Gardening with Weather Extremes

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February 15, 2025

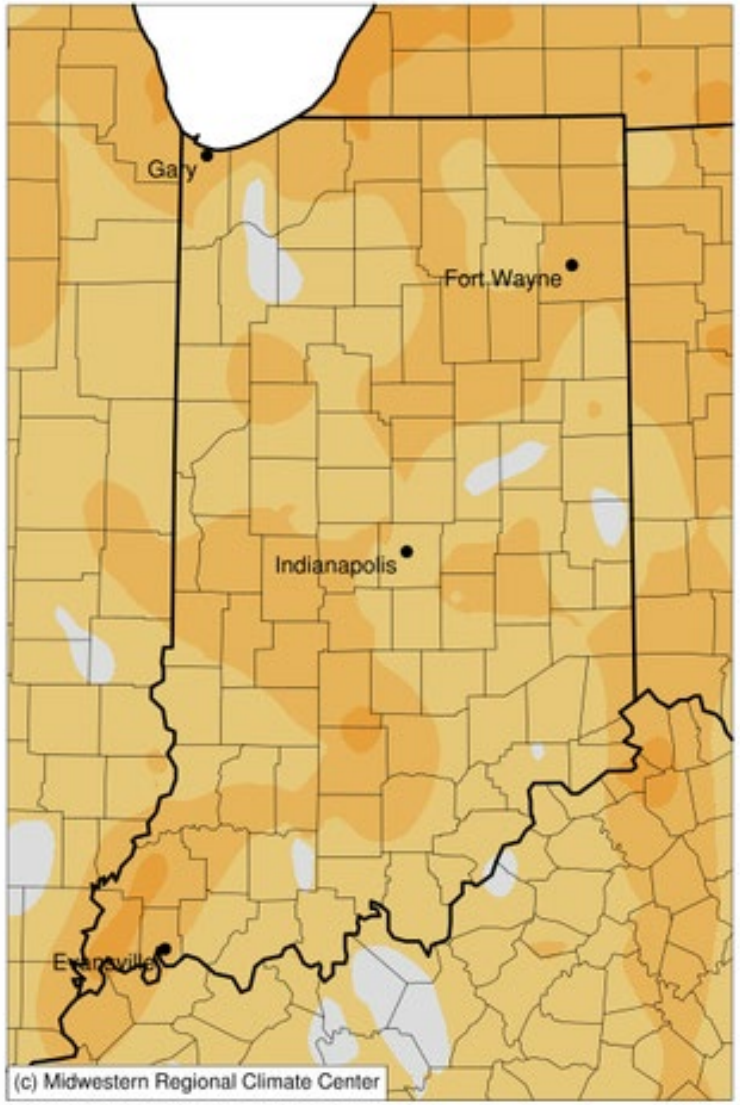
MRCC
Midwestern Regional Climate Center

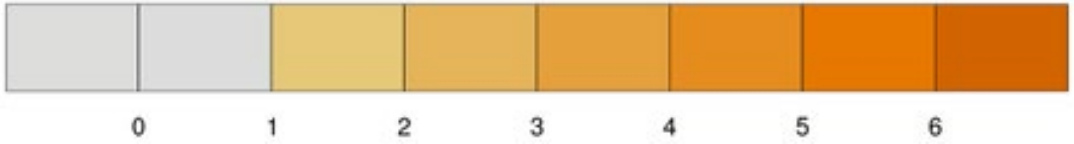
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

PURDUE UNIVERSITY
Indiana State Climate Office

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

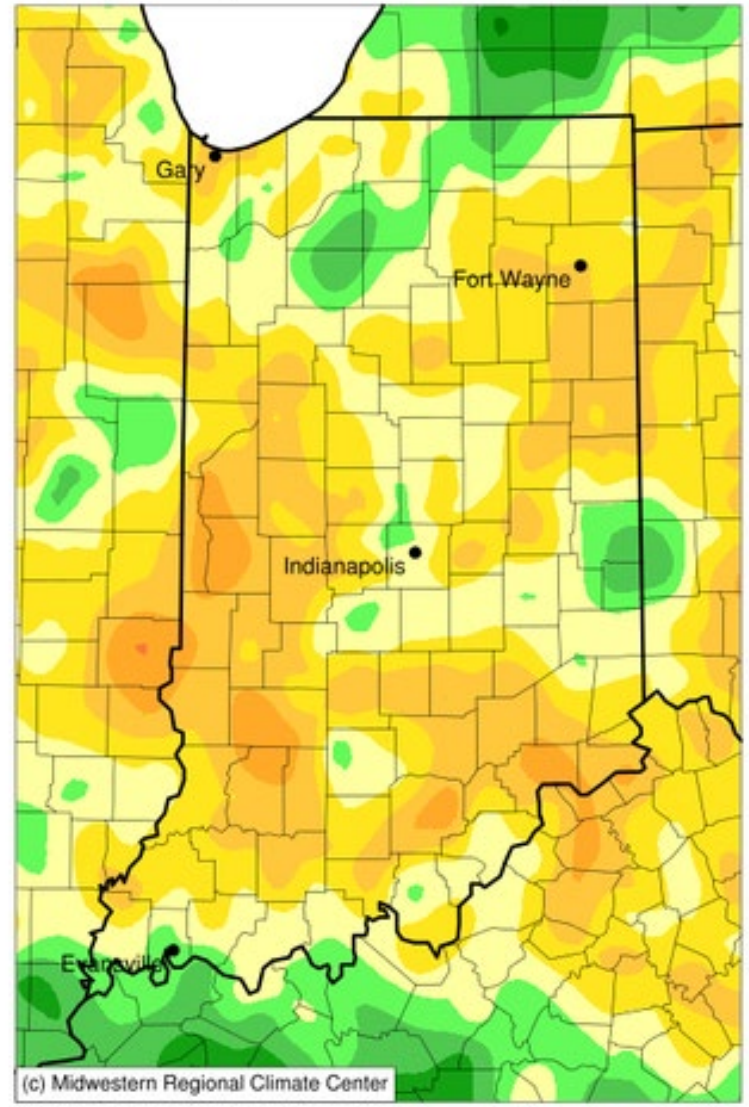
April 01, 2024 to October 31, 2024





Accumulated Precipitation (in): Departure from 1991-2020 Normals

April 01, 2024 to October 31, 2024



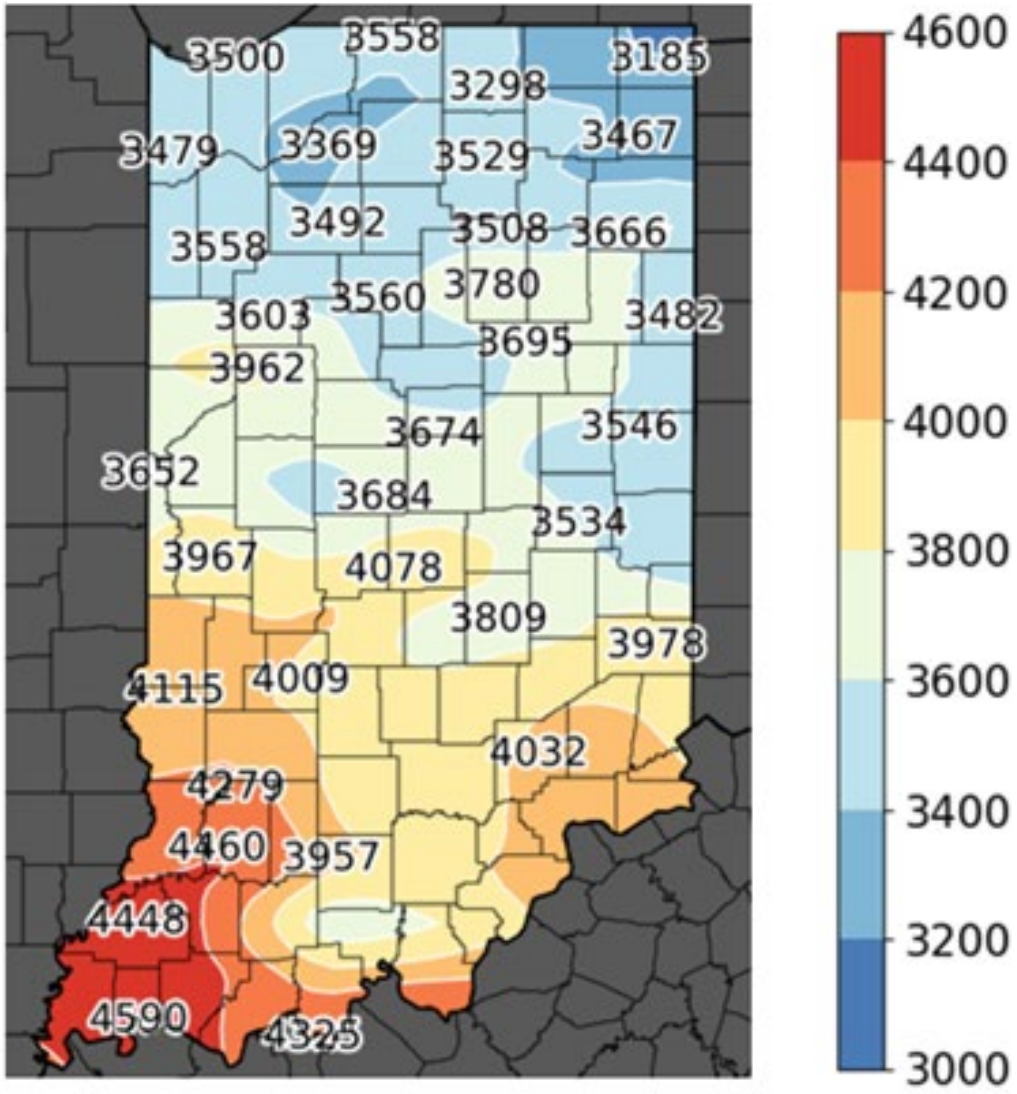
- Warm winter, early perennial crop dormancy break.
- Digging ourselves out of dry winter conditions.
- Wet April, challenging to plant.
- Rain shut off in June.
- Beryl and stormy patterns saved crops in July.
- Drought began to expand in August and September.
- Helene brought measurable rain to southern IN in September.
- Second driest October on record since 1895.
- 18 of longest recording weather stations in IN had the driest October on record.
- Field and ditch fires throughout October, most of the harvest.

Division	Avg Temperature (Departure from 1991-2020)							
	Apr	May	Jun	Jul	Aug	Sep	Oct	Apr-Oct
1	51.8 (2.2)	64.6 (3.9)	72.1 (2.0)	71.4 (-1.8)	71.4 (0.1)	67.2 (2.4)	56.8 (3.7)	65.0 (1.8)
2	51.8 (2.3)	64.7 (4.2)	72.2 (2.3)	71.6 (-1.3)	71.6 (0.5)	67.1 (2.6)	56.1 (3.2)	65.0 (2.0)
3	52.2 (2.8)	64.6 (4.3)	71.9 (2.3)	71.6 (-1.2)	71.5 (0.6)	67.4 (3.1)	56.1 (3.4)	65.0 (2.2)
4	54.4 (2.2)	66.8 (4.0)	72.9 (1.4)	72.8 (-1.4)	73.1 (0.5)	68.2 (2.1)	57.8 (3.3)	66.6 (1.7)
5	54.9 (2.9)	67.0 (4.7)	72.6 (1.6)	72.9 (-1.0)	73.0 (0.7)	68.0 (2.2)	57.6 (3.3)	66.6 (2.1)
6	54.1 (2.8)	66.0 (4.4)	71.7 (1.3)	71.9 (-1.4)	72.1 (0.5)	67.2 (2.1)	56.5 (2.7)	65.6 (1.8)
7	58.4 (3.0)	69.0 (3.8)	74.8 (1.1)	76.0 (-0.7)	75.4 (0.2)	70.7 (2.2)	60.1 (3.1)	69.2 (1.8)
8	57.1 (2.6)	67.9 (3.8)	72.9 (0.6)	74.8 (-0.7)	74.3 (0.2)	69.5 (2.1)	58.7 (2.7)	67.9 (1.6)
9	57.5 (3.2)	67.9 (4.1)	73.3 (1.4)	75.1 (-0.7)	74.6 (0.6)	70.0 (2.7)	58.6 (2.8)	68.1 (2.1)
State	54.8 (2.7)	66.6 (4.1)	72.8 (1.6)	73.2 (-1.1)	73.1 (0.5)	68.4 (2.4)	57.7 (3.2)	66.7 (1.9)

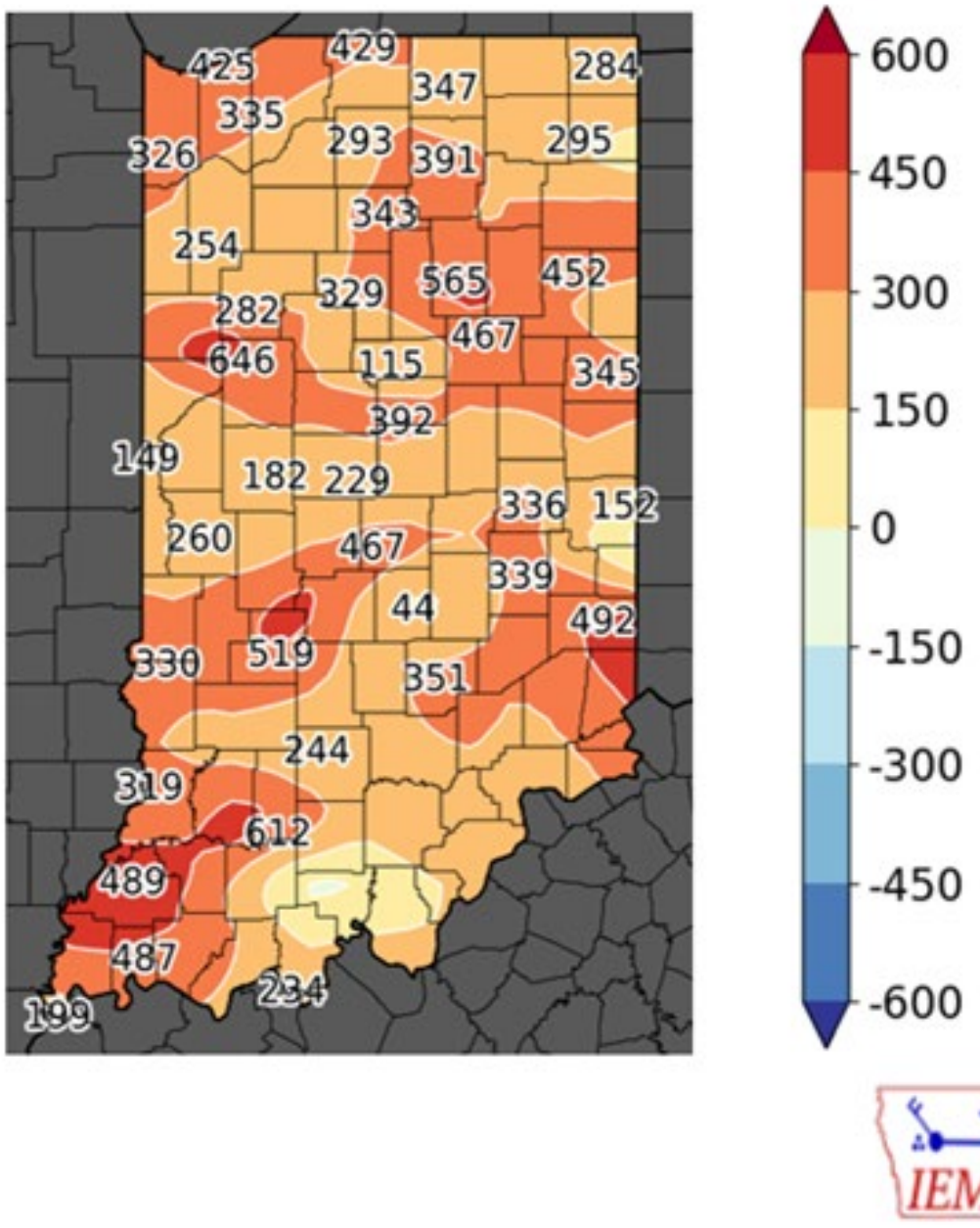
Division	Total Precipitation (Departure from 1991-2020)							
	Apr	May	Jun	Jul	Aug	Sep	Oct	Apr-Oct
1	6.72 (2.98)	3.77 (-0.55)	3.71 (-1.04)	6.05 (1.70)	3.42 (-0.65)	1.81 (-1.45)	0.94 (-2.42)	26.42 (-1.43)
2	6.68 (2.92)	4.44 (0.13)	3.99 (-0.58)	5.54 (1.30)	2.39 (-1.61)	2.02 (-1.21)	0.45 (-2.78)	25.51 (-1.83)
3	6.44 (2.69)	4.19 (-0.22)	3.20 (-1.04)	3.92 (-0.09)	2.26 (-1.58)	1.88 (-1.21)	0.49 (-2.50)	22.38 (-3.95)
4	6.96 (2.49)	4.11 (-0.51)	2.50 (-2.56)	5.36 (0.94)	2.58 (-0.76)	2.20 (-0.97)	0.18 (-3.26)	23.89 (-4.63)
5	7.22 (2.84)	5.19 (0.43)	3.07 (-1.97)	4.95 (0.62)	2.97 (-0.54)	2.64 (-0.60)	0.22 (-3.06)	26.26 (-2.28)
6	7.58 (3.38)	3.33 (-1.27)	3.03 (-1.83)	4.36 (0.14)	2.69 (-0.85)	3.28 (0.16)	0.22 (-2.86)	24.49 (-3.13)
7	6.46 (1.38)	5.74 (0.42)	1.92 (-2.86)	5.24 (0.90)	1.78 (-1.41)	4.93 (1.37)	0.19 (-3.36)	26.26 (-3.56)
8	6.27 (1.13)	6.20 (0.85)	1.85 (-2.98)	5.55 (1.25)	2.72 (-0.72)	5.16 (1.61)	0.12 (-3.39)	27.87 (-2.25)
9	5.35 (0.47)	5.18 (-0.04)	1.90 (-3.01)	5.23 (0.86)	3.19 (-0.41)	5.34 (2.04)	0.24 (-3.17)	26.43 (-3.26)
State	6.67 (2.28)	4.77 (-0.01)	2.81 (-1.99)	5.17 (0.88)	2.65 (-0.95)	3.19 (-0.10)	0.34 (-2.99)	25.60 (-2.88)

IN Climate Divisions

Accumulated MGDDs Apr-Oct



MGDDs Departure from Average Apr-Oct



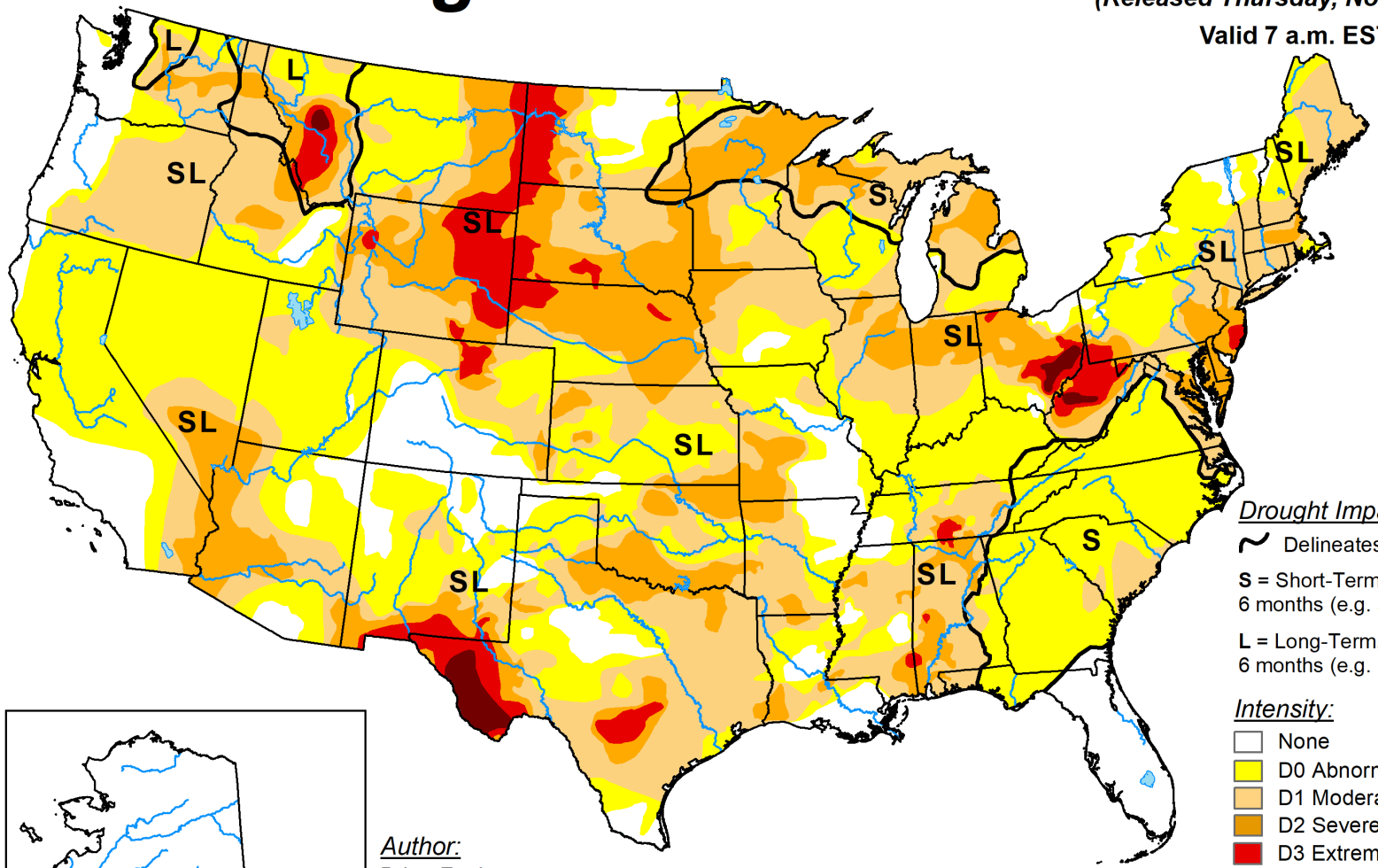
IEM

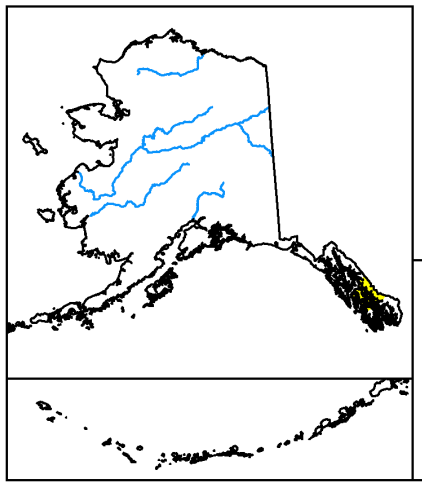
U.S. Drought Monitor

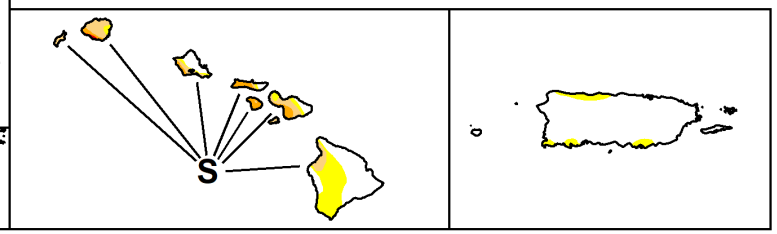
November 5, 2024

(Released Thursday, Nov. 7, 2024)

Valid 7 a.m. EST







Drought Impact Types:

~ Delineates dominant impacts

S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

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

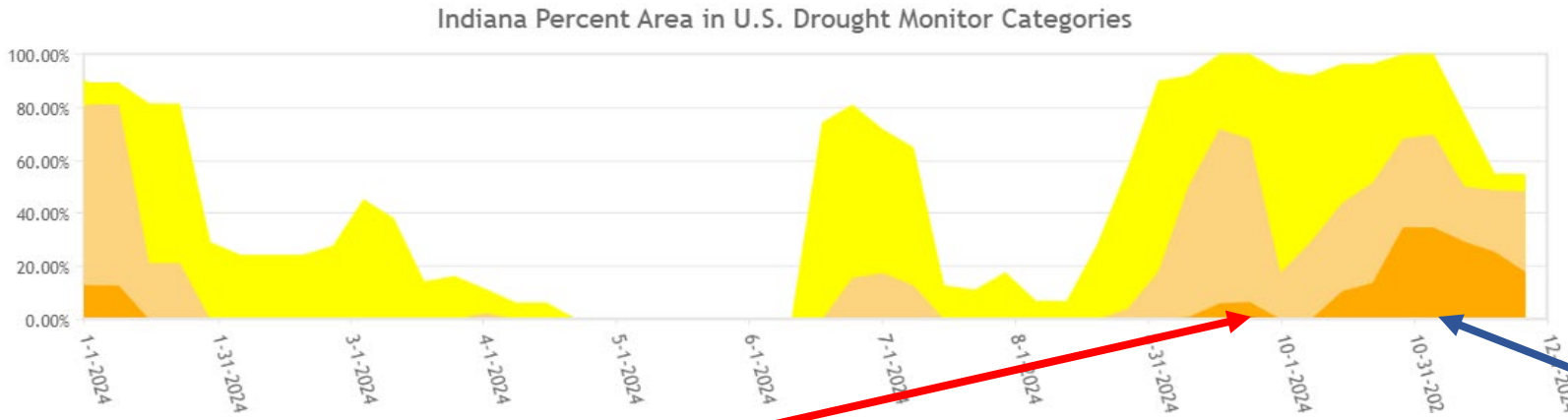
Author:

Brian Fuchs

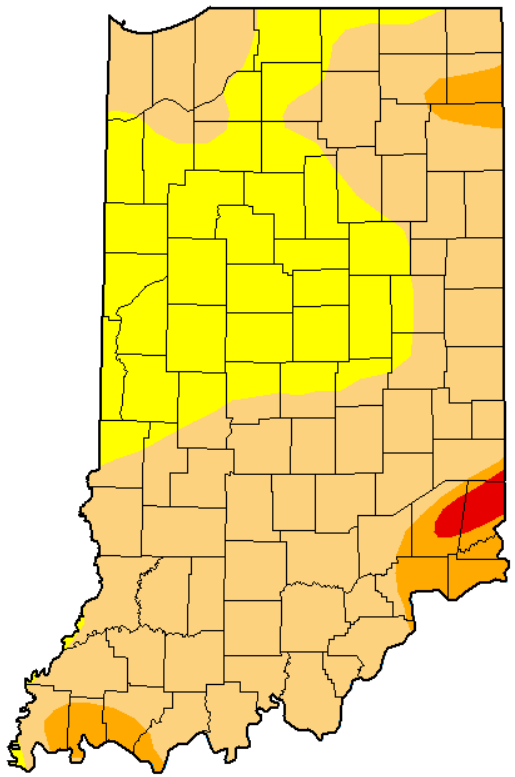
National Drought Mitigation Center

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

droughtmonitor.unl.edu



U.S. Drought Monitor
Indiana



September 24, 2024
(Released Thursday, Sep. 26, 2024)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	67.93	6.57	0.91	0.00
Last Week *09-17-2024*	0.00	100.00	71.73	6.07	0.00	0.00
3 Months Ago *06-25-2024*	19.07	80.93	15.70	0.00	0.00	0.00
Start of Calendar Year *01-02-2024*	10.70	89.30	81.12	12.88	0.00	0.00
Start of Water Year *09-26-2023*	1.38	98.62	85.30	0.00	0.00	0.00
One Year Ago *09-26-2023*	1.38	98.62	85.30	0.00	0.00	0.00

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

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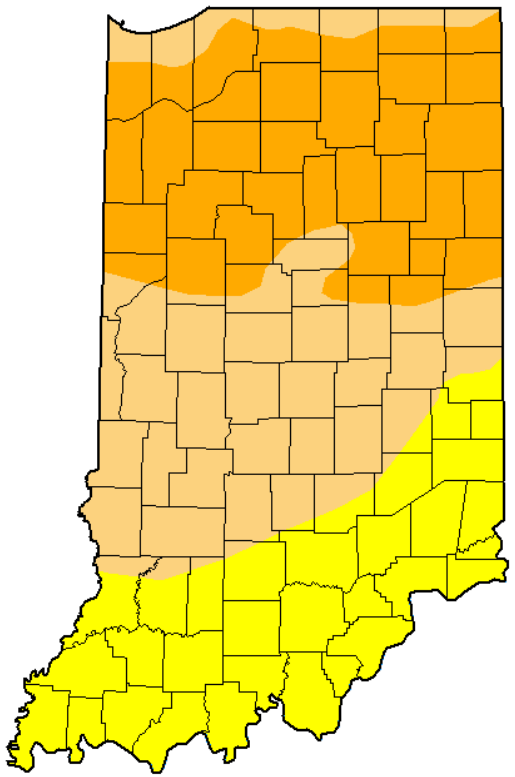
U.S. Drought Monitor
Indiana



November 5, 2024
(Released Thursday, Nov. 7, 2024)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	69.72	34.65	0.00	0.00
Last Week *10-29-2024*	0.13	99.87	68.14	34.65	0.00	0.00
3 Months Ago *08-06-2024*	92.90	7.10	0.00	0.00	0.00	0.00
Start of Calendar Year *01-02-2024*	10.70	89.30	81.12	12.88	0.00	0.00
Start of Water Year *10-01-2024*	6.65	93.35	17.54	0.11	0.00	0.00
One Year Ago *11-07-2023*	36.91	63.09	23.94	0.00	0.00	0.00

Intensity:
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
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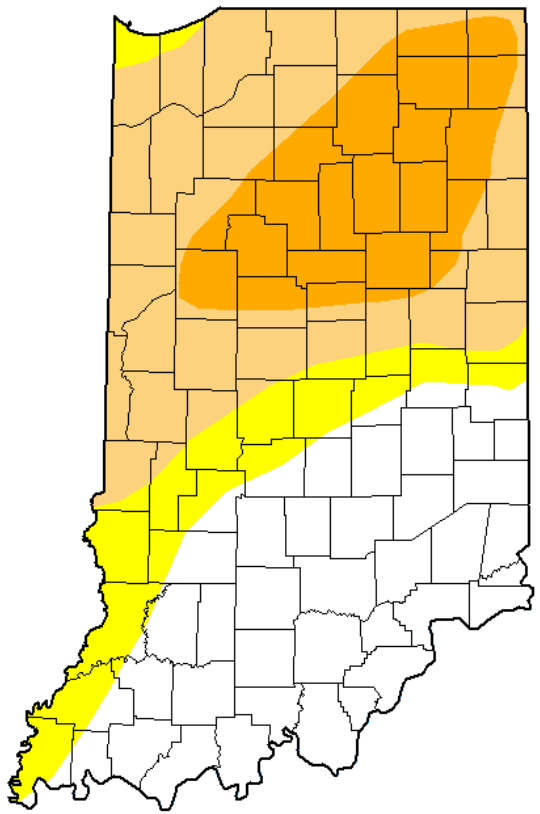
U.S. Drought Monitor

Indiana



December 10, 2024

(Released Thursday, Dec. 12, 2024)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	36.37	63.63	50.15	19.71	0.00	0.00
Last Week *12-03-2024*	45.03	54.97	50.06	17.88	0.00	0.00
3 Months Ago *09-10-2024*	8.02	91.98	50.50	0.98	0.00	0.00
Start of Calendar Year *01-02-2024*	10.70	89.30	81.12	12.88	0.00	0.00
Start of Water Year *10-01-2024*	6.65	93.35	17.54	0.11	0.00	0.00
One Year Ago *12-12-2023*	1.92	98.08	54.15	7.61	0.00	0.00

Intensity:

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

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Author:

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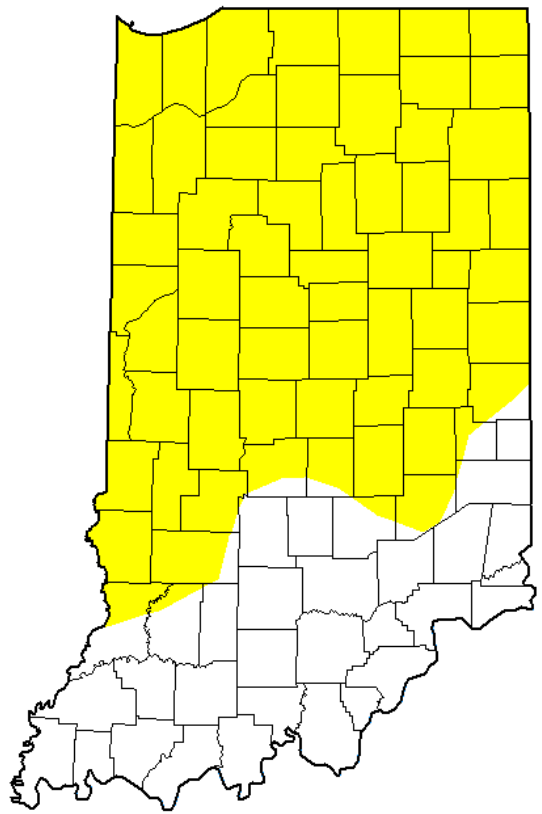
U.S. Drought Monitor

Indiana



February 11, 2025

(Released Thursday, Feb. 13, 2025)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.72	68.28	0.00	0.00	0.00	0.00
Last Week *02-04-2025*	67.04	32.96	0.00	0.00	0.00	0.00
3 Months Ago *11-12-2024*	22.52	77.48	50.12	29.42	0.00	0.00
Start of Calendar Year *01-07-2025*	49.64	50.36	2.02	0.00	0.00	0.00
Start of Water Year *10-01-2024*	6.65	93.35	17.54	0.11	0.00	0.00
One Year Ago *02-13-2024*	75.72	24.28	0.00	0.00	0.00	0.00

Intensity:

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

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Author:

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Climate Services
Obtaining Weather Data

MRCC
Midwestern Regional
Climate Center

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

PURDUE
UNIVERSITY

Indiana State Climate Office

Climate Services

"Services that equip decision makers in climate-sensitive sectors with better information to help society adapt to climate variability and change." – *Global Framework for Climate Services*

"Scientifically-based information and products that enhance users' knowledge and understanding about the impacts of climate on their decisions and actions." – *American Meteorological Society*

DATA → INFORMATION → DECISIONS

Federal Level

National Centers for Environmental Information (NCEI)
National Weather Service

Regional Level

Regional Climate Centers

State Level

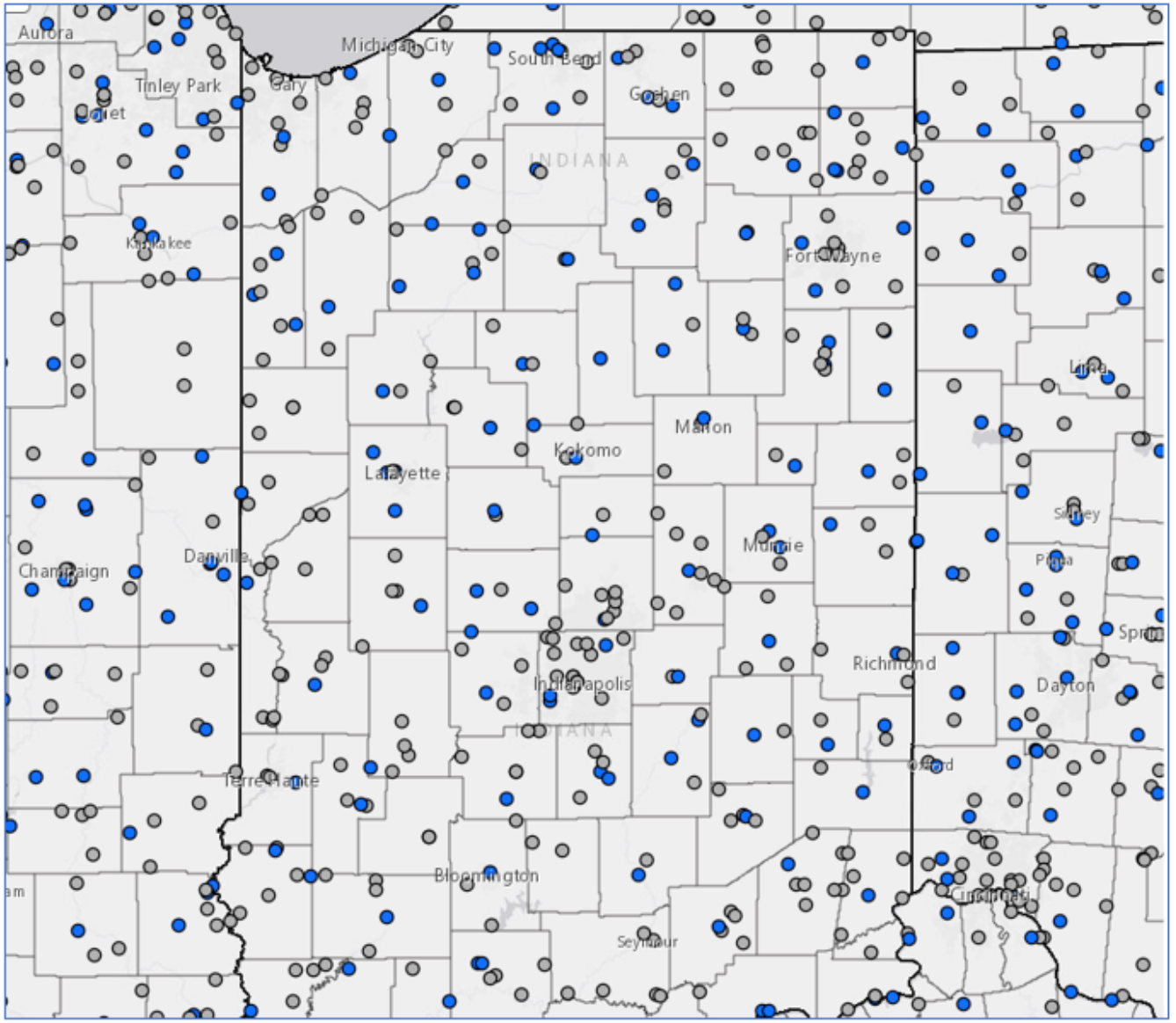
State Climate Offices

Federal Data

- Daily
- Temperature *(max, min)*
- Precipitation *(rain, snow fall, snow depth)*

Blue = still active
Grey = inactive

NWS Cooperative Observer Program

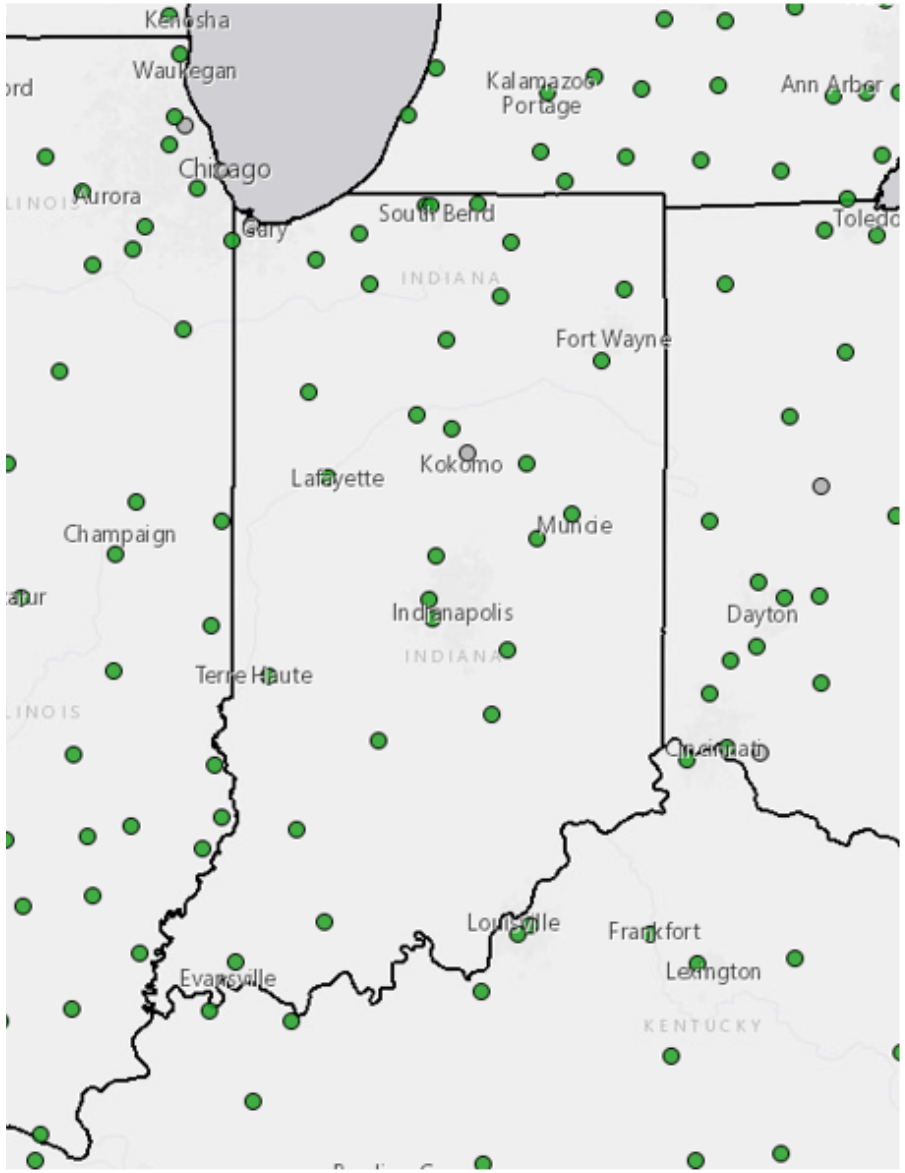


Federal Data

FAA (airport) stations

- Automated
- Hourly
- 1948 - present
- Variables:
  - Temperature
  - Precipitation
  - Humidity
  - Winds
  - Pressure
  - Cloud height

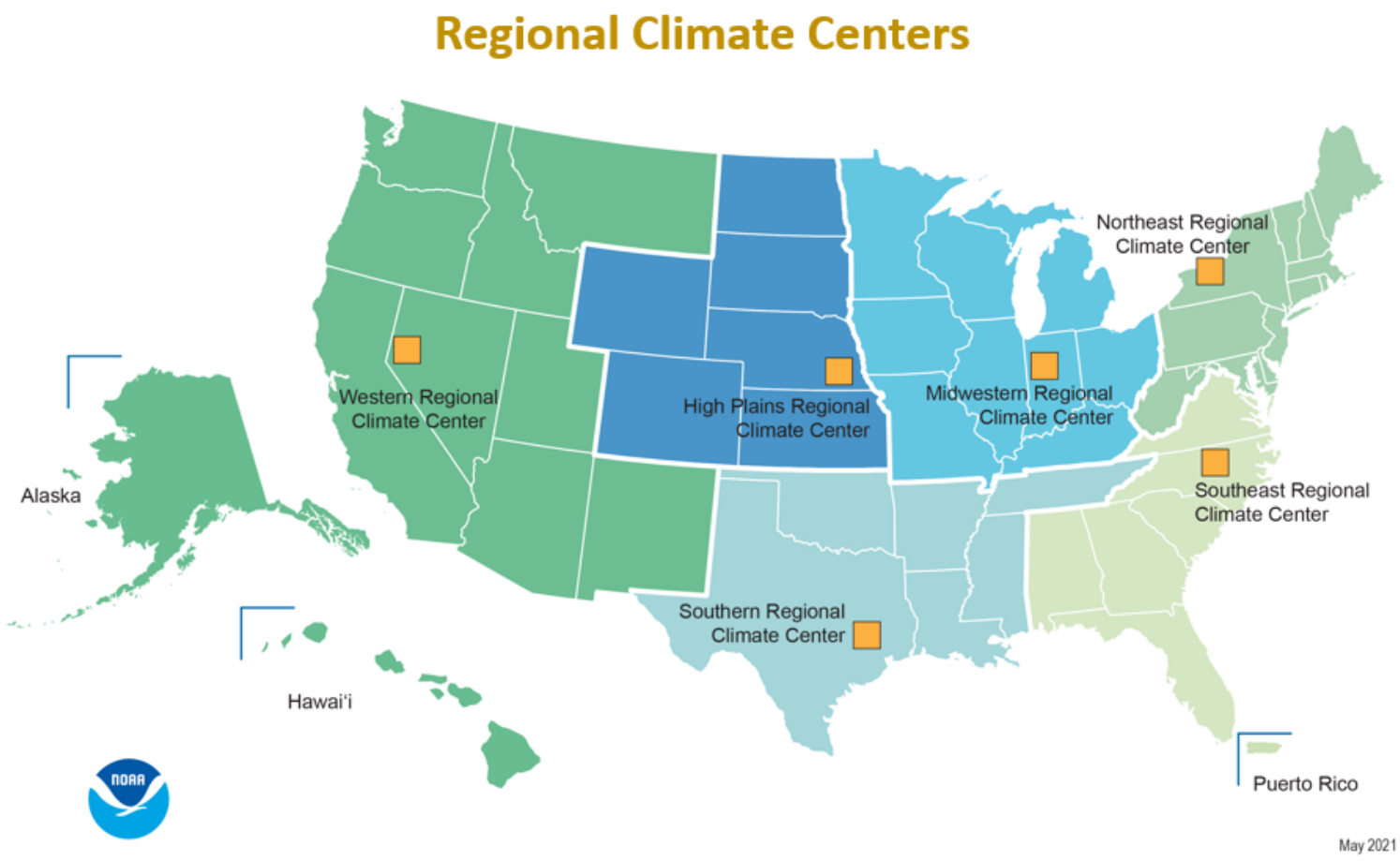
Green = still active
Grey = inactive



Regional Services - RCCs

Mission:

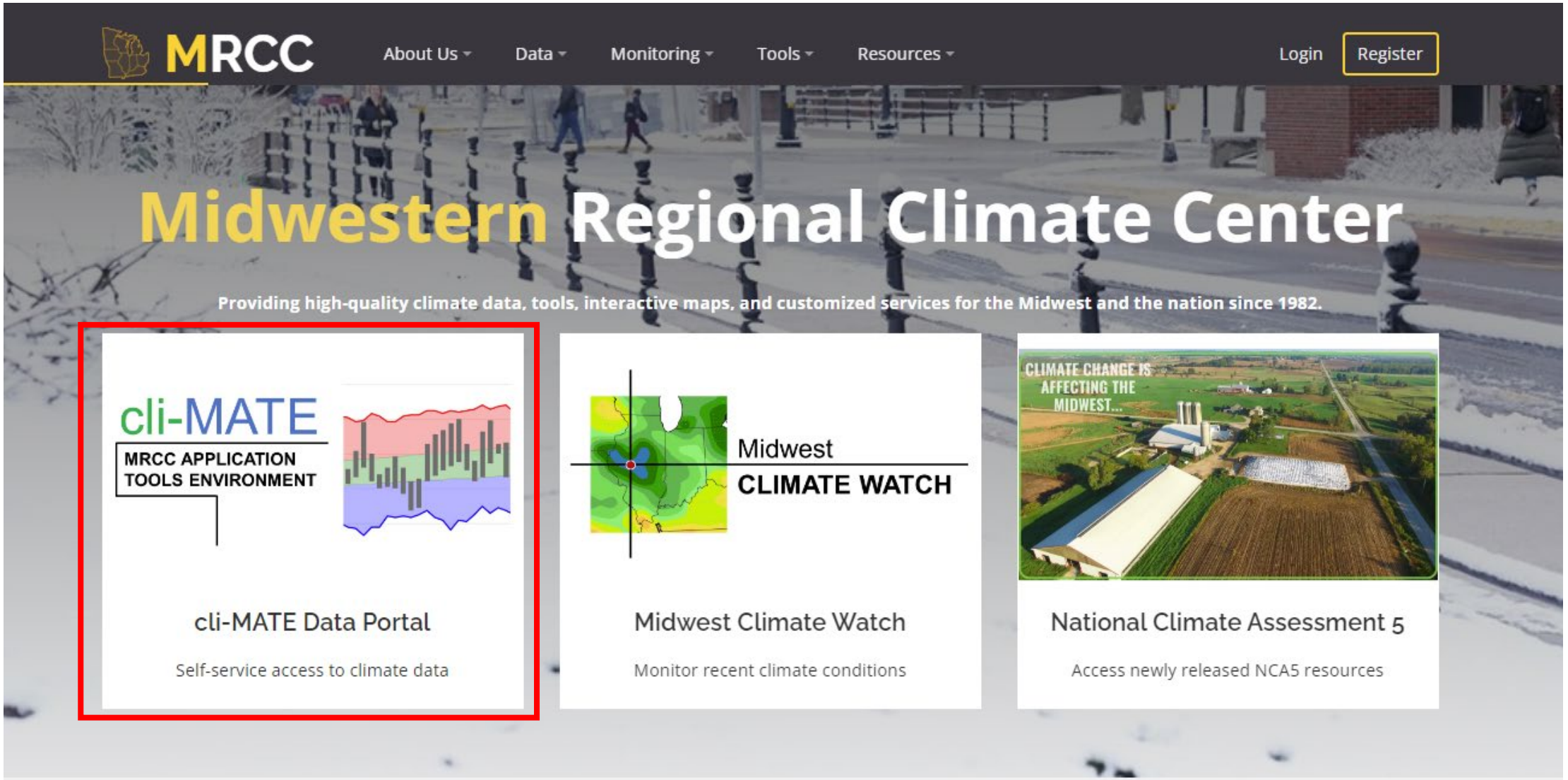
- Provide high-quality climate data, derived information, and data summaries *for the region*
- Monitor and assess *regional climate conditions* and their impacts
- Focus on region-specific needs
- Coordinate and conduct applied research on climate-related issues and problems
- Work with key stakeholders to identify climate services needs



- **DECISION SUPPORT**

Where to download Federal Data

https://mrcc.purdue.edu



cli-MATE

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

cli-MATE
MRCC APPLICATION TOOLS ENVIRONMENT

Hi Austin!
Log out

CURRENT DAILY STATION INFORMATION:
Station Name: ANDERSON SEWAGE PLANT
County: MADISON
State: IN
More Info
Select Daily Station

Synchroniz
Stations
<

CURRENT HOURLY STATION INFORMATION:
Station Name: CHICAGO MIDWAY AP
County: COOK
State: IL
More Info
Select Hourly Station

MRCC Midwestern Regional Climate Center

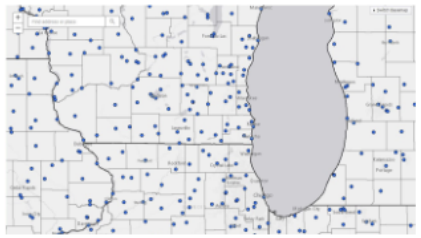
Privacy Policy

- Daily-Observed Data
- Hourly-Observed Data
- Climate Division Data
- State Data
- Gridded Data
- Maps of Data
- Charts and Graphs
- Help

Send Feedback

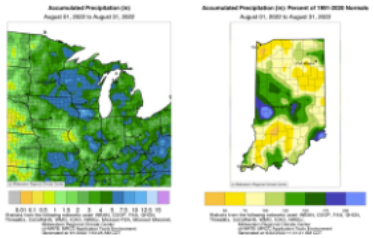
Welcome to **cli-MATE**, the Midwestern Regional Climate Center's online data portal. If you are unsure of how to get started, we have resources for you in the "Help" section, located in the menu to the left. Should you have any issues while working in cli-MATE, please report them here.

Featured Products



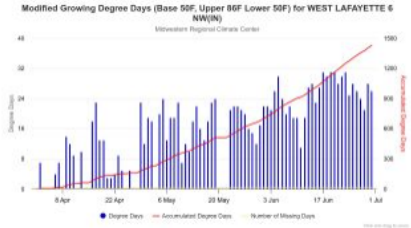
Daily Station Selector Tool

Choose the daily station of interest by using a map, where you can select from multiple climate data networks



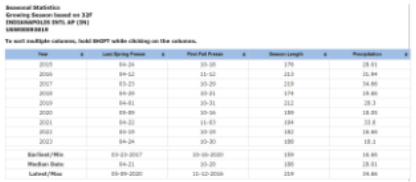
Interpolated Maps

Create temperature and precipitation maps for customized time frames, data networks, and regions [Product Description]



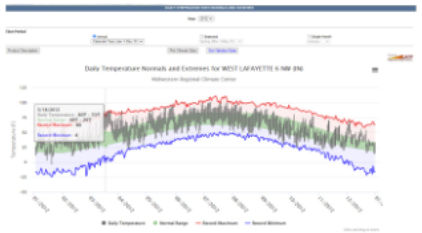
Degree Days

Create plots showing the accumulation of degree days for a chosen location and date range [Product Description]



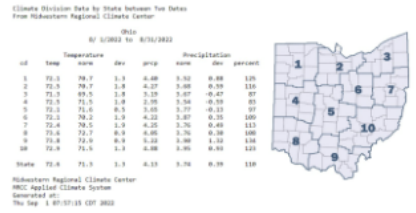
Seasonal Statistics

Compare customized seasonal statistics, including first/last snowfalls, degree days, and freeze events.



Thermograph

View charts or download tables containing temperature measurements, averages, and extremes for a specified time period [Product Description]



Climate Division Estimated Between Two Dates

Estimate state and climate division temperatures, precipitation, and degree days, for a user-selected time period

cli-MATE

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

Daily Threshold Search Tool

- Chronological List of Dates, Monthly Counts, Runs of Days Meeting a Threshold

Threshold Search
LAFAYETTE PURDUE UNIVERSITY AP (IN)
14835
Lat/Lon/Elev: 40.4124/-86.9474/596
Years: 2015 to 2024
Limited to: 05/01 - 05/31 and 00:00 - 24:00
Criterion: Air Temperature (F) less than or equal to 32
Mode: Runs of hours meeting criteria
30 out of 7,440 hours missing (0.4%)

Time Period	Number of Consecutive Hours
2020-05-09 01:00 to 2020-05-09 05:00	5

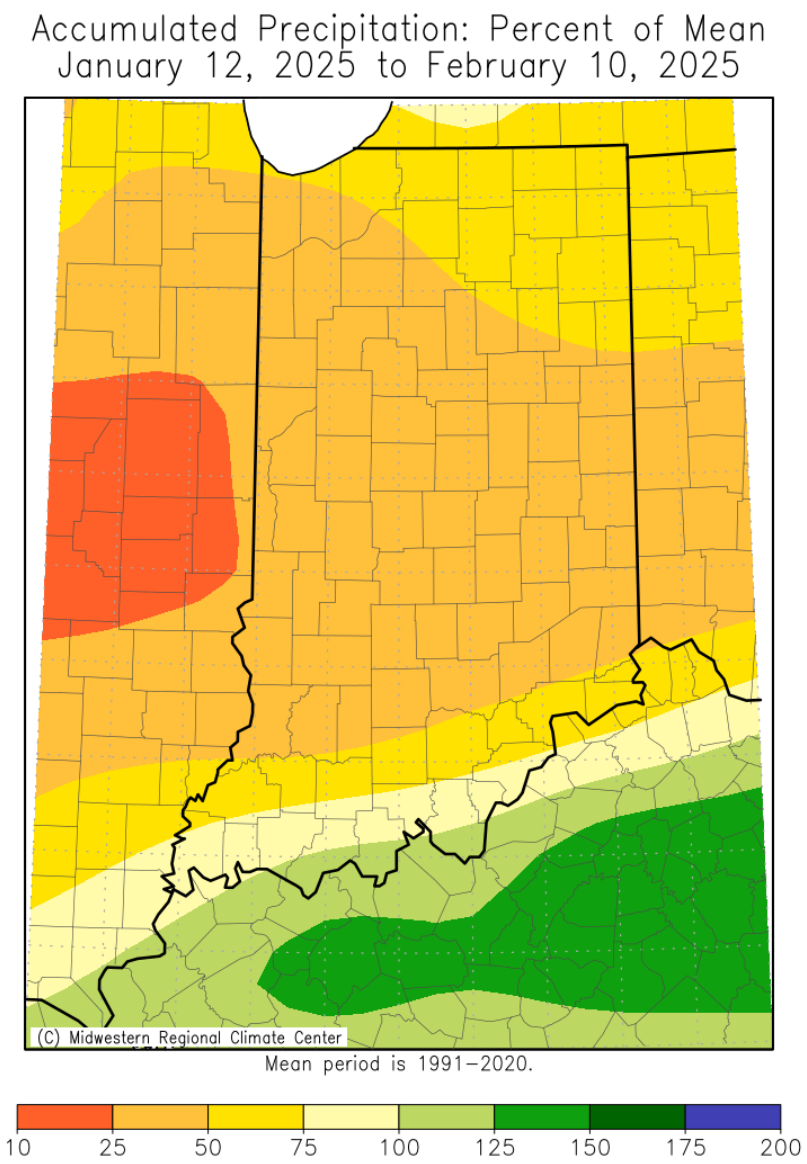
Threshold Search for Precipitation (in)
DUBOIS SRN IN FORAGE FARM (IN)
USC00122309
Lat/Lon/Elev: 38.4558/-86.6983/690.0
Years: 2019 to 2024
Dates: 01-01 to 12-31
Condition is: Precipitation (in) greater than 1.00

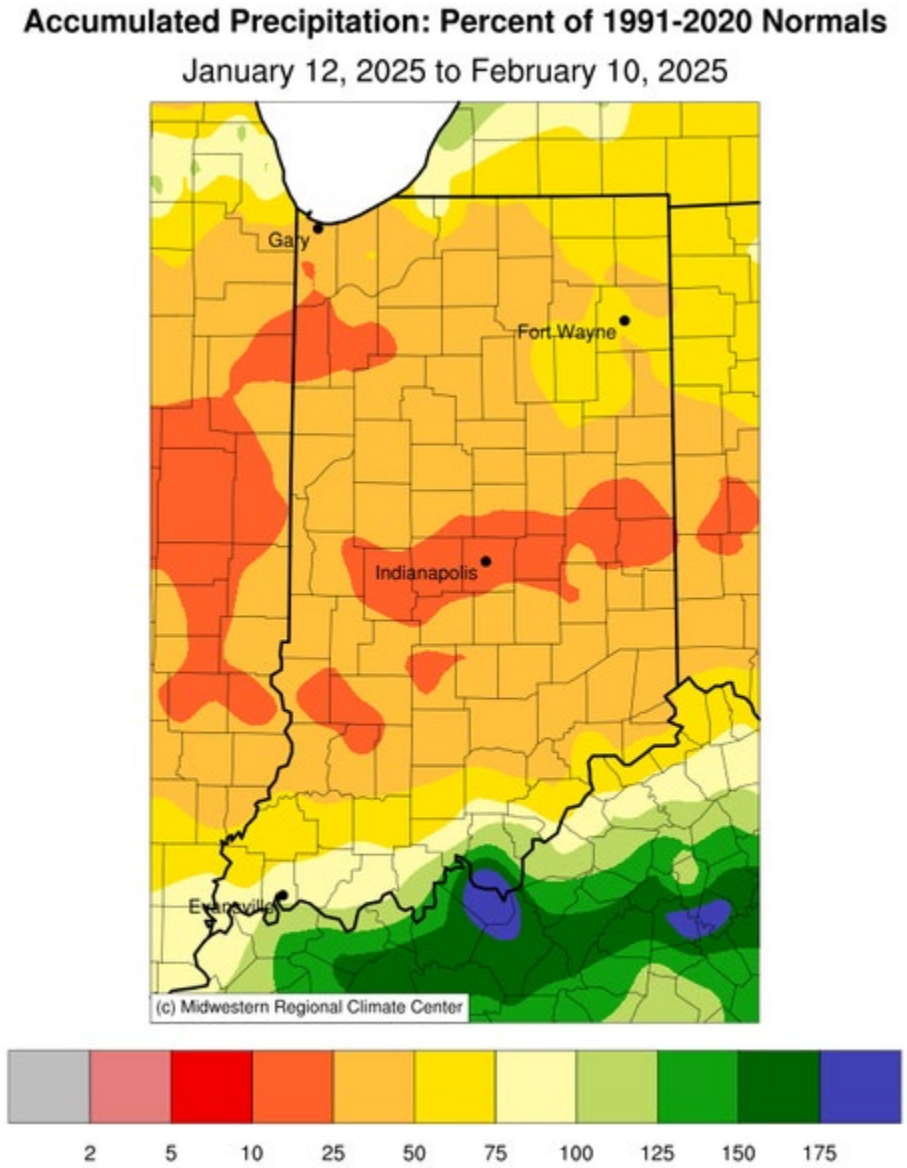
To sort multiple columns, hold SHIFT while clicking on the columns.

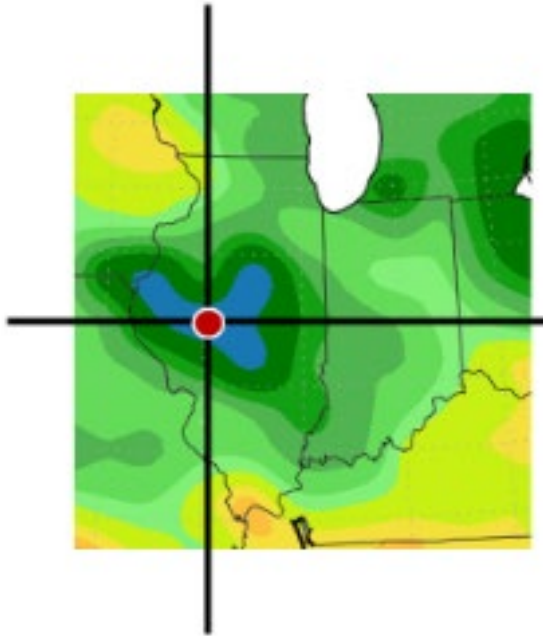
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov*	Dec	Annual
2019	1	4	4	4	4	3	2	1	0	3	2	1	29
2020	2	0	1	1	1	2	1	1	0	2	1	0	12
2021	1	1	1	2	0	2	2	1	2	1	0	1	14
2022	2	3	1	1	1	0	4	1	2	0	0	1	16
2023	2	1	4	1	1	0	3	1	0	1	0	0	14
2024	2	0	0	2	3	0	1	1	2	0	2	-	13
Average	1.7	1.5	1.8	1.8	1.7	1.2	2.2	1.0	1.0	1.2	0.8	0.5	16.3

cli-MATE

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



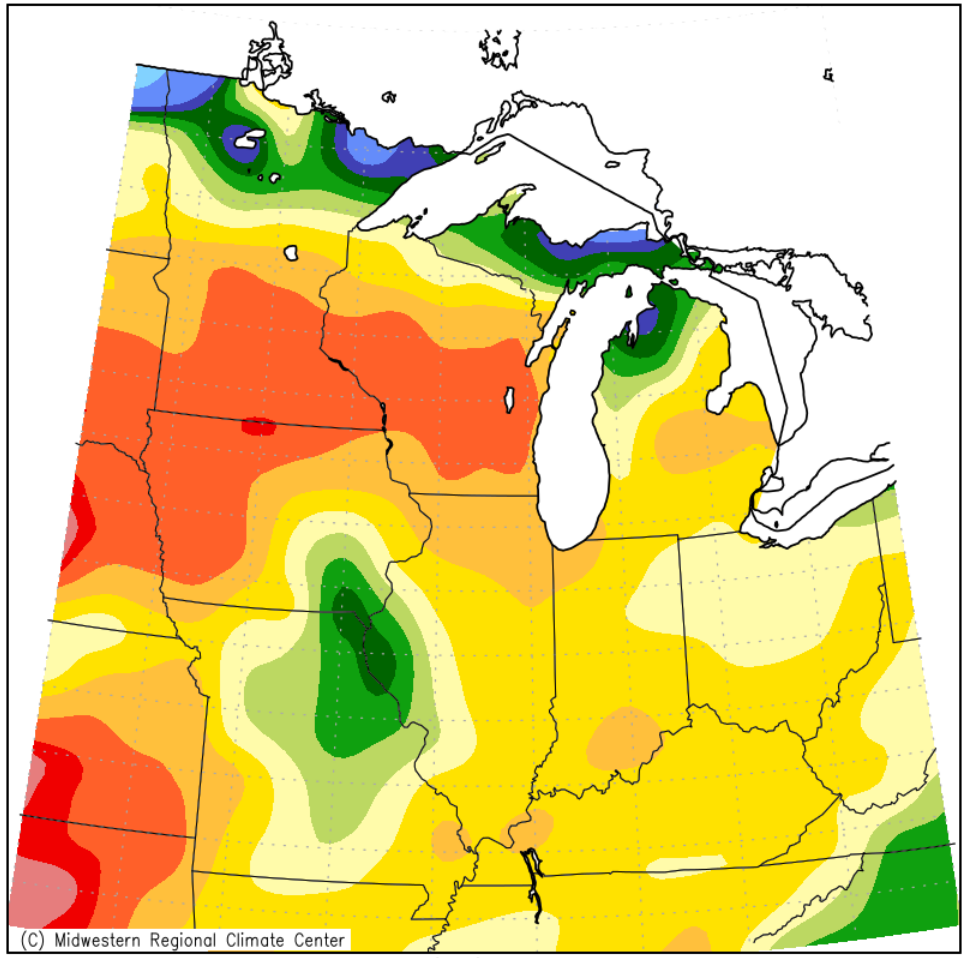




Midwest
CLIMATE WATCH

	Temp	from Mean	Max Temp	from Mean	Min Temp	from Mean	Precip
LAST 7 DAYS							
LAST 30 DAYS							
MIDWEST MONTH-TO-DATE							

Accumulated Precipitation: Percent of Mean
December 1, 2024 to December 15, 2024



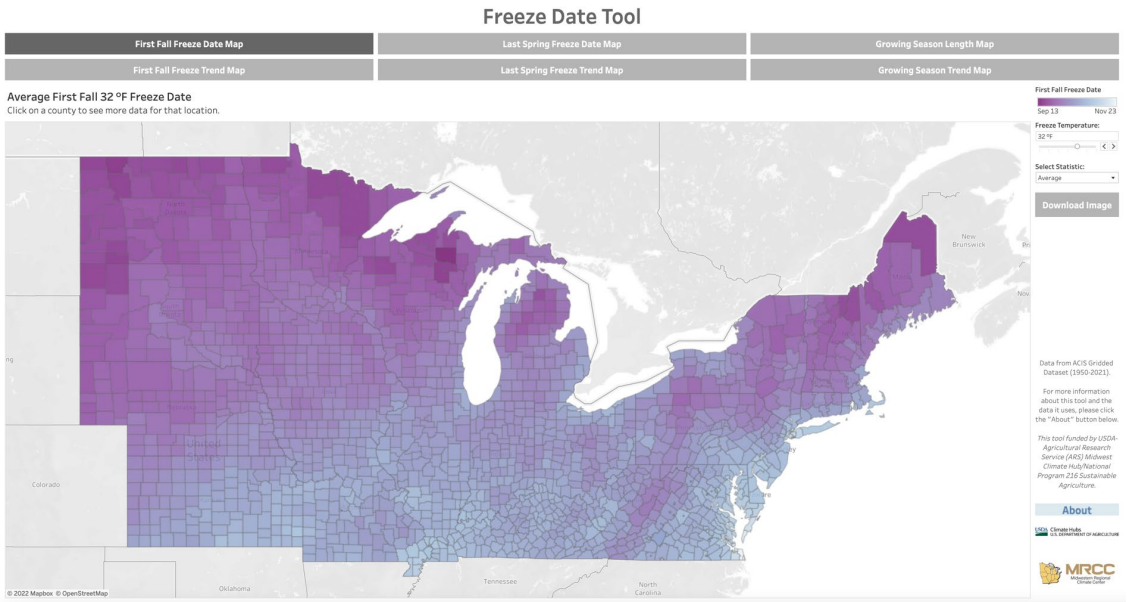
Mean period is 1991–2020.

Midwestern Regional Climate Center
Purdue University

Freeze Date Tool

https://mrcc.purdue.edu/freeze/freezedatetool.html

Interactive tool lets you explore local first/last freeze date and growing season climatologies, and trends



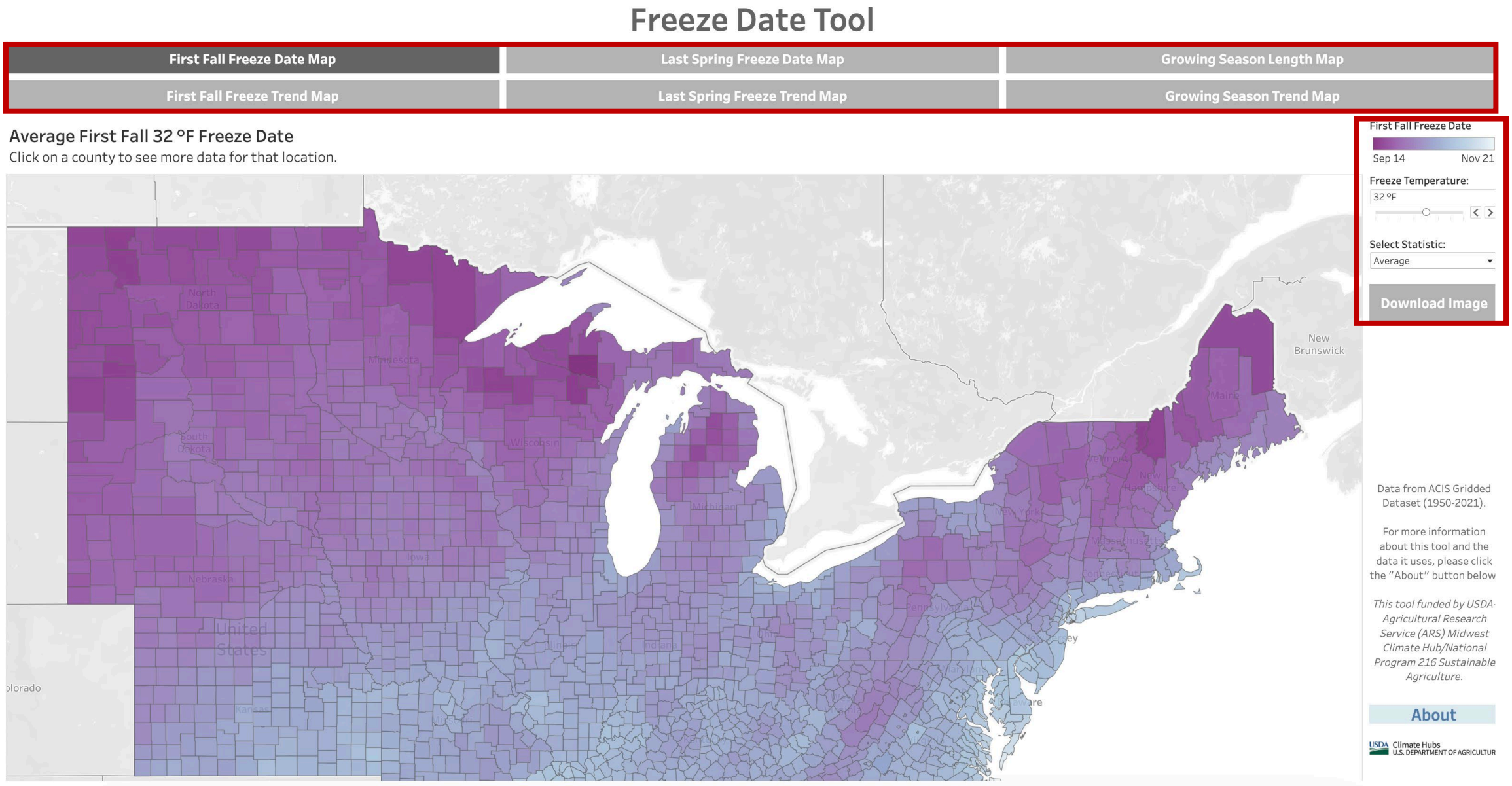
USDA Climate Hubs
U.S. DEPARTMENT OF AGRICULTURE

MRCC
Midwestern Regional Climate Center

- County-level **gridded** data, 1950-2023
- First fall freeze, last spring freeze, growing season length
  - Average, Early/late, Earliest/latest
  - Linear trend
- Customize freeze threshold ranging from 20°F to 40°F
- Seamlessly move between regional maps and local charts

Freeze Date Tool

https://mrcc.purdue.edu/freeze/freezedatetool.html



Freeze Date Tool

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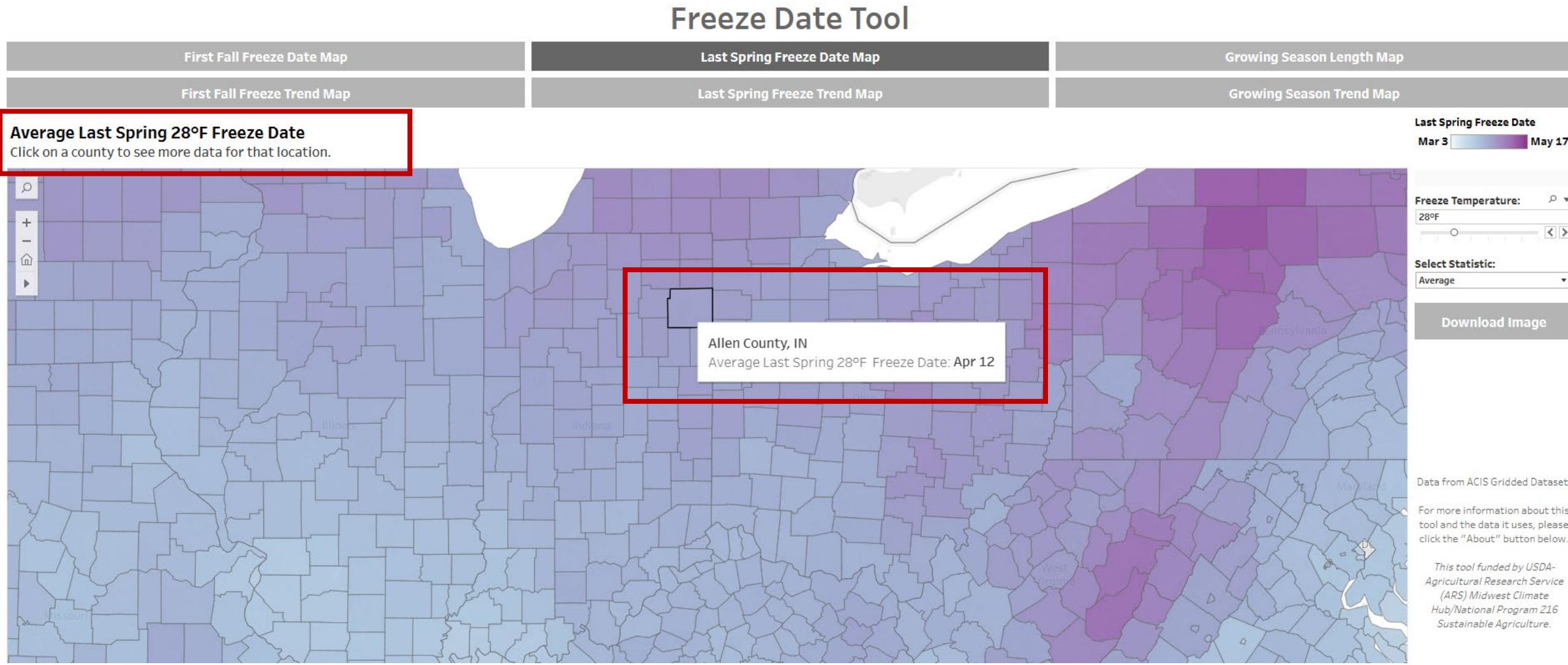

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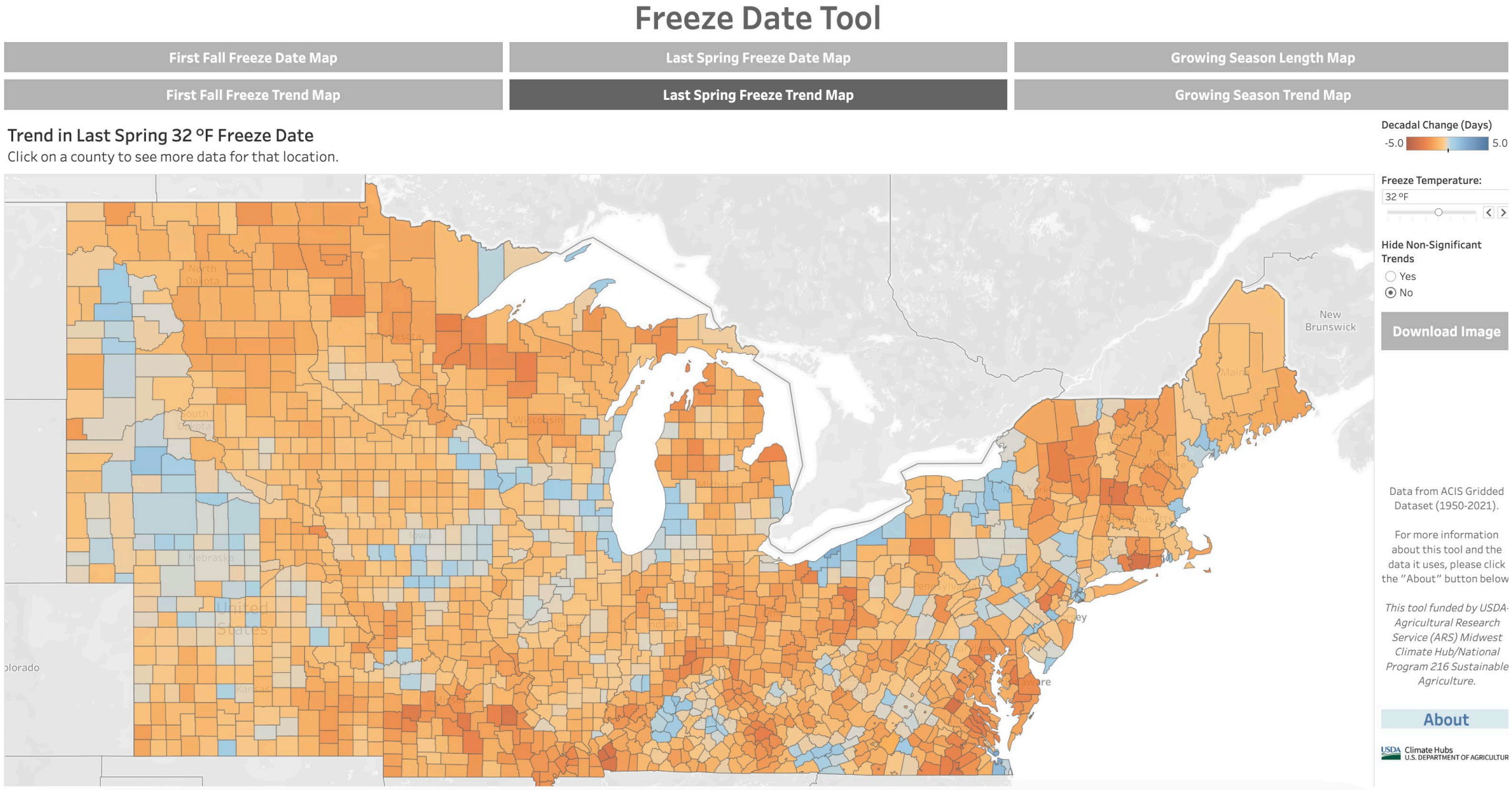
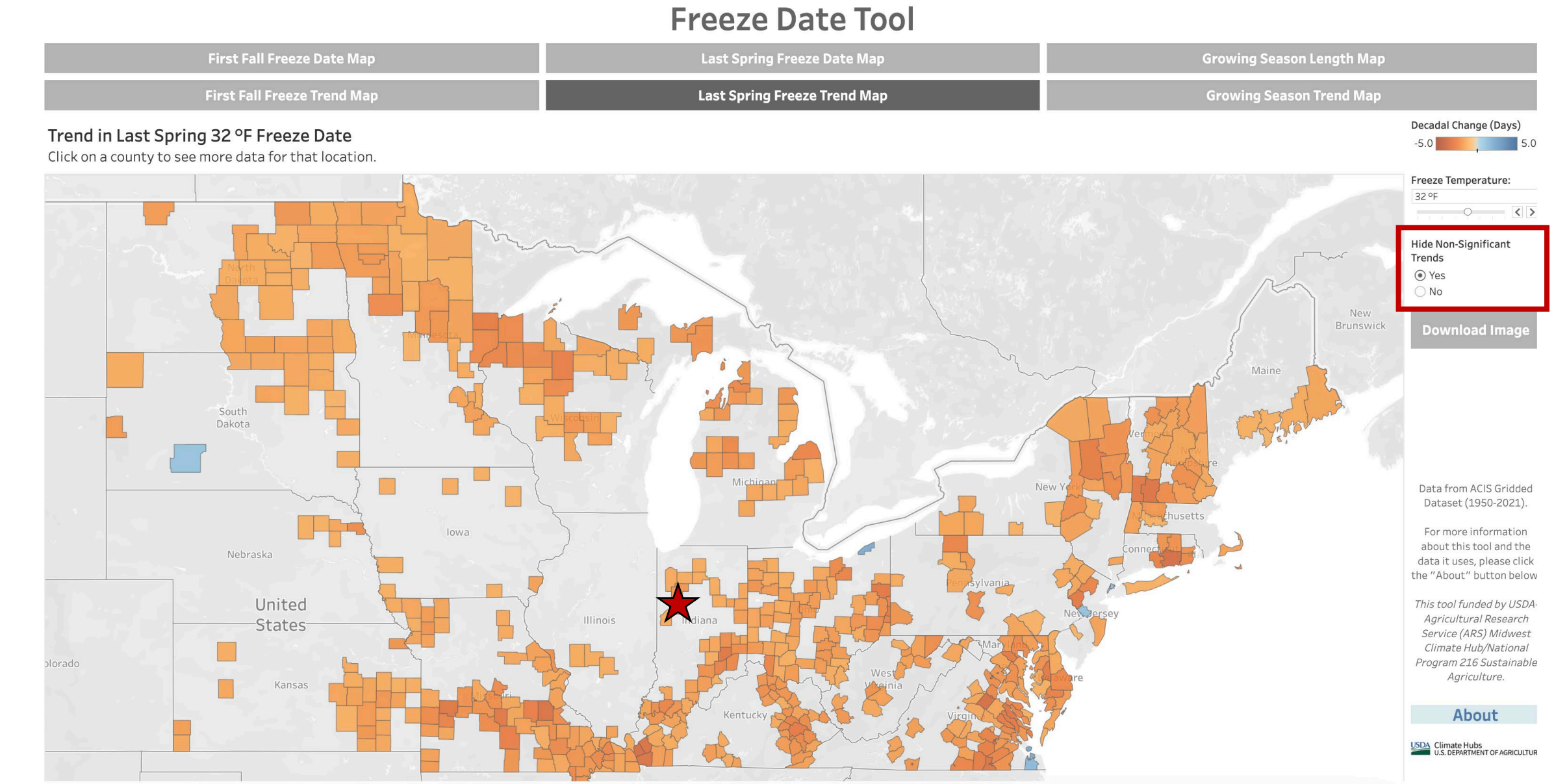


Freeze Date Tool

https://mrcc.purdue.edu/freeze/freezedatetool.html



Freeze Date Tool

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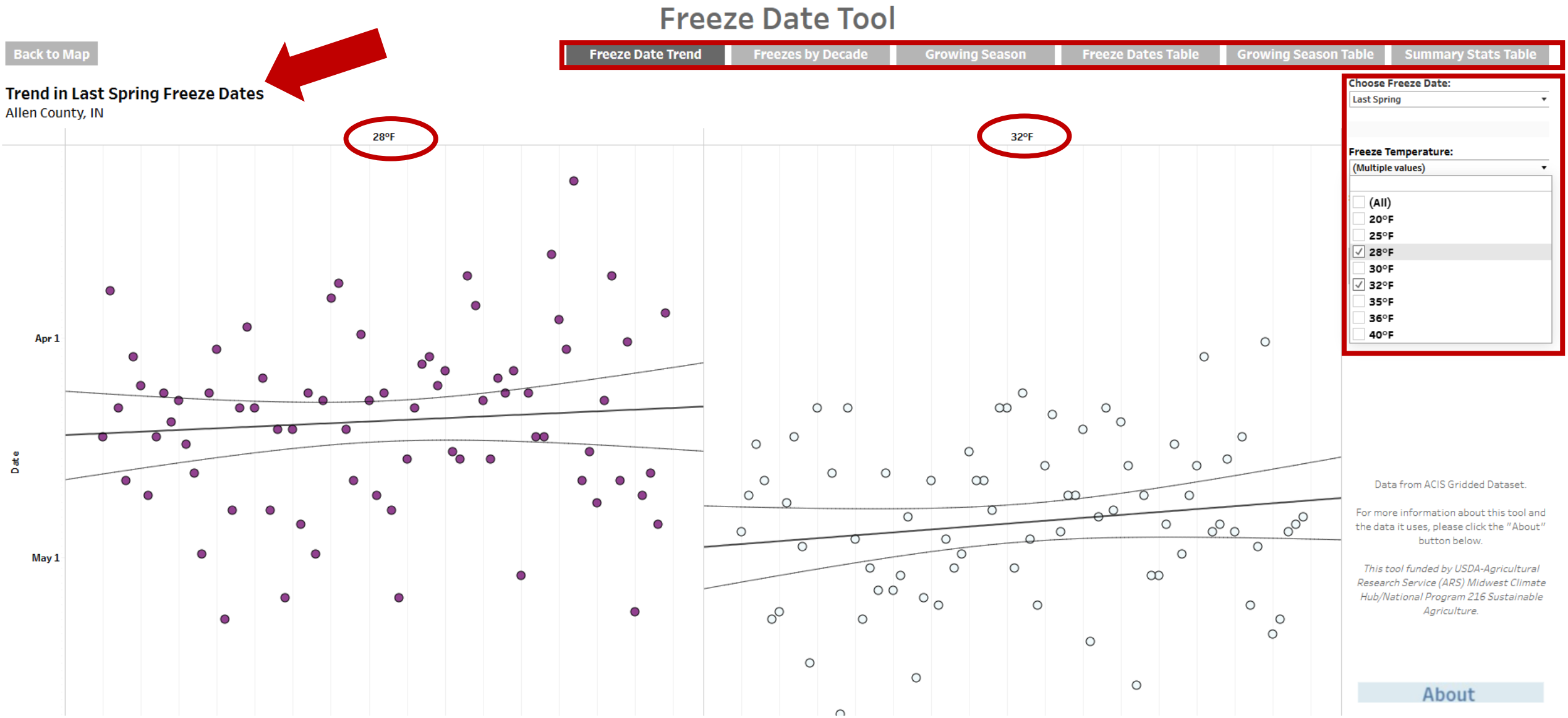

Freeze Date Tool

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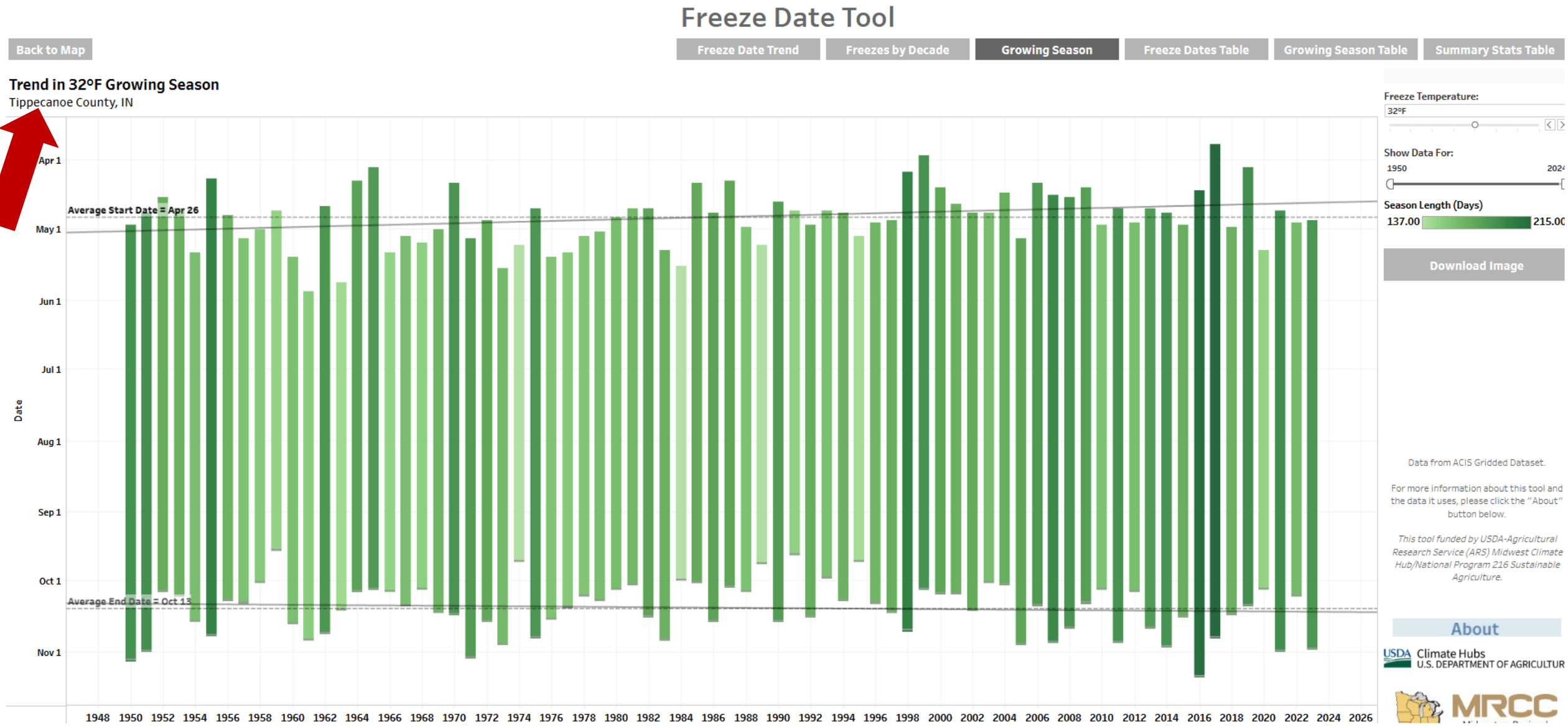


Vegetation Impact Program (VIP)

https://mrcc.purdue.edu/VIP

Spring and Fall Frost/Freeze Maps

SHADED MAPS MENU

CURRENT SEASON FREEZES

- 28°F: Date of first Freeze
- 28°F: Date of most recent Freeze
- 28°F: Days since most recent Freeze
- 28°F: Over past 14 days, num. < 28°F
- 32°F: Date of first Freeze
- 32°F: Date of most recent Freeze
- 32°F: Days since most recent Freeze
- 32°F: Over past 14 days, num. < 32°F
- Lowest Min Temp: 10°F to 50°F
- Lowest Min Temp: −38°F to 10°F

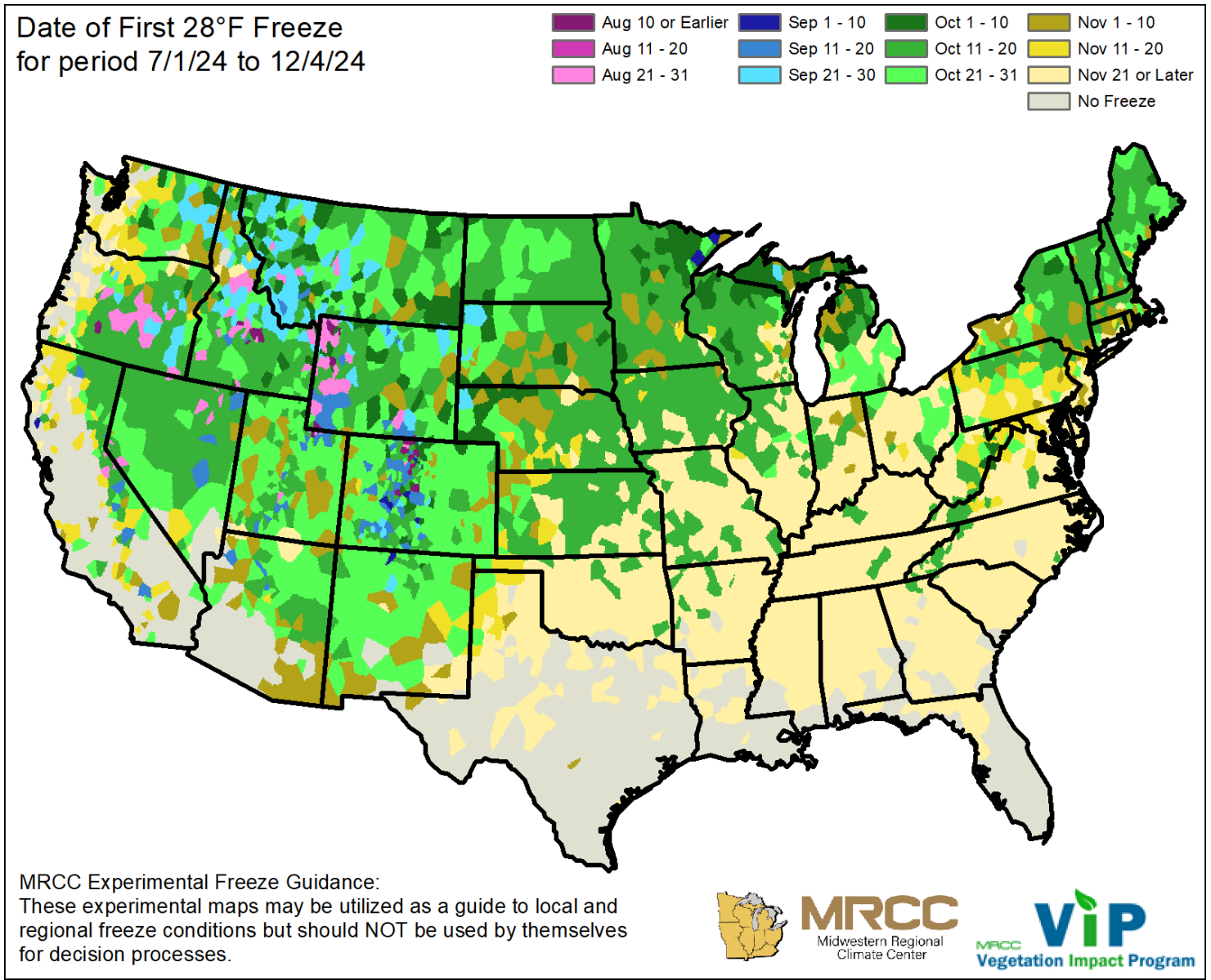
GROWING DEGREE DAYS

VEGETATION STATUS

28° FREEZE CLIMATOLOGIES

32° FREEZE CLIMATOLOGIES

ABOUT STATION DATA



MRCC Experimental Freeze Guidance:
These experimental maps may be utilized as a guide to local and regional freeze conditions but should NOT be used by themselves for decision processes.

PURDUE UNIVERSITY

MRCC Midwestern Regional Climate Center

MRCC Vegetation Impact Program

Vegetation Impact Program (VIP)

https://mrcc.purdue.edu/VIP

Spring and Fall Frost/Freeze Maps

SHADED MAPS MENU

CURRENT SEASON FREEZES

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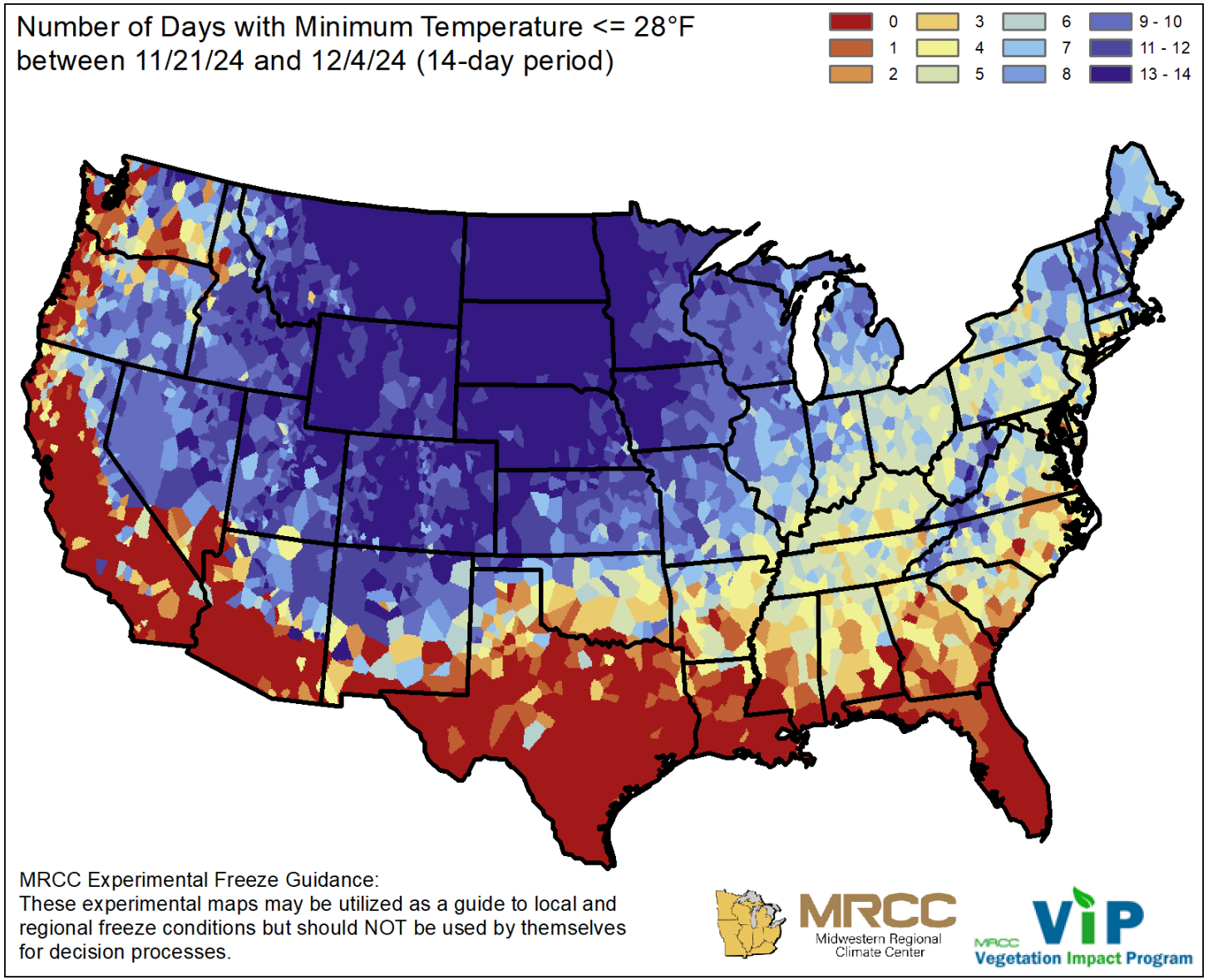
GROWING DEGREE DAYS

VEGETATION STATUS

28° FREEZE CLIMATOLOGIES

32° FREEZE CLIMATOLOGIES

ABOUT STATION DATA



MRCC Experimental Freeze Guidance:
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PURDUE UNIVERSITY

MRCC Midwestern Regional Climate Center

MRCC VIP Vegetation Impact Program

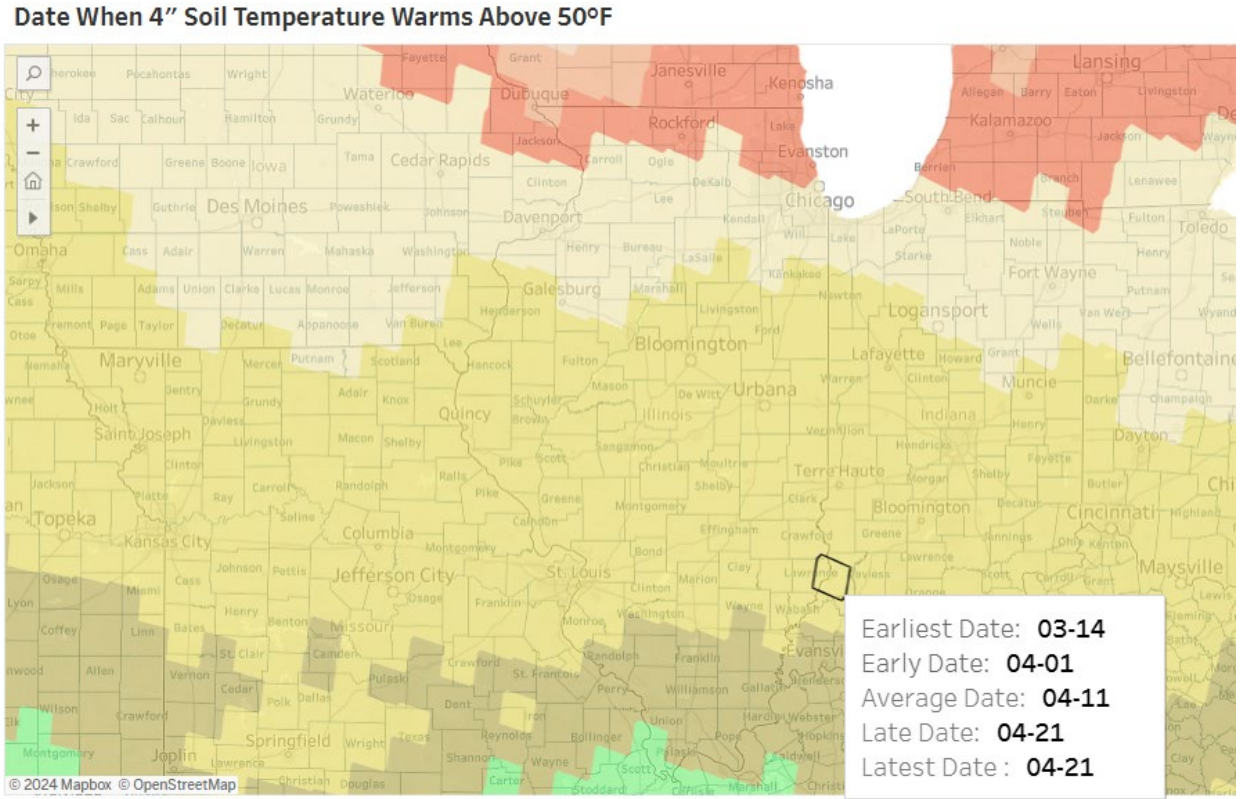
https://mrcc.purdue.edu/clim/Soil-T

Soil Temperature Climatology

Provides historical soil temperature statistics for the north central US

Date when soils WARM ABOVE temperature threshold

Date when soils COOLS BELOW temperature threshold



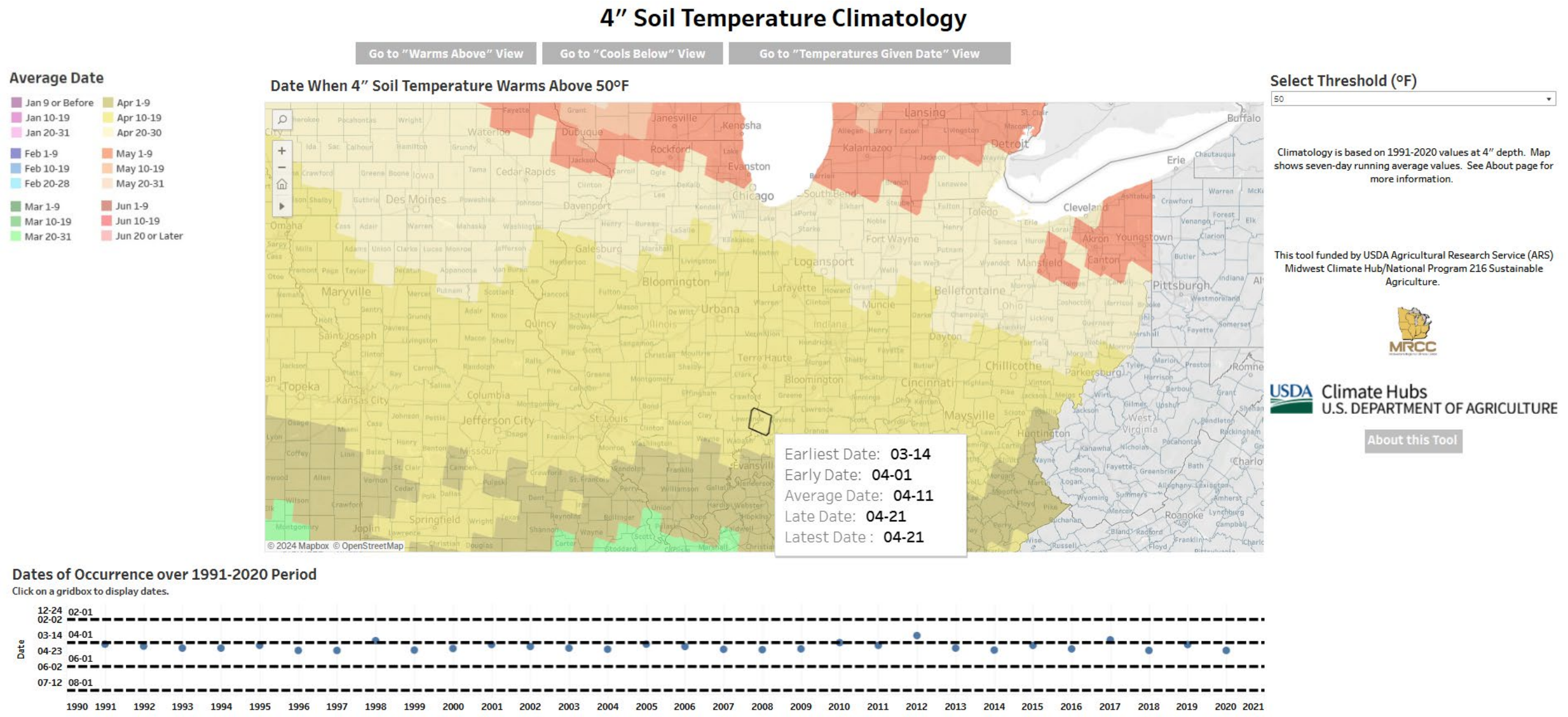
30-yr averages using bias-corrected NARR reanalysis data

USDA Climate Hubs
U.S. DEPARTMENT OF AGRICULTURE

MRCC
Midwestern Regional Climate Center

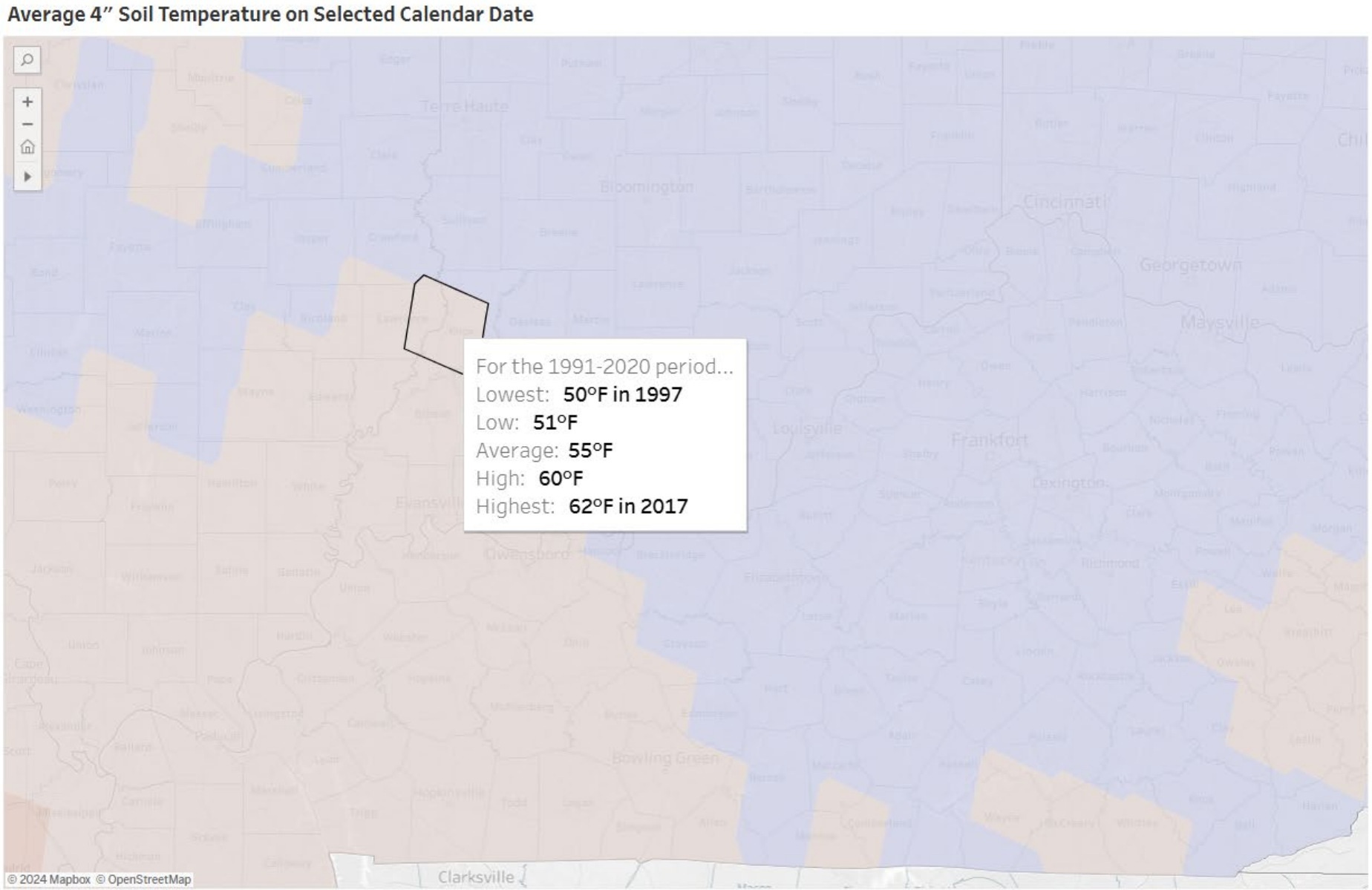
https://mrcc.purdue.edu/clim/Soil-T

Soil Temperature Climatology



https://mrcc.purdue.edu/clim/Soil-T

Soil Temperature Climatology



Select a Month

April

Select a Day

20

Climatology is based on 1991-2020 values at 4" depth. Map shows seven-day running average values. See About page for more information.

This tool funded by USDA Agricultural Research Service (ARS) Midwest Climate Hub/National Program 216 Sustainable Agriculture.

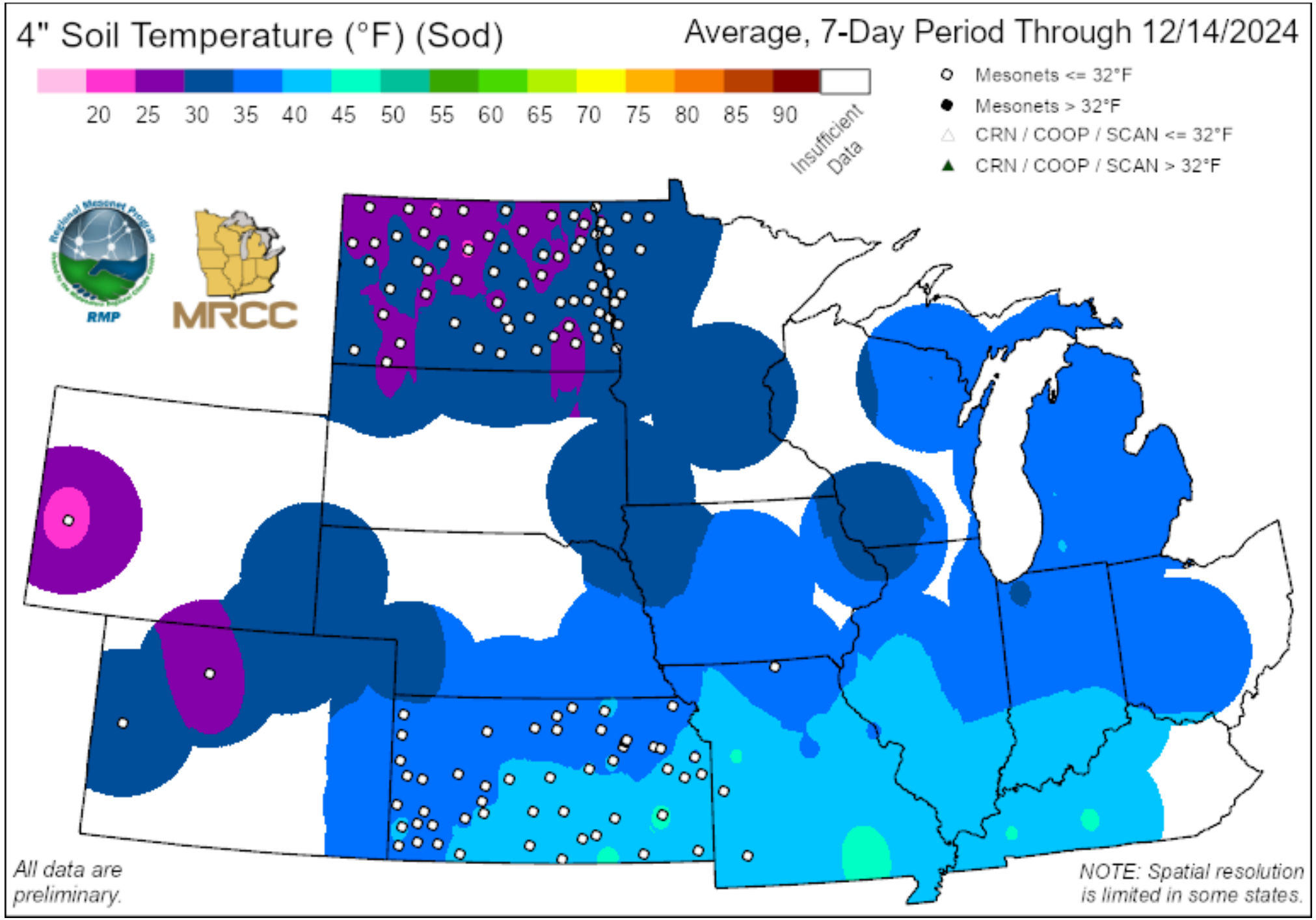
MRCC

USDA Climate Hubs
U.S. DEPARTMENT OF AGRICULTURE

About this Tool

Average 4" Soil Temperature

- 30°F to 34°F
- 35°F to 39°F
- 40°F to 44°F
- 45°F to 49°F
- 50°F to 54°F
- 55°F to 59°F
- 60°F to 64°F


4" Soil Temperature (°F) (Sod)
Average, 7-Day Period Through 12/14/2024
20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
Insufficient Data
Mesonets <= 32°F
Mesonets > 32°F
CRN / COOP / SCAN <= 32°F
CRN / COOP / SCAN > 32°F
RMP
MRCC
All data are preliminary.
NOTE: Spatial resolution is limited in some states.

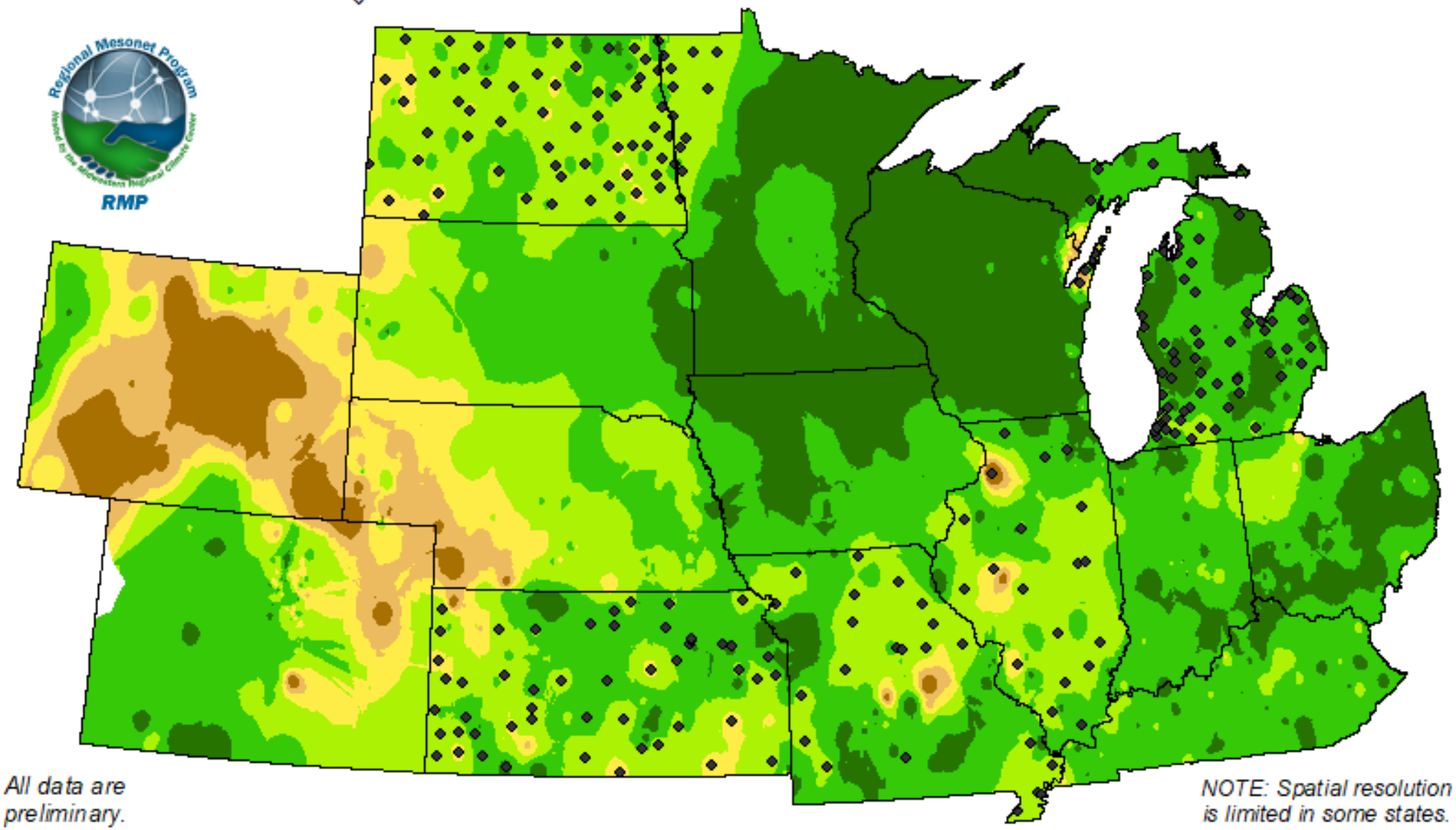
Potential Evapotranspiration (mm)

24-Hour Period Through 6/23/2024

2 4 6 8 10 Insufficient Data

Mesonets

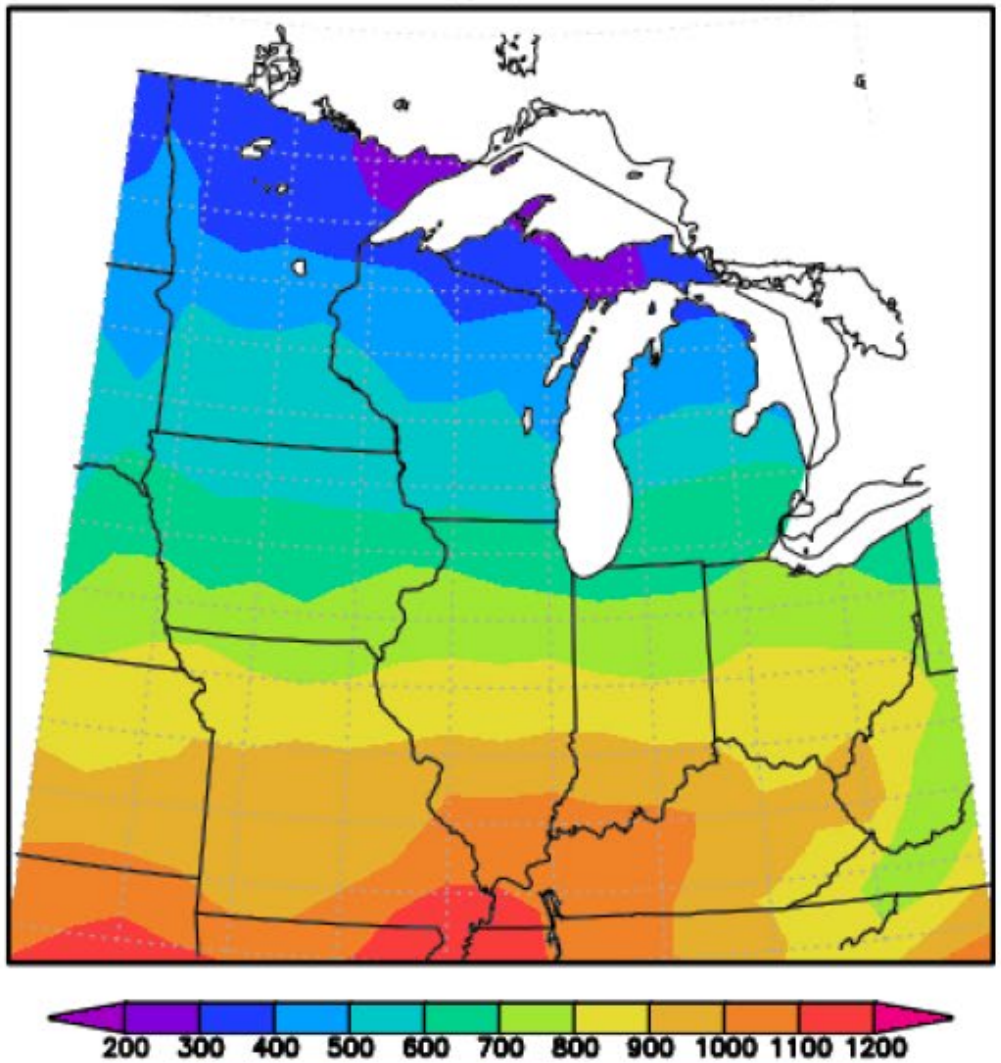
RAWS / SCAN



All data are preliminary.

NOTE: Spatial resolution is limited in some states.

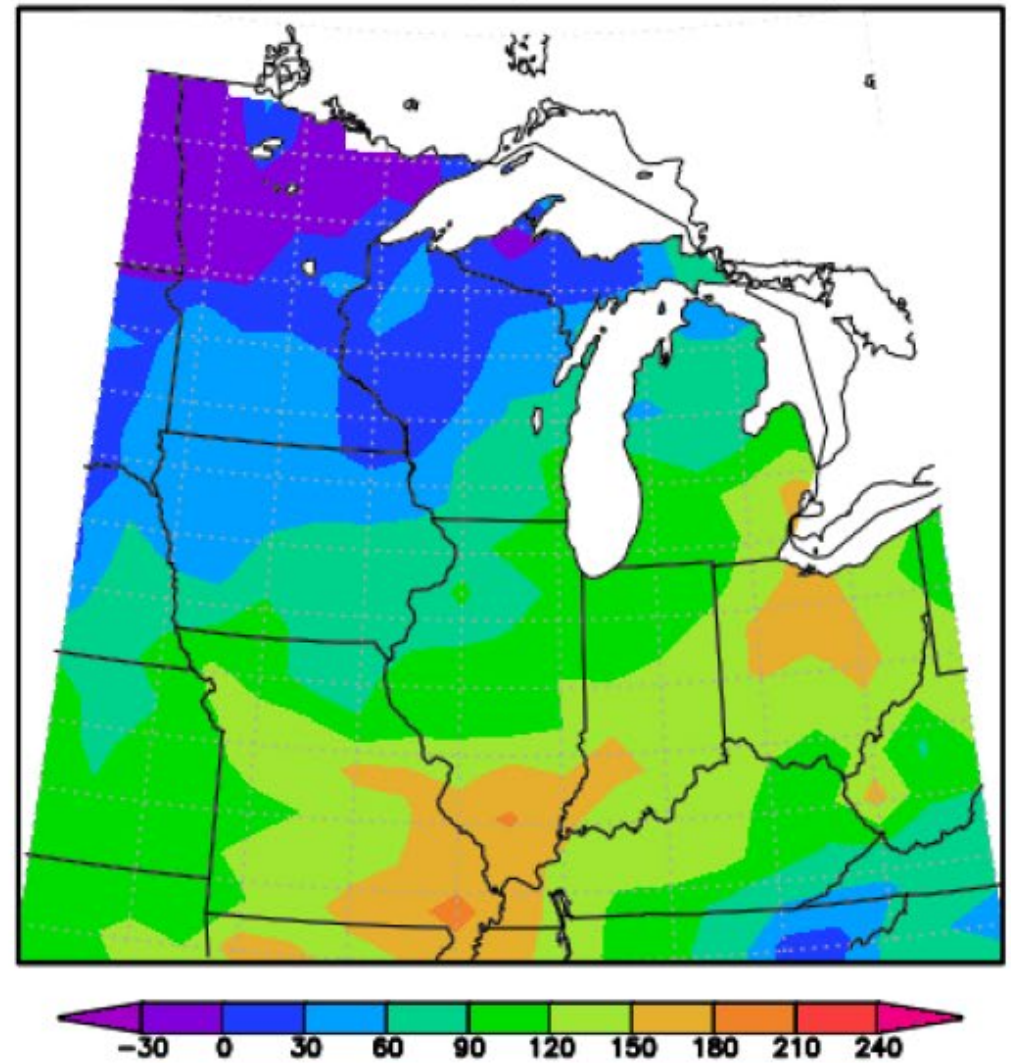
Total MGDD from 4/1/2024 to 6/2/2024



200 300 400 500 600 700 800 900 1000 1100 1200

Midwestern Regional Climate Center
Purdue University

MGDD Departure, 4/1/2024 to 6/2/2024

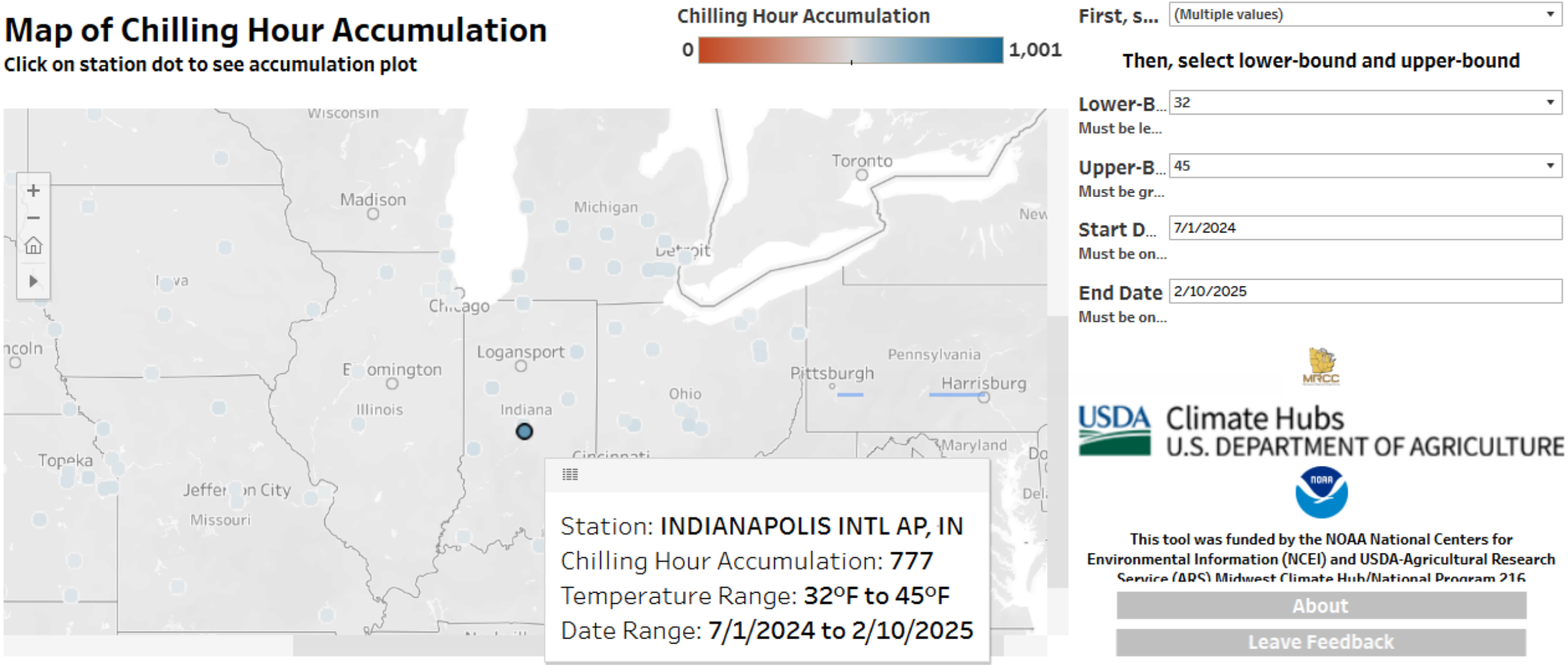


−30 0 30 60 90 120 150 180 210 240

Midwestern Regional Climate Center
Purdue University
Normals Period, 1991–2020

Chilling Hour Tool

https://mrcc.purdue.edu/ChillingHours



Chilling Hour requirements by type of fruit (courtesy RaintreeNursery.com):

- Almond, 500-60
- Apple, 400-1000 (low-chill varieties are less)
- Apricot, 500-600
- Blackberry, 200-500
- Blueberry, Northern, 800
- Cherry, 700-800
- Chestnut, 400-500
- Citrus, 0
- Currant, 800-1000
- Fig, 100-200
- Filbert, 800
- Gooseberry, 800-1000
- Grape, 100+
- Kiwi, 600-800
- Mulberry, 400
- Peach, 600-800
- Pear, European, 600-800
- Pear, Japanese, 400-500
- Persimmon, 200-400
- Plum Cot,400
- Plum, European, 800-900
- Plum, Japanese, 300-500
- Pomegranate, 100-200
- Quince, 300-500
- Raspberries, 700-800
- Strawberry, 200-300
- Walnut, 600-700

The Custom Chilling Hours Tool is a product developed by the Midwestern Regional Climate Center (MRCC) in collaboration with the USDA Midwest Climate Hub that lets users track chilling hour accumulations for locations across the United States using customized temperature thresholds and time periods. This tool can be used to answer such questions as:

- How many chilling hours accumulated from September 1, 2022, to March 31, 2023, at a selected location based on temperature bounds of 32°F and 45°F? How does that compare to previous seasons?

- How does the number of chilling hours accumulated at a selected station compare to other stations in the United States?

https://climatetoolbox.org/tool/climate-mapper

Choose Metrics

Select from the menus below

Time Scale:

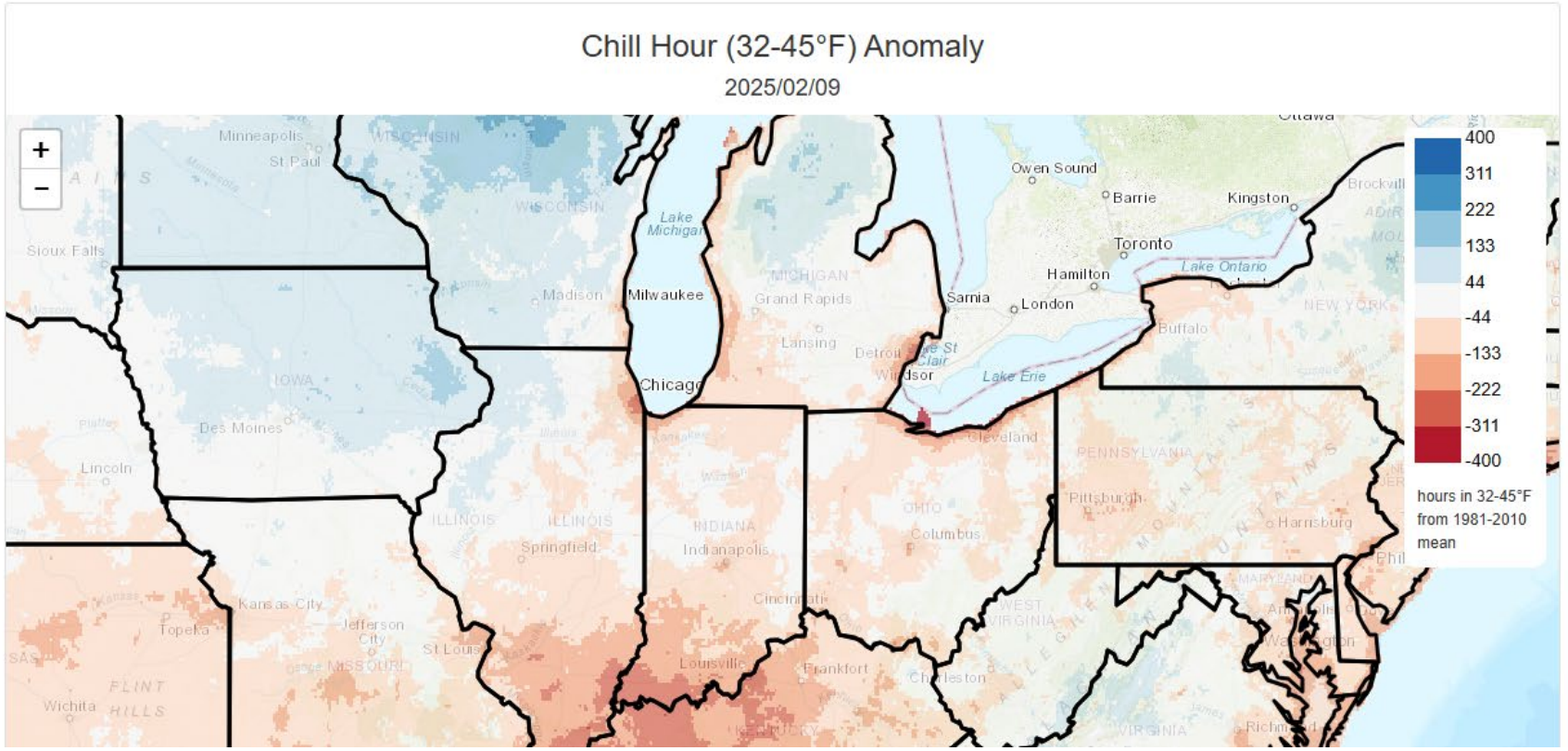
Past/Real-Time: Observations

Impact Area:

Agriculture (Contiguous US, gridMET)

Variable:

Chill Hour (32-45°F) Anomaly



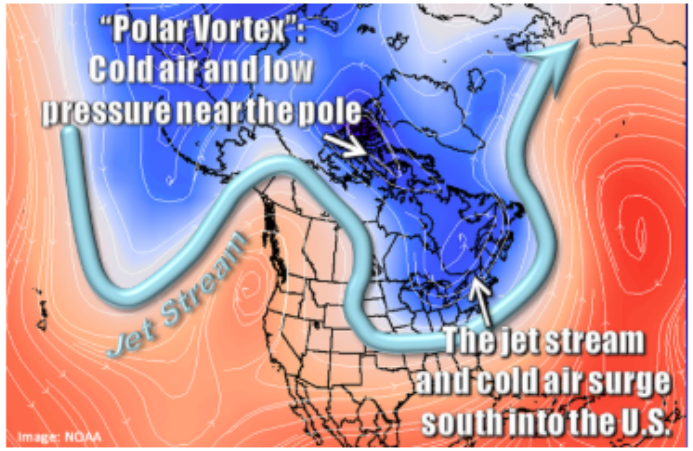
STAY CONNECTED, STAY INFORMED

CLIMATE PERSPECTIVE

What is the Polar Vortex?

This story has been adapted from an article that originally appeared in the Winter 2021-22 newsletter from the Indiana State Climate Office.

Polar vortex is a term that has been used by media outlets in recent years to warn the public of oncoming, dangerously cold weather. Why are we hearing this all of a sudden? Is this new? Do we need to be concerned?



The divider between this polar vortex and milder air along the mid-latitudes (where the continental United States is located) is the polar jet stream. Due to different surface temperatures across the oceans and land, as well as ocean currents and other global ocean-air movements, the polar vortex rarely stays contained as a nice round blob around the poles. When the polar vortex weakens and becomes disrupted, the polar jet stream begins meandering north and south, causing southward plunges of very cold Arctic air into the U.S.

Sign up for the MRCC Quarterly Newsletter

https://mrcc.purdue.edu/resources/newsletter

State Climate Offices

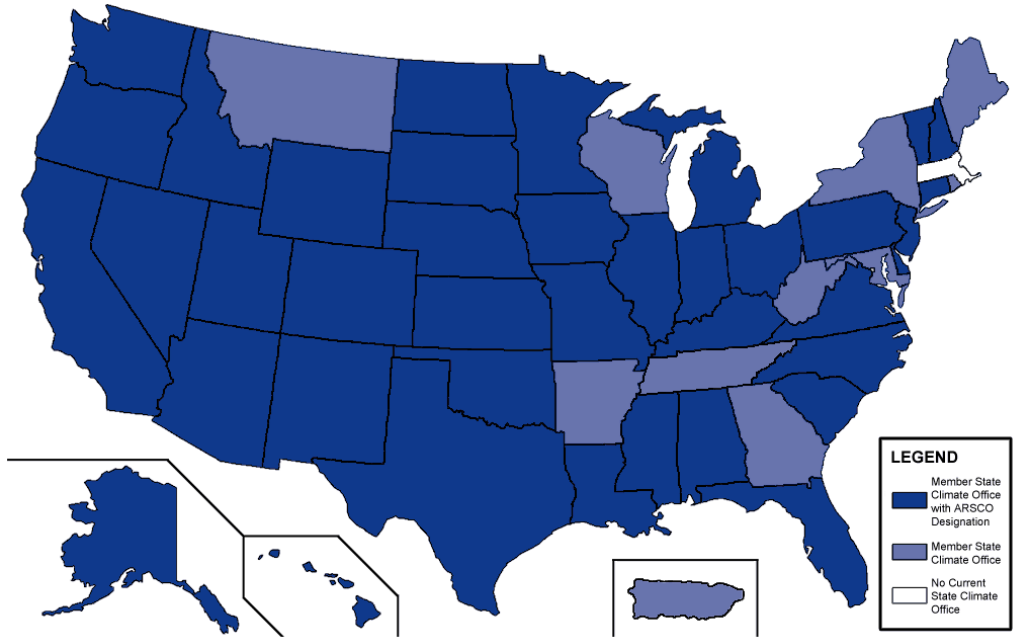
About:

- Focus on state priorities
  - *Agriculture*
  - *Drought*
  - *Wildfires*
  - *Coastal issues*
  - *Urban issues*

- More outreach than data tools
  - *Articles*
  - *Presentations*
  - *Interviews*

- More climate change linkages

- Programs
  - *CoCoRaHS*
  - *Mesonets*



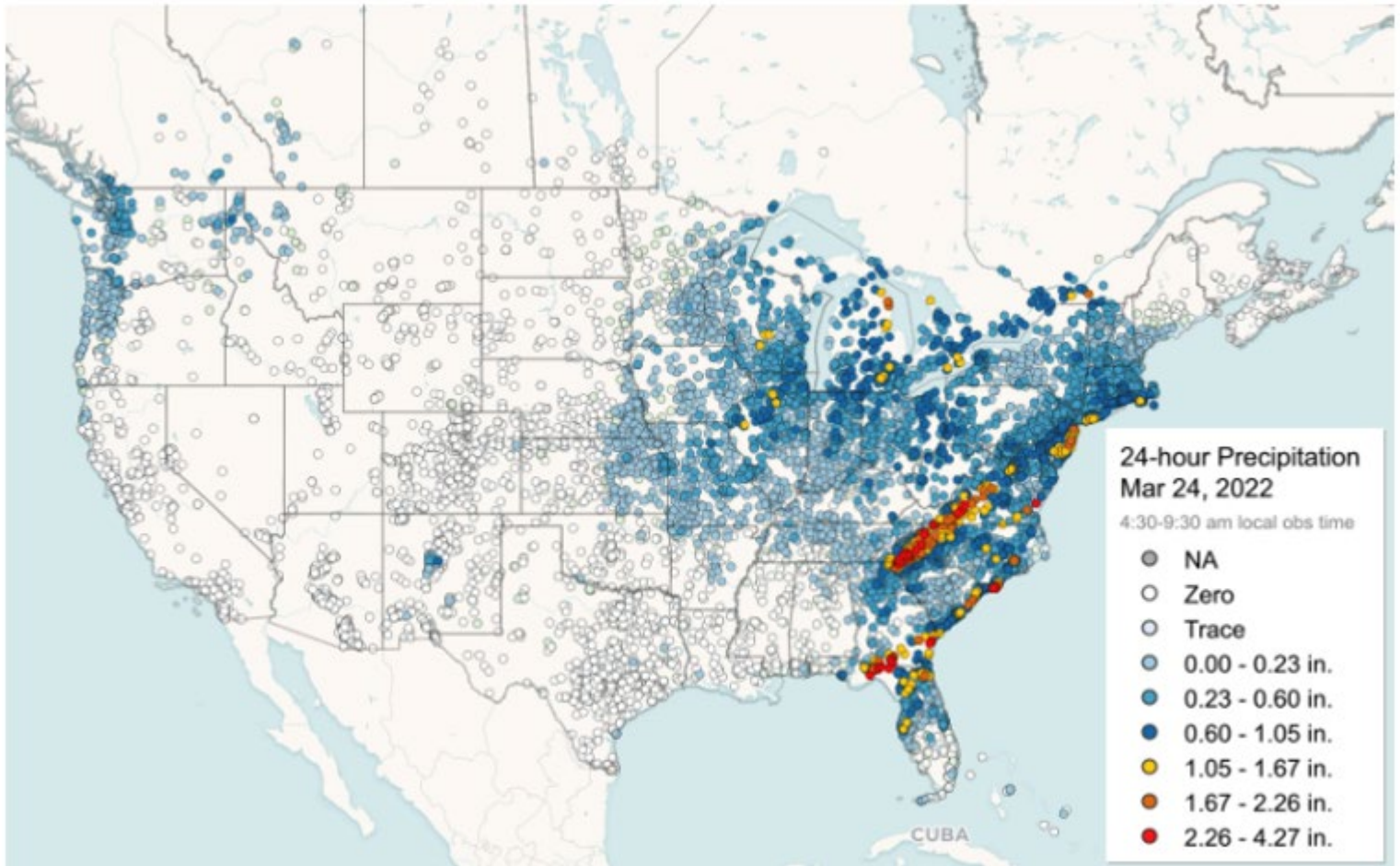
PURDUE UNIVERSITY | Indiana State Climate Office

CoCoRaHS

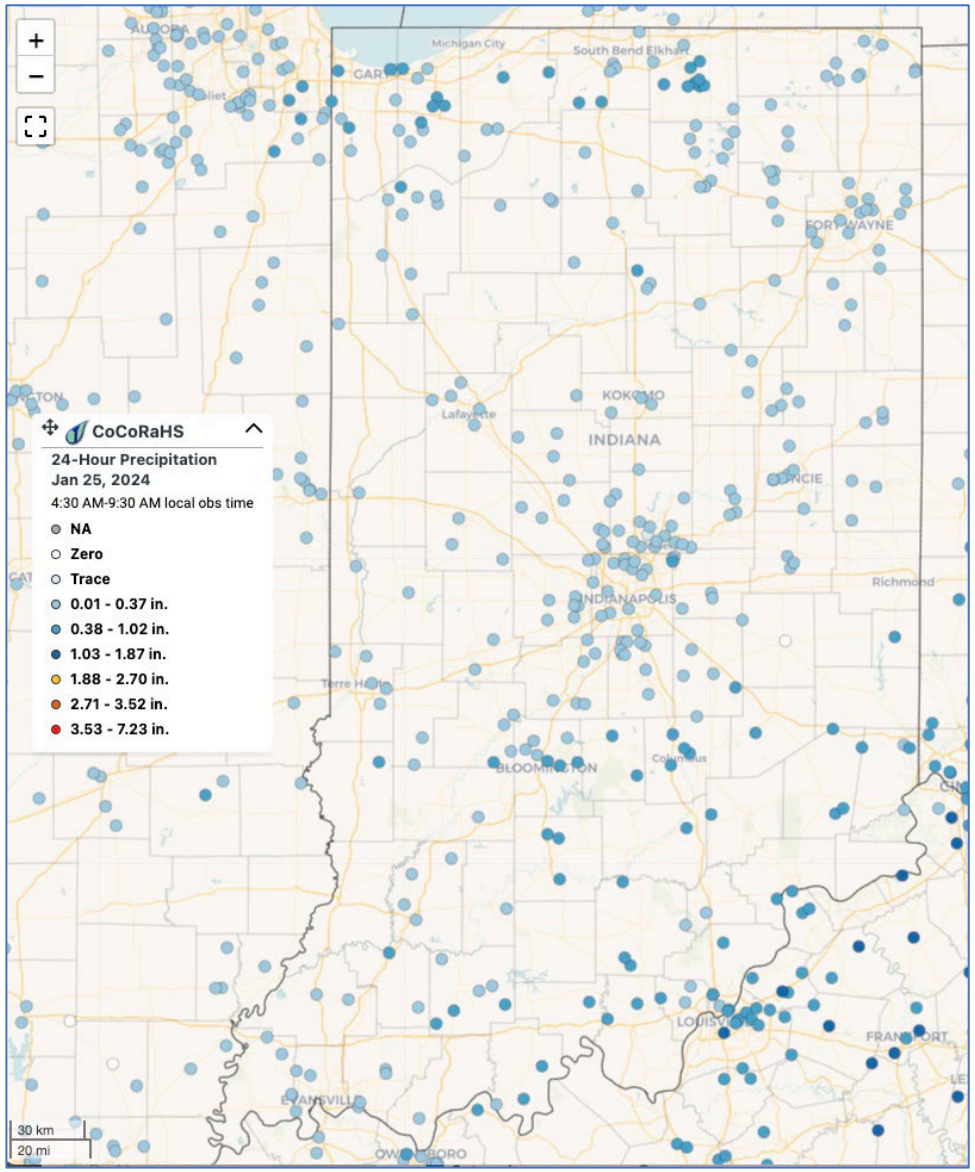
Community Collaborative Rain, Hail, and Snow network

Reports received today 3/24/2022 as of 7:23 PM EDT

Daily	Multi-day	SigWx	Hail	Condition	ET
11,176	168	9	0	9	15



CoCoRaHS



CoCoRaHS (Community Collaborative Rain, Hail, and Snow) Network
Cocorahs.org

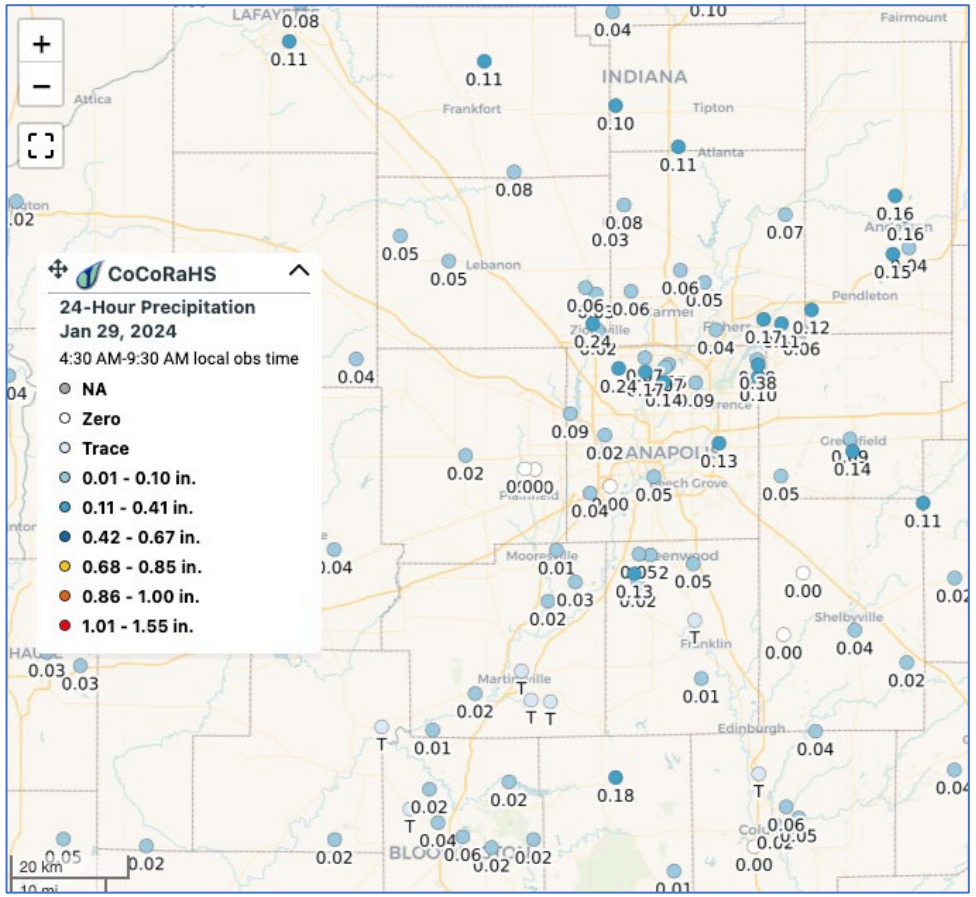
- Started over 25 years ago
- *Colorado* Collaborative Rain, Hail, and Snow network

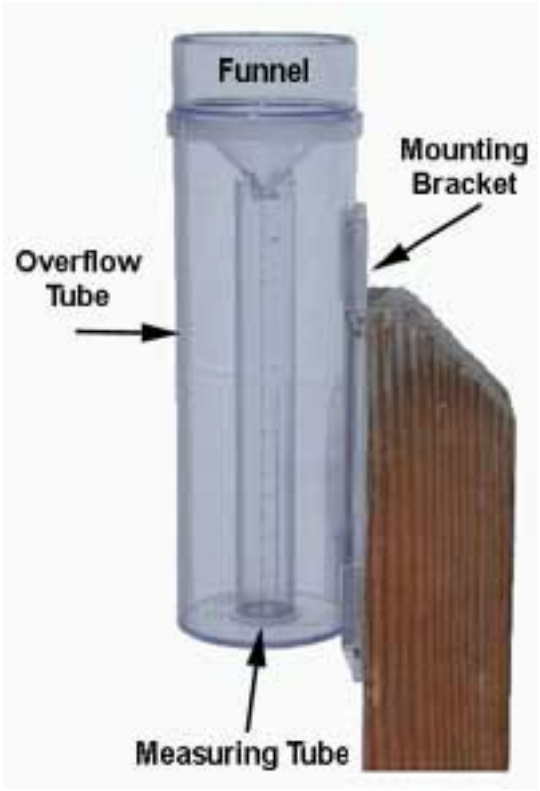
- Manual observations
- Daily (morning)
- Multi-day

- Significant weather reports
- Condition monitoring reports
- ET monitoring

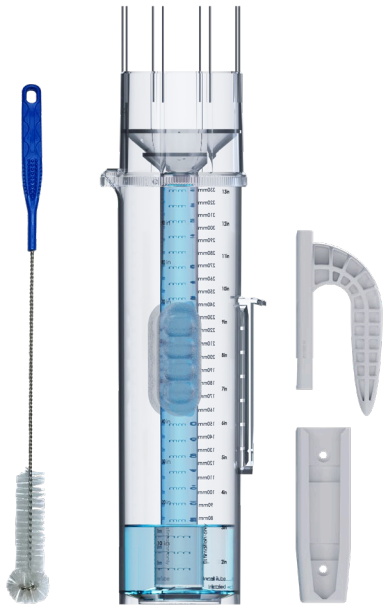
CoCoRaHS

CoCoRaHS (Community Collaborative Rain, Hail, and Snow) Network
Cocorahs.org



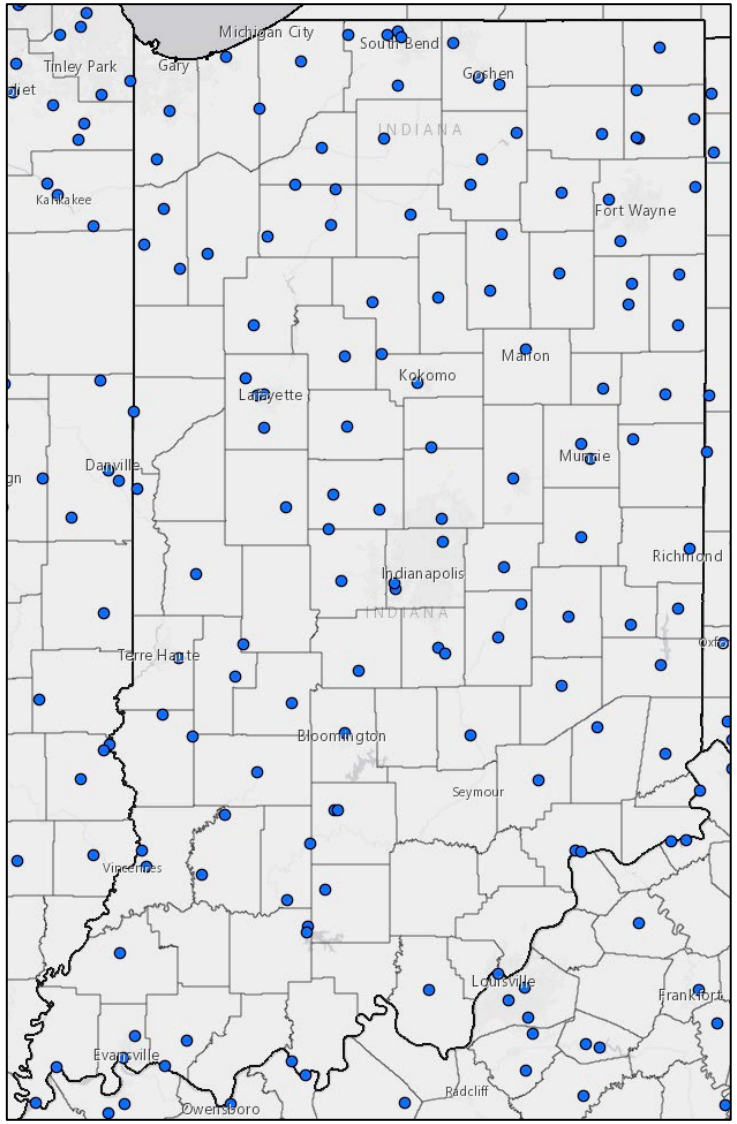


WEATHERYOURWAY.COM
THE OFFICIAL DEALER for CoCoRaHS

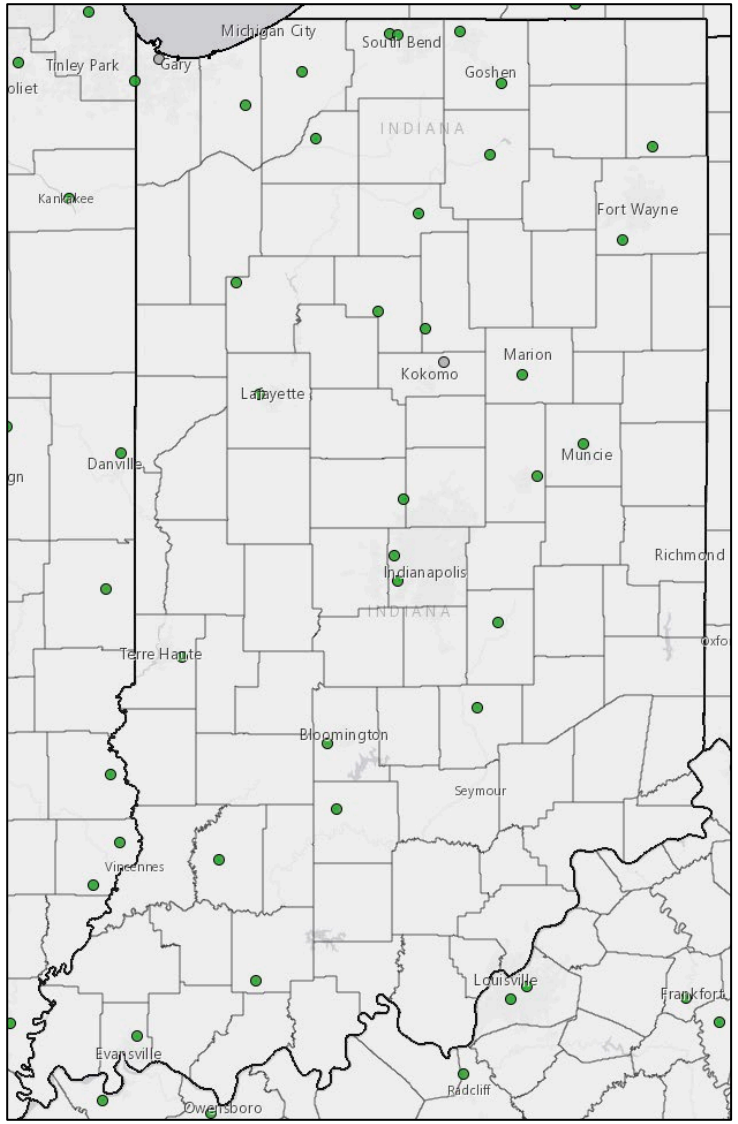


A Critical Gap in Local Weather Observation

NWS Cooperative Observer Network



ASOS / AWOS



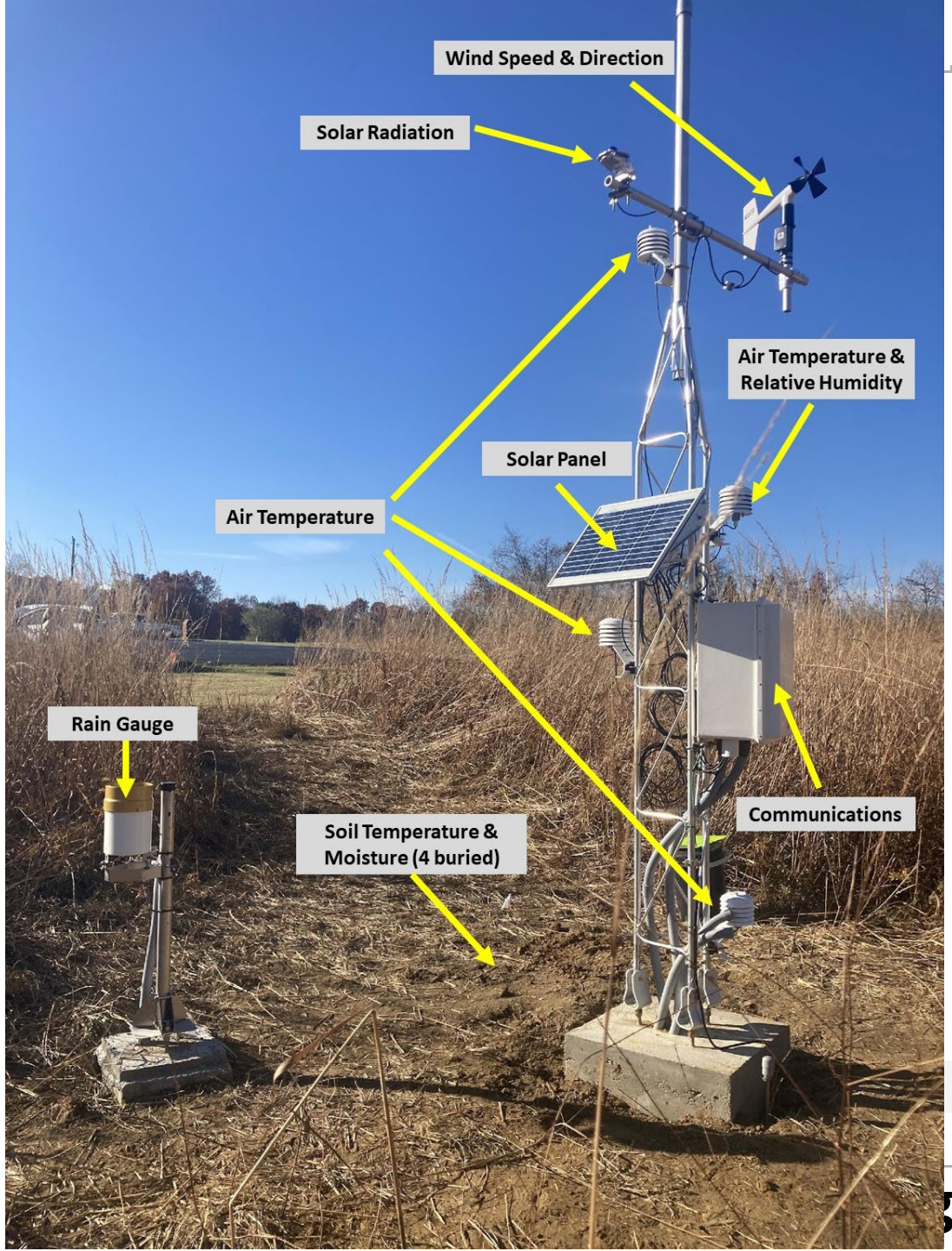
PURDUE MESONET

A mesoscale network of high-quality, research-grade

weather stations

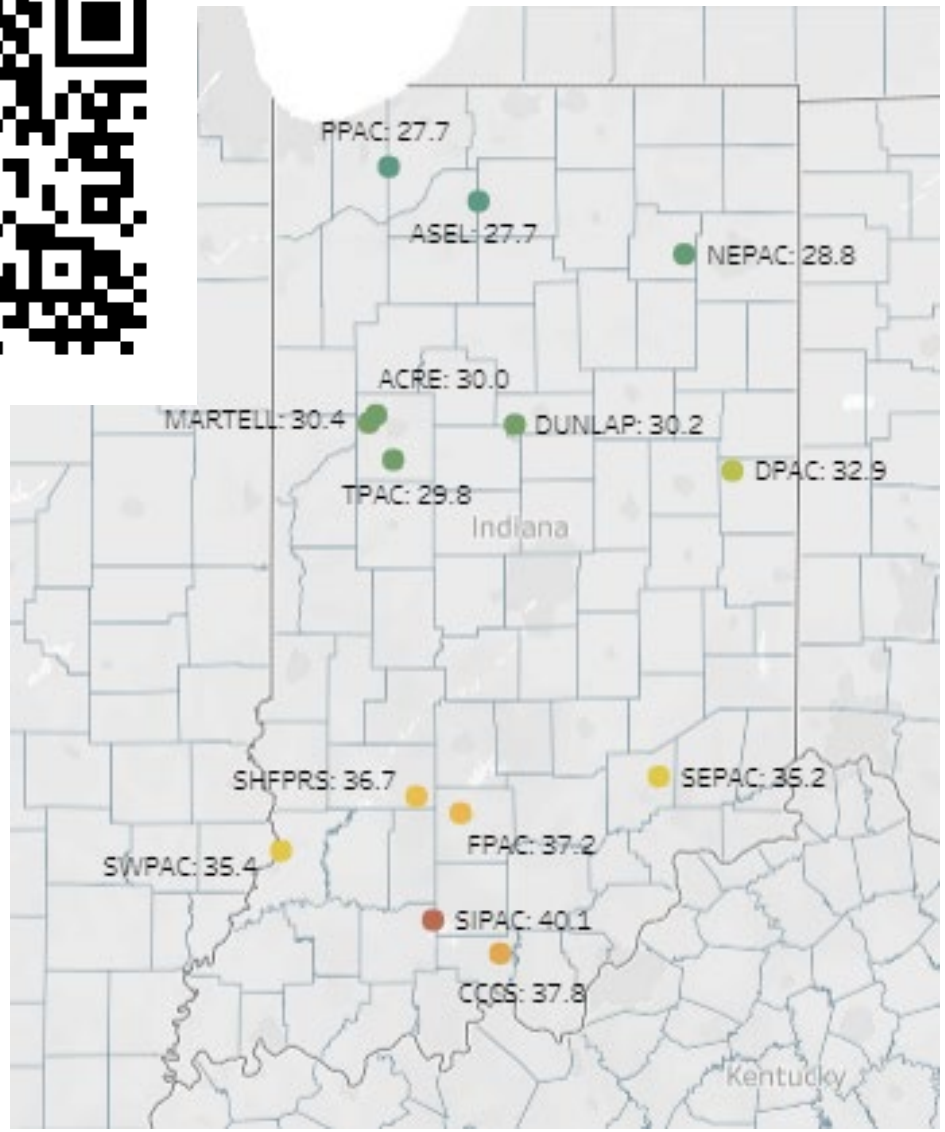
About the Purdue Mesonet

- Maintain 15 Purdue Mesonet stations across Indiana, measuring real-time weather



- Air Temp (°F)
- 0.5 m Air Temp (°F)
- 1.5 m Air Temp (°F)
- 3 m Air Temp (°F)
- Inversion Strength (°F)
- Relative Humidity (%)
- 24 hr Total Precipitation (in)
- Solar Radiation (kW/m²)
- Wind Speed (mph)
- Wind Direction (°)
- Wind Gust (mph)
- 4" Bare Soil Temp (°F)
- 4" Grass Soil Temp (°F)
- 2" Soil Temp (°F)
- 2" Soil Water Content (%)
- 4" Soil Temp (°F)
- 4" Soil Water Content (%)
- 8" Soil Temp (°F)
- 8" Soil Water Content (%)
- 20" Soil Temp (°F)
- 20" Soil Water Content (%)

Useful Tools: IN-SCO – Purdue Mesonet



Recent Conditions at SHFPRS (as of Jan 22 at 12:00 PM LST)	
Air Temperature (°F)	36.7
Wind Speed (mph)	2.9
Wind Gust (MPH)	11.2
Wind Direction (°)	218
Dewpoint Temperature (°F)	17.2
4" Soil Temperature (°F)	33.6

Past 24 Hours at SHFPRS	
Avg. Air Temperature (°F)	23.9
Maximum Air Temperature (°F)	36.7
Minimum Air Temperature (°F)	18.3
Total Precipitation (in.)	0.02
Avg. 4" Soil Temp (°F)	33.6
Avg. Dewpoint Temperature (°F)	11.4

Past 7 Days at SHFPRS	
Avg. Air Temperature (°F)	13.9
Maximum Air Temperature (°F)	36.7
Minimum Air Temperature (°F)	-6.2
Total Precipitation (in.)	0.03

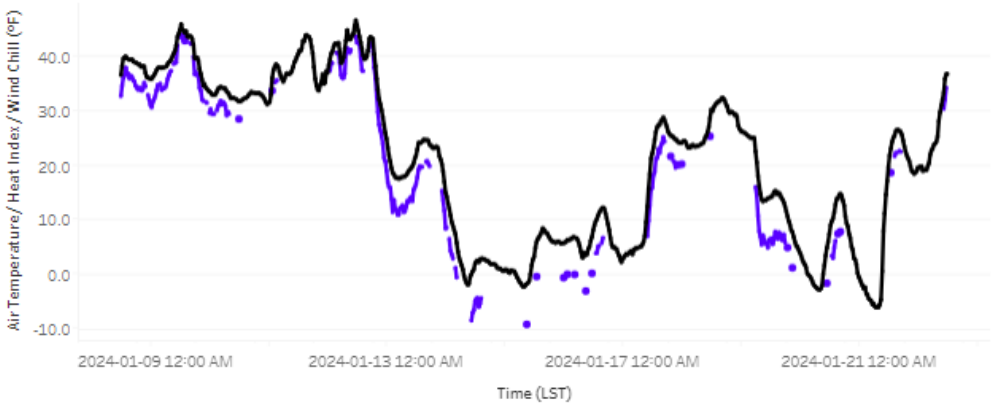
Past 30 Days at SHFPRS	
Avg. Air Temperature (°F)	29.4
Maximum Air Temperature (°F)	63.5
Minimum Air Temperature (°F)	-6.2
Total Precipitation (in.)	4.67

Station ID
SHFPRS
Go to Data Selector
Go to Map View

PURDUE UNIVERSITY
Indiana State Climate Office
PURDUE MESONET

Air Temperature / Heat Index / Wind Chill at SHFPRS

(Note: Wind chill is displayed only if air temperature is at or below 50°F and wind speed is greater than 3 miles per hour. Heat index is displayed only if air temperature is at or above 80°F.)

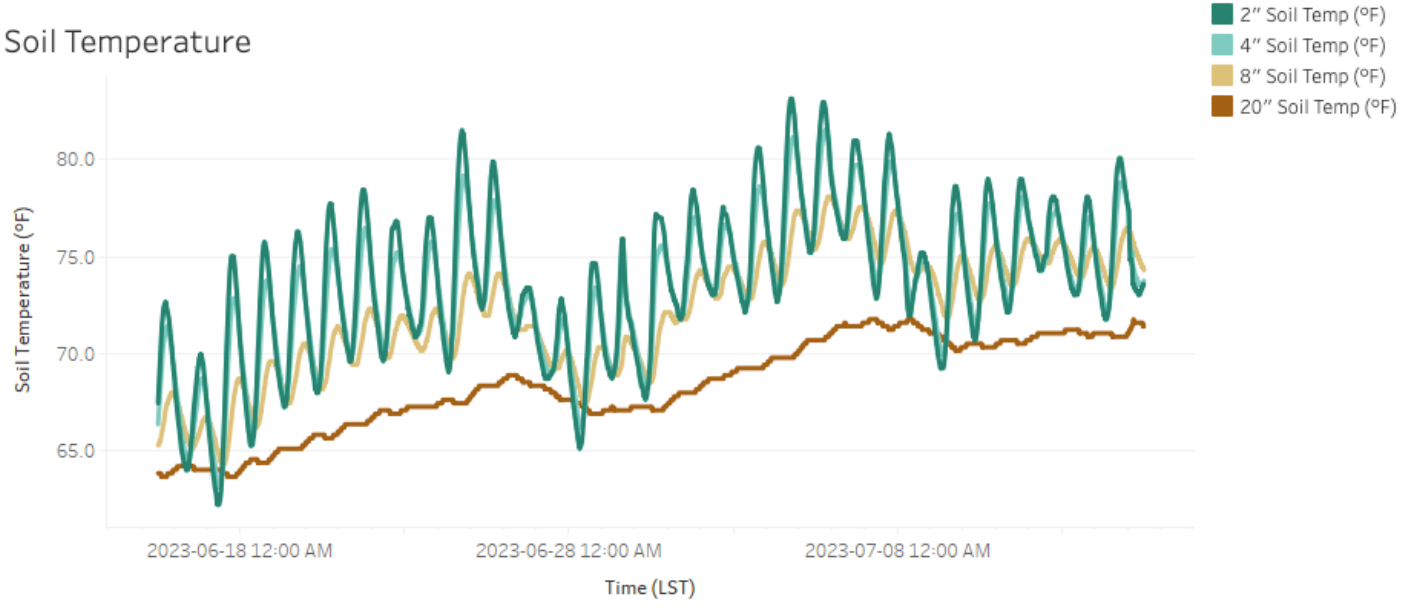


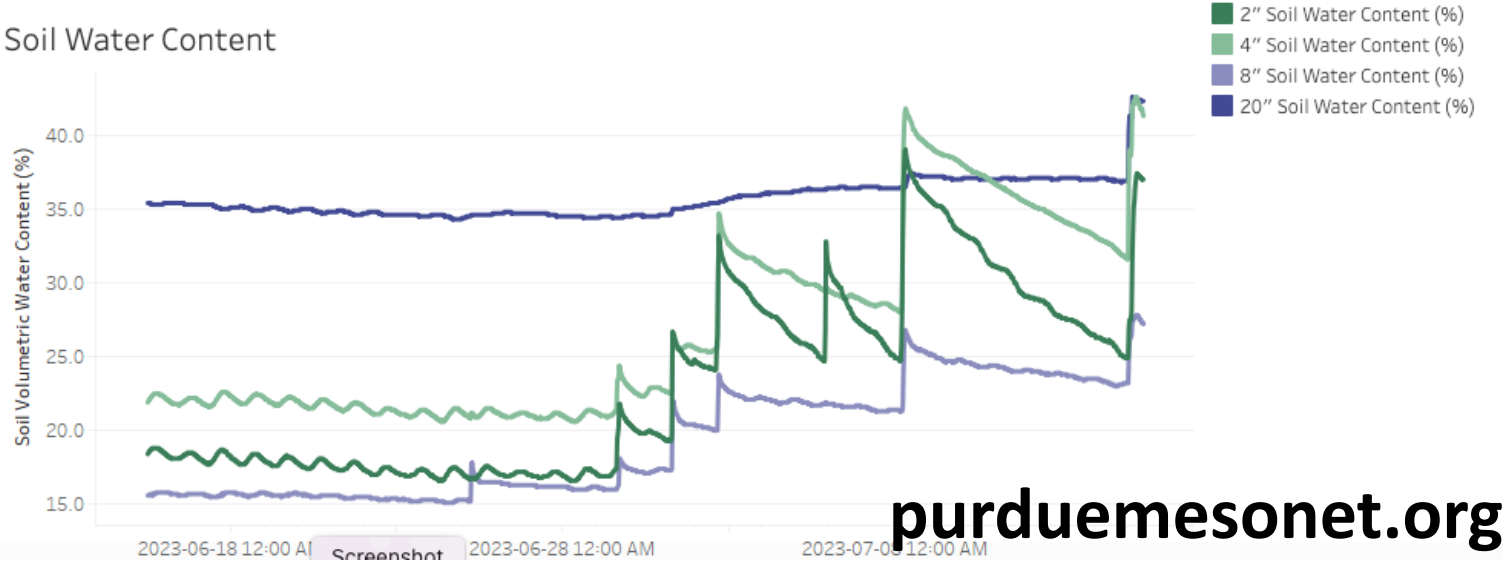
Start Time
2024-01-08 12:00 PM

End Time
2024-01-22 12:00 PM

Avg. Heat Index (°F)
Avg. Air Temperature (°F)
Avg. Wind Chill (°F)

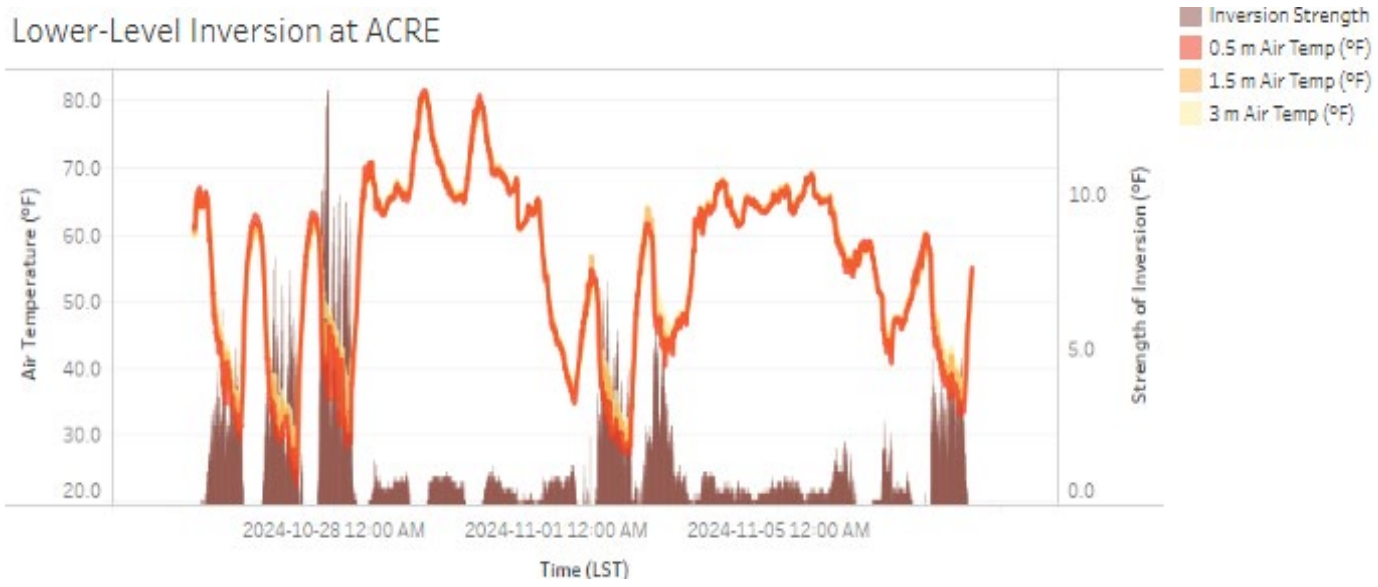
Useful Tools: IN-SCO – Purdue Mesonet





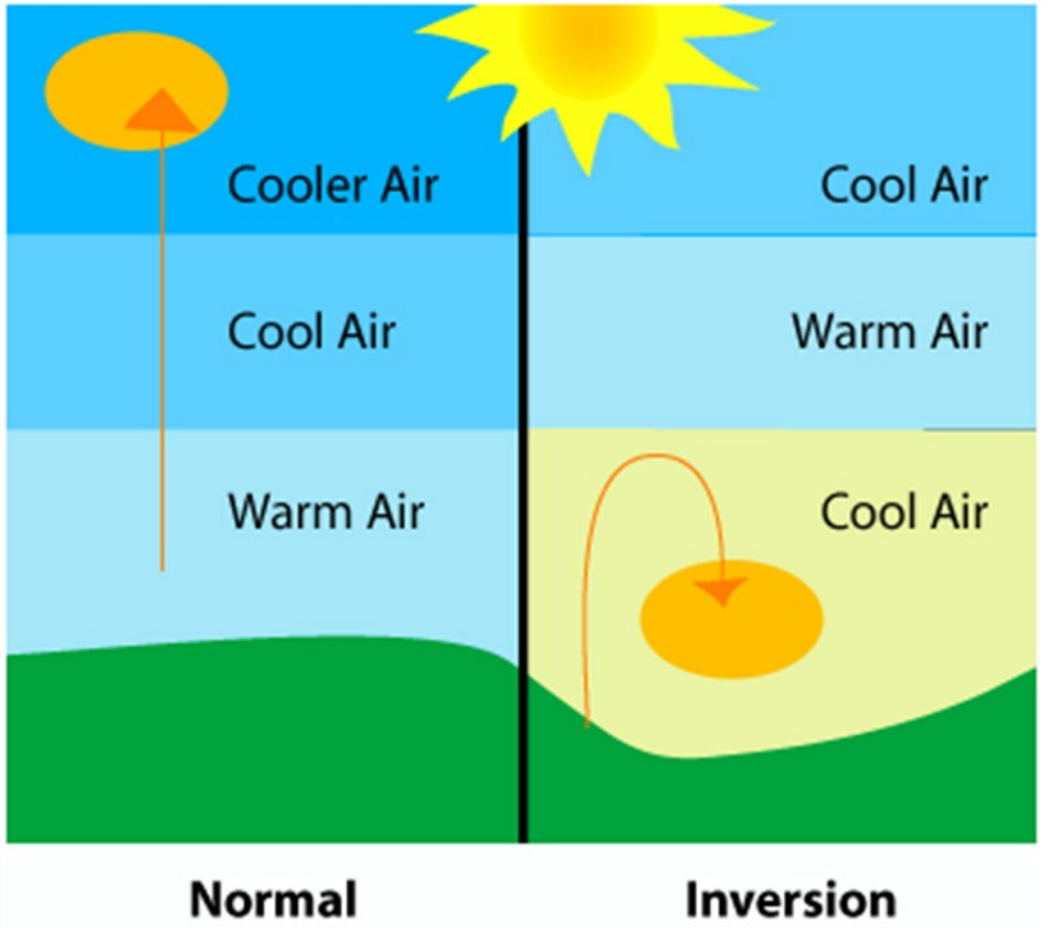
purduemesonet.org

Useful Tools: IN-SCO – Purdue Mesonet



Temperature Inversions

- Temperature in the atmosphere increasing with height from the surface
- Very stable atmosphere
- Wind < 3 mph



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Pesticide Application Considerations

Temperature Inversions

- Likely present if:
  - Mist, fog, dew, or frost
  - Low hanging smoke that moves parallel to the ground
  - Large temperature swings from maximum and minimum temperatures
  - Clear skies after a day that was primarily sunny
  - Sounds travel through the air much further
  - Calm winds

Goals and Needs of the Mesonet

- Expand network (under new umbrella)
  - *At least 1 station per county*
  - *Prioritize agricultural areas*
  - *Fill in spatial gaps*
- Identify communities in need
- Continue adding value
  - *Develop climatologies, perspectives*
  - *Integrate forecasts*
  - *Integrate alert system*
- *Integrate new tools and standards*
  - *Snow monitoring*
  - *Cameras*
  - *10-m towers*

IN MESONET

Indiana State Climate Office
Indiana Geological & Water Survey

indianamesonet.org

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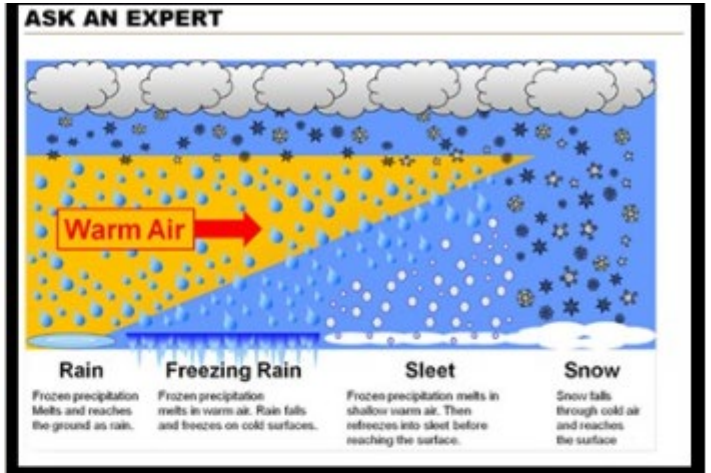
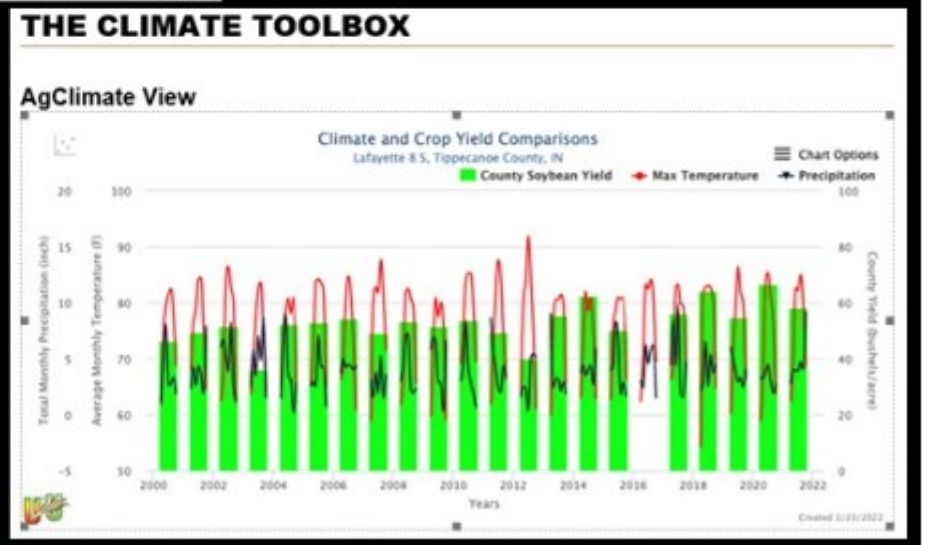
Newsletter Signup





Impact on Horticultural Crops

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Weather Impact on Horticulture - Temperature

Temperature

- Plants grow faster with increasing air temperatures up to a point.
- Extreme heat slows growth.
- Some annual flowers and vegetables are extremely sensitive to cold temperatures.
- Seed germination is a factor of soil temperature.
- Many plants require a certain number of days chilling before growth can resume.
- Wide temperature fluctuations are damaging.
- Warmer winter can cause larger insect populations in the next growing season.

(HO-203-W)
PURDUE EXTENSION PUBLICATION
By: Larry A. Caplan

Weather Impact on Horticulture - Temperature

Low Temperatures

- Colder temperatures will slow plants rate of metabolism and growth.
- Extended periods of colder temperatures during plant growth, overall plant quality will be hindered or may cause plant death.
- Below freezing, water freezes within the plant. Ice crystals puncture cell's membranes. Ice melts, contents from the cells leak out, killing the plant.
  - Plant tissue looks dark green or water soaked, then blackened/necrotic later.

(HO-203-W)

PURDUE EXTENSION PUBLICATION

By: Larry A. Caplan

Weather Impact on Horticulture - Temperature

Vegetables and Annual Flowers

- **Warm Season Crops**
  - Tomatoes, snap beans, cucurbits can be severely injured by light frost.
- **Cool Season Crops**
  - Broccoli, cabbage, peas, and onions can tolerate frost and light freezes of short durations.
- **Bolting** – plants set out too early in the spring. Put enough growth to get out of juvenile stage. Plant is sensitive to cold spell.
  - Bolted plants should be discarded; cutting flower stalks off will not prevent the deterioration in flavor and quantity.
  - Do not set out plants too early in the spring.

(HO-203-W)
PURDUE EXTENSION PUBLICATION
By: Larry A. Caplan

Weather Impact on Horticulture - Temperature

Woody Plants & Perennials

- Can tolerate very low temperatures if they are allowed to harden off and go dormant in the fall.
- Hardening is triggered by shorter days in late summer and fall and colder temperatures. Overwintering buds are matured and protected by bud scales.
- Withhold late year nitrogen applications.
- Frost cracking in trees with thin, dark bark (peach or silver maples).
  - White exterior latex paint – reduces wide fluctuations in temperature.
- Root injuries – frost heaving. Roots move upward in the soil.

https://wltreefriends.org/tree-news/frost-cracks/

(HO-203-W)
PURDUE EXTENSION PUBLICATION
By: **Larry A. Caplan**

Weather Impact on Horticulture - Temperature

Fruit Crops

- Cold is common cause for economic loss.
- Injury caused when temperatures drop below certain threshold levels.
- Pruning!!! – best done in late winter/early spring.
- Proper selection of species and cultivars will decrease the potential for crop loss.
- Selection of late blossoming cultivars may be the best chance for success.

https://www.gardeningknowhow.com/edible/fruits/fegen/fruit-tree-pruning.htm

(HO-203-W)

PURDUE EXTENSION PUBLICATION

By: Larry A. Caplan

Weather Impact on Horticulture - Precipitation

Precipitation

- Rain, snow, sleet, hail, and ice…
- Effects of too much rain or too little rain can be temporary or permanent.
- Water is an absolute necessity, but too much reduces amount of oxygen available in the soil.
- Snow during the winter can help insulate the ground, reducing effect from extreme temperatures.
- Salt can damage plants.
- High humidity (amount of water air can hold) can create problems with disease.

"How Weather Affects Plants" Garden Tips form Knox County Master Gardeners – Illinois Extension

Weather Impact on Horticulture - Wind

Wind

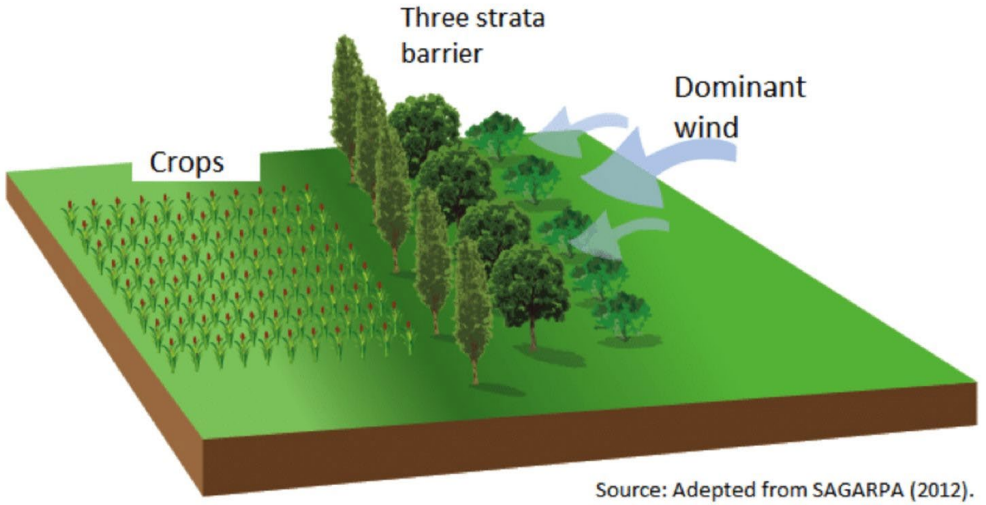
- Drying effect.
- Can cause high evapotranspiration effects.
- Disperses pollen, seeds, spores, insects, pathogens, salt, and noxious chemicals.
- Can also damage plants.

"How Weather Affects Plants" Garden Tips form Knox County Master Gardeners – Illinois Extension

Weather Impact on Horticulture – Minimizing Hazards

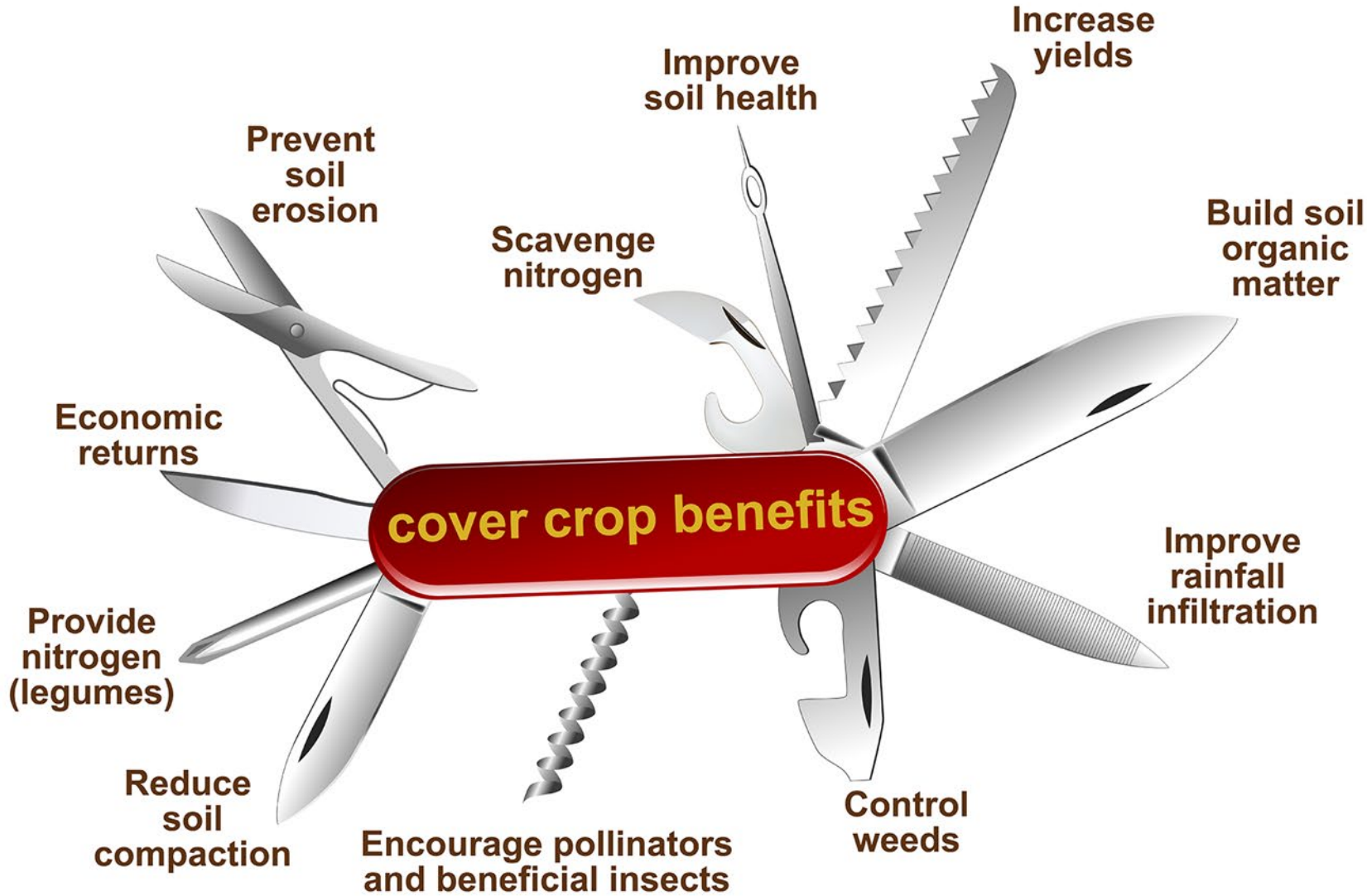
Minimizing Hazards

- Select plants that are good for your climate (native plants).
- When choosing trees, choose ones that are strong.
- Healthy plants are happy plants and are less susceptible to environmental hazards.
- Improve soil to maintain moisture (mulch, continuous watering).
- Provide water for trees during extended dry periods.
- Water evergreens before ground freezes in winter.
- Mulch perennials, wrap young trees.
- Leave ice covered plants alone.
- When shoveling, don't put snow on plants that may have salt.
- Consider planting a windbreak.



Source: Adepted from SAGARPA (2012).

"How Weather Affects Plants" Garden Tips form Knox County Master Gardeners – Illinois Extension


cover crop benefits
Increase yields
Improve soil health
Prevent soil erosion
Scavenge nitrogen
Build soil organic matter
Economic returns
Improve rainfall infiltration
Provide nitrogen (legumes)
Reduce soil compaction
Encourage pollinators and beneficial insects
Control weeds

Outlook

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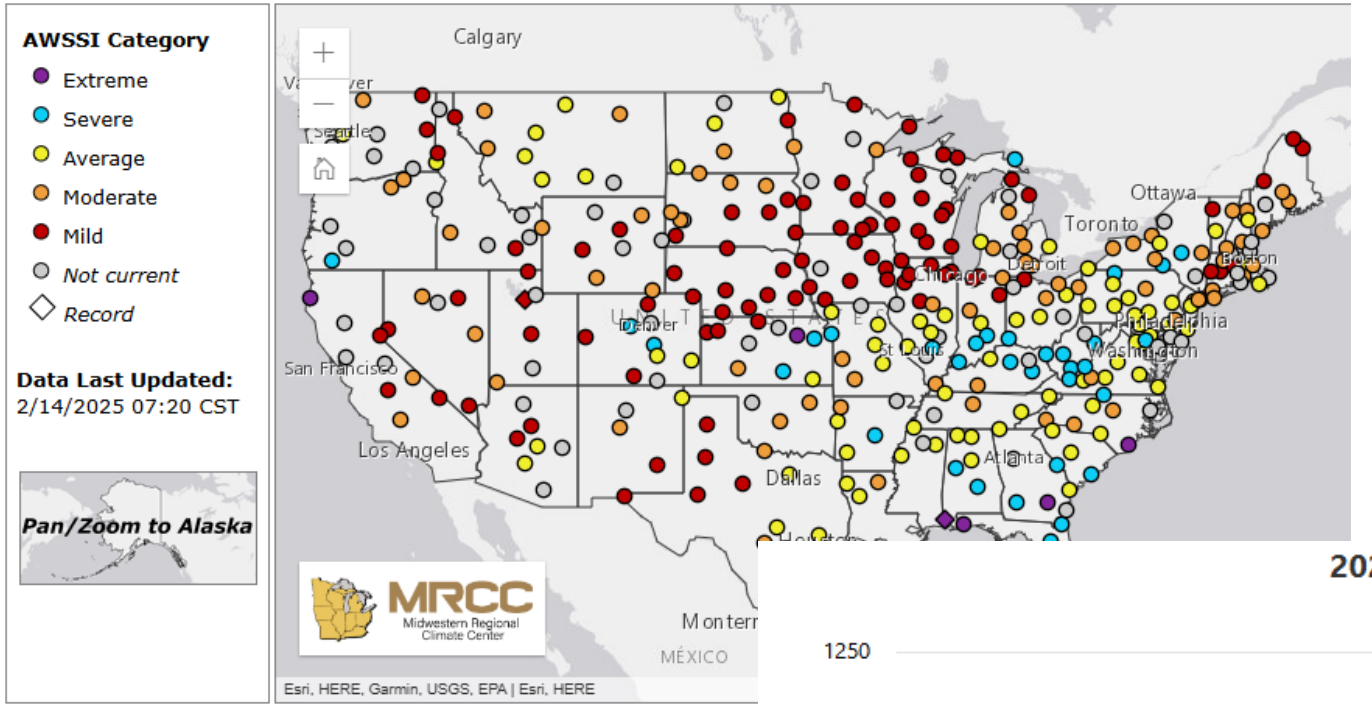
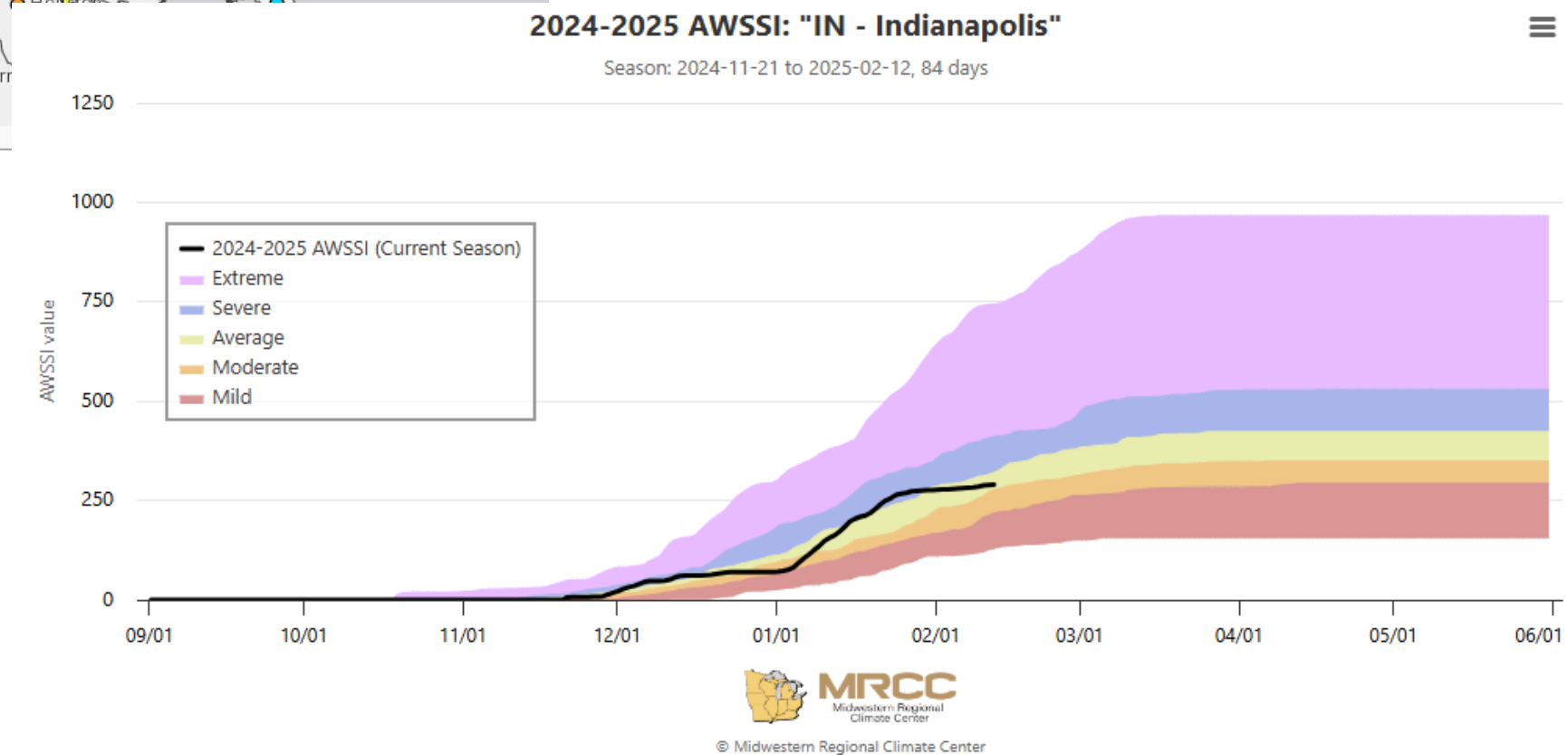
Current Season



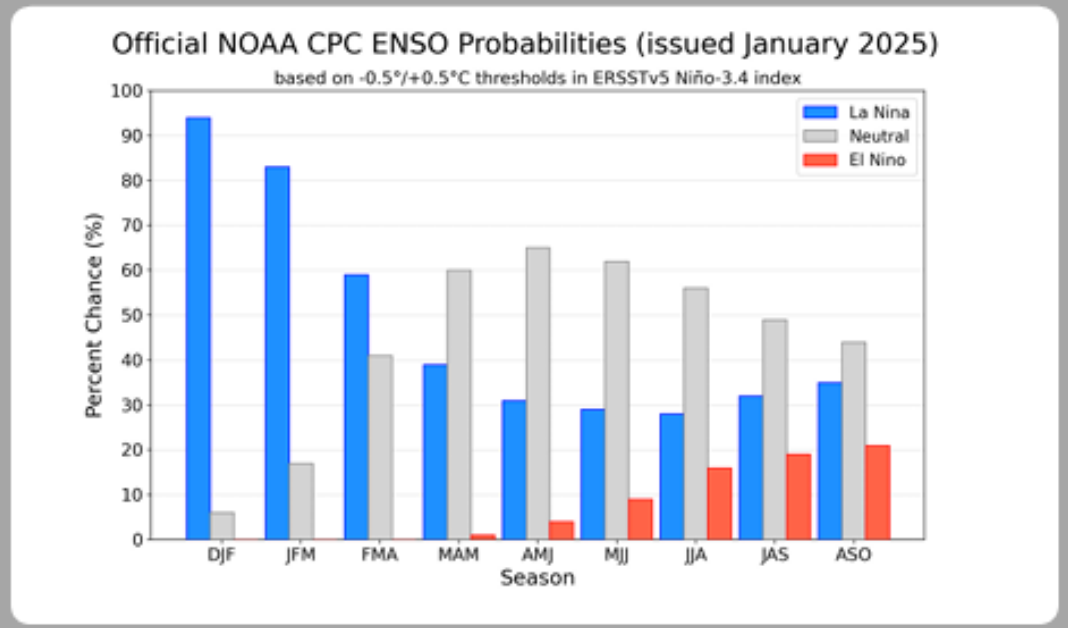


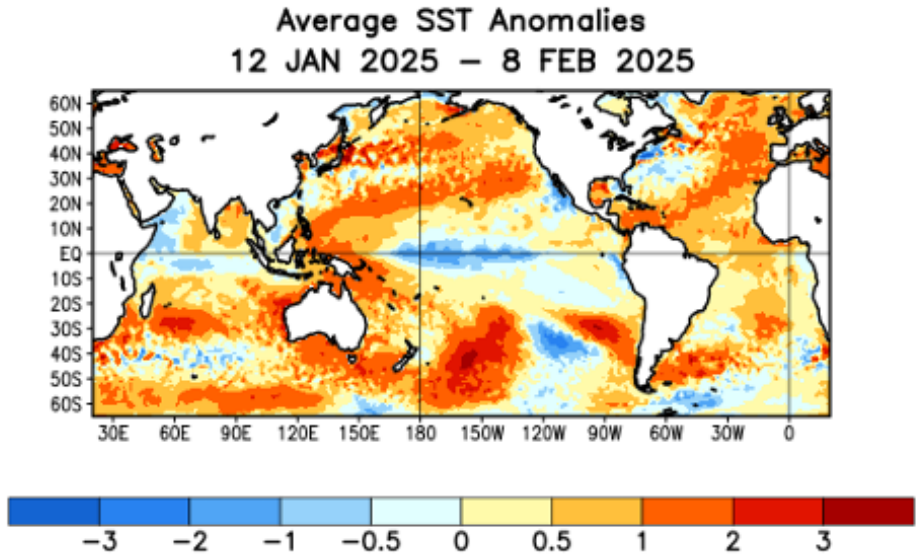
ENSO Alert System Status: La Niña Advisory

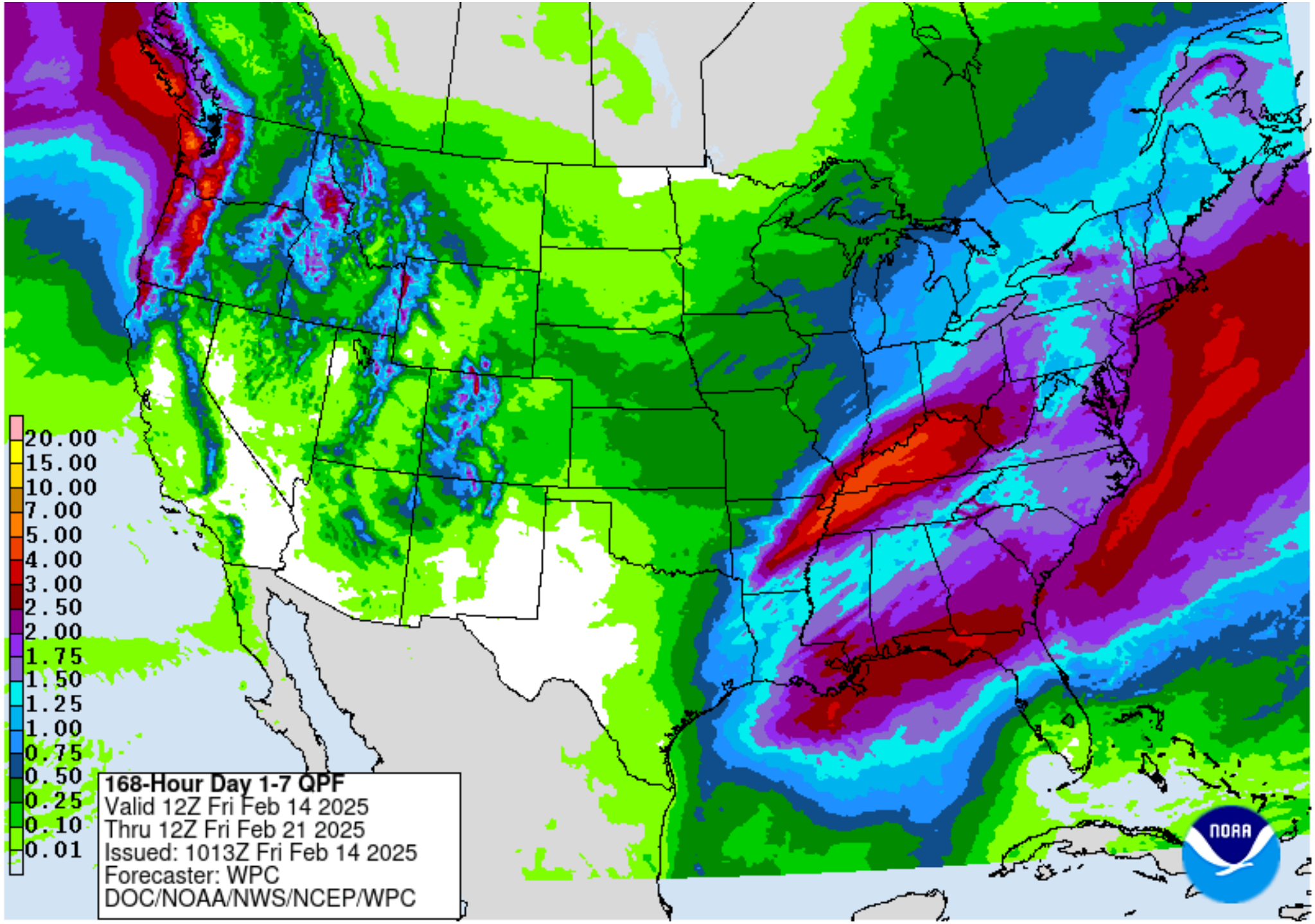
La Niña conditions are present.*

Equatorial sea surface temperatures (SSTs) are below average in the central and east-central Pacific Ocean.

La Niña conditions are expected to persist through February-April 2025 (59% chance), with a transition to ENSO-neutral likely during March-May 2025 (60% chance).



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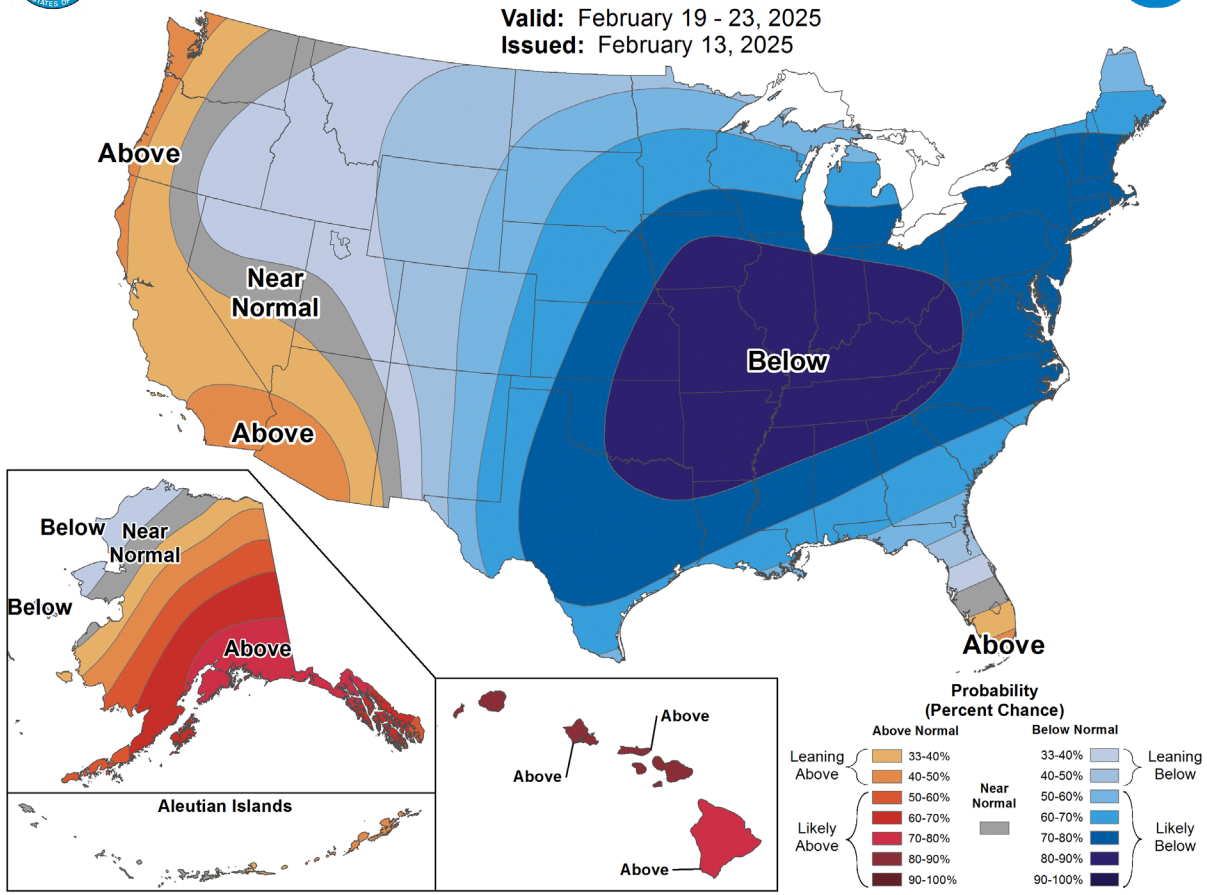
168-Hour Day 1-7 QPF
Valid 12Z Fri Feb 14 2025
Thru 12Z Fri Feb 21 2025
Issued: 1013Z Fri Feb 14 2025
Forecaster: WPC
DOC/NOAA/NWS/NCEP/WPC
NOAA

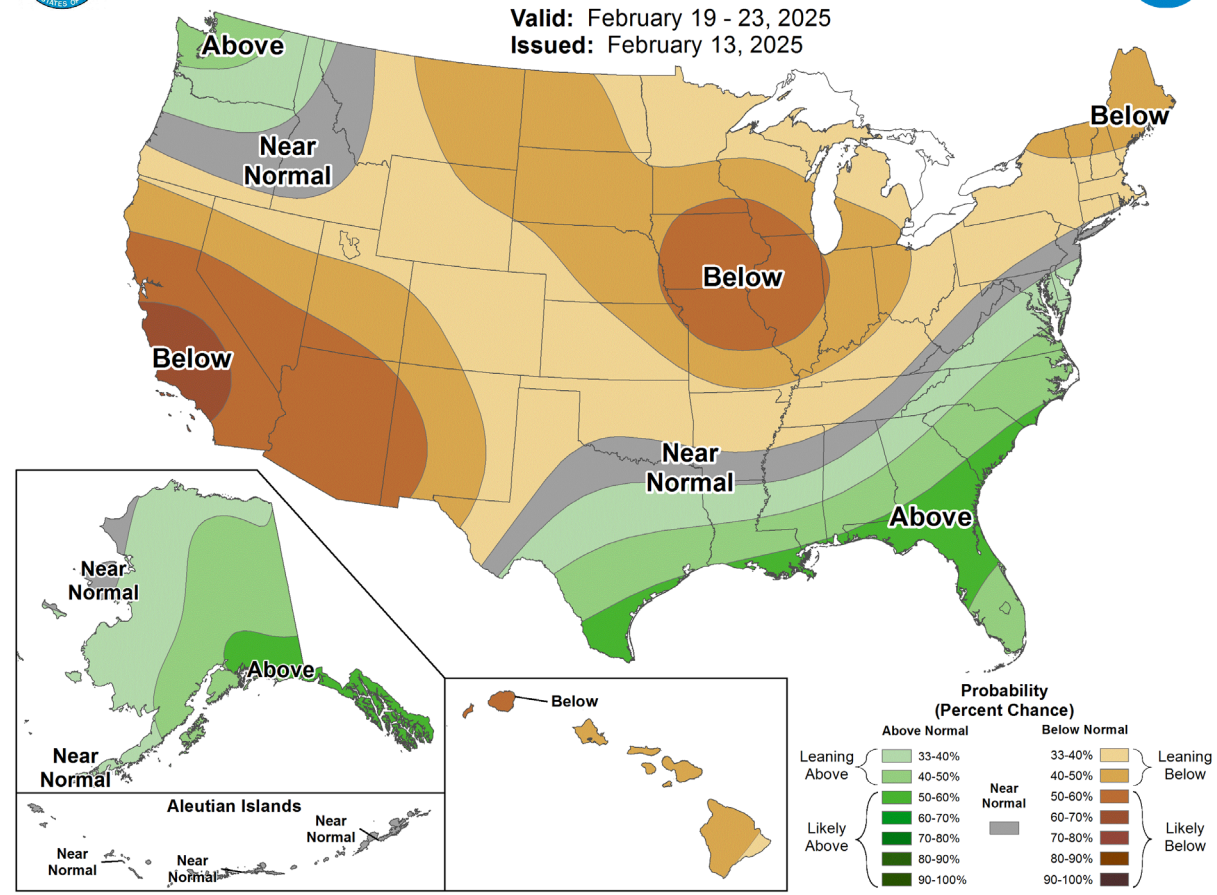
6-10 Day Temperature Outlook

Valid: February 19 - 23, 2025
Issued: February 13, 2025



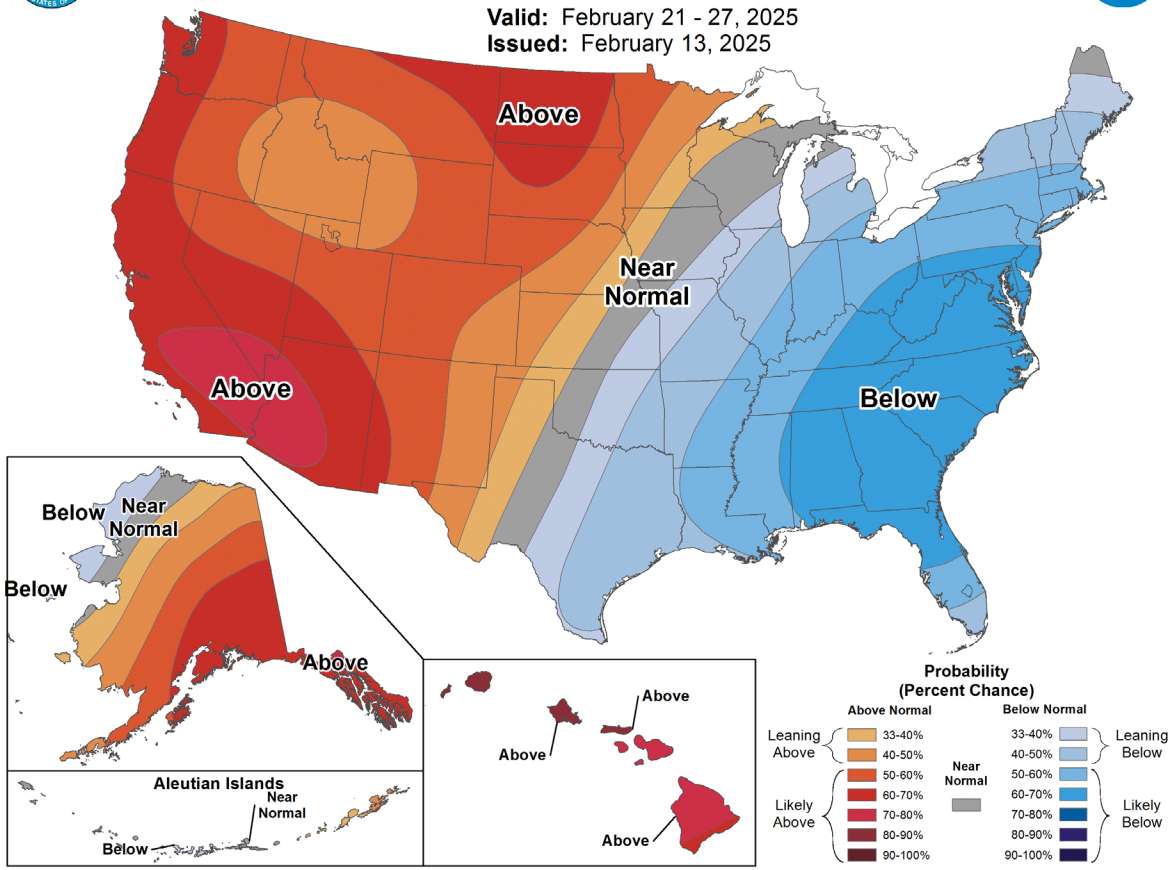
6-10 Day Precipitation Outlook

Valid: February 19 - 23, 2025
Issued: February 13, 2025



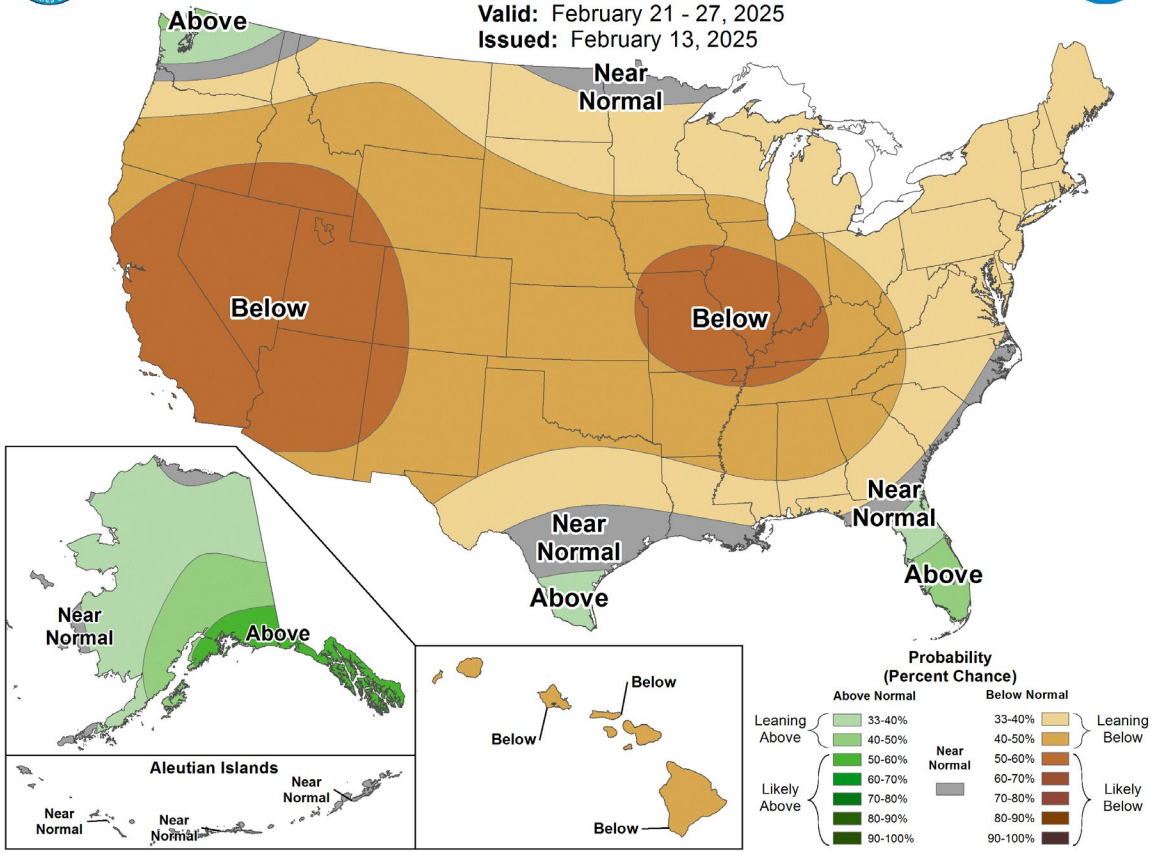
8-14 Day Temperature Outlook

Valid: February 21 - 27, 2025
Issued: February 13, 2025



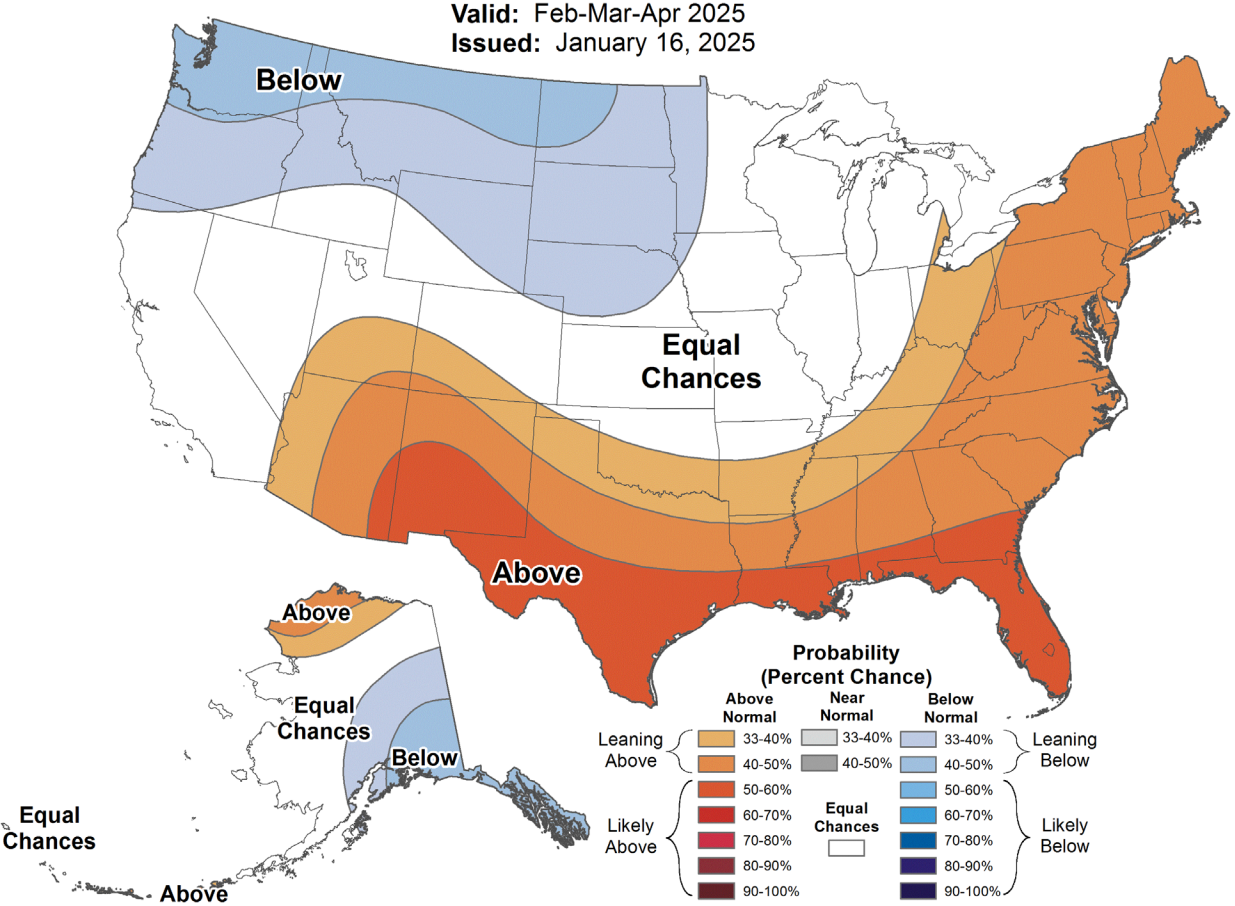
8-14 Day Precipitation Outlook

Valid: February 21 - 27, 2025
Issued: February 13, 2025



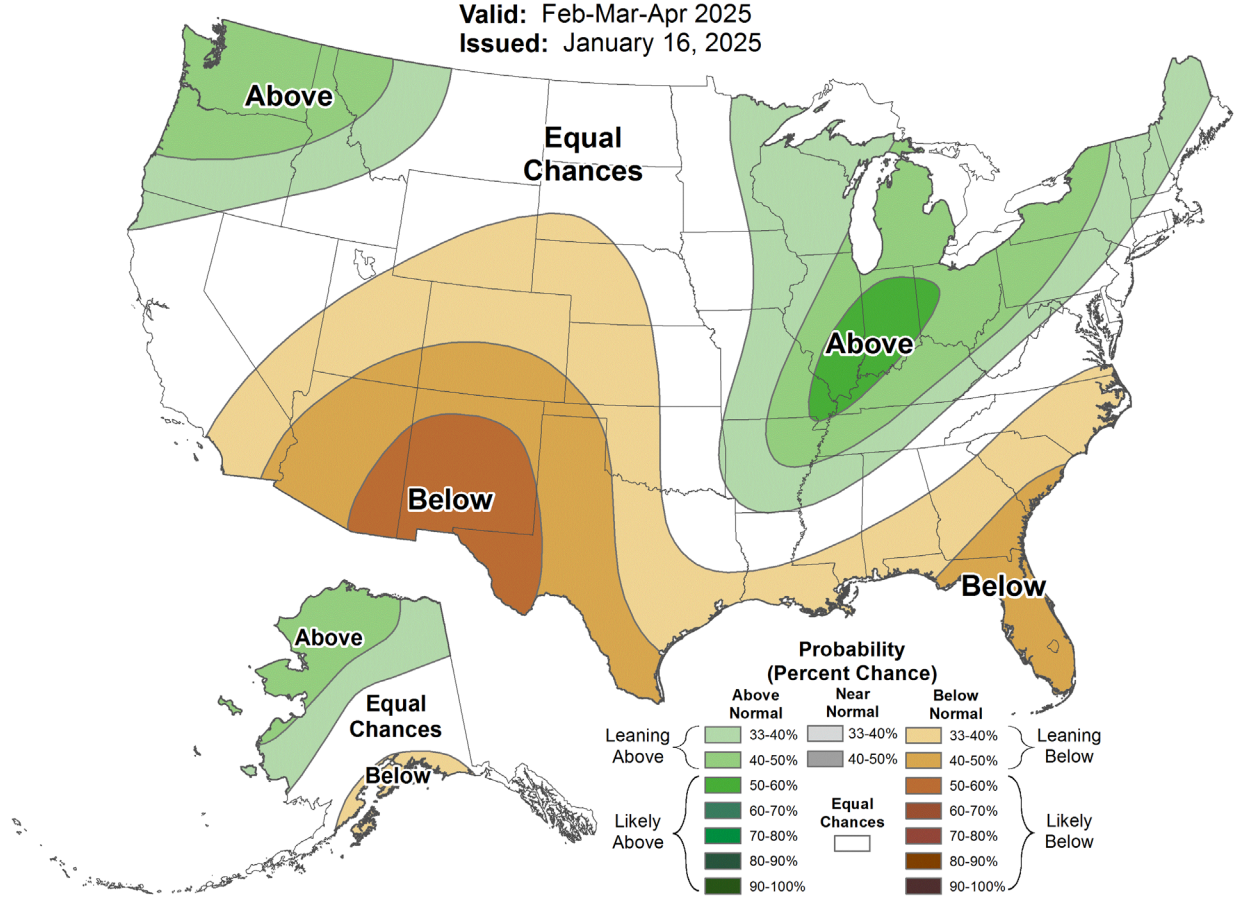
Seasonal Temperature Outlook

Valid: Feb-Mar-Apr 2025
Issued: January 16, 2025



Seasonal Precipitation Outlook

Valid: Feb-Mar-Apr 2025
Issued: January 16, 2025



Thank you!

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