



United States Department of Agriculture  
Midwest Climate Hub



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

# North Central Region Climate and Drought Outlook

## February 15, 2024

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# General Information



- Collaborative Effort of:
  - NOAA NCEI / NWS / OAR / NIDIS
  - AASC: American Association of State Climatologists
  - USDA Climate Hubs
  - MRCC: Midwest Regional Climate Center
  - HPRCC: High Plains Regional Climate Center
  - NDMC: National Drought Mitigation Center
- Next Regular Climate/Drought Outlook Webinar
  - March 21, 2024 @ 1 PM CDT / 12 PM MDT
  - Presenter: Becky Bolinger, Colorado Assistant State Climatologist
- Past Webinars
  - <https://mrcc.purdue.edu/webinars/>
  - <https://hprcc.unl.edu/webinars.php>
- Questions?
  - Feel free to add questions into the chat window during and after the presentation.

# Presentation Outline

- Past Weather
  - January climate data
- Present Weather
  - February so far
  - Seasonal snowfall totals
  - Snowpack, Ice coverage
- Local Impacts
- US Drought Monitor
- Future Weather/Climate Outlooks
  - Precipitation forecasts
  - River flooding outlook
  - ENSO forecast



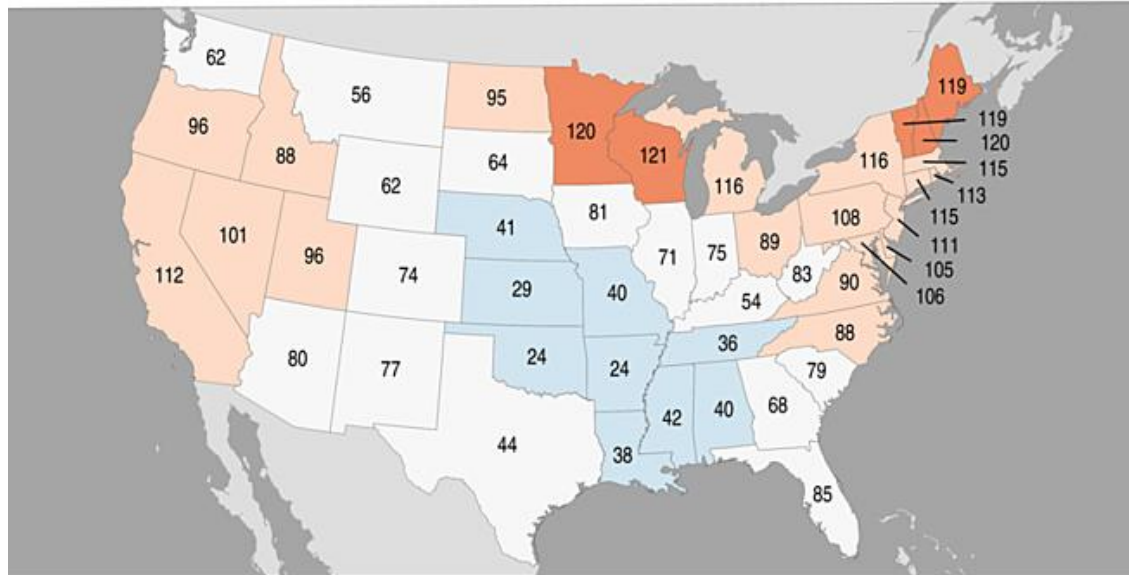
Tulip in Manhattan, KS, Feb. 11

# January 2024 – Temperature Rankings

## Statewide Average Temperature Ranks January 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information



Created: Tue Feb 6 2024  
Source: nClimGrid – Monthly

Record  
Coldest  
(1)

Much  
Below  
Average

Below  
Average

Near  
Average

Above  
Average

Much  
Above  
Average

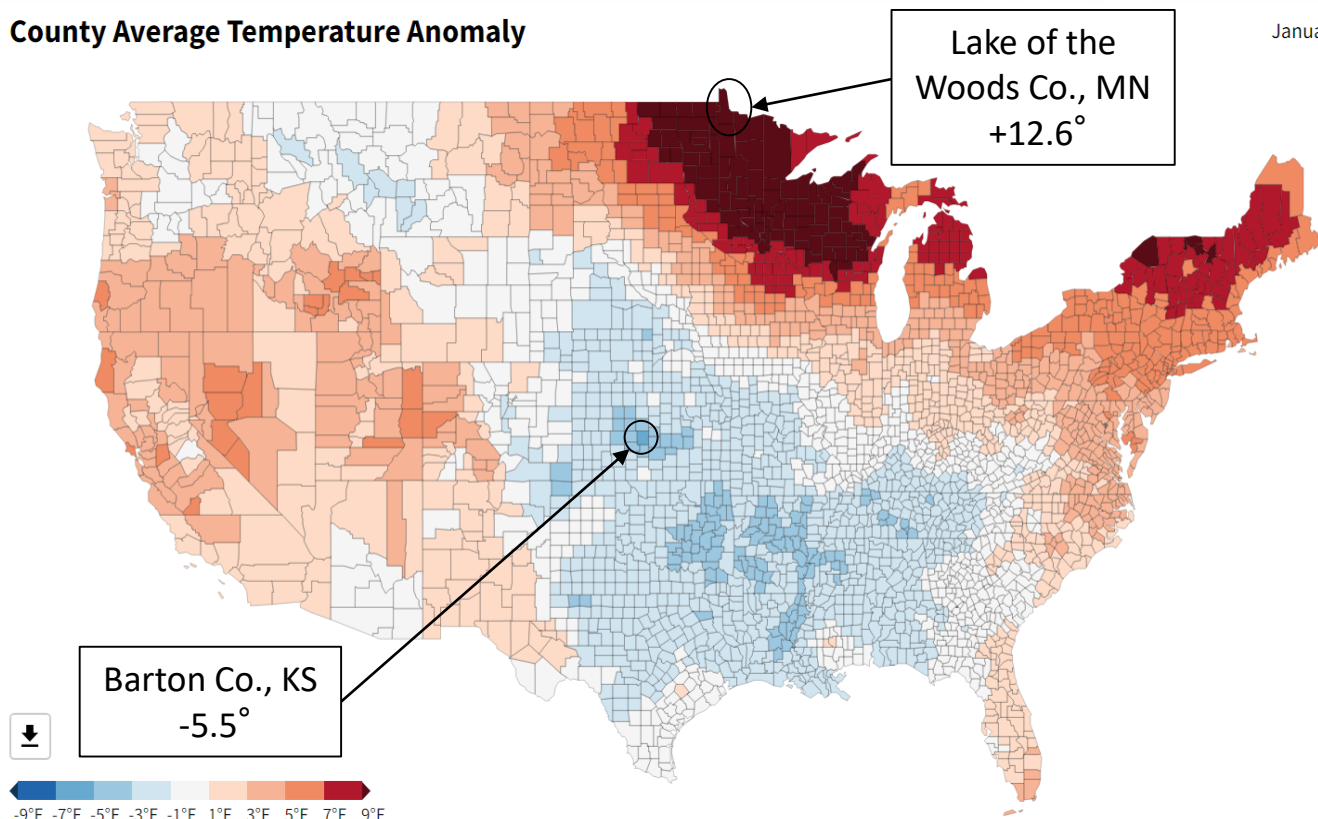
Record  
Warmest  
(130)



# January 2024 – Temperature Rankings

## County Average Temperature Anomaly

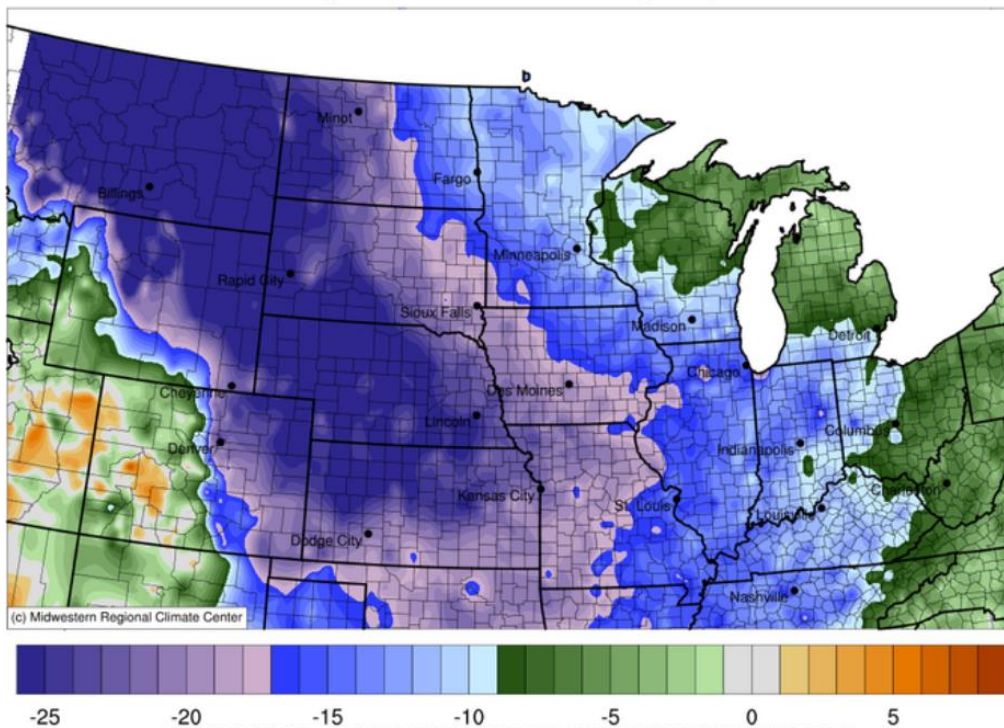
January 2024



# Mid-January Arctic Outbreak

**Average Temperature (°F): Departure from 1991-2020 Normals**

January 12, 2024 to January 18, 2024



# New Monthly Record Lows for January

| Location   | Temperature | Date    | POR<br>(years) |
|------------|-------------|---------|----------------|
| Weston, WY | -46°        | Jan. 13 | 63             |
| Dillon, MT | -41°*       | Jan. 13 | 84             |
| Lead, SD   | -37°        | Jan. 13 | 115            |
| Agate, NE  | -34°^       | Jan. 16 | 121            |
| Limon, CO  | -30°*       | Jan. 15 | 75             |

Coldest reading: -54°  
Chester, MT  
Jan. 13

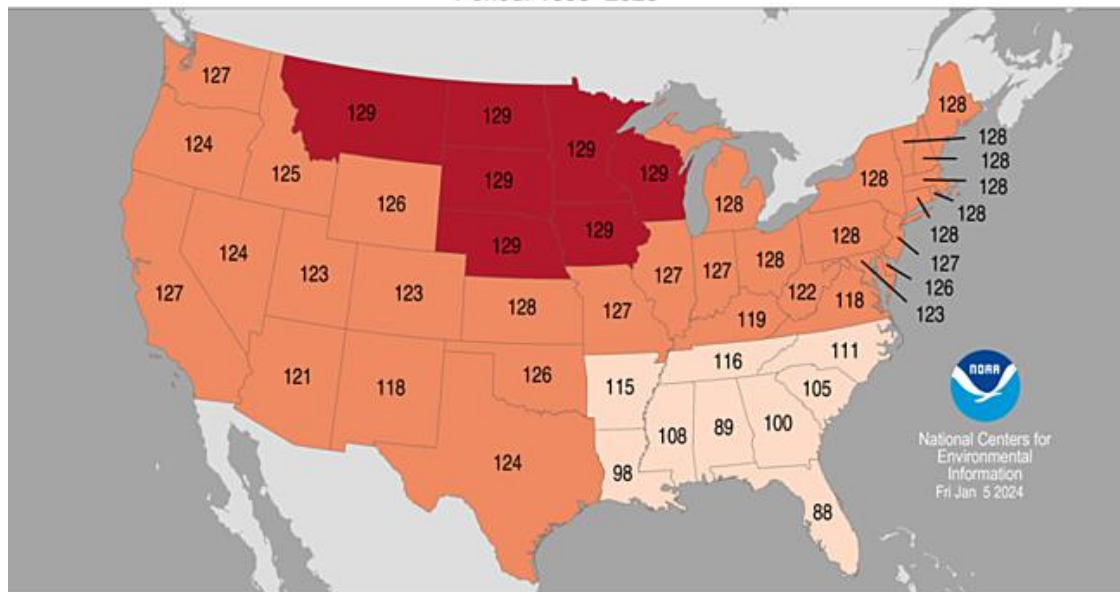
\* New all-time record low

^ tied an earlier record

# December 2023 – Temperature Rankings

## Statewide Average Temperature Ranks

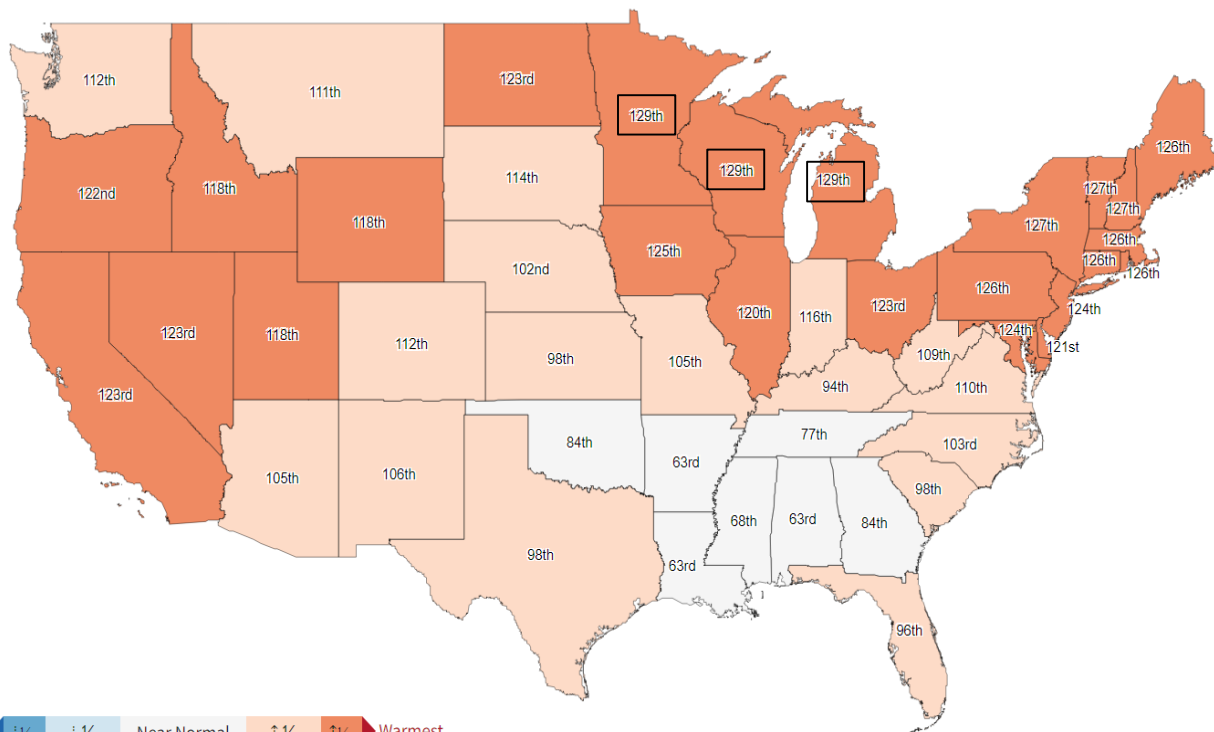
December 2023  
Period: 1895–2023



# Dec 2023 + Jan 2024 – Temperature Rankings

Statewide Average Temperature Rank (130 years)

December 2023 - January 2024



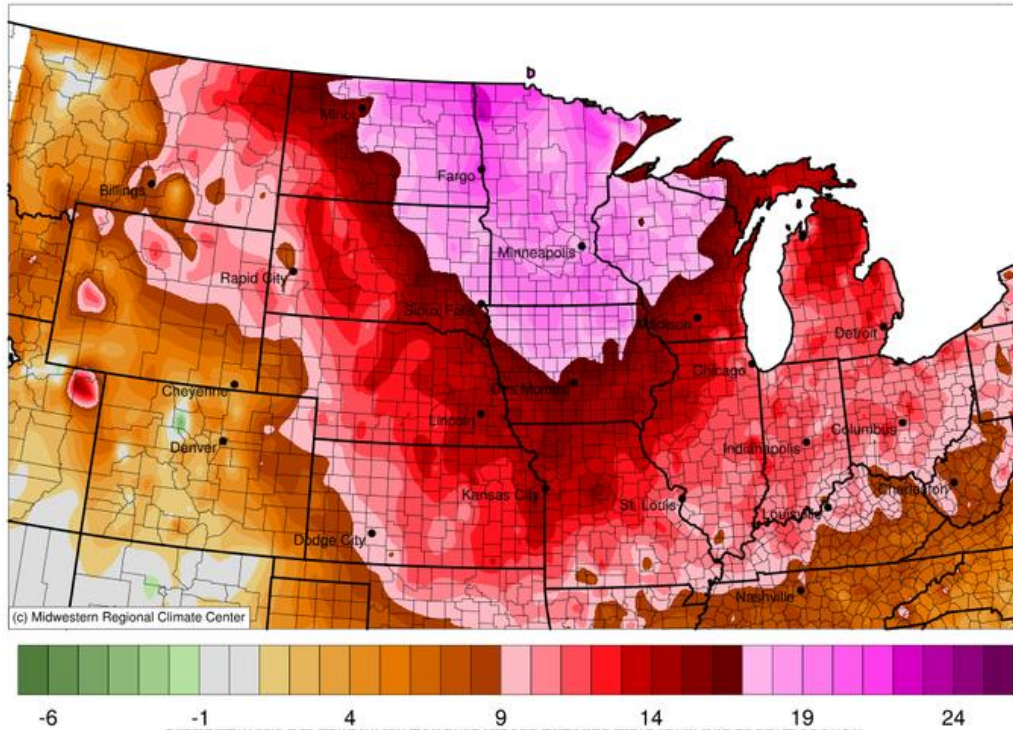
## Warmest Dec-Jan on record!

| State     | Avg. Temp. | Anomaly<br>(1991-2020) | Old Record<br>(Years) |
|-----------|------------|------------------------|-----------------------|
| Minnesota | 22.7°      | +10.6°                 | 20.6°<br>(2011-12)    |
| Wisconsin | 26.5°      | +11.2°                 | 25.8°<br>(2001-02)    |
| Michigan  | 29.8°      | +9.1°                  | 29.7°<br>(2001-02)    |

# February 2024 Temperature Anomaly

**Average Temperature (°F): Departure from 1991-2020 Normals**

February 01, 2024 to February 15, 2024

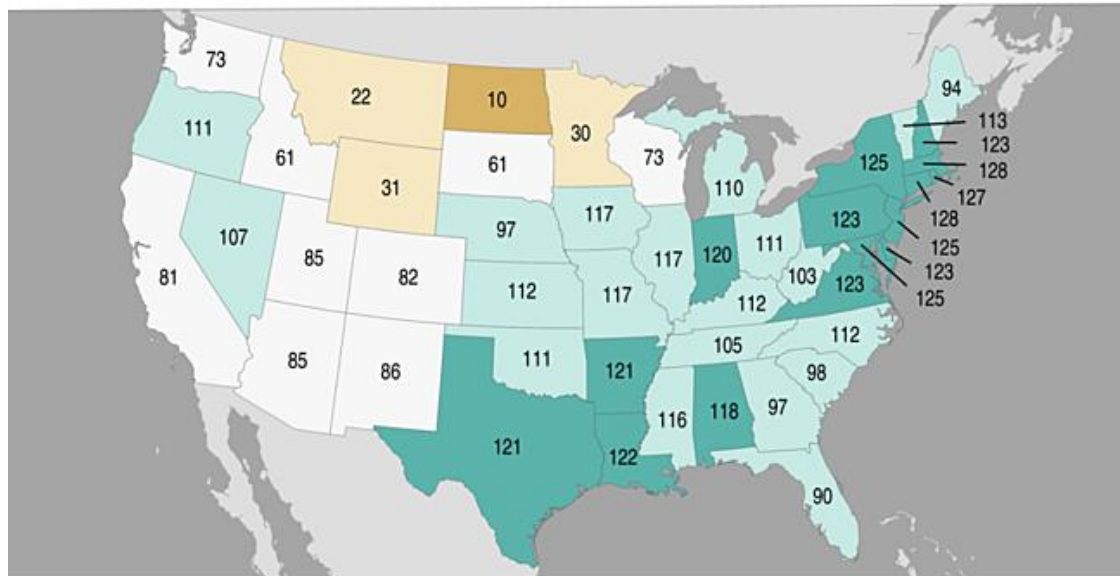


# January 2024 – Precipitation Rankings

## Statewide Precipitation Ranks January 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information



Record  
Driest  
(1)

Much  
Below  
Average

Below  
Average

Near  
Average

Above  
Average

Much  
Above  
Average

Record  
Wettest  
(130)

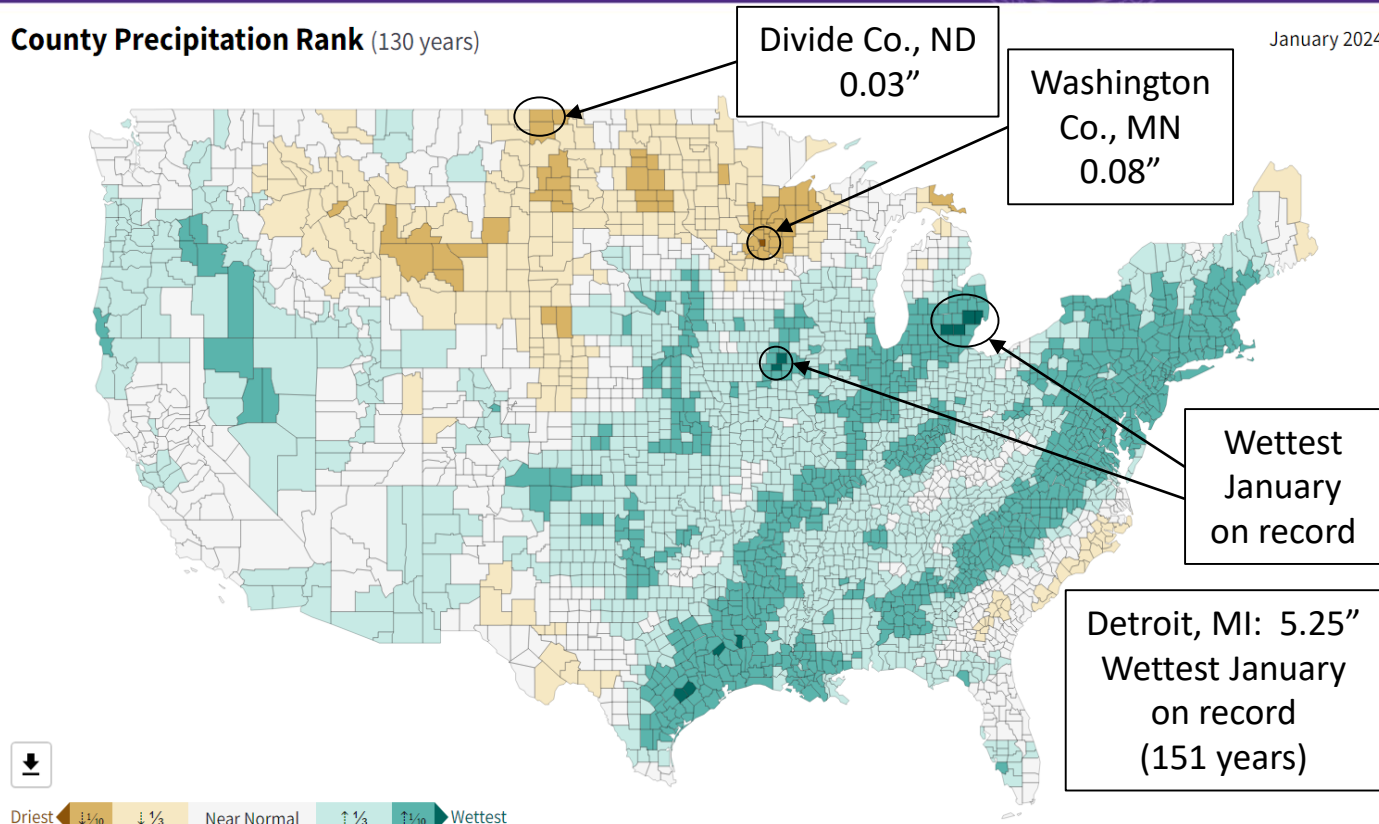
Created: Tue Feb 6 2024  
Source: nClimGrid - Monthly



# January 2024 – Precipitation Rankings

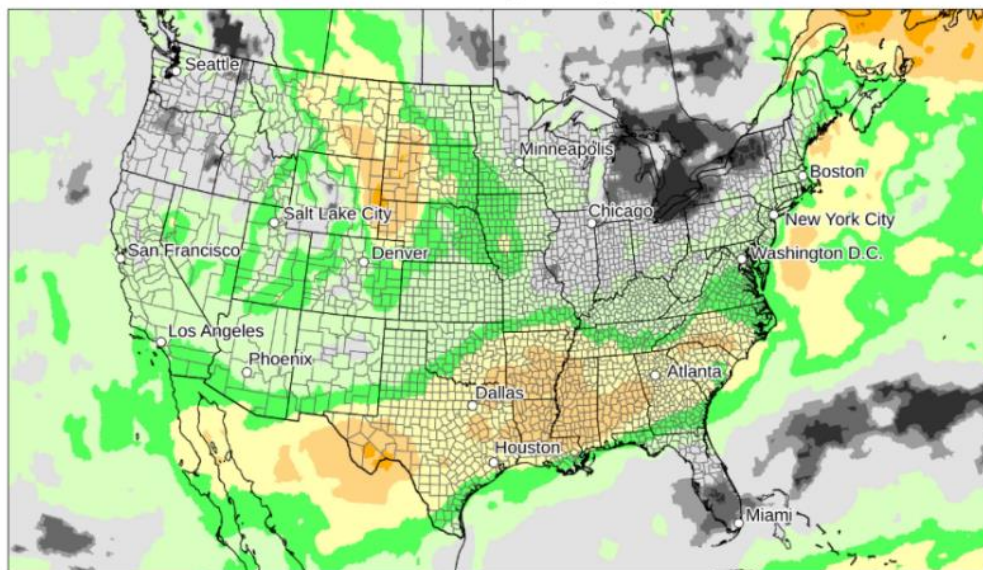
County Precipitation Rank (130 years)

January 2024



# January – Very Cloudy for some...

## Clouds Ranking for Jan 2024



Source: ERA5 Reanalysis

Lower 48 Rank for Jan 2024 is: 15 out of 85

Map by: Brian Brettschneider



# January 2024 – Cloudy Cities

| Location          | Average<br>% of<br>Overcast<br>Days | 2024<br>% of<br>Overcast<br>Days |
|-------------------|-------------------------------------|----------------------------------|
| Muskegon, MI      | 73                                  | 100                              |
| Grand Rapids, MI  | 66                                  | 97                               |
| Traverse City, MI | 69                                  | 97                               |
| Alpena, MI        | 63                                  | 94                               |
| Saginaw, MI       | 53                                  | 94                               |

First and only  
time since 1951  
that Muskegon  
had 100%  
overcast for  
any month!

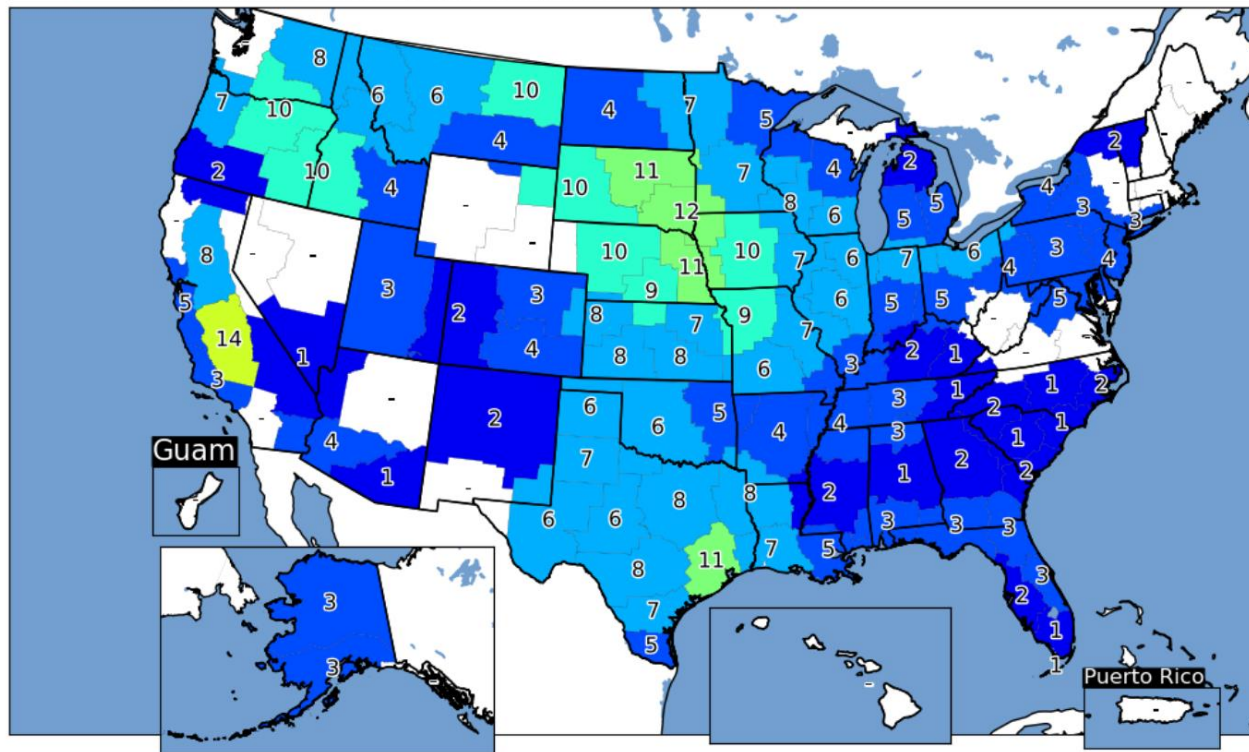
All five locations set new or tied existing  
marks for the cloudiest January on record.

# January – Very Foggy for some...



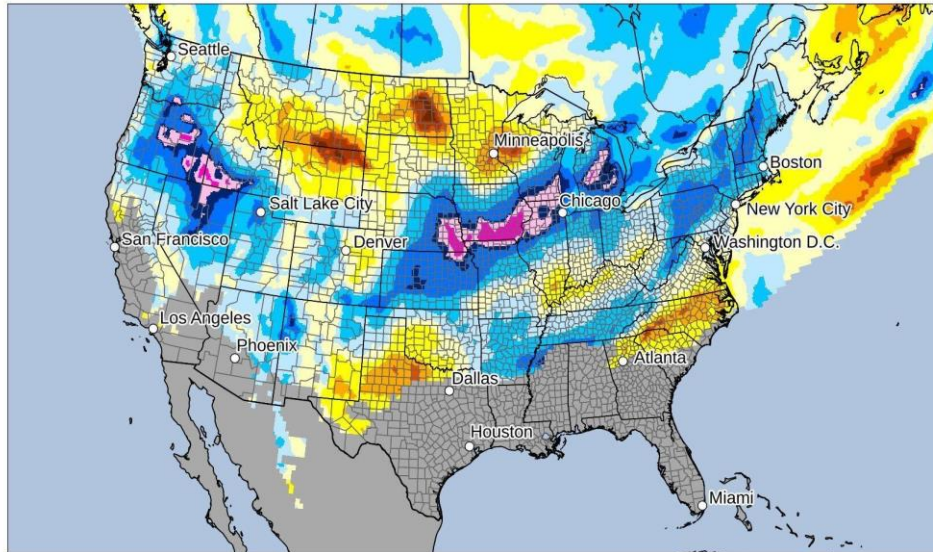
## Dense Fog Advisory Days with 1+ Events by WFO

Valid 01 Jan 2024 00:00 - 31 Jan 2024 23:59 UTC, based on VTEC: FG.Y



# January – Very Snowy for some...

## Snowfall Ranking for Jan 2024



Source: ERA5 Reanalysis

Lower 48 Rank for Jan 2024 is: 15 out of 50

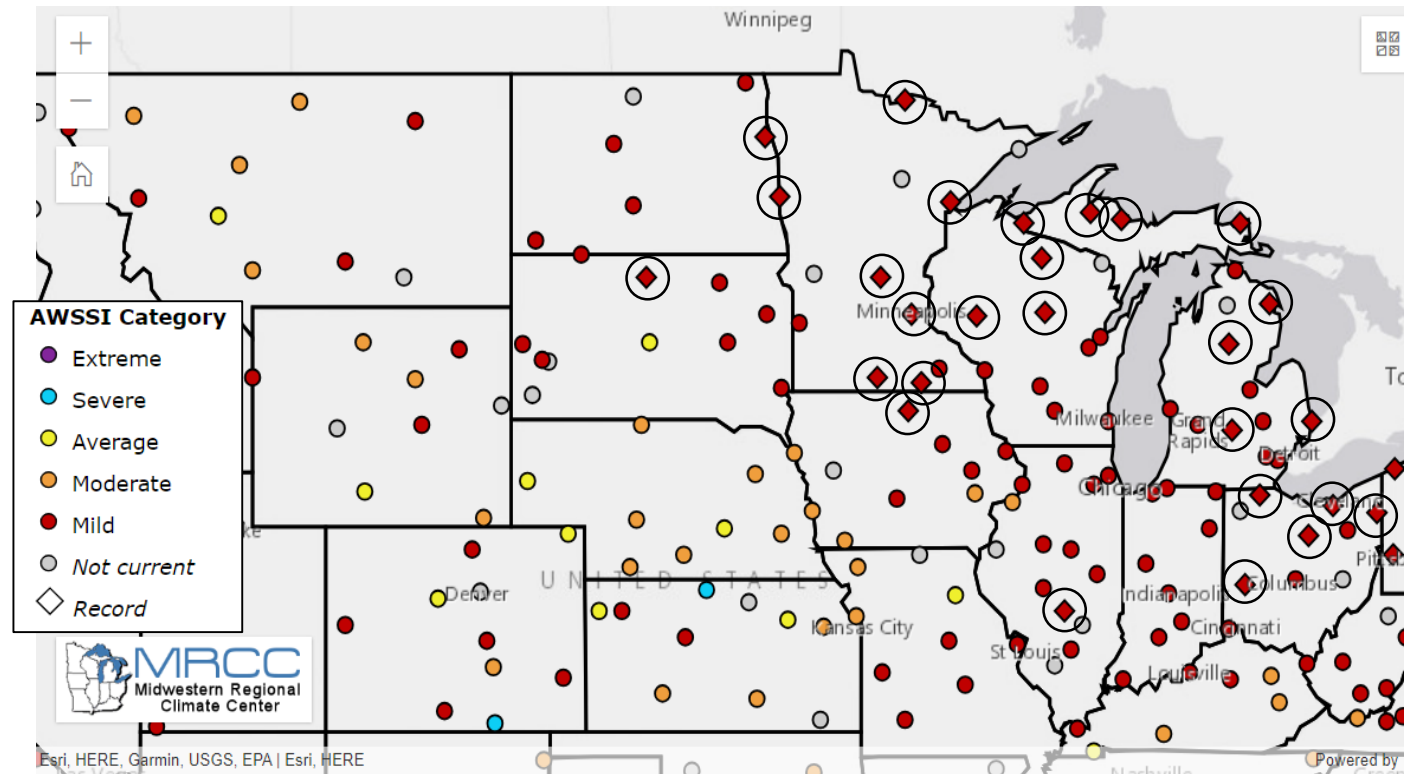
Map by: Brian Brettschneider



# January 2024 – Snowy Cities

| Location       | Average<br>January<br>Snowfall | January<br>2024<br>Snowfall | January<br>2024<br>Rank / Years |
|----------------|--------------------------------|-----------------------------|---------------------------------|
| Ottumwa, IA    | 7.1"                           | 31.1"                       | 1 / 107                         |
| Waterloo, IA   | 10.1"                          | 25.1"                       | 1 / 130                         |
| Moline, IL     | 10.8"                          | 27.2"                       | 2 / 140                         |
| Des Moines, IA | 9.4"                           | 27.2"                       | 2 / 140                         |
| Dubuque, IA    | 10.7"                          | 26.5"                       | 3 / 131                         |

# AWSSI – Accumulated Winter Season Severity Index

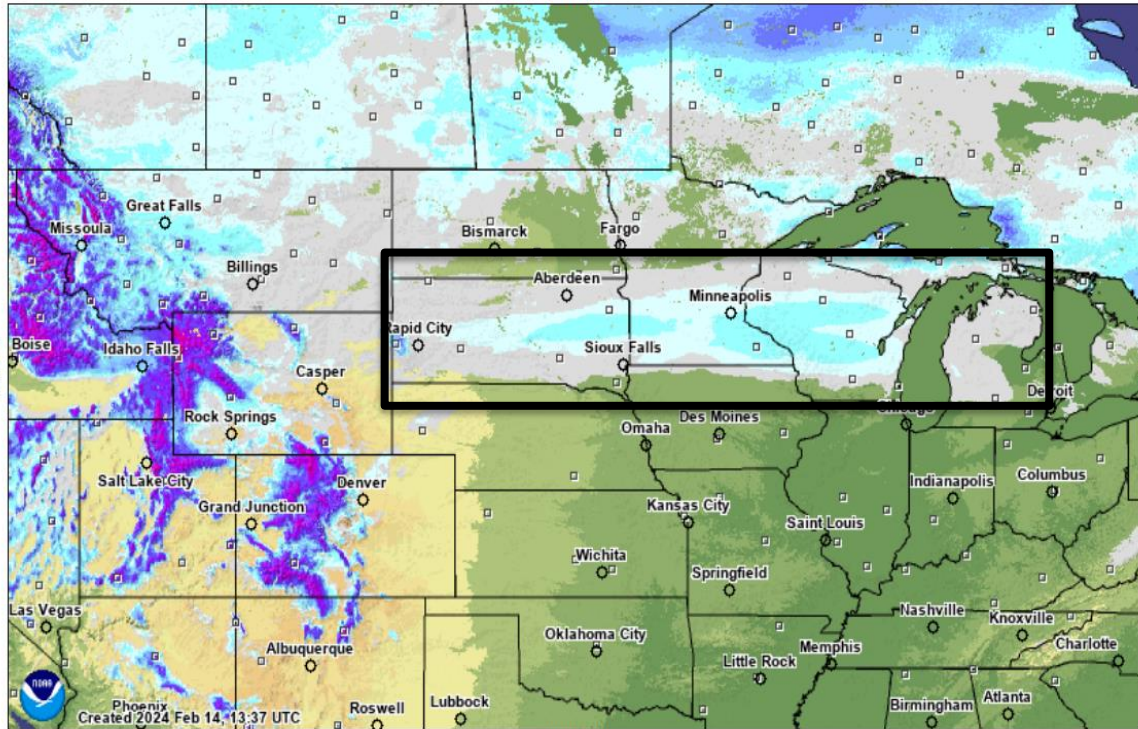
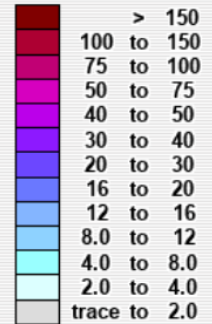


# Current Snow Depth Map

Modeled Snow Depth forecasted for 2024 February 15, 11:00 UTC

1469 mi

Inches of depth

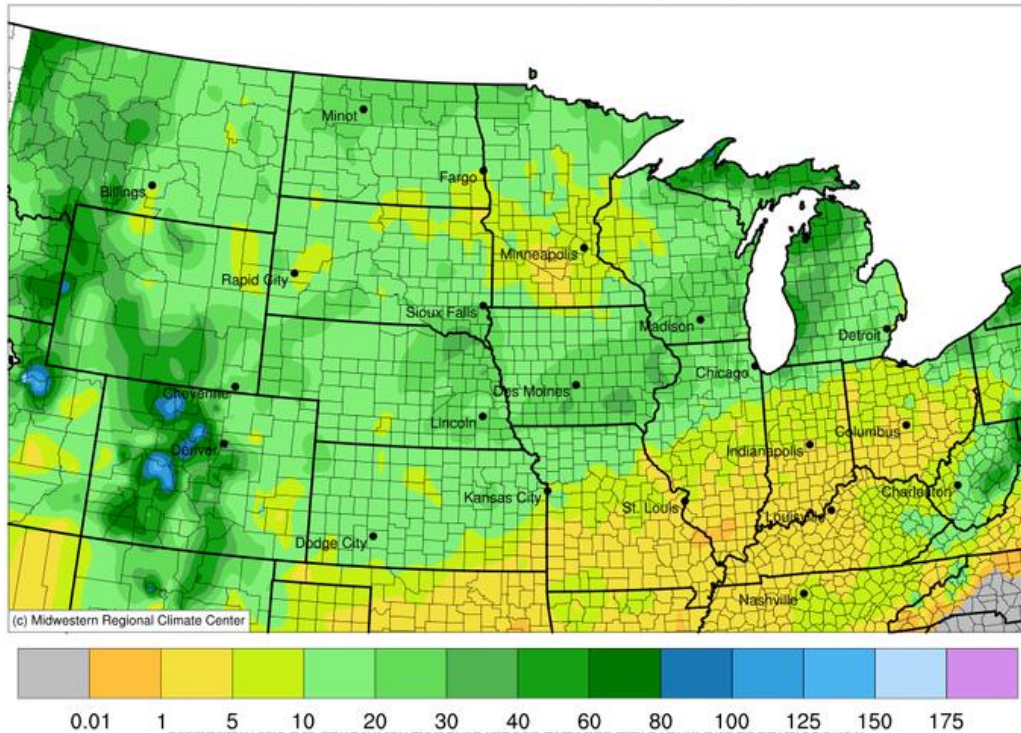


2081 mi

# 2023-24 Snowfall

## Accumulated Snowfall (in)

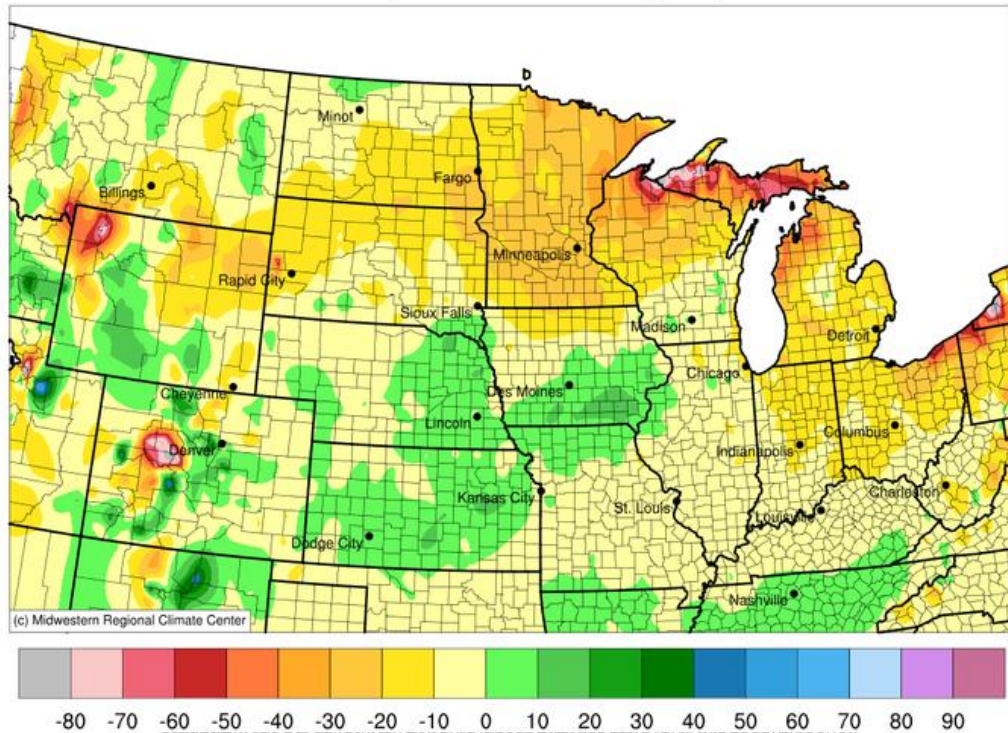
October 01, 2023 to February 15, 2024



# 2023-24 Snowfall

## Accumulated Snowfall (in): Departure from 1991-2020 Normals

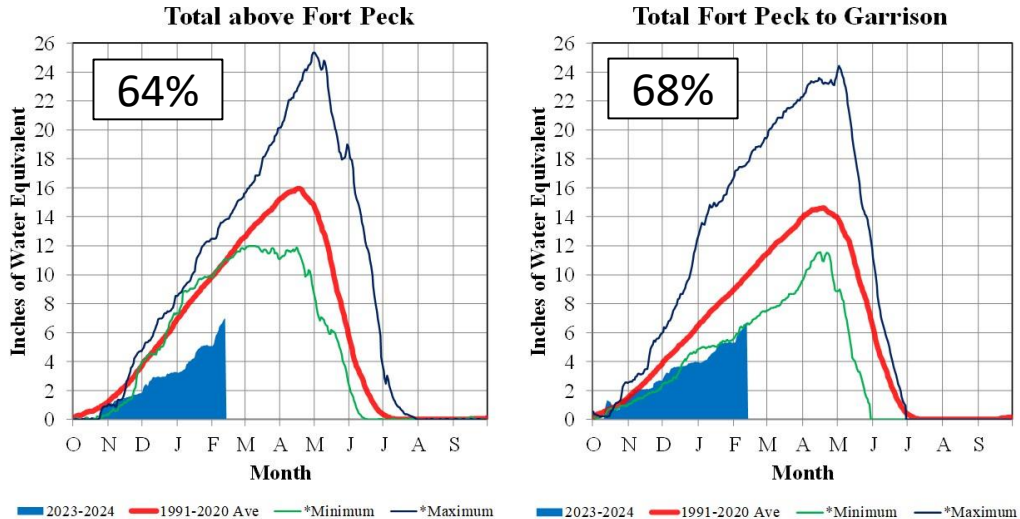
October 01, 2023 to February 15, 2024





# Missouri River Basin - Snowpack

## Missouri River Basin – Mountain Snowpack Water Content 2023-2024 with comparison plots from recent high and low years 12-Feb-2024



On February 12, 2024 the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach is 7.0" and 64% of the (1991-2020) average. The mountain SWE in the "Fort Peck to Garrison" reach is 6.7" and 68% of the (1991-2020) average. The normal peak for both reaches occurs near April 17.

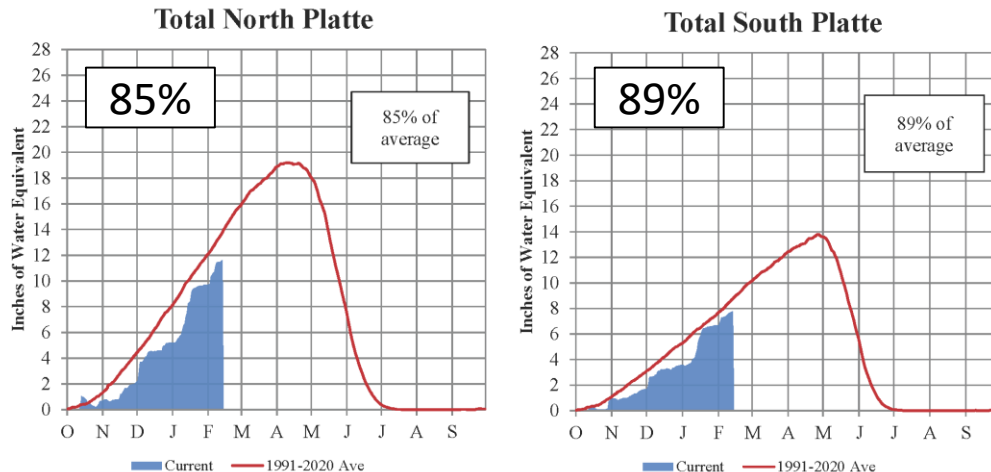
\*Minimum peak SWE between 1991-2020 occurred in 2015 above Fort Peck, and in 2001 between Fort Peck and Garrison.  
Maximum peak SWE between 1991-2020 occurred in 2011 above Fort Peck, and in 1997 between Fort Peck and Garrison.

Provisional data. Subject to revision.

# Platte River Basin - Snowpack

## Platte River Basin - Mountain Snowpack Water Content Water Year 2023-2024

February 13, 2024

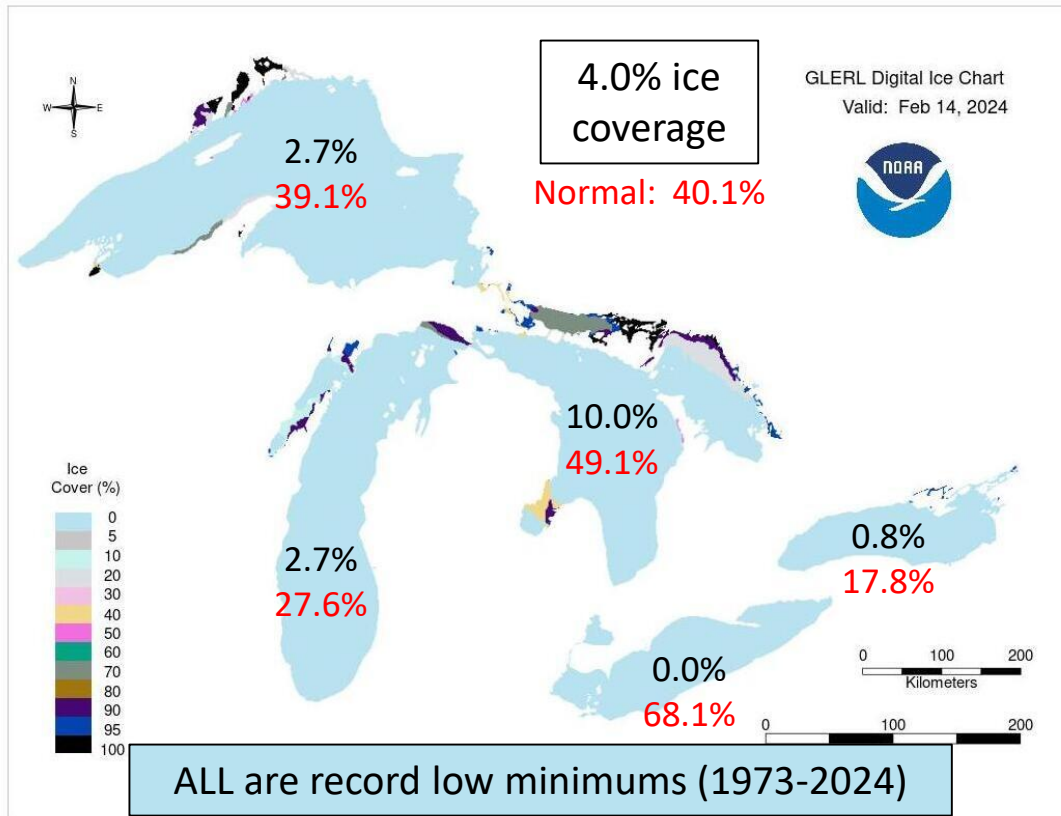


The North and South Platte River Basin mountain snowpacks normally peak near April 10 and the end of April, respectively. As of February 13, 2024, the mountain snowpack SWE in the "Total North Platte" reach is 11.6", 85% of the (1991-2020) average. The mountain snowpack SWE in the "Total South Platte" reach is 7.8", 89% of the (1991-2020) average.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

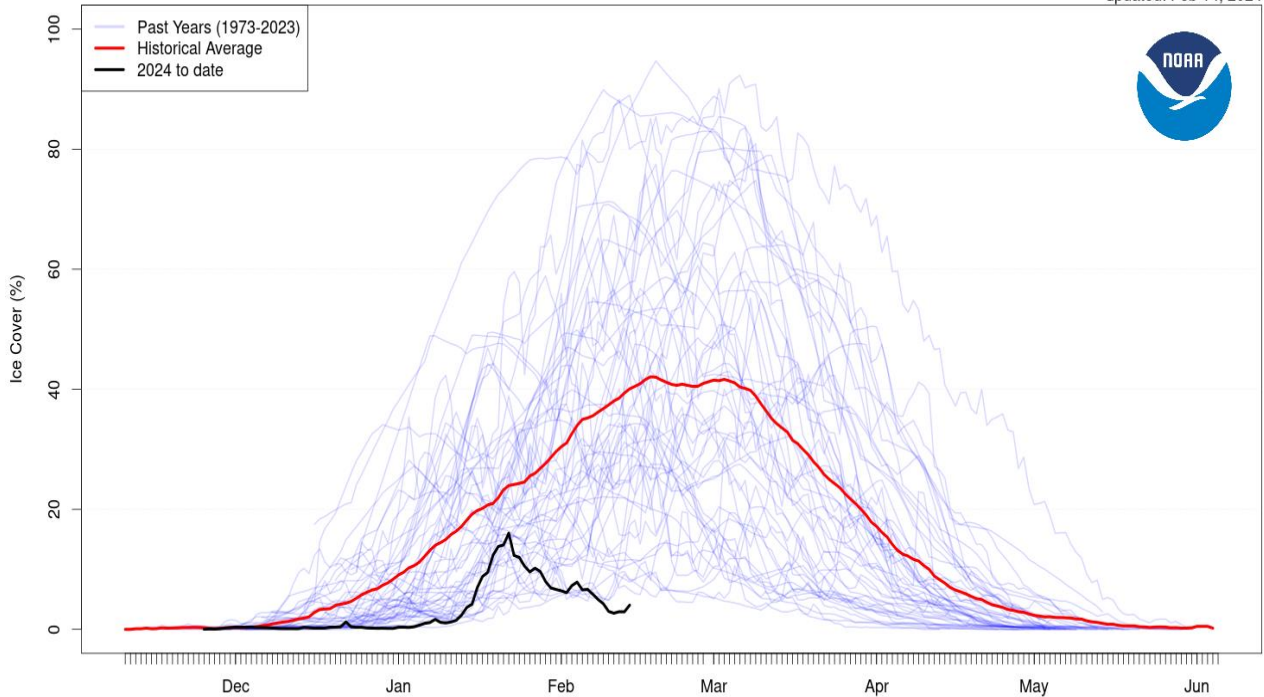
# Great Lakes Ice Coverage



# Great Lakes Ice Coverage

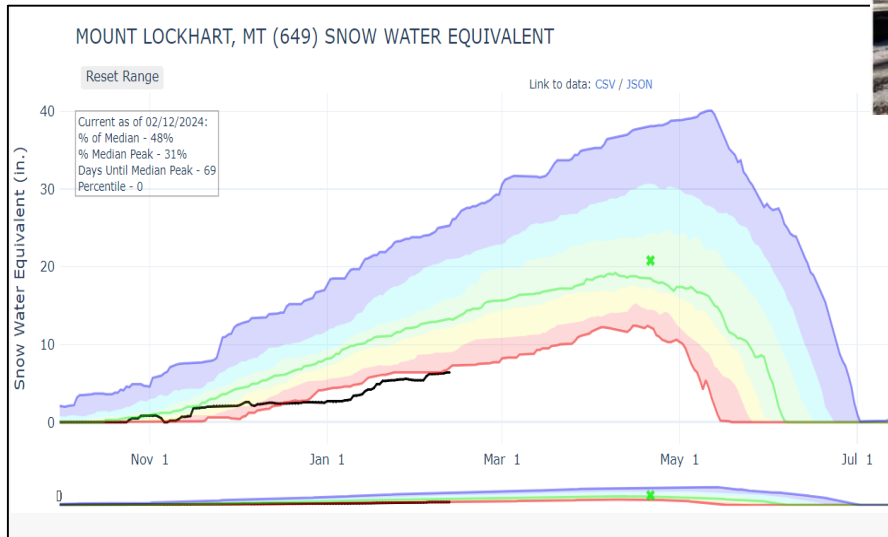
## Great Lakes Average Ice Cover

updated: Feb 14, 2024



# Montana – Ski Resort Closure

- Teton Pass Ski Resort
- Closed for Season
- Only open for 4 days
- “Lowest Levels of moisture...in 55 years”



# Minnesota – Winter Events

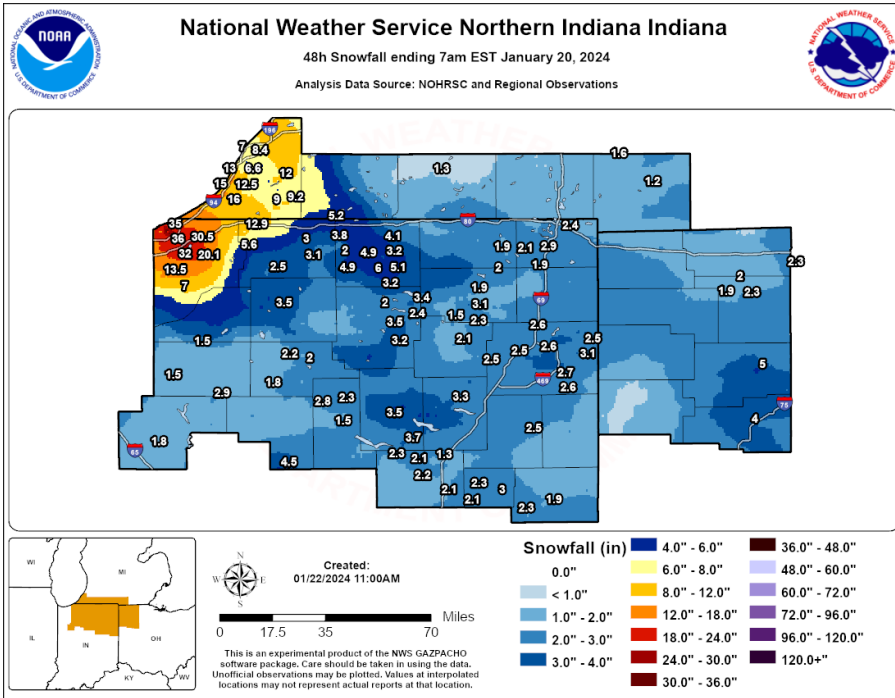
- Minnesota Ice Festival – Eagan
- US Pond Hockey Championships – Lake Nokomis
- John Beargrease Dog Sled Marathon – Duluth
- Chilly Open (Ice) Golf Tournament – Wayzata
- Ice Fest Snowmobile Drag Races – Breezy Point

**CANCELLED**

# Indiana – Lake Effect Snow

Laporte: 21.9" of snow on Jan. 19

All-time 1-day snowfall record at that site (76-year POR)



# Wisconsin – Feb. 8 Tornadoes



- EF1 in Green County
- 8-mile tornado path
- First February tornadoes on record in Wisconsin

- High-end EF2
- Rock/Dane/Jefferson Cos.
- 4 homes destroyed
- 20 homes damaged
- 24-mile tornado path



# Spring Flowers – An Early Start

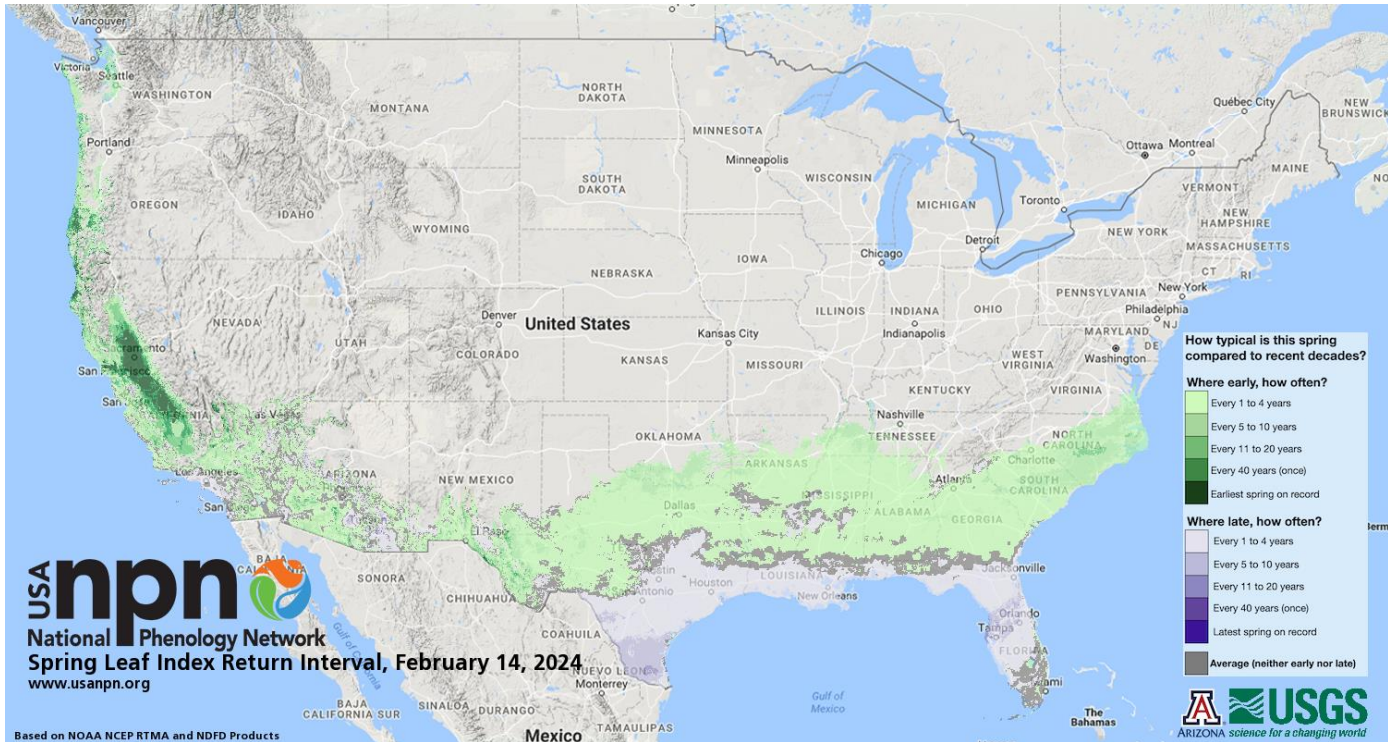
**Feb. 8, Smithville, MO**



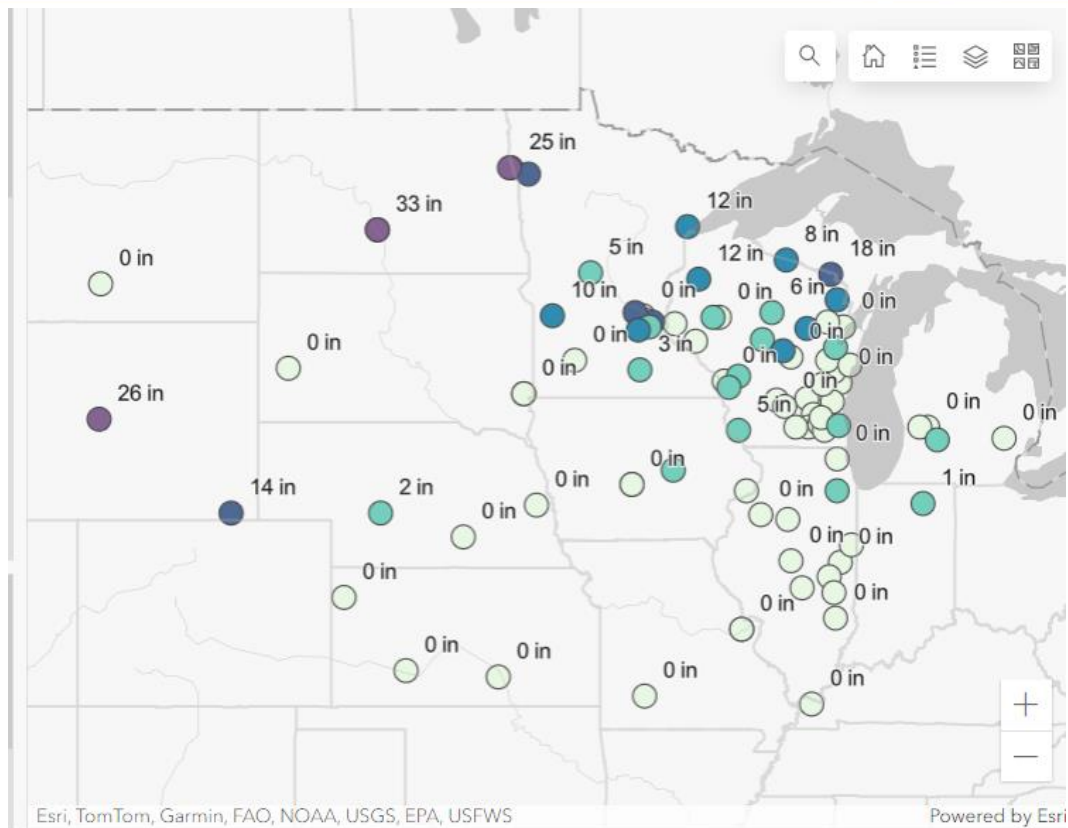
**Feb. 13, Manhattan, KS**



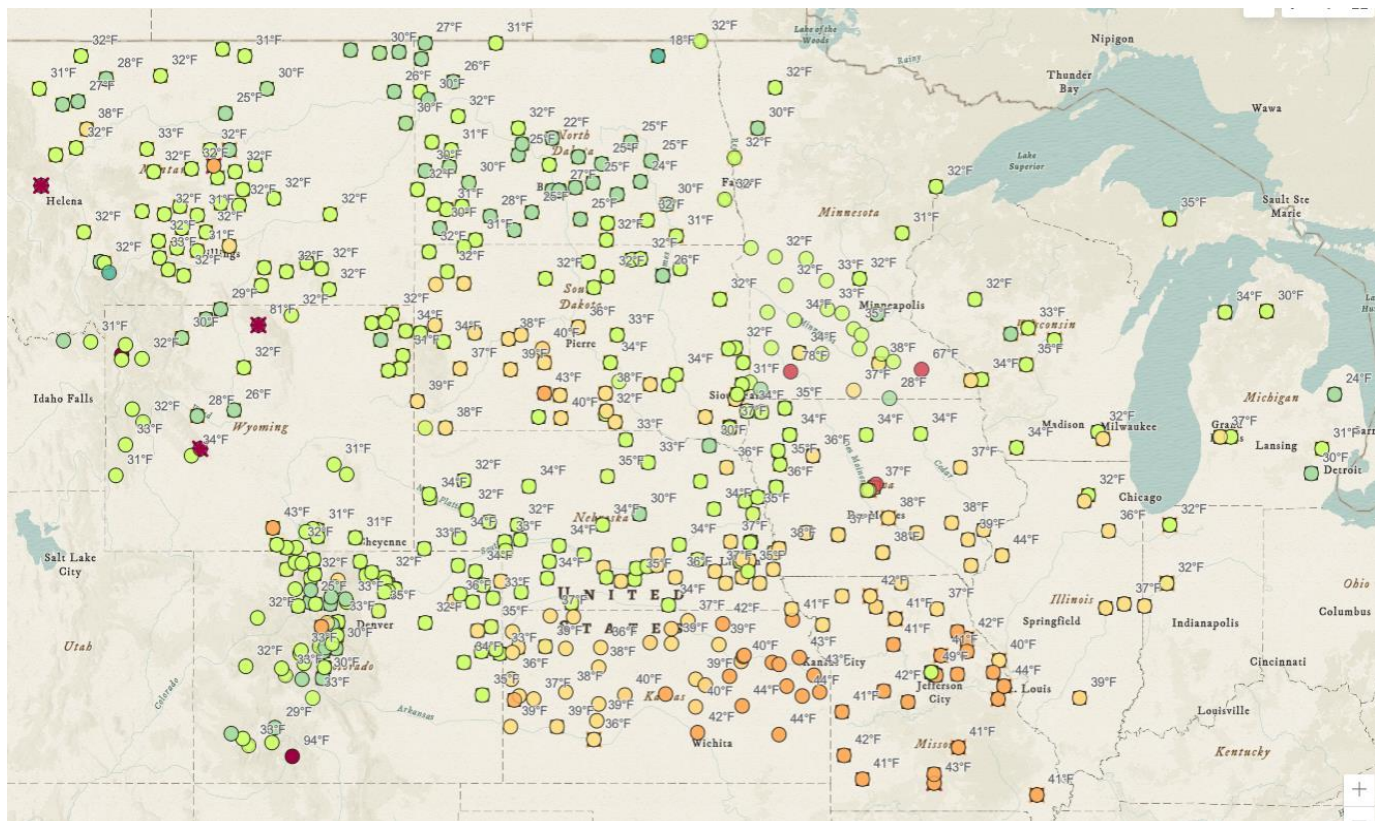
# Spring Leaf Index



# Frost Depth



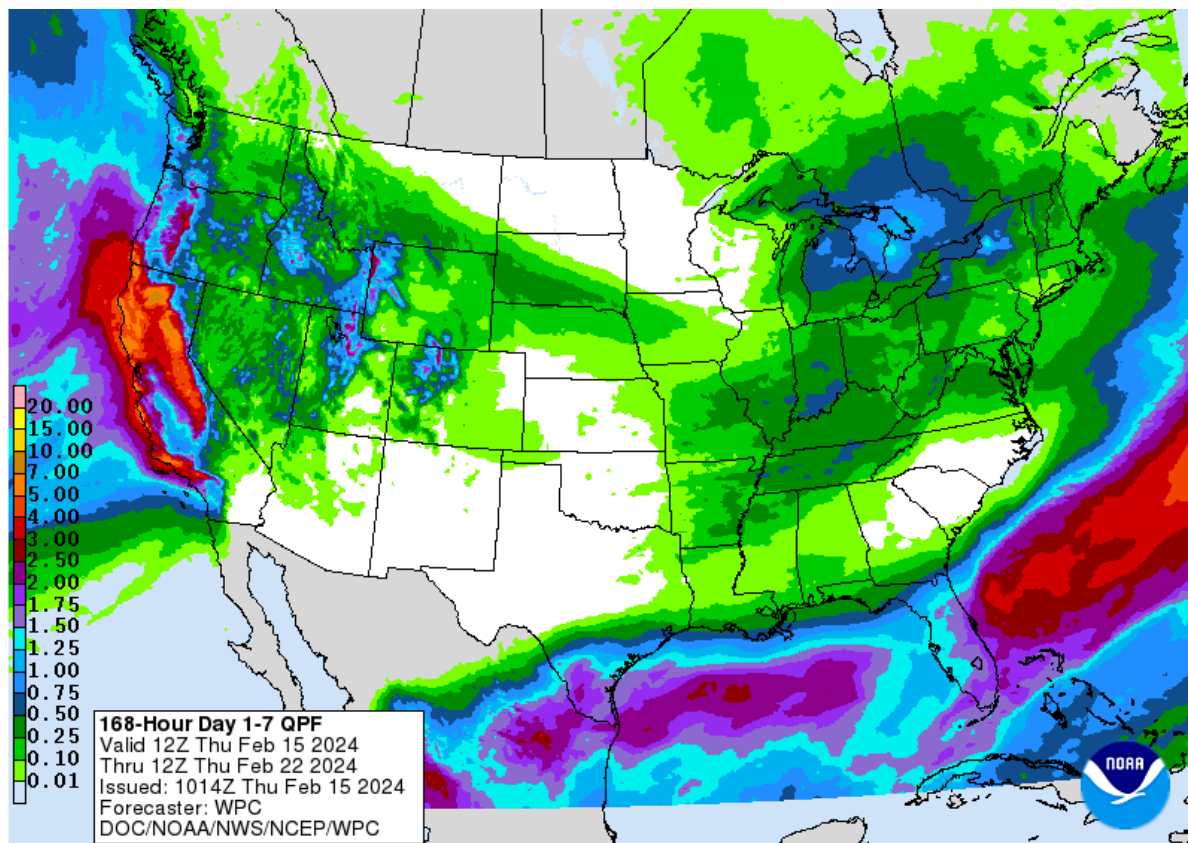
# Soil Temperature – Feb. 15





# Outlooks

# 7-Day Precipitation Outlook



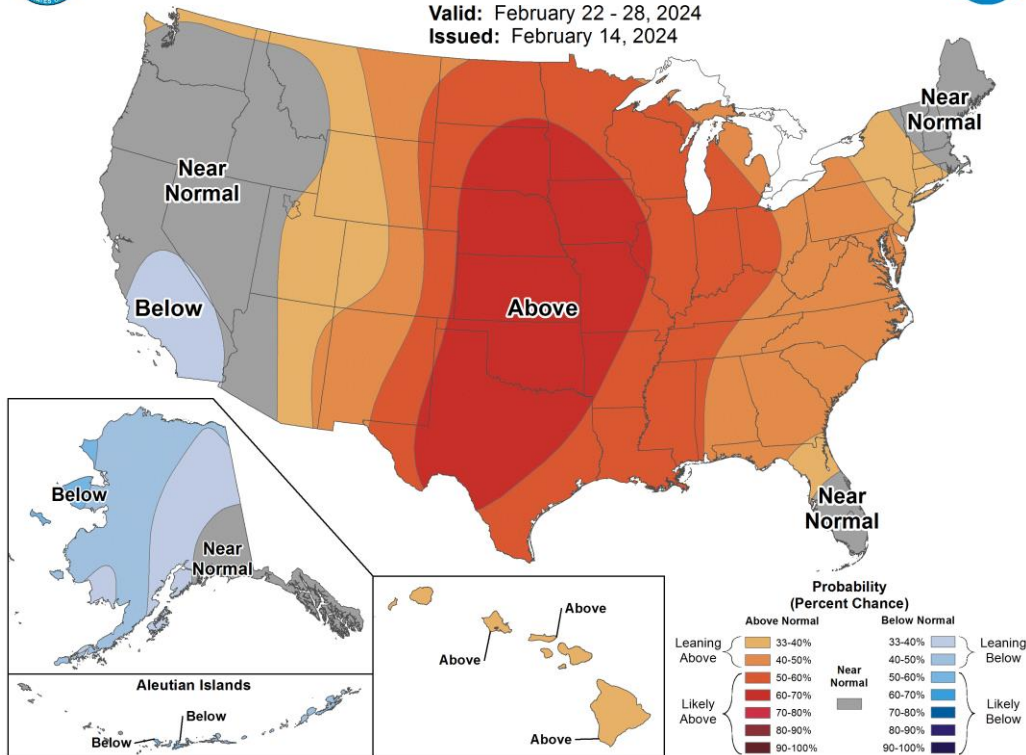
# Feb 22-28 Temperature Outlook



## 8-14 Day Temperature Outlook

Valid: February 22 - 28, 2024

Issued: February 14, 2024



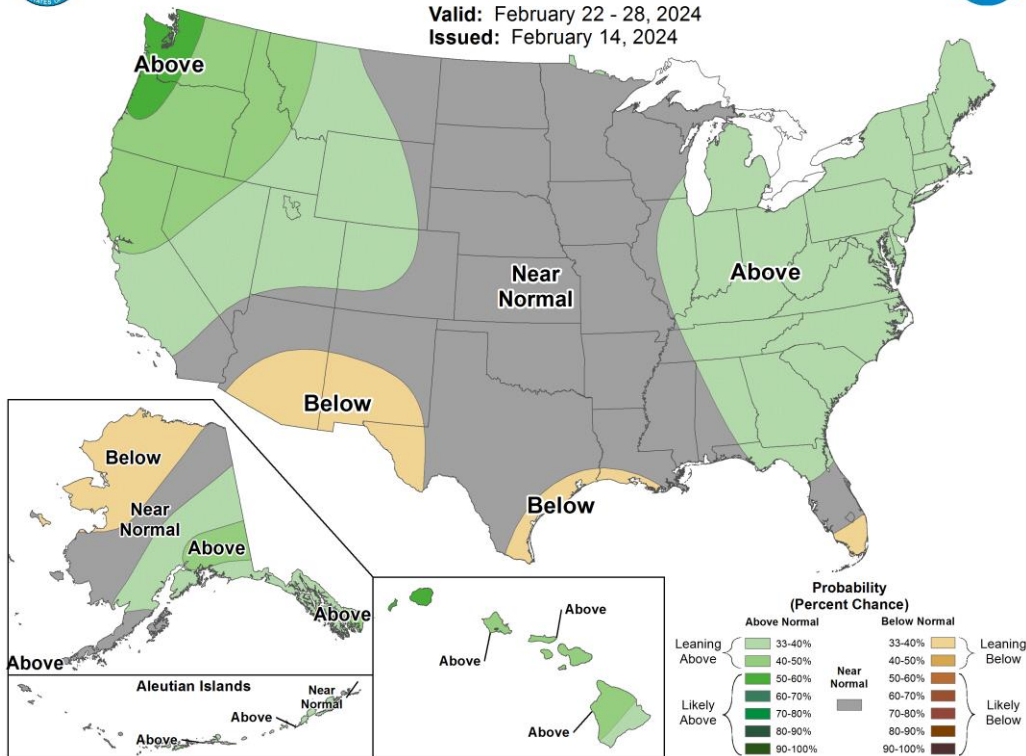
# Feb 22-28 Precipitation Outlook



## 8-14 Day Precipitation Outlook

Valid: February 22 - 28, 2024

Issued: February 14, 2024



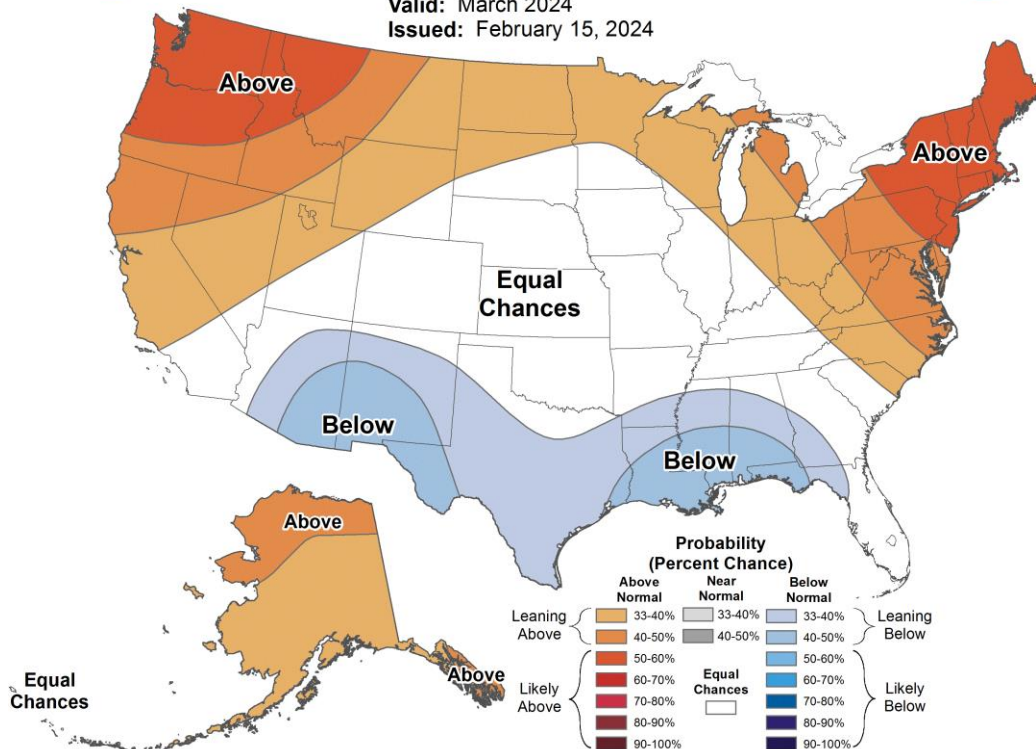
# March Temperature Outlook



## Monthly Temperature Outlook



Valid: March 2024  
Issued: February 15, 2024



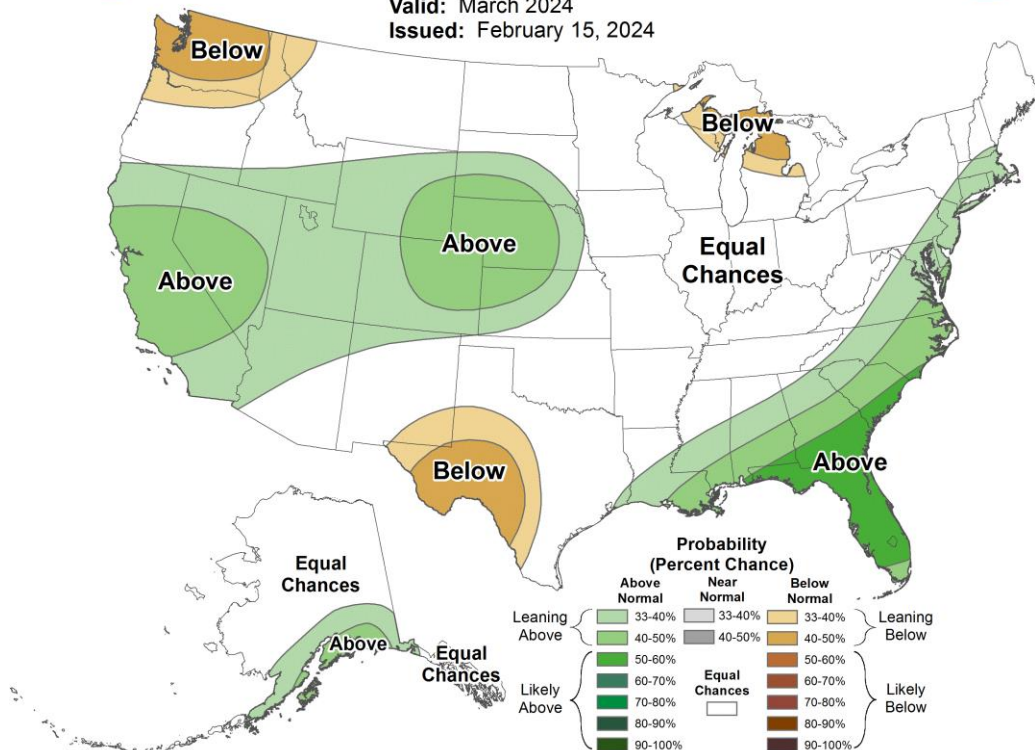
# March Precipitation Outlook



## Monthly Precipitation Outlook



Valid: March 2024  
Issued: February 15, 2024



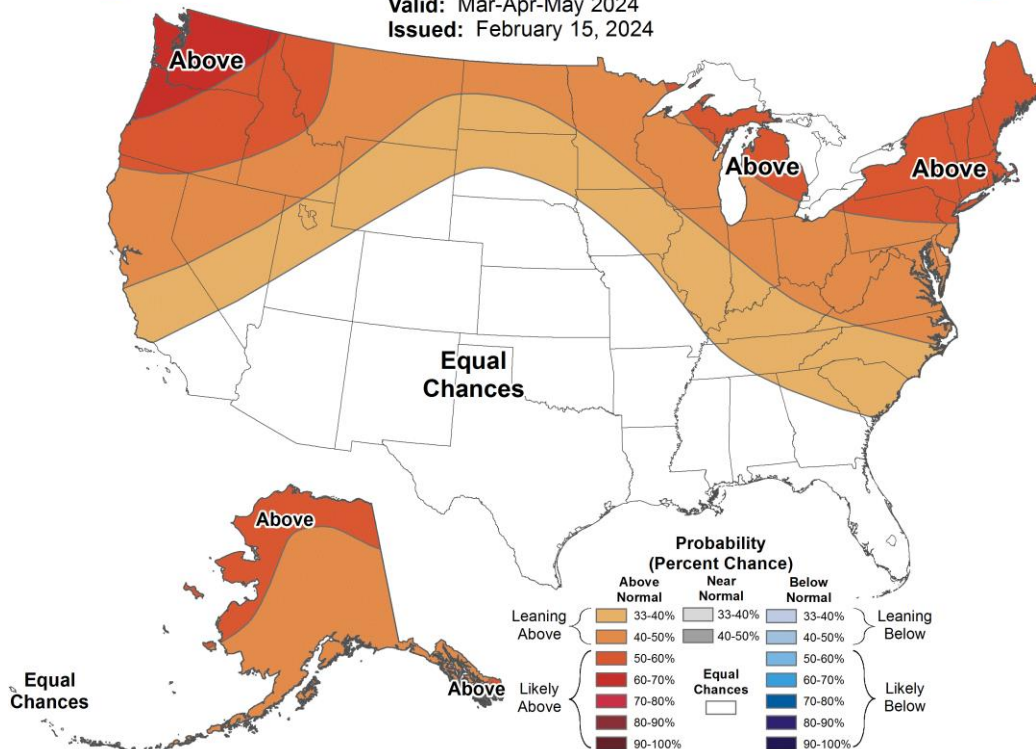
# Mar-Apr-May Temperature Outlook



## Seasonal Temperature Outlook



Valid: Mar-Apr-May 2024  
Issued: February 15, 2024



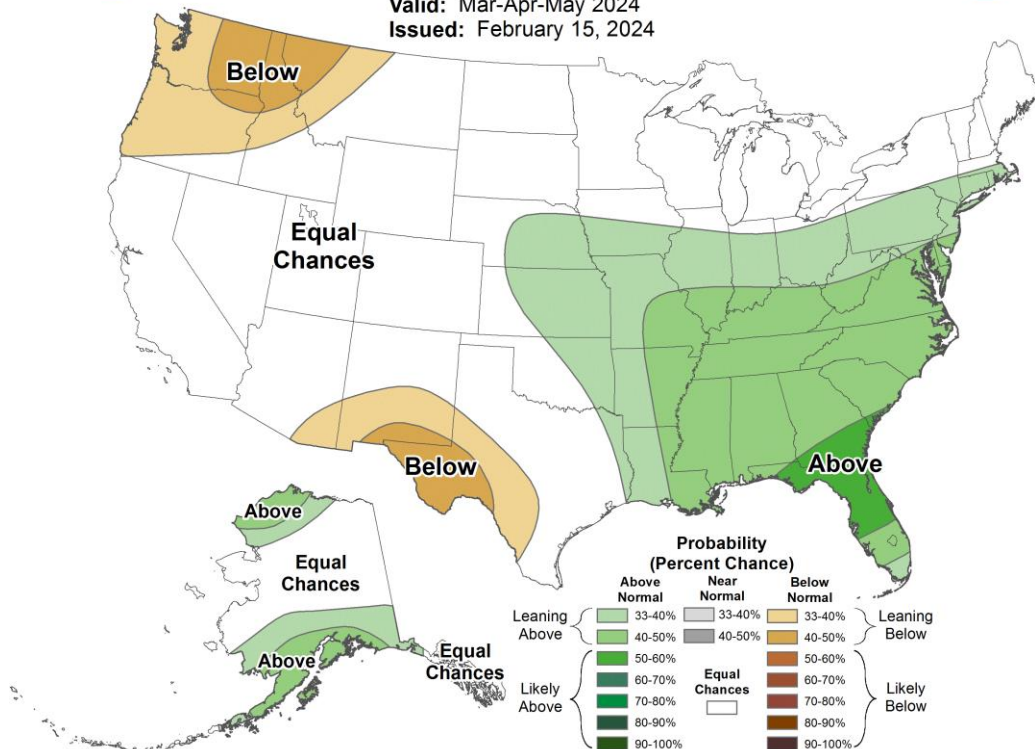
# Mar-Apr-May Precipitation Outlook



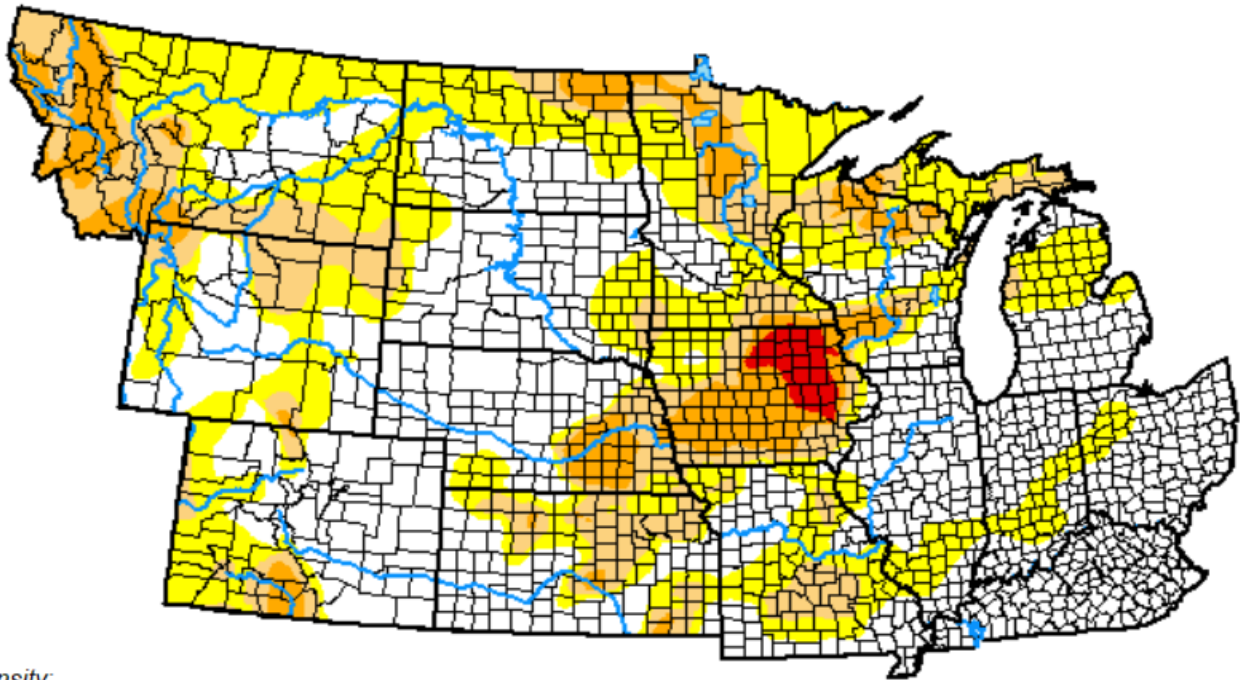
## Seasonal Precipitation Outlook



Valid: Mar-Apr-May 2024  
Issued: February 15, 2024



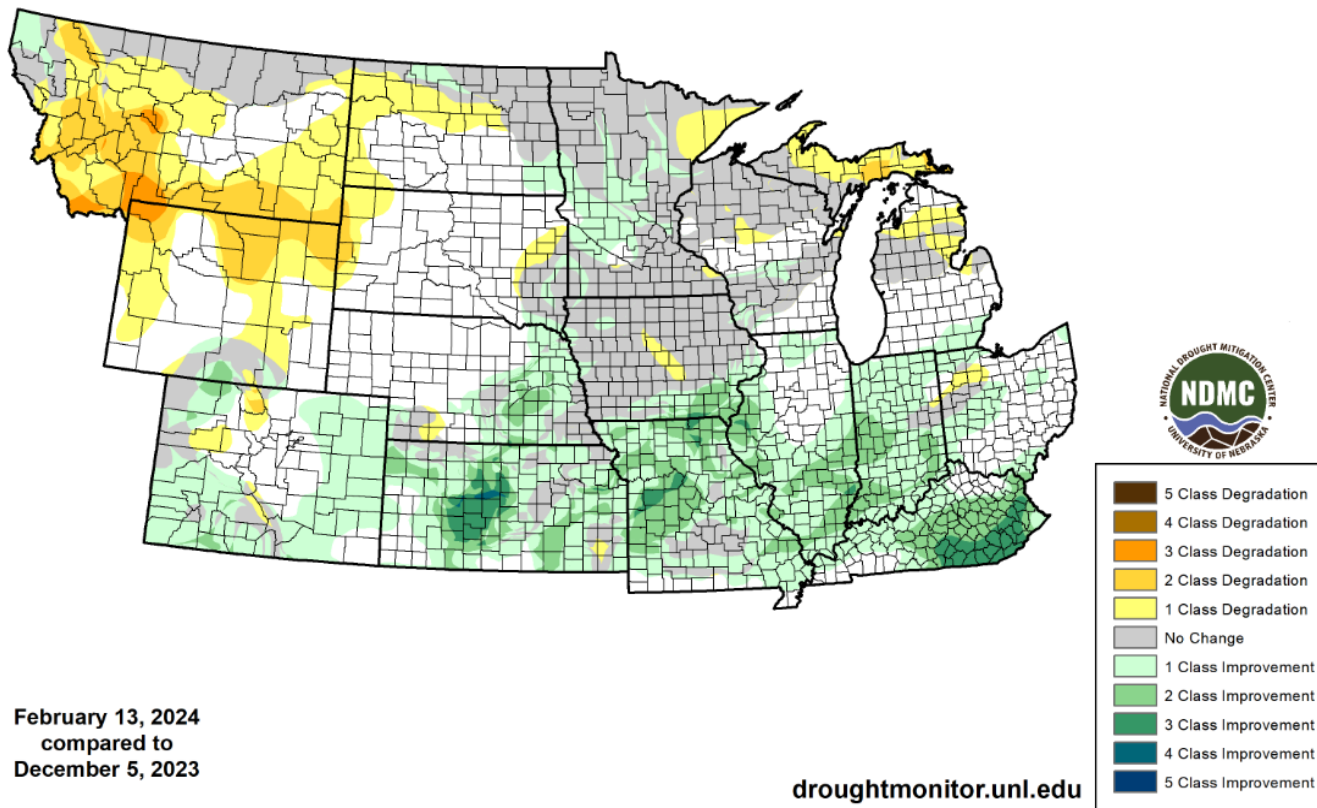
# US Drought Monitor – February 13, 2024



## Intensity:



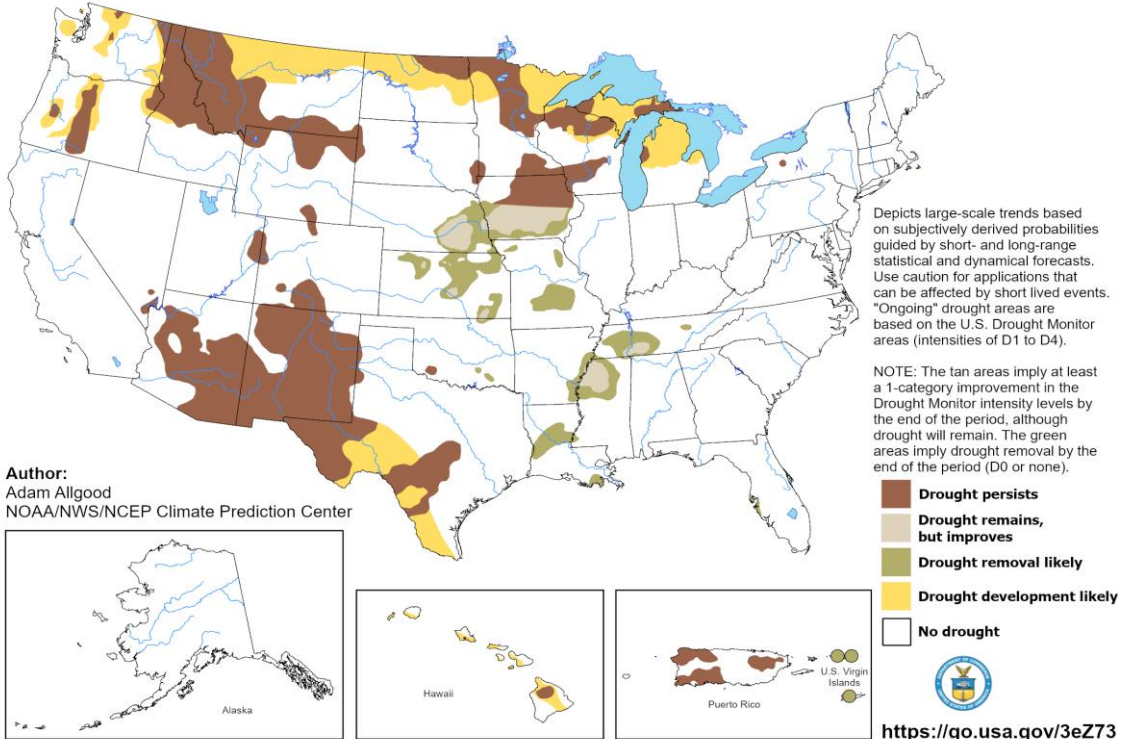
# US Drought Monitor –Change since Dec 2023



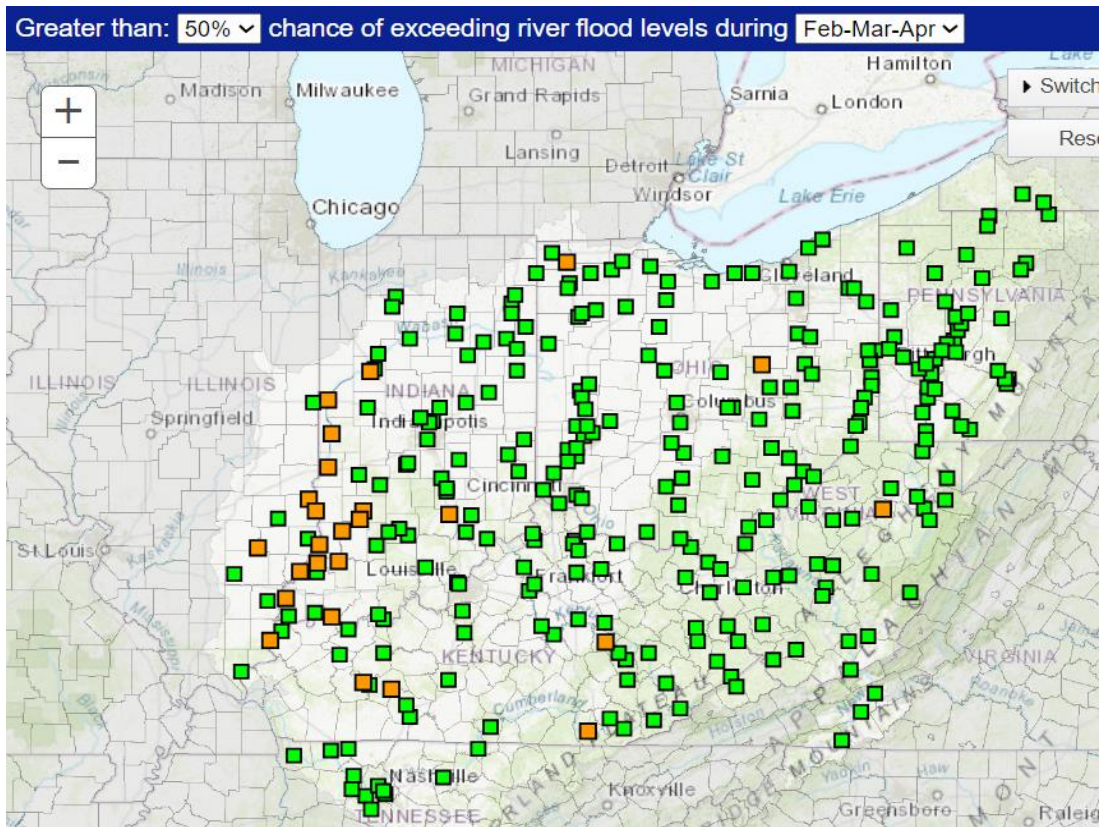
# Feb-May 2024 Drought Outlook

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

*Valid for February 15 - May 31, 2024*  
*Released February 15, 2024*



# Feb-Mar-Apr River Flood Outlook – Ohio



> 50% Major Flooding

> 50% Moderate Flooding

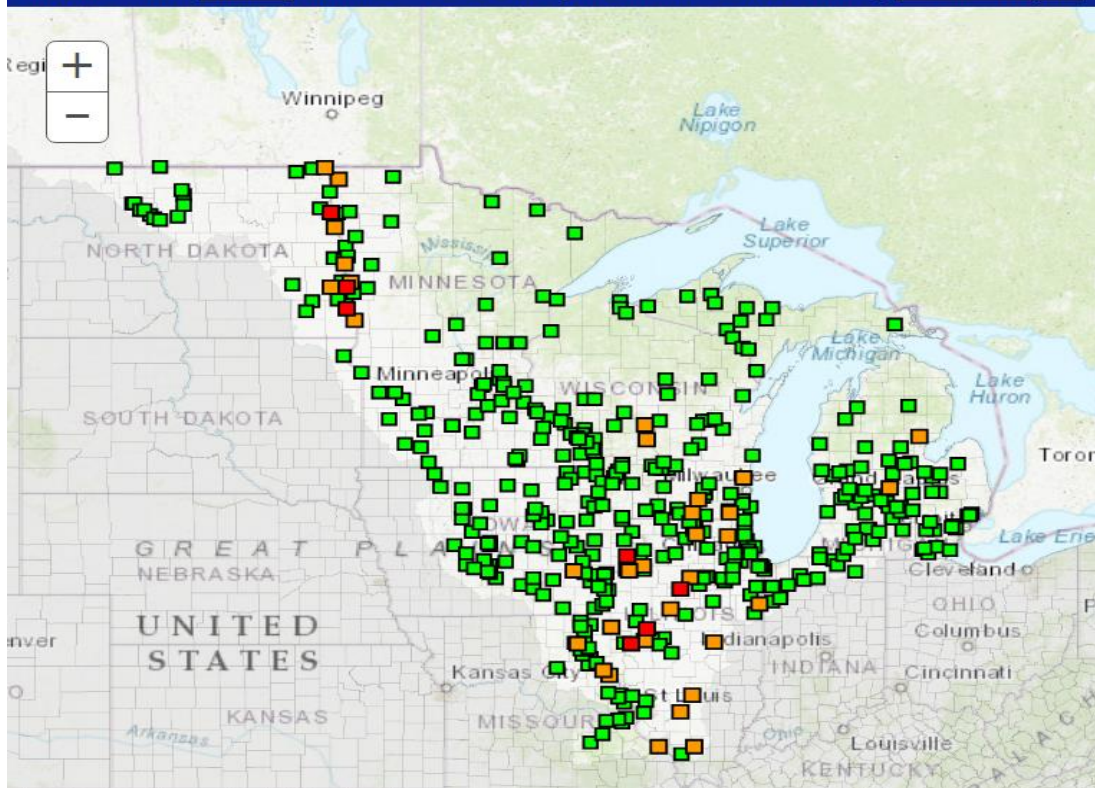
> 50% Minor Flooding

< 50% Chance of Flooding

Long-Range Flood Risk Not Calculated

# Feb-Mar-Apr River Flood Outlooks – North Central

Greater than: 50% ▾ chance of exceeding river flood levels during Feb-Mar-Apr ▾



> 50% Major Flooding

> 50% Moderate Flooding

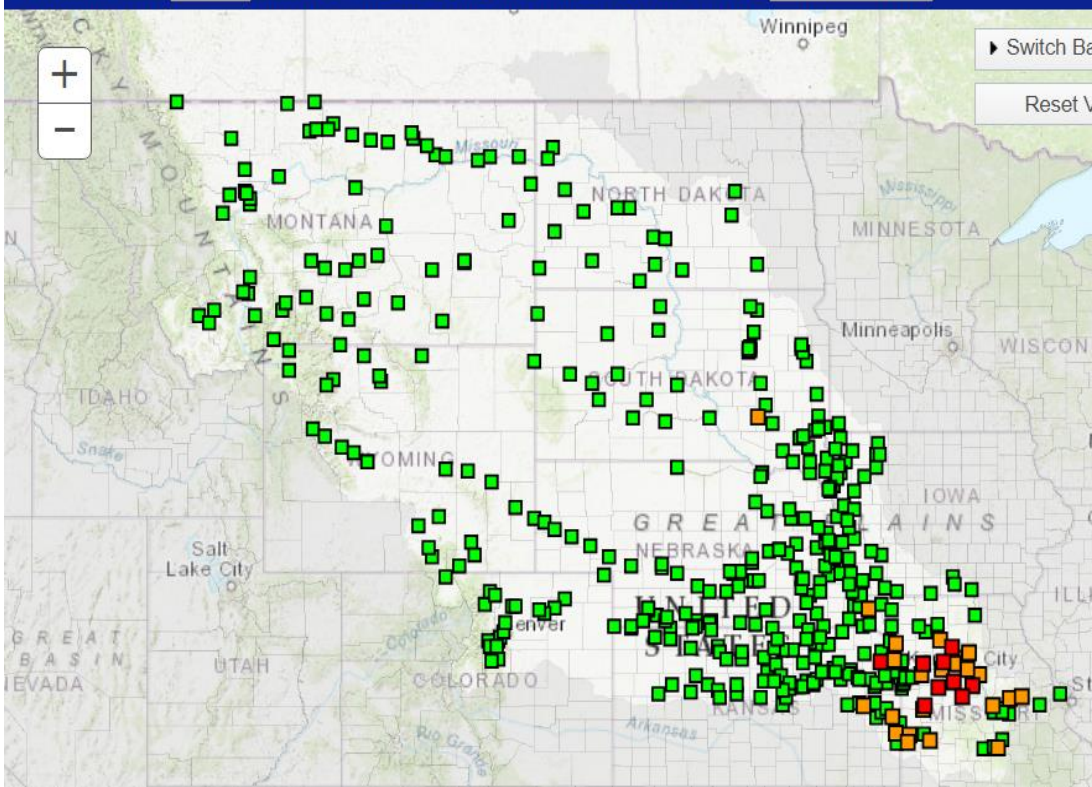
> 50% Minor Flooding

< 50% Chance of Flooding

Long-Range Flood Risk Not Calculated

# Feb-Mar-Apr River Flood Outlooks - Missouri

Greater than:  chance of exceeding river flood levels during



> 50% Major Flooding

> 50% Moderate Flooding

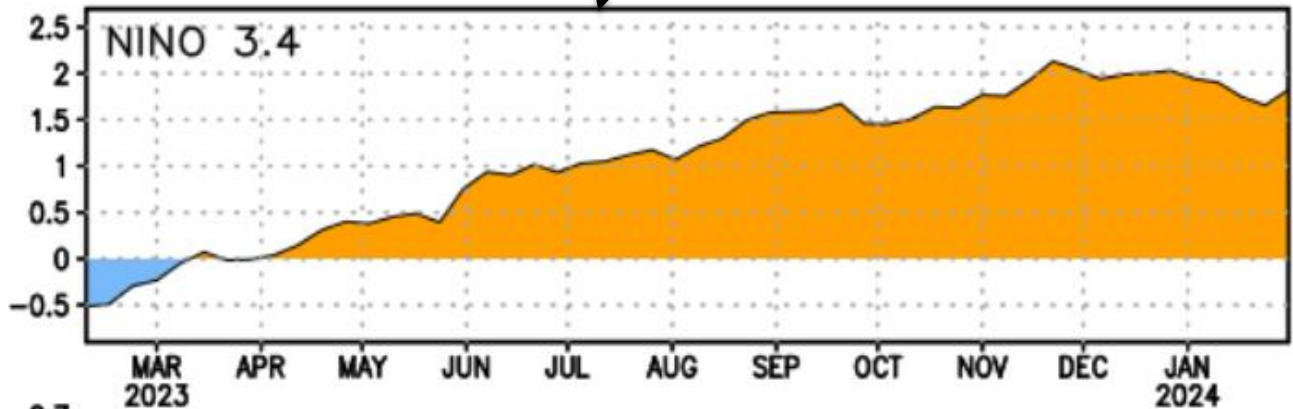
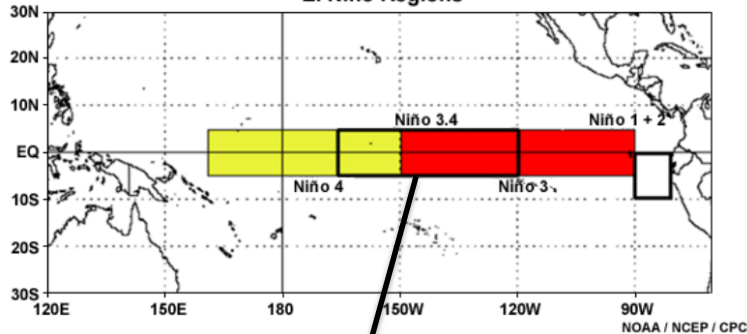
> 50% Minor Flooding

< 50% Chance of Flooding

Long-Range Flood Risk Not Calculated

# ENSO Status

El Niño Regions

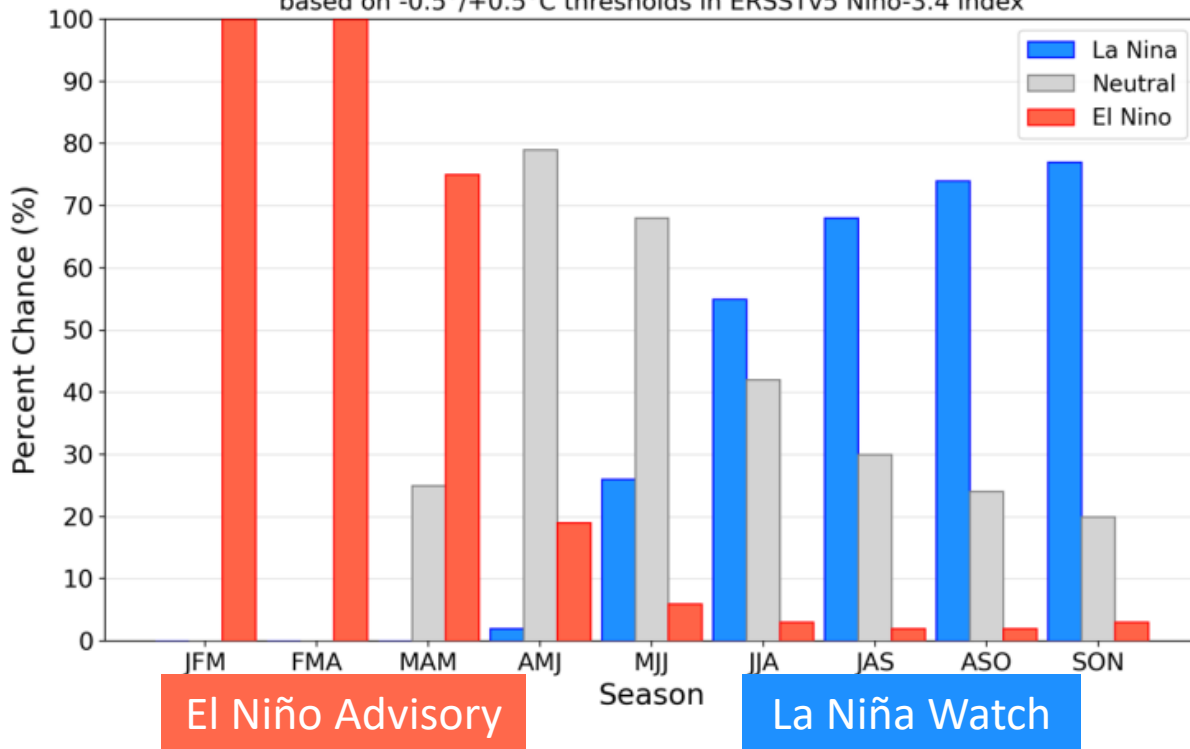


# ENSO Forecast



## Official NOAA CPC ENSO Probabilities (issued Feb. 2024)

based on  $-0.5^{\circ}/+0.5^{\circ}\text{C}$  thresholds in ERSSTv5 Niño-3.4 index



# Comments / Questions?

Contact: Matthew Sittel – [msittel@ksu.edu](mailto:msittel@ksu.edu)

Dennis Todey - [dennis.todey@usda.gov](mailto:dennis.todey@usda.gov) - (515) 294-2013

Doug Kluck - [doug.kluck@noaa.gov](mailto:doug.kluck@noaa.gov) - (816) 564-2417

Websites: [weather.gov](http://weather.gov), [climate.gov](http://climate.gov), [heat.gov](http://heat.gov), [drought.gov](http://drought.gov)

Past Webinars: <https://mrcc.purdue.edu/webinars/>  
<https://hprcc.unl.edu/webinars.php>

