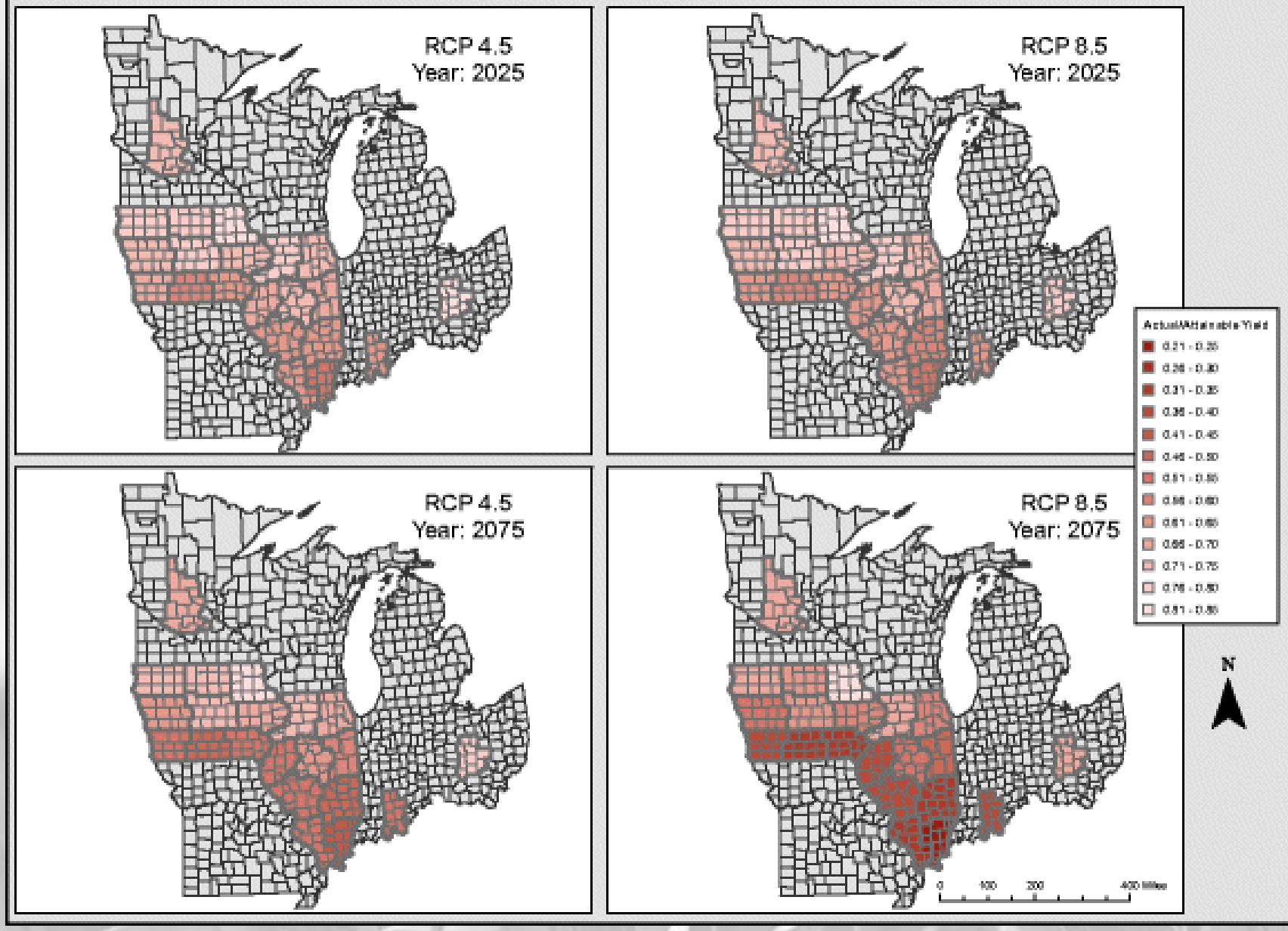


Figure 6.1. Observed changes in annual, winter, and summer temperature (°F). Changes are the difference between rage for present-day (1986–2016) and the average for the first half of the last century (1901–1960 for the con- United States, 1925–1960 for Alaska and Hawai'i). Estimates are derived from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


Fraction of Actual/Attainable Yield for Midwest Soybean
RCP 4.5
Year: 2025
RCP 8.5
Year: 2025
RCP 4.5
Year: 2075
RCP 8.5
Year: 2075
Actual/Attainable Yield
0.56 - 0.60
0.61 - 0.65
0.66 - 0.70
0.71 - 0.75
0.76 - 0.80
0.81 - 0.85
0.86 - 0.90
0.91 - 0.95
N
0
100
200
400 Miles

Fraction of Actual/Attainable Yield for Midwest Maize



Climate Change and Agricultural Pests

1)Expanding geographic ranges northward

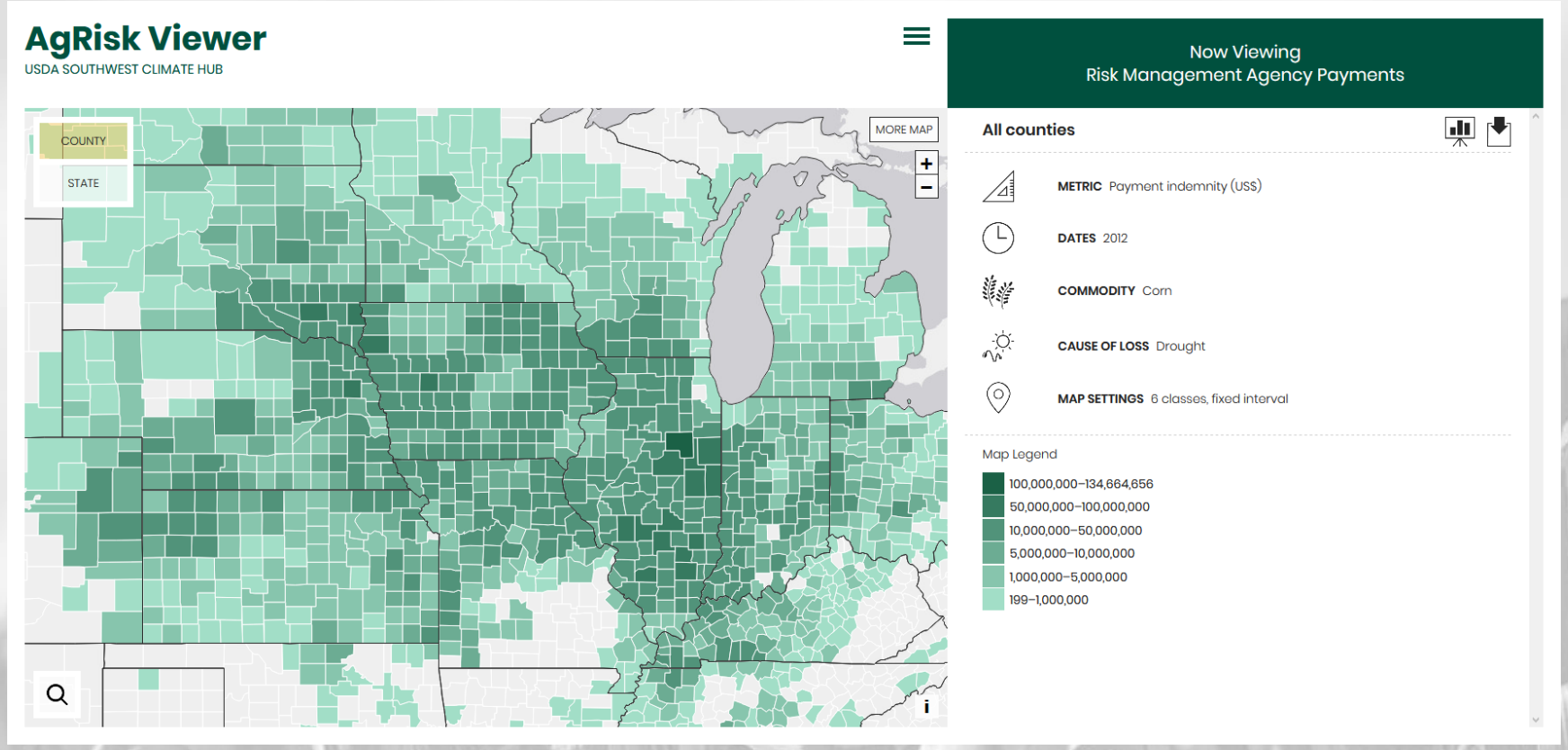
2) Reducing winter die offs

3)Earlier spring emergence

4) Increased generations per year

- Invasive insects are of particular concern since they often limited more by climate in their non-native ranges (no natural enemies and abundant food)

AG Risk Viewer – Cause of Loss Data

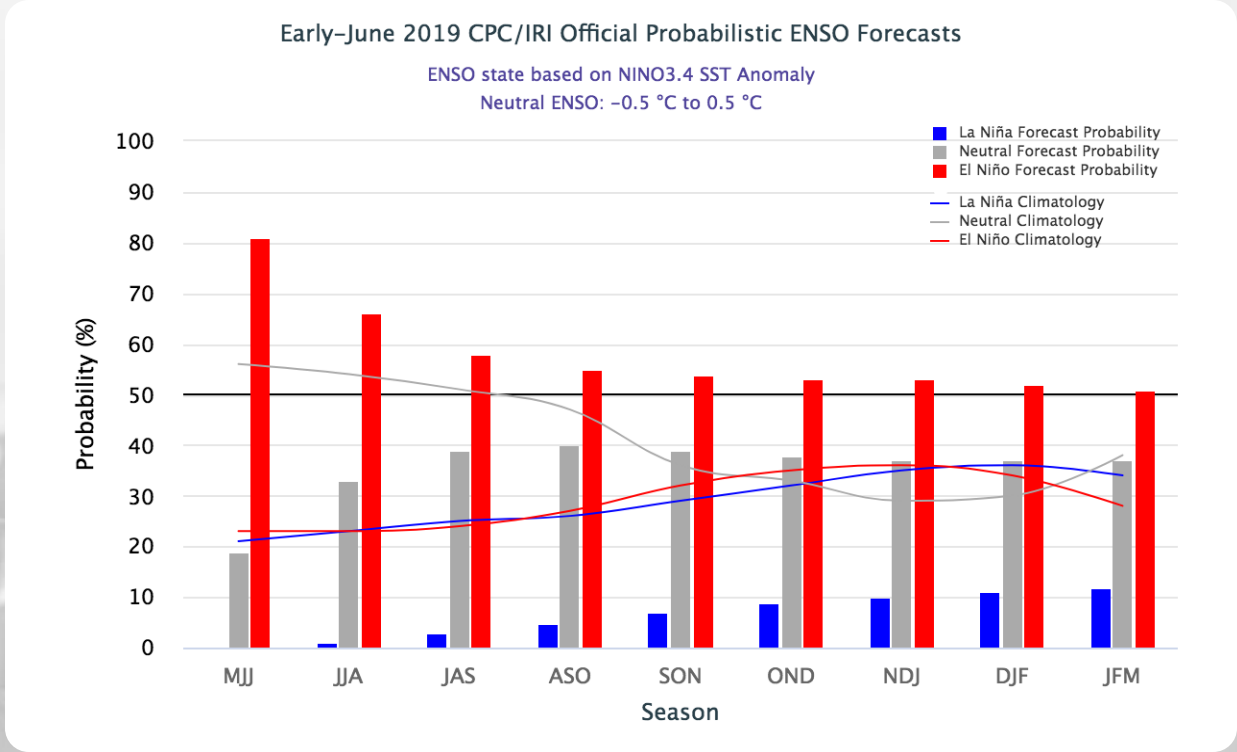


https://swclimatehub.info/rma/rma-data-viewer.html

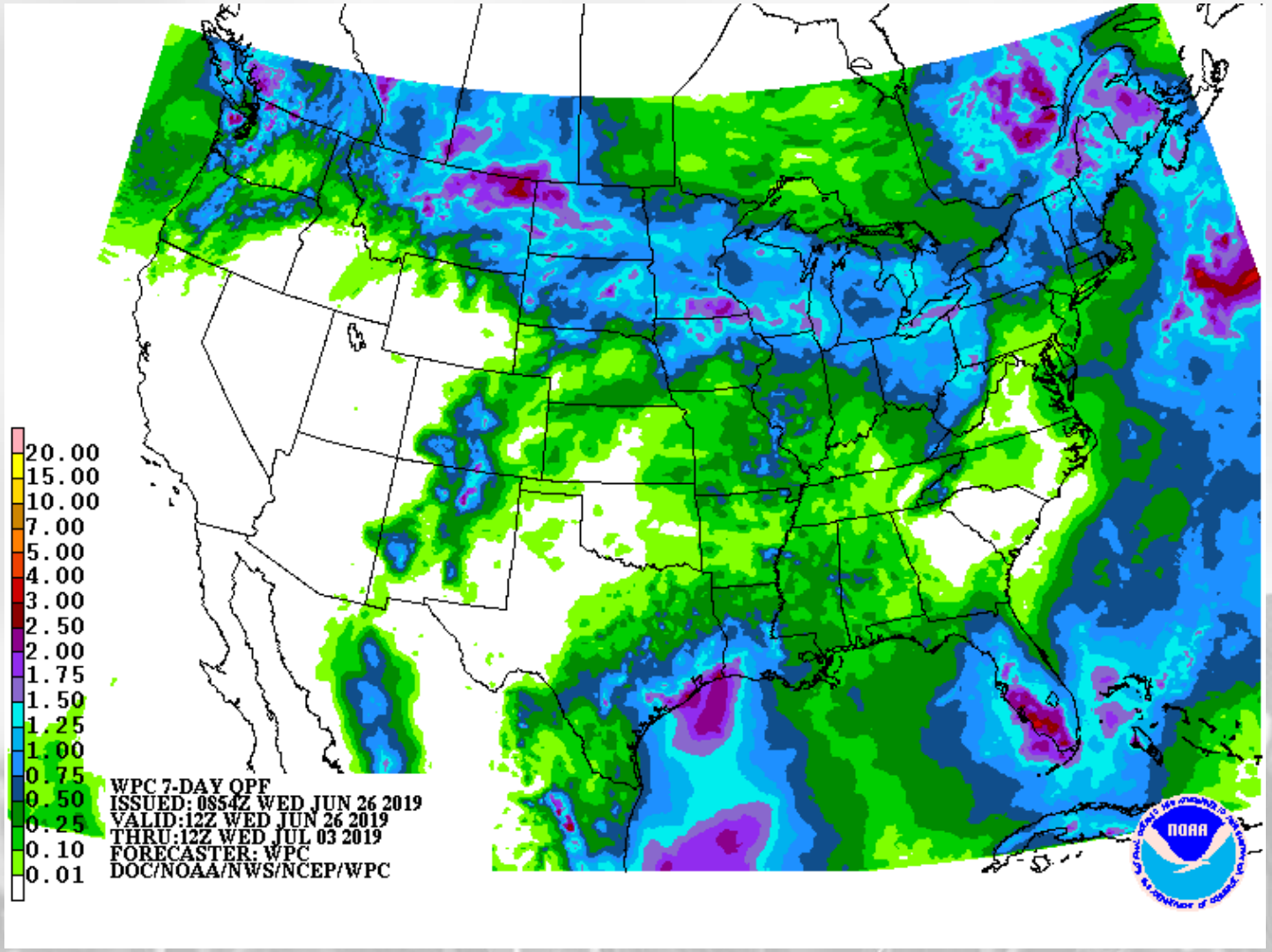
CPC/IRI Probabilistic ENSO Outlook

Updated: 13 June 2019

El Niño is favored to continue with chances nearing 50% in Northern Hemisphere fall and winter.



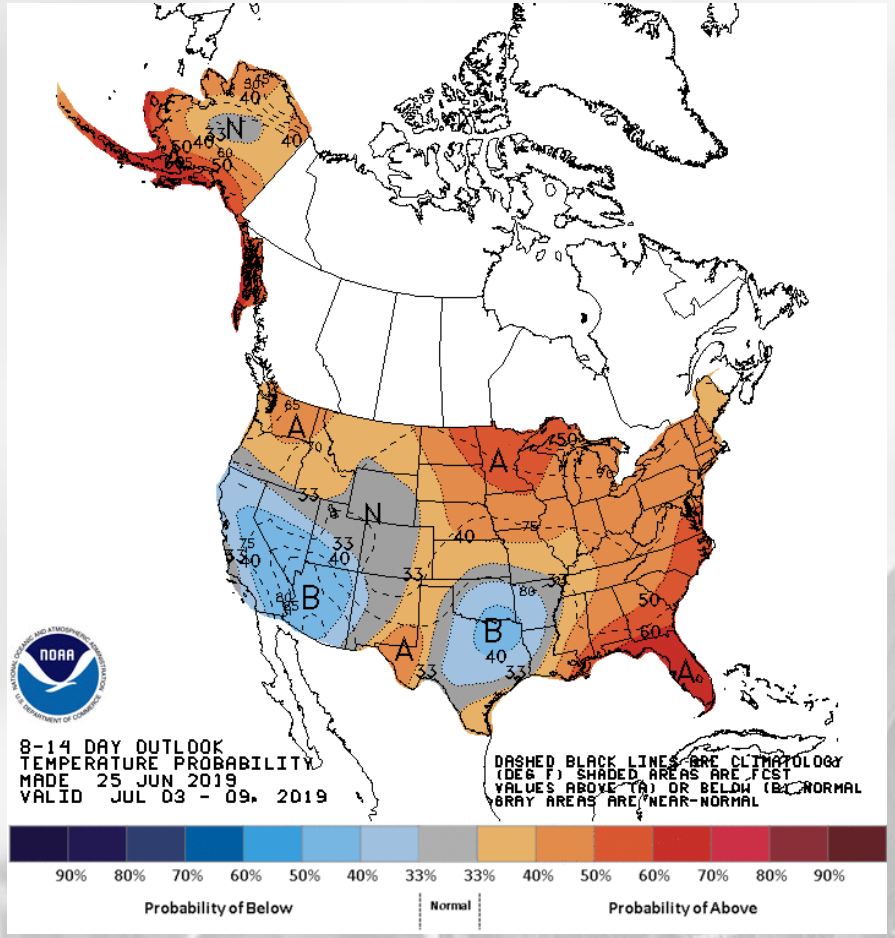
7 Day Forecast Precip.

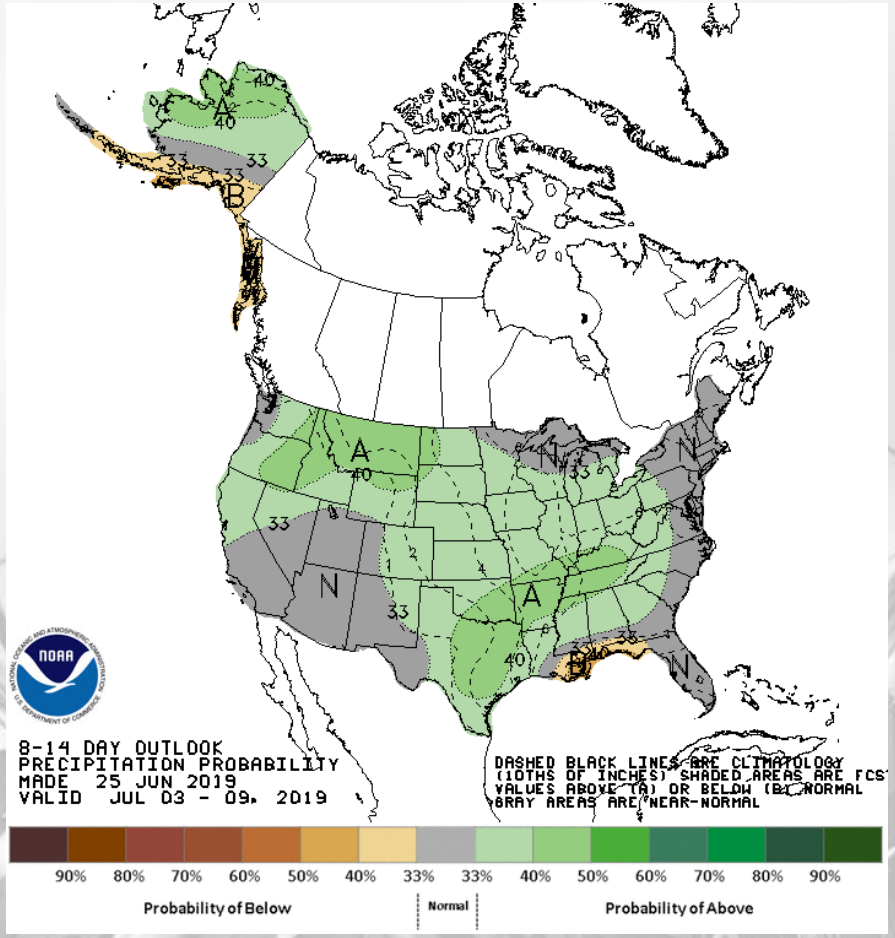


Smaller areas of rains (up to 2") – more northern Midwest.

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

8-14 Day Temp and Precip. Outlook

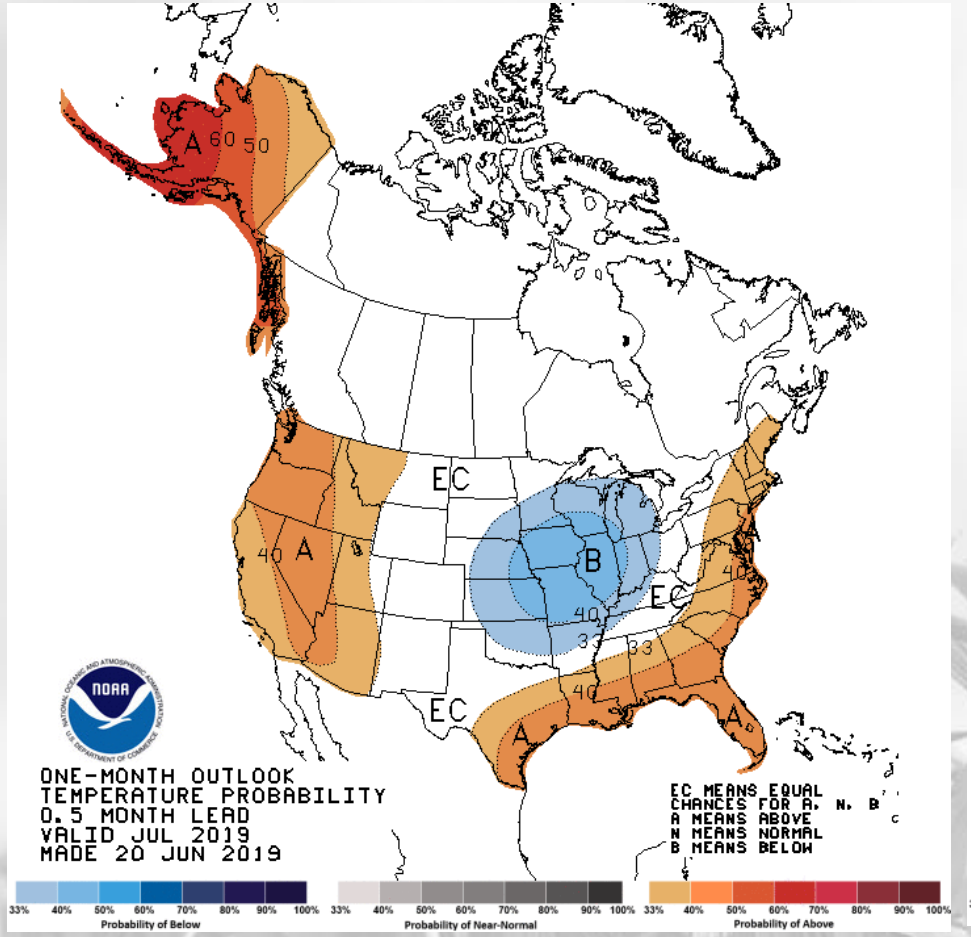


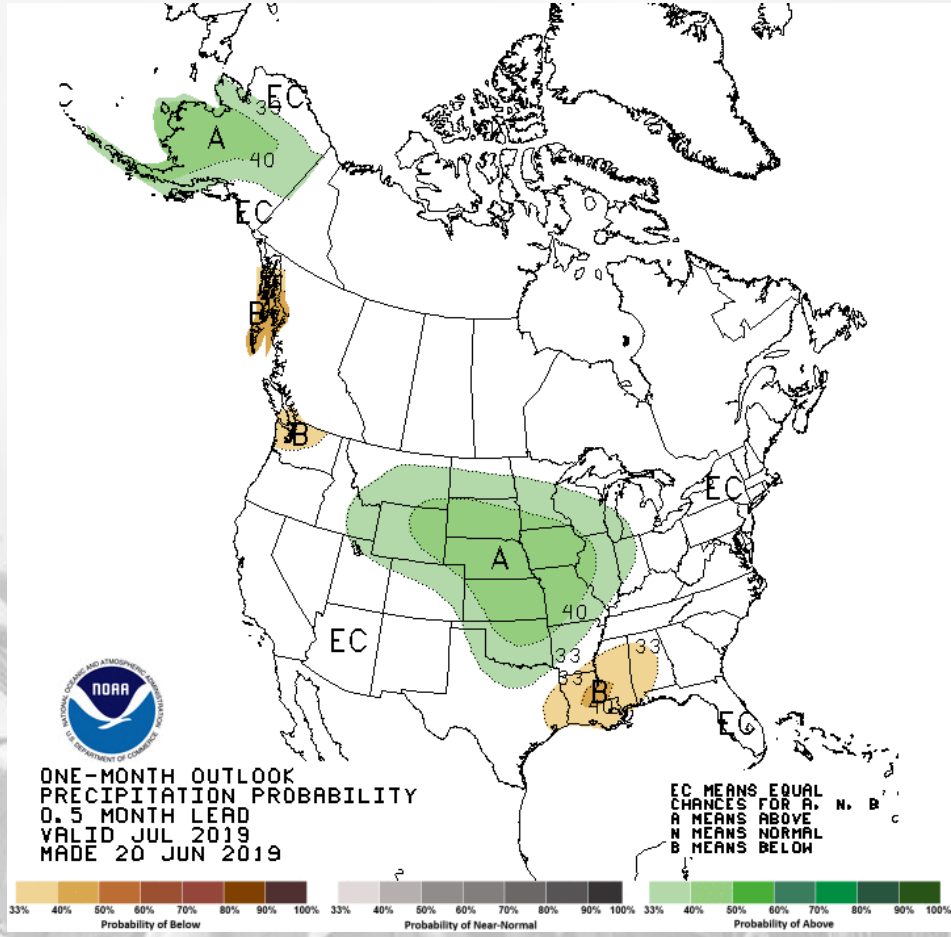


http://www.cpc.ncep.noaa.gov/

Early July – above average precip chances continue. Likely warmer than average temperatures good news for crops.

30 Day Temp and Precip. Outlook

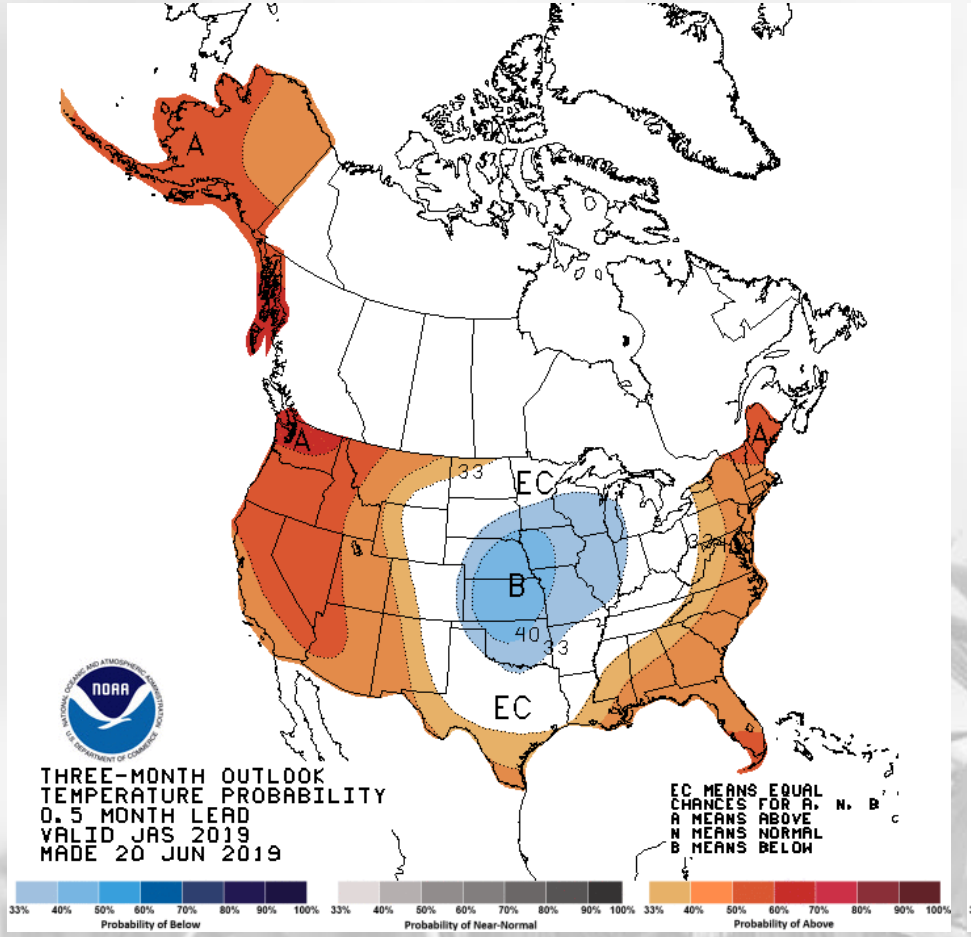


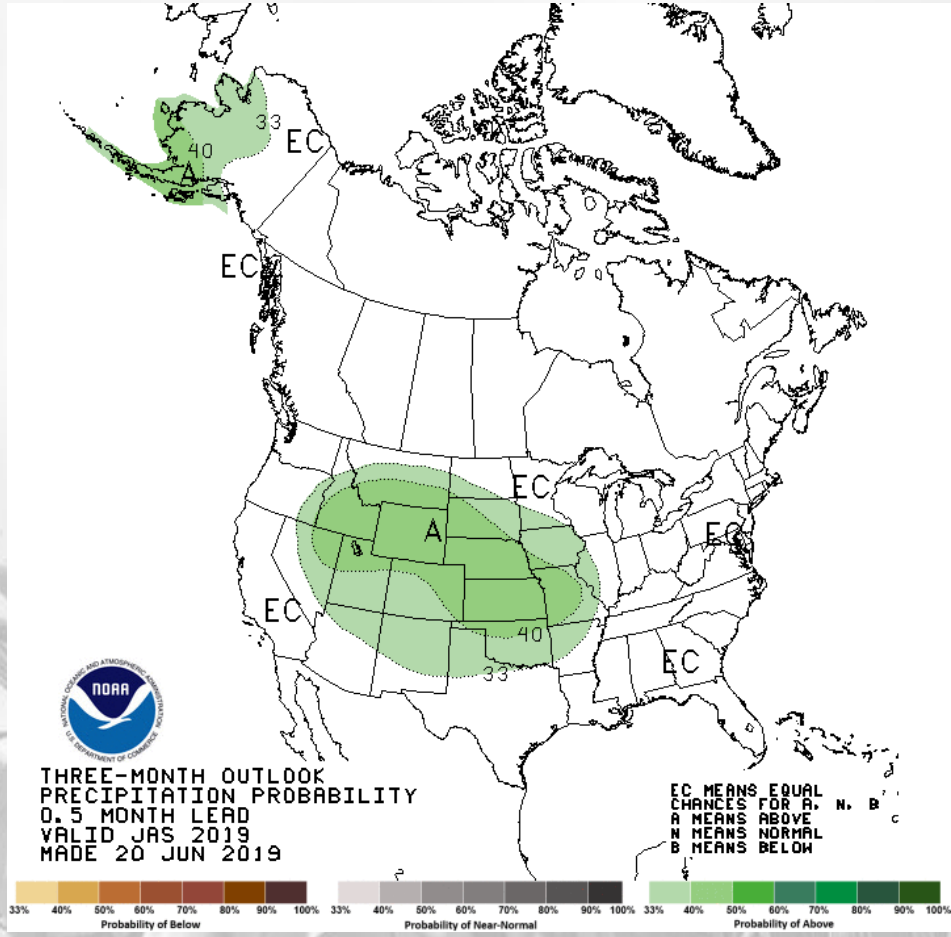


http://www.cpc.ncep.noaa.gov/

Persistence of cooler and wetter more likely through July.

90 Day Temp and Precip. Outlook





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

Persistence of cooler and wetter still more likely through the summer.
Soil moisture, El Niño and persistence from spring are main drivers.

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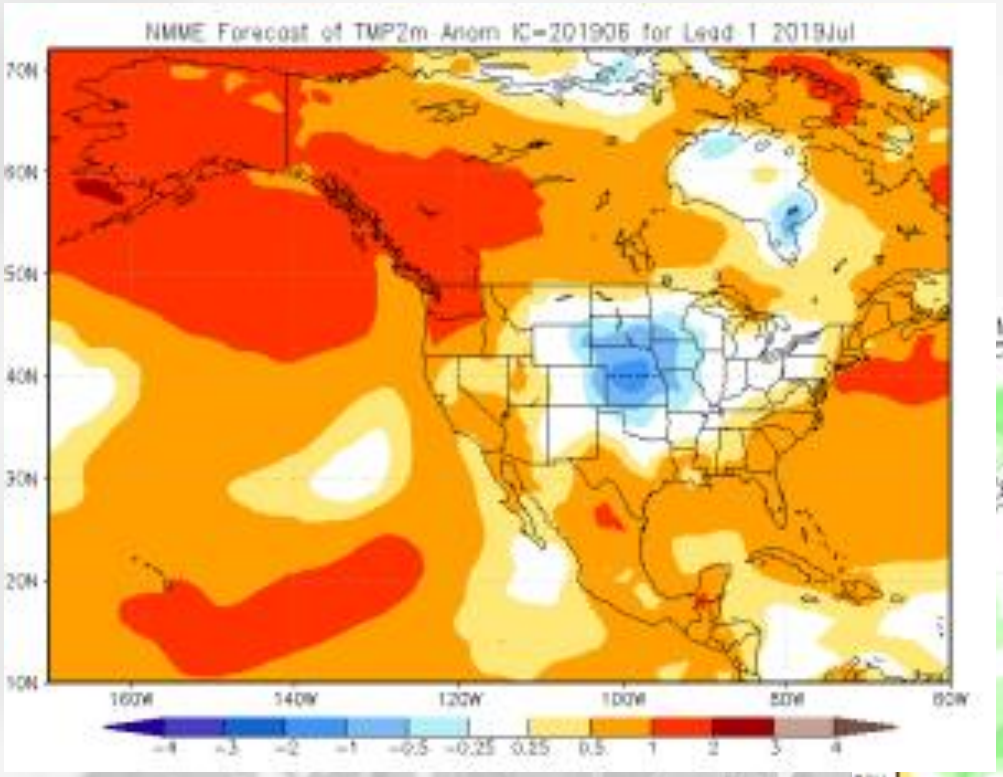
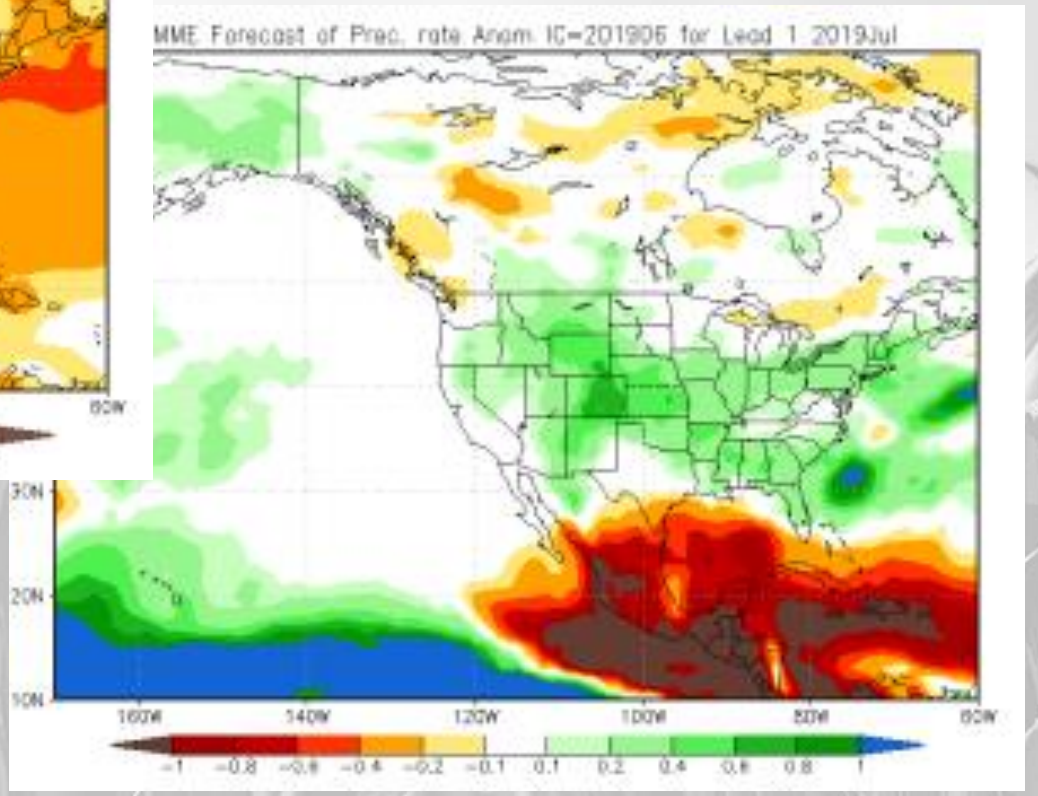
July Temp./Precip. Outlook (model)





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

Take Home

- Current conditions:
  - Lighter rains during last week.
  - Some additional crop progress
  - Mostly wetter than average in the state but some slightly drier areas west central

- Outlook info:.
  - Rain issues should continue this week and likely into the end of June. Some heavier amounts possible. But wet soils cannot handle too much.
  - Temperatures mostly moderate. Need some above average to push crop development.
  - New longer range outlooks will be released Thursday June 20

  - Crop issues still developing

Midwest and Great Plains Climate-Drought Outlook 15 September 2016

Sign up:
https://www.drought.gov/drought/dews/midwest
Archives:
http://mrcc.isws.illinois.edu/multimedia/webinars.jsp.

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515-294-2013

National Drought Mitigation Center

NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

Regional Climate Centers

AASC American Association of State Climatologists

USDA United States Department of Agriculture Midwest Climate Hub

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

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