North Central U.S. Climate Summary and Outlook Webinar

December 19, 2019

Vince Godon: Corn dryer in operation near Stephen, MN

Vince Godon: Harvesting soybeans after freeze near Oslo, MN

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National Drought Mitigation Center

United States Department of Agriculture
Midwest Climate Hub

General Information

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

- **Next Climate/Drought Outlook Webinar**
  - Thursday, Jan 16, 2020: TBD

- **Access to Future Climate Webinars & Past Recordings can be found here:**
  - http://mrcc.isws.illinois.edu/multimedia/webinars.jsp
  - http://www.hprcc.unl.edu/webinars.php

- **Open for questions at the end**

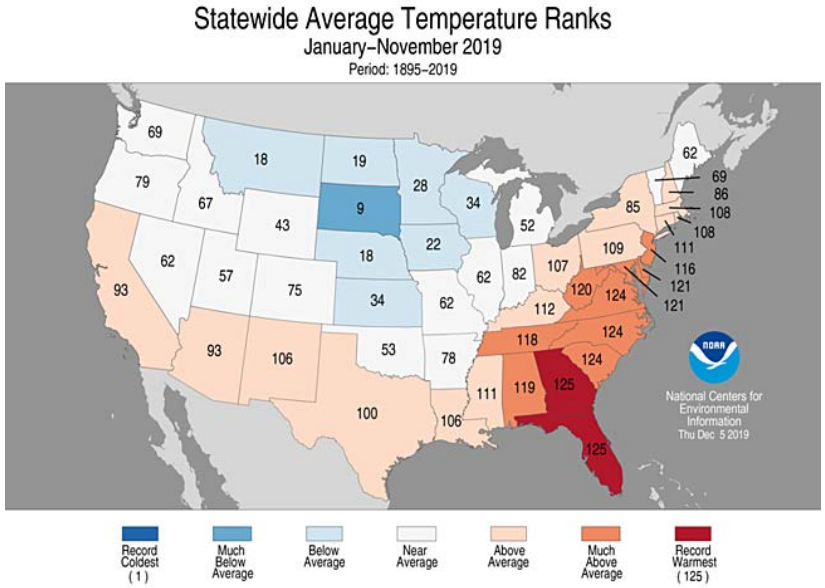
Agenda

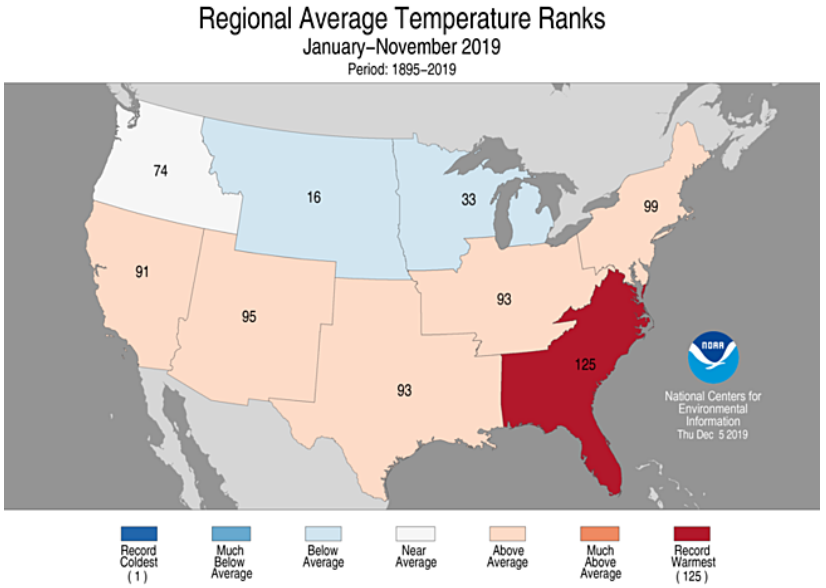
- ❑ Jan-Nov and Autumn Recap
- ❑ November Conditions
- ❑ Snow/Water/Flood/Drought
- ❑ Agriculture
- ❑ State Impacts
- ❑ Climate Outlooks
- ❑ Summary
- ❑ Questions/Comments

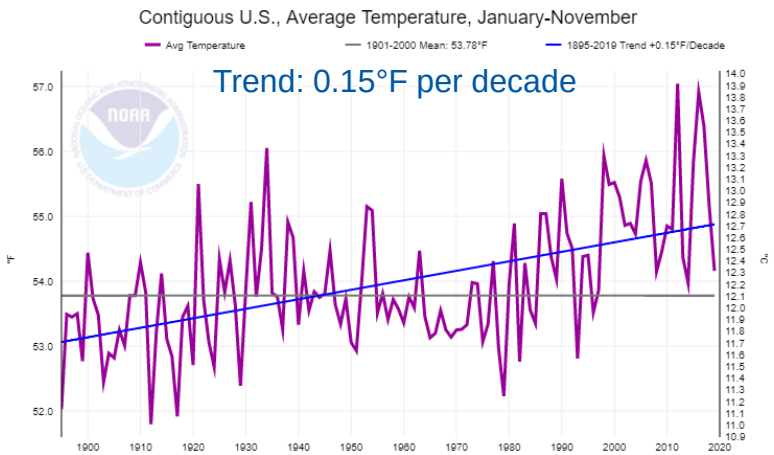
Jan-Nov Recap

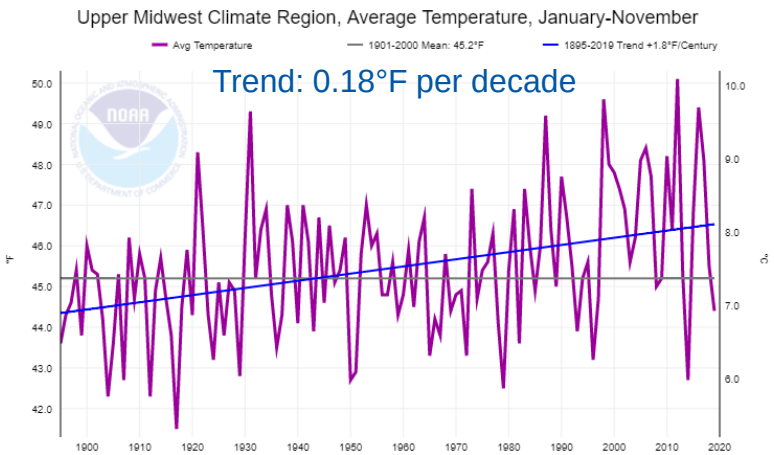
U.S. Jan-Nov Temperature
0.4°F above the 20th century average
45th Warmest since 1895.

Midwest Jan-Nov temperature
33rd Coolest since 1895
Coolest since 2014





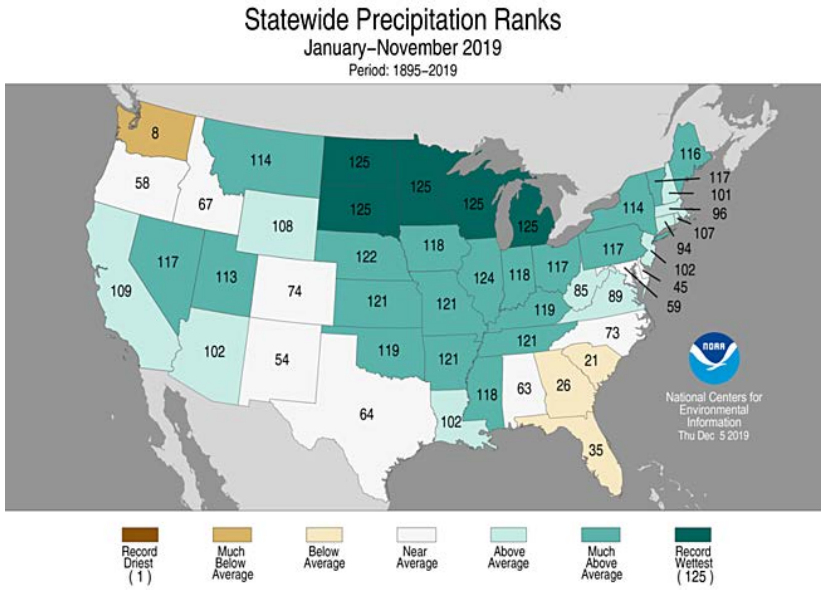


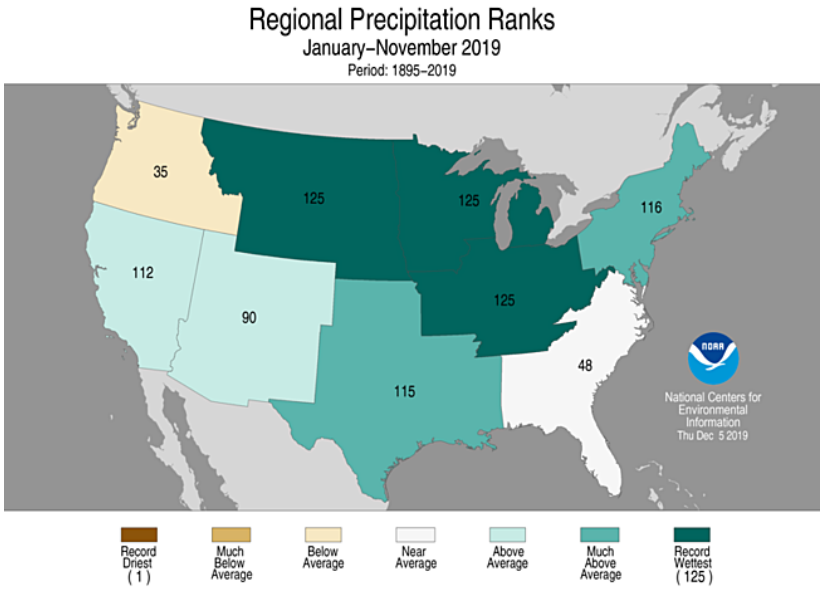


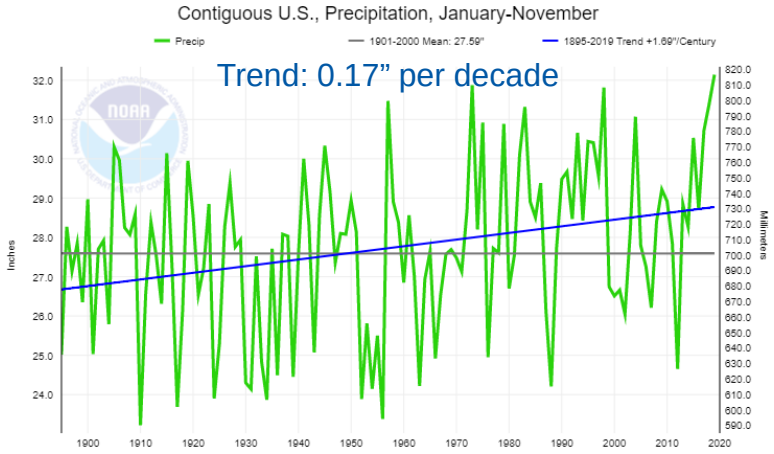
https://www.ncdc.noaa.gov/sotc/national/201911

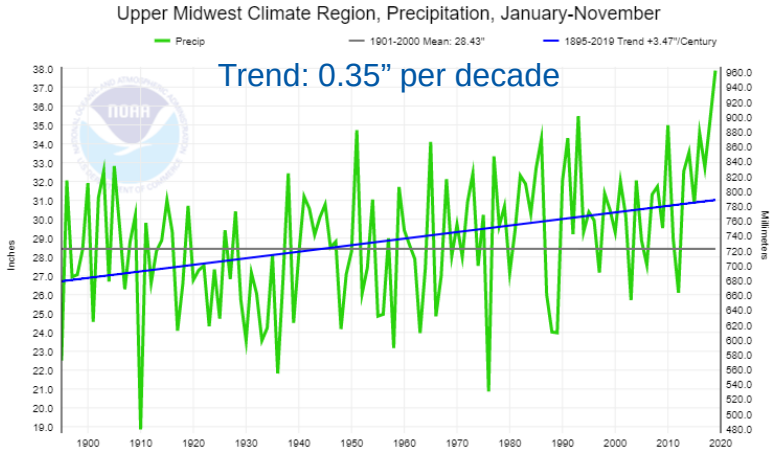
U.S. Jan-Nov Temperature
4.55” above the 20th century average
The wettest since 1895

Midwest Jan-Nov temperature
The wettest since 1895
Exceeds the old record in 1993 by 2.41”









https://www.ncdc.noaa.gov/sotc/national/201911

Record Breaking Year for the Region

State	Number of Stations Breaking the Annual Precipitation Accumulation Records
WI	25
IL	16
MN	15
MI	5
MO	5
IA	1
IN	1
KY	1
OH	1
Total	**70**

2019 annual accumulated precipitation of 54.28” for Rochester, MN already exceeded the previous record in 1990 by 10.34”

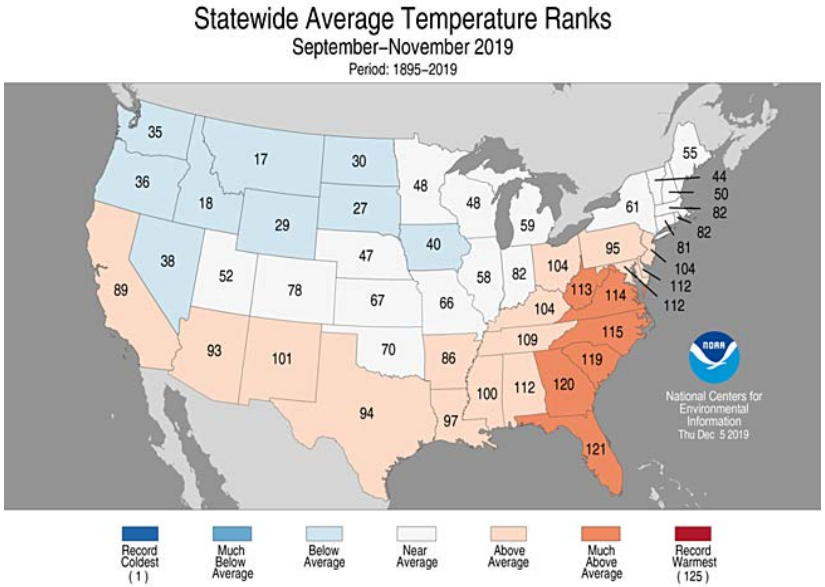
Rochester has been breaking a precipitation record since Sep 19.

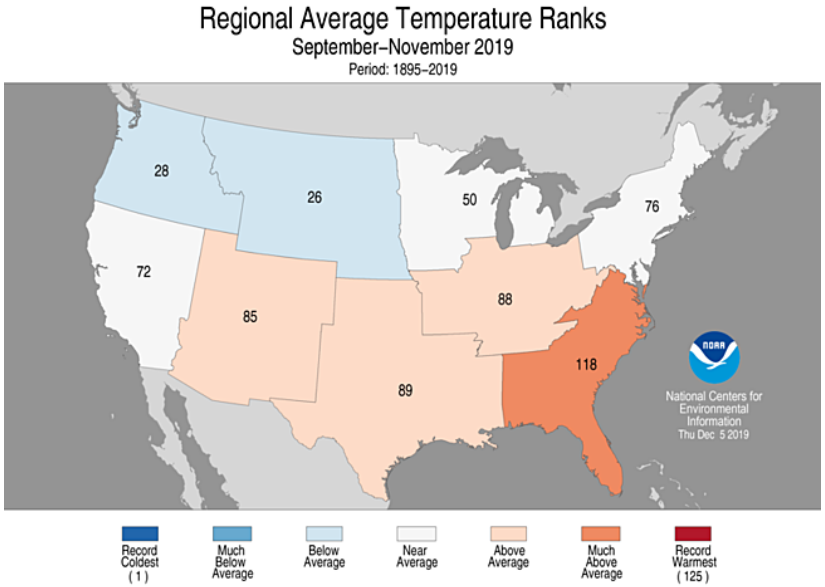
Autumn Recap

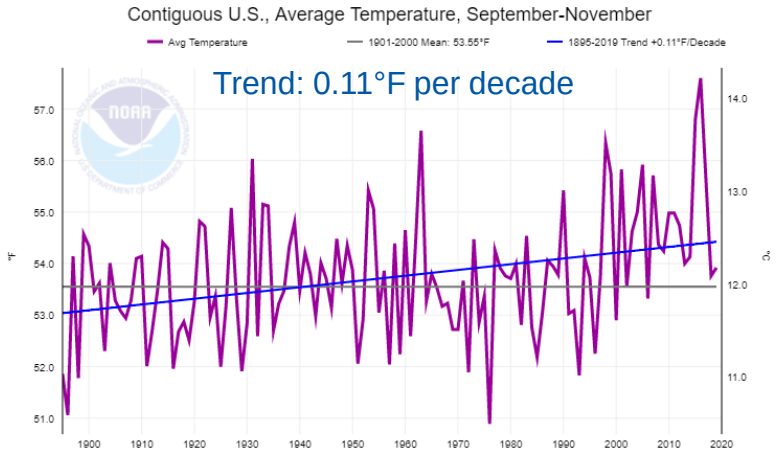
U.S. Sep-Nov Temperature
0.36°F above the 20th century average
52nd Warmest since 1895.

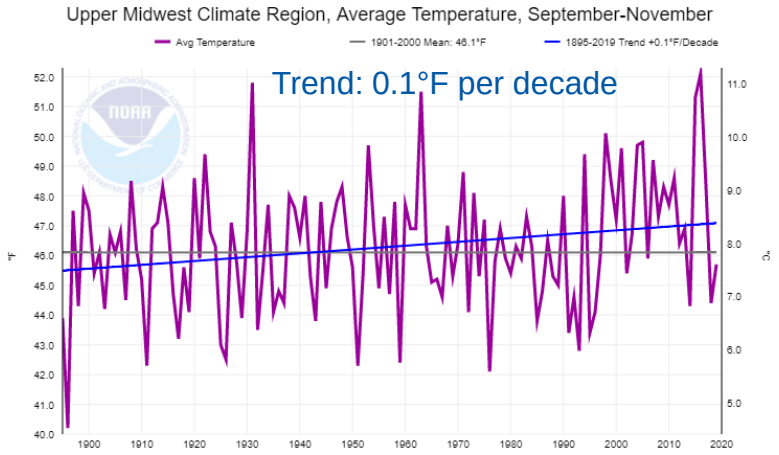
Midwest Sep-Nov temperature

50th Coolest since 1895.





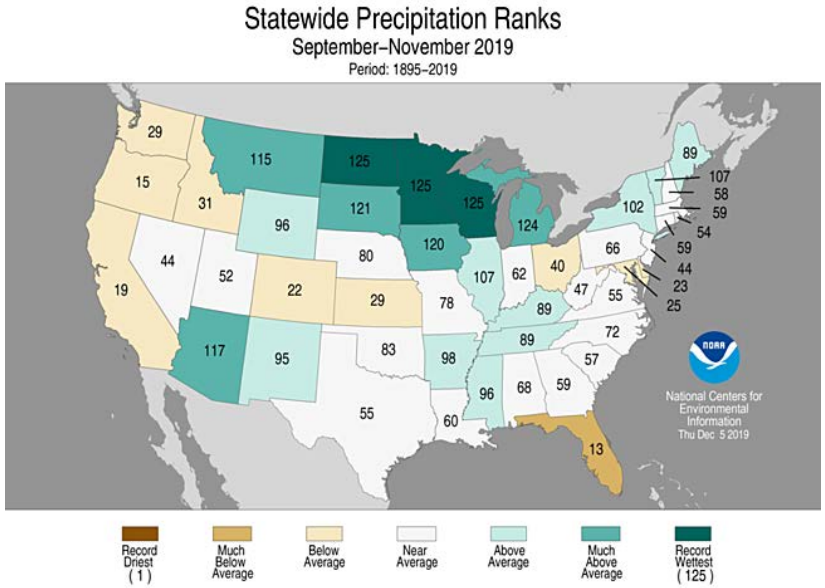


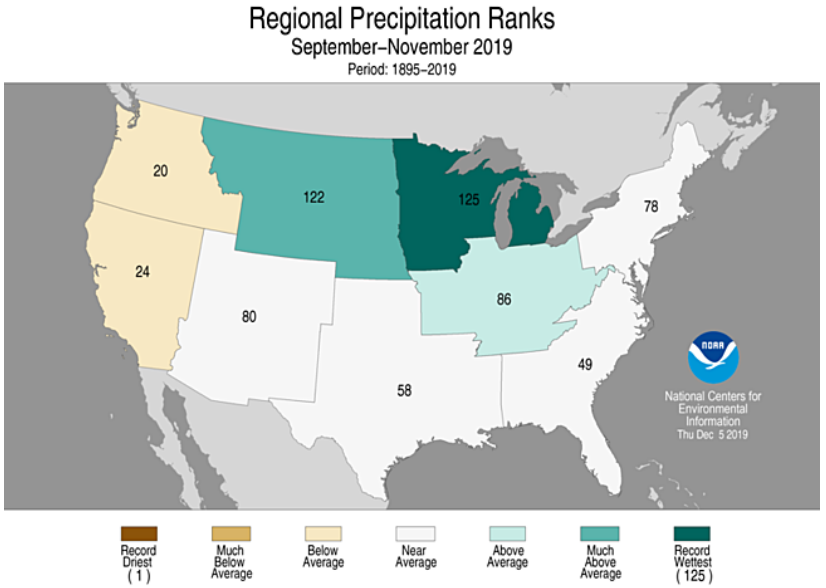


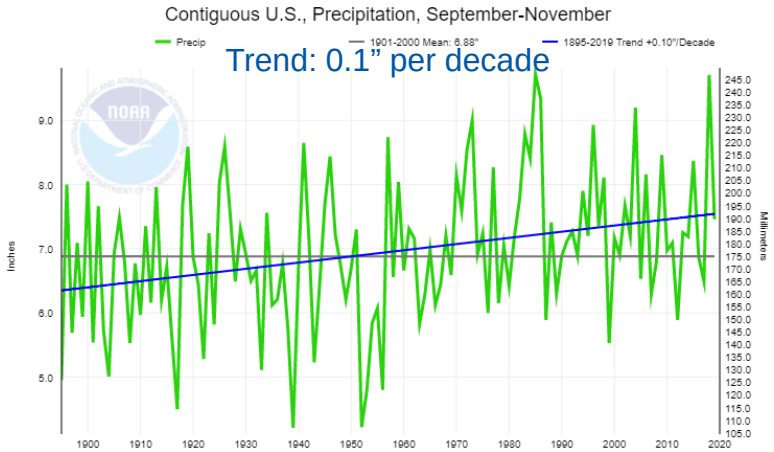
https://www.ncdc.noaa.gov/sotc/national/201911

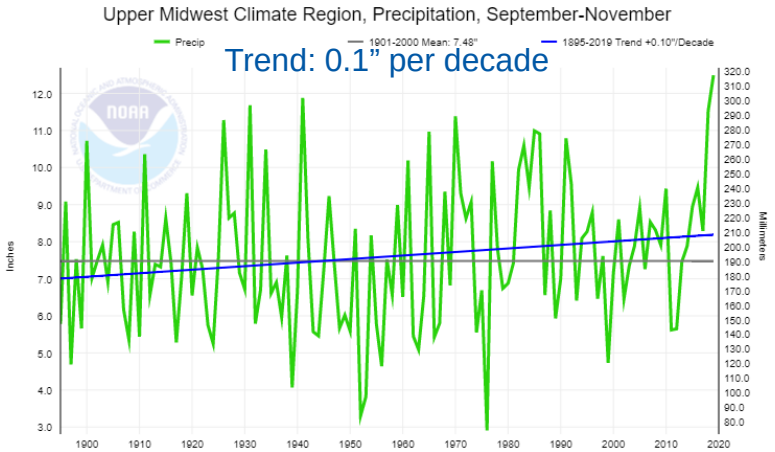
U.S. Sep-Nov Temperature
0.58” above the 20th century average
The 36th wettest since 1895.

Midwest Sep-Nov temperature
The wettest since 1895
Exceeds the old record in 1941 by 0.61”









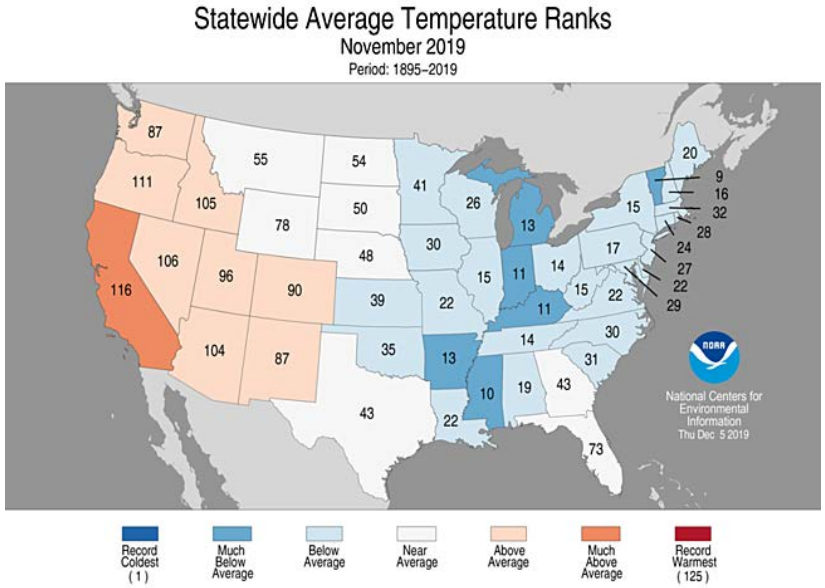
https://www.ncdc.noaa.gov/sotc/national/201911

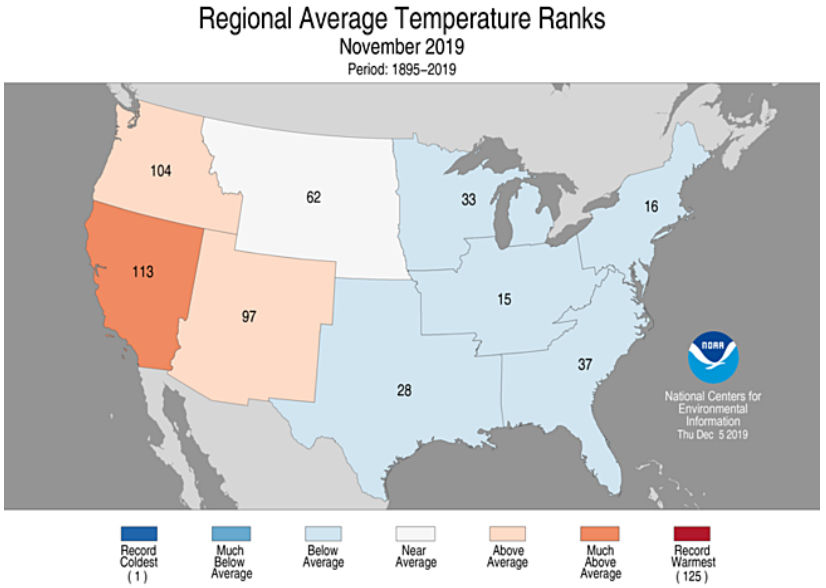
November Recap

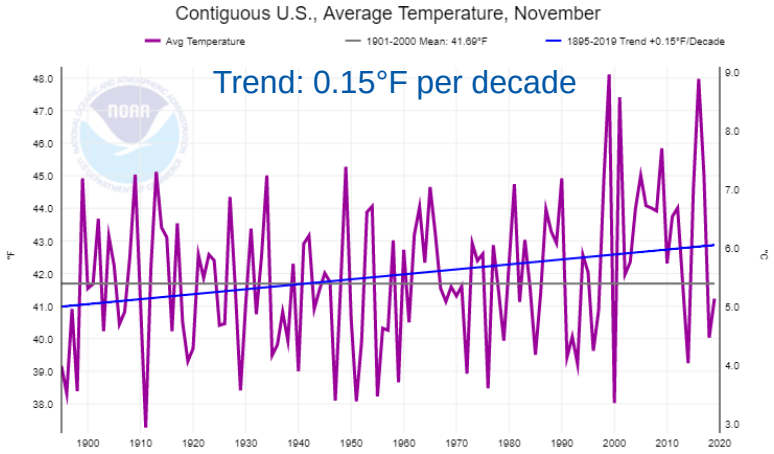
U.S. Nov Temperature
0.46°F below the 20th century average
48th Coolest since 1895.

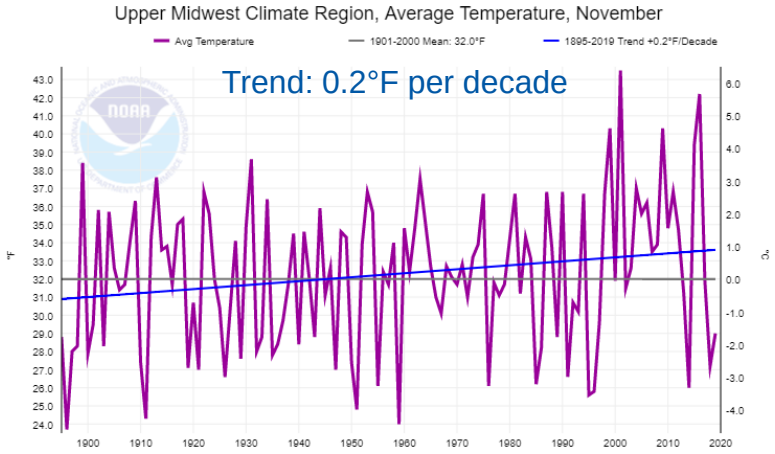
Midwest Nov temperature

33rd Coolest since 1895.







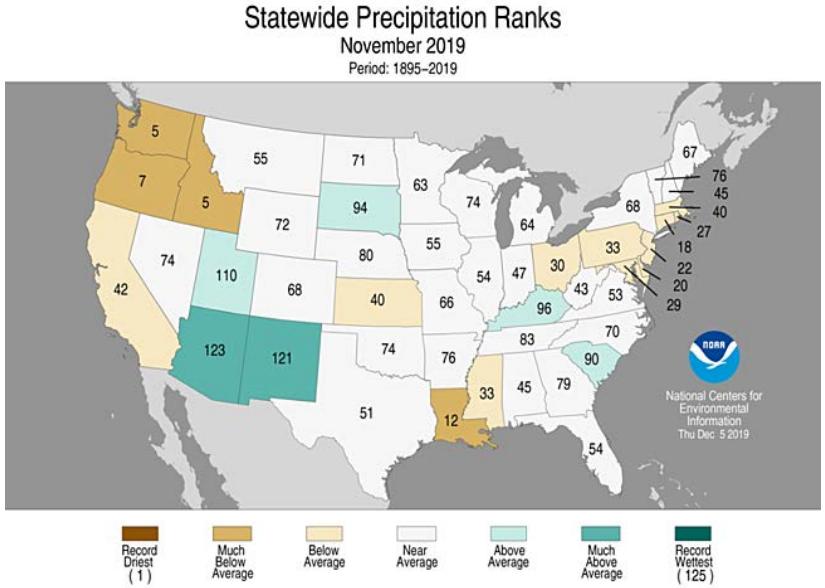


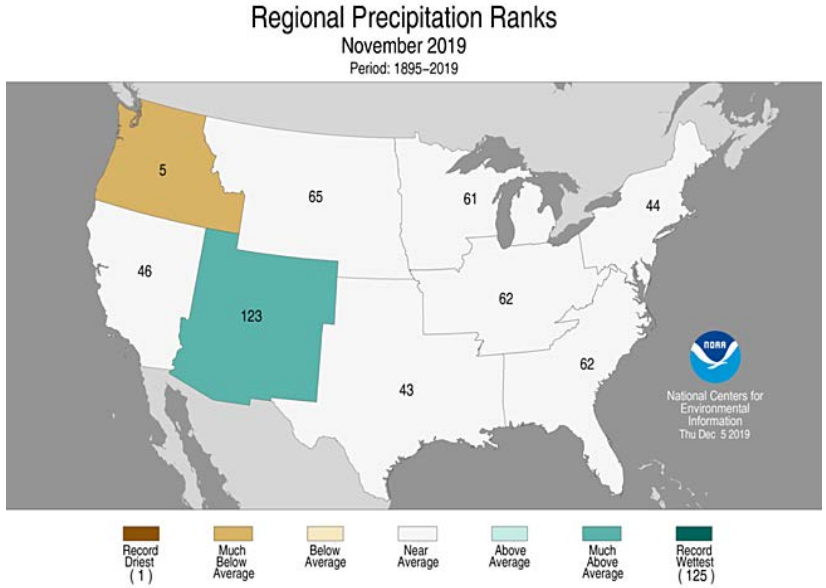
https://www.ncdc.noaa.gov/sotc/national/201911

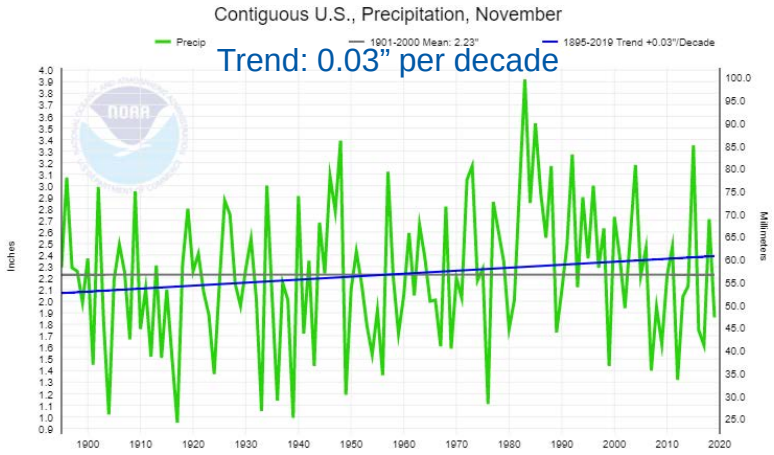
U.S. Nov Temperature
0.37” below the 20th century average
The 32th driest since 1895.

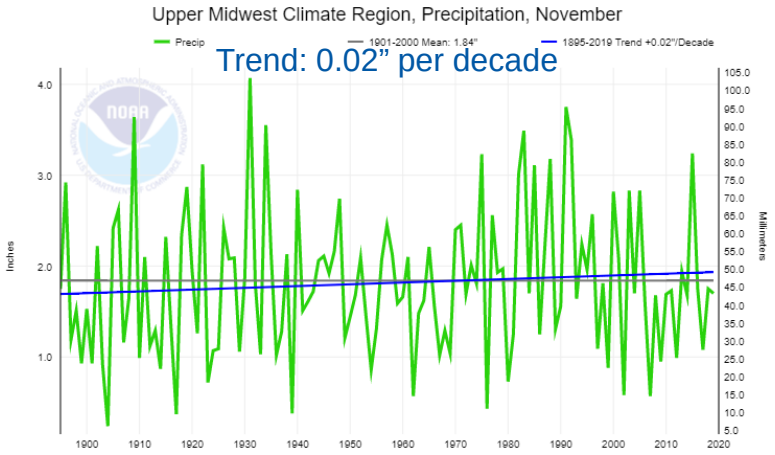
Midwest Nov temperature

61st driest since 1895





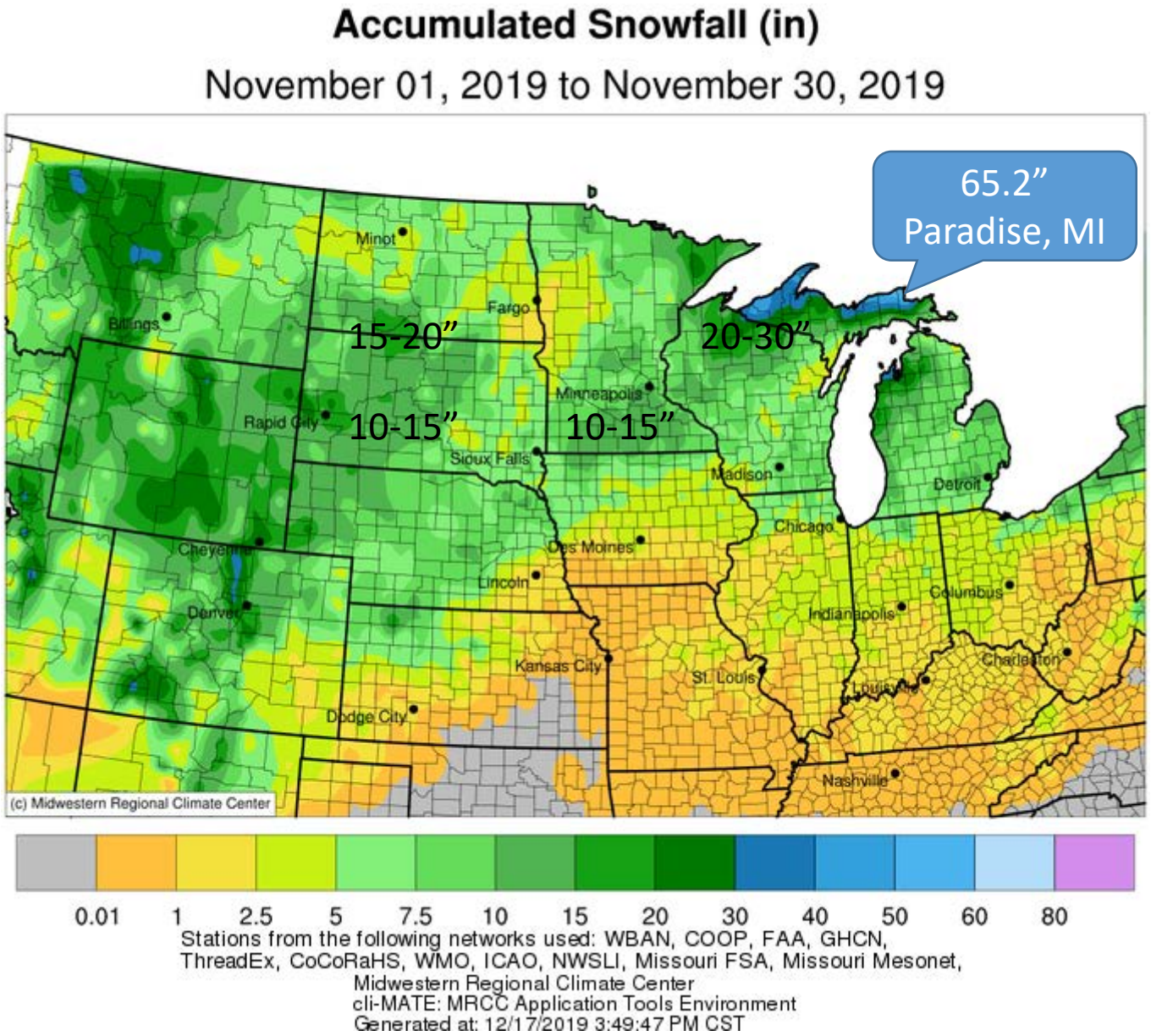




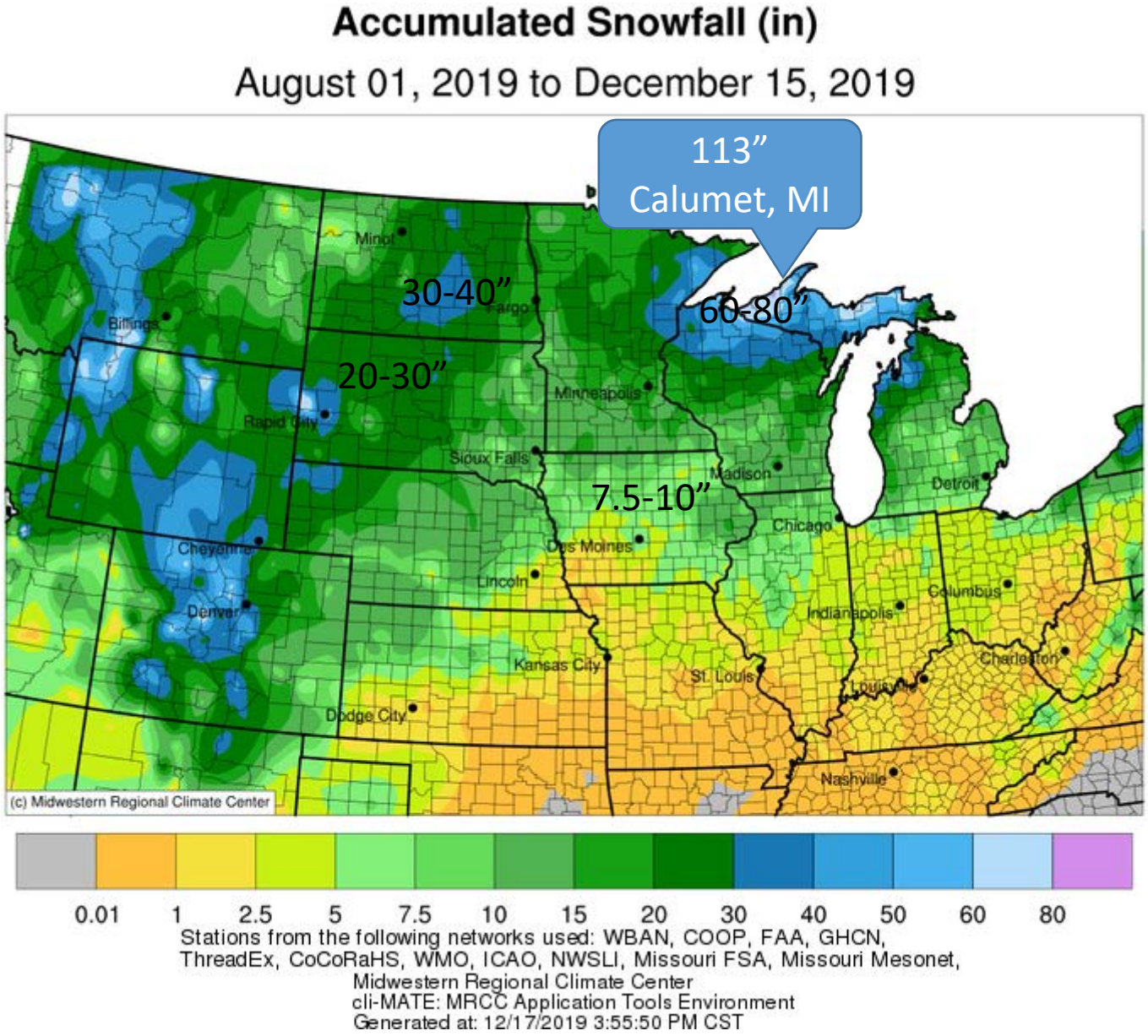
https://www.ncdc.noaa.gov/sotc/national/201911

Snow

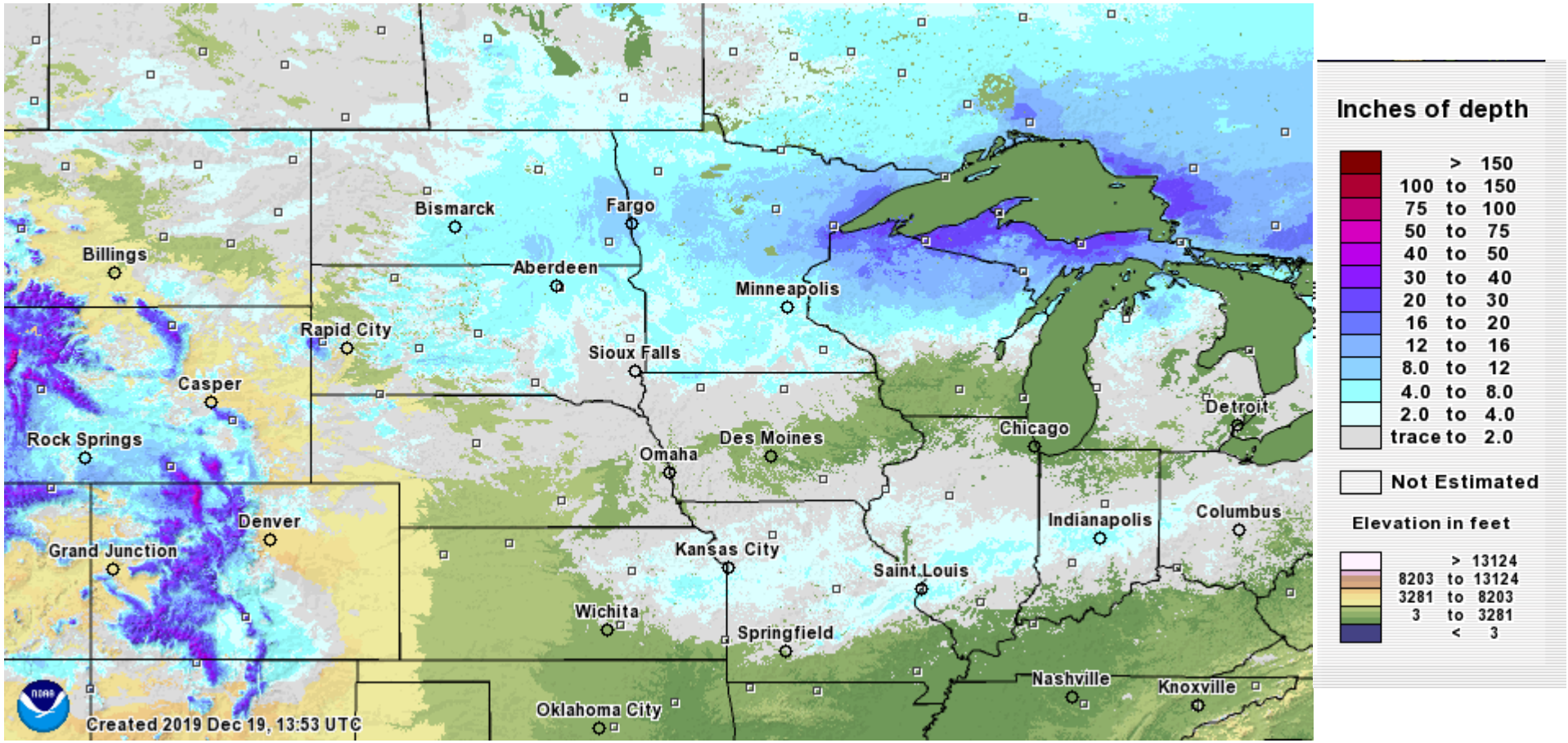
Accumulated Snowfall in November (in)



Accumulated Snowfall in This Season (in)

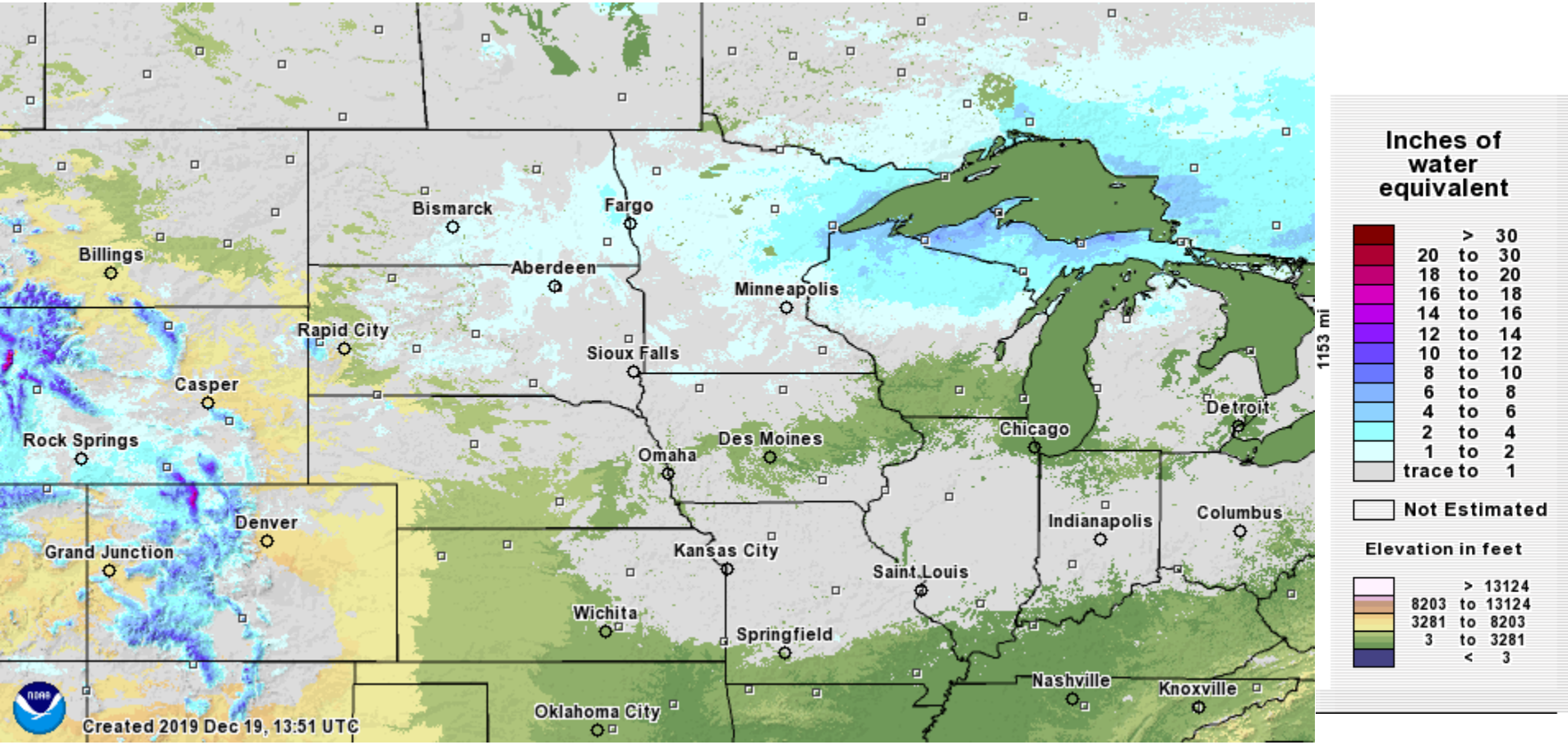


Snow Pack
(Snow Depth)



https://www.nohrsc.noaa.gov/nsa/

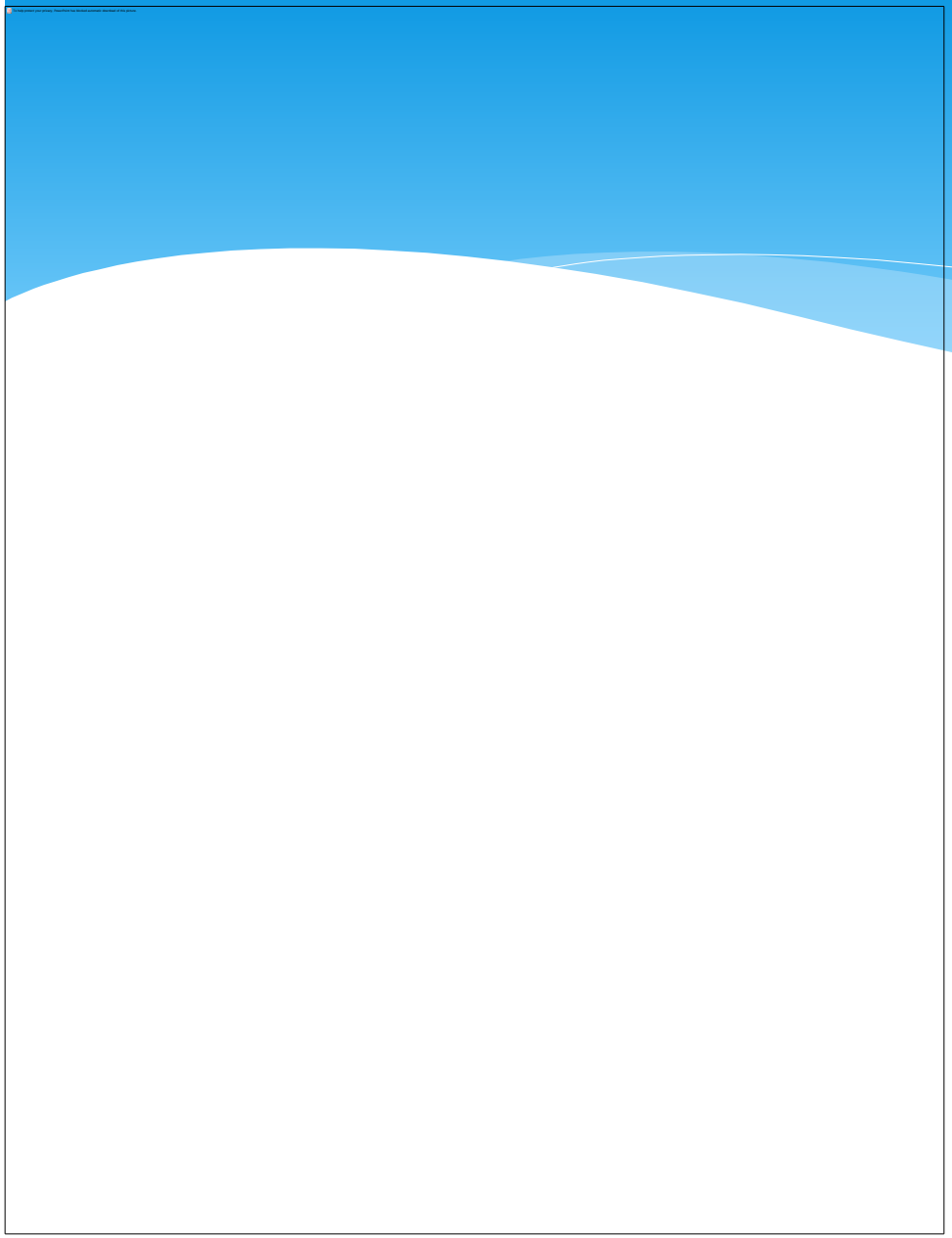
Snow Pack
(Snow Water Equivalent)



https://www.nohrsc.noaa.gov/nsa/

Mountain Snowpack

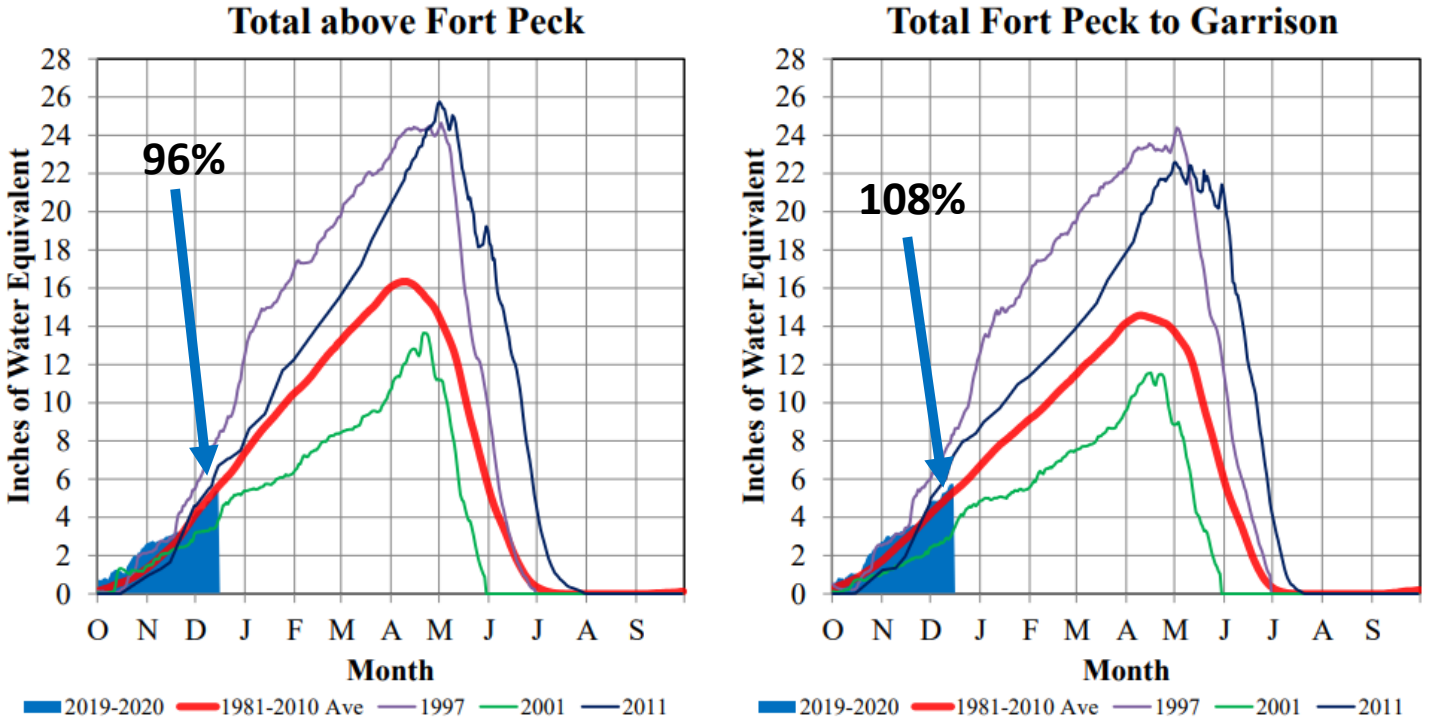
USDA/NRCS Snow Water Equivalent
% of Normal



https://www.nrcs.usda.gov/wps/portal/wcc/home/quicklinks/predefinedMaps/

Missouri River Basin – Mountain Snowpack Water Content
2019-2020 with comparison plots from 1997*, 2001*, and 2011

15-Dec-2019



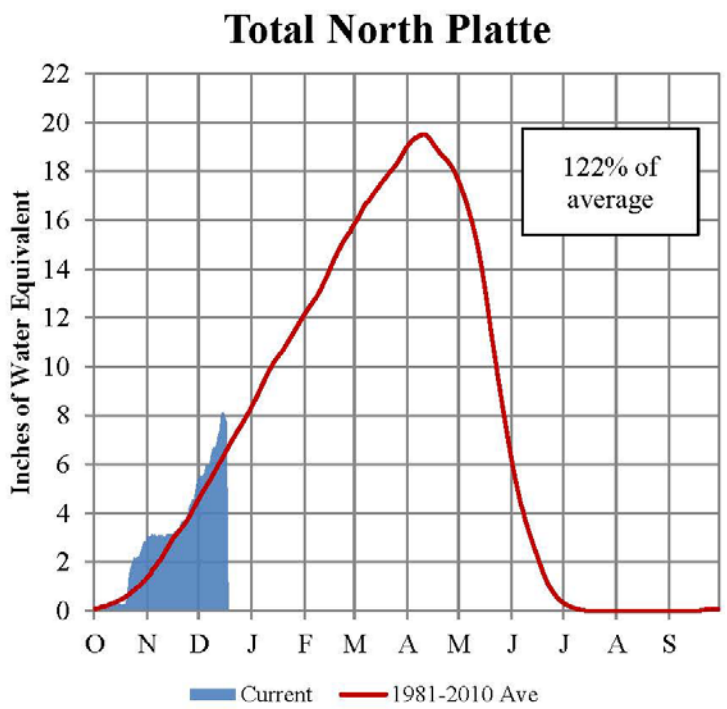
The Missouri River Basin mountain snowpack normally peaks near April 15. On December 15, the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach was 5.4", 96% of the December 15 average. On December15, the mountain SWE in the Fort Peck to Garrison reach was 5.7", 108% of the December 15 average.

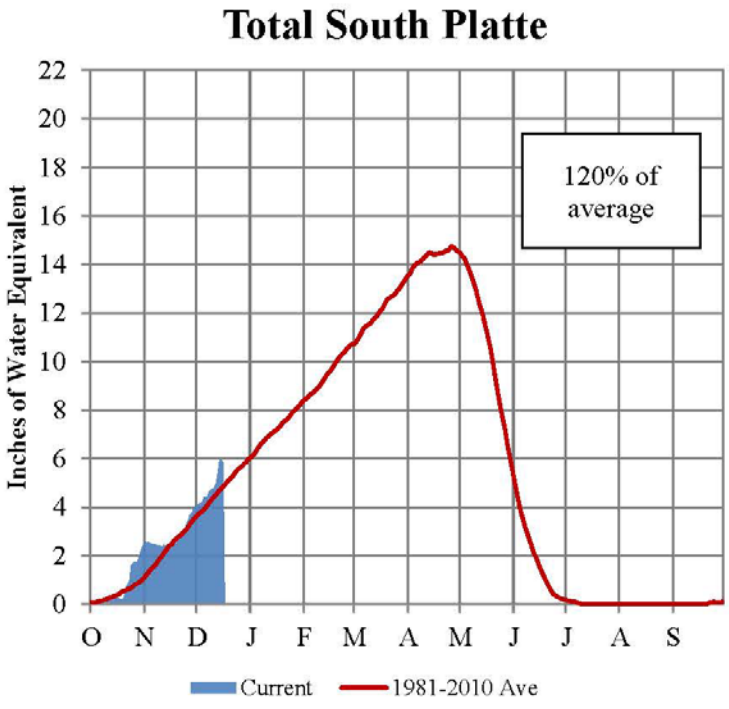
*Generally considered the high and low year of the last 25-year period, respectively

Provisional data. Subject to revision.

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

Platte River Basin - Mountain Snowpack Water Content
Water Year 2019-2020
December 17, 2019





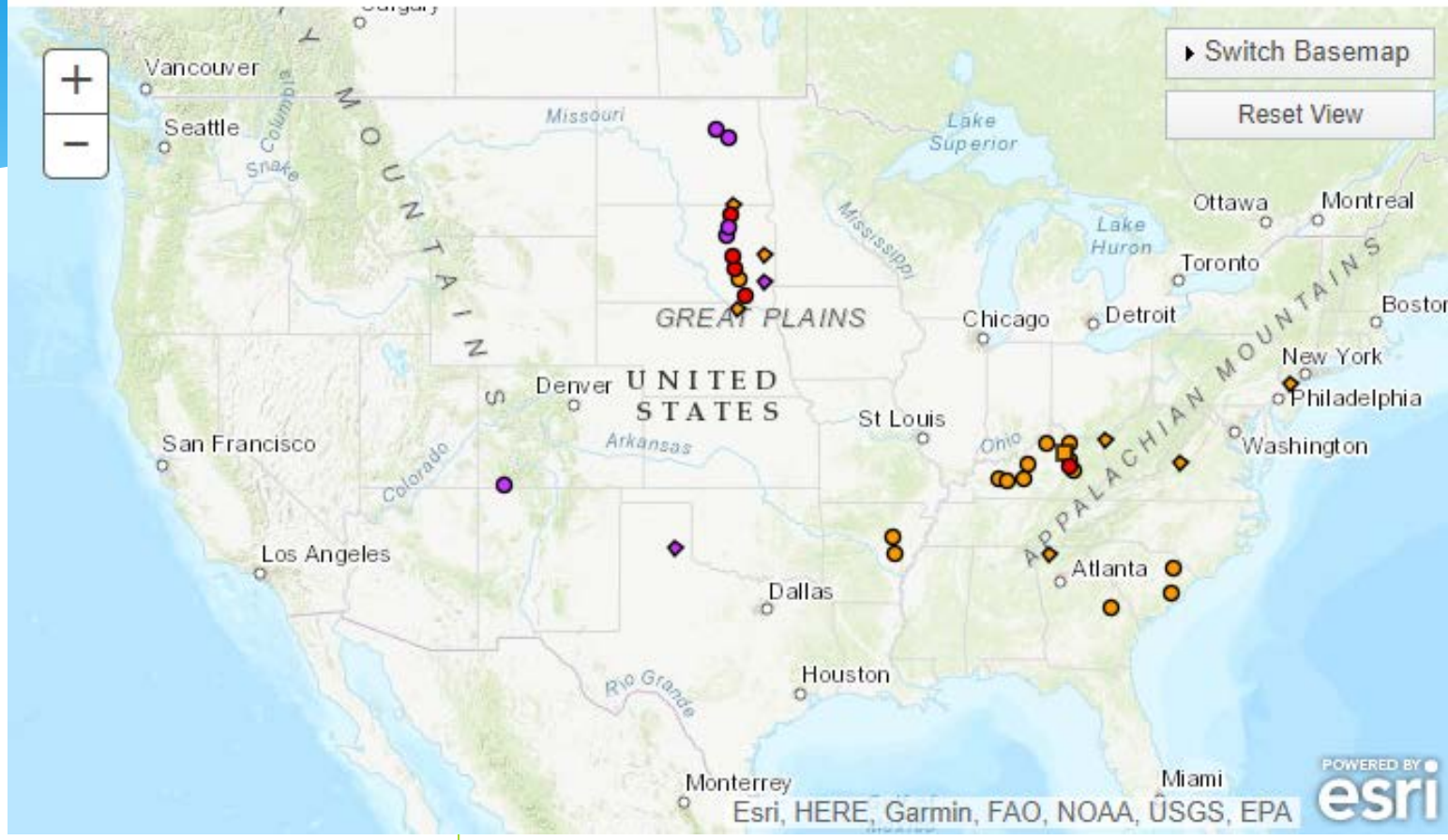
The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of December 16, 2019, the mountain snowpack SWE in the "Total North Platte" reach is currently 7.9", 122% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 5.8", 120% of average.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

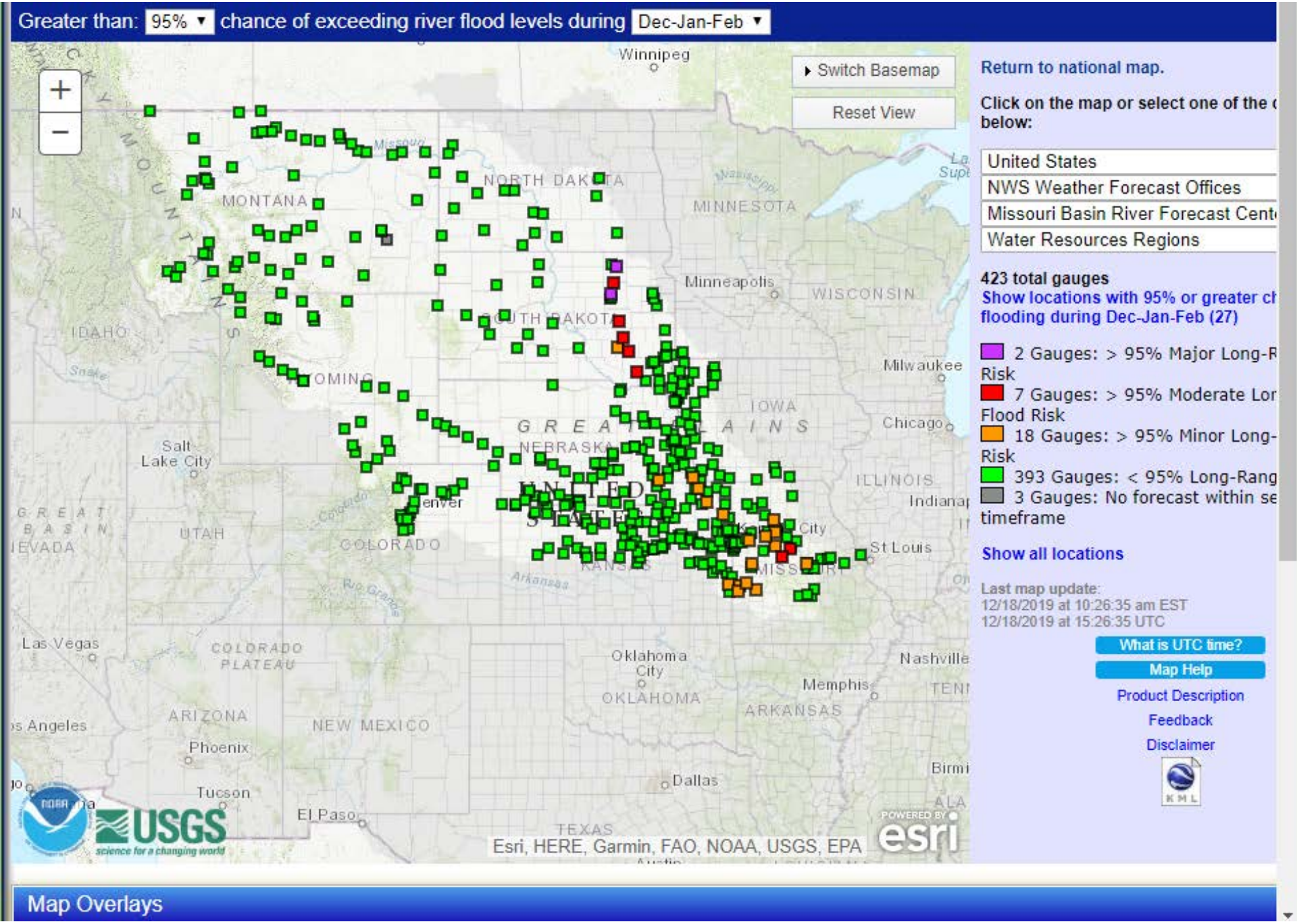
http://www.nwd-mr.usace.army.mil/rcc/reports/snow.pdf

AHPS Observed Gauge Map

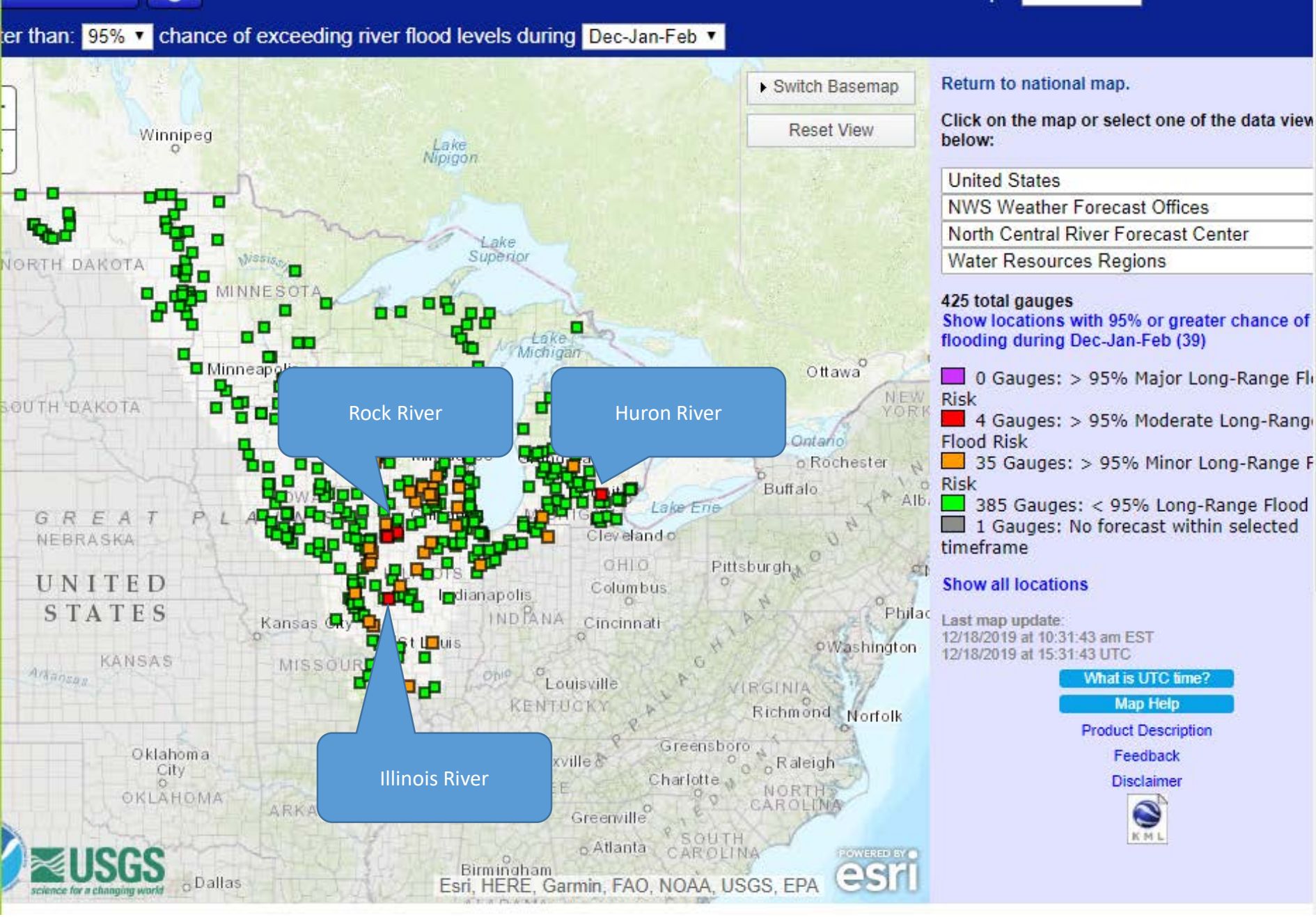


- 7 Gauges: Major Flooding
- 5 Gauges: Moderate Flooding
- 22 Gauges: Minor Flooding
- 90 Gauges: Near Flood Stage
- 5721 Gauges: No Flooding
- 2651 Flood Category Not Defined
- 32 At or Below Low Water Threshold
- 607 Gauges: Observations Are Not Current
- 158 Gauges: Out of Service

Regional Long-Range Flood Outlook



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



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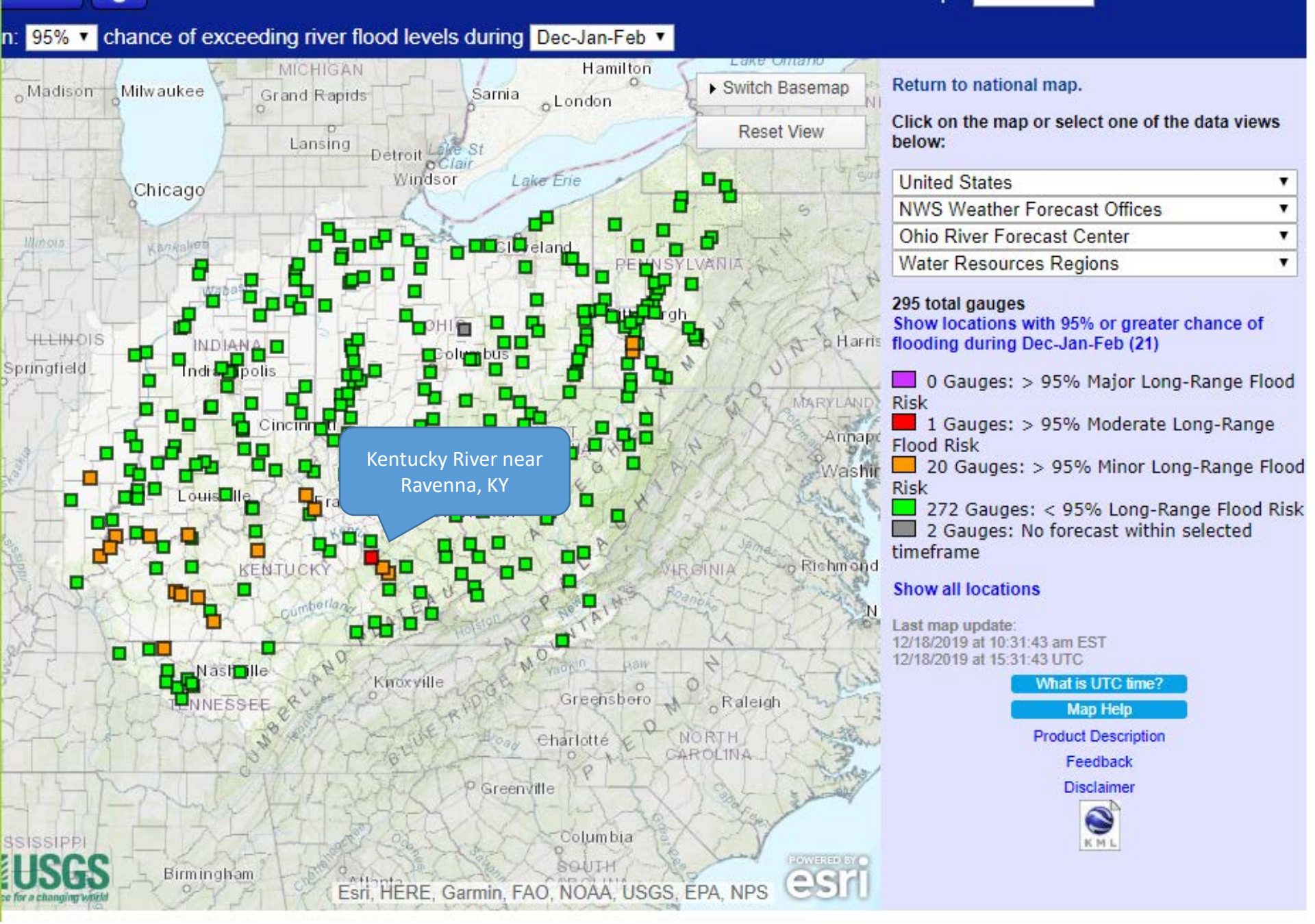
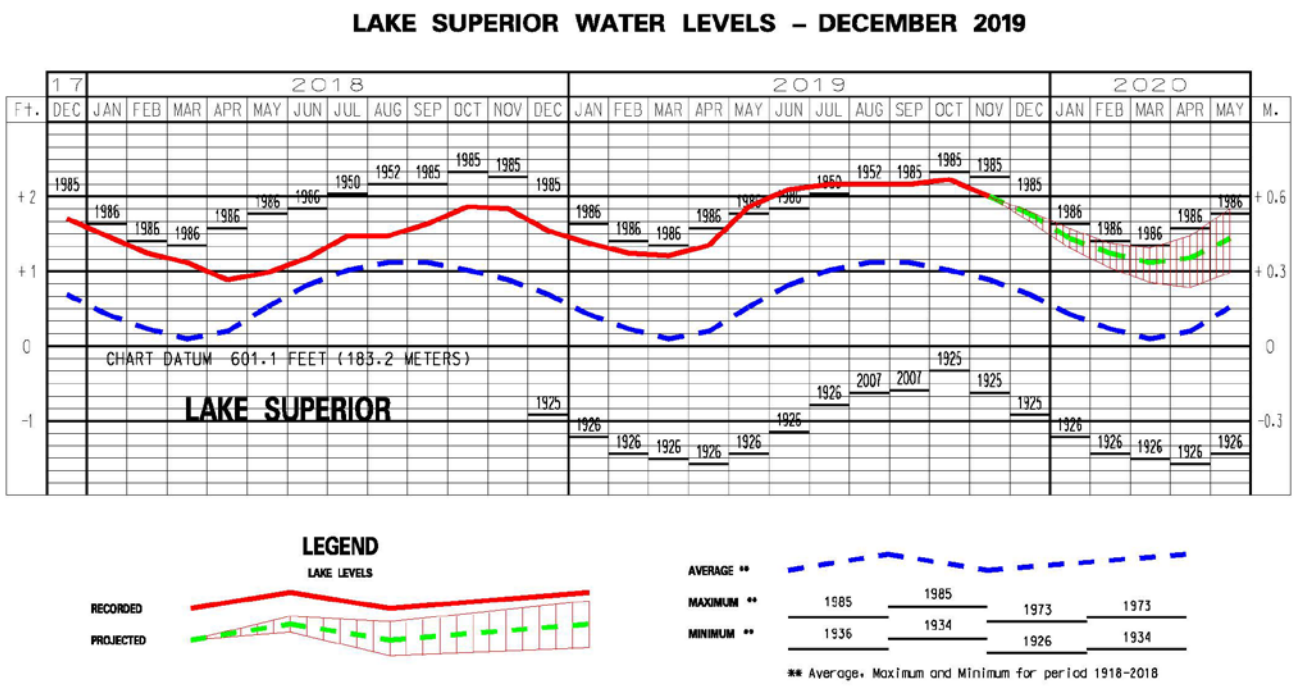


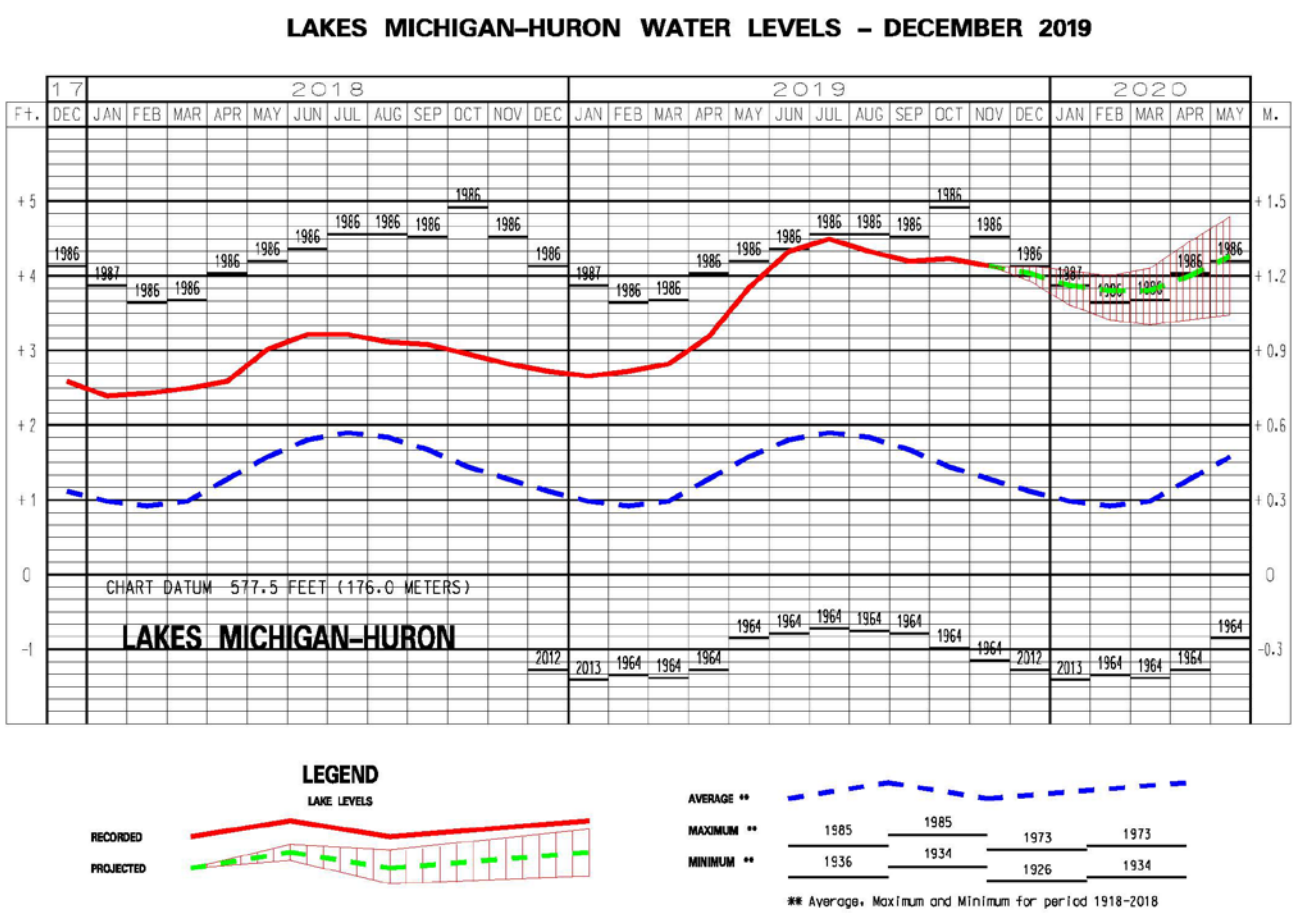
https://water.weather.gov/ahps/region_long_range.php

The Great Lakes

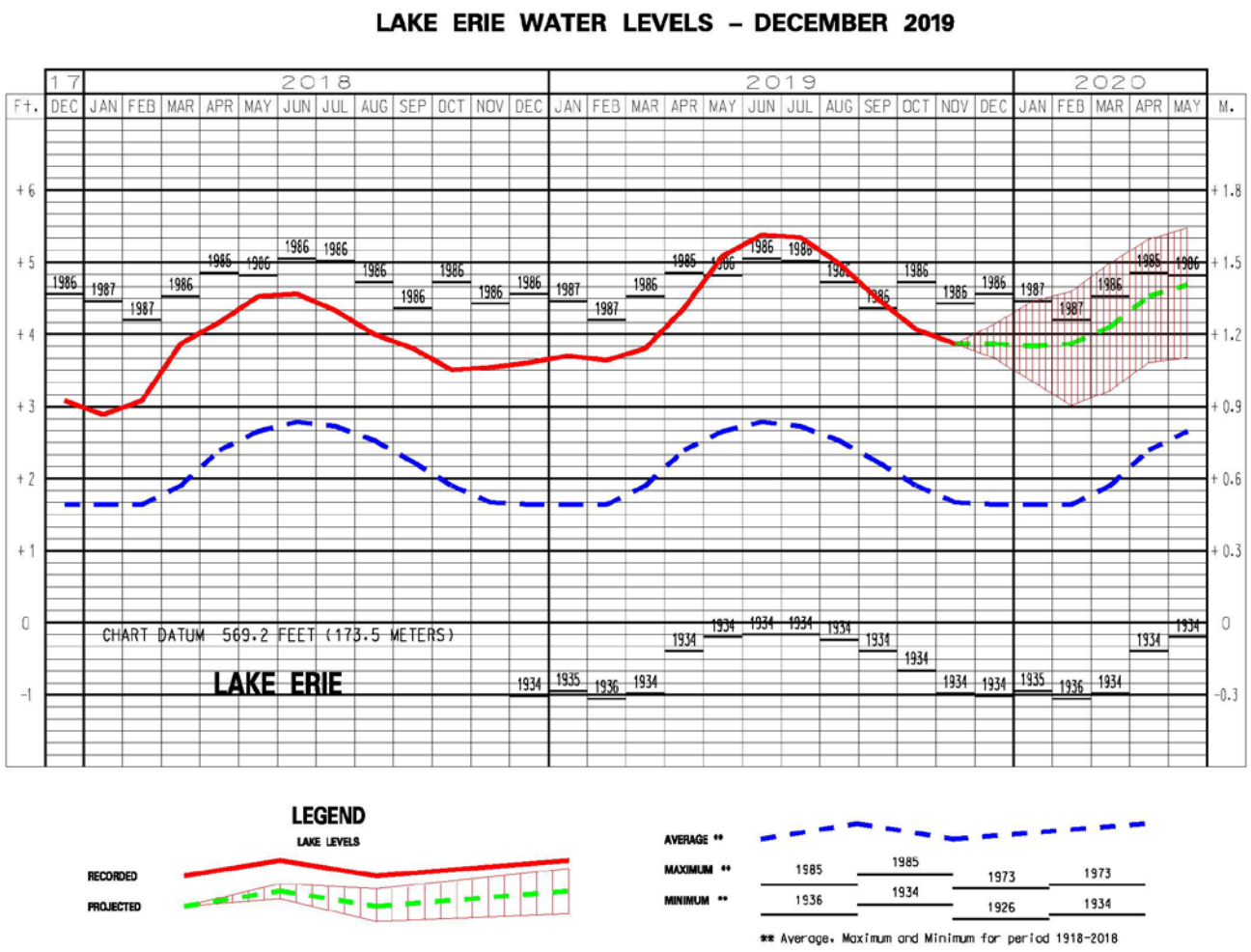
Lake Superior



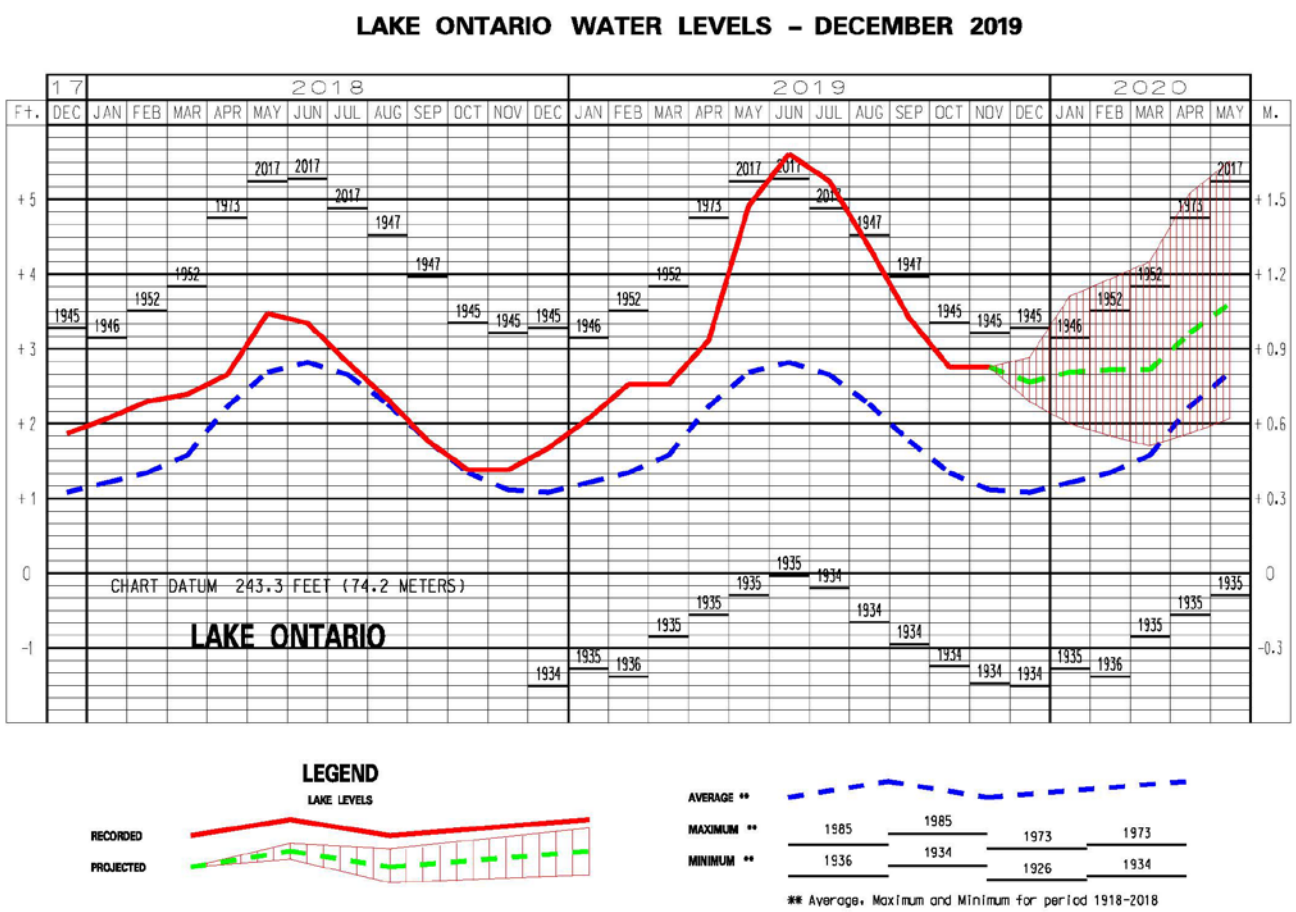
Lake Michigan-Huron



Lake Erie


LAKE ERIE WATER LEVELS – DECEMBER 2019
17
2018
2019
2020
Ft.
M.
DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY
+6
+5
+4
+3
+2
+1
0
-1
+1.8
+1.5
+1.2
+0.9
+0.6
+0.3
0
-0.3
CHART DATUM 569.2 FEET (173.5 METERS)
LAKE ERIE
LEGEND
LAKE LEVELS
RECORDED
PROJECTED
AVERAGE **
MAXIMUM **
MINIMUM **
1985 1985 1973 1973
1936 1934 1926 1934
** Average, Maximum and Minimum for period 1918-2018

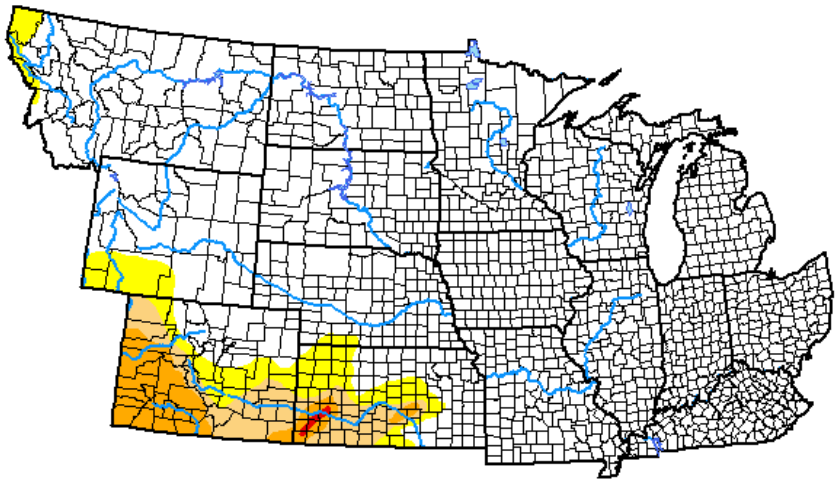
Lake Ontario



US Drought Monitor

U.S. Drought Monitor

NWS Central Region



December 10, 2019

(Released Thursday, Dec. 12, 2019)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	87.57	12.43	7.00	3.31	0.11	0.00
Last Week *12-03-2019*	88.65	11.35	6.34	3.12	0.11	0.00
3 Months Ago *09-10-2019*	80.75	19.25	3.74	0.00	0.00	0.00
Start of Calendar Year *01-01-2019*	85.98	14.02	8.17	5.23	2.44	1.01
Start of Water Year *10-01-2019*	79.05	20.95	8.02	2.19	0.14	0.00
One Year Ago *12-11-2018*	84.68	15.32	8.48	5.22	2.44	1.01

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

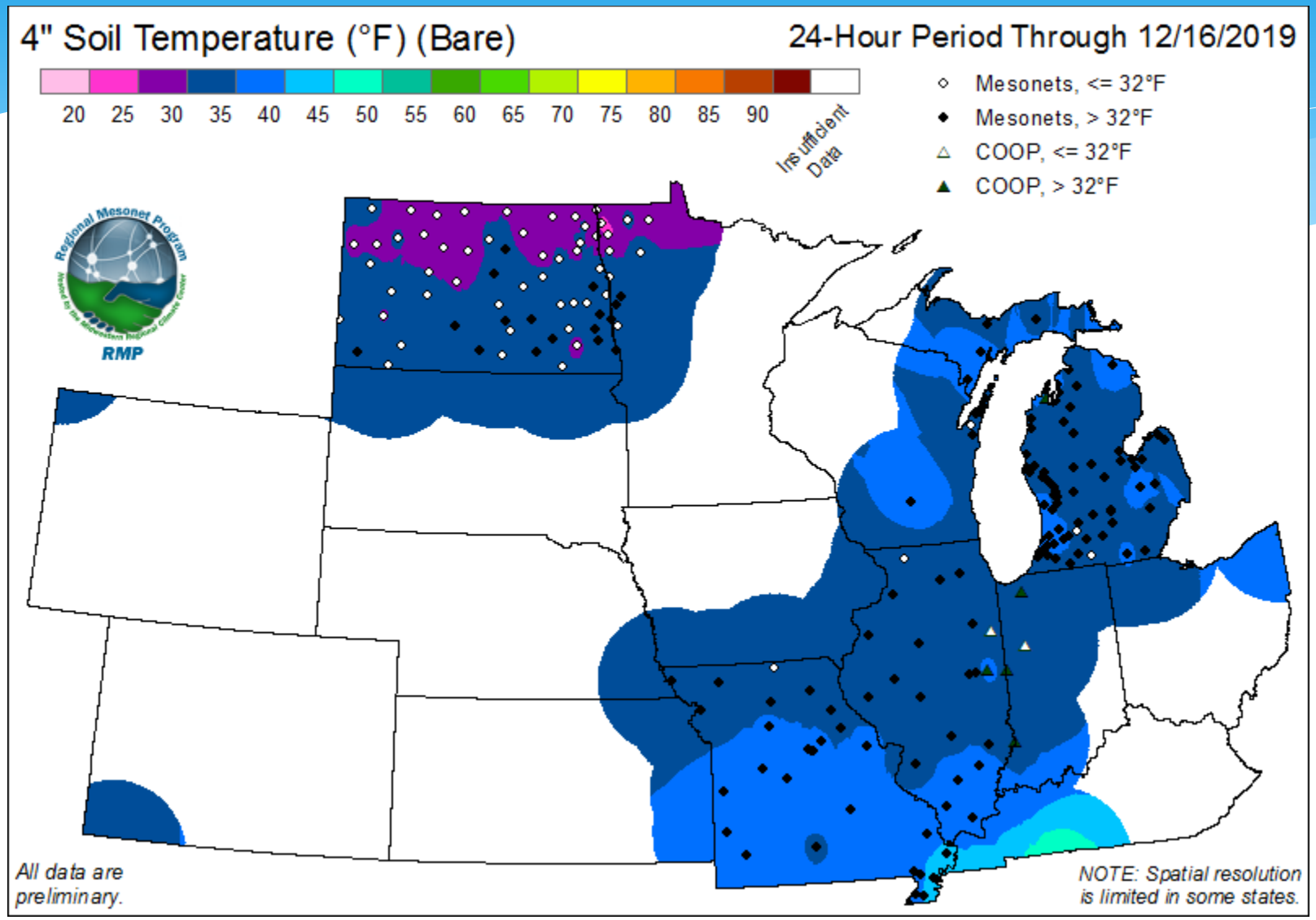
Author:

Deborah Bathke
National Drought Mitigation Center

droughtmonitor.unl.edu

Agriculture

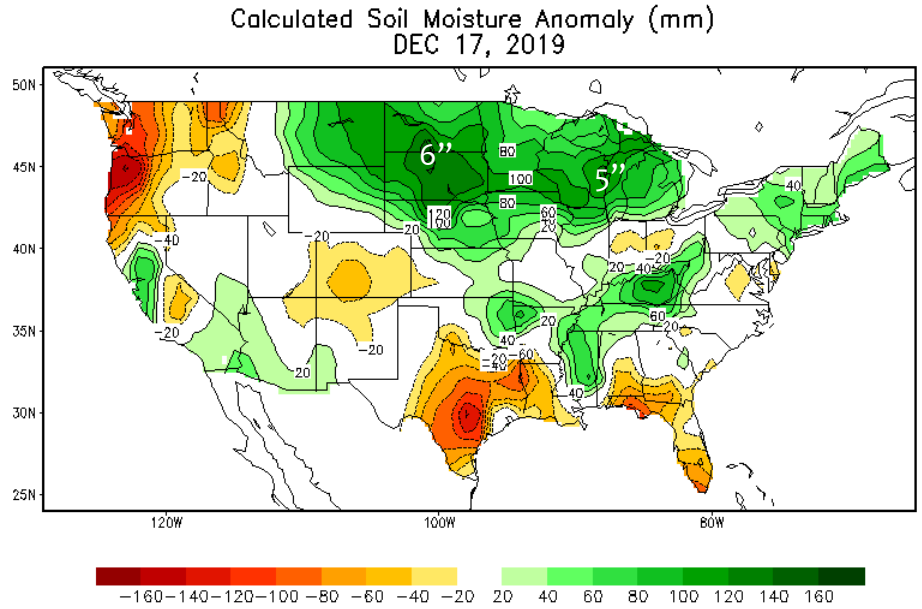
4-in Bare Soil Temperatures



https://mrcc.illinois.edu/RMP/currentMaps.html#banner

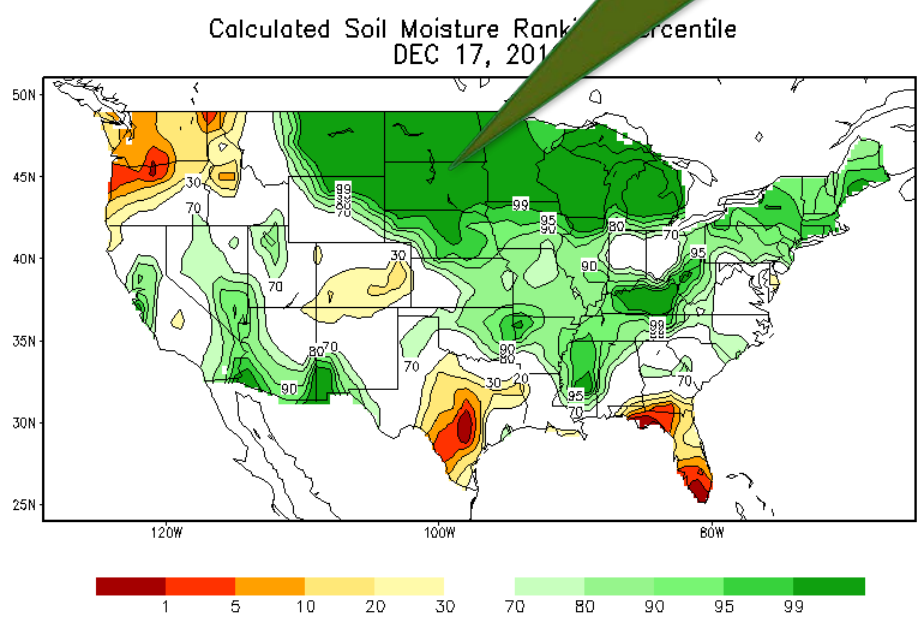
CPC Soil Moisture

Departure from Average



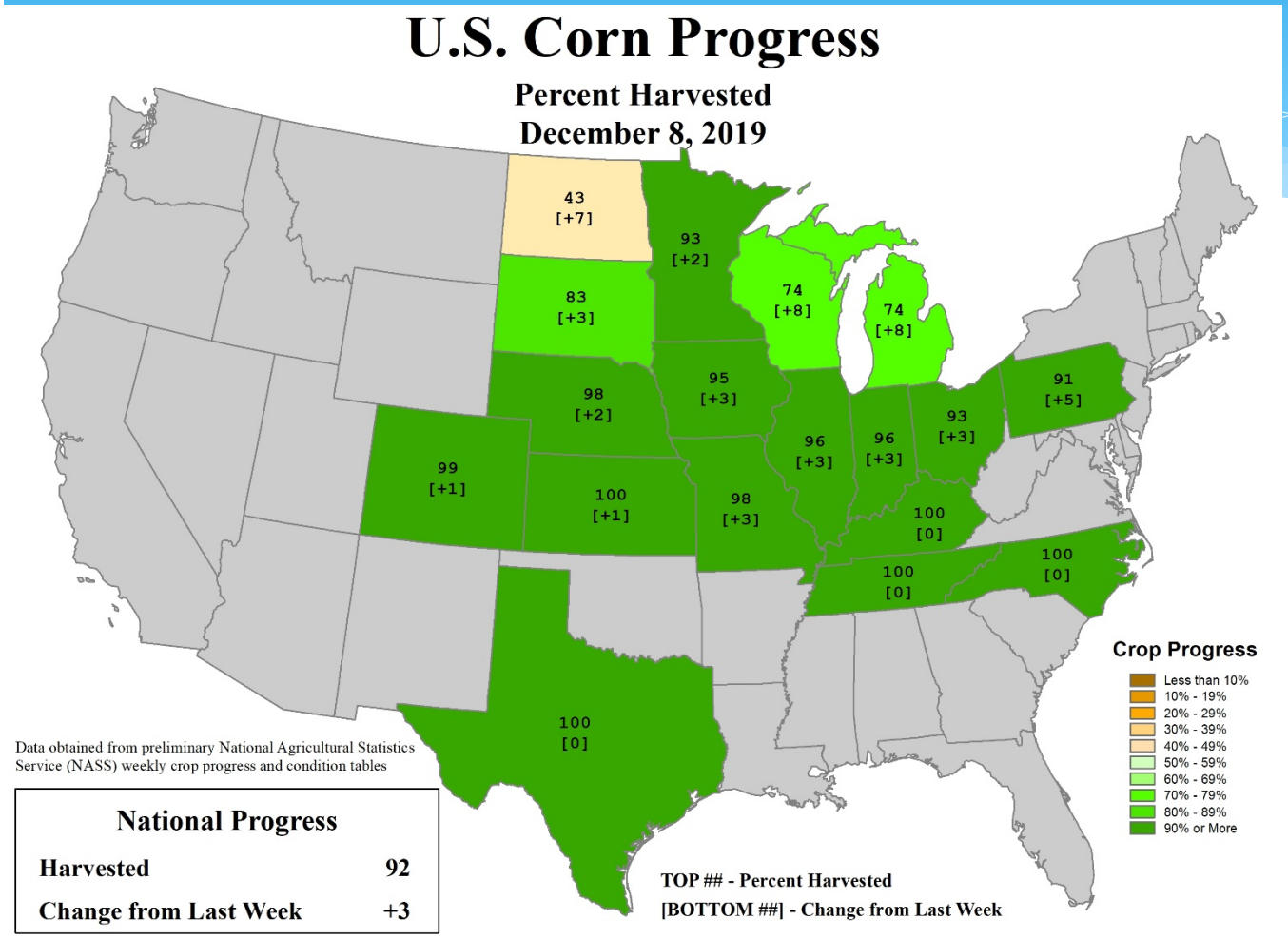
Ranking

Less than 1% of the times the soil moisture was greater than it is now, this time of the year



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

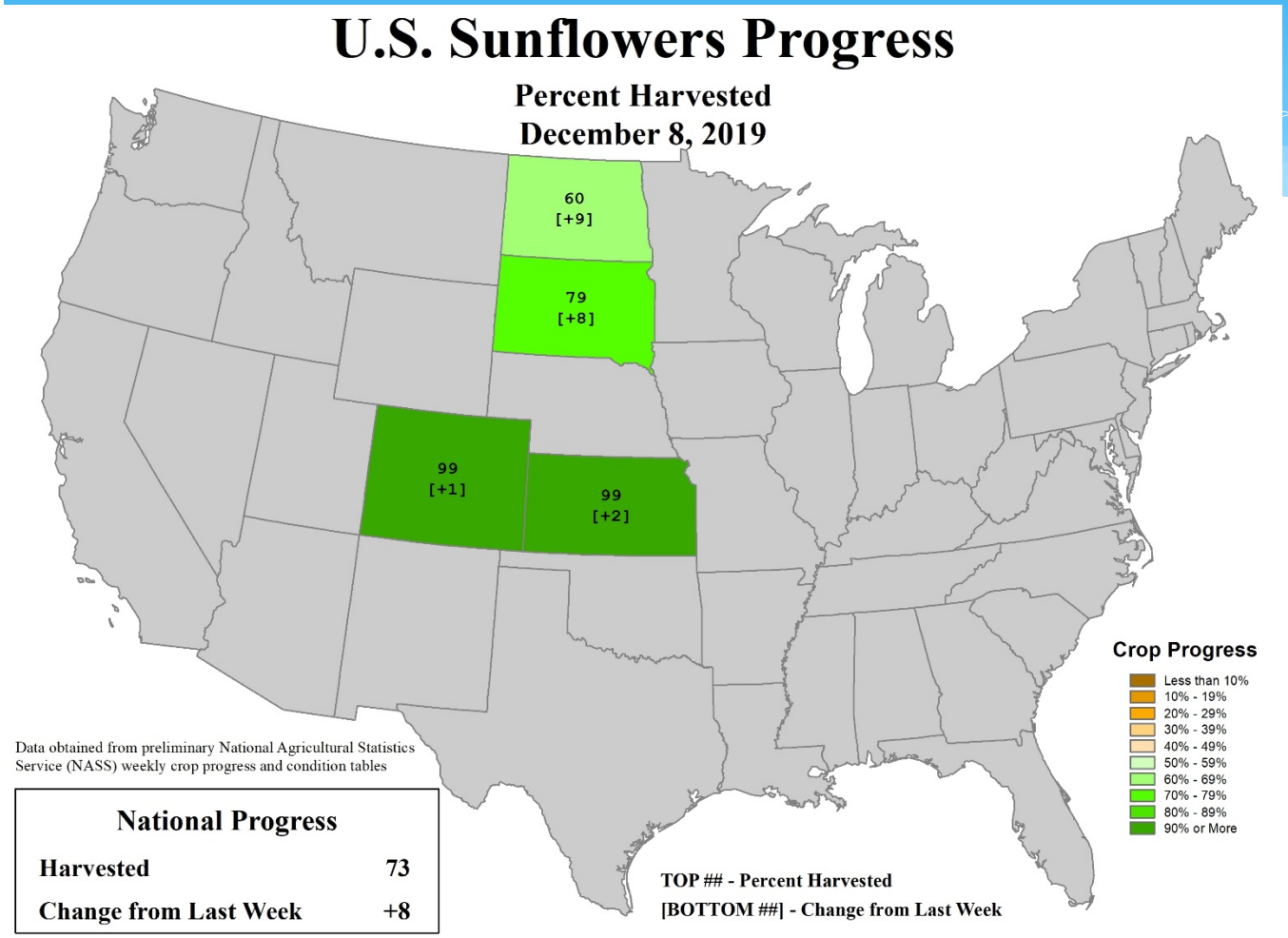
Corn Progress



2nd slowest corn harvest (through Nov. 17) in the last 25 years. Only 2009 was slower.

Slides courtesy of Brad Rippey, USDA/OCE

Sunflower Progress



Slides courtesy of Brad Rippey, USDA/OCE

Impacts

- Cold Oct-Nov conditions across the region in combination with wet and snowy periods have made it challenging for farmers this year. Crop harvest was running several weeks behind normal across the region and the extreme wetness was creating other problems related to;
  - crop disease,
  - grain dry down,
  - stalk lodging,
  - compaction, and
  - fieldwork preparation for next year.
- Reports of propane shortages and propane distribution problems in region with grain drying and livestock in some states. Cold and wet conditions have led to high moisture content in seed, and slowing natural dry-down in fields.

Impacts on Social Media

Michael Douglas @northdad · Dec

My son flew out of Grand Forks, ND ye
pic shortly after take off. You can really
left standing. Most of the non-snow c
standing corn! @StevenGDouglas too

Satellite image from Dec 3. Brown squares are corn still in the fields. Daryl Ritchison (@DarylRitchison), NDAWN, NDSU.

Tweet

Miranda Meehan
@NDSU_eX_Steward

According to data collected by @NDSUExtension agents, the majority of #livestock producers in the state are facing #forage shortages going into the #winter. Here are some tips from NDSU Extension Specialist Janna Block on stretching forage supplies. ag.ndsu.edu/news/newsrelea...

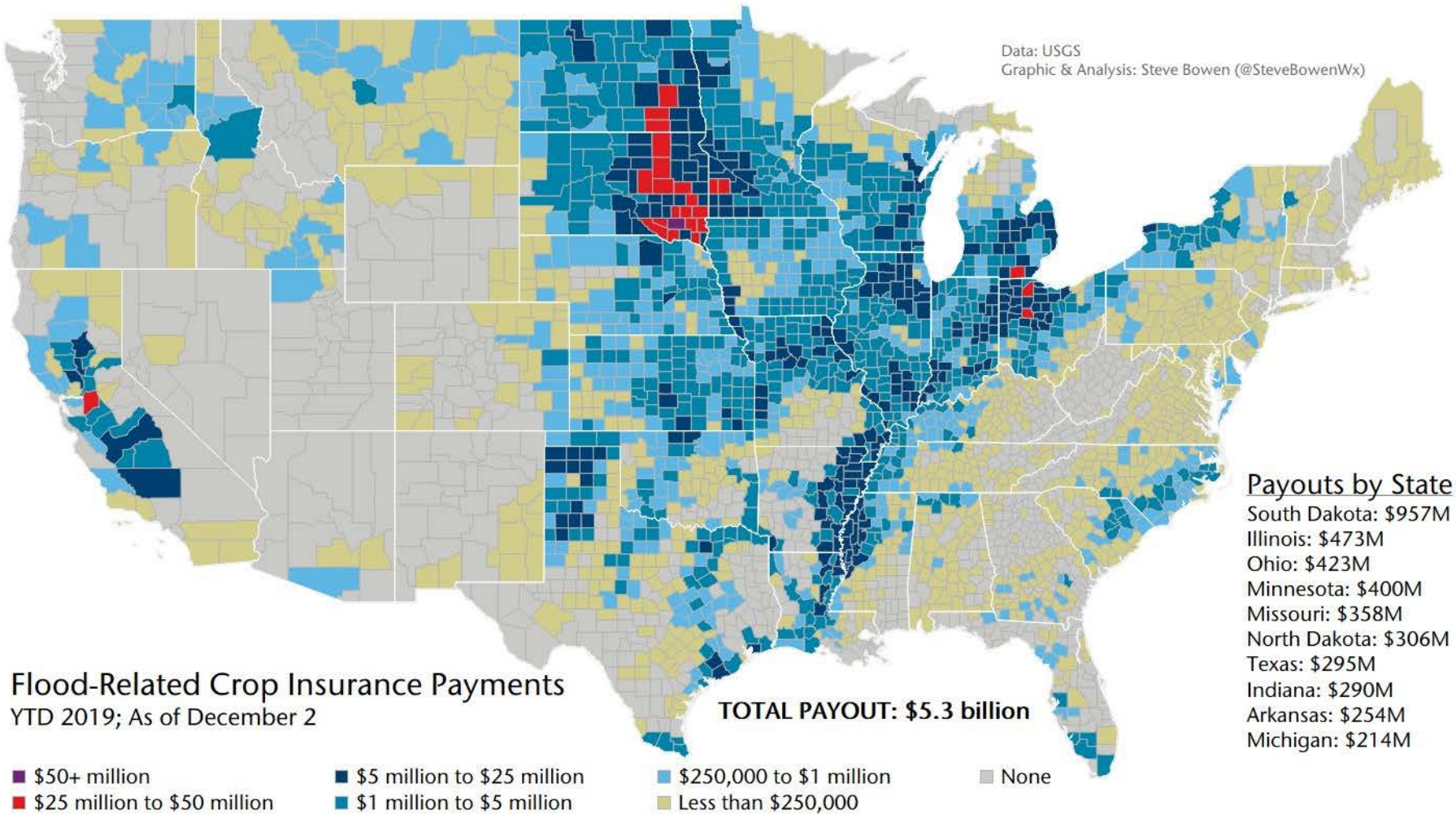
11:05 AM · Dec 6, 2019 · Twitter Web App

3 Retweets **2** Likes

Fargo ND

Impacts on Social Media

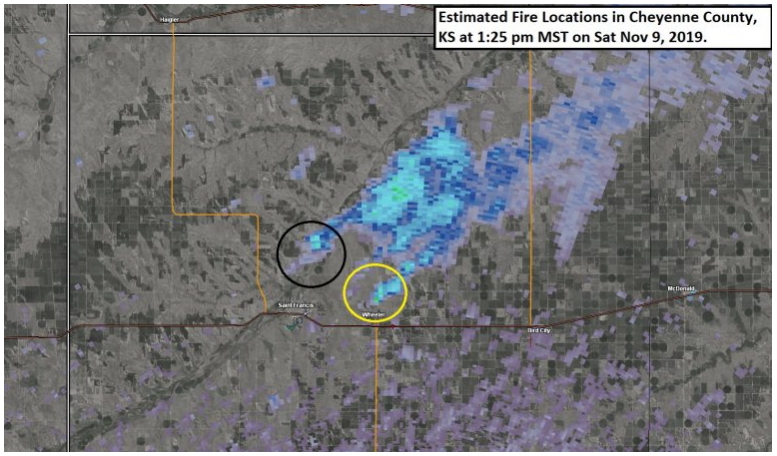
YTD 2019 Flood-related Crop Insurance Payments as of December 2.



Graphic and Analysis: @SteveBowenWx

Impacts

- Increasing drought/dryness on the south and west edges of the region causing concern for winter wheat establishment, and increasing fire danger. Attached is an image from the Goodland NWS office of a fire in Cheyenne County, KS (M. Knapp)



- The sugarbeet harvest ended as ACSC found beets uneconomical to process because of poor beet conditions, along with high levels of mud.
- Earlier in Nov, ACSC charged producers $343 per acre for the undelivered beets to cover the companies fixed cost.

- A major flood along the Red River Valley is a major concern as the wettest fall is considered as a precursor of a major flood in the following spring.

Response and Mitigation

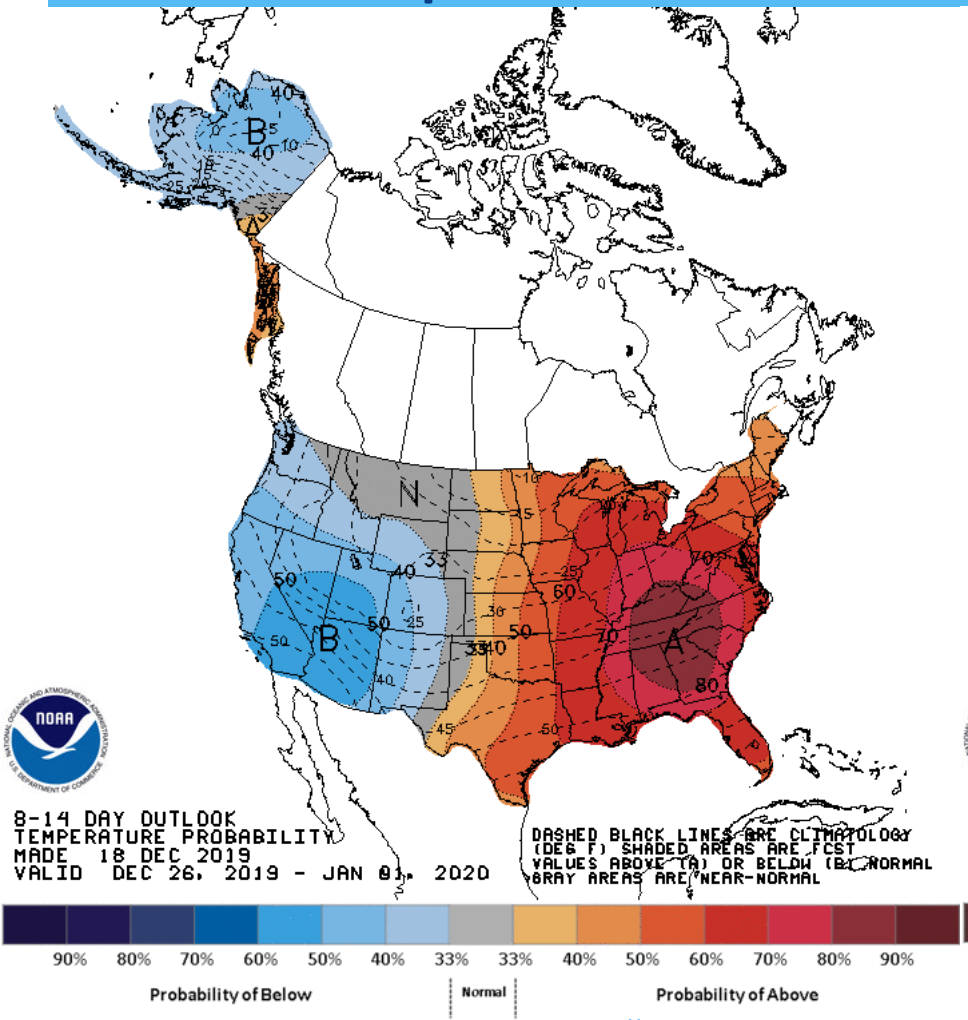
- ND is seeking for a presidential disaster declaration in response to spring flooding, and then a Secretarial Disaster Designation for 47 of 53 counties following an October precipitation event that culminated in at least $423 million in crop damages for the ND producers and $5.9 million in infrastructure damages.
- In response to the flooding , Jamestown and Pipestem Dams have been in flood operations since September, and will continue to evacuate flood storage through the winter.
- Because the conditions in the upper MO River basin, USACE plans to be as aggressive with spring releases as downstream conditions allow. However, if the unregulated tributaries are flowing full and contributing a significant amount of flow to the Missouri River, the Corp will reduce releases to mitigate downstream flooding conditions.

Climate Outlooks

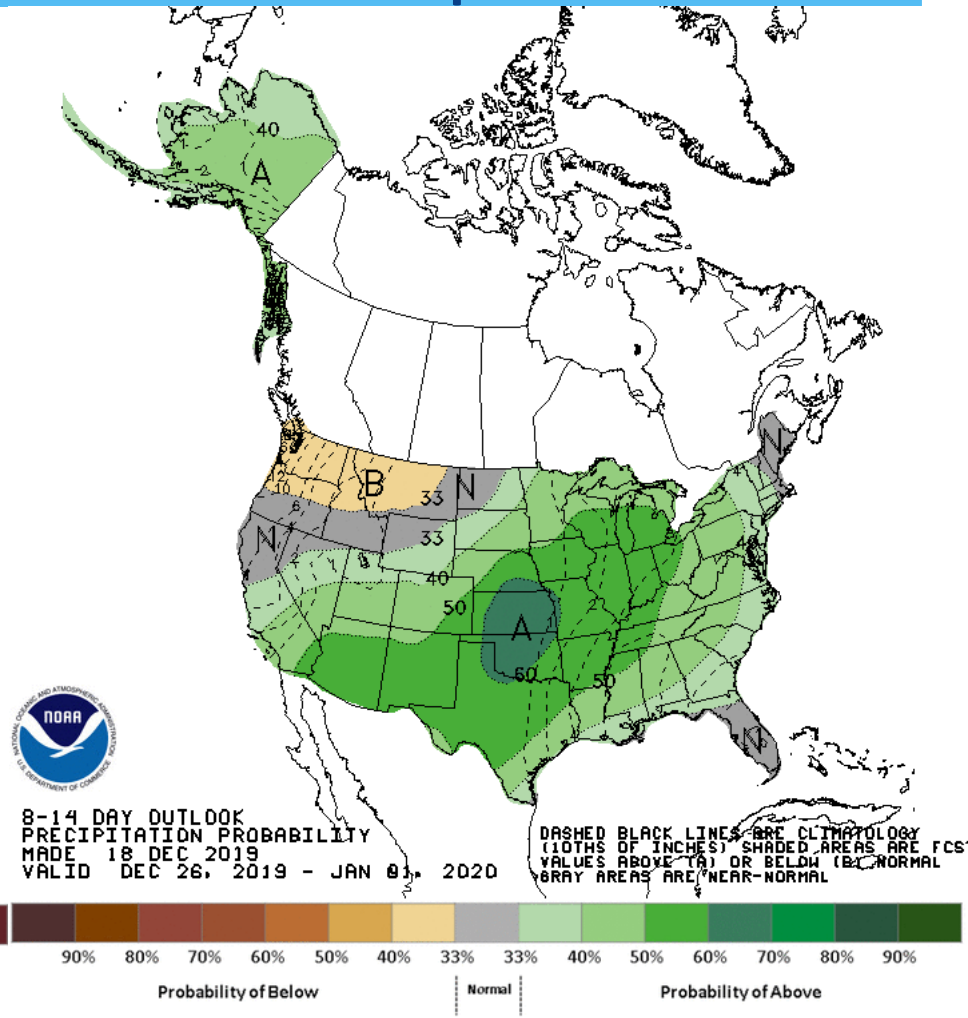
* 8 to 14-day Outlook
* 16-day QPF
* Jan Outlook
* ENSO Outlook
* Rest of the Winter
* Spring

8 to 14-day Outlook

Temperature

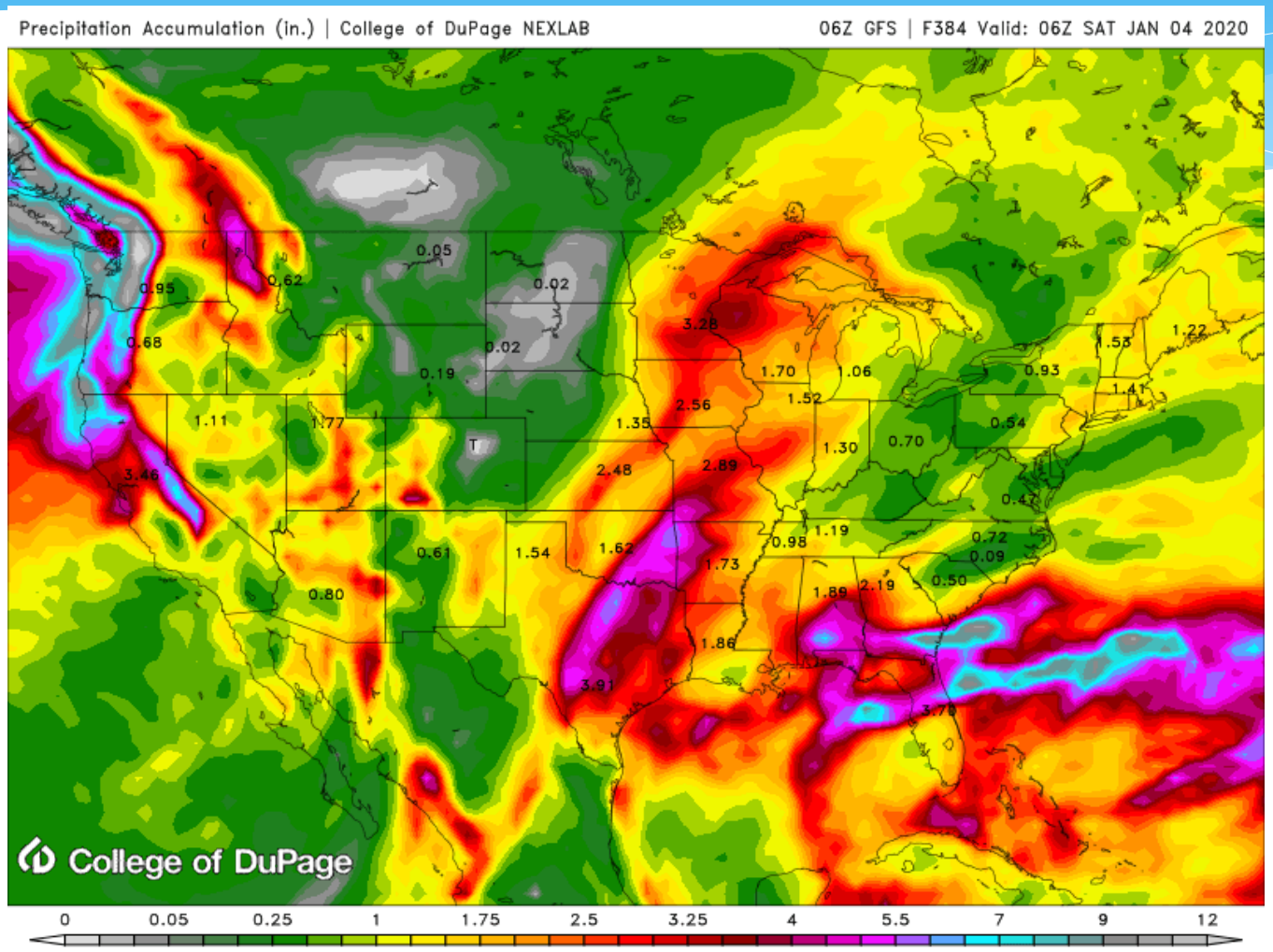


Precipitation



https://www.cpc.ncep.noaa.gov/products/predictions/814day/

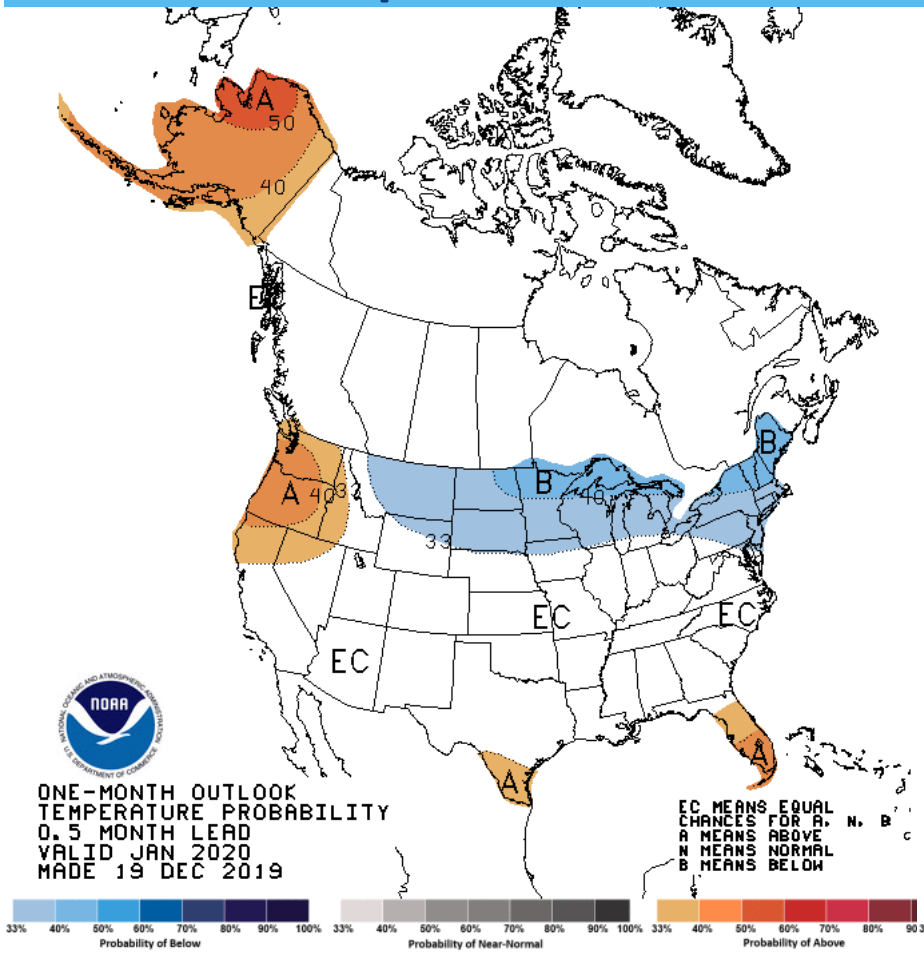
16-Day Total Precipitation Outlook
(From Midnight Thu, Dec 19 through Midnight Sat, Jan 4)



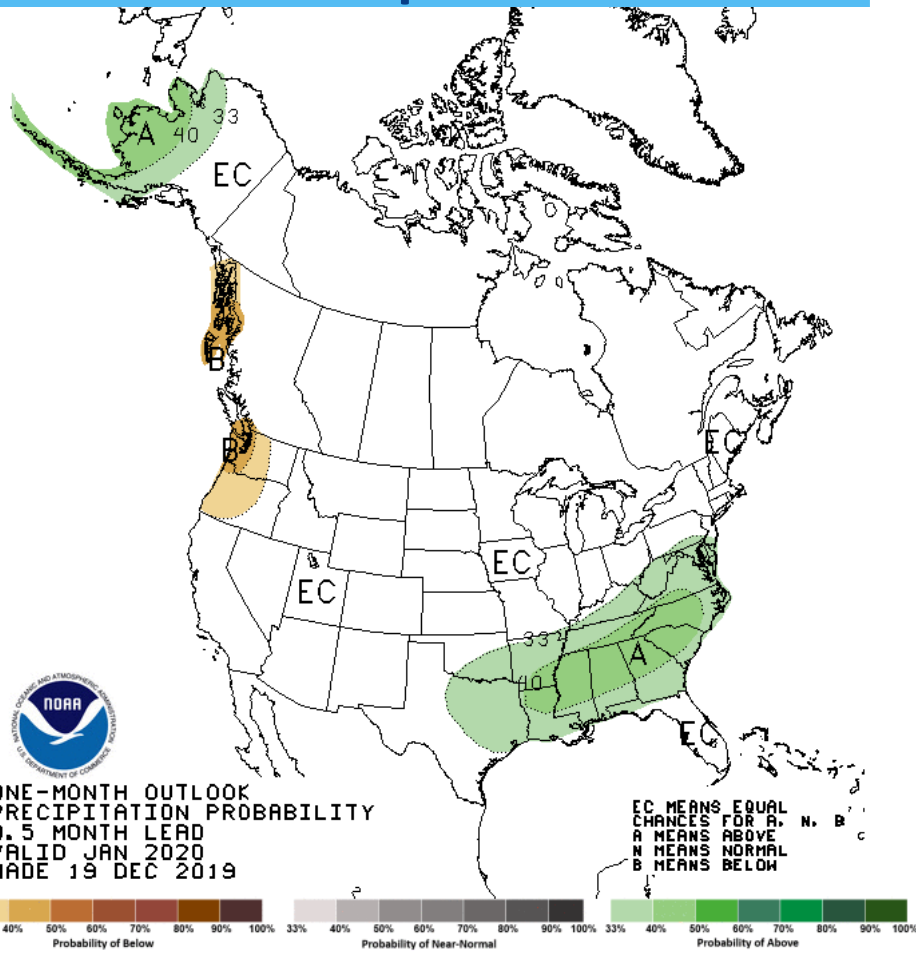
https://weather.cod.edu/forecast/

January Outlook

Temperature



Precipitation

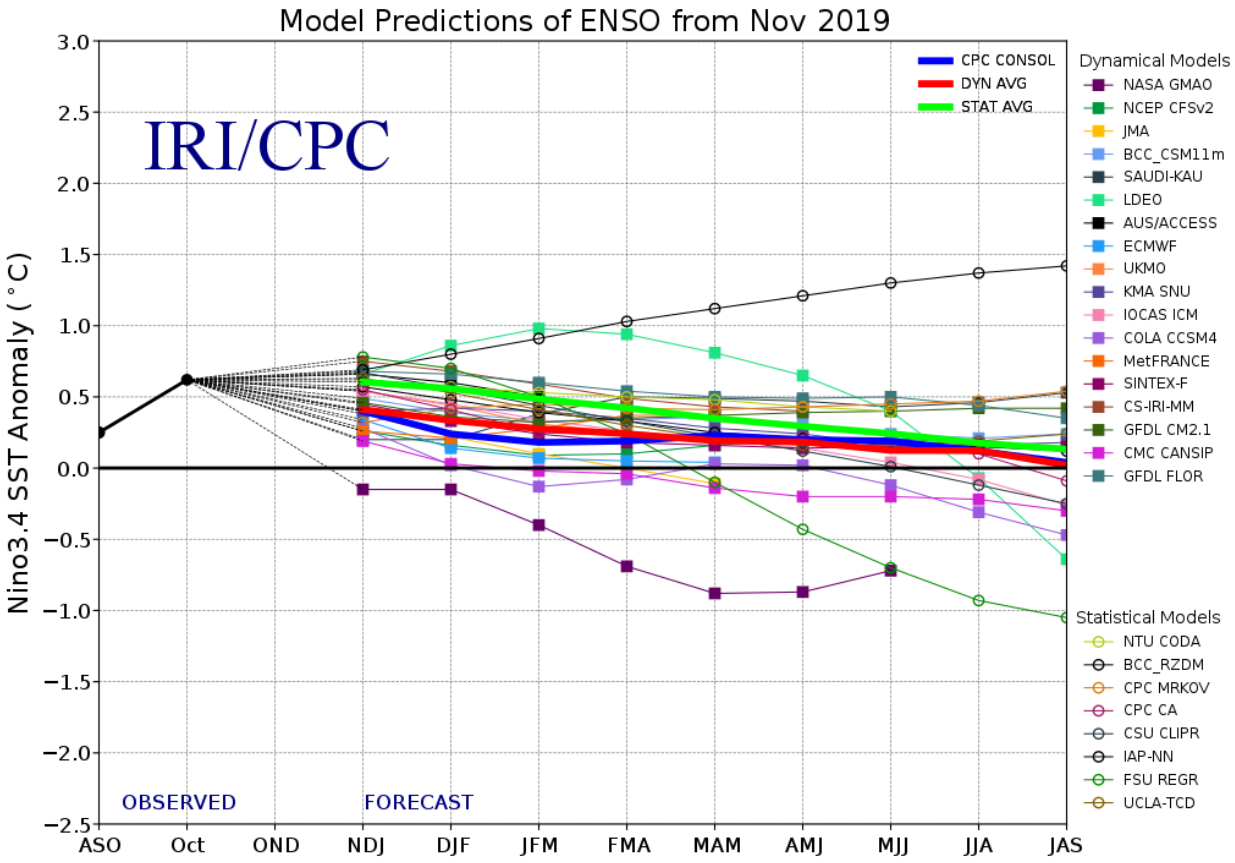


https://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead14/

ENSO Outlook

ENSO Alert: Not Active

Updated on Dec 12, 2019

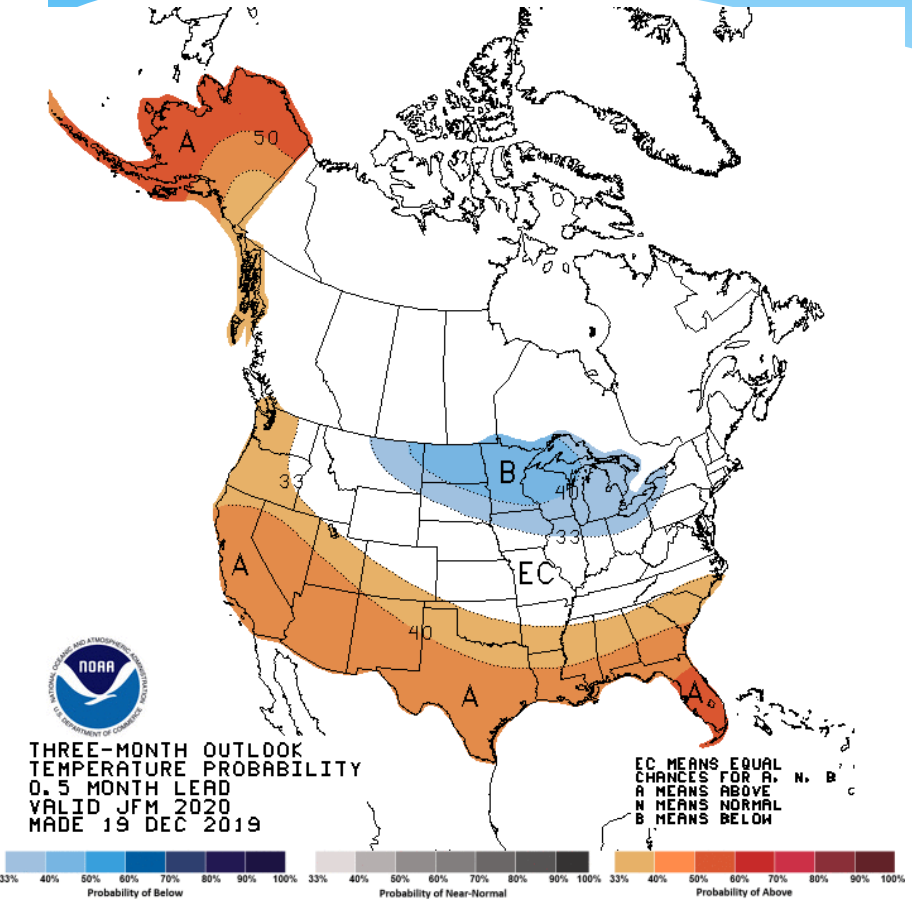


- **The majority of models including CPC CONSOL, DYN AVG and STAT AVG continue to favor ENSO-neutral through the Northern Hemisphere spring and summer.**

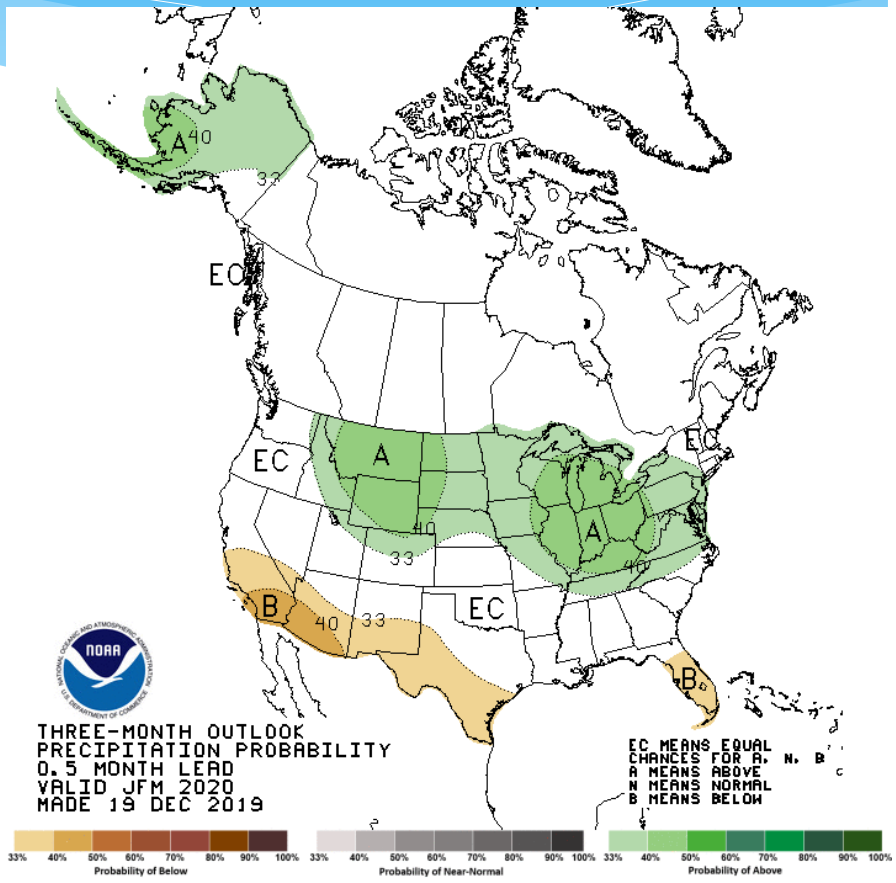
https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/?enso_tab=enso-sst_table

January – March Outlook

Temperature



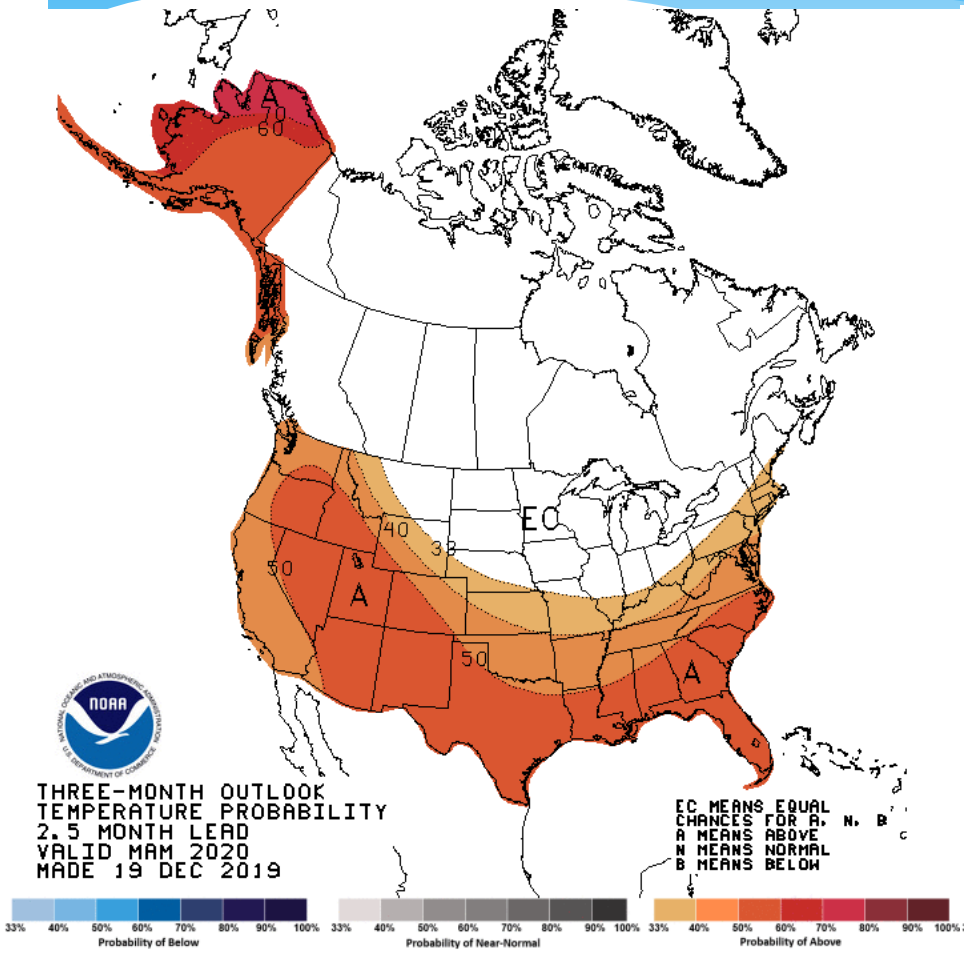
Precipitation



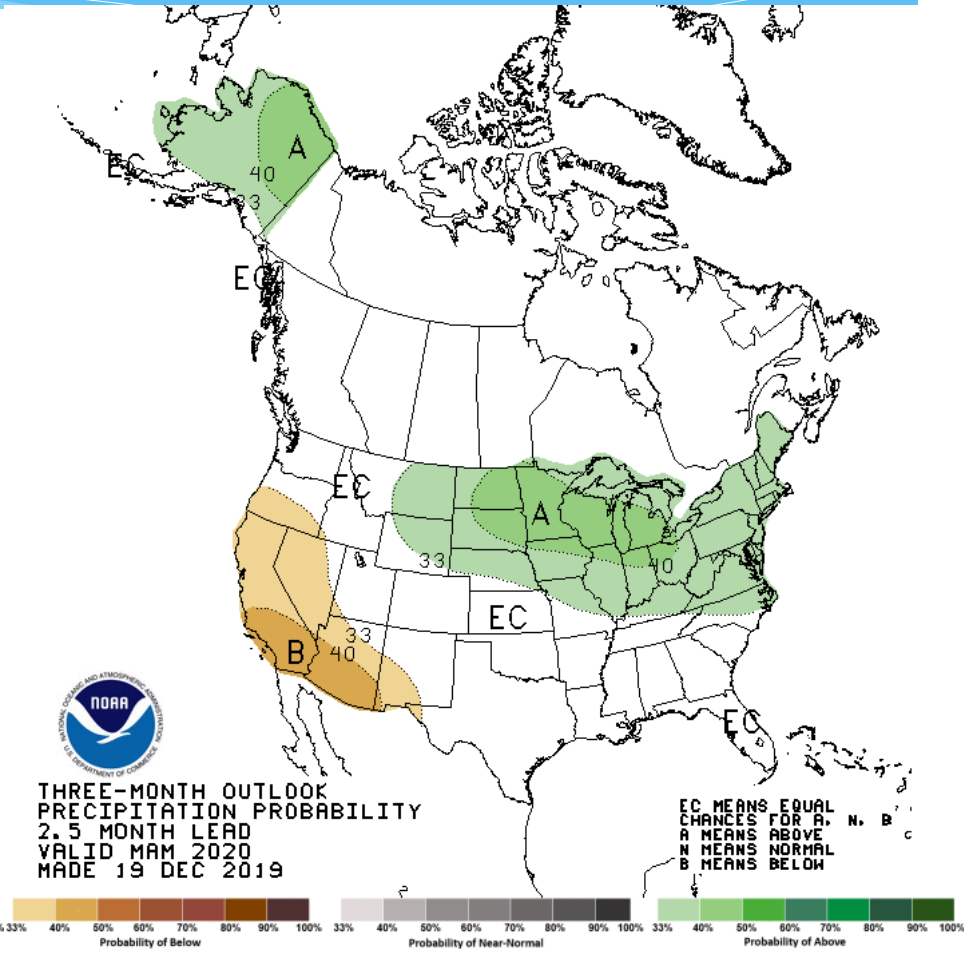
https://www.cpc.ncep.noaa.gov/products/predictions/long_range/

March – May (spring) Outlook

Temperature



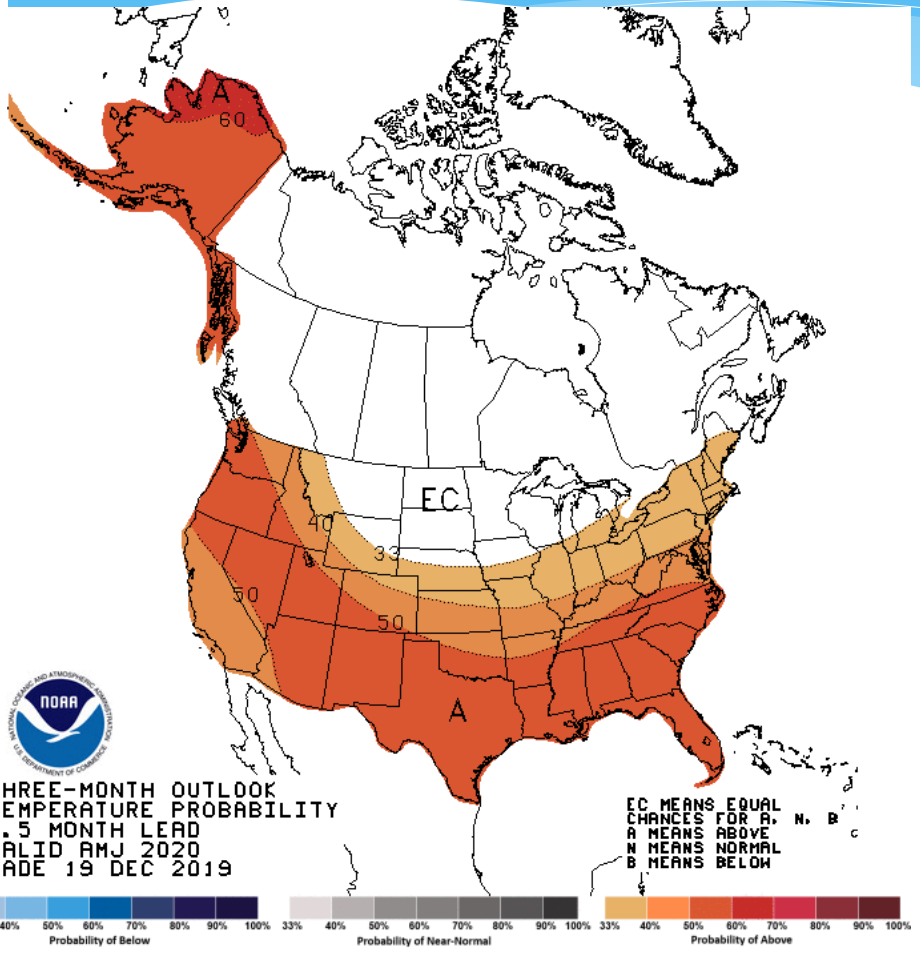
Precipitation



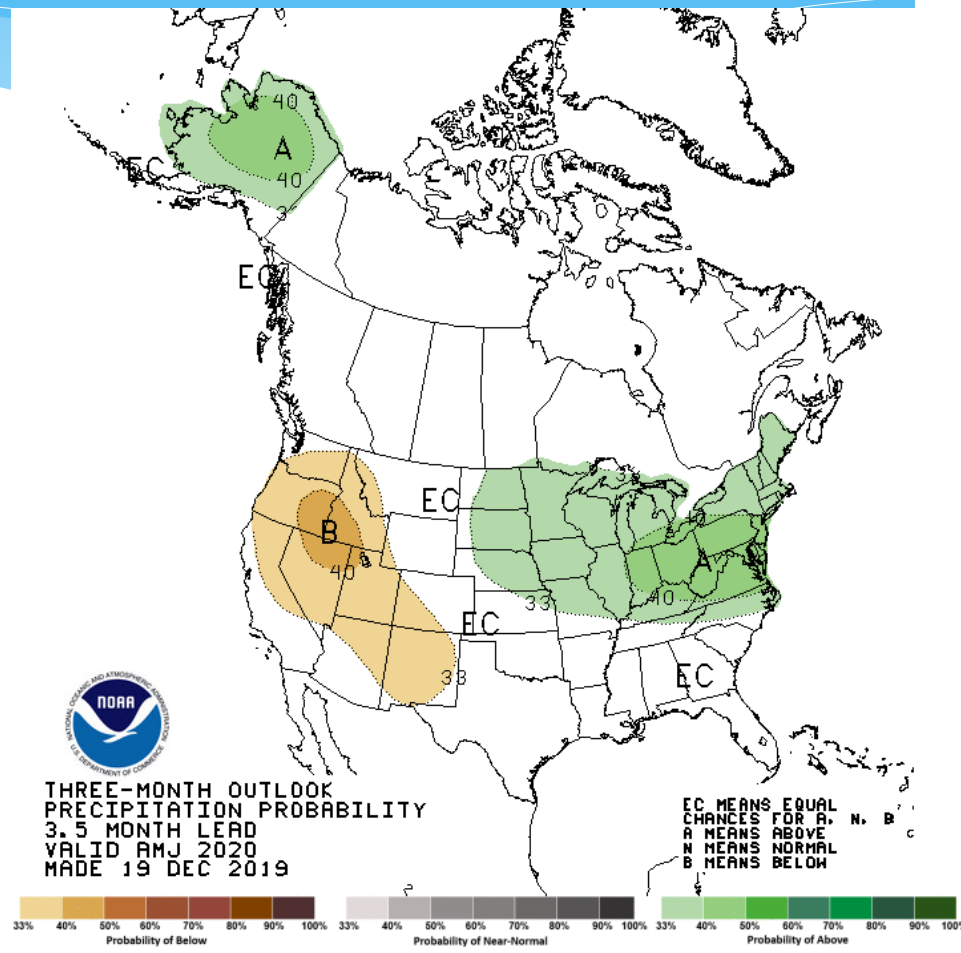
https://www.cpc.ncep.noaa.gov/products/predictions/long_range/

April – June Outlook

Temperature



Precipitation



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

Summary

* Despite the early snow, and the saturated soil, there is still a little progress with the corn being harvested in the Northern Plains.
* Much of the region experienced cold to near-average temperatures in November in terms of precipitation with few exceptions (SD & KY were wet; KS was Dry).
* Concerns for rivers freezing above flood stage as we go into winter;
* Spring ice jams especially along rivers flows to North;
* Dryness concerns for SW Wyoming, Colorado, SW Kansas, and SW Nebraska
* Spring flood concerns for Missouri & Mississippi River Basins and potential delay in spring fieldwork preparation and planting.
* Projected spring water levels in all Great Lakes are expected to be well above average (if not record levels).

Additional Resources from our Partners

* **Today's and Past Recorded Presentations and :**
* *http://mrcc.illinois.edu/multimedia/webinars.jsp*
  http://hprcc.unl.edu/webinars.php
- NOAA's National Centers for Environmental Information: www.ncdc.noaa.gov
  - Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Climate Portal: www.climate.gov
- U.S. Drought Portal: www.drought.gov
- National Drought Mitigation Center: http://drought.unl.edu
- State climatologists
  * http://www.stateclimate.org
- Regional climate centers
  * http://mrcc.isws.illinois.edu
  * http://www.hprcc.unl.edu

Thank You and Questions?

* Questions:
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  * Natalie Umphlett: numphlett2@unl.edu ; 402 472-6764
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  * crhroc@noaa.gov