

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



Near Ipswich: NWS Employee



Houghton, MI: Marquette, MI
WFO

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THE OHIO STATE
UNIVERSITY



United States Department of Agriculture
Midwest Climate Hub

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**

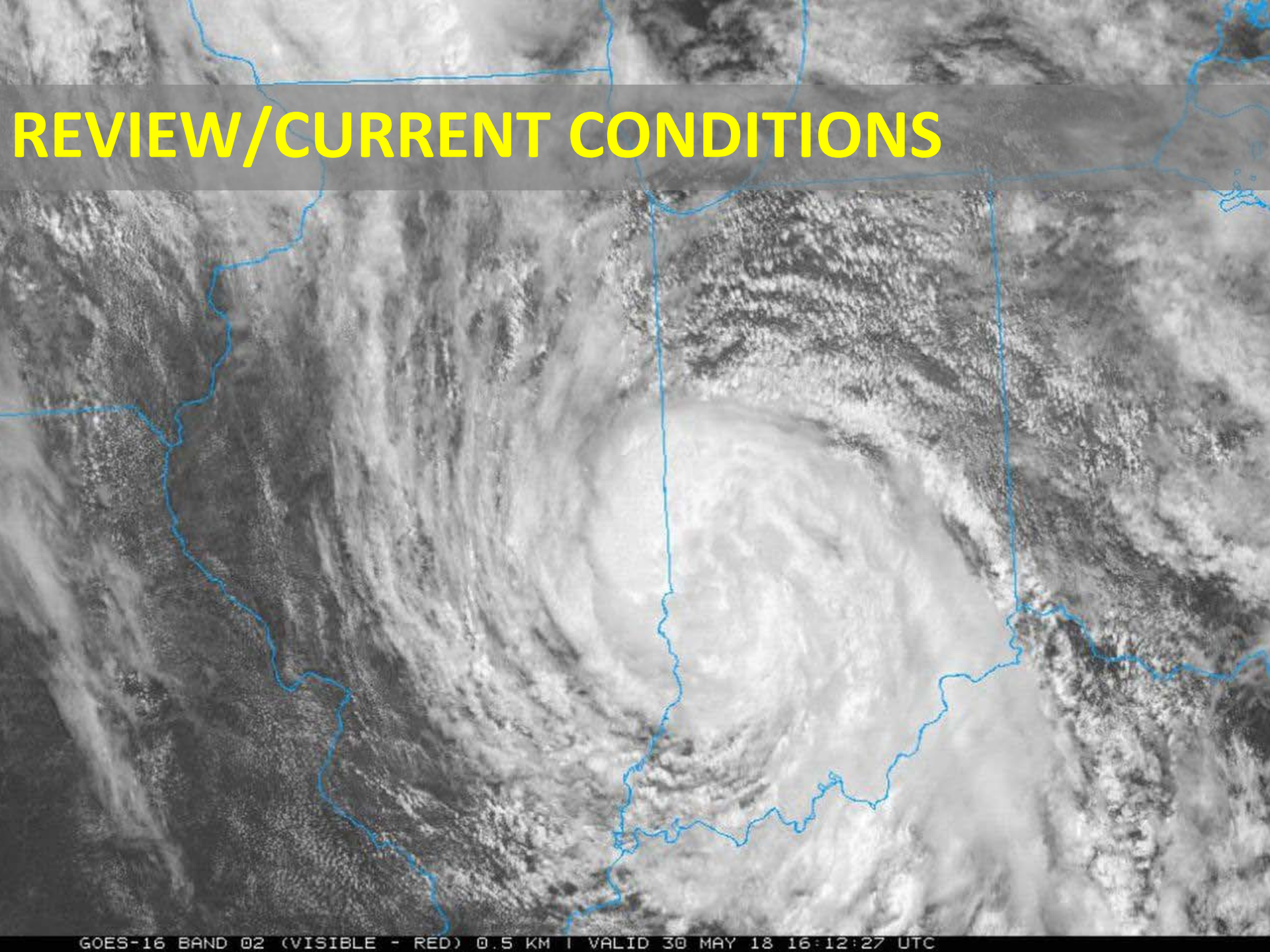
Agenda

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



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

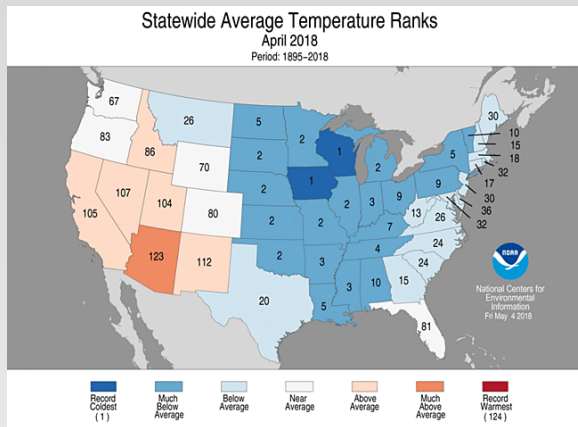
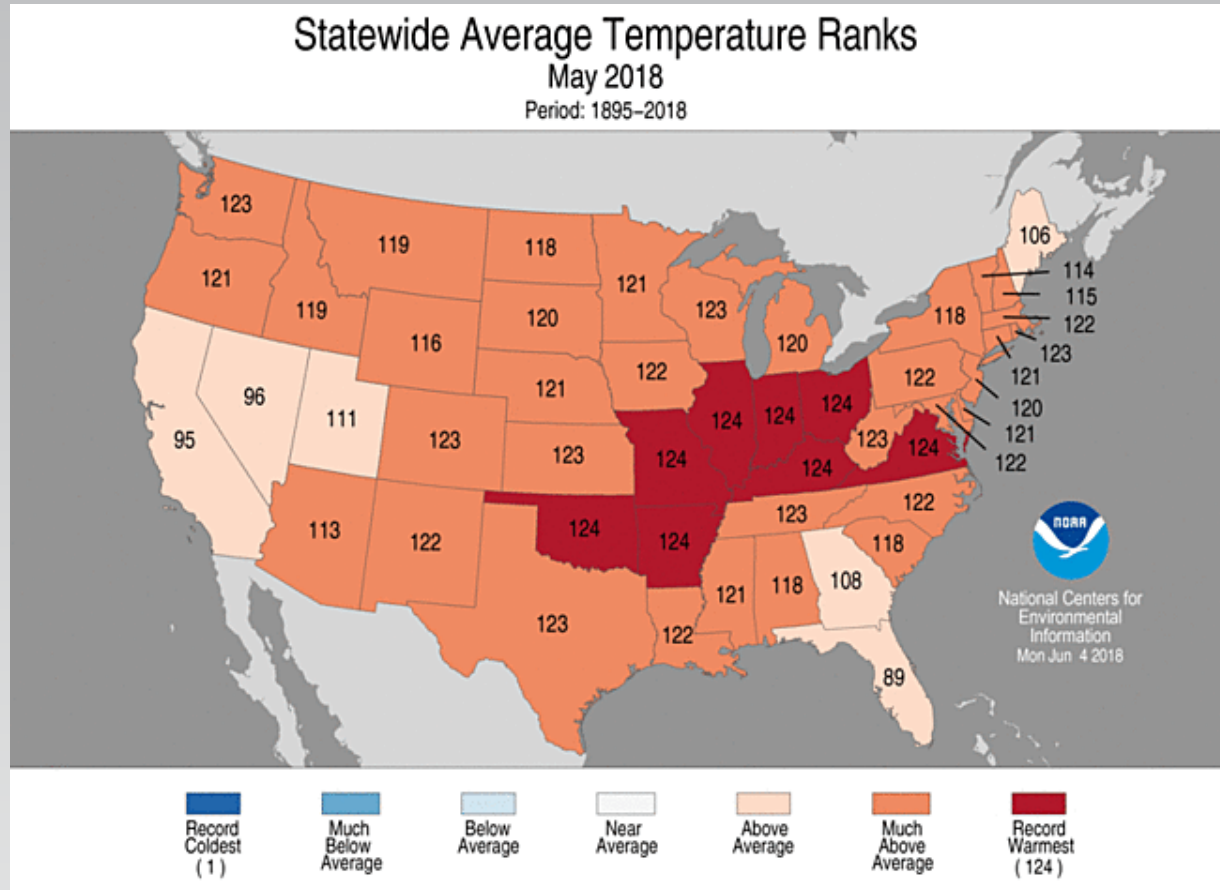
REVIEW/CURRENT CONDITIONS



GOES-16 BAND 02 (VISIBLE - RED) 0.5 KM | VALID 30 MAY 18 16:12:27 UTC

May Temperature Recap

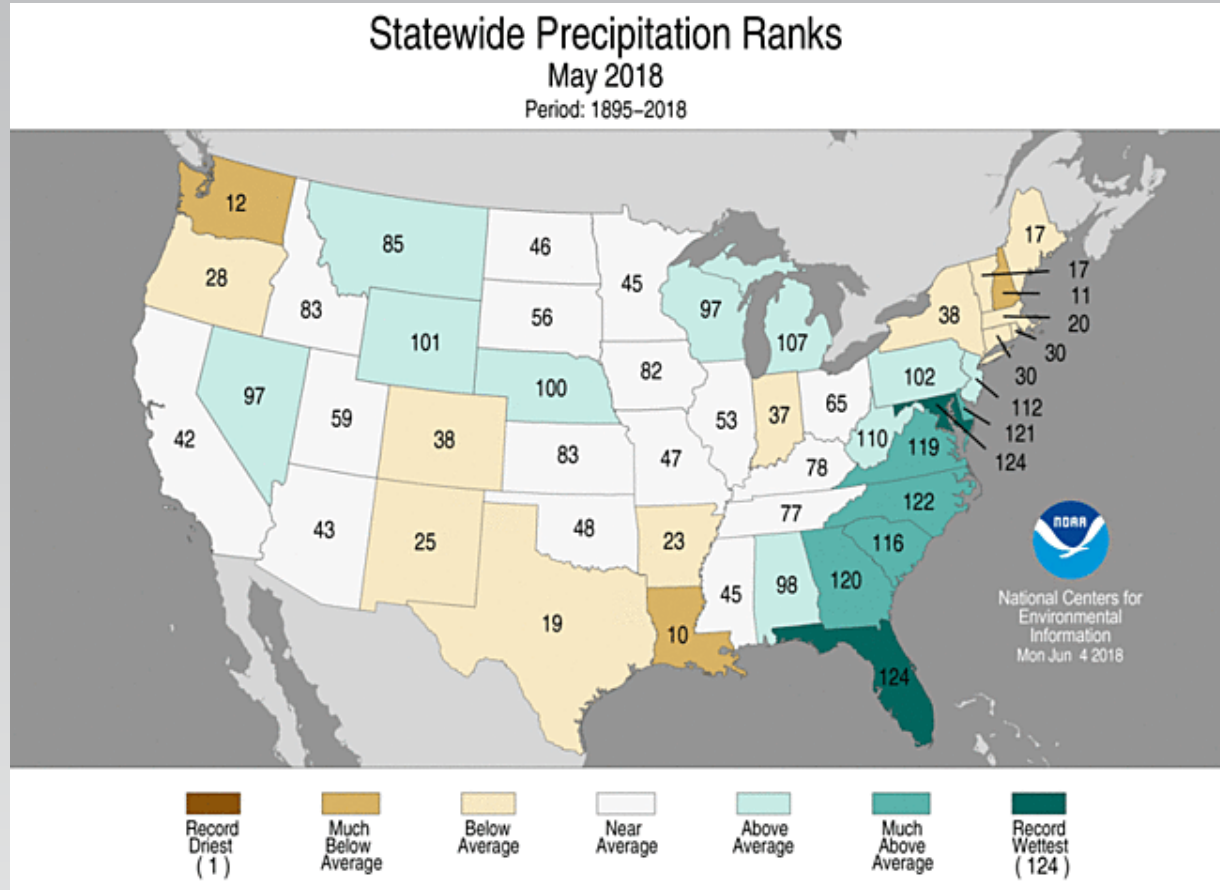
- Contiguous U.S. had warmest May on record
- Record warmest for MO-IL-IN-OH-KY
- Reversal from April



<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



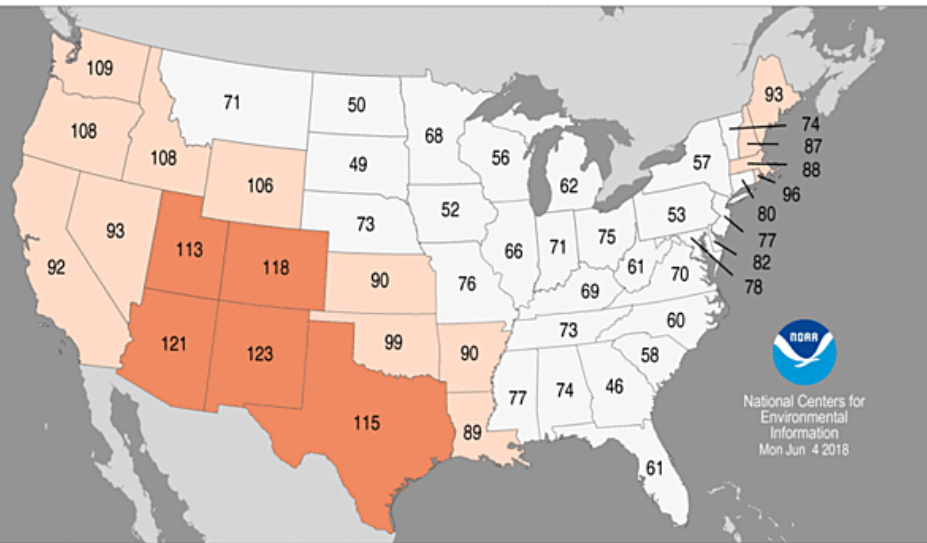
<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

Statewide Average Temperature Ranks

March–May 2018

Period: 1895–2018

March – May Ranks

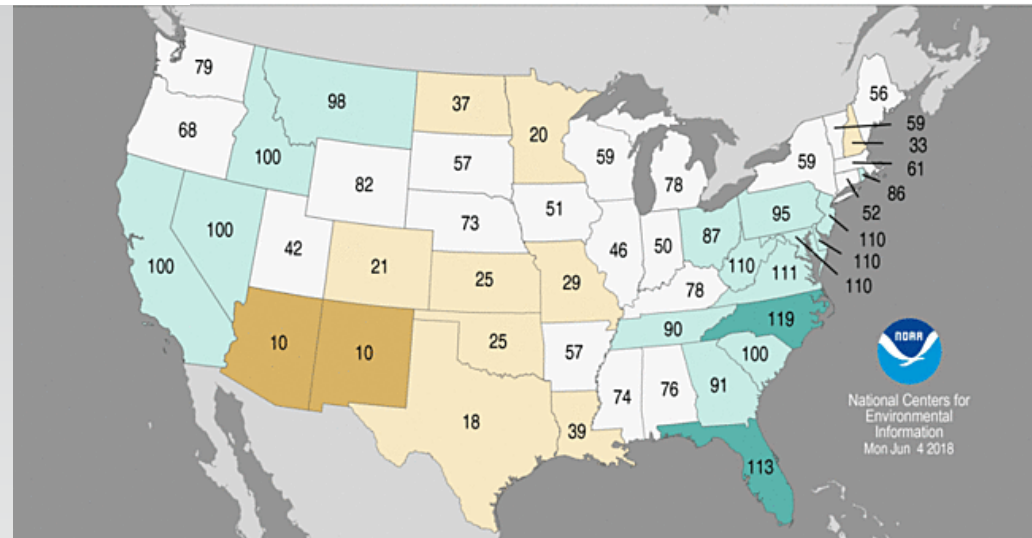


Statewide Precipitation Ranks

March–May 2018

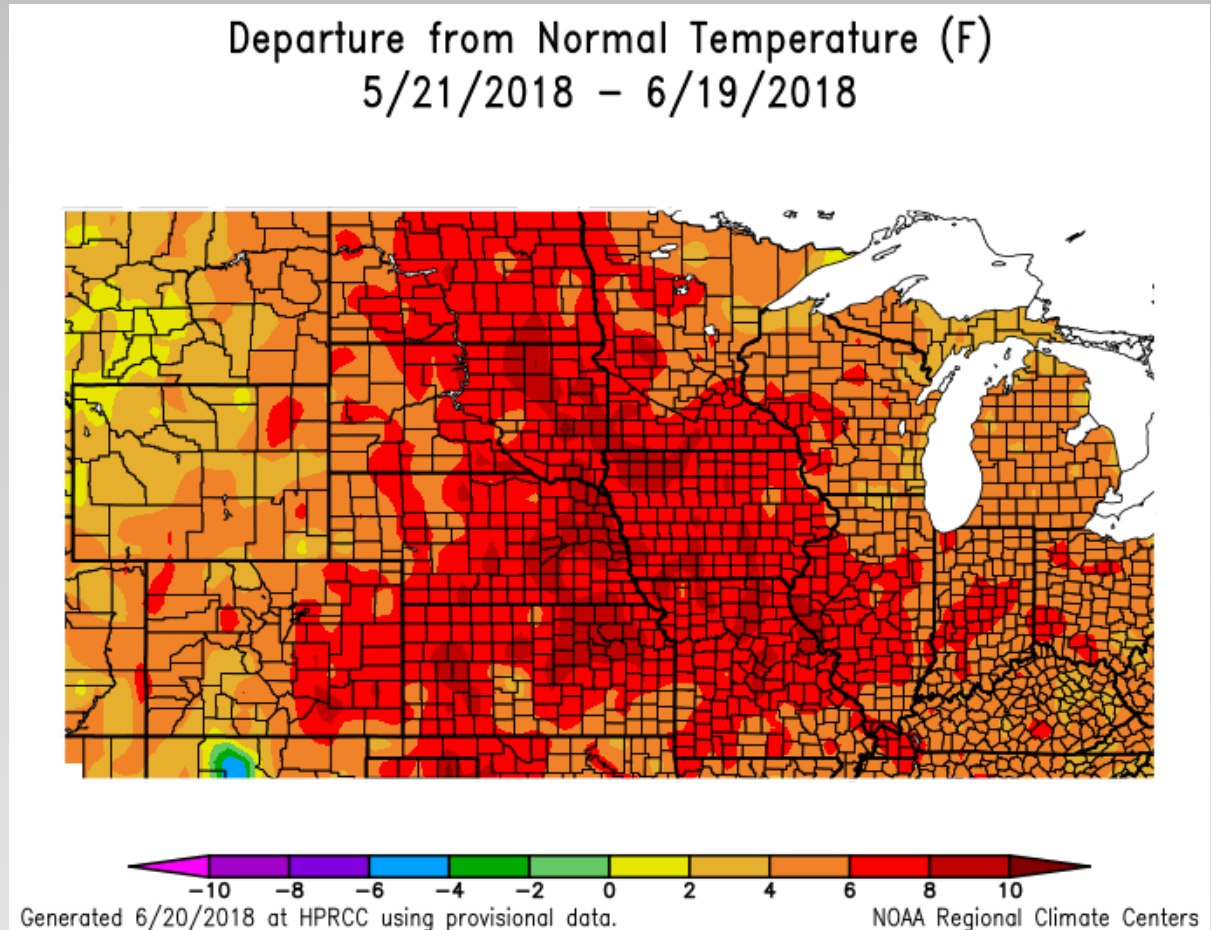
Period: 1895–2018

- “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



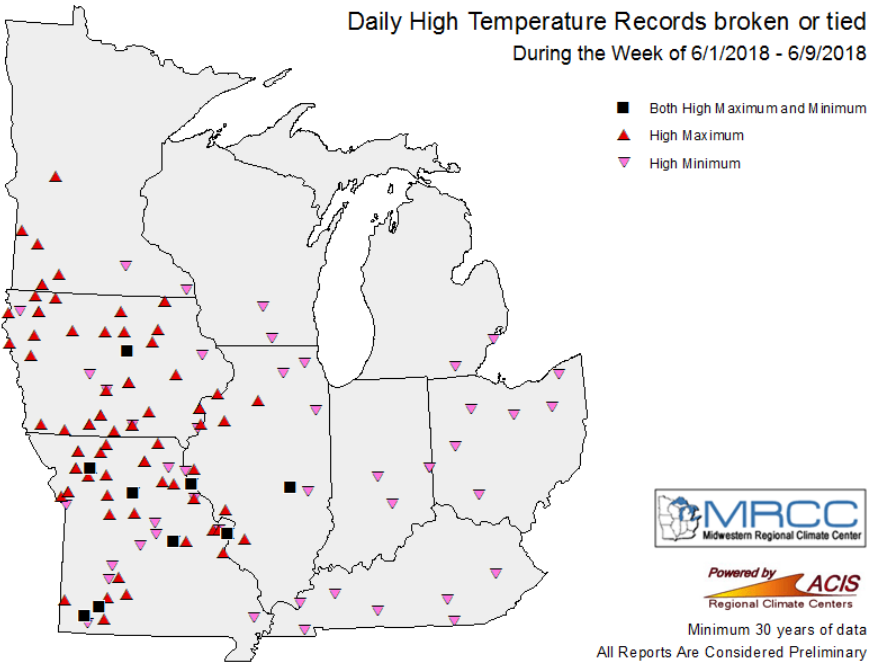
Last 30 days Temperature

- 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

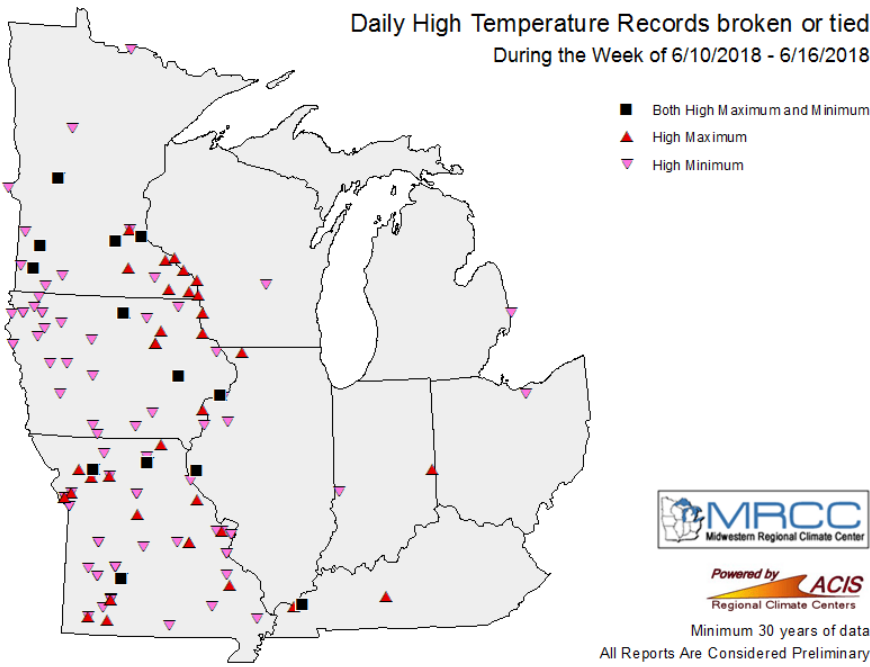


More Temperature Records

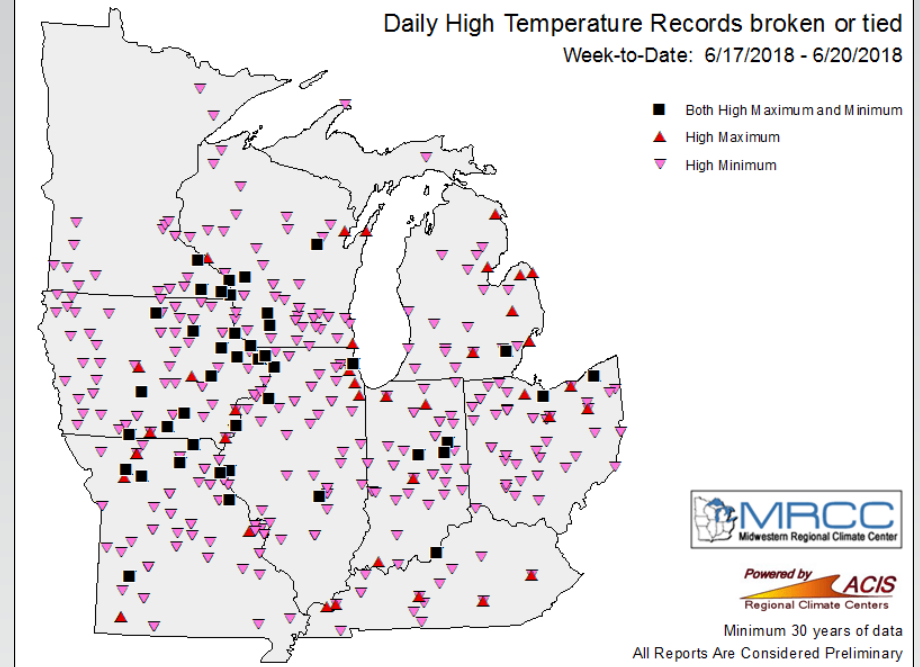
Daily High Temperature Records broken or tied
During the Week of 6/1/2018 - 6/9/2018



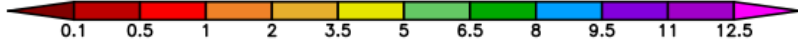
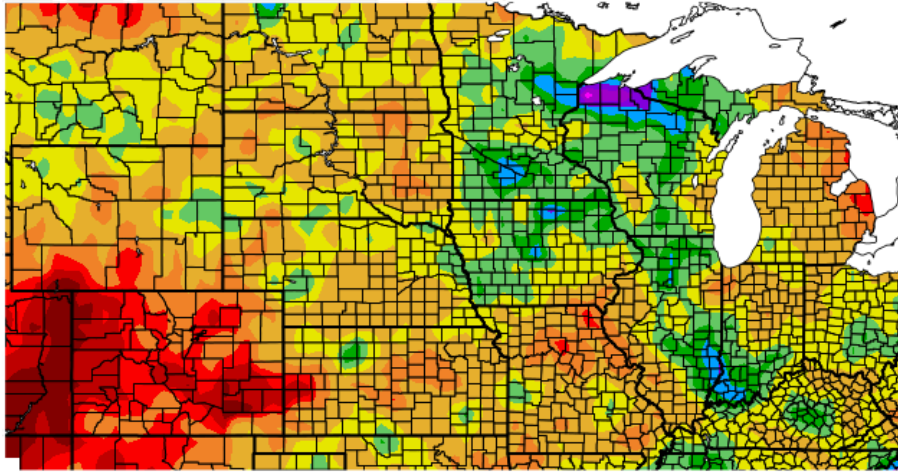
Daily High Temperature Records broken or tied
During the Week of 6/10/2018 - 6/16/2018



Daily High Temperature Records broken or tied
Week-to-Date: 6/17/2018 - 6/20/2018



Precipitation (in)
5/21/2018 – 6/19/2018

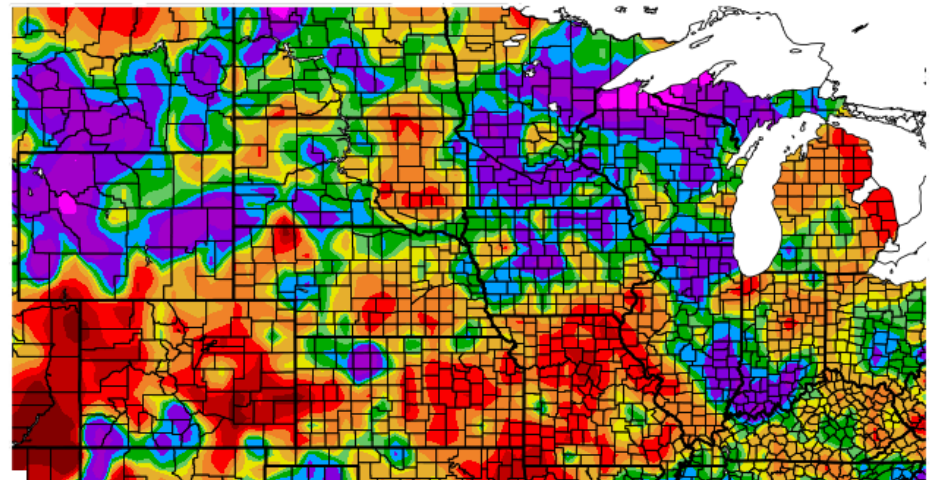


Generated 6/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

Last 30 days Precipitation

Percent of Normal Precipitation (%)
5/21/2018 – 6/19/2018



Generated 6/20/2018 at HPRCC using provisional data.

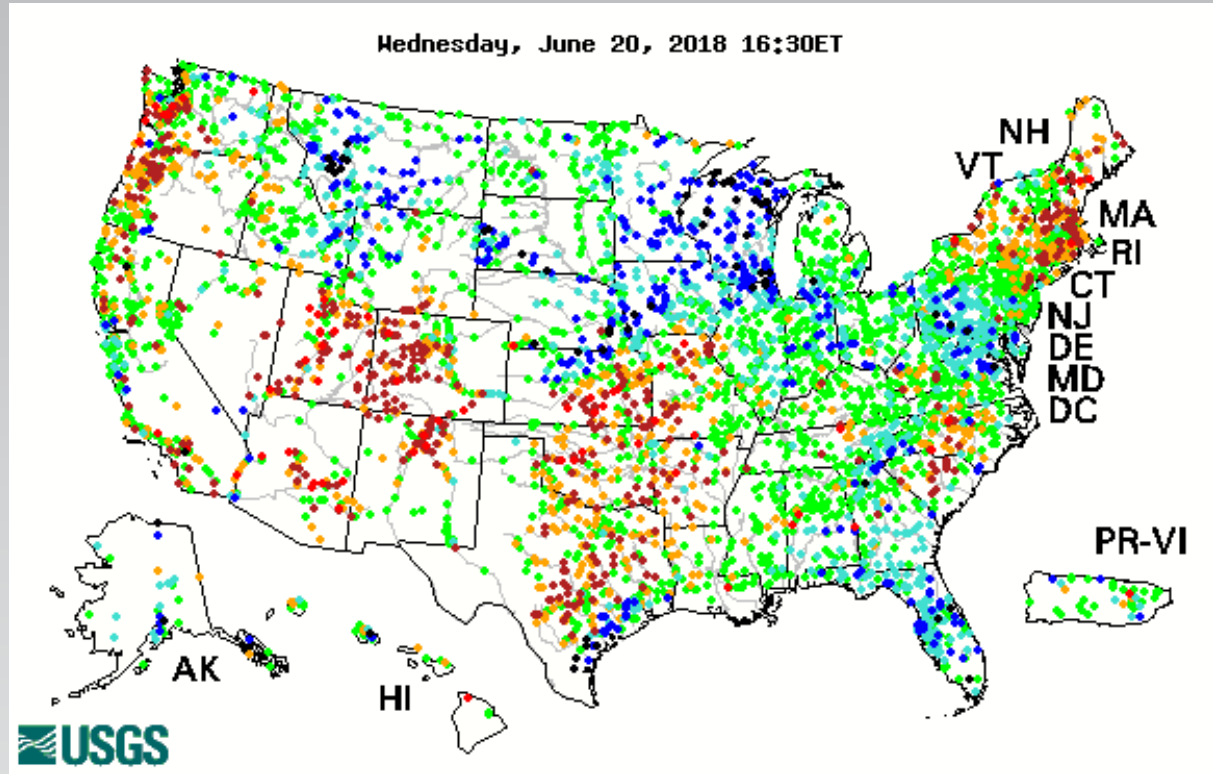
NOAA Regional Climate Centers

- **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

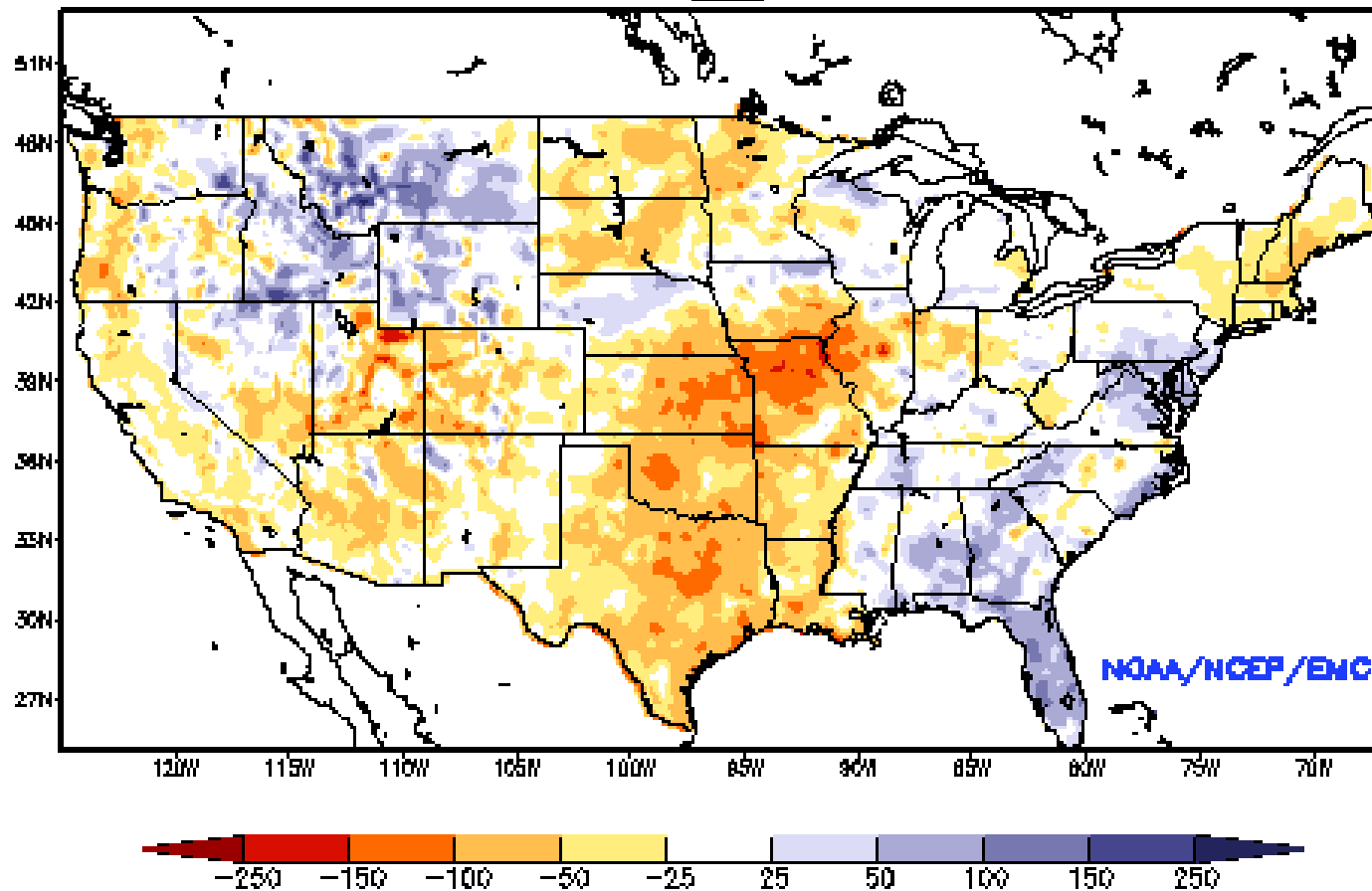


Explanation - Percentile classes						
	●	●	●	●	●	●
	<10	10-24	25-75	76-90	>90	
Low	Much below normal	Below normal	Normal	Above normal	Much above normal	High

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

Soil Moisture

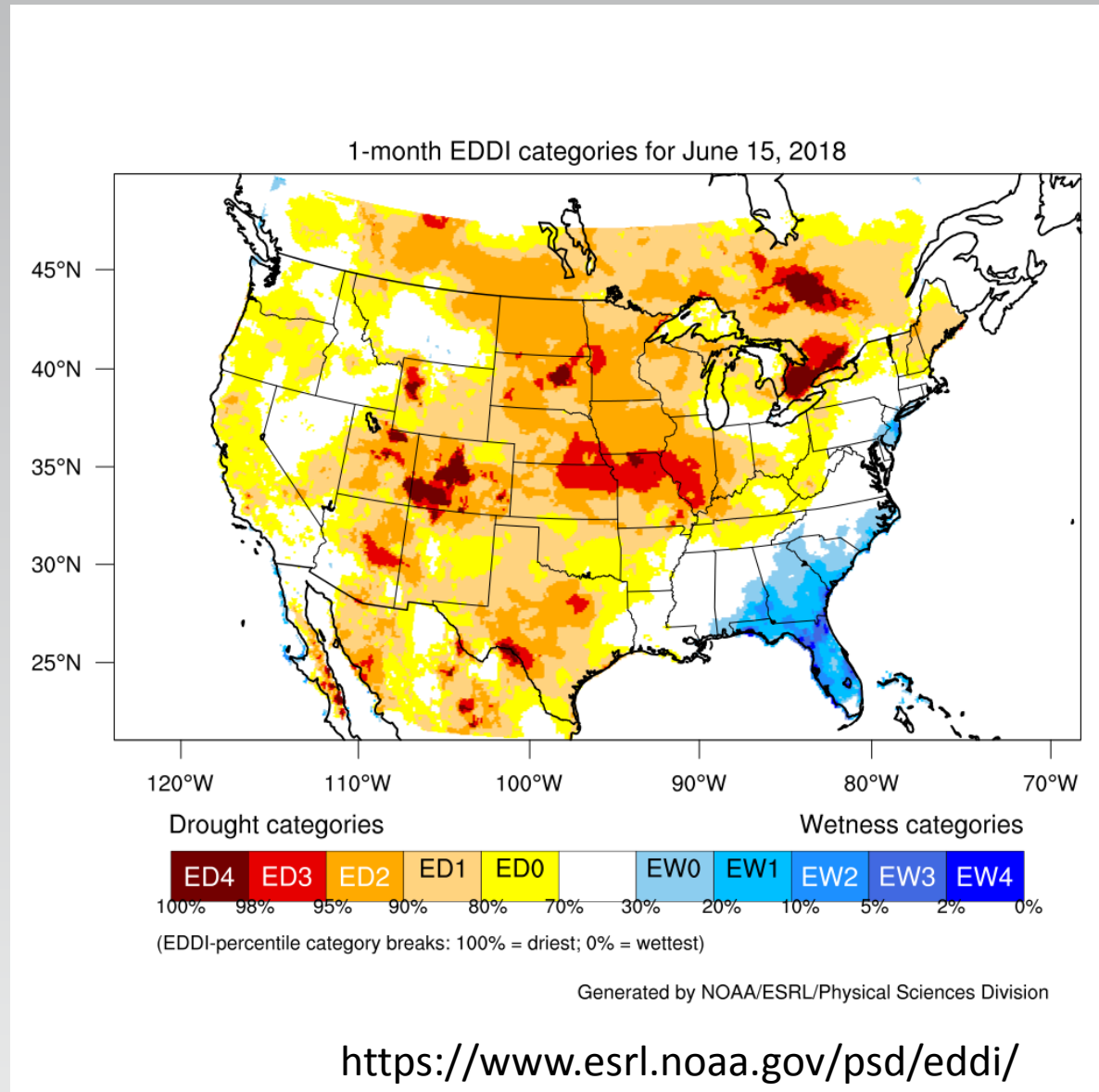
Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: JUN 16, 2018



<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.



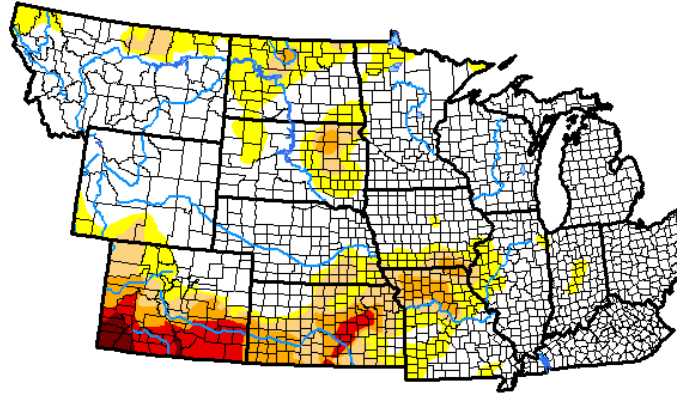
U.S. Drought Monitor

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:



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

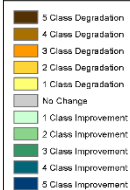
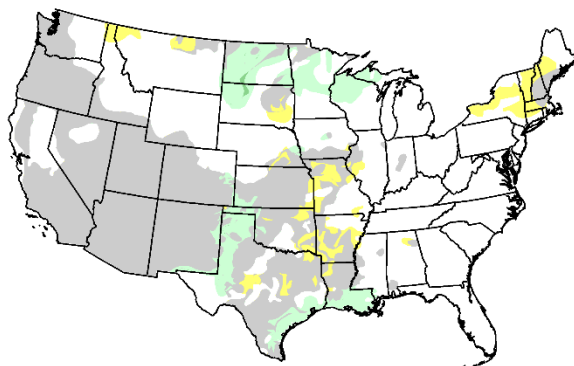
Author:

Brian Fuchs
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor Class Change - CONUS
1 Week



June 19, 2018
compared to
June 12, 2018

<http://droughtmonitor.unl.edu>

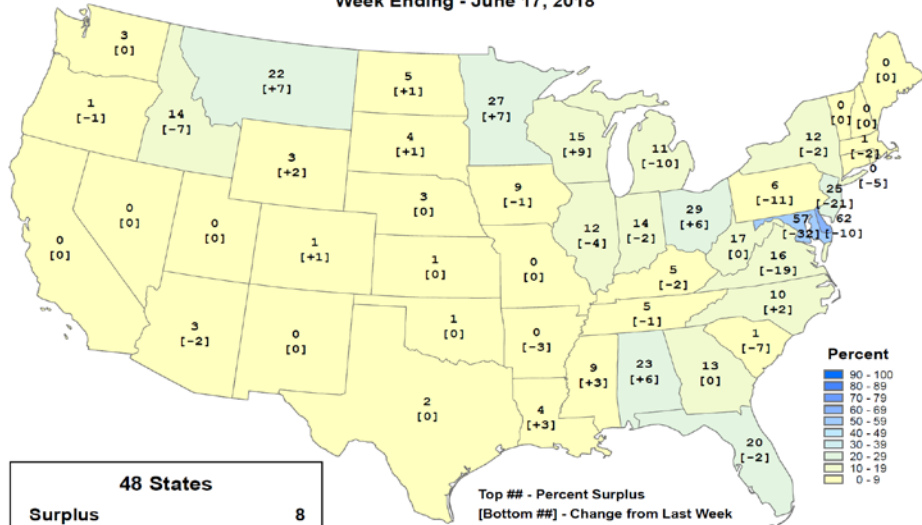
AGRICULTURE IMPACTS

A photograph of a cornfield with young, green plants in rows. In the background, there are trees and a multi-story building under a clear sky. The text 'AGRICULTURE IMPACTS' is overlaid in yellow on a dark grey banner at the top.

Pat Guinan: MO State Climatologist

Topsoil Moisture Percent Surplus Week Ending - June 17, 2018

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

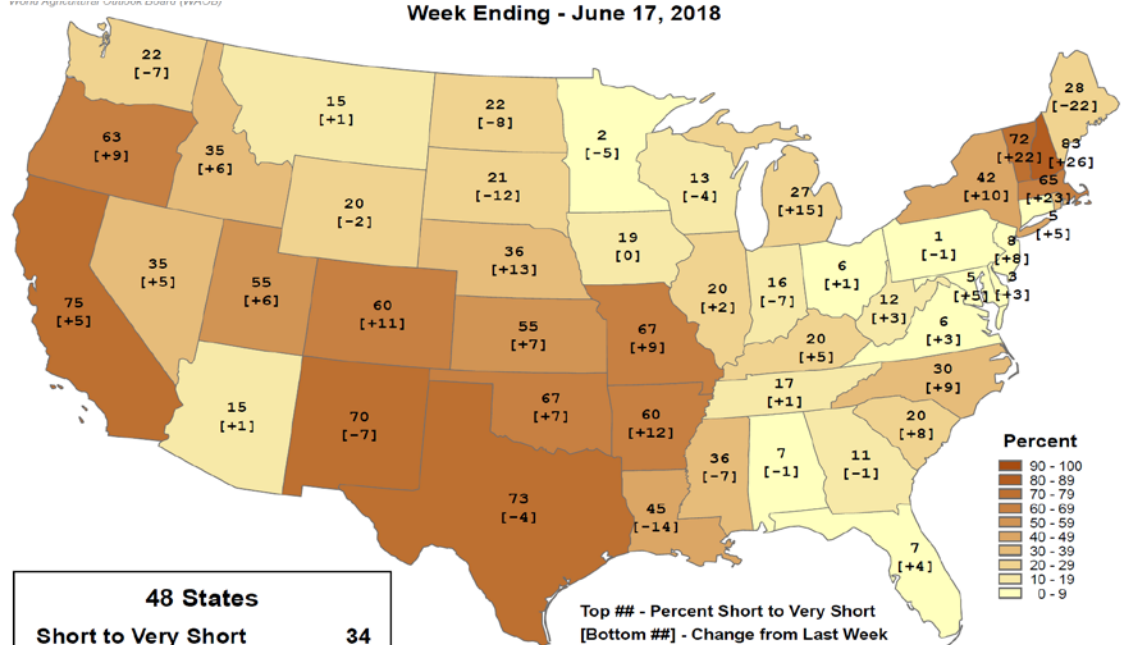


48 States	
Surplus	8
Change from Last Week	0

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports. These reports are available through <http://www.nass.usda.gov/Publications/>.

Topsoil Moisture

Topsoil Moisture Percent Short to Very Short Week Ending - June 17, 2018



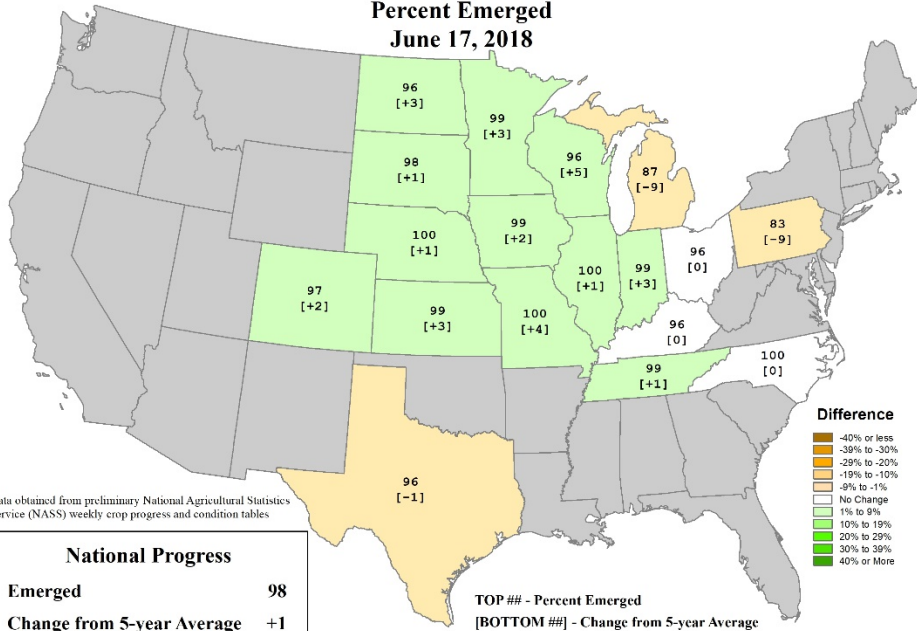
48 States	
Short to Very Short	34
Change from Last Week	+2

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports. These reports are available through <http://www.nass.usda.gov/Publications/>.

- 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

U.S. Corn Progress

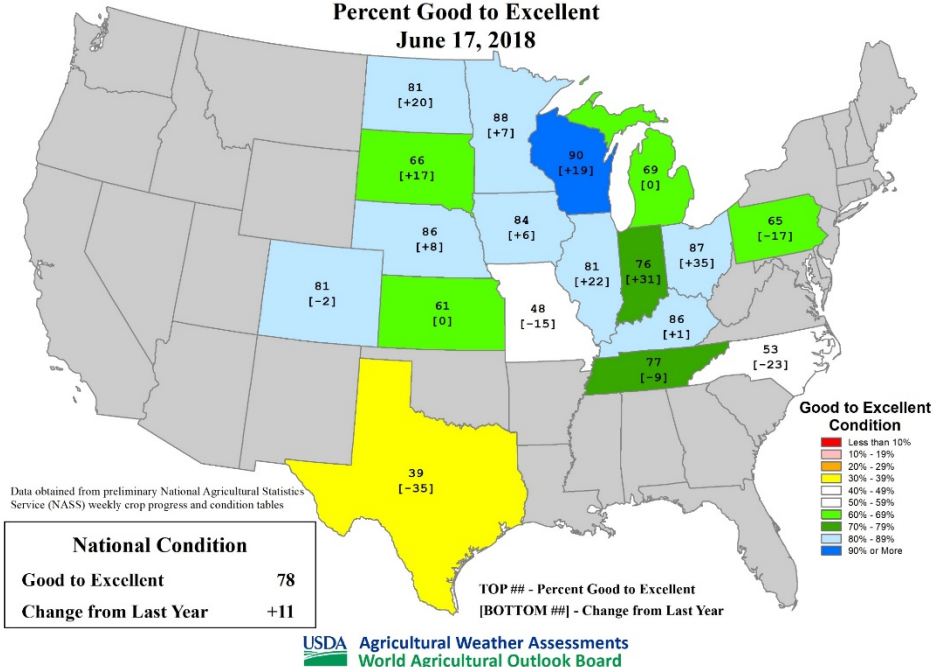
Percent Emerged
June 17, 2018



Corn Progress

U.S. Corn Conditions

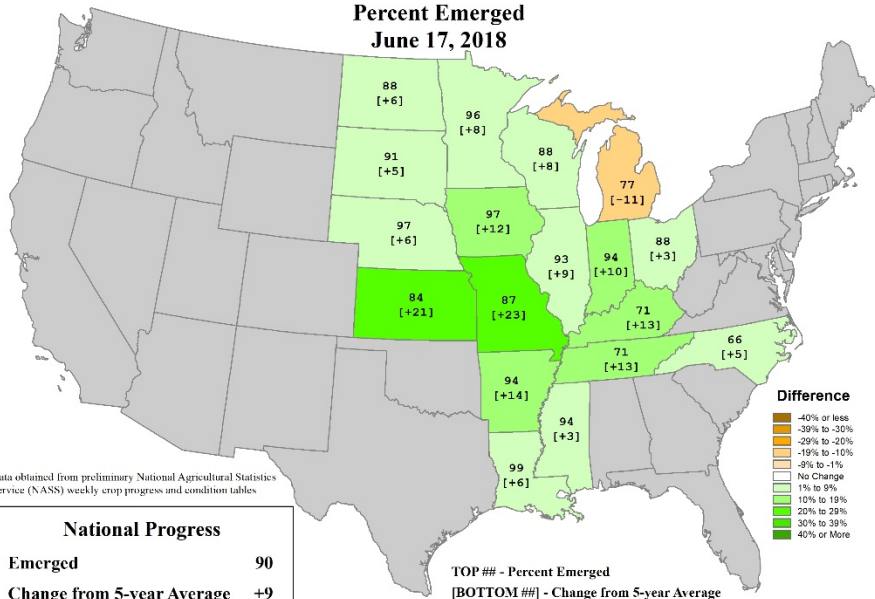
Percent Good to Excellent
June 17, 2018



- 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

U.S. Soybeans Progress

Percent Emerged
June 17, 2018



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

National Progress	
Emerged	90
Change from 5-year Average	+9

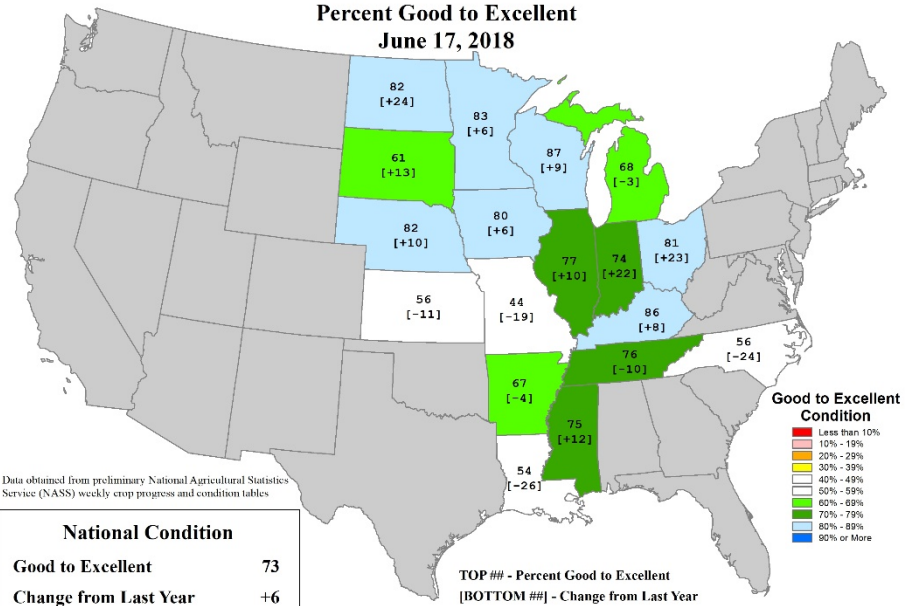
USDA Agricultural Weather Assessments
World Agricultural Outlook Board

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

U.S. Soybean Conditions

Percent Good to Excellent
June 17, 2018



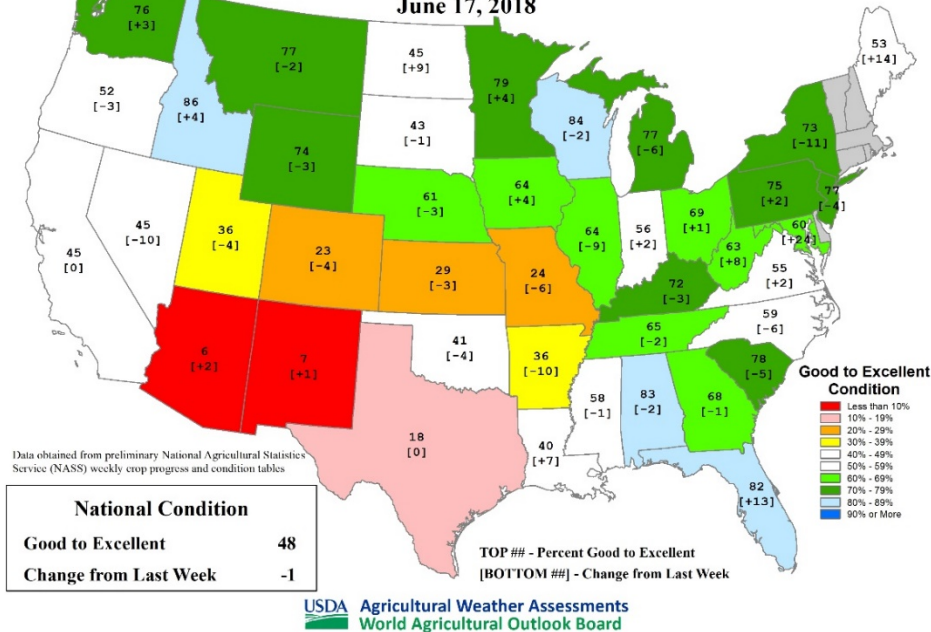
Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Condition	
Good to Excellent	73
Change from Last Year	+6

USDA Agricultural Weather Assessments
World Agricultural Outlook Board

U.S. Pasture and Range Conditions

Percent Good to Excellent
June 17, 2018



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

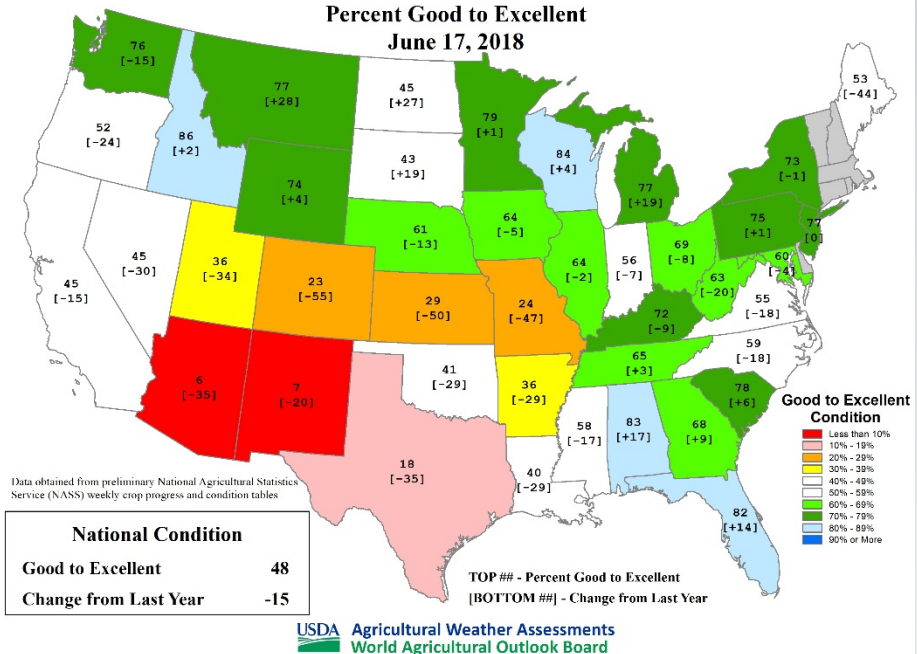
Pastureland

Left (Compared to Last Week)

- Good conditions across the north and east
- Deteriorating conditions from Colorado through Kansas and Missouri

U.S. Pasture and Range Conditions

Percent Good to Excellent
June 17, 2018



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



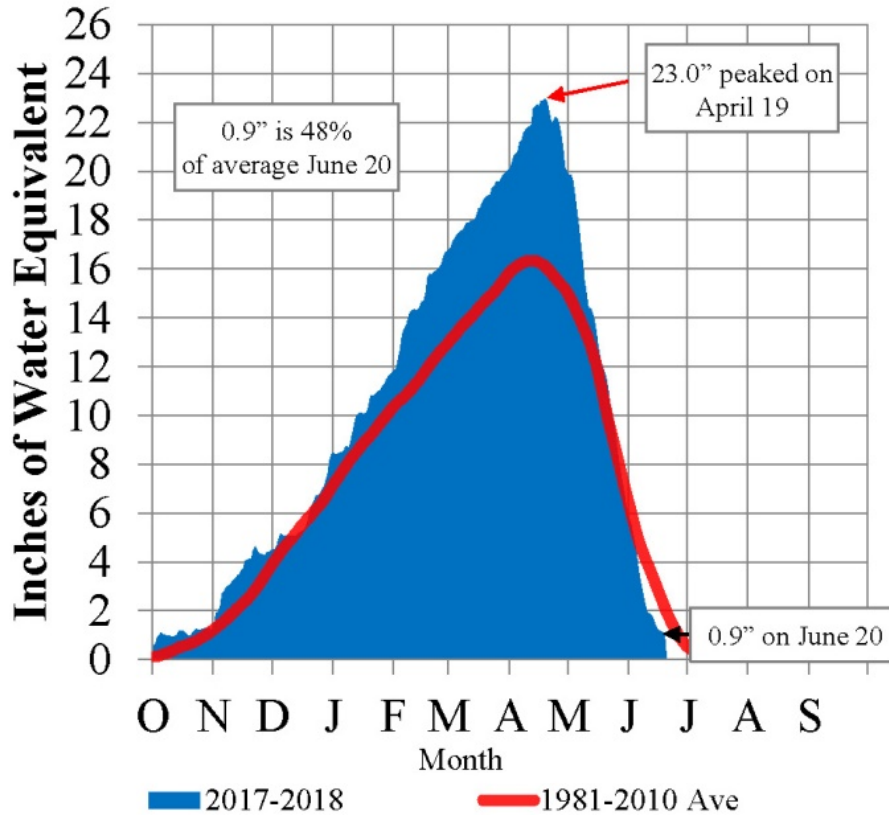
Photo: Maggie and Ryan Jett: 5 miles
SW of Aberdeen: NWS WFO

WATER/SNOW

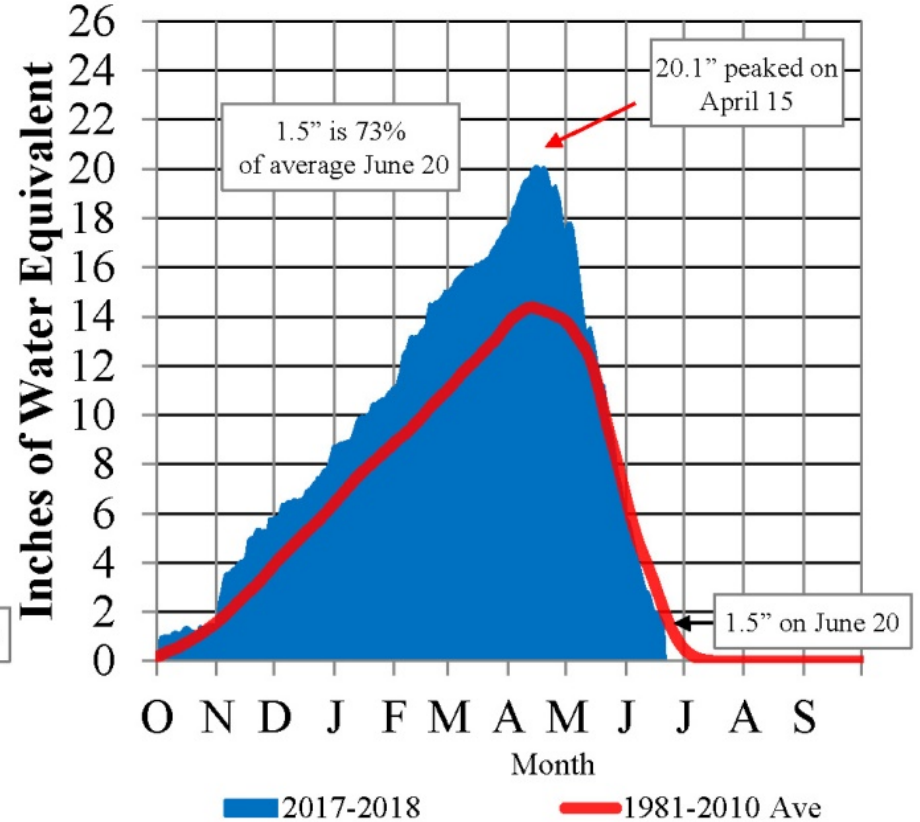
Mountain Snowpack

June 20, 2018

Total above Fort Peck



Total Fort Peck to Garrison

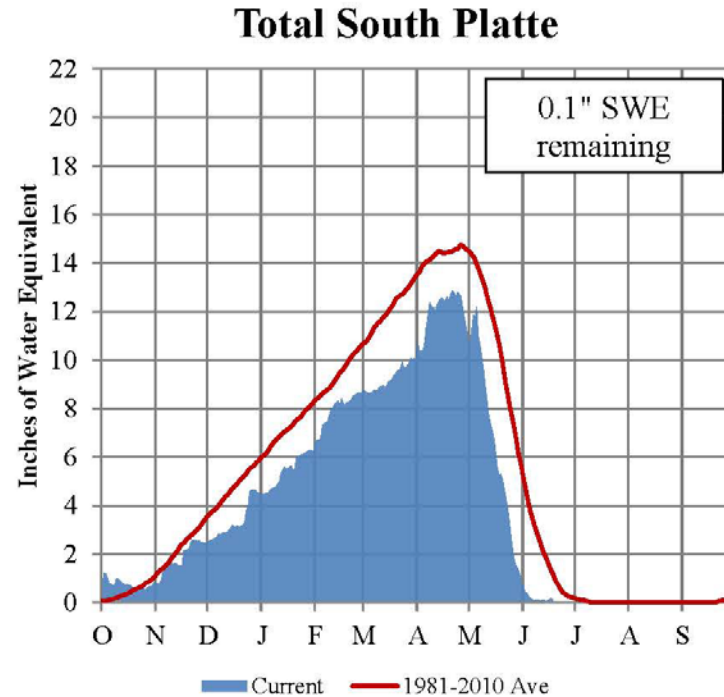
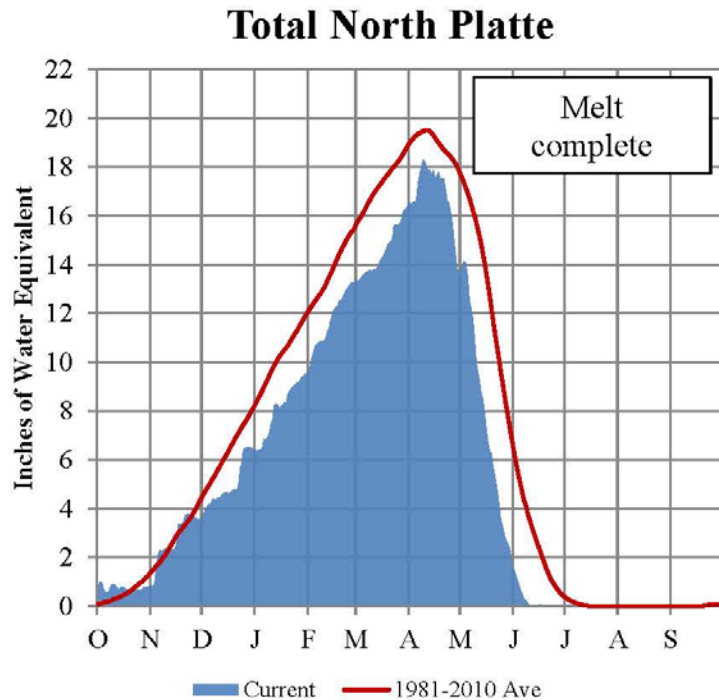


Normally by April 15 the peak mountain SWE has peaked in both reaches.

Source: USDA-NRCS

Platte River Basin - Mountain Snowpack Water Content Water Year 2017-2018

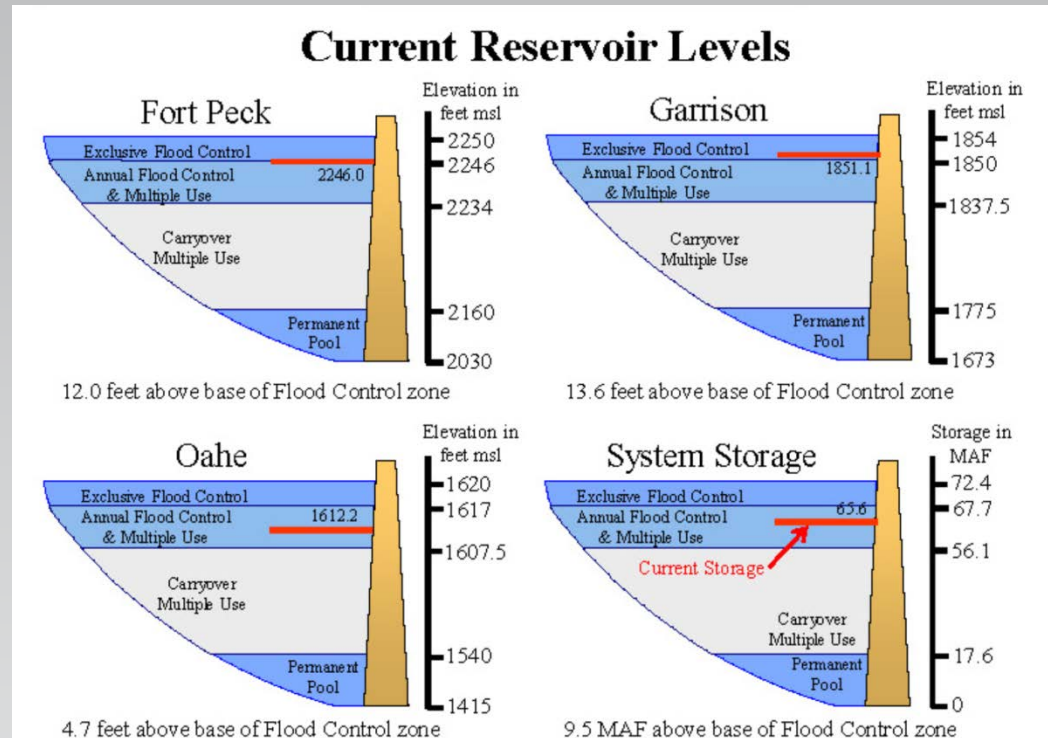
June 19, 2018



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.

Runoff and Reservoirs

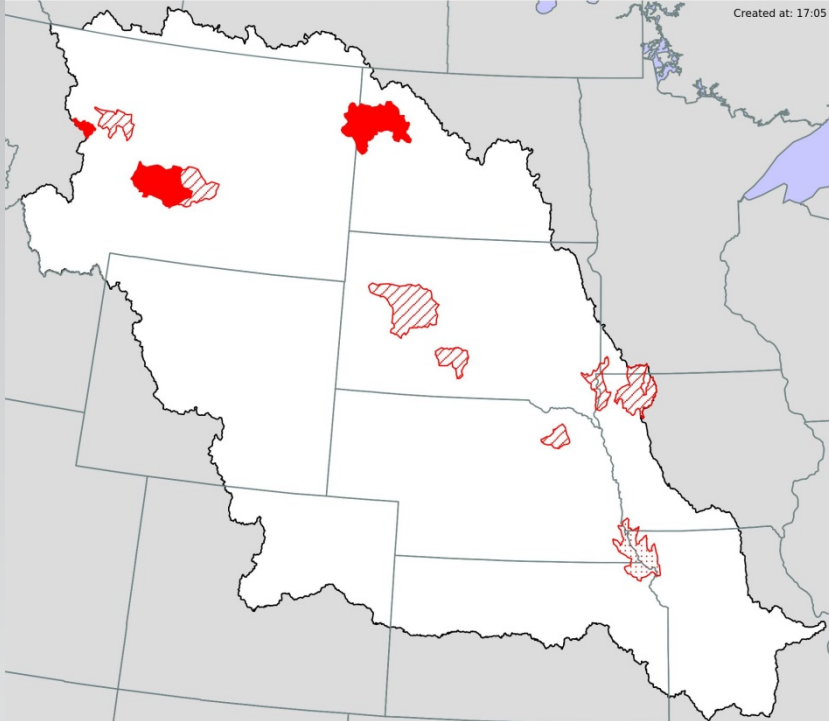
- More than 90% of snow has melted in both reaches.
- Runoff into Fort Peck and Garrison Reservoirs will continue over the next couple of week.
- Higher-than-average releases (ongoing for last several months) will continue.
- "Releases are being stepped up from 52,000 cfs to 60,000 cfs," by June 23."
- 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


Significant River Flood Outlook
 Missouri Basin River Forecast Center
 Valid: 06/20/2018 - 06/25/2018

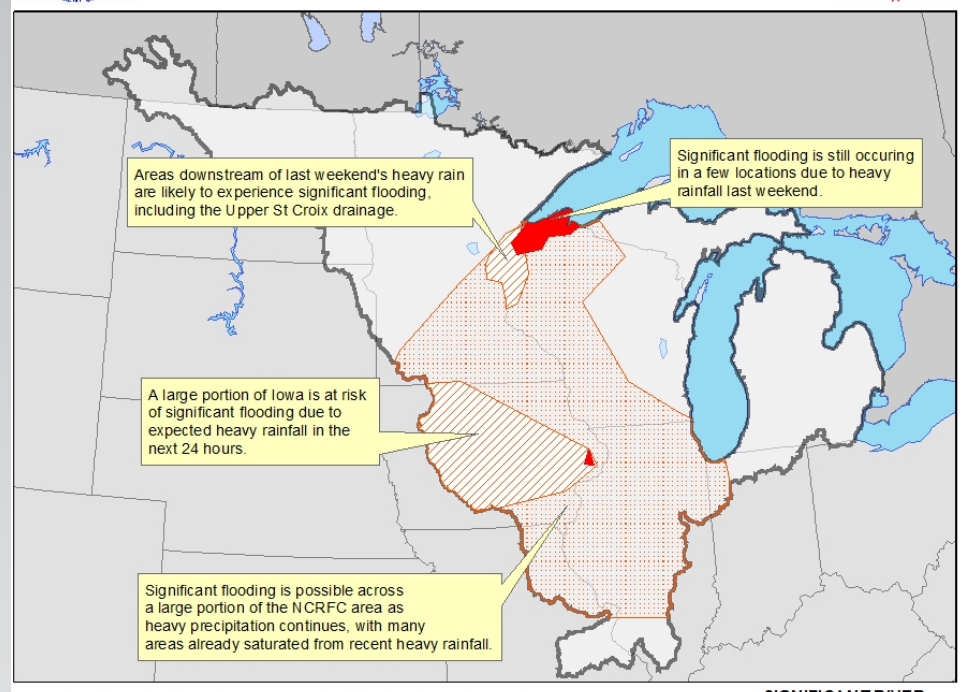






 SIGNIFICANT FLOODING IS POSSIBLE
  SIGNIFICANT FLOODING IS LIKELY
  SIGNIFICANT FLOODING IS OCCURRING OR IMMINENT

Significant River Flooding - Impacts include:
 - Roads adversely affected
 - Residential, commercial, industrial, or agricultural areas affected
 - May require evacuation of people

NOTE: Flash flooding or minor river flooding will NOT be included in this outlook.


Significant River Flood Outlook
 Valid: 6/20/2018 - 6/25/2018
 North Central River Forecast Center 6/20/2018 2:01:02 PM

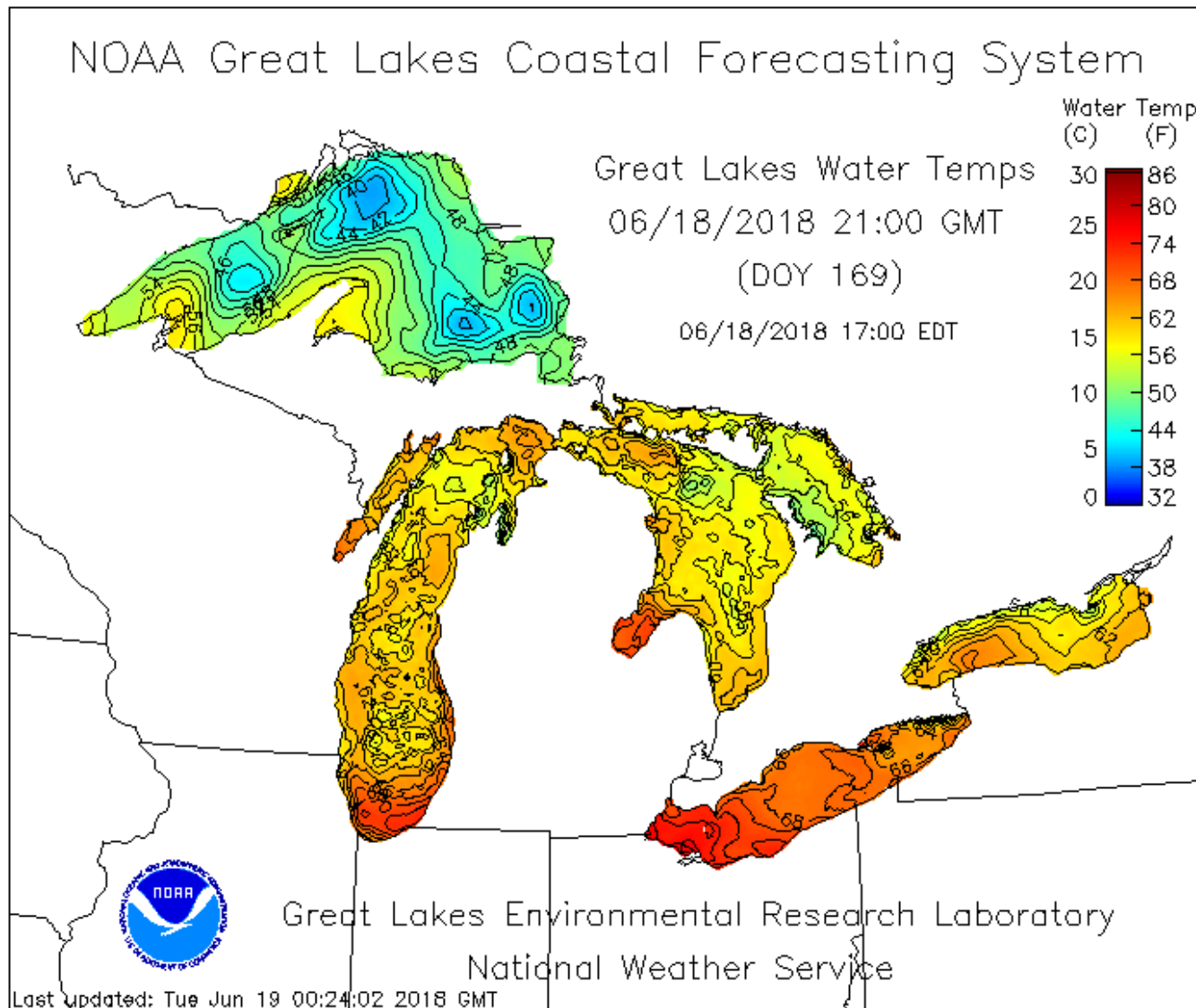



 SIGNIFICANT RIVER FLOODING POSSIBLE.
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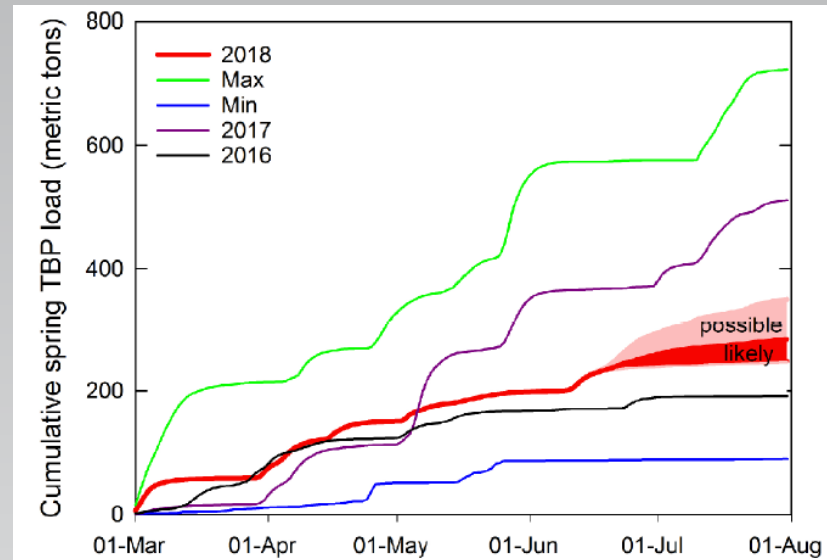
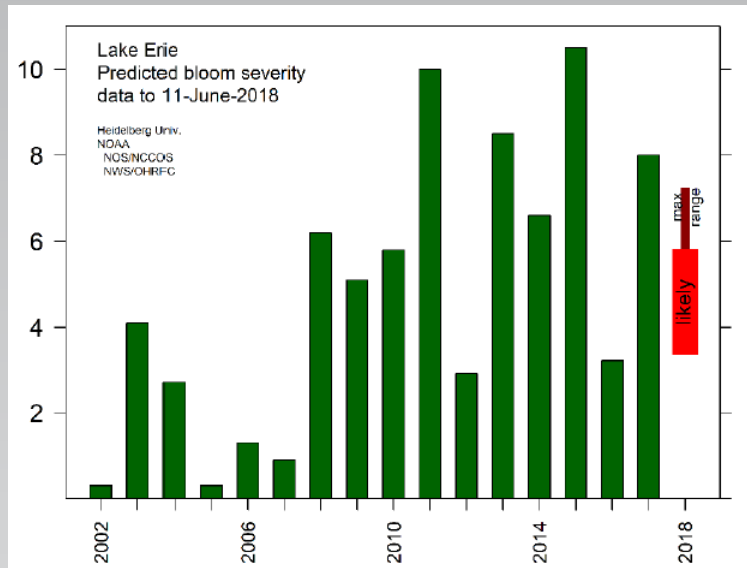
Significant River Flooding Impacts include:
 Roads adversely affected. Residential, commercial, industrial, and/or agricultural areas affected. May require evacuation of people.

NOTE: Flash Flooding or Minor River Flooding will NOT be included in this outlook.

Great Lakes Temperatures



Lake Erie and Harmful Algal Blooms (HABs)

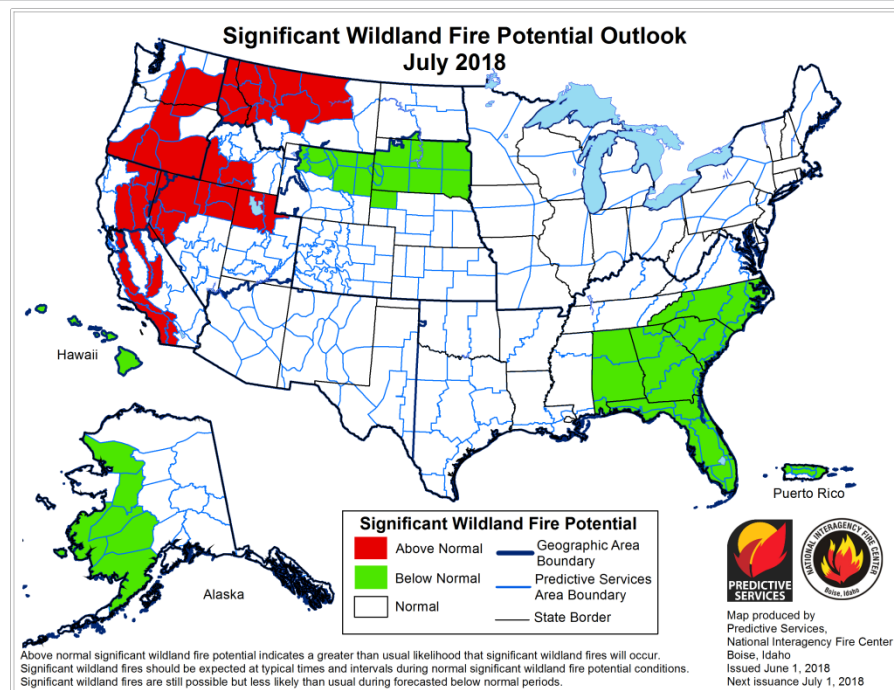


- Based on a combination of measurements through June 11 and river forecasts through July
- Greater than the mild 2016 bloom , but smaller than in 2017.



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>

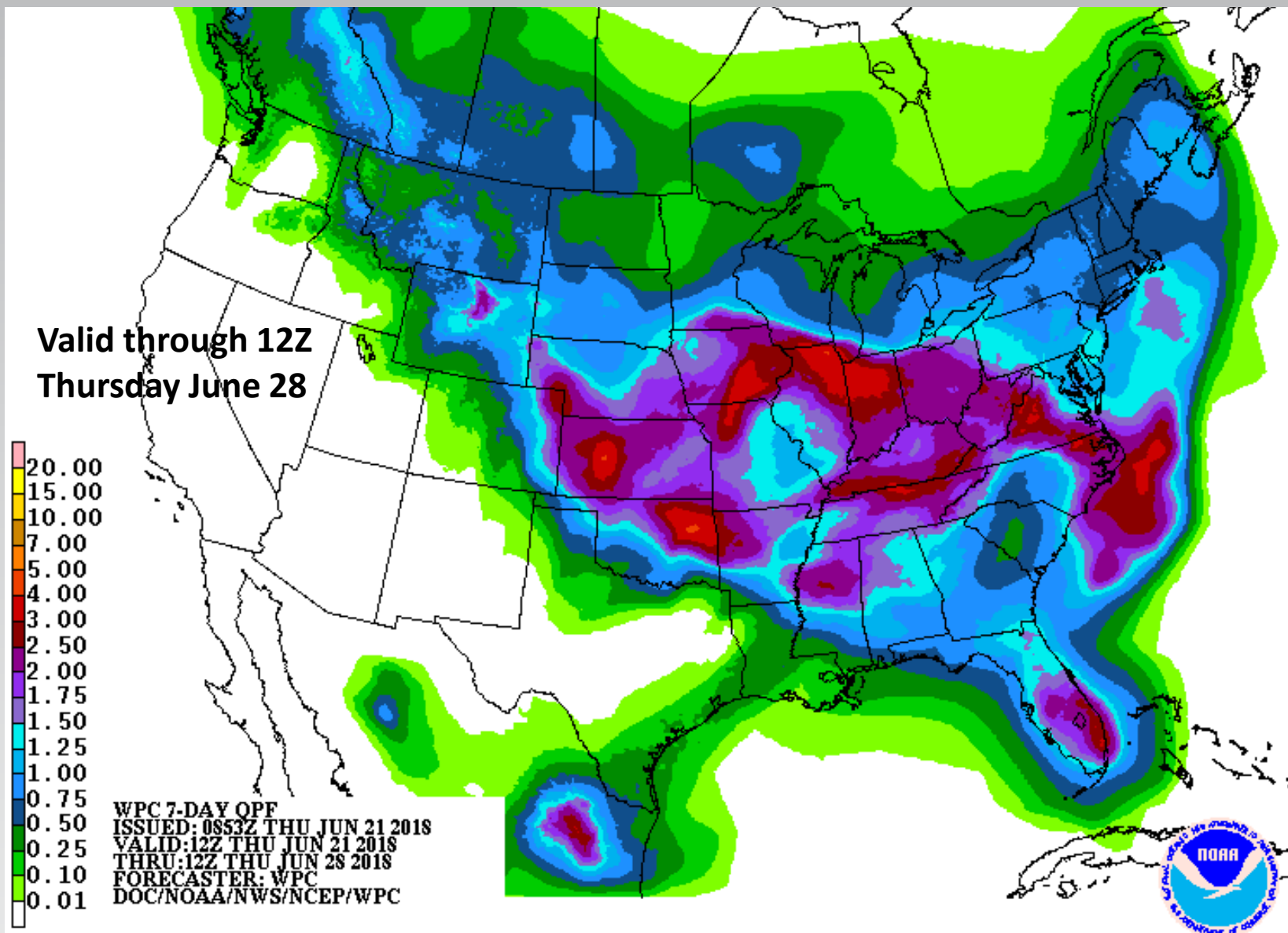
OUTLOOKS



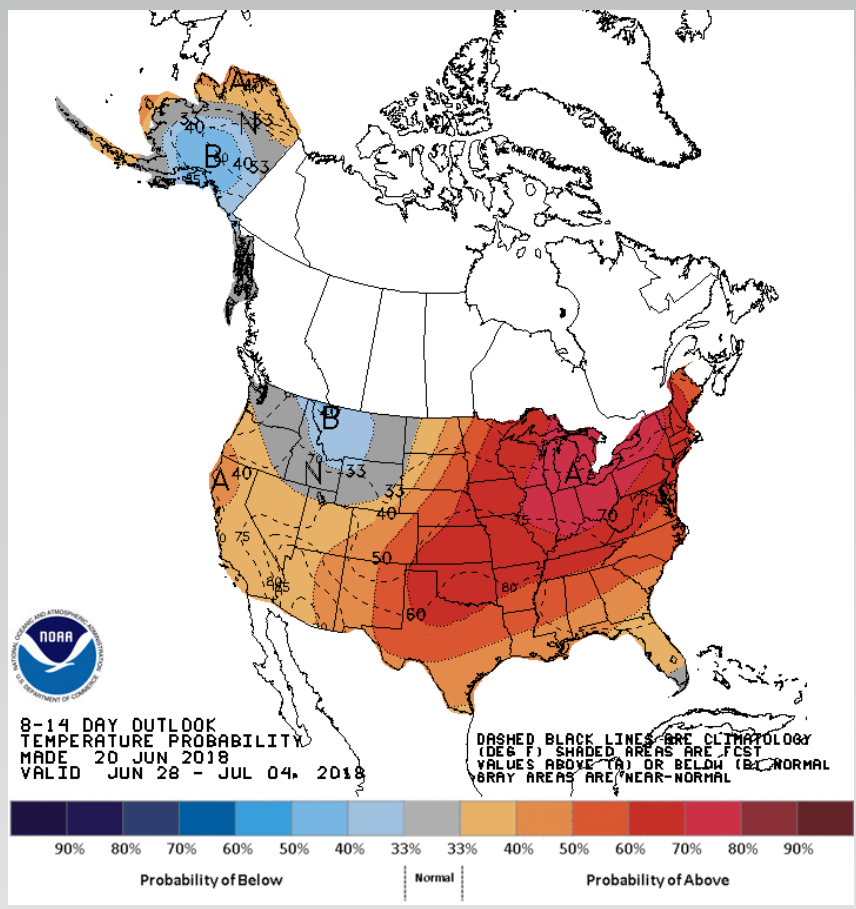
Outlooks

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

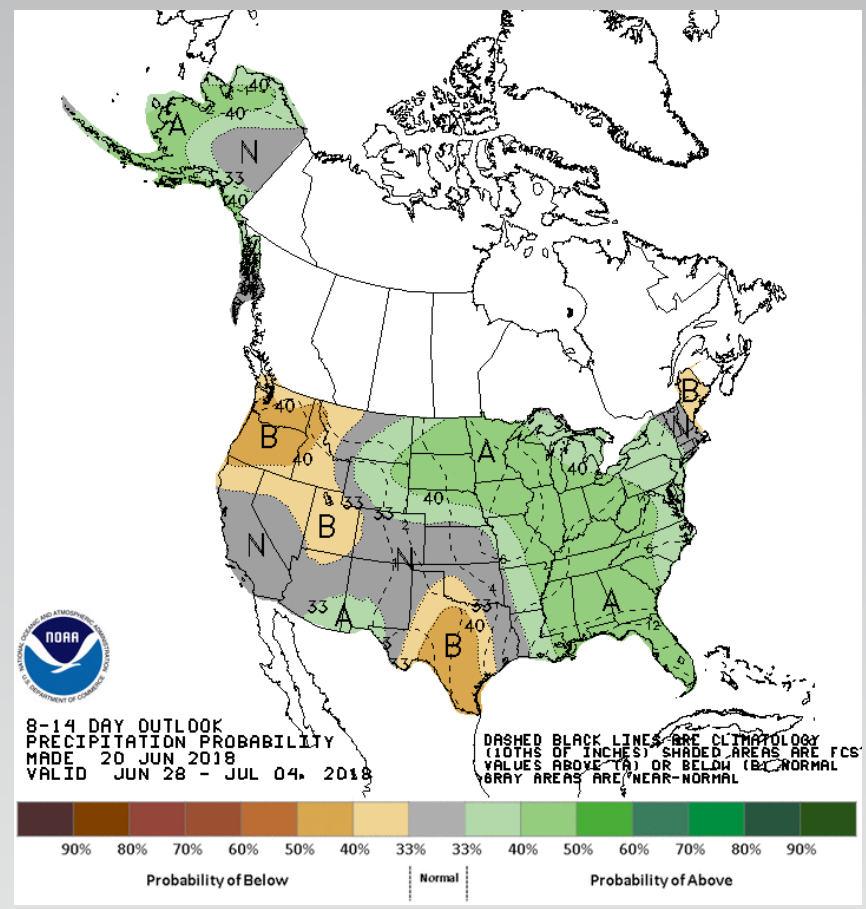
7-Day Quantitative Precipitation Forecast



Temperature and Precipitation Probabilities for June 28 – July 4

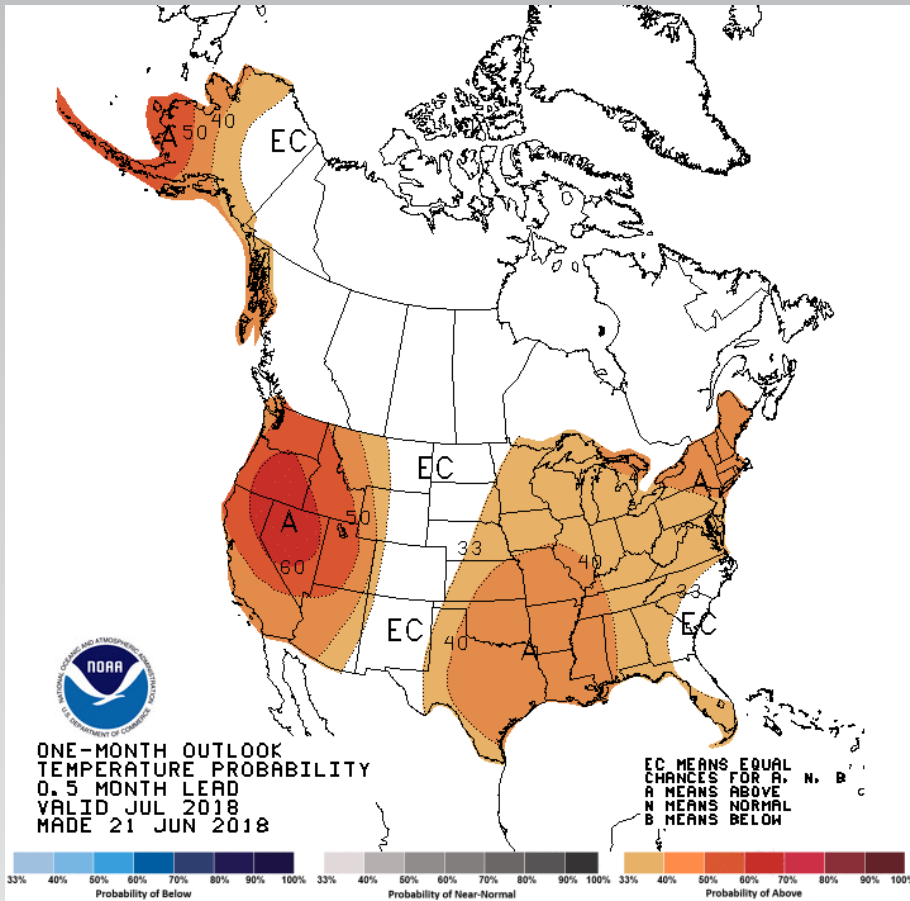


Temperature

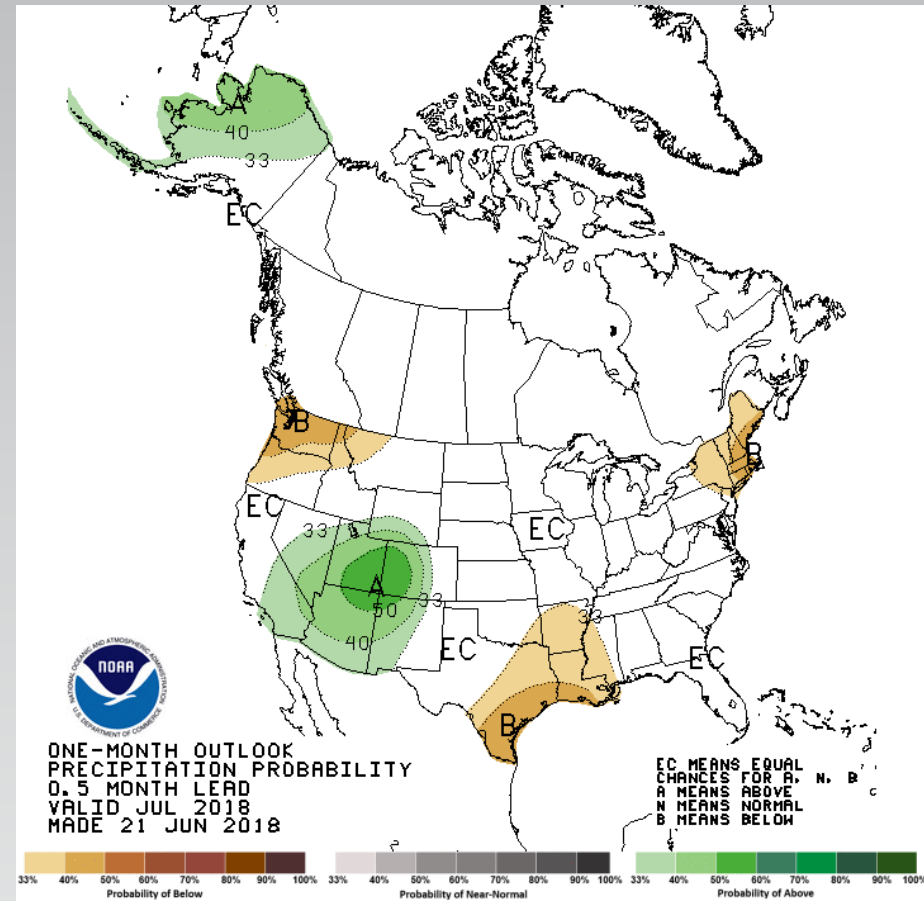


Precipitation

July Temperature and Precipitation Probabilities

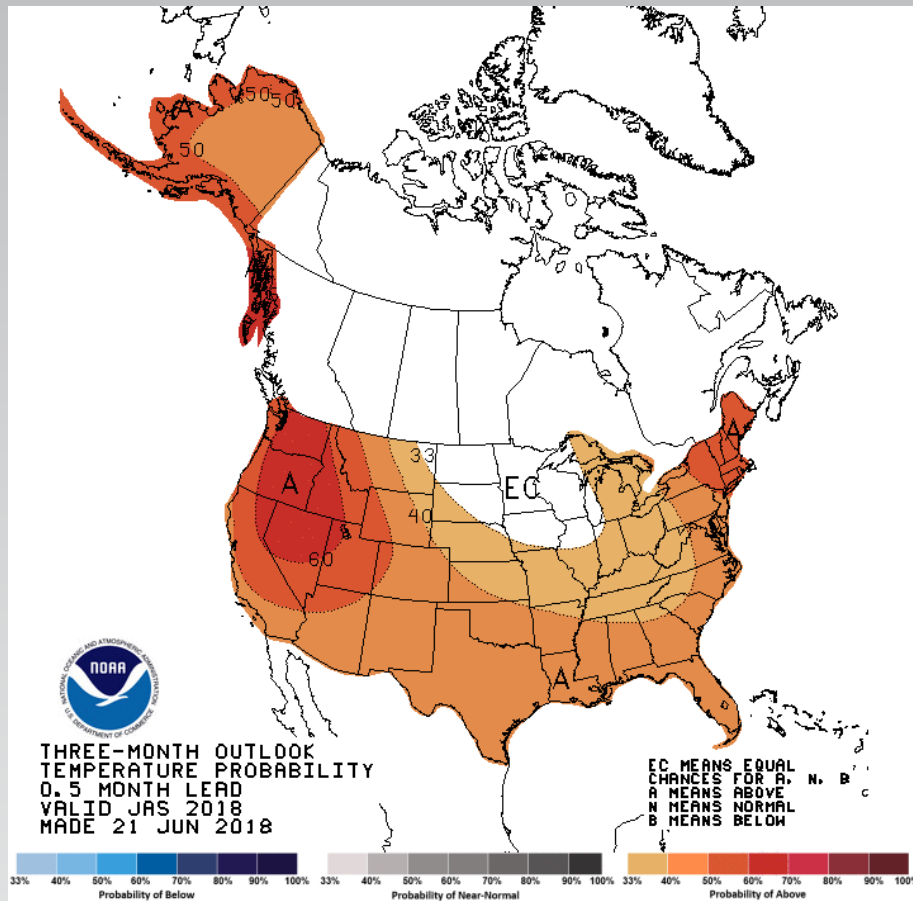


Temperature

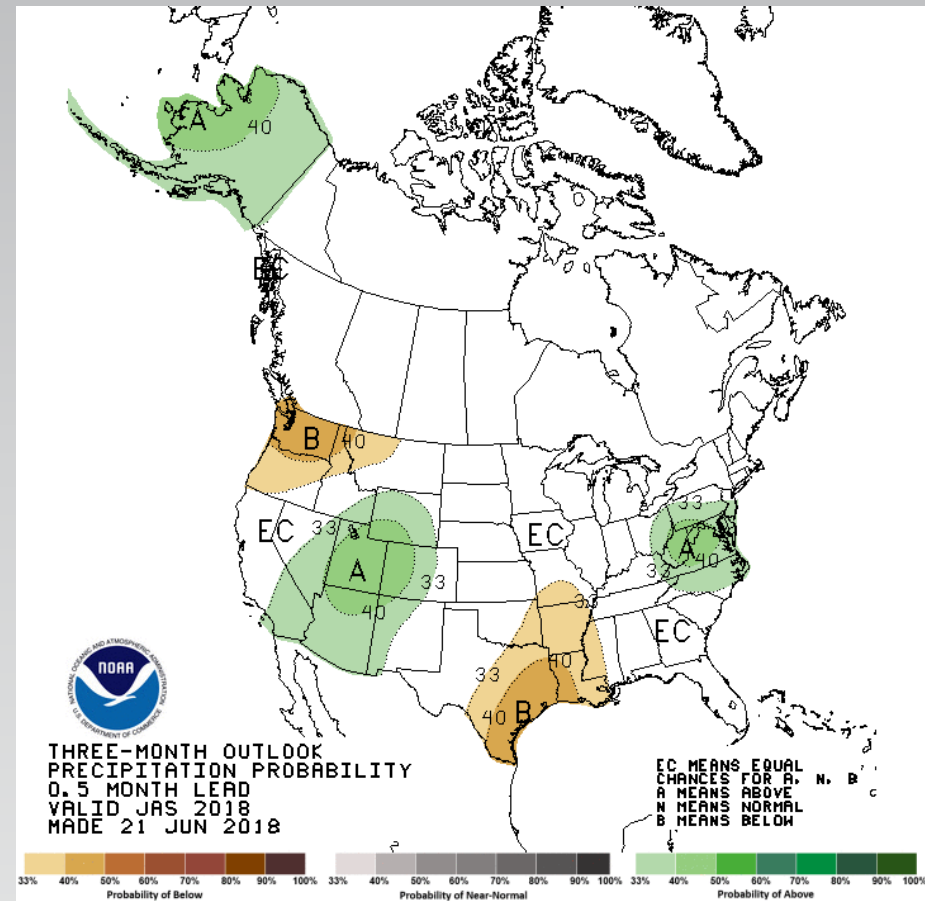


Precipitation

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

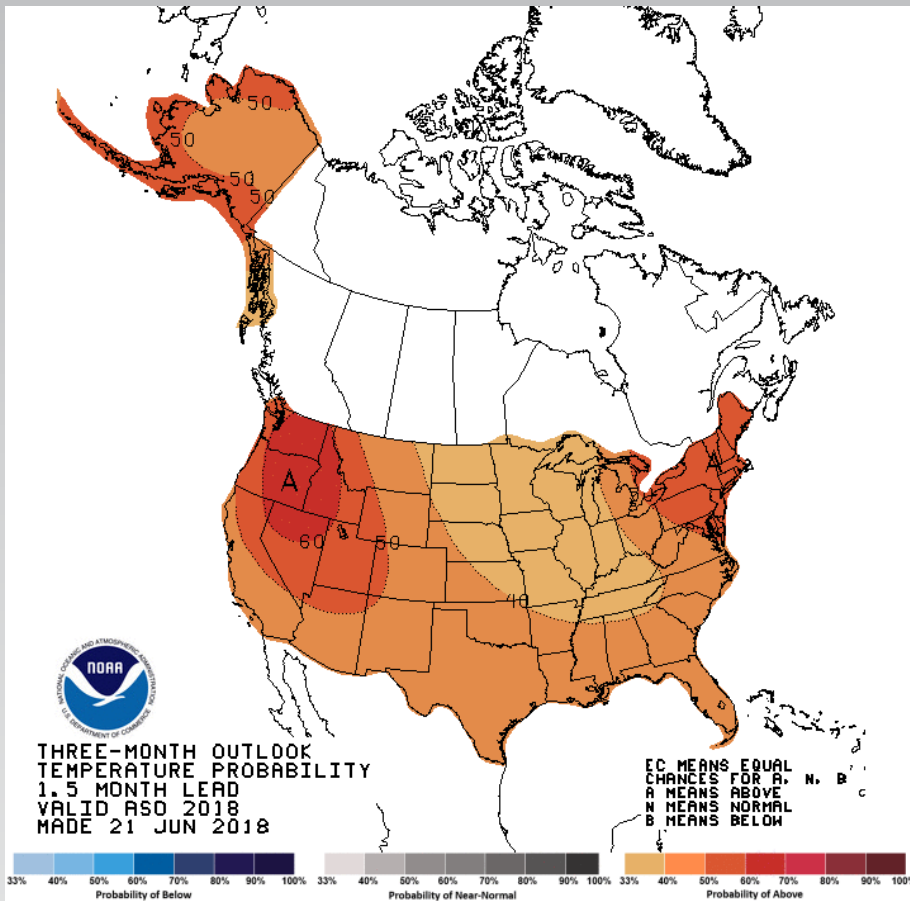


Temperature

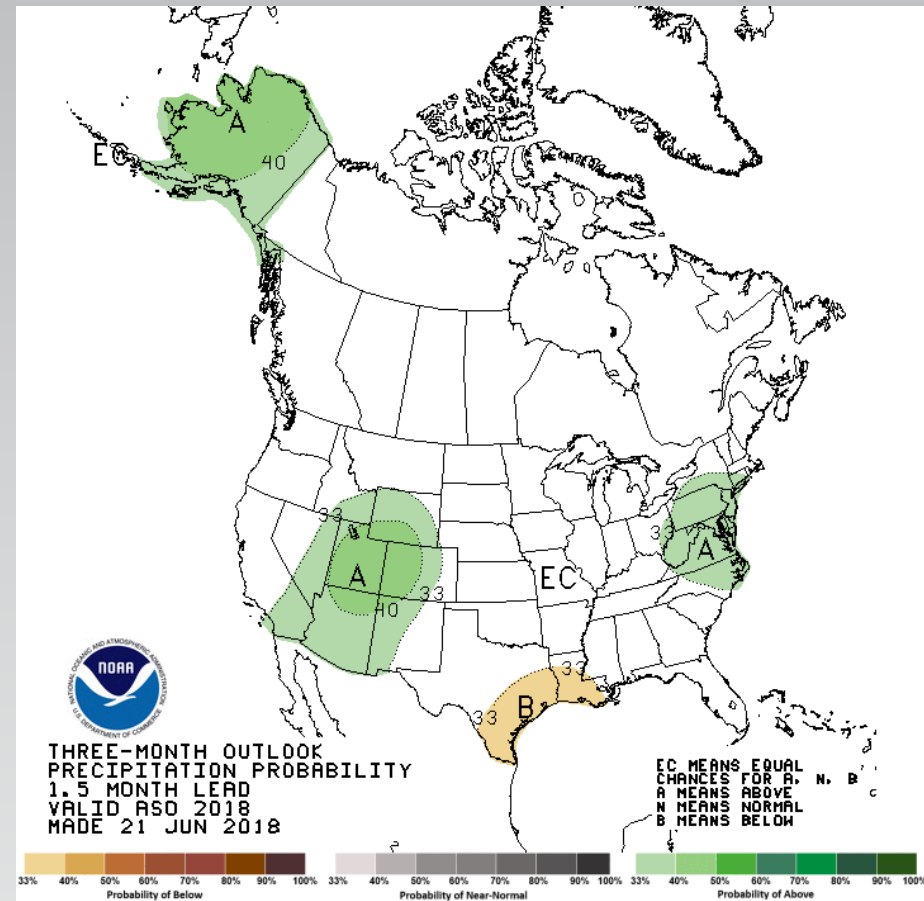


Precipitation

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



Temperature

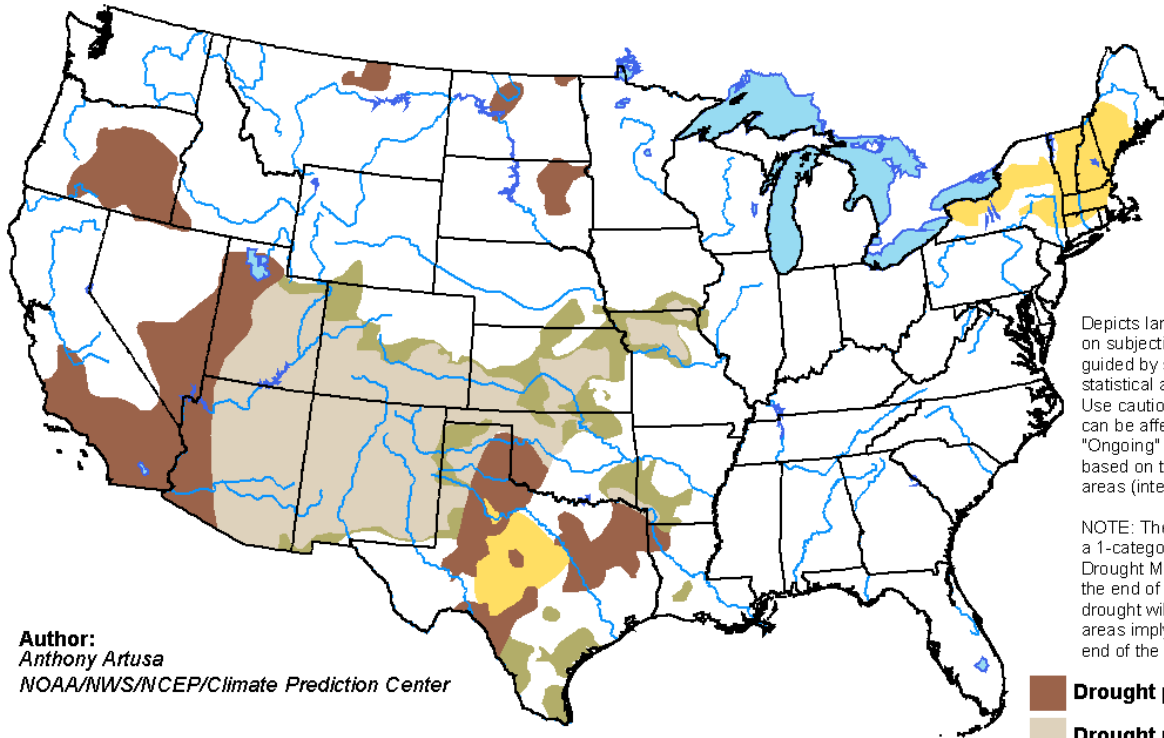


Precipitation

Drought Outlook through September 30

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



Valid for June 21 - September 30, 2018
Released June 21, 2018

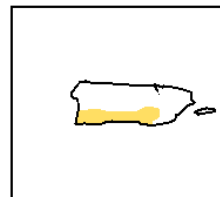
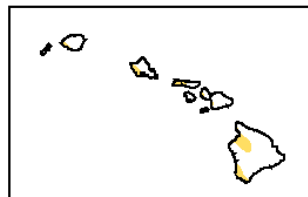
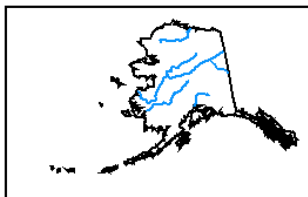


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
Anthony Artusa
NOAA/NWS/NCEP/Climate Prediction Center

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

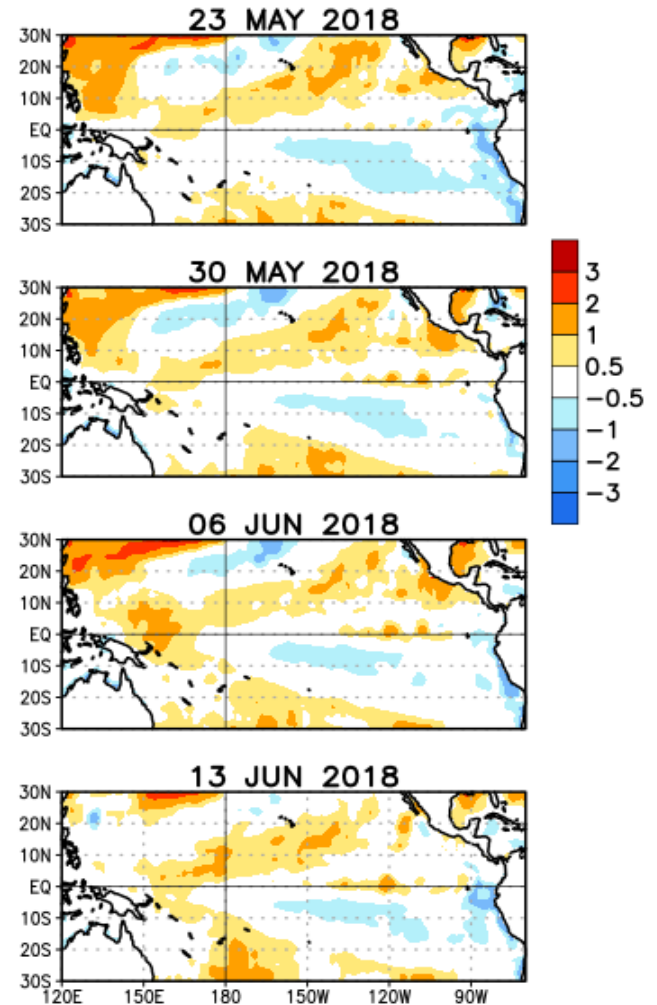


<http://go.usa.gov/3eZ73>

Weekly SST Departures during the Last Four Weeks

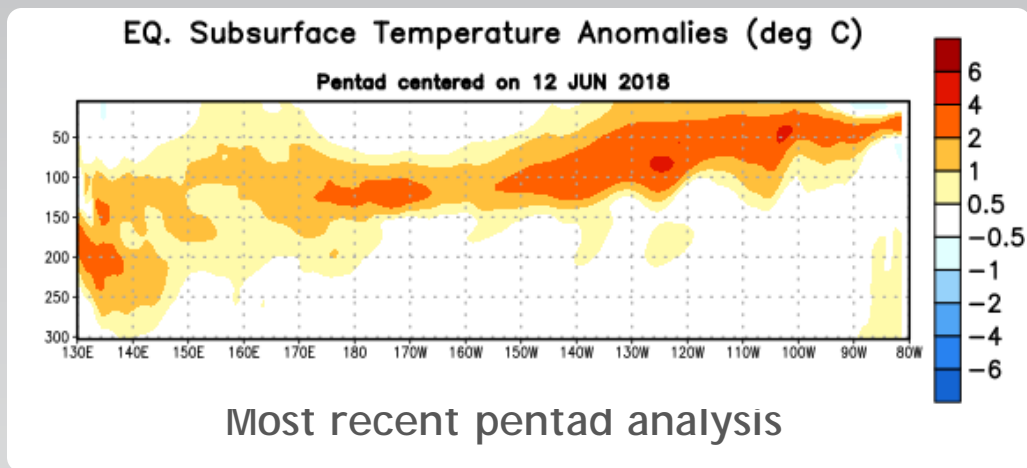
During the last four weeks, slightly above average SSTs emerged in the east-central equatorial Pacific Ocean. Positive SST anomalies have persisted in the western Pacific, while negative anomalies have mostly persisted near South America.

Weekly SST Anomalies (DEG C)

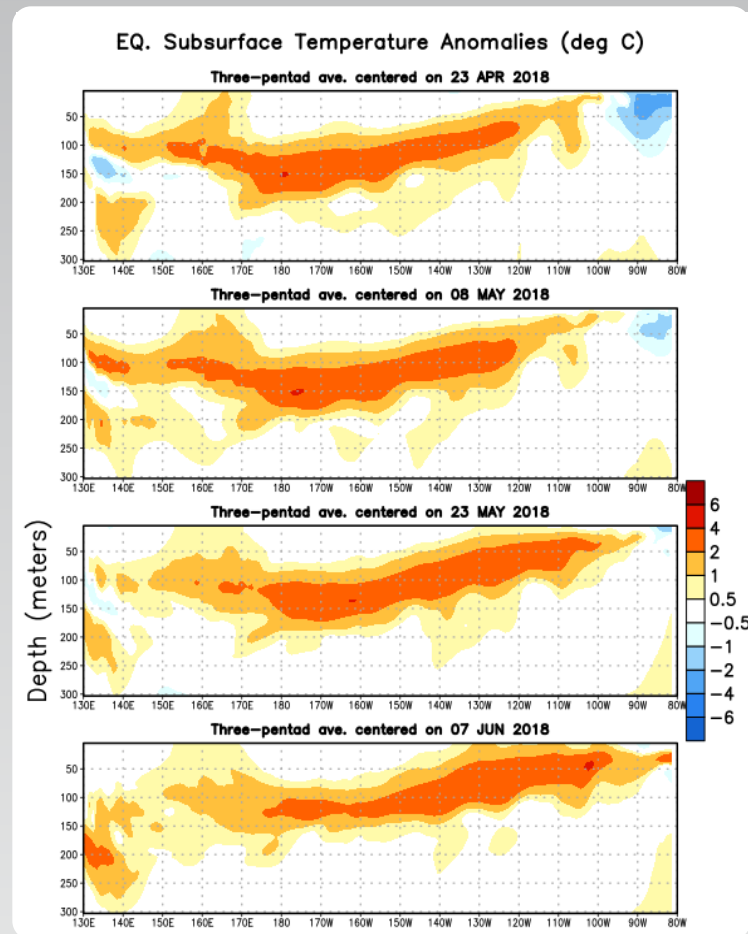


Sub-Surface Temperature Departures in the Equatorial Pacific

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



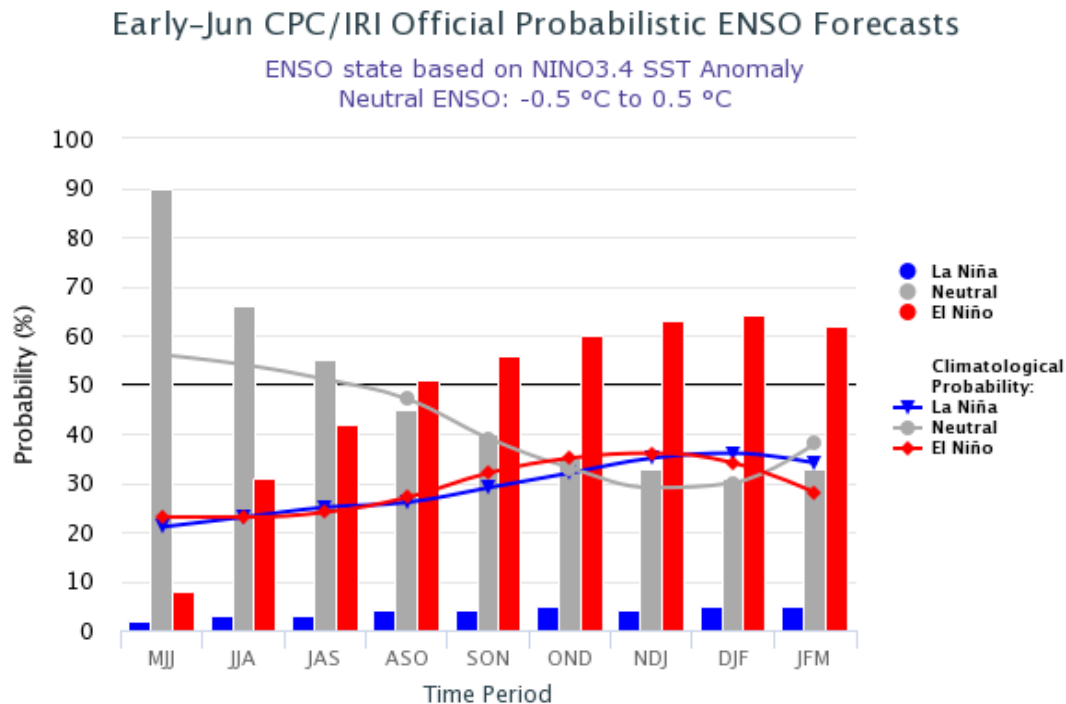
Negative temperature anomalies in the far eastern Pacific have dissipated.



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:**

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