# North Central Region Climate and Drought Outlook January 20, 2022

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Sunset in Minnesota, January 11, 2022
Photo: Nancy Boulay

USDA United States Department of Agriculture Midwest Climate Hub

GLISA A NOAA RISA TEAM

MICHIGAN STATE UNIVERSITY

AASC AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS

NDMC NATIONAL DROUGHT MITIGATION CENTER UNIVERSITY OF NEBRASKA

# General Information

- **Providing climate services to the Central Region**
  - Collaboration Activity Between:
    - State Climatologists/American Association of State Climatologists
    - NOAA NCEI/NWS/OAR/NIDIS
    - USDA Climate Hubs
    - Midwest and High Plains Regional Climate Centers
    - National Drought Mitigation Center
- **Next Regular Climate/Drought Outlook Webinar**
  - February 17, 2022 2pm EST (1pm CST): Peter Goble, Colorado State Climate Office
- **Access to  Future Climate Webinars and Information**
- *https://www.drought.gov/regional-activities/north-central-region-climate-summary-and-outlook-webinars*
- **Recordings of Past Webinars**
- *https://mrcc.purdue.edu/multimedia/webinars.jsp*
- *http://www.hprcc.unl.edu/webinars.php*
- **Open for questions at the end**

# Agenda

- Recent Conditions
- Impacts
- Outlooks

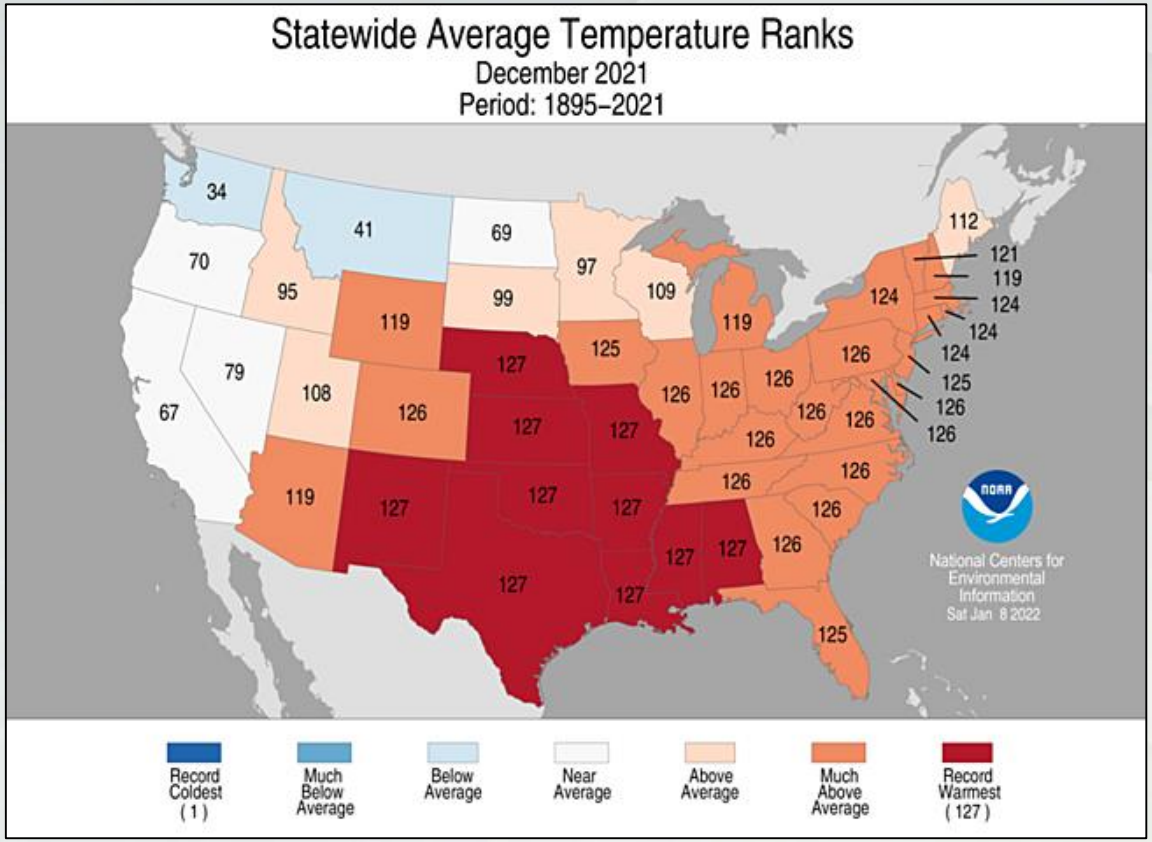
Sunset in Kansas, January, 2022.
Photo courtesy: Chip Redmond, KSU

# A Look Back

## Recent Conditions

First “white” Christmas since 1983, Brownsville, OR
December 25th, 2021.
Photo courtesy: B.J. Baule MSU

# December Temperature Ranks



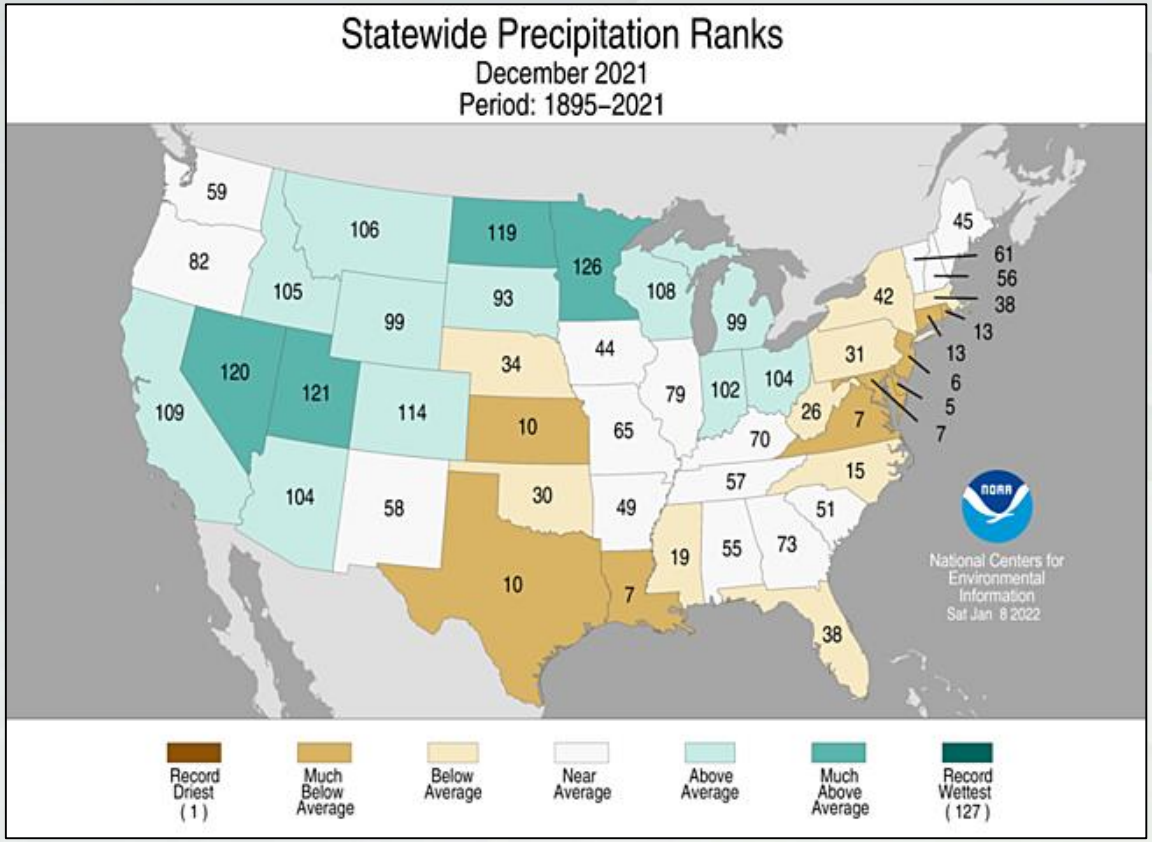

- Top 10's
  - ✓ NE, KS, MO record warmest
  - ✓ KY, OH, IN, IL, CO 2nd warmest
  - ✓ IA 3rd warmest
  - ✓ MI, WY 9th warmest
- Relative cold in MT

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

# 2 Major Tornado Outbreaks December 10-11 & 15, 2021

- 193 confirmed tornadoes in December
- Previous record 99 in 2002
  - Records back to 1950
- Average Number (2002-2021) in December
  - 36
  - Usually 2nd lowest in year (lowest: January (32))
- Included tornadoes in MN, first on record in December
- Derecho across IA

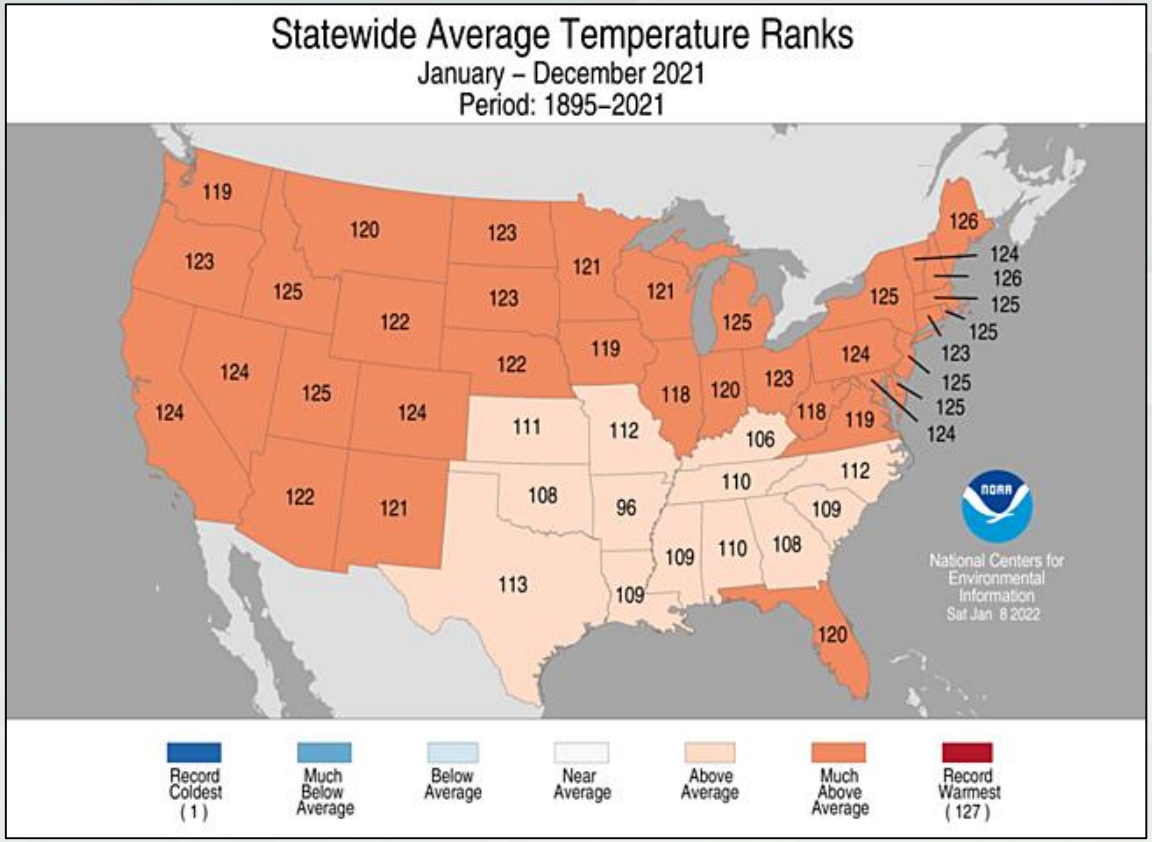
# December Precipitation Ranks



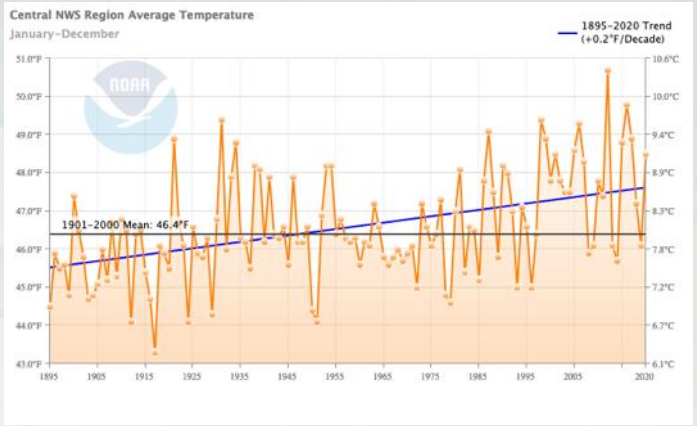

- Top 10's
  - ✓ MN 2nd wettest
  - ✓ ND 9th wettest
  - ✓ KS 10th driest

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

# 2021 Temperature Ranks




Regional:114/125(warmest)

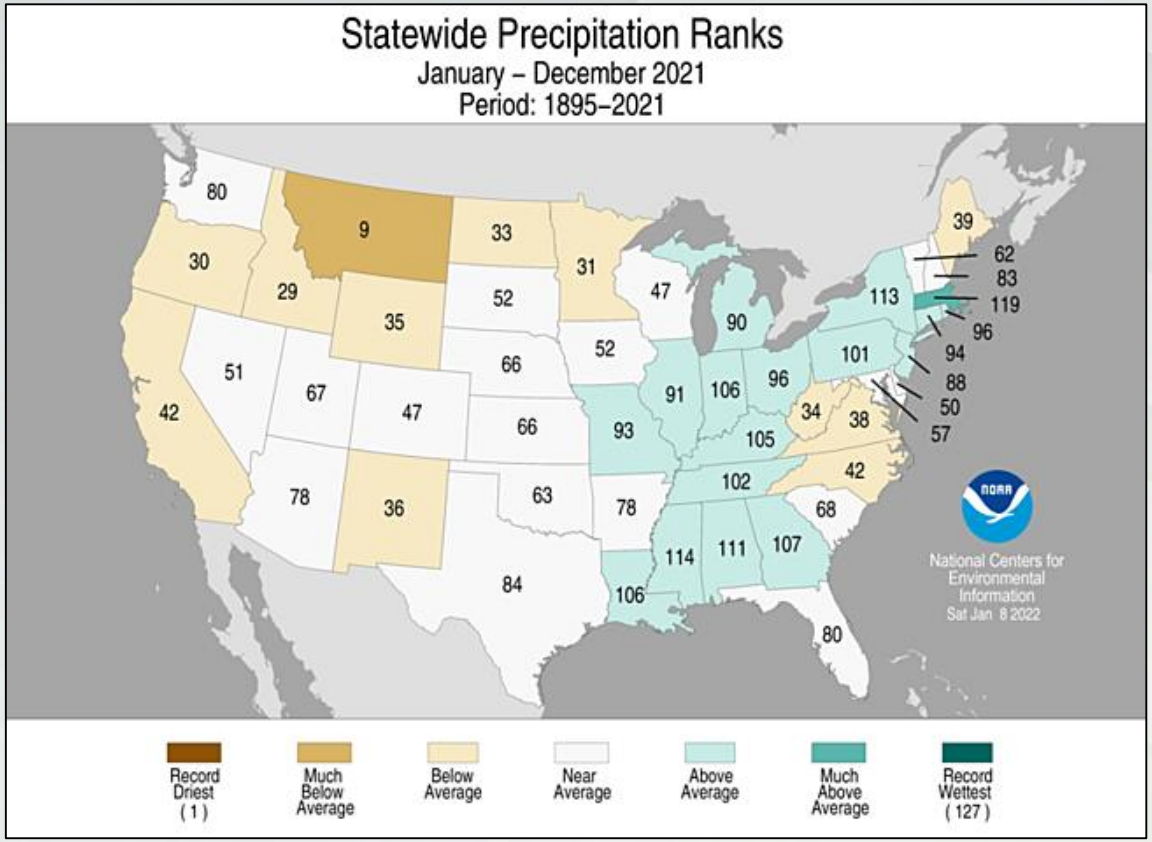



Central Region: MT, WY, CO, KS, NE, SD, ND, MN, IA, MO, KY, WI, IL, IN, MI, OH

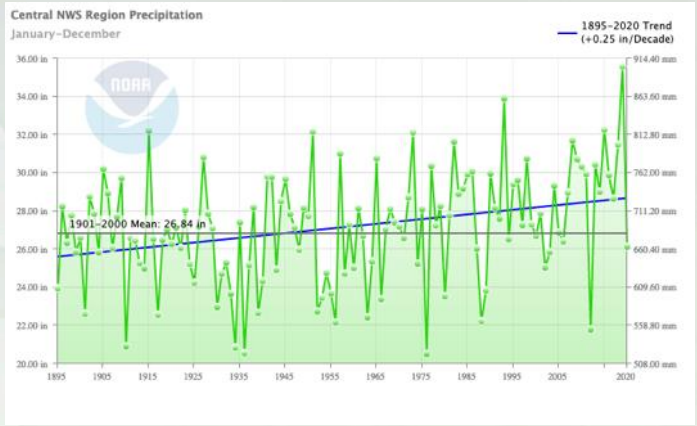
https://www.ncdc.noaa.gov/cag/regional/time-series/

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

# 2021 Precipitation Ranks



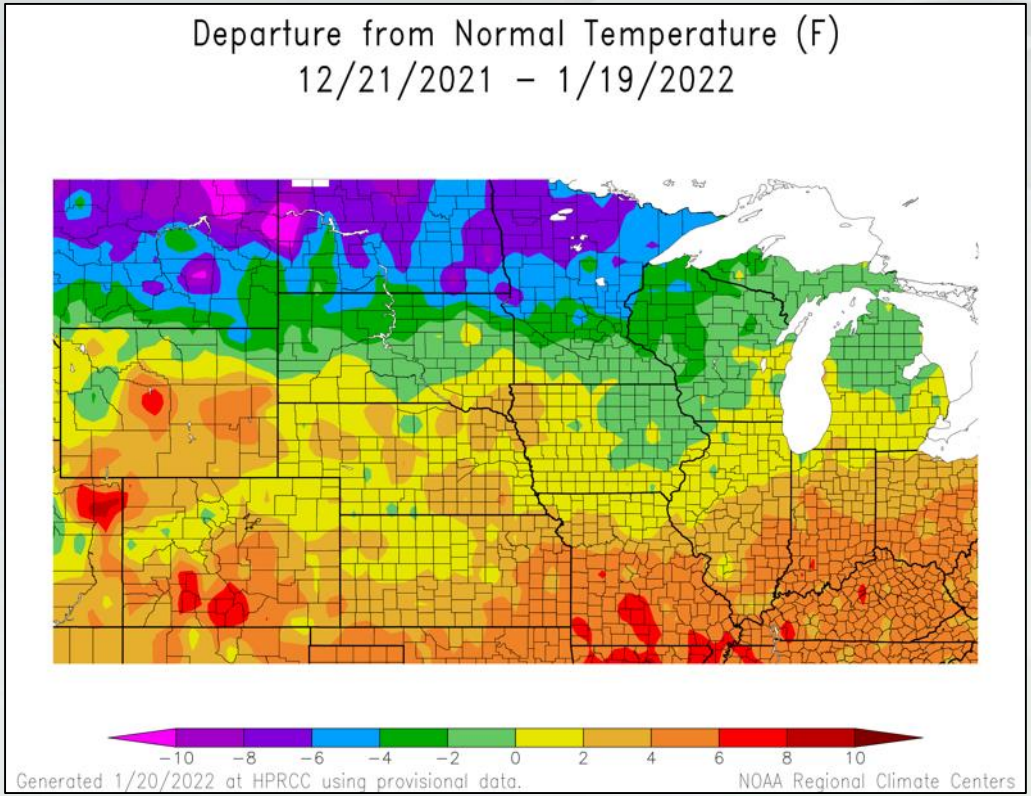

Regional:46/125(wettest)




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

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

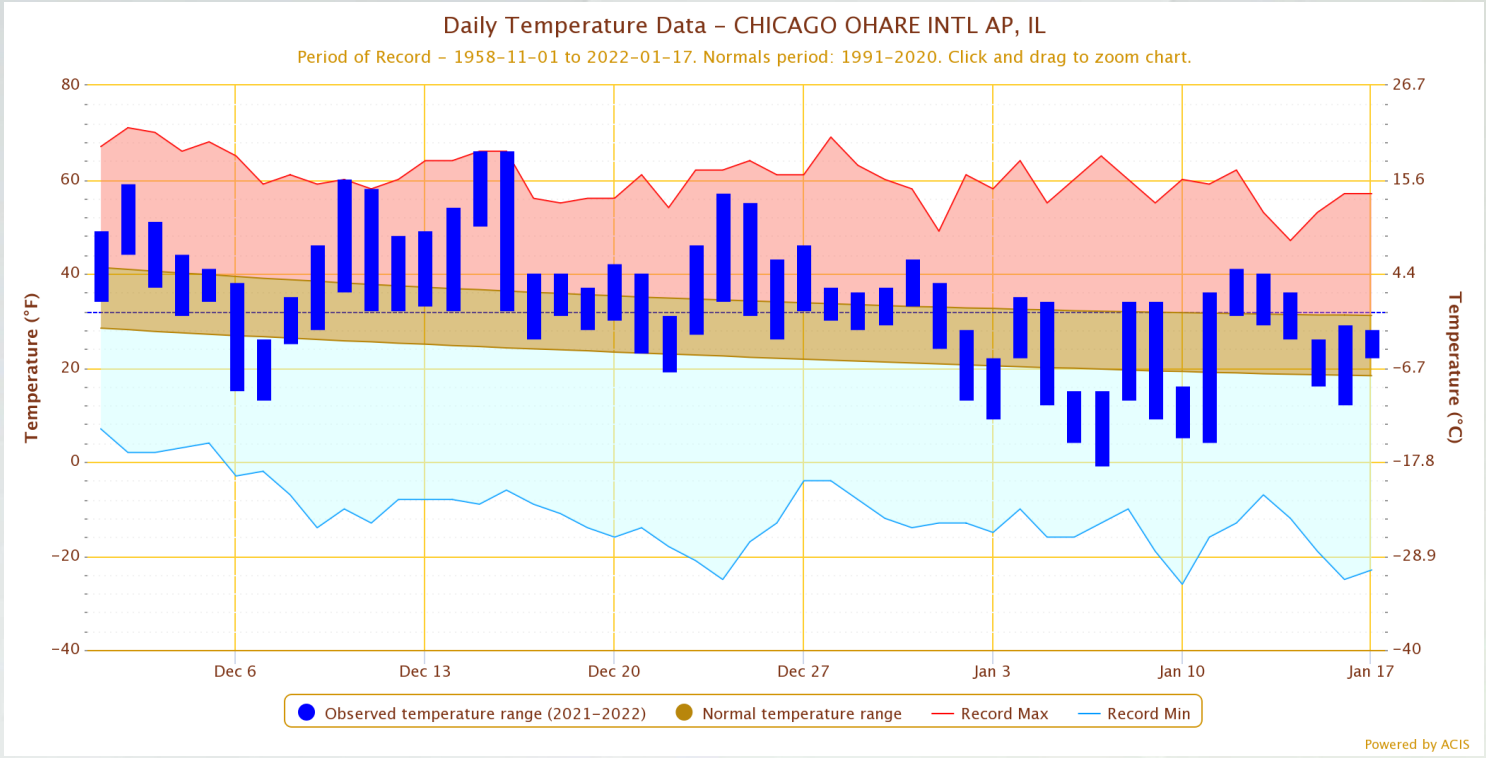
# Last 30 Days




- Below average temperatures across northern tier
- Above average across the south
- General North-South gradient
- Warm early in last half of December, Colder since New Year

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

# Chicago O'Hare 12/1/21-1/17/22- Daily Temperature




Blue Bars: Daily Max/Min Temp

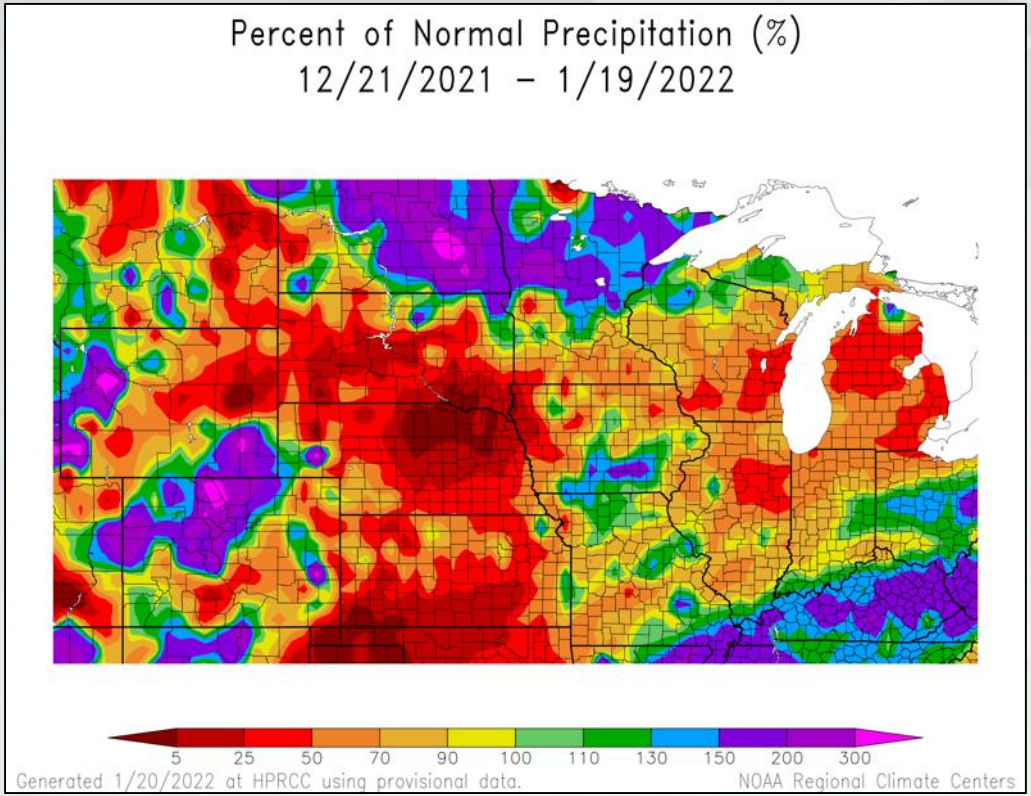
Brown: Normal temperature range

Shaded Red: Record High

Shaded Blue: Record Low

http://scacis.rcc-acis.org

# Last 30 Days

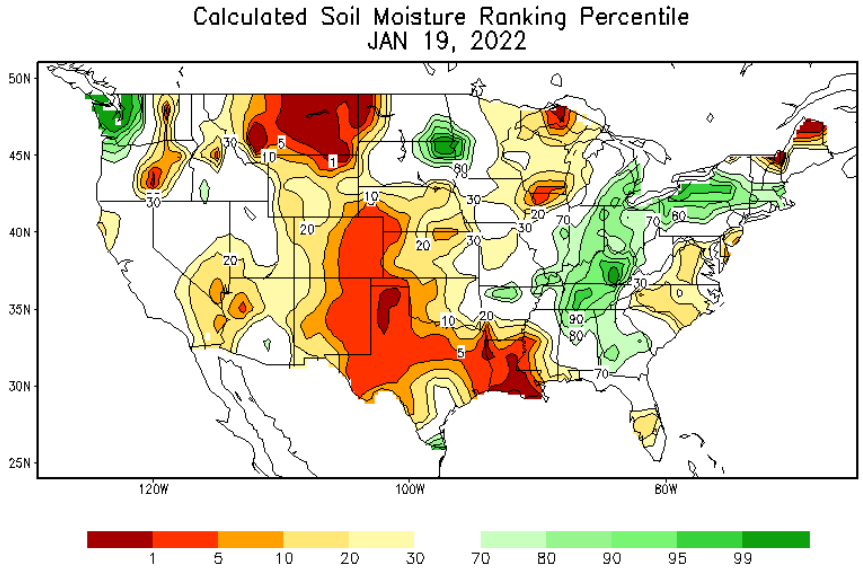



- Below average precipitation across much of the region
  - Particularly central-Plains
- Above average across North Dakota, northern Minnesota, northwest Colorado, much of the Ohio River Valley

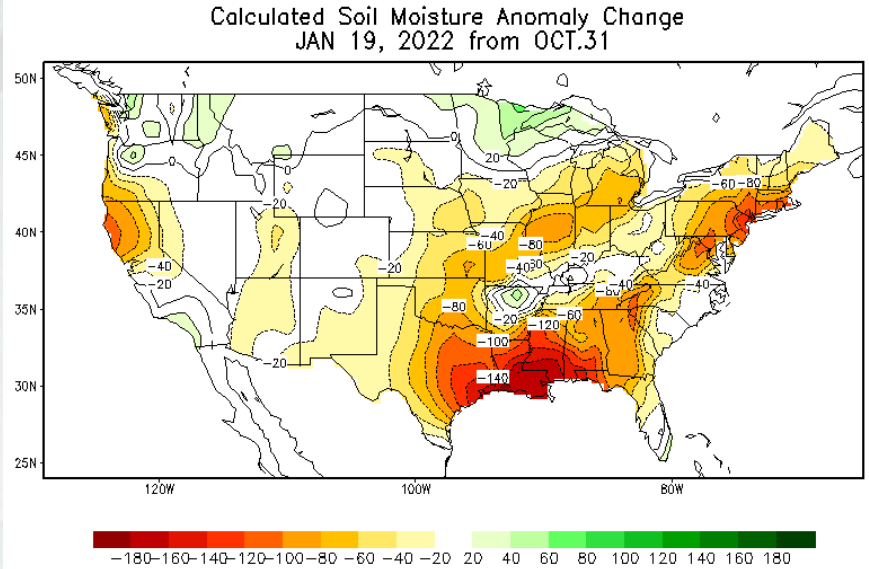
https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

# Soil Moisture

## Today



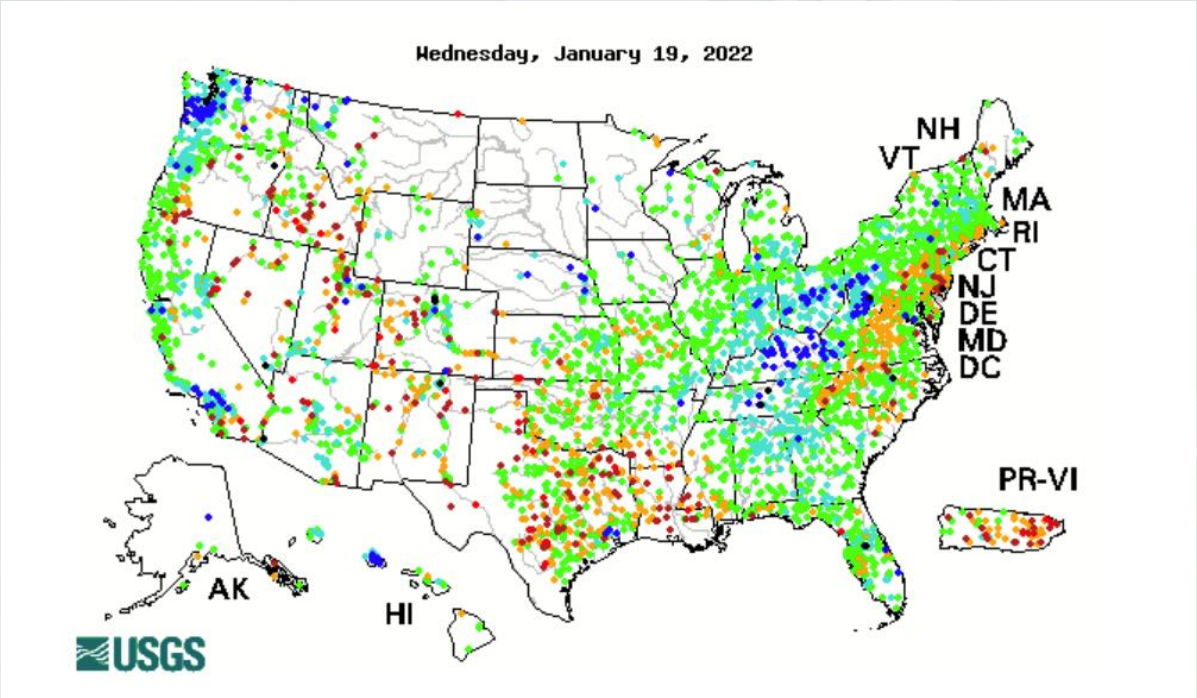

## Change since Oct 31 '21




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

# 28-Day Average Streamflow

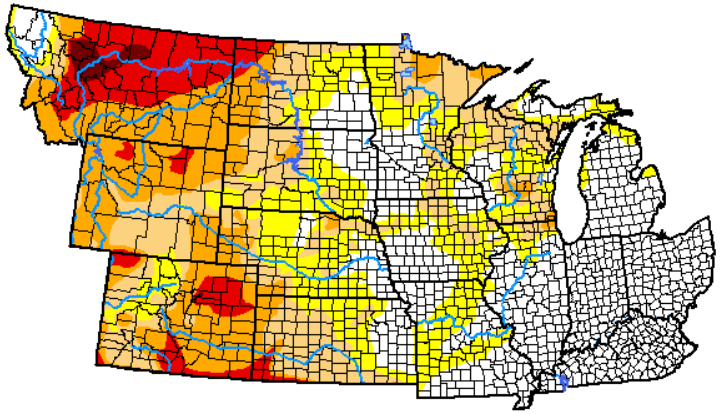
| Explanation - Percentile classes | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| Low | <10 | 10-24 | 25-75 | 76-90 | >90 | High |
| | Much below normal | Below normal | Normal | Above normal | Much above normal | |




Note: Fewer observations in frozen areas, just that time of year

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

# U.S. Drought Monitor
# NWS Central



## January 18, 2022
***(Released Thursday, Jan. 20, 2022)***
**Valid 7 a.m. EST**

*Drought Conditions (Percent Area)*

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|---|---|---|---|---|---|
| **Current** | 33.21 | 66.79 | 46.85 | 27.52 | 9.11 | 0.91 |
| **Last Week** 01-11-2022 | 33.42 | 66.58 | 46.40 | 26.90 | 10.65 | 1.14 |
| **3 Months Ago** 10-19-2021 | 33.69 | 66.31 | 48.16 | 30.73 | 14.36 | 2.47 |
| **Start of Calendar Year** 01-04-2022 | 33.94 | 66.06 | 46.53 | 27.27 | 10.67 | 1.77 |
| **Start of Water Year** 09-28-2021 | 31.08 | 68.92 | 50.85 | 37.30 | 18.35 | 3.17 |
| **One Year Ago** 01-19-2021 | 29.24 | 70.76 | 45.44 | 23.90 | 11.51 | 2.52 |

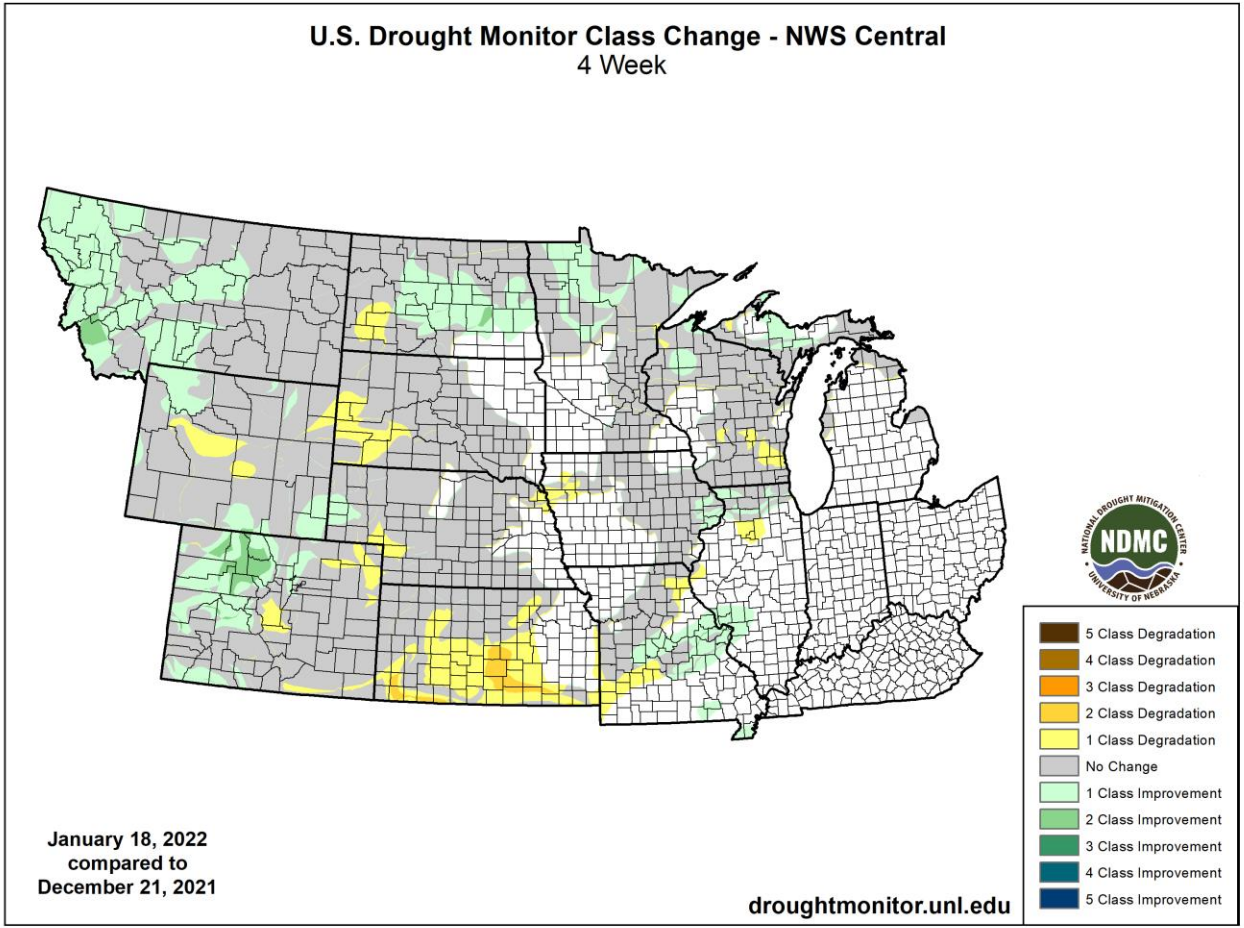
*Intensity:*

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

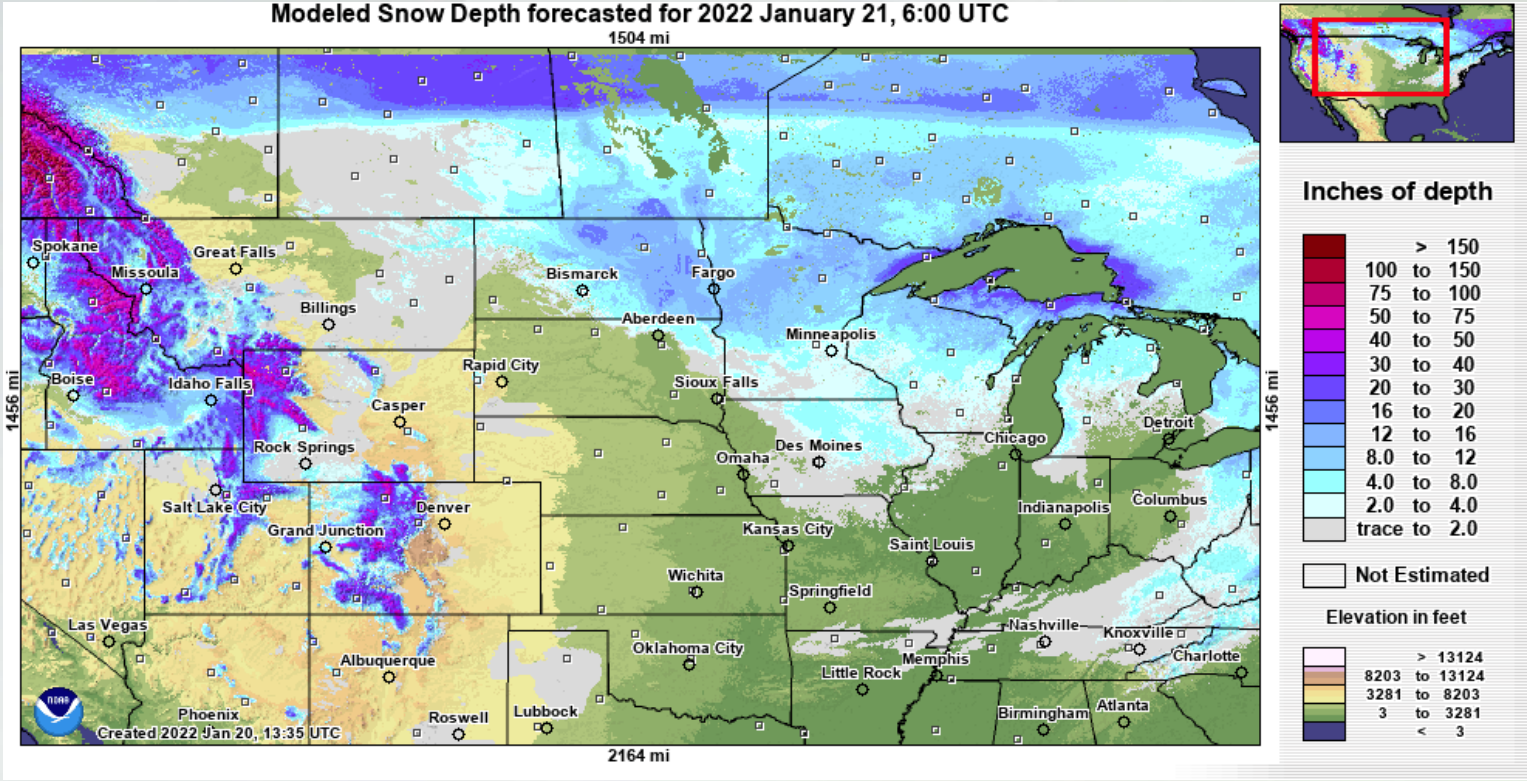
*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx*

*Author:*
Brian Fuchs
National Drought Mitigation Center

**droughtmonitor.unl.edu**

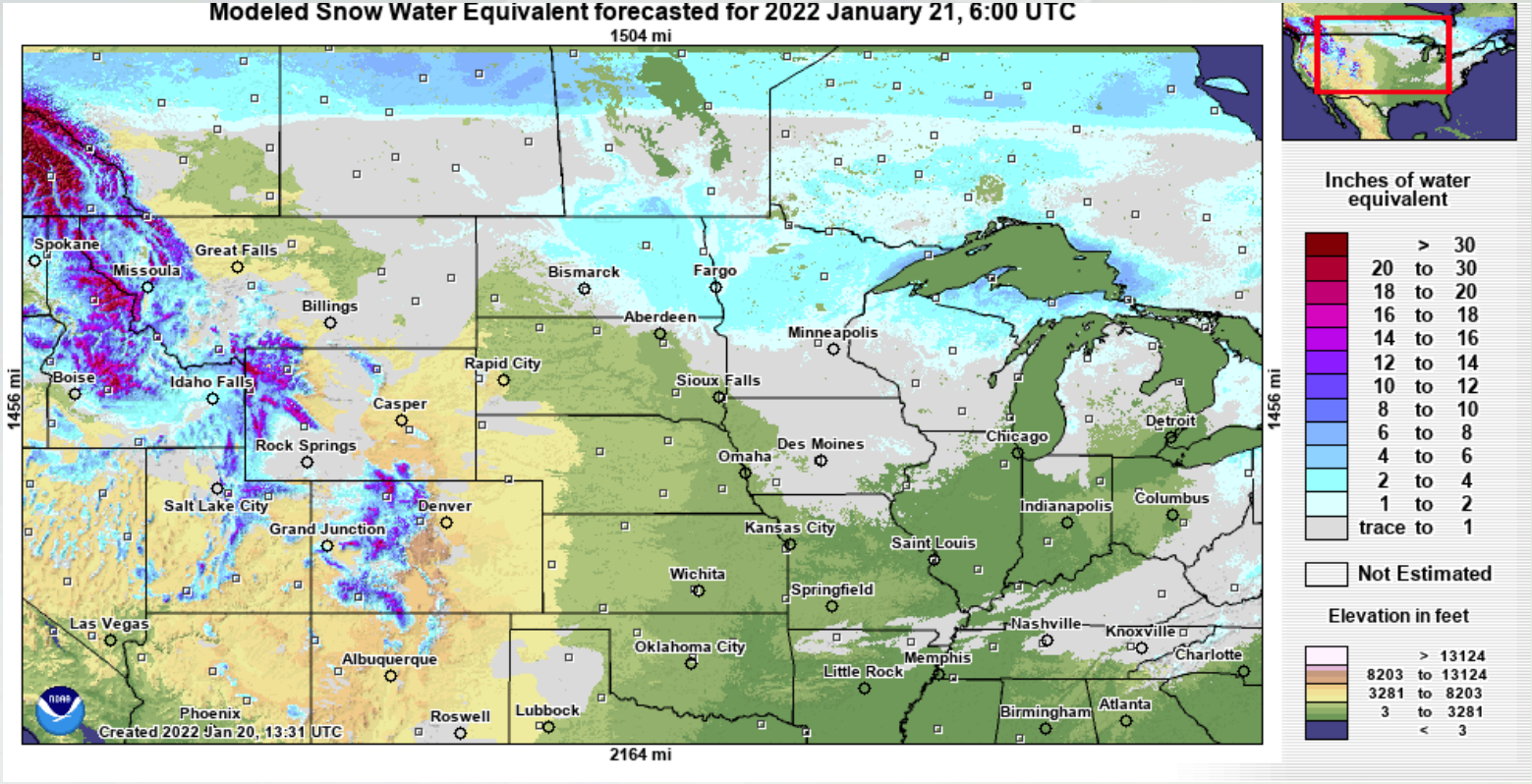

U.S. Drought Monitor Class Change - NWS Central
4 Week
January 18, 2022
compared to
December 21, 2021
droughtmonitor.unl.edu
NDMC
NATIONAL DROUGHT MITIGATION CENTER
UNIVERSITY OF NEBRASKA
5 Class Degradation
4 Class Degradation
3 Class Degradation
2 Class Degradation
1 Class Degradation
No Change
1 Class Improvement
2 Class Improvement
3 Class Improvement
4 Class Improvement
5 Class Improvement

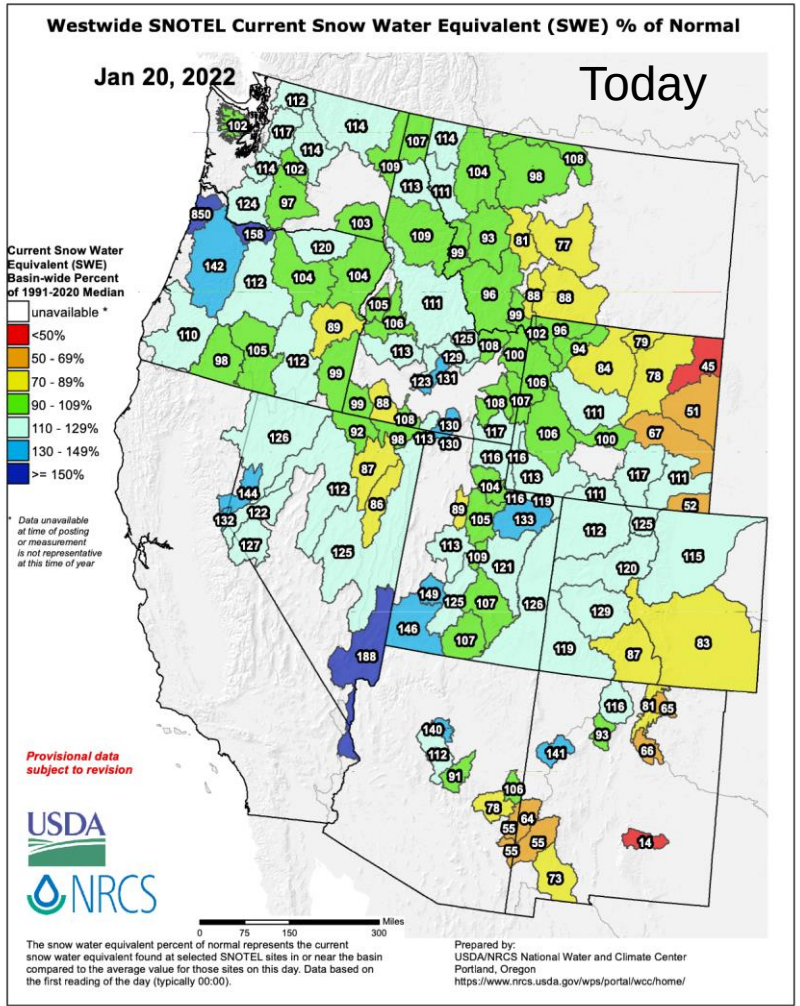
# Current Snow Depth




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

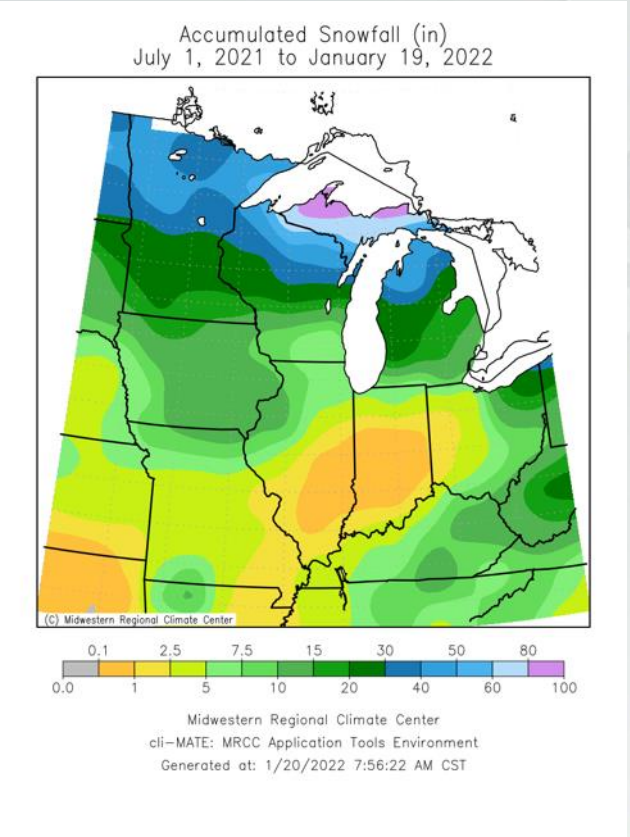
# Current Snow Water Equivalent

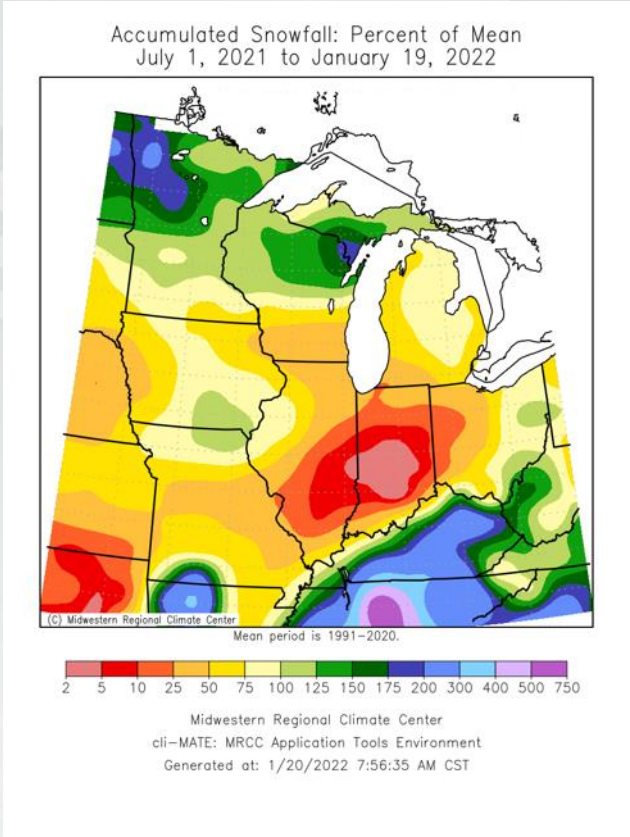





- Conditions improving in higher elevations, especially in CO
- Areas east of the continental divide still lagging behind

# Midwest Snow

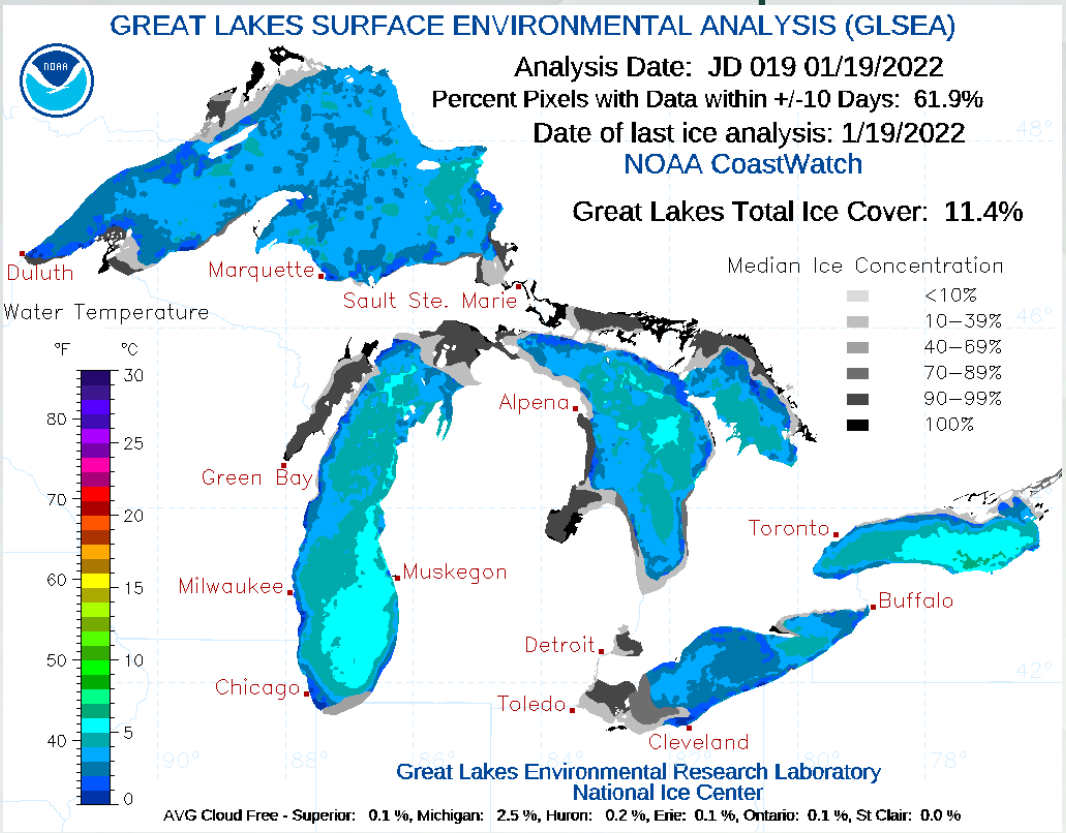


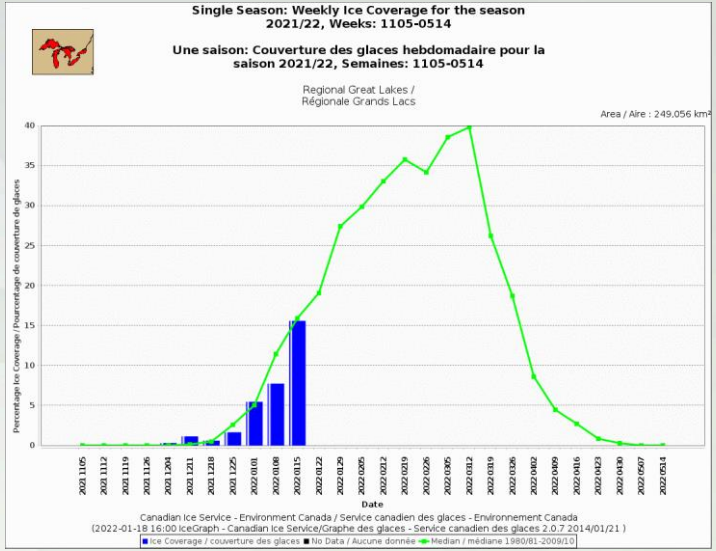




- Above average
  - ✓ ND, NW MN, KY
- Rest of region generally near or below average
- Snow Drought
  - E. IL, IN

https://mrcc.purdue.edu/CLIMATE/Maps/

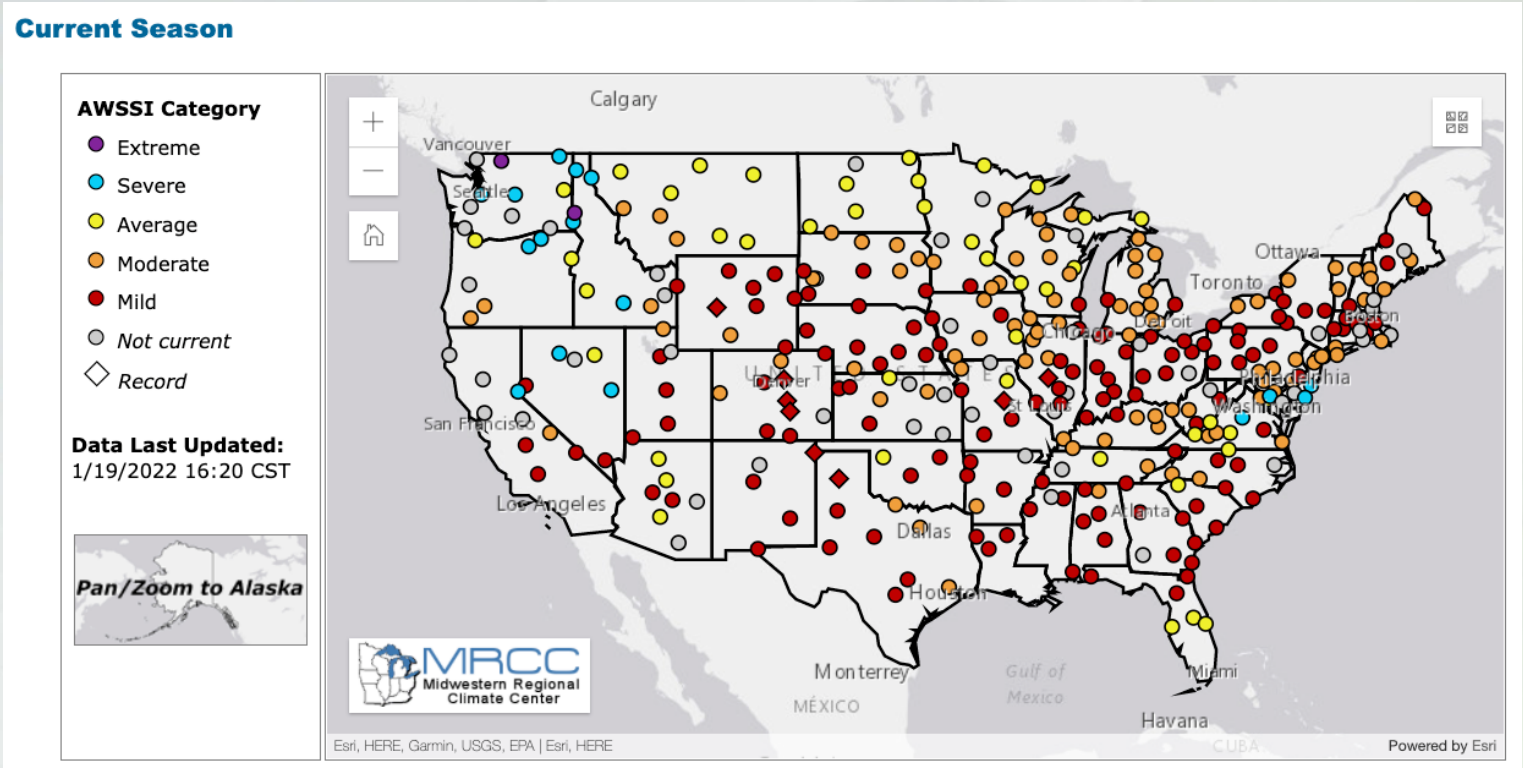
# Great Lakes Water Temperatures/Ice Cover




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

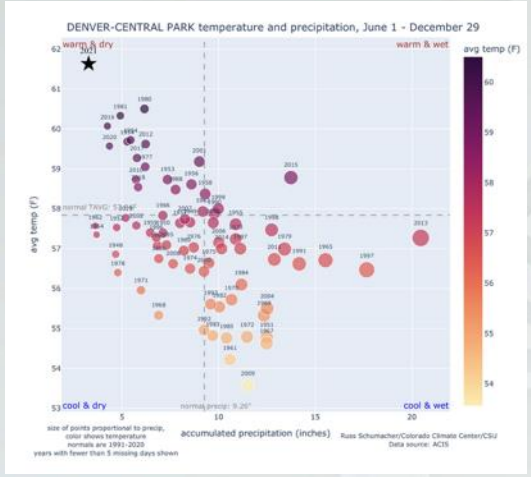
# Accumulated Winter Season Severity Index

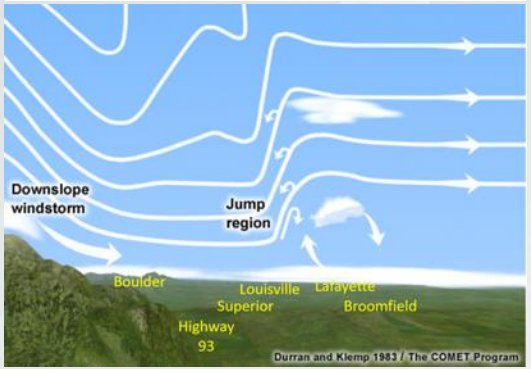



https://mrcc.purdue.edu/research/awssi/indexAwssi.jsp

# Impacts

# Colorado Marshall Fire, 30 DEC 2021




- The preceding summer, fall and early winter seasons were abnormally warm and dry across the region.
- High winds developed on the 30th as the result of a mountain wave that developed with very strong westerly winds across the Rockies.
- Sustained winds of 50-60 mph with gusts of 80-100 mph were observed between Boulder and Denver.

https://climate.colostate.edu/drought/index.html
https://www.weather.gov/bou/MarshallFire20211230

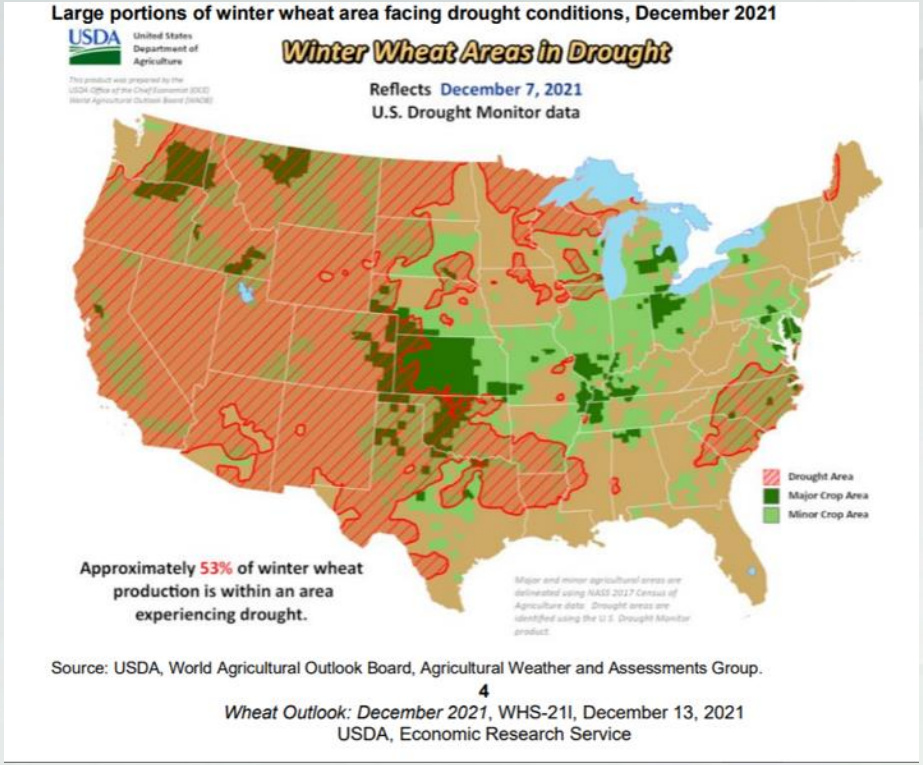
https://www.weather.gov/bou/HighWinds12_30_2021

# Colorado Marshall Fire, 30 DEC 2021


- The fire began on the morning of Dec. 30 near the town of Marshall and spread across the communities of Superior and Louisville, prompting the evacuation of 35,000 people. The fire grew and strengthened rapidly due to sustained high winds and an extremely dry landscape.
- One fatality has been confirmed with another person still missing. 1,084 homes and seven commercial structures were destroyed, and 149 homes and another 30 commercial structures were damaged. A total of 6,200 acres were burned.
- The fire is now considered the most costly in Colorado history.

https://www.weather.gov/bou/MarshallFire20211230
Photo 1: Becky Bollinger, CO Climate Center

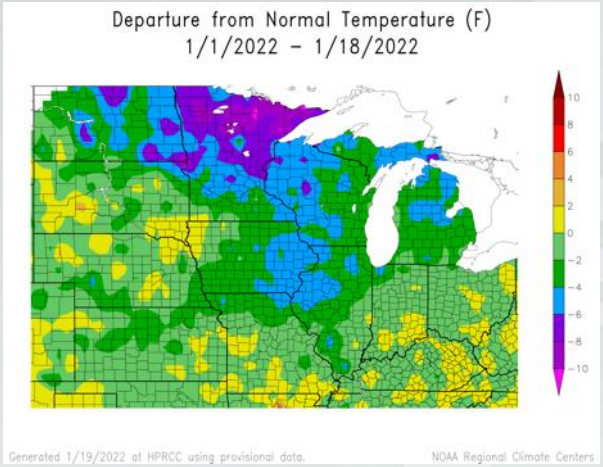
# Winter Wheat Condition



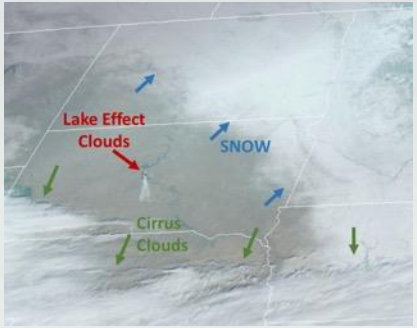

https://www.ers.usda.gov/webdocs/outlooks/102850/whs-21l.pdf?v=9632.9

- Winter wheat has been stressed by unfavorable fall and early winter weather across several major production areas:
  - Prolonged drought and recent high winds across southwestern sections of the central and southern Great Plains.
  - Abnormally wet conditions, late planting across sections of the Ohio Valley
- Condition index the lowest since 2012 and among the lowest of the past 20 years (as of late NOV)

# Cold Outbreak, JAN 2022




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




https://twitter.com/NWSSiouxFalls

http://Chicagotribune.com/news

- Abnormally cold temperatures since the beginning of the year have led to a number of challenges across northern and central sections of the region:
  - Frozen water infrastructure, freezing hydrants complicate fire fighting.
  - Deep frost levels in soils with little or no snow cover.
  - Increased demand for propane/natural gas
- Cold soil temperatures decrease winter survival of pests

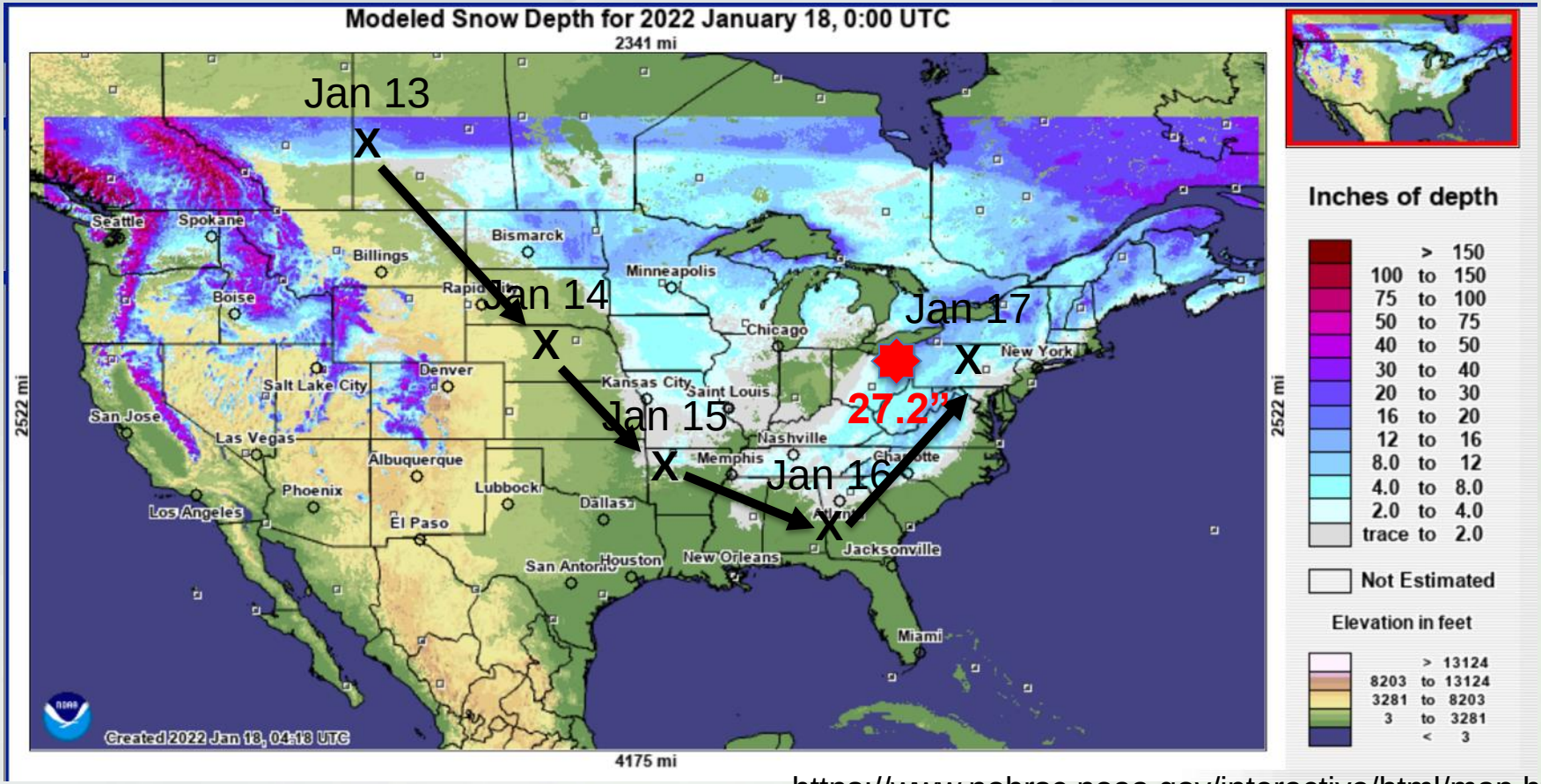
# Winter Storm, 14-17 JAN 2022


Brian Houlgrave, The Register

NT News

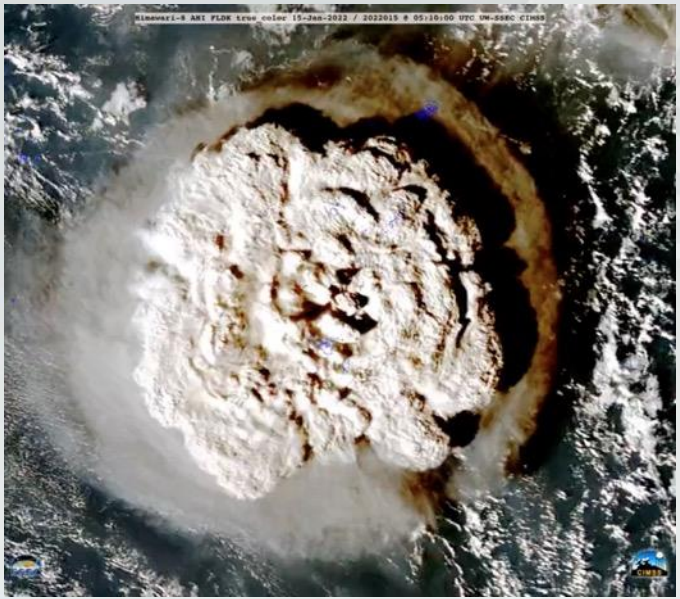
- A major winter storm impacted over 80 million people from the High Plains to the Southeastern United States and into the Mid Atlantic into the Northeastern United States from January 14–17, 2022.
- The storm brought high winds, widespread snow, sleet, freezing rain, and rain. More than 12” of snow fell across S. MN, Central IA, and portions of the Northeast.
- The storm impacted over 80 million people across its path with road closures, thousands of flight cancellations, and widespread power outages.

# Winter Storm, 14-17 JAN 2022




https://www.nohrsc.noaa.gov/interactive/html/map.html

# Tonga Volcanic Eruption, 15 JAN 2022

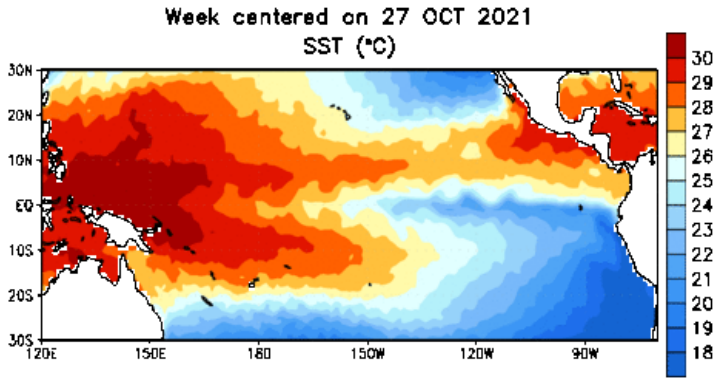


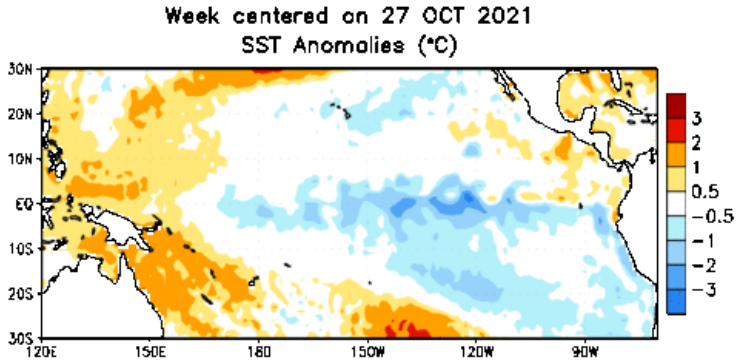
Himawari-8/Japan Meteorological Agency
via NOAA/SSEC/CIMSS and Reuters

- The Hunga Tonga-Hunga Ha'apai underwater volcano erupted on January 15, 2022. Damage from the eruption is still being assessed, but thought to be widespread/extensive. The eruption led to tsunamis across the Pacific, including the west coast the USA.
- The eruption was the strongest at the volcano in more than 1000 years, with an ash/gas plume reaching 24 miles in height (into the Earth’s stratosphere).
- Total sulfur dioxide emissions thus far are likely too small to have any measurable global climate impacts.
- Shockwaves measured around the globe.

# Outlooks

# La Niña Status

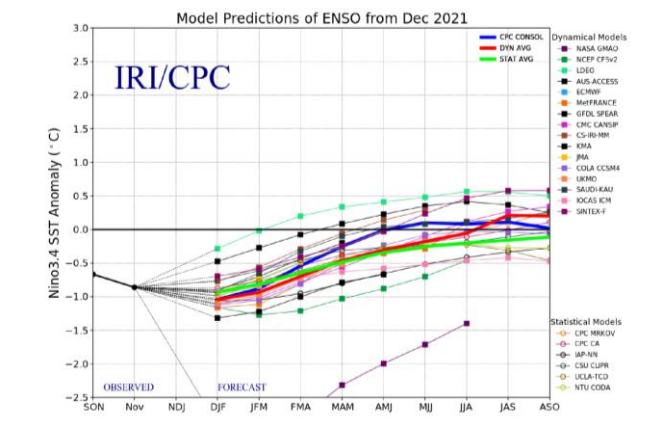


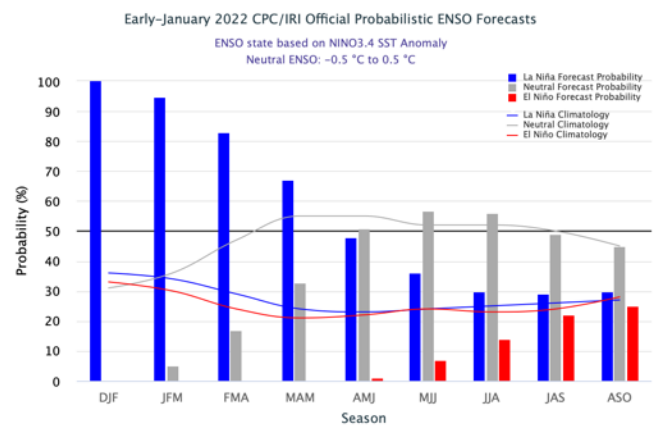




Weak-moderate La Nina conditions continue in the Equatorial Pacific region.

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml

# ENSO Outlooks

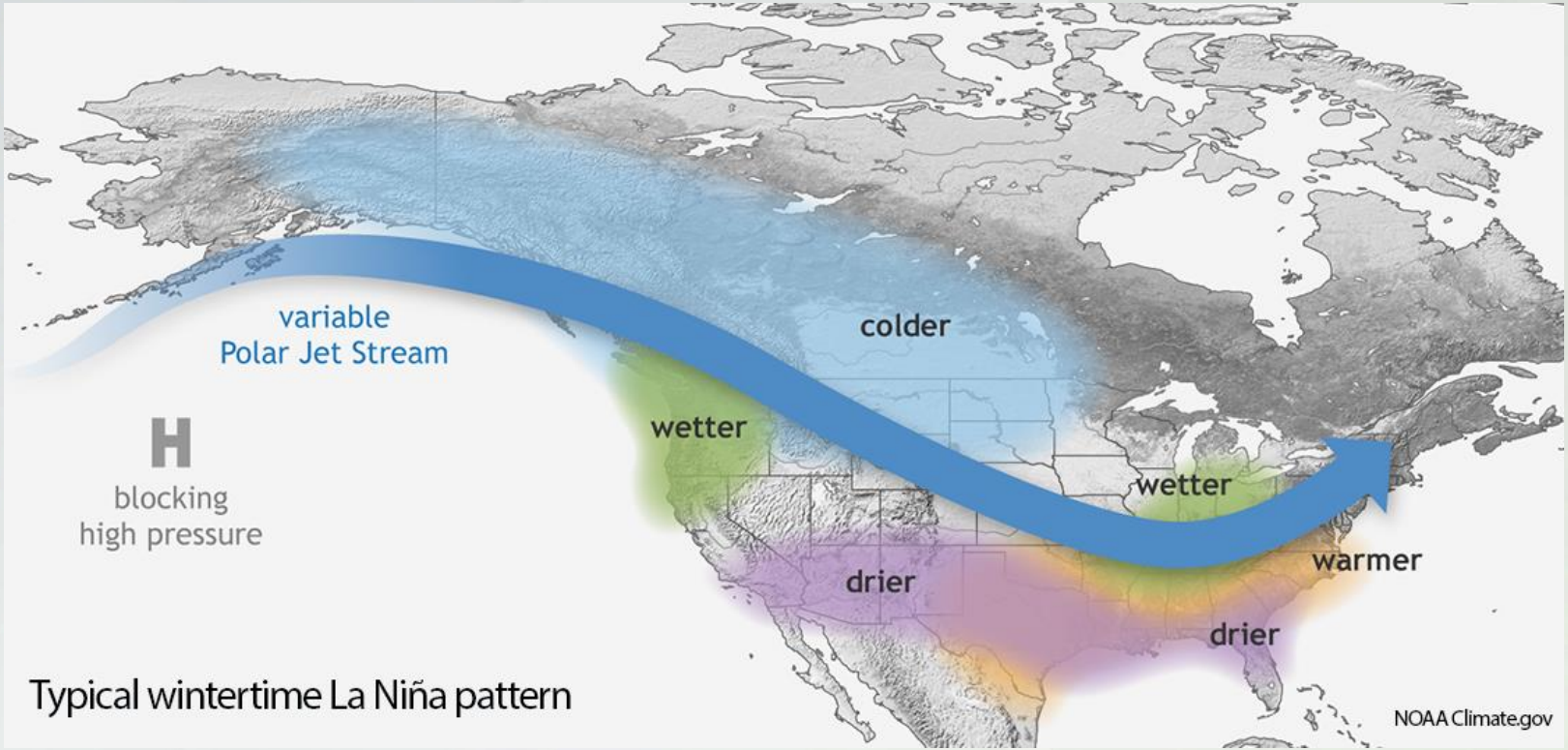



- The forecast calls for a continuation of La Niña conditions (67% chance) through March-May 2022, with a transition to ENSO-neutral occurring in April-June 2022 (51% chance) continuing through the Northern Hemisphere summer.
- La Niña is anticipated to impact temperature and precipitation patterns across the USA during the upcoming months.

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml

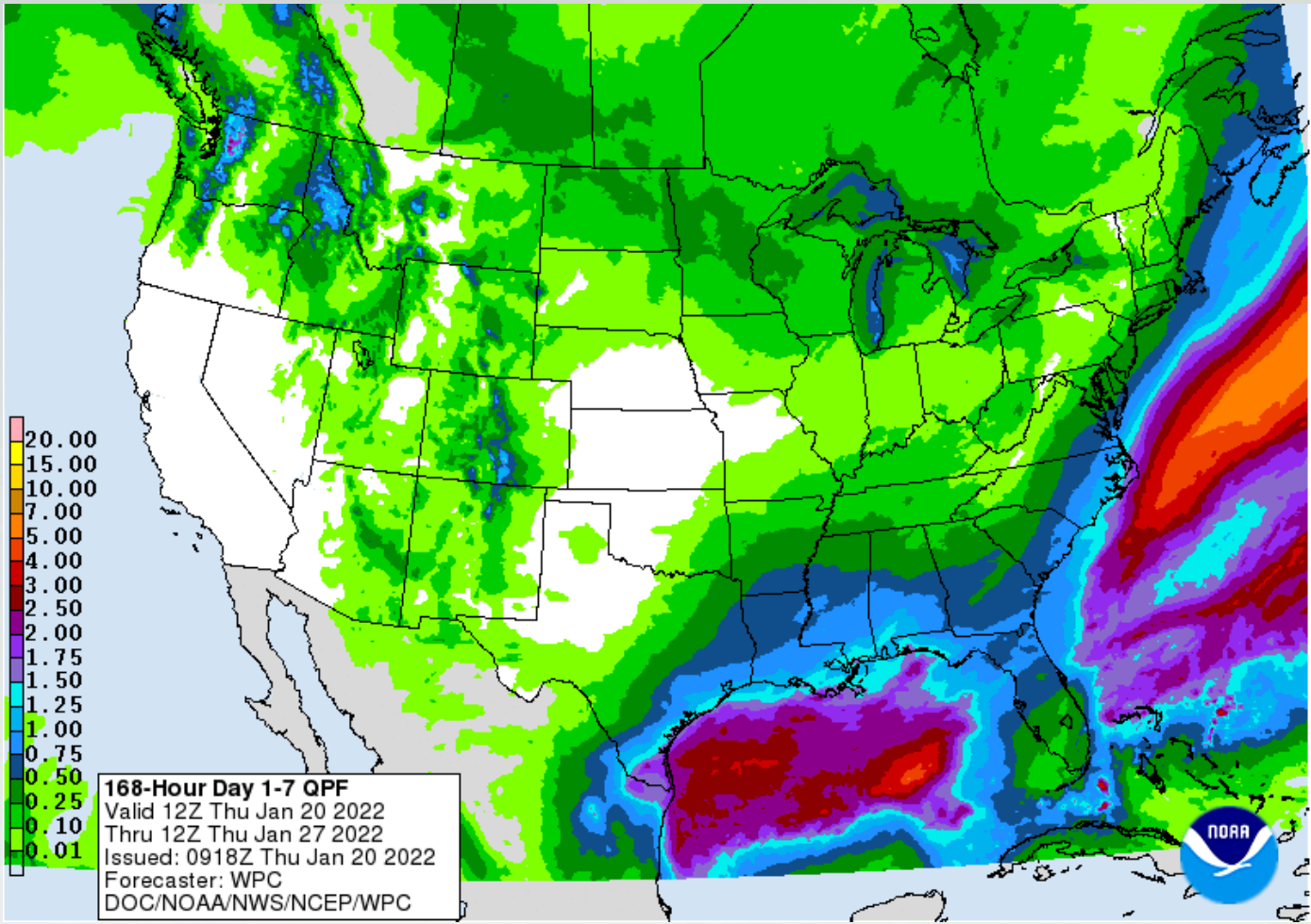
# Typical La Niña Winter Weather Impacts




https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml

# Precipitation Forecast

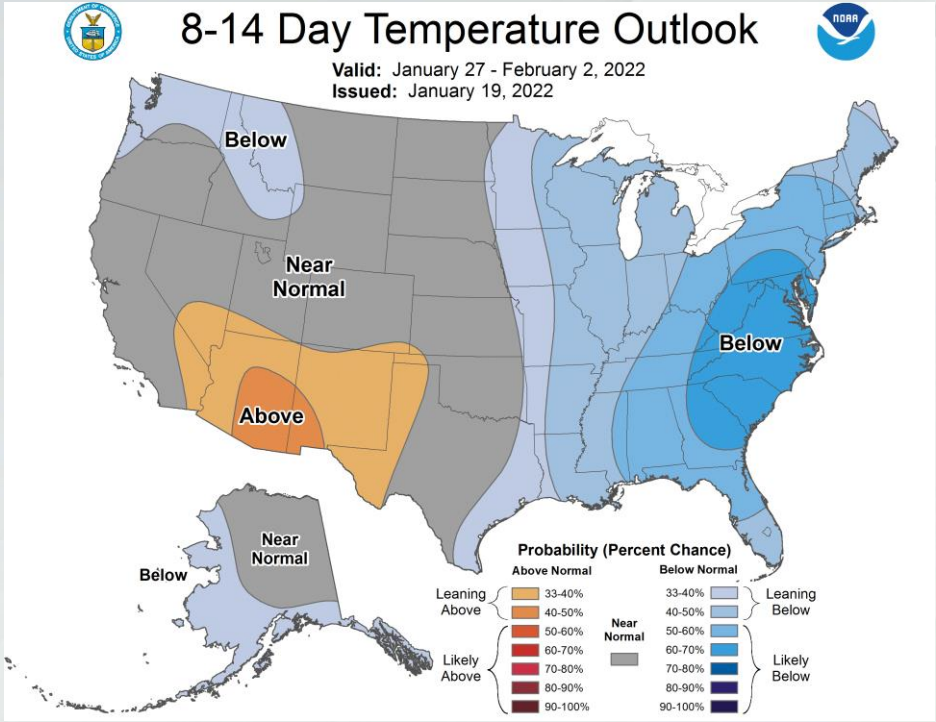
Forecast 7-Day Precipitation Totals through 7AM THU JAN 27th 2022

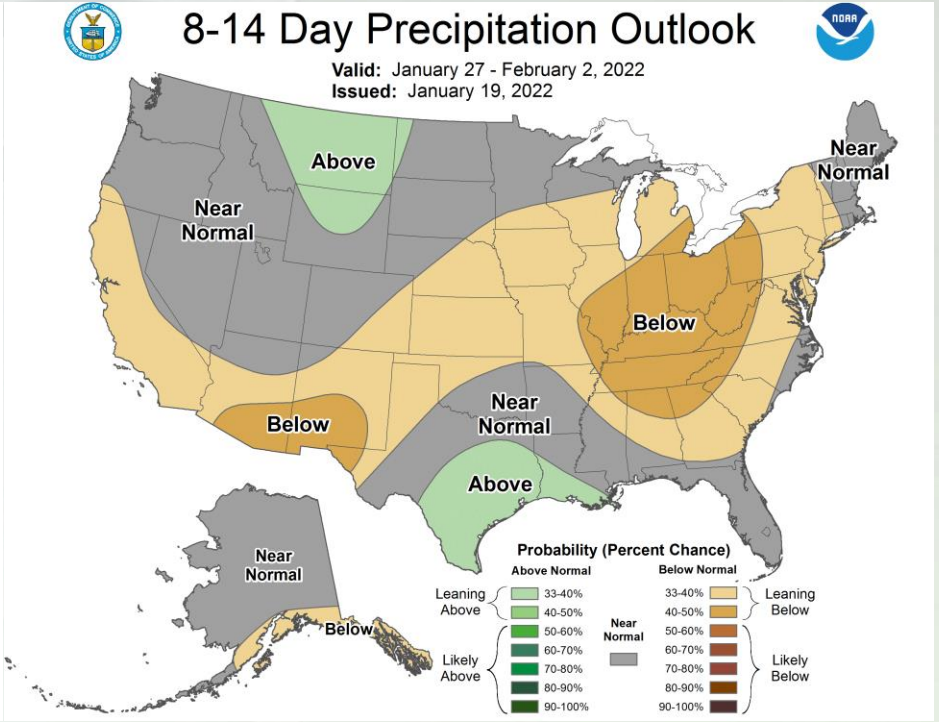



https://origin.wpc.ncep.noaa.gov/qpf/day1-7.shtml`

# NOAA CPC 8-14 Day Outlook

JAN 27- FEB 2, 2022

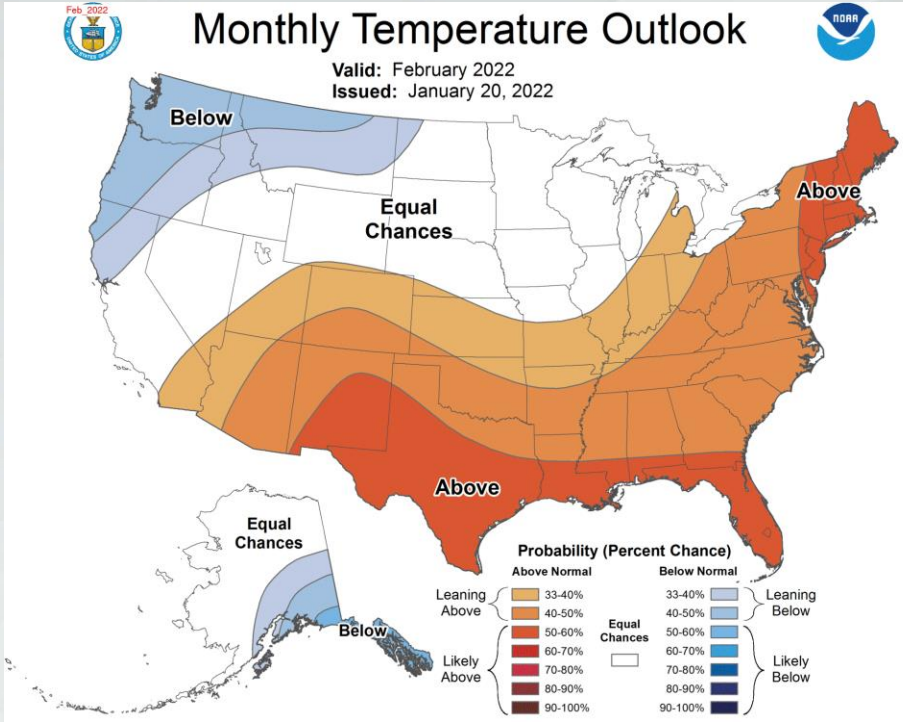


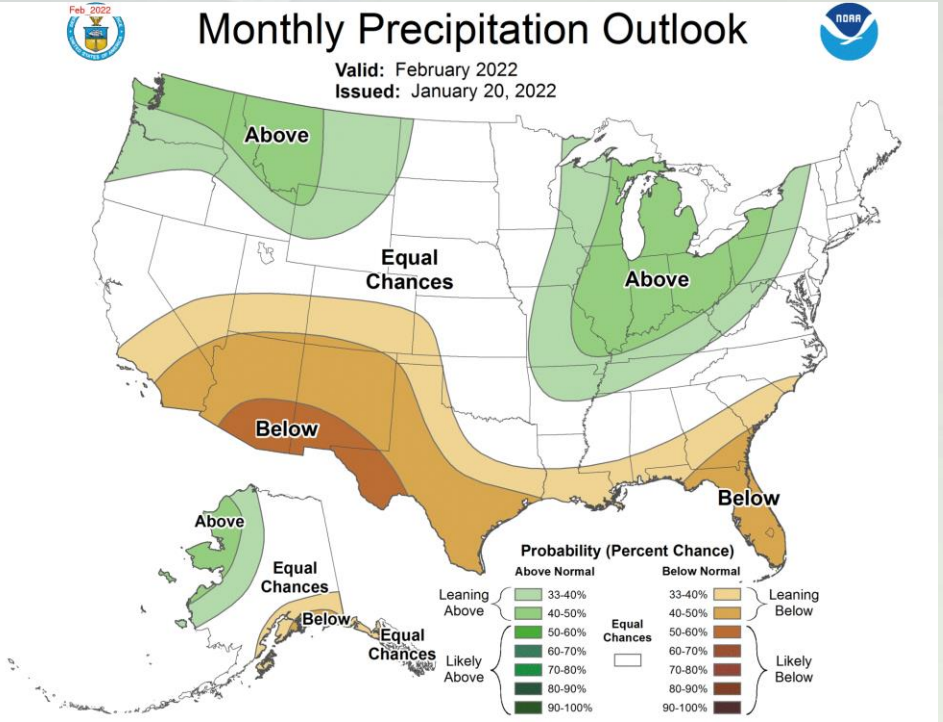




https://www.cpc.ncep.noaa.gov/products/predictions/814day/

# NOAA CPC Long Lead Outlooks

FEB 2022

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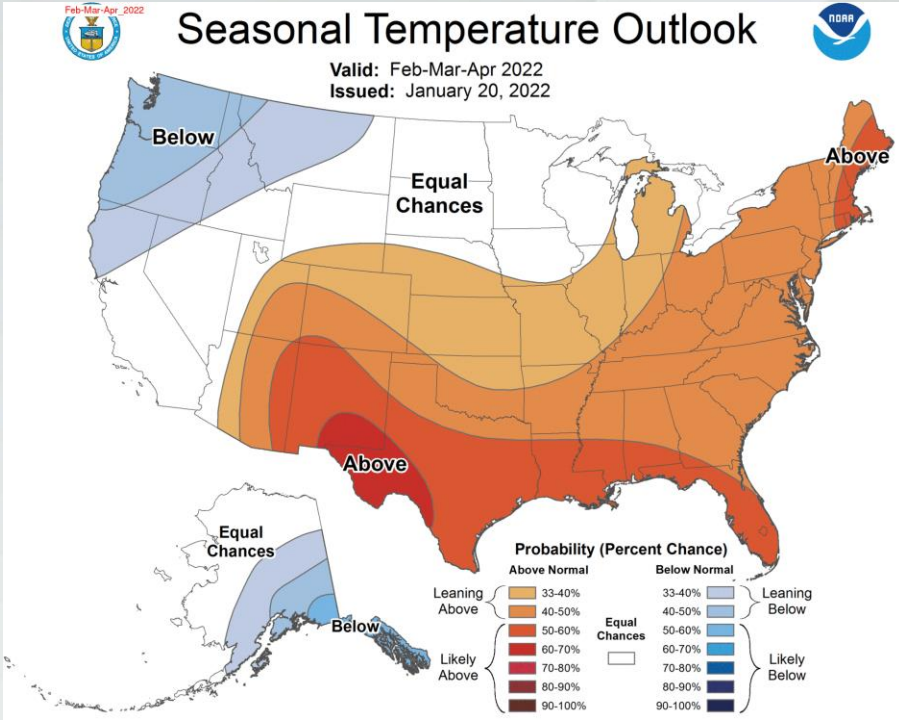
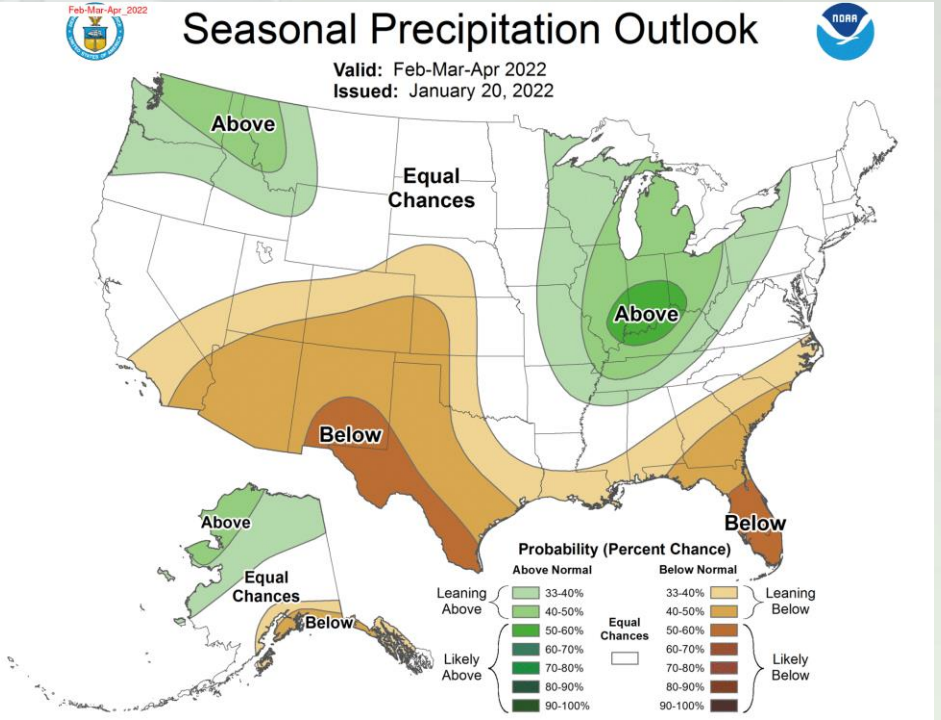
# NOAA CPC
# Long Lead Outlooks

FEB-APR 2022

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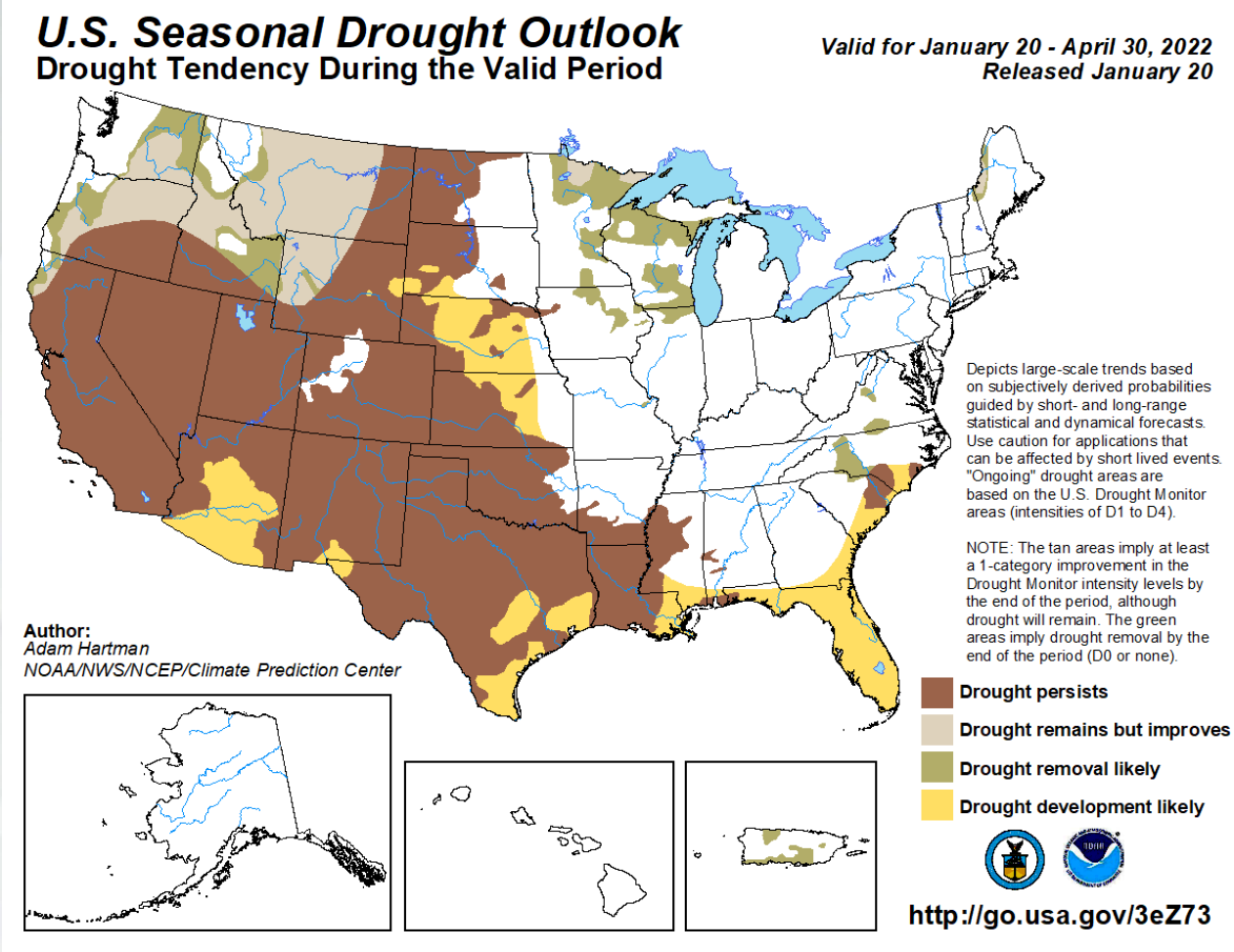
# NOAA CPC Drought Outlook

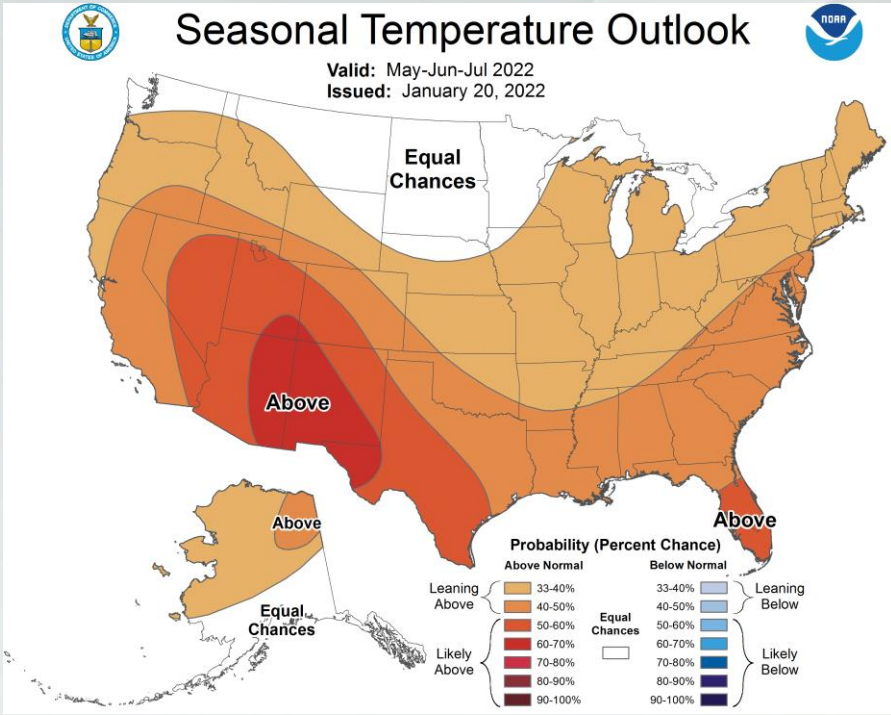
JAN-APR 2022

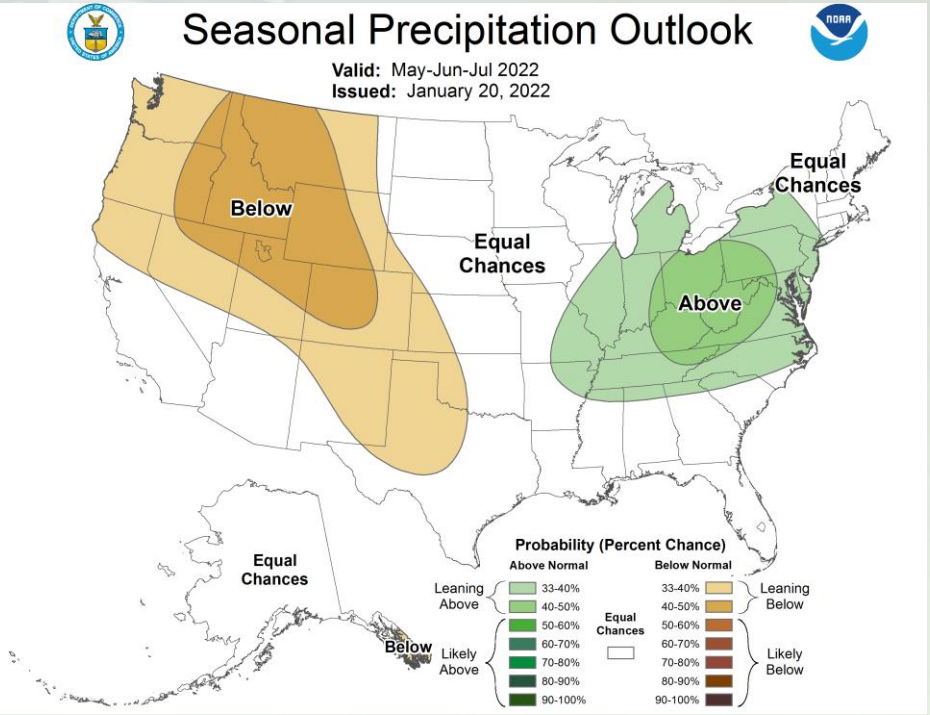



https://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.png

# NOAA CPC Long Lead Outlooks

MAY-JUL 2022




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

# Outlook Summary

- Colder and drier than normal weather are likely to continue across much of the Midwest in the short term through much of the remainder of January. Medium range guidance suggests at least a temporary change by early February, with moderating temperatures.
- Long lead outlooks for the late winter and spring season are based on continuing La Niña conditions and numerical forecast guidance and are consistent with recent past forecasts. ENSO neutral conditions are expected by the upcoming summer season.
- The outlooks through the spring and early summer suggest elevated chances for normal to above normal mean temperatures and precipitation totals across eastern and central sections of the region and for near equal odds of below-, near-, and above normal means across northwestern sections. There is also an elevated chance of below normal precipitation totals across portions of the central and southern Great Plains.

# Further Information - Partners

- Today's and Past Recorded Presentations: https://mrcc.purdue.edu/multimedia/webinars.jsp • http://www.hprcc.unl.edu
- 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 • https://mrcc.purdue.edu • http://www.hprcc.unl.edu

# Thank You!

**Questions:**

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