Midwest and Great Plains Climate-Drought Outlook: 21 June 2018

Near Ipswich: NWS Employee

Houghton, MI: Marquette, MI WFO

Aaron B. Wilson

BPCRC | OSU Extension | SCOO

The Ohio State University

wilson.1010@osu.edu 614-292-7930

General Information

- **Providing climate services to the Central Region**
  - Collaboration Activity Between:
    - NOAA NCEI/NWS/OAR/NIDIS/
    - USDA Climate Hubs
    - American Association of State Climatologists
    - Midwest and High Plains Regional Climate Centers
    - National Drought Mitigation Center

- **Next Regular Climate/Drought Outlook Webinar**
  - July 19, 2018 (1 PM CDT) Martha Shulski – Nebraska State Climatologist

- **Access to Future Climate Webinars and Information**
- http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars

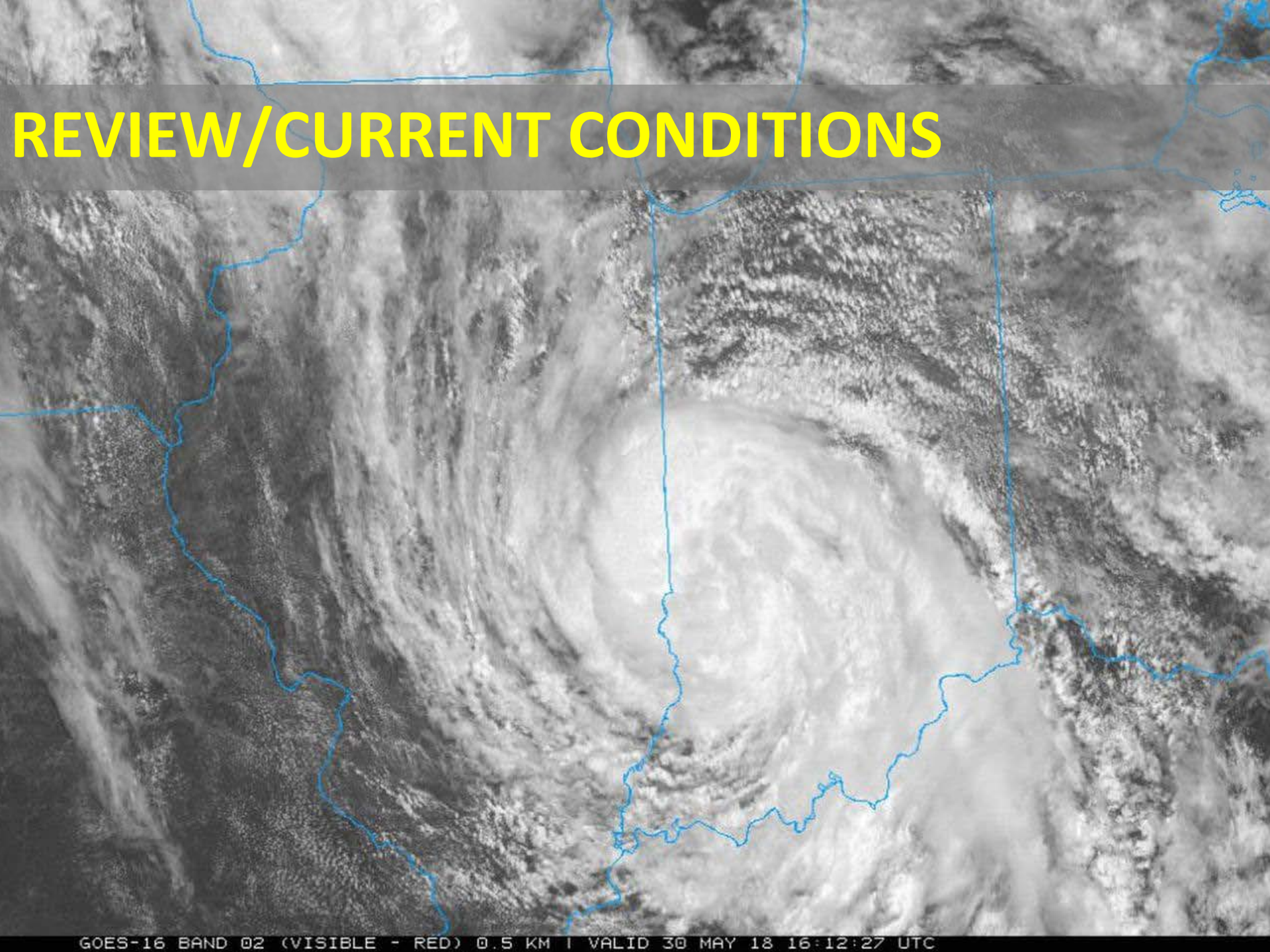
- *http://mrcc.isws.illinois.edu/webinars.htm*
- *http://www.hprcc.unl.edu/webinars.php*
- **Open for questions at the end**

Agenda

- Current Conditions
- Impacts
  - Ag
  - Snow/water
  - Others
- Outlooks
  - El Niño in waiting
  - Planting/summer

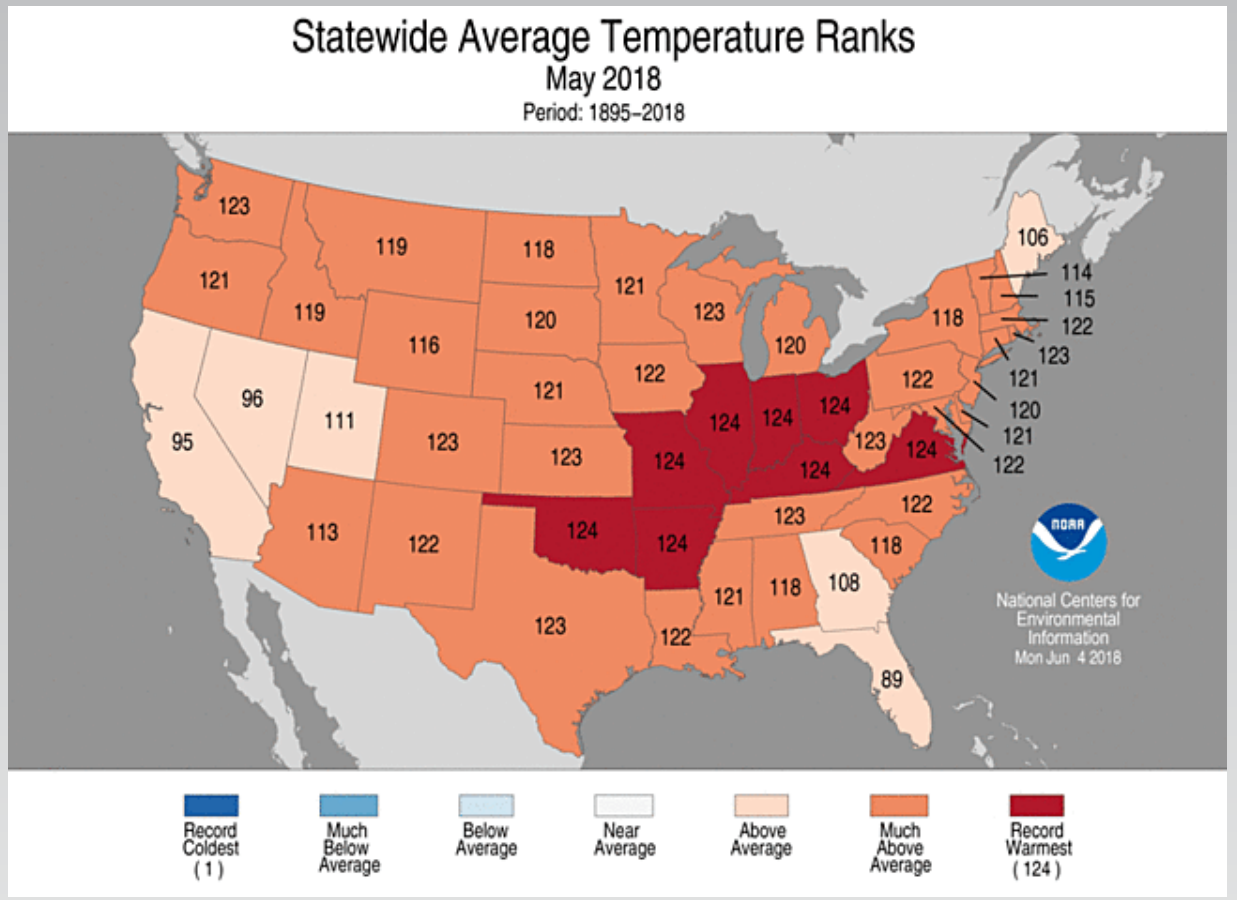
416 Fire in Colorado: https://inciweb.nwcg.gov/

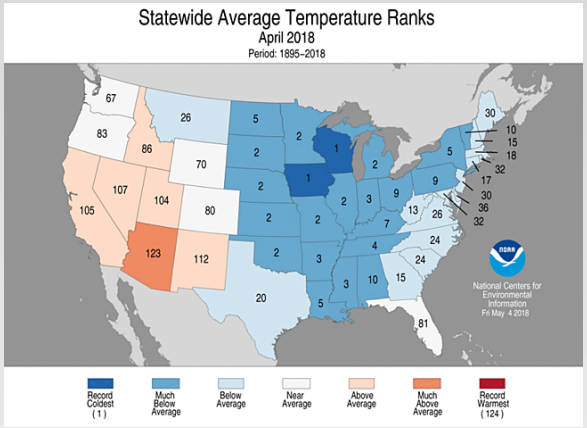
REVIEW/CURRENT CONDITIONS



May Temperature Recap

- **Contiguous U.S. had warmest May on record**
- **Record warmest for MO-IL-IN-OH-KY**
- **Reversal from April**

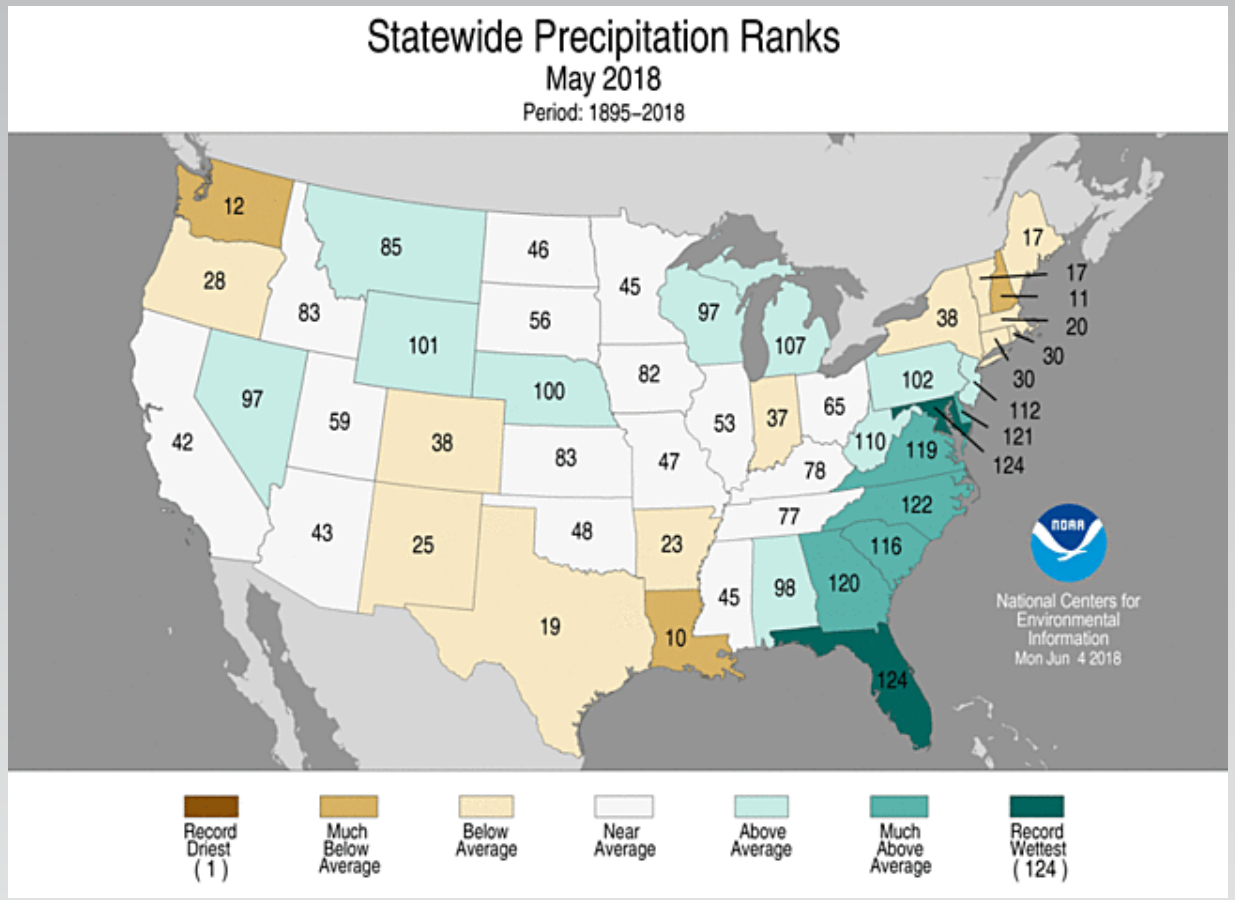




http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

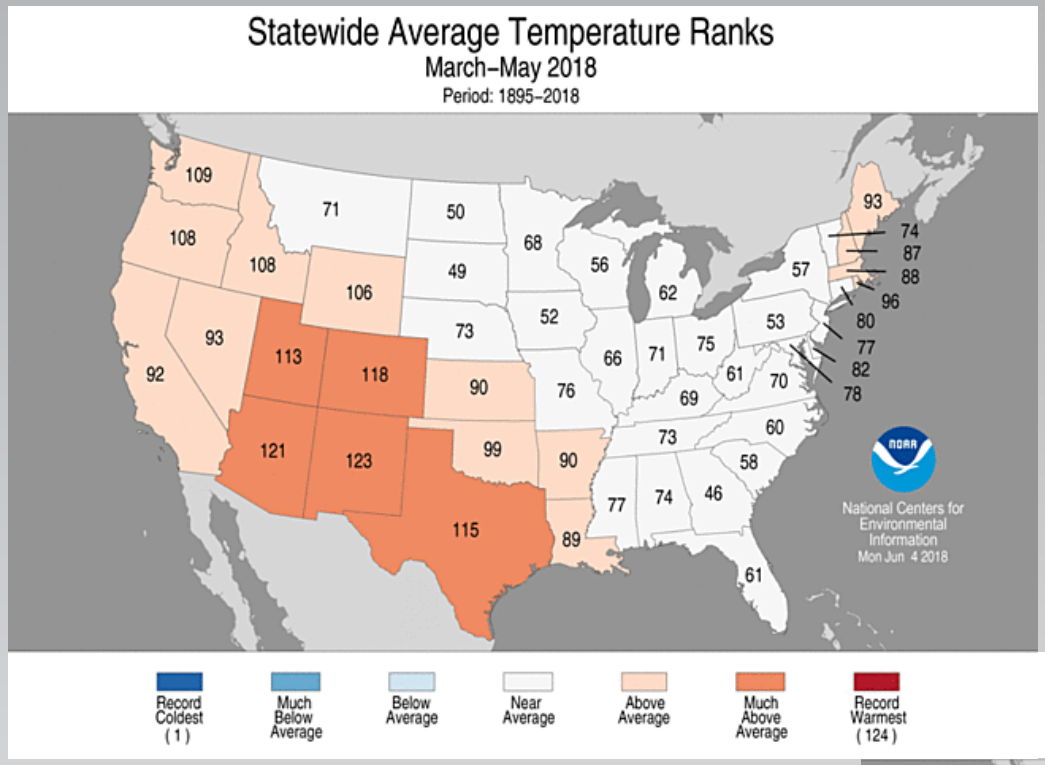
May Precipitation Recap

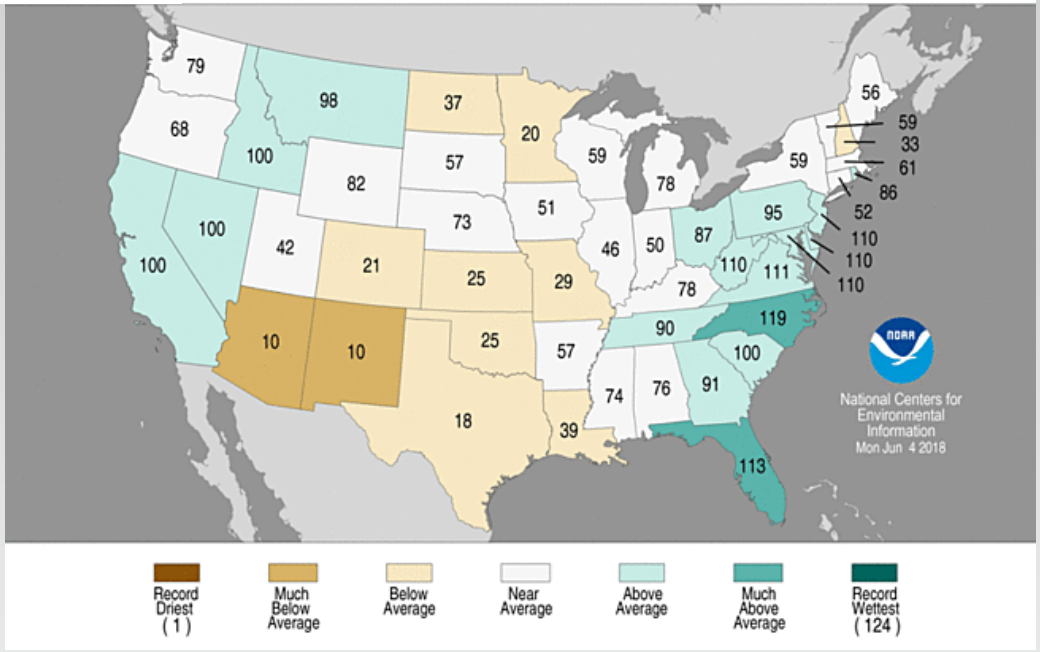
- A mixed bag of conditions across our region
- Wet far west, NE, Great Lakes
- Dry in Colorado (fires) and Indiana



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

March – May Ranks

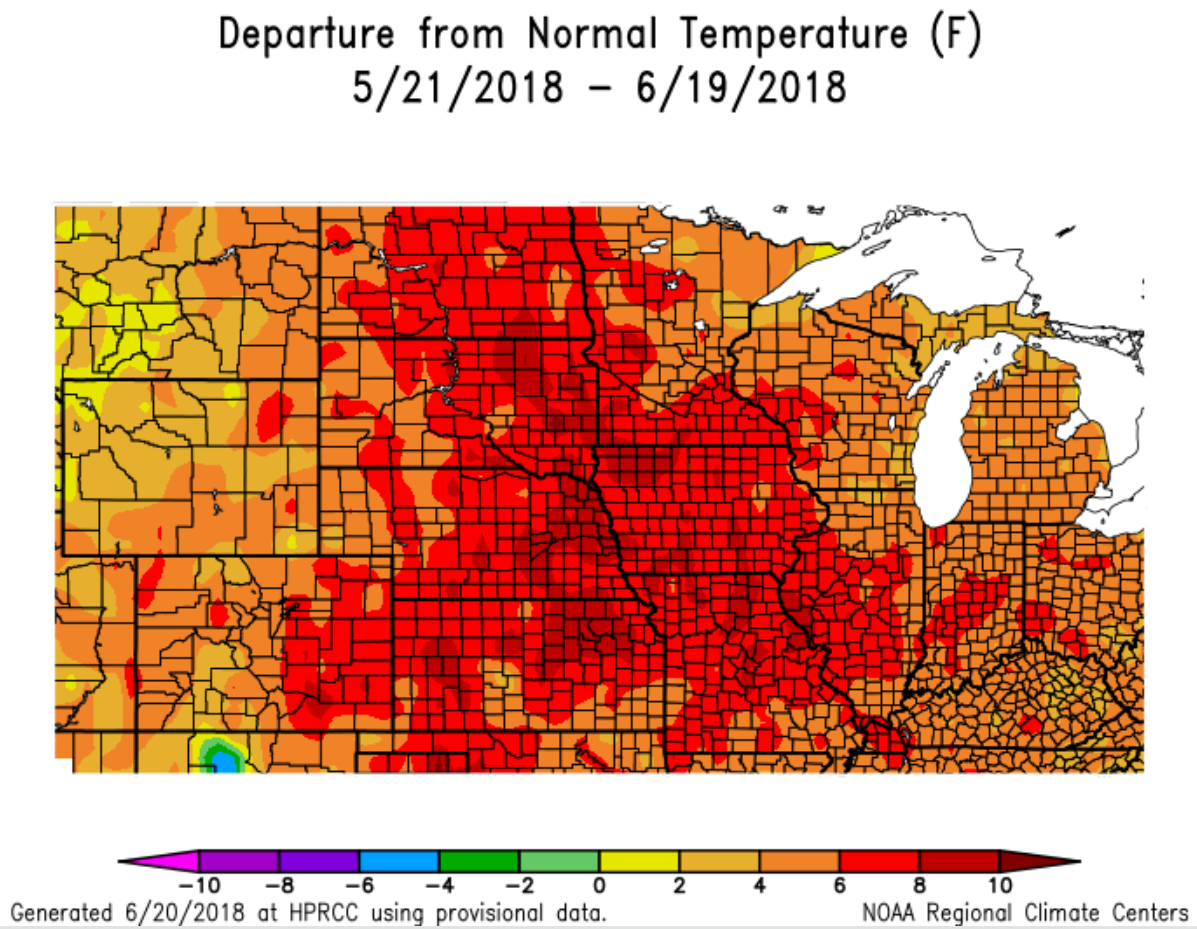




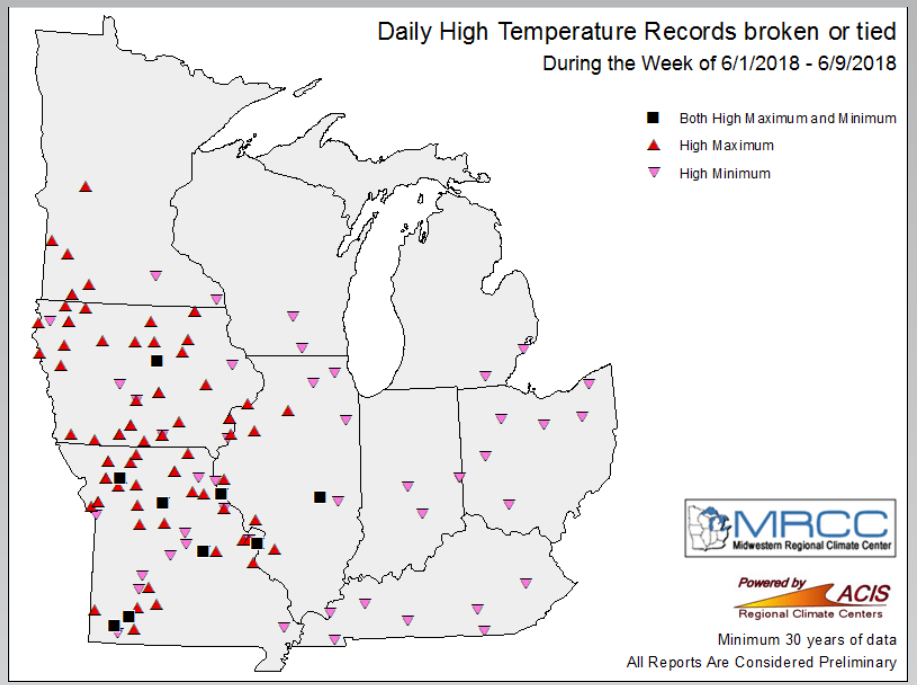
- **“Near Average” temperatures across much of the region**
- **Above to Much Above for Kansas, Wyoming, and Colorado**
- **Above Average precipitation in Ohio and Montana**
- **Dry from MO to CO and Upper Midwest**

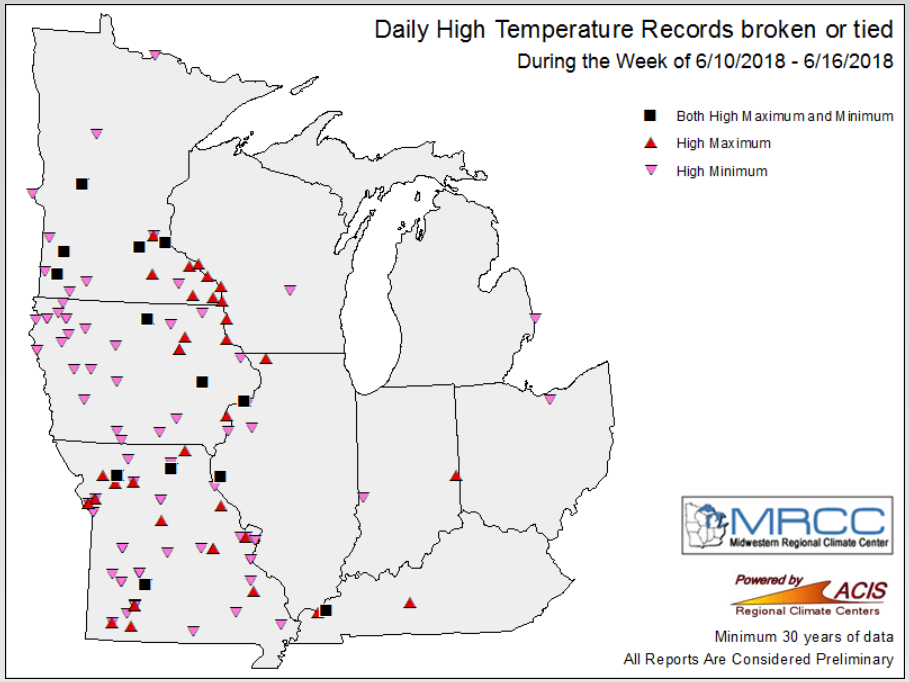
Last 30 days Temperature

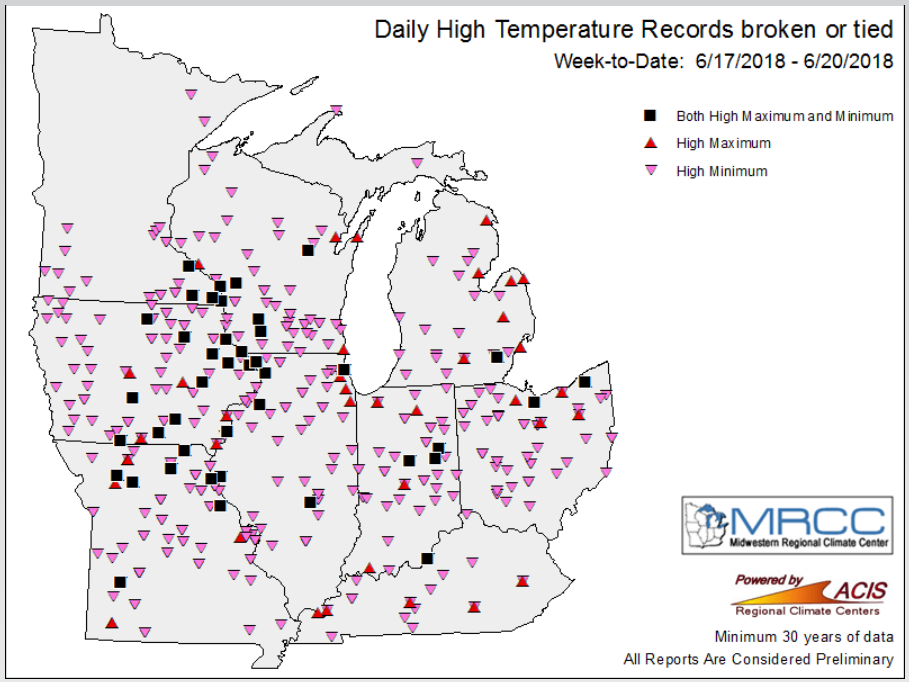
- Above normal across the entire region
- Many areas in excess of 6 degrees F
- Omaha Memorial Day Heat: 97-100-101-97 Friday-Monday
- Aberdeen, SD: Has hit 100 degrees F 2x already



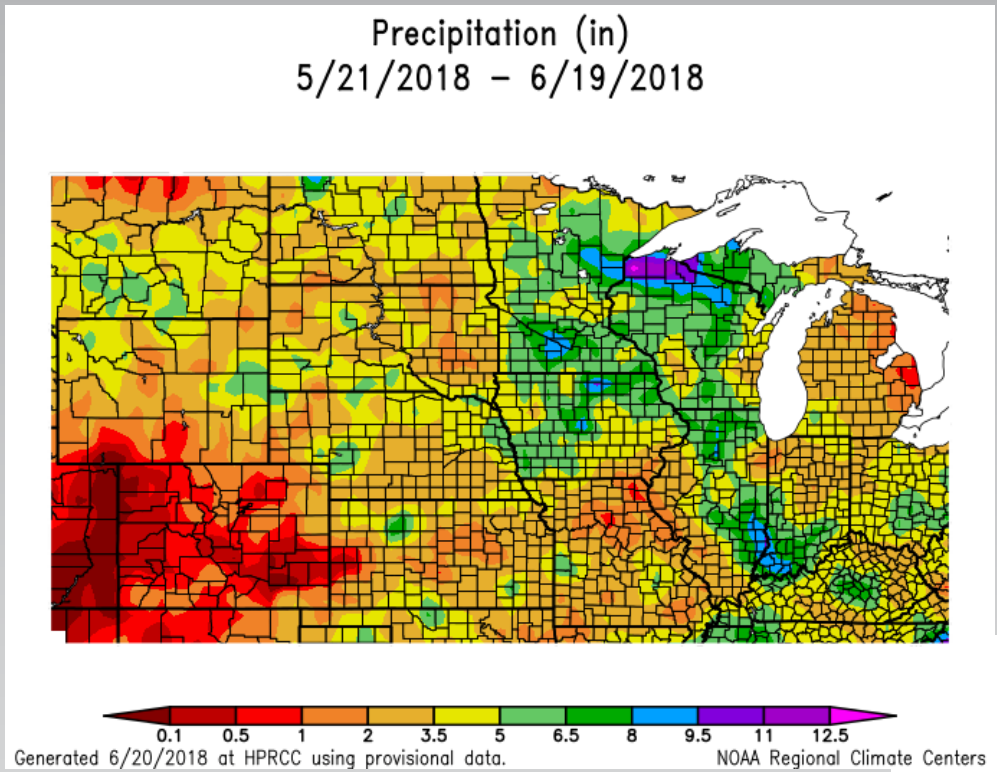
More Temperature Records

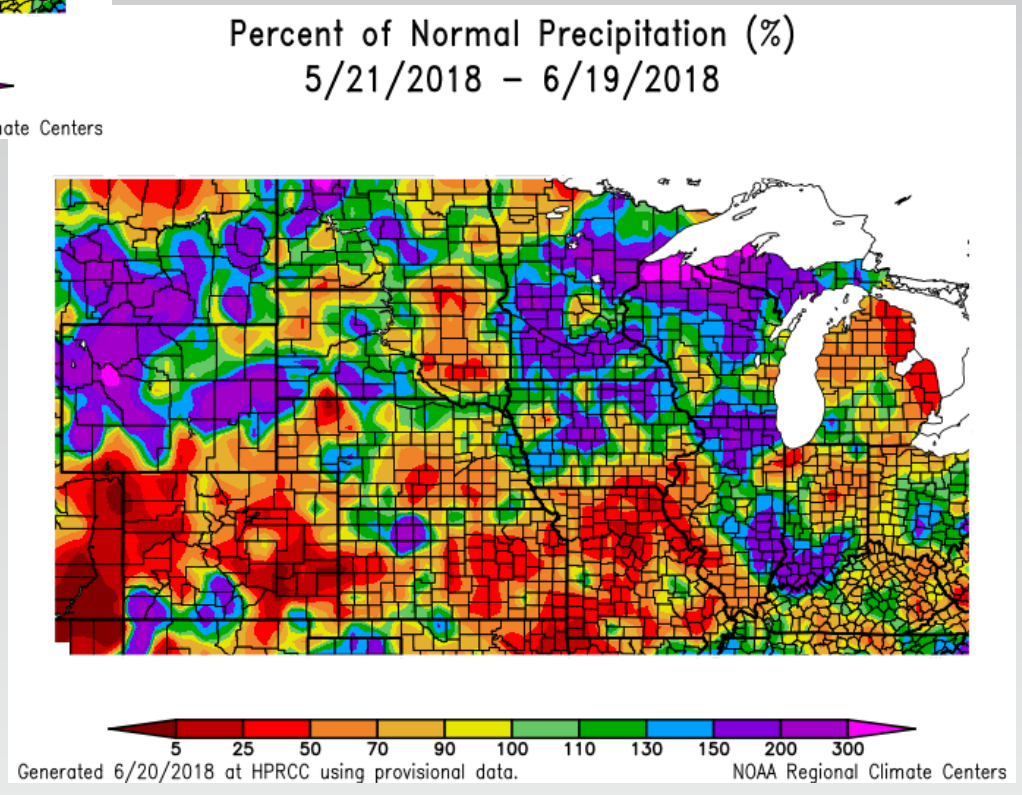






Last 30 days Precipitation



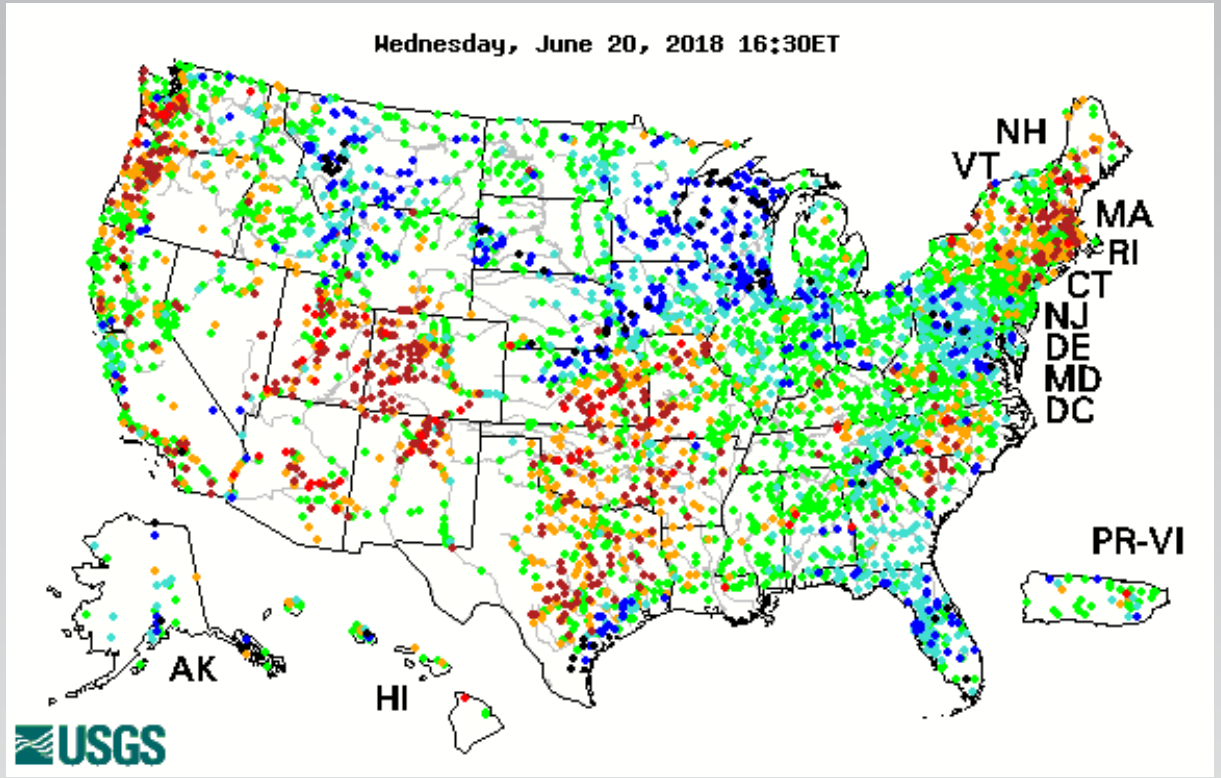


- **Highly variable precipitation across the region**
- **<25% across parts of MO and CO (some areas <5%)**
- **Very wet across portions of the Great Lakes, Iowa, IL, IN, and parts of the Great Plains**

7-Day StreamFlow

Wednesday, 20 June 2018

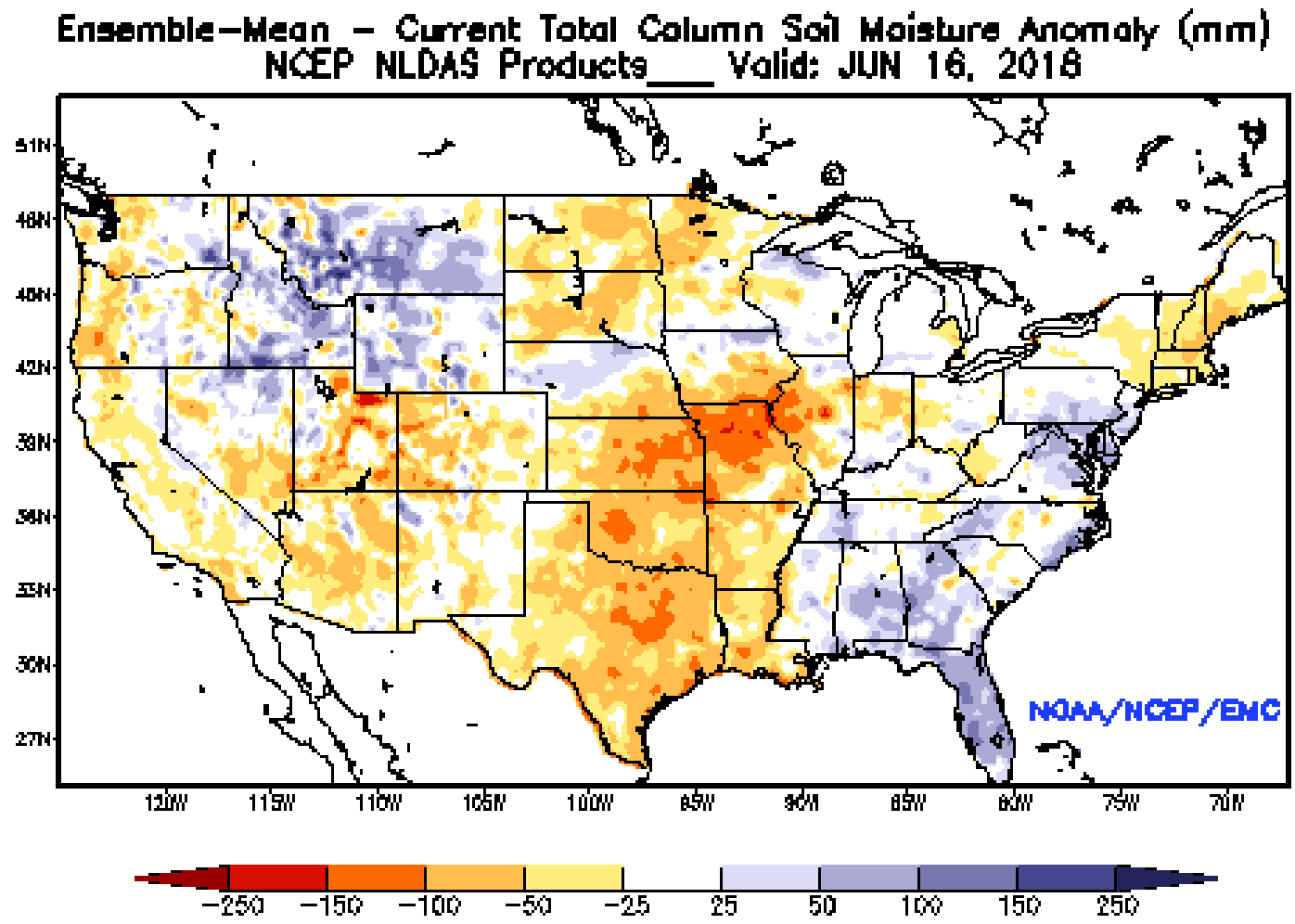
- Intense wet/dry areas are clearly depicted
- Low flows from E/SE Kansas through NE Missouri
- High flows N. Kansas through Great Lakes; Flooding in SD/MN; High flows on the Missouri
- High precipitation events in UP of Michigan, Wisconsin, near Rockford, IL



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

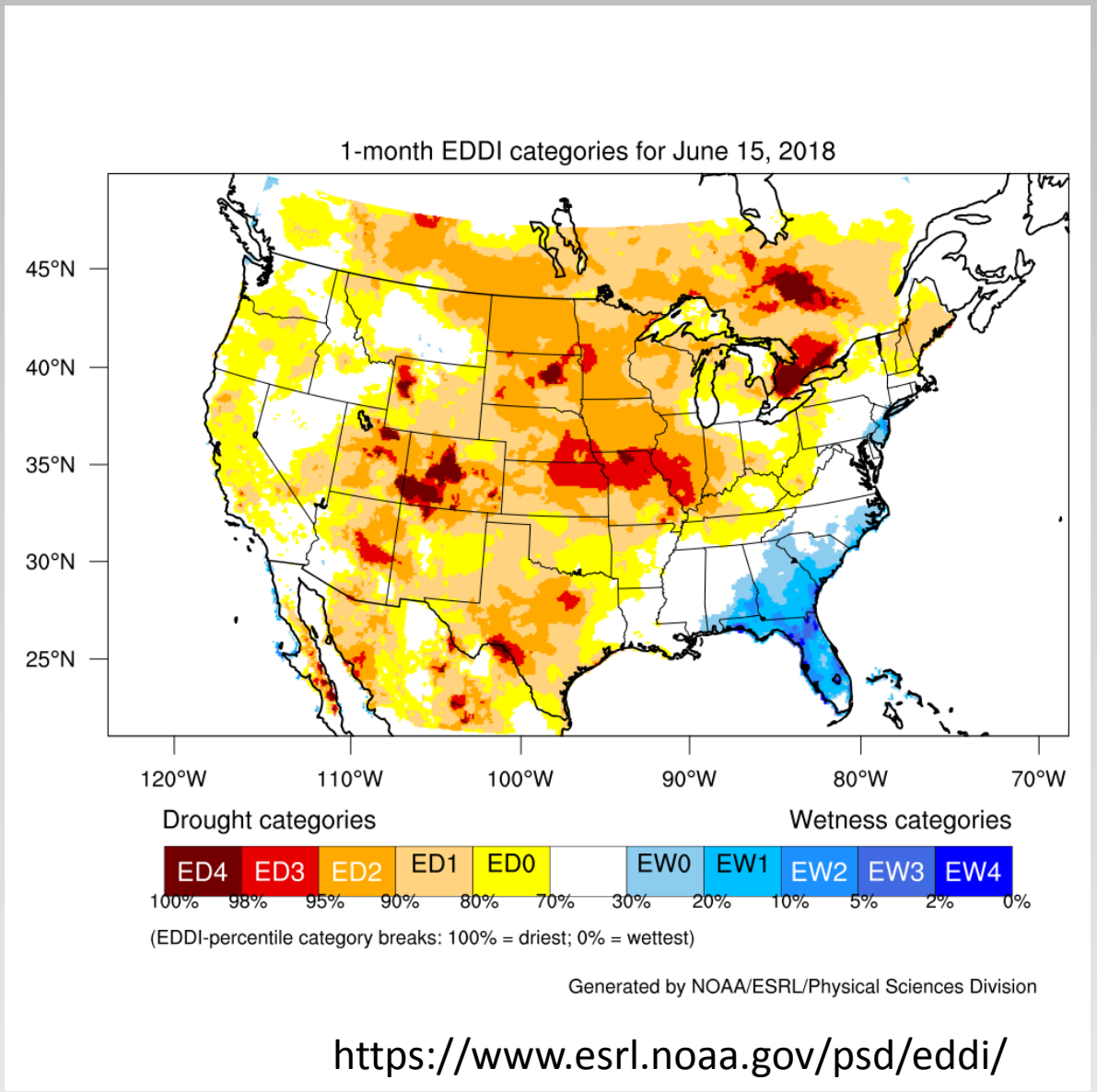
Soil Moisture



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

EDDI – Evaporative Demand Drought Index

- Above average evaporative demand across most of the region
- Very low percentiles across western and central CO, eastern SD, and a persistent areas in northern MO.
- Compared to recent conditions, eastern SD is worsening.

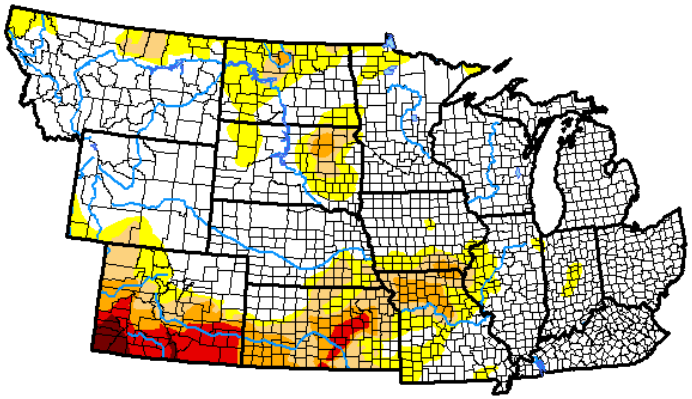


https://www.esrl.noaa.gov/psd/eddi/

U.S. Drought Monitor

U.S. Drought Monitor

NWS Central Region



June 19, 2018

(Released Thursday, Jun. 21, 2018)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	69.55	30.45	15.88	8.30	3.59	0.70
Last Week *06-12-2018*	64.84	35.16	17.93	8.16	4.08	0.70
3 Months Ago *03-20-2018*	63.82	36.18	20.70	10.63	3.18	0.02
Start of Calendar Year *01-02-2018*	44.74	55.26	22.30	7.69	2.03	0.00
Start of Water Year *09-26-2017*	50.80	49.20	24.09	12.89	6.13	2.26
One Year Ago *06-20-2017*	74.46	25.54	11.83	5.37	1.42	0.00

Intensity:

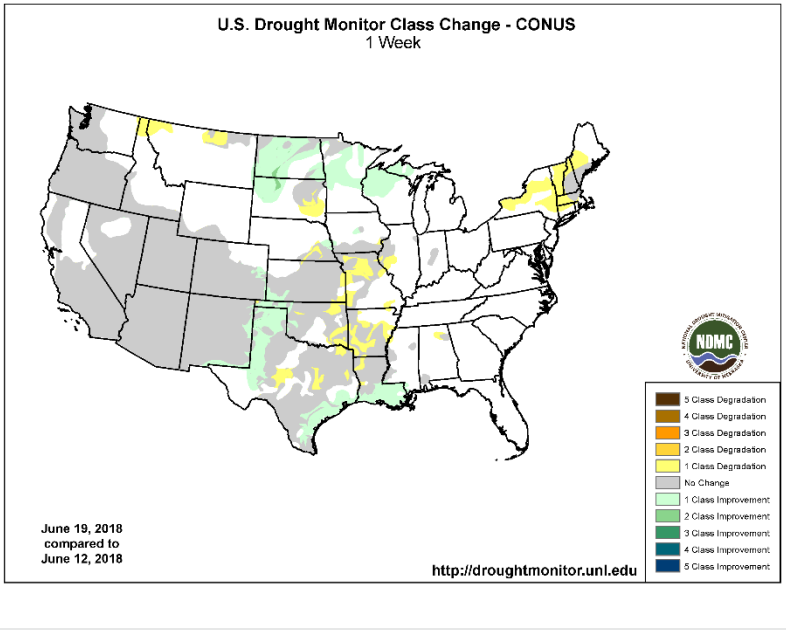
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Brian Fuchs
National Drought Mitigation Center

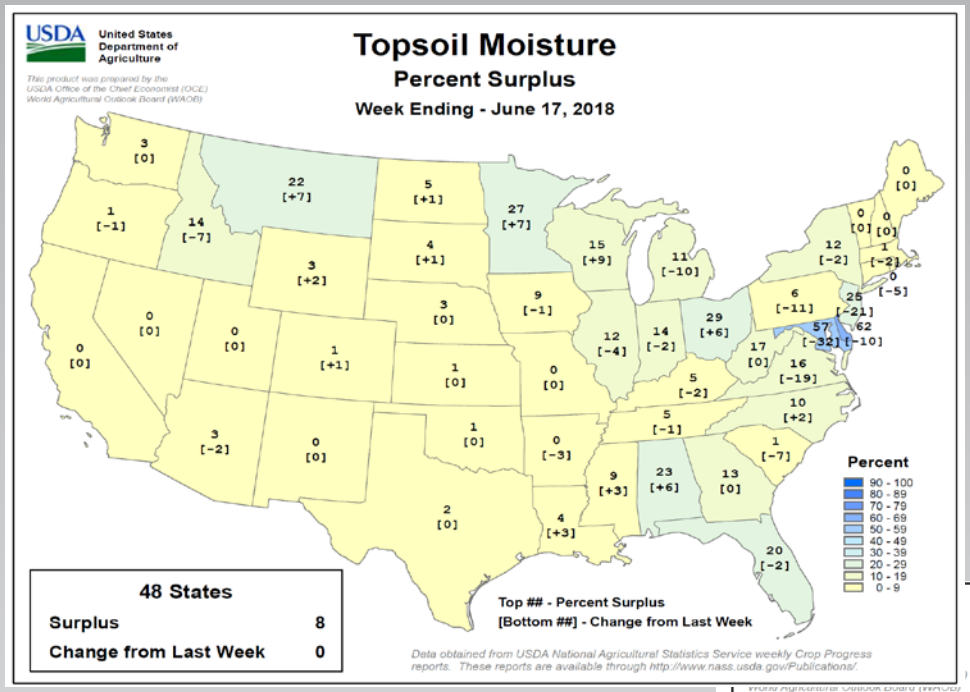
http://droughtmonitor.unl.edu/

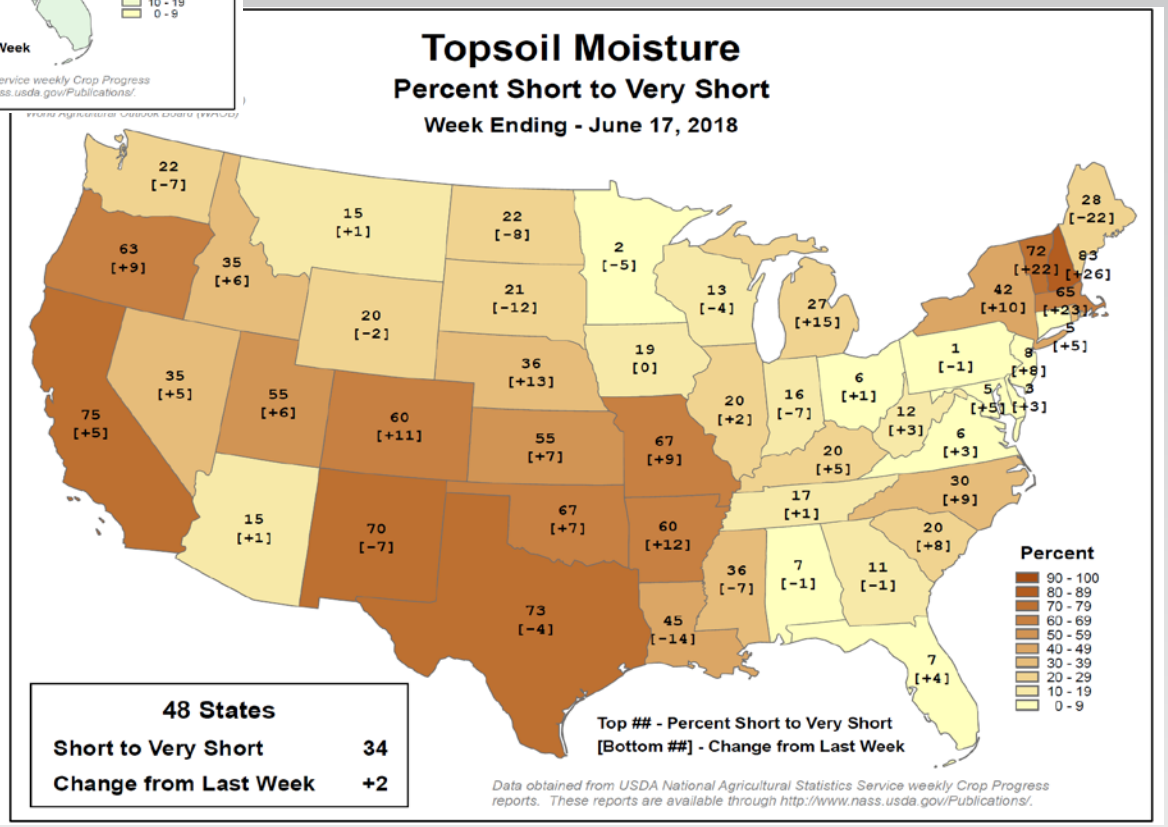


AGRICULTURE IMPACTS

Pat Guinan: MO State Climatologist

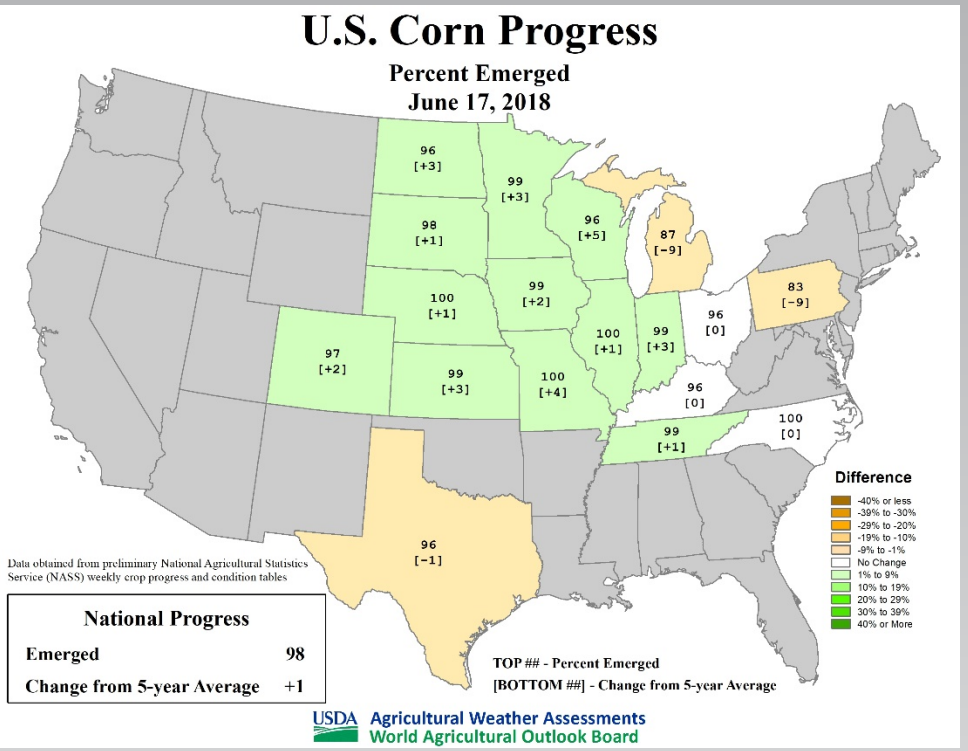
Topsoil Moisture

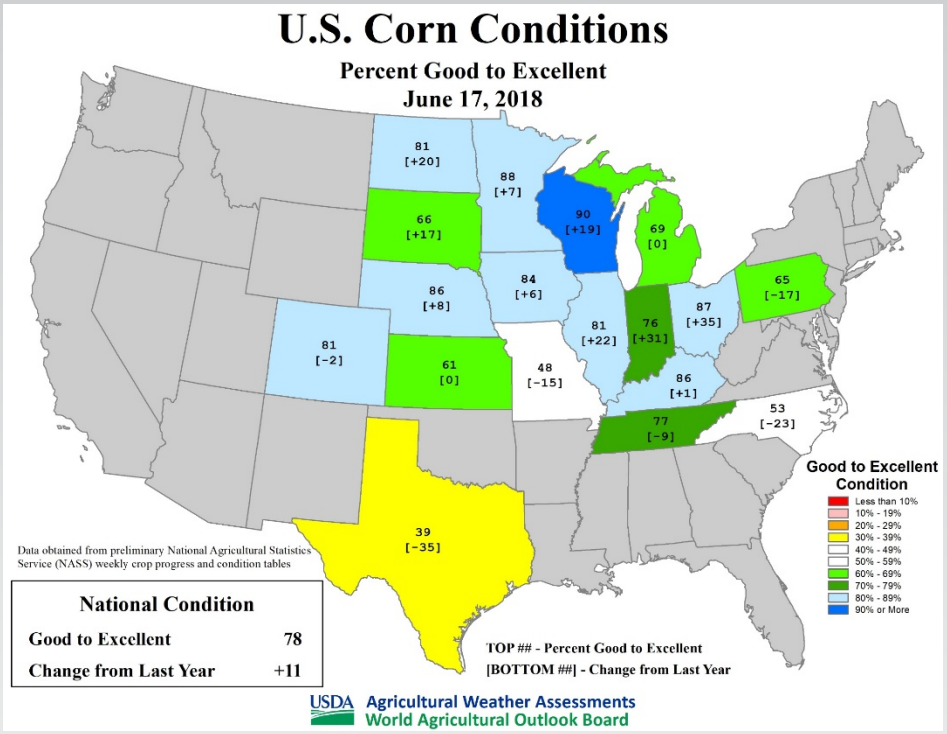




- Only a few states with moderate levels of surplus throughout the region
- Short to very short conditions continue across the southern states of the region

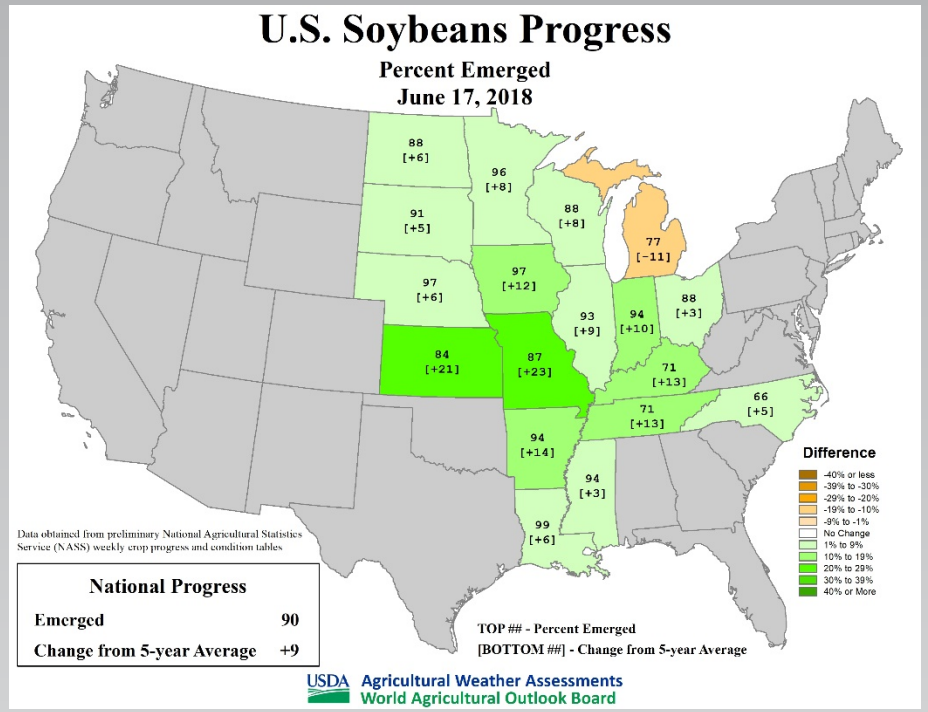
Corn Progress



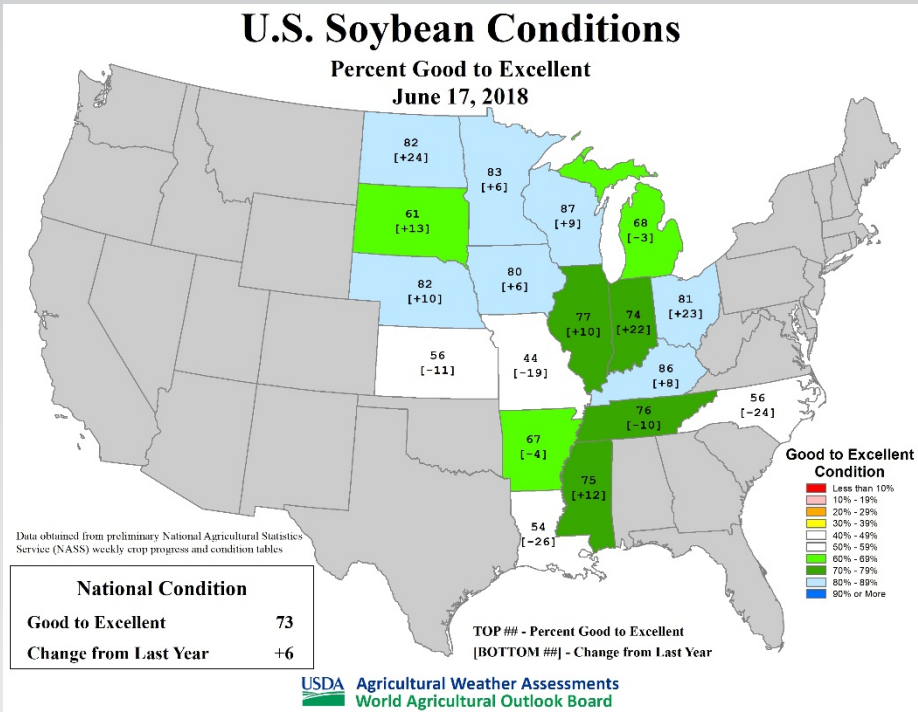


- Nearly all corn emerged (behind the 5-year average in MI)
- Corn (in Good to Excellent) above 5-year average
- Drought stress evident across MO

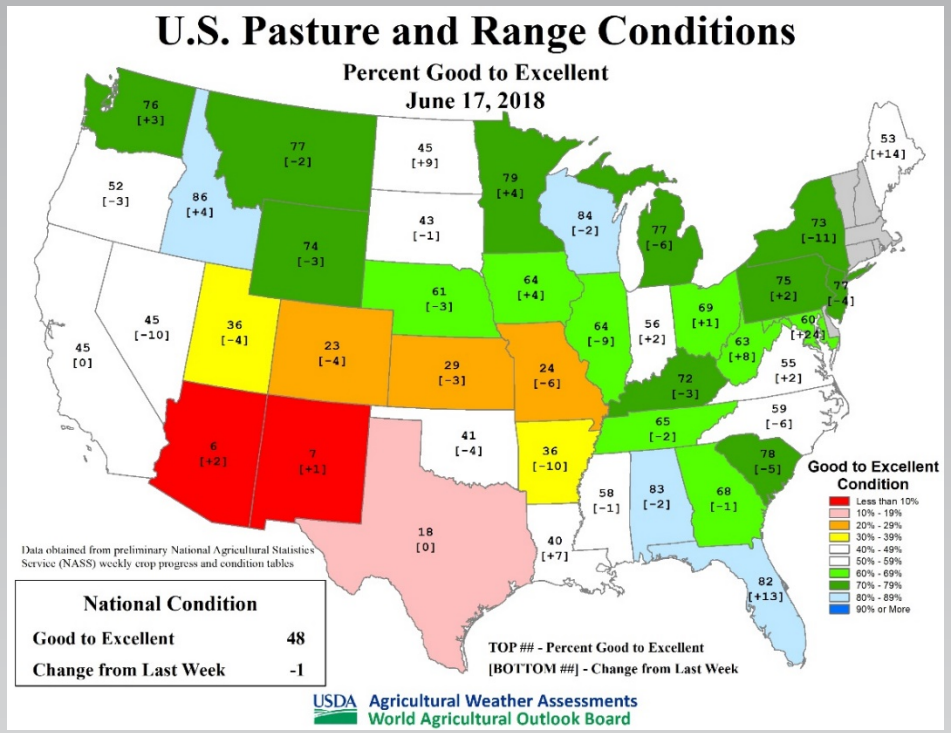
Soybean Progress



- Similar to corn: nearly all soybean has emerged (behind the 5-year average in MI)
- Above 5-year average in many locations
- Stress evident in KS and MO



Pastureland



Left (Compared to Last Week)

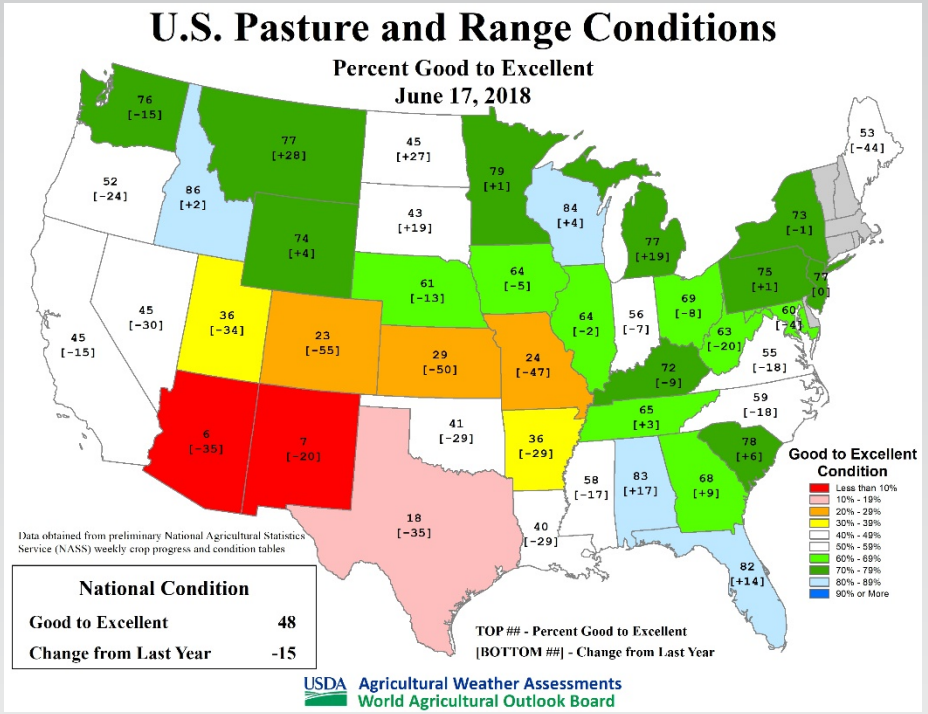
- Good conditions across the north and east

- Deteriorating conditions from Colorado through Kansas and Missouri

Right (Compared to Last Year)

- Good conditions across the north and east even with some negative changes compared to last year

- Significant negative impacts throughout the southern states of the region



Additional Impacts

- Cattle: Carry-over and upcoming hay crop low
  - Sell off in some areas (MO); Heat mortality (SD)
- Pastures turning brown (MO); not great across other areas of the region
- Ponds critically low (NC MO) or drying in other areas (e.g., IA)
- Dust storms in SD cause defoliation and corn plants blown out of the ground near Miller, SD.
- Water restrictions in Hamilton and Cameron MO – low reservoir levels

Wyatt Miller End of May, 2018 NE MO: Photo via Pat Guinan

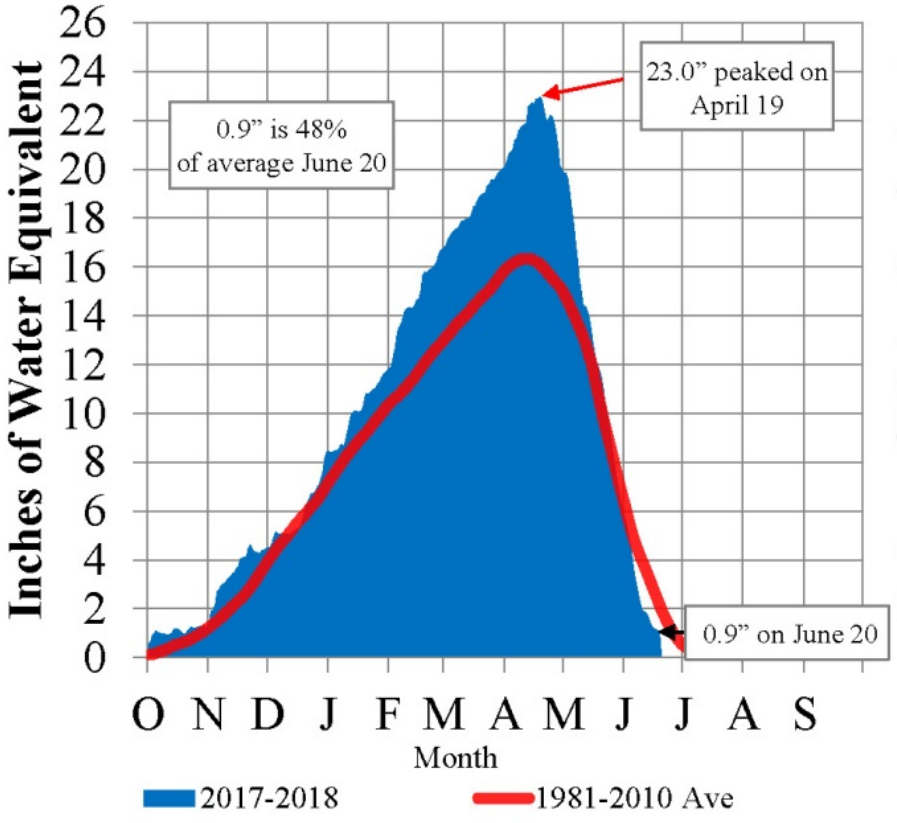
Photo: Maggie and Ryan Jett: 5 miles SW of Aberdeen: NWS WFO

WATER/SNOW

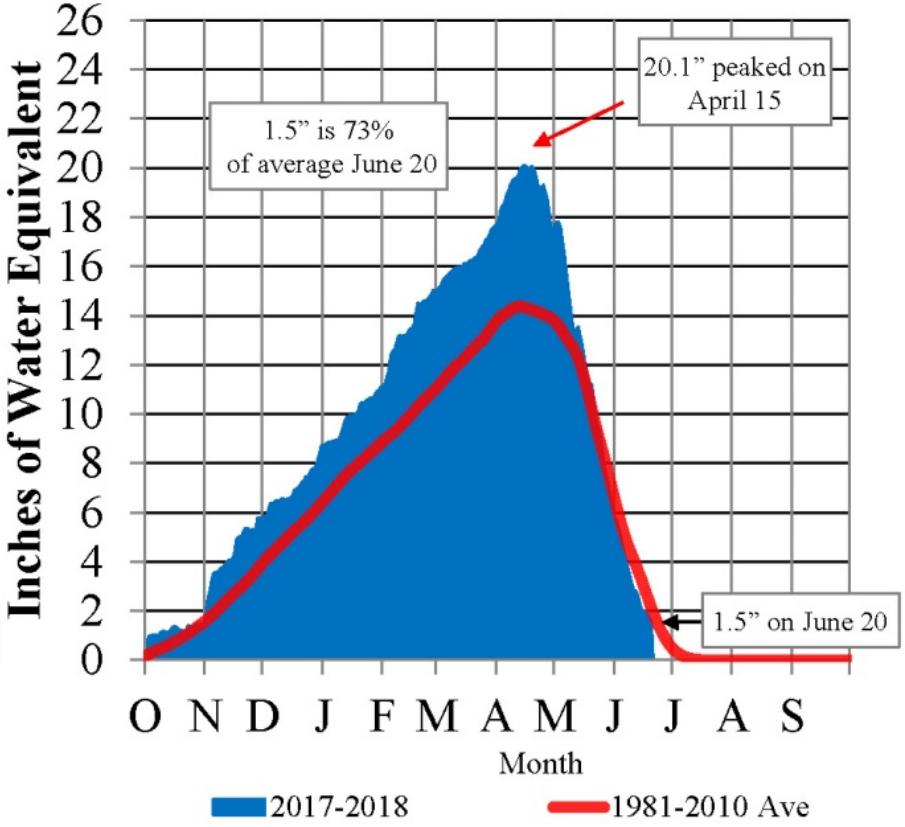
Mountain Snowpack

June 20, 2018

Total above Fort Peck



Total Fort Peck to Garrison

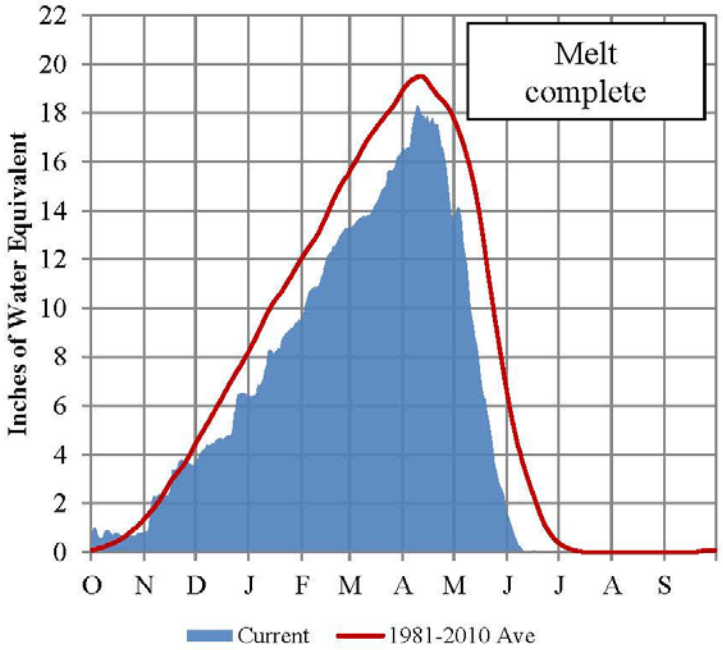


Normally by April 15 the peak mountain SWE has peaked in both reaches.

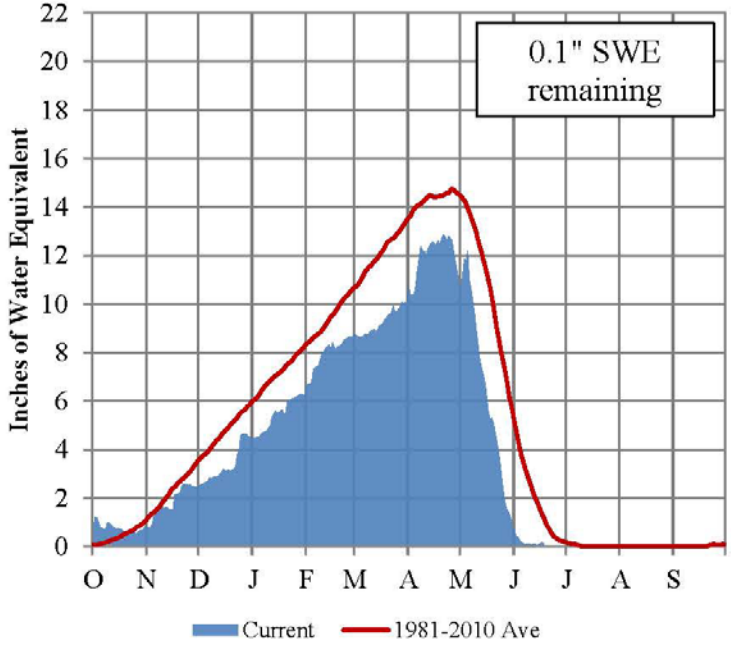
Source: USDA-NRCS

Platte River Basin - Mountain Snowpack Water Content
Water Year 2017-2018
June 19, 2018

Total North Platte



Total South Platte



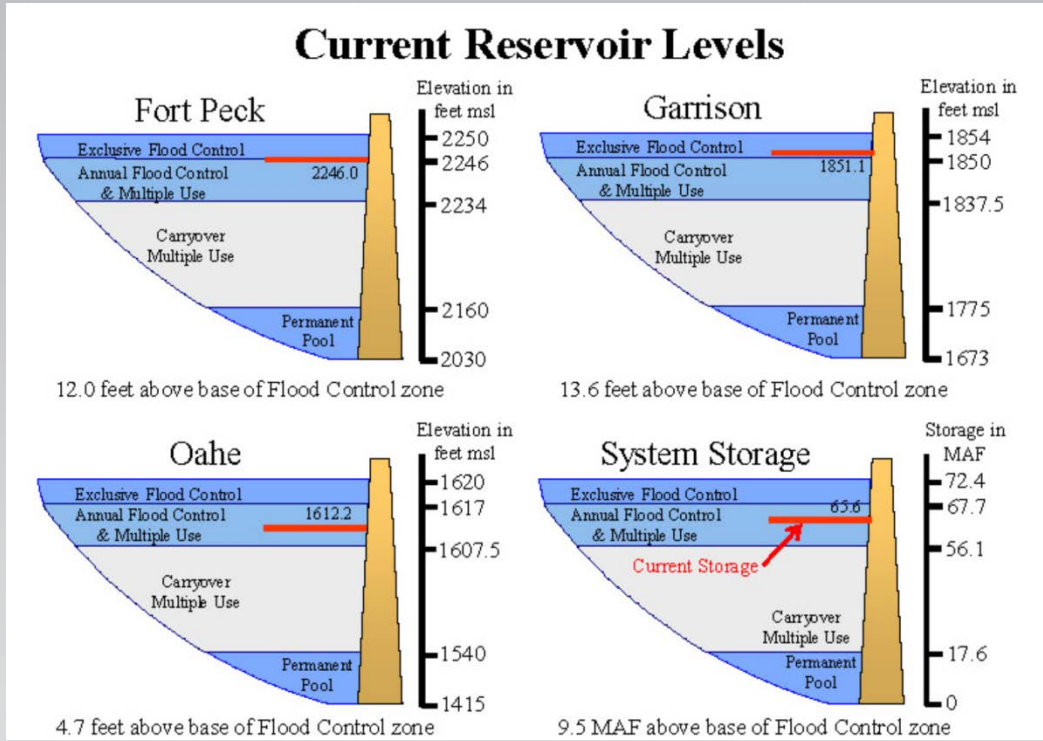
The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of June 19, 2018, the mountain snowpack SWE in the "Total North Platte" reach has completed its melt. The mountain snowpack SWE in the "Total South Platte" reach is 0.1 inches.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

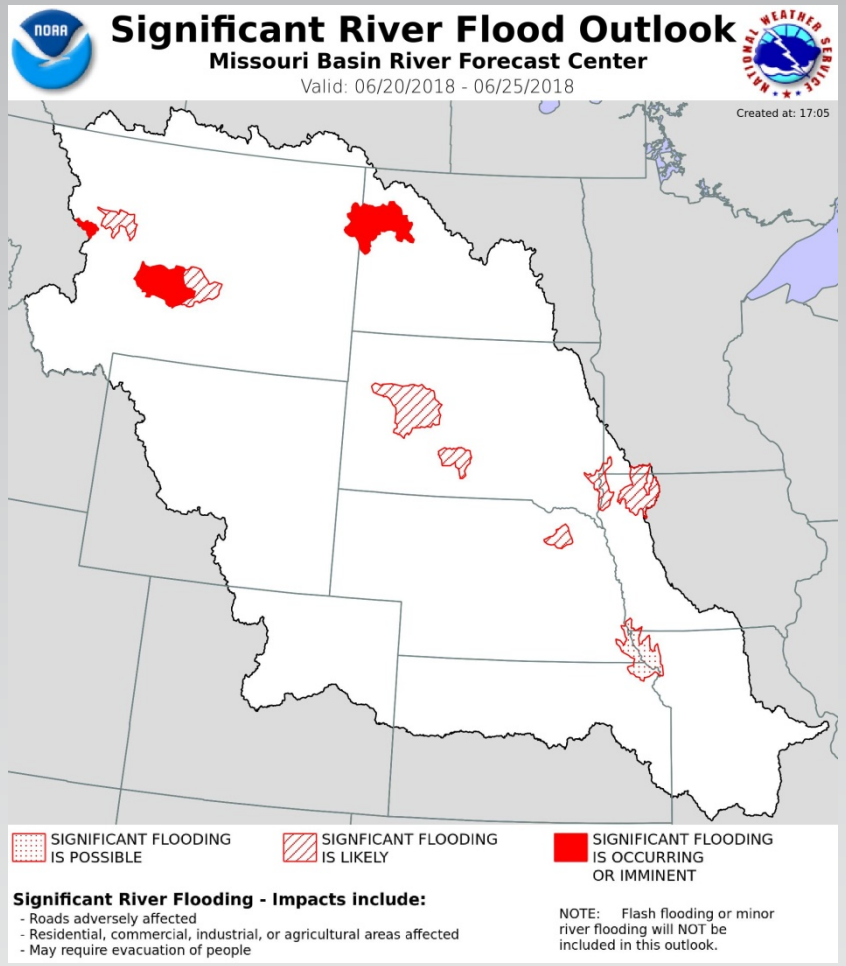
Runoff and Reservoirs

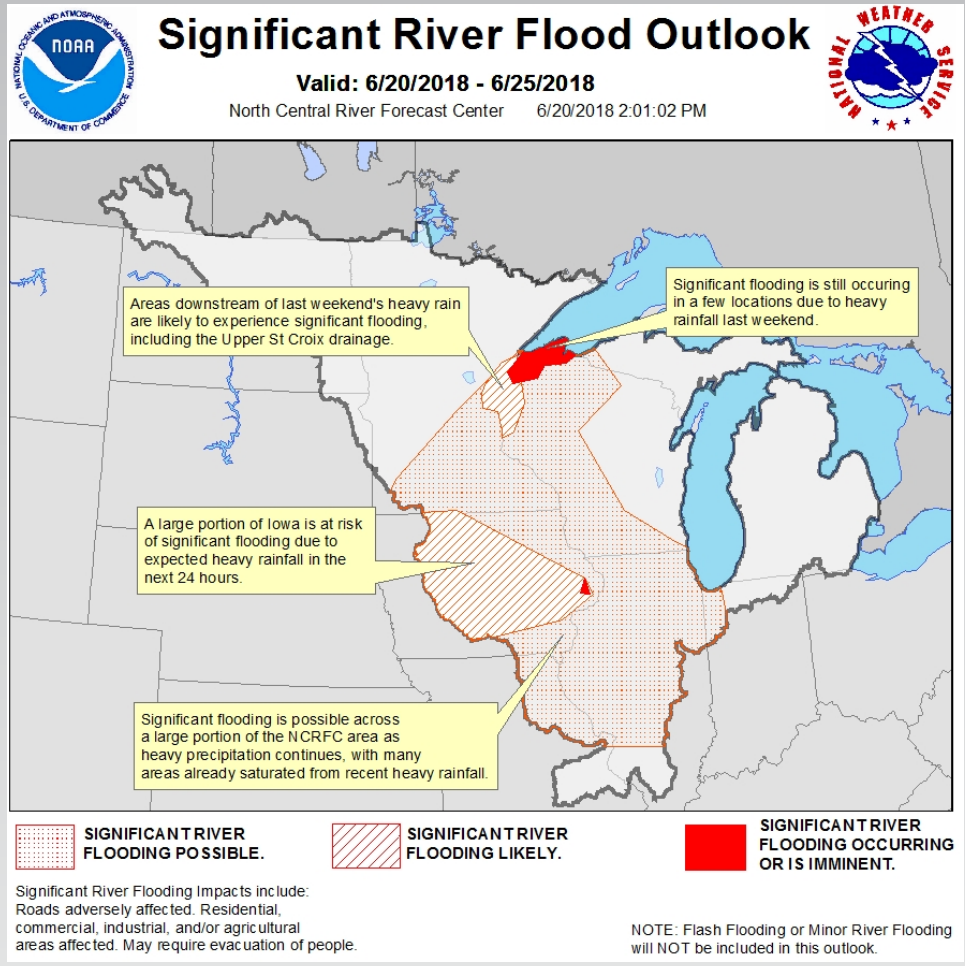
- More than 90% of snow has melted in both reaches.
- Runoff into Fort Peck and Garrison Reservoirs will continue over the next couple of week.
- Higher-than-average releases (ongoing for last several months) will continue.
- "Releases are being stepped up from 52,000 cfs to 60,000 cfs," by June 23."
- Storage should peak in early July.
- Will take 6 months, with above average releases, to evacuate all the stored flood waters from the March-July high runoff period.



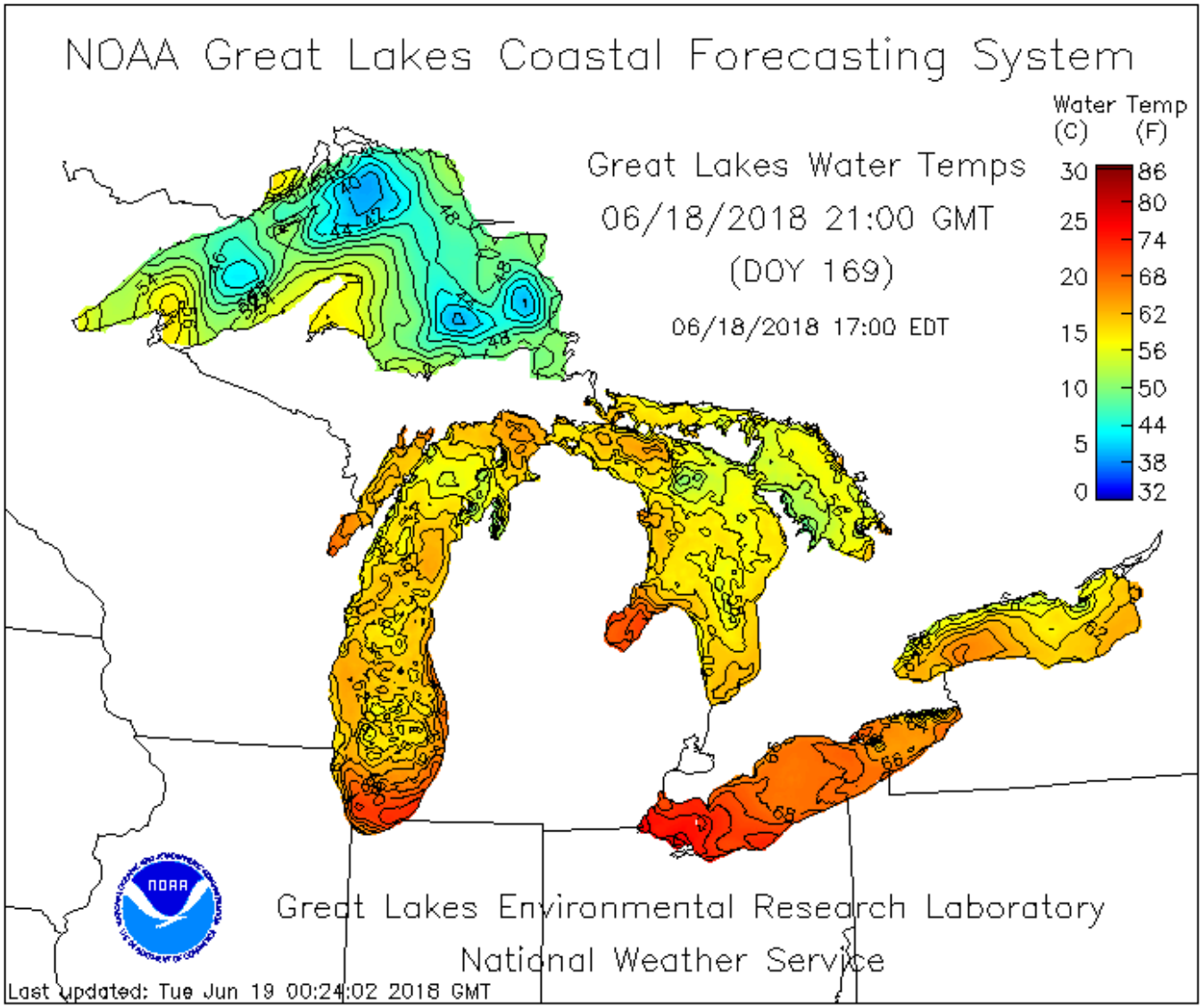
http://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/weeklyupdate.pdf

Current River Flooding Issues

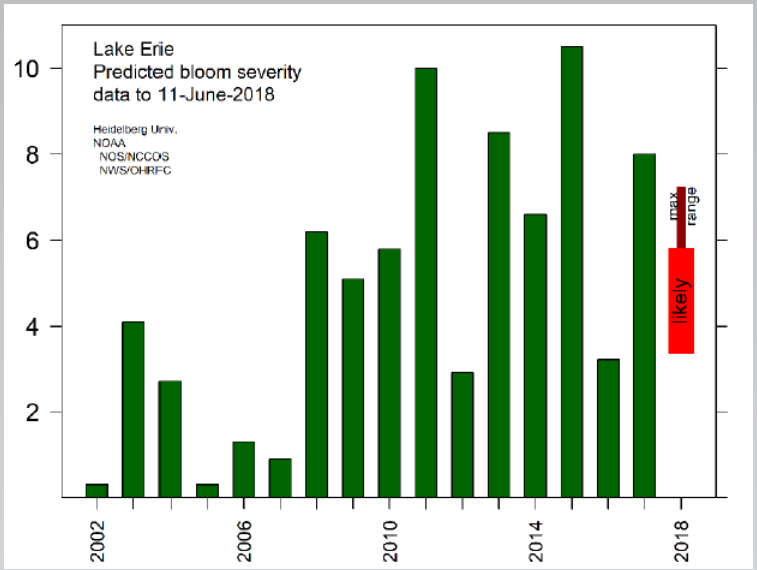


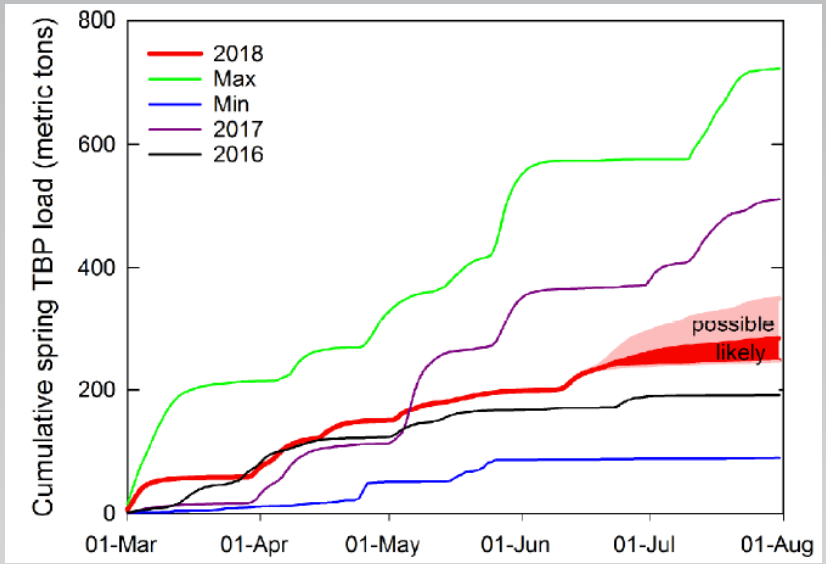


Great Lakes Temperatures



Lake Erie and Harmful Algal Blooms (HABs)





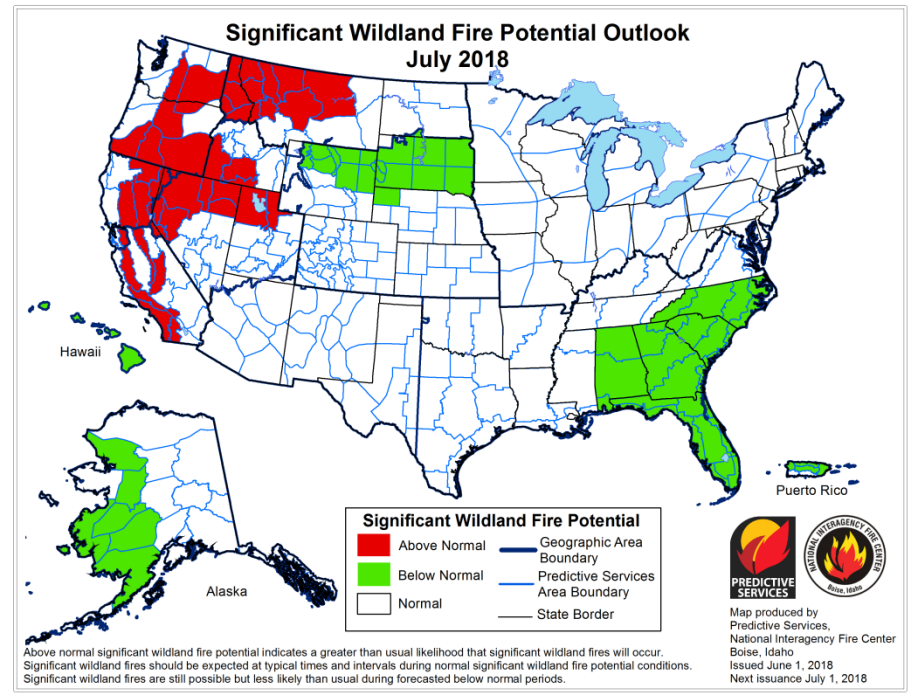
- Based on a combination of measurements through June 11 and river forecasts through July

- Greater than the mild 2016 bloom , but smaller than in 2017.

https://www.glerl.noaa.gov/res/HABs_and_Hypoxia/lakeErieHABArchive/projection_2018-06.pdf

Fire Conditions and Outlook

- 416 Fire in SW Colorado: 34,177 acres burned; 37% contained
- 4th largest fire in CO – expected full containment July 31



https://inciweb.nwcg.gov/

- Some recent help from remnants of Hurricane Bud
- Monsoon expected to dampen fire potential in July

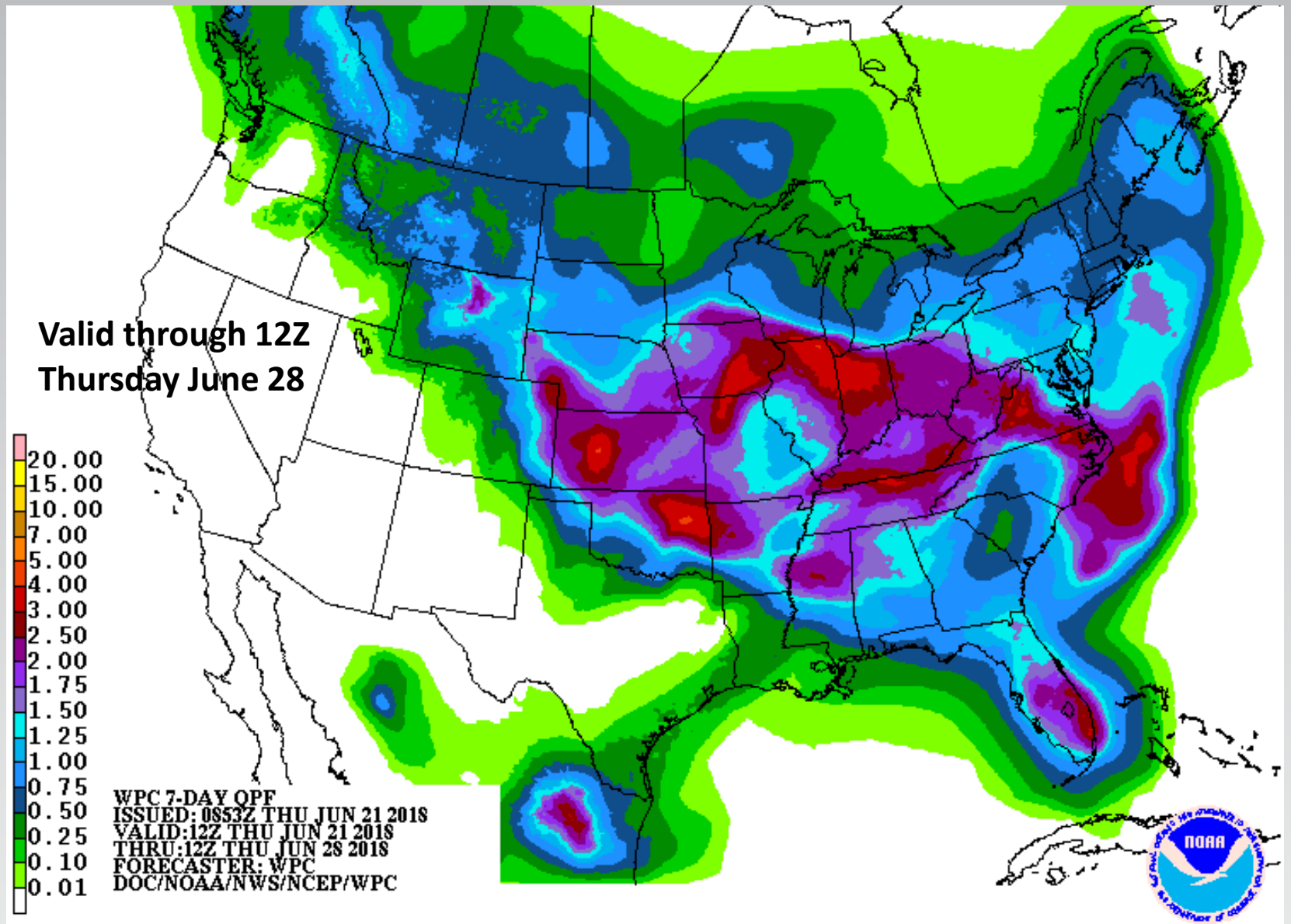
https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm

OUTLOOKS

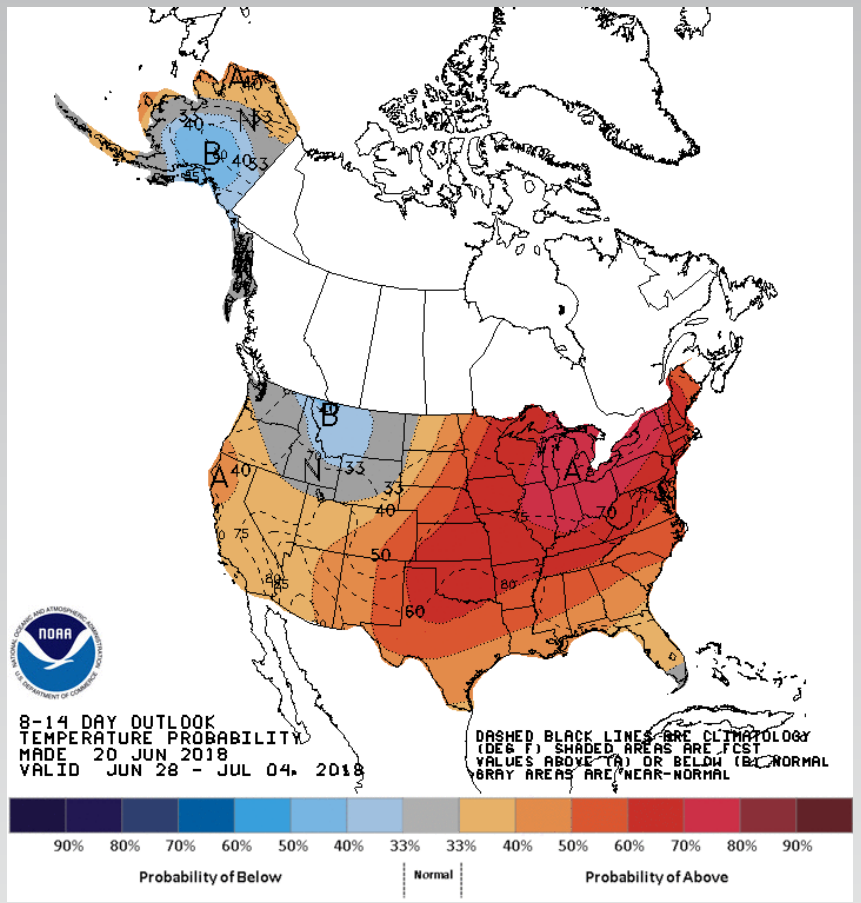
Outlooks

- 7-day precipitation forecast
- 8-14 day outlook
- July
- Remainder of Summer/growing season
- El Niño Watch

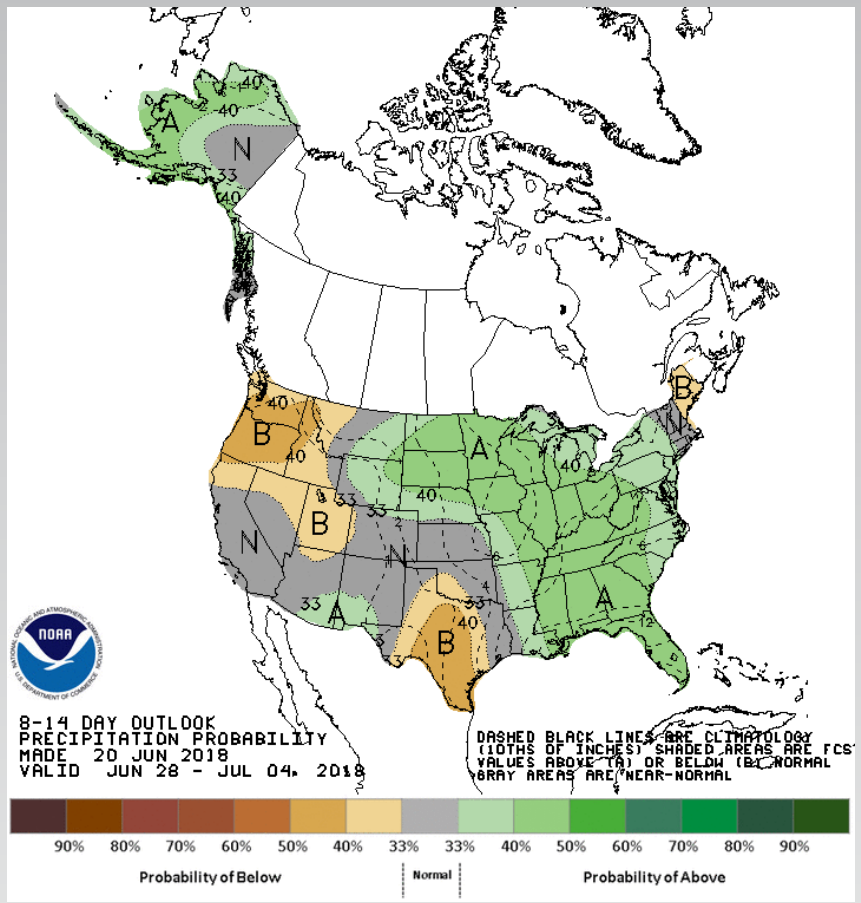
7-Day Quantitative Precipitation Forecast



Temperature and Precipitation Probabilities for June 28 – July 4



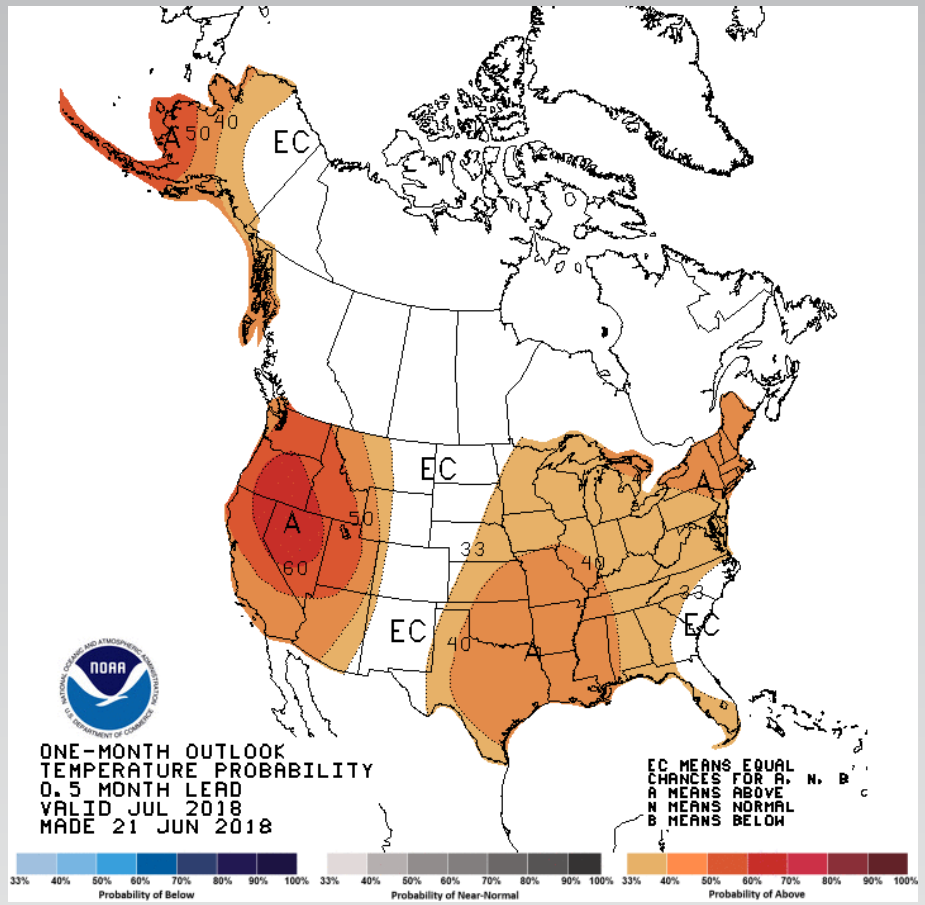
Temperature



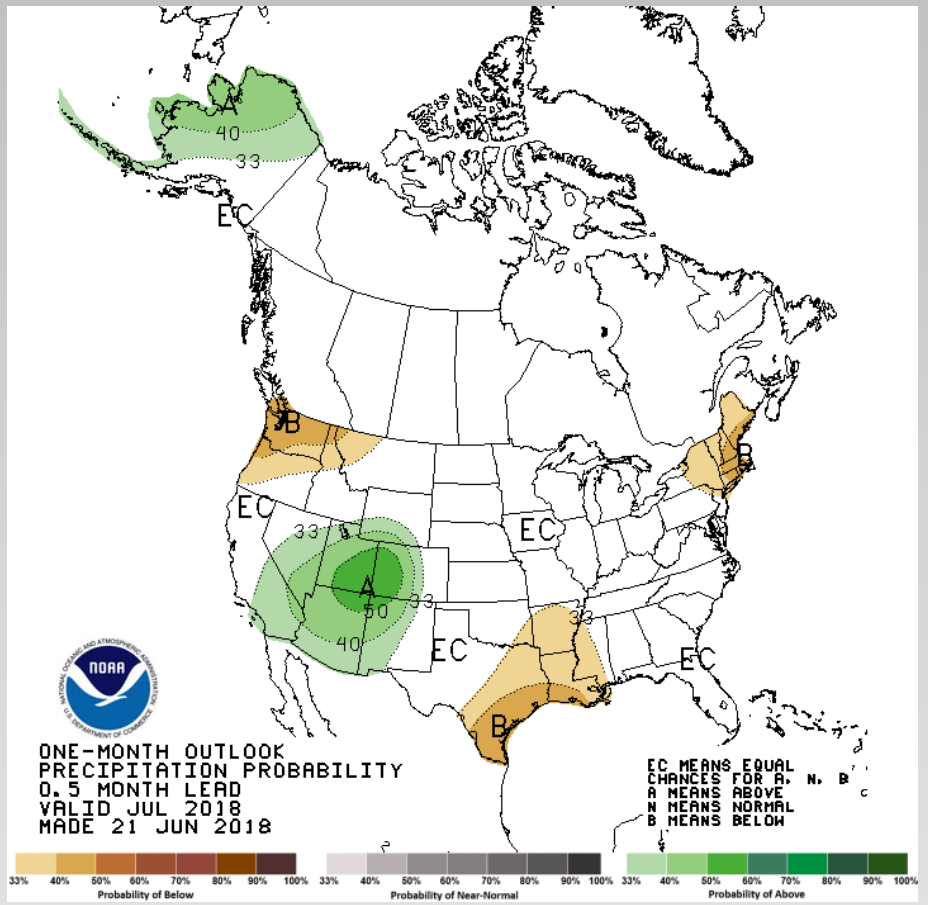
Precipitation

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

July Temperature and Precipitation Probabilities

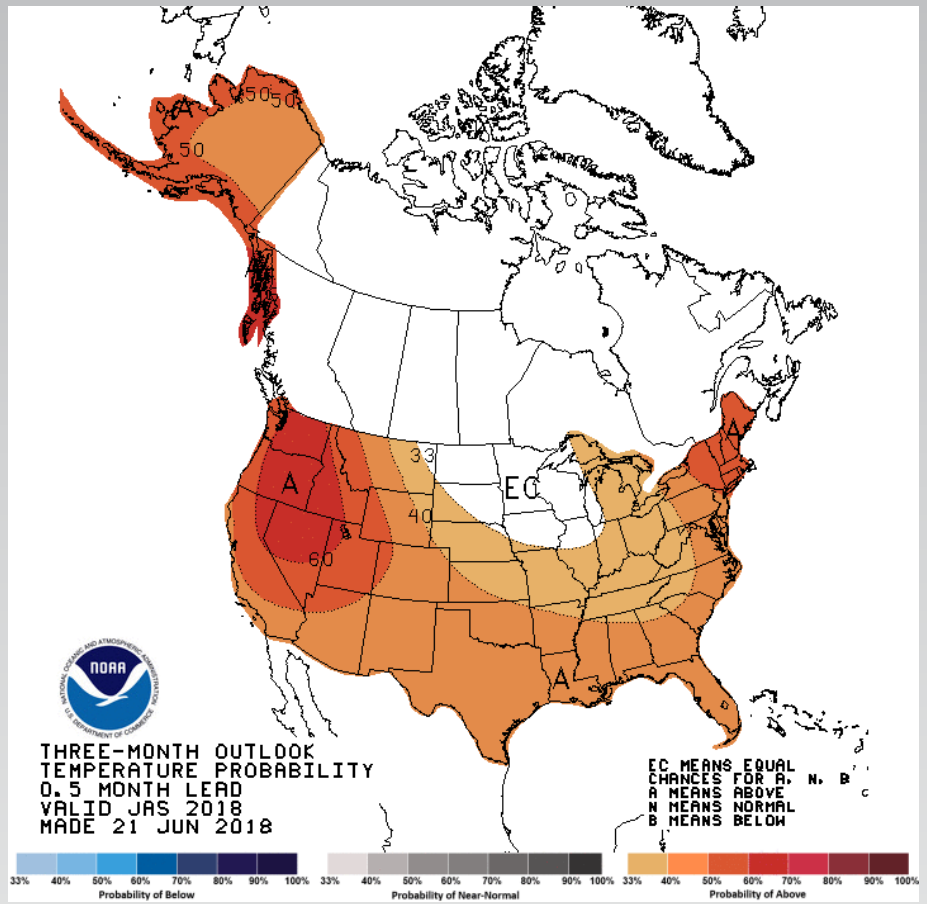


Temperature

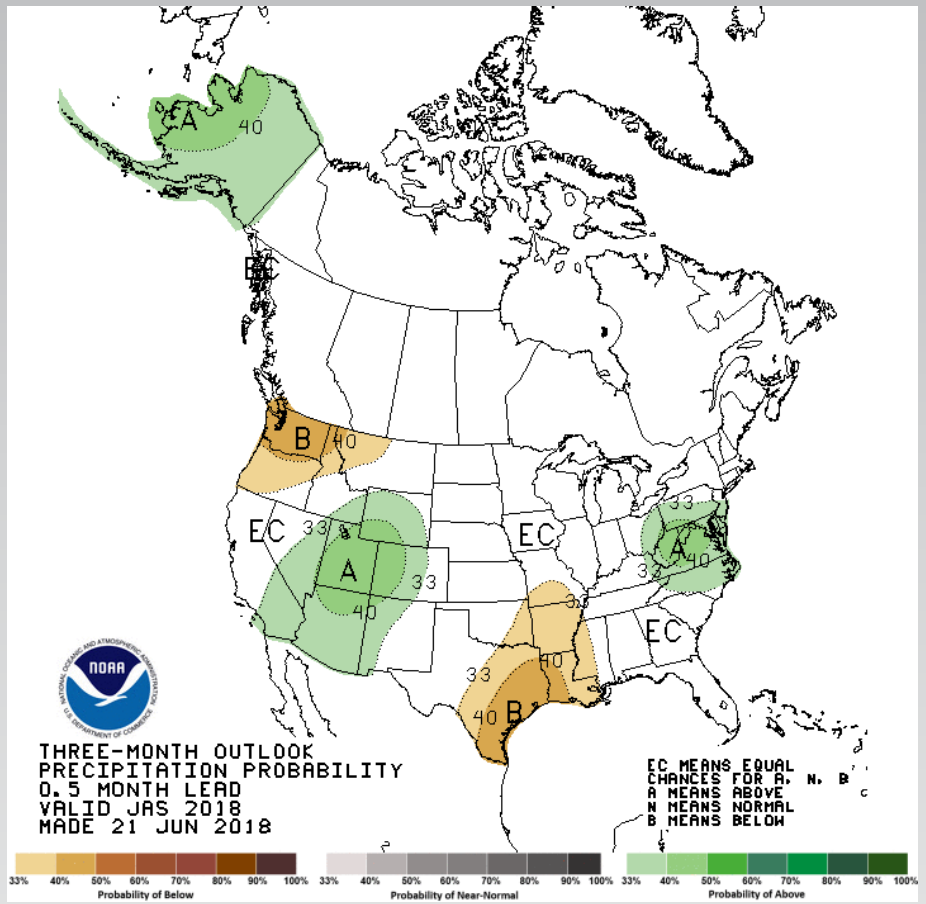


Precipitation

3-Month Temperature and Precipitation Probabilities (July-September)

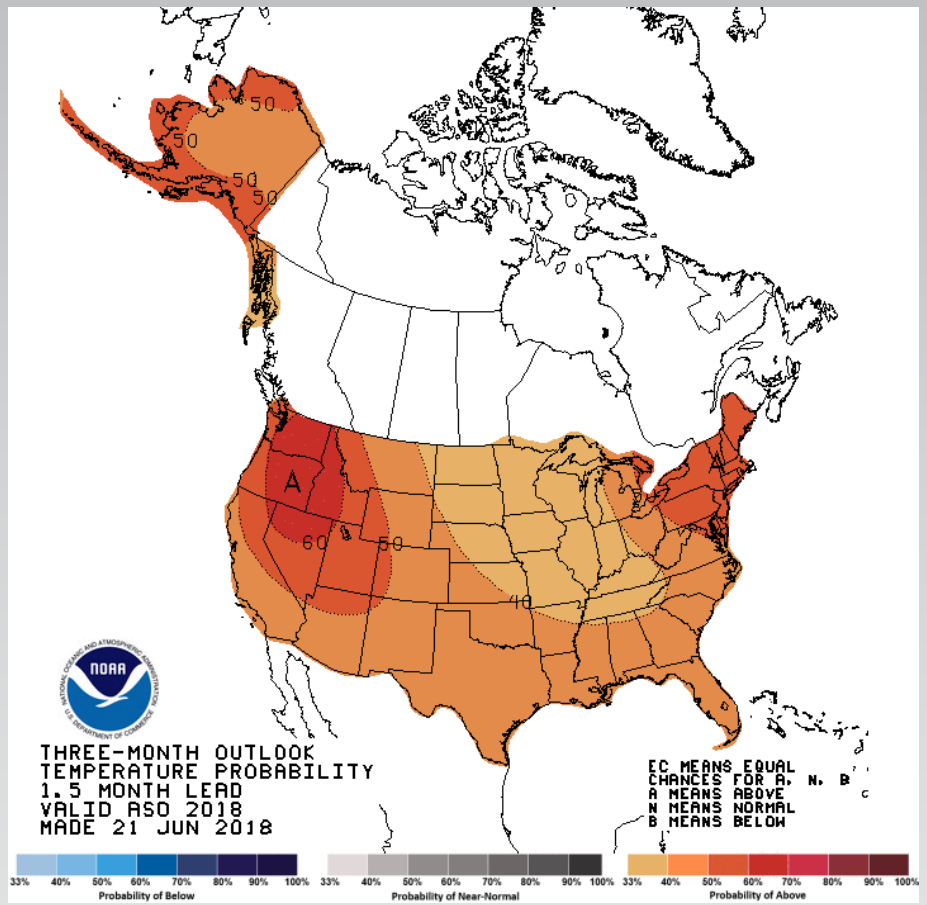


Temperature

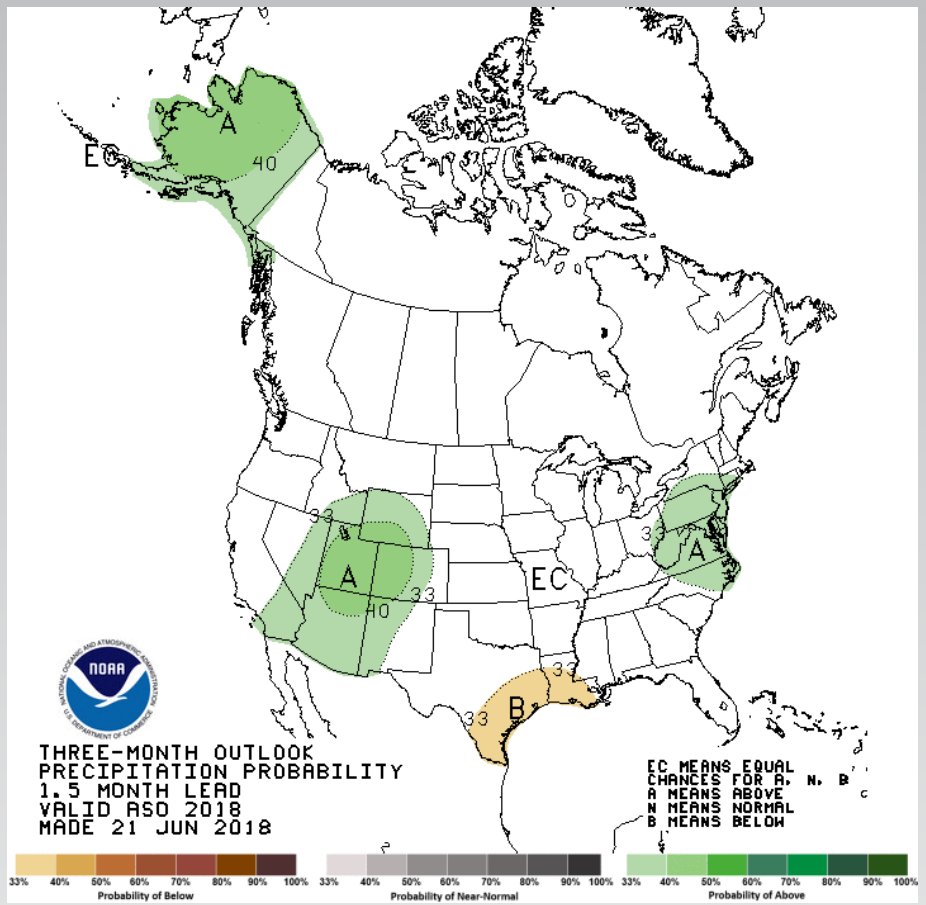


Precipitation

3-Month Temperature and Precipitation Probabilities (August-October)

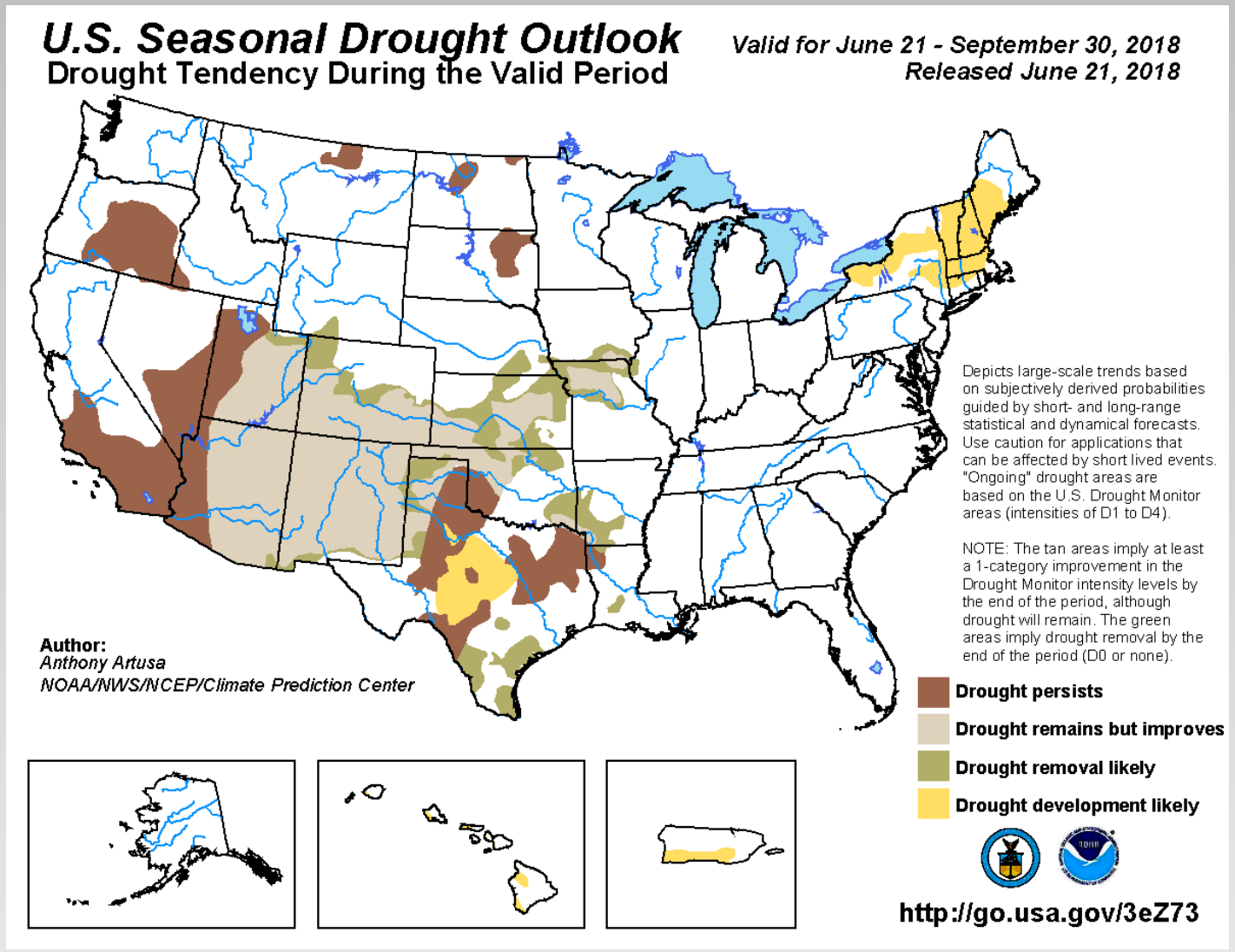


Temperature



Precipitation

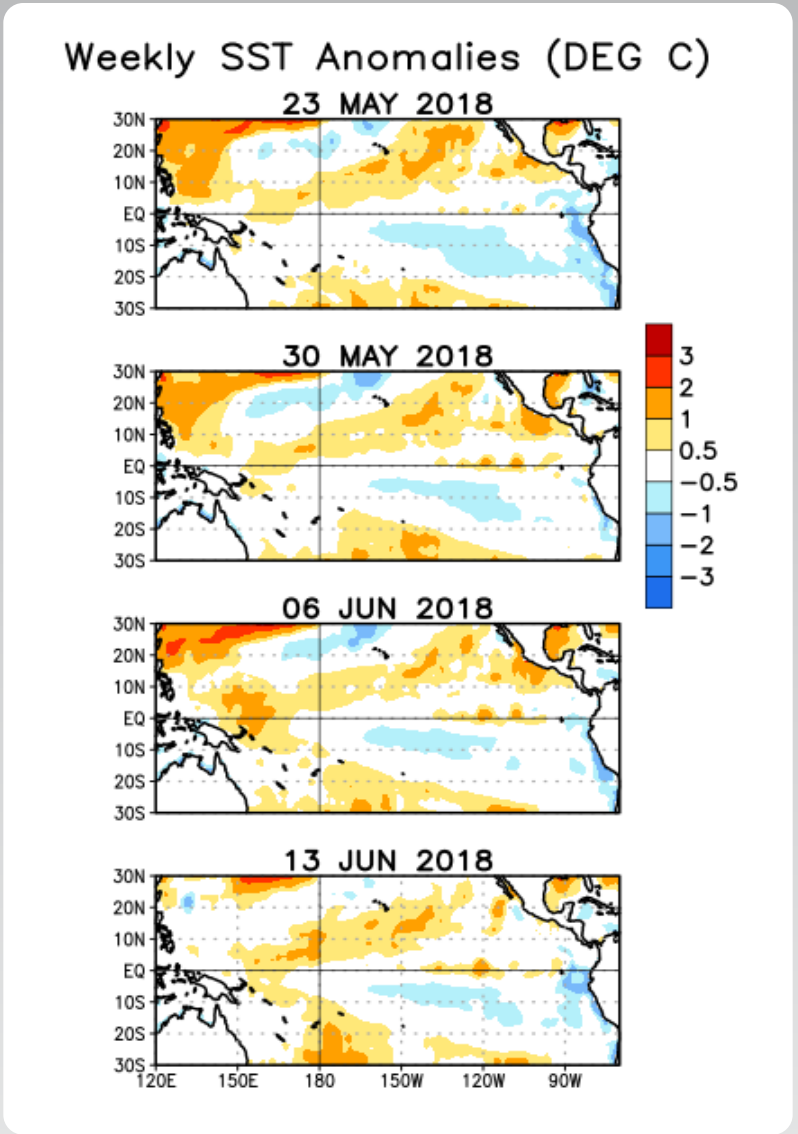
Drought Outlook through September 30



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

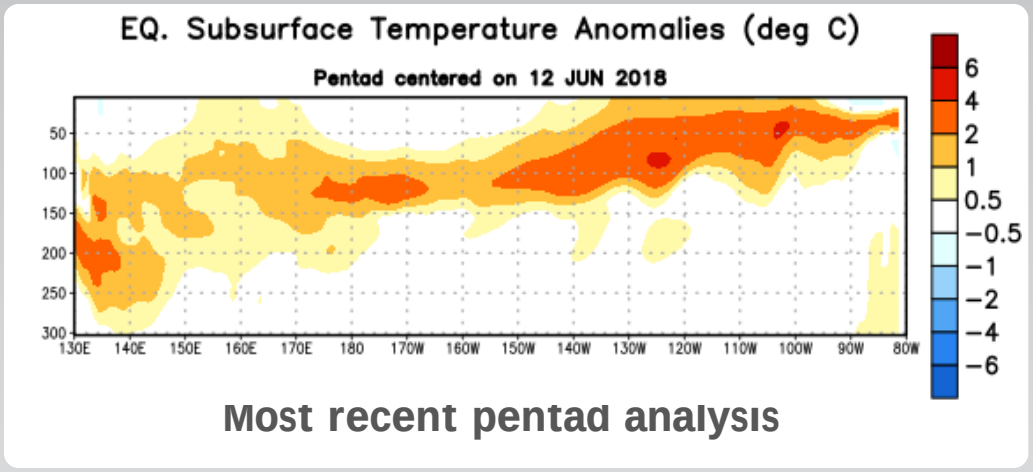
Weekly SST Departures during the Last Four Weeks

During the last four weeks, slightly above average SSTs emerged in the east-central equatorial Pacific Ocean. Positive SST anomalies have persisted in the western Pacific, while negative anomalies have mostly persisted near South America.

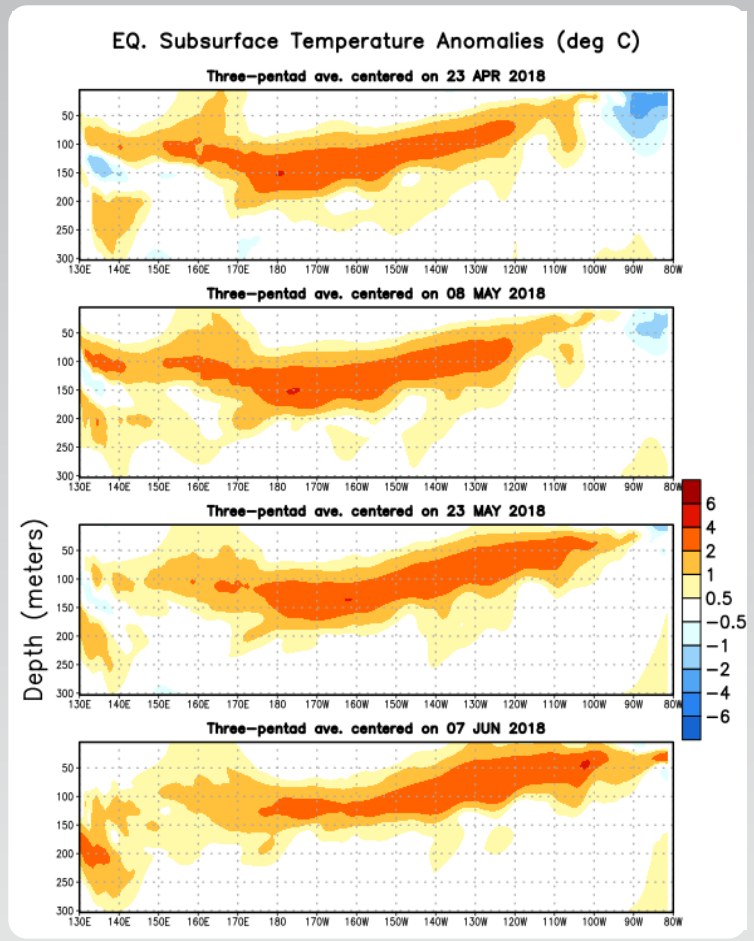


Sub-Surface Temperature Departures in the Equatorial Pacific

In the last two months, positive subsurface temperature anomalies have strengthened and expanded across the equatorial Pacific Ocean.

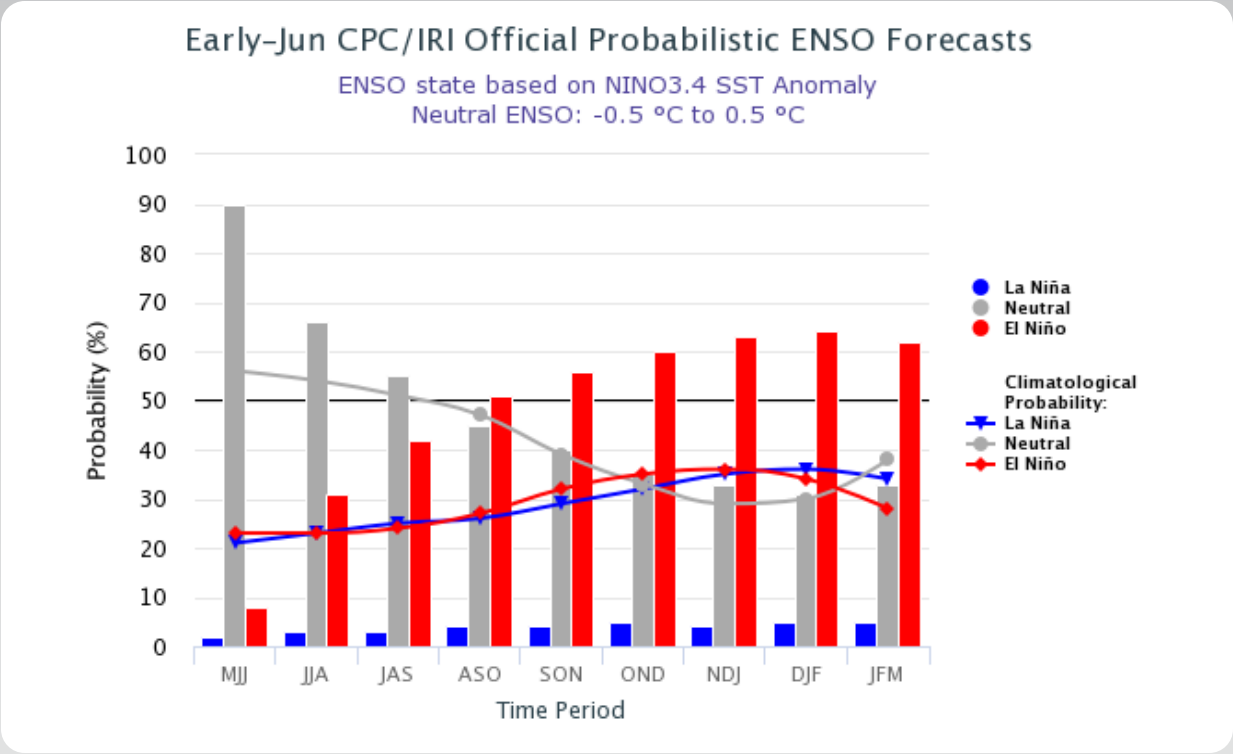


Negative temperature anomalies in the far eastern Pacific have dissipated.



CPC/IRI Probabilistic ENSO Outlook Updated: 14 June 2018

ENSO-neutral is favored through July-September 2018, with El Niño favored thereafter. Chances for El Niño are near 65% during Northern Hemisphere winter 2018-19.



El Niño Watch

- ENSO-neutral is favored through Northern Hemisphere summer 2018, with the chance for El Niño increasing to 50% during fall, and ~65% during winter 2018-19.

- Too early to talk specific outlooks – stay tuned!

Conditions Summary

- May's warmth has carried over into June
- The hard flip from very cold April to warm May is still having an impact across the region on Ag and water
- Plenty of haves and have nots in recent rainfall across the region
- May's warmth helped corn and soybean's throughout much of the region
- Some expansion of drought across the southern states of the region, worsening conditions in KS, MO, and SD.

Outlook Summary

- El Niño Watch Issued – impacts discussed later
- Lack of ENSO leaves outlooks to trend and models
- Elevated likelihood for warmer-than-average and wetter-than-average conditions across most of the region in July (except for Kansas and Missouri)
- No specific dryness in outlooks. But will need to monitor for changes

Further Information - Partners

- **Today's and Past Recorded Presentations and :**
- *http://mrcc.isws.illinois.edu/webinars.htm*
  http://www.hprcc.unl.edu
- 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 – Questions?

- **Upcoming Webinars of note:**
  - SW Monday June 25, from 2-3 pm MDT. For information and registration: https://www.drought.gov/drought/calendar/events/drought-southwest-conditions-impacts-and-forecast
  - S Plains Drought Webinar with Victor Murphy (NWS) will be held on Wednesday, June 27, from 11 to 12 CDT. For information and registration: https://www.drought.gov/drought/calendar/events/southern-plains-drought-webinar-june-27-2018-0

- Questions:
  - **Climate:**
  - Dennis Todey: dennis.todey@ars.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

  - **Weather:**
  - crhroc@noaa.gov