

MRCC's Soil Temperature Climatology Tool

Austin Pearson

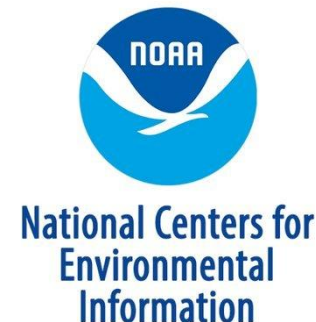
Climatologist

Midwestern Regional Climate Center (MRCC)

Purdue University

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We have tools to help you
make decisions.

The **Midwestern Regional Climate Center** provides
high-quality climate data, tools, interactive maps, and
customized services for the Midwest and the nation.



mrcc.purdue.edu



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for Environmental Information and
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Soil Temperature Climatology



- Soil temperature information benefits a range of on-farm decisions associated with field work, plant growth, and pest and disease management.
- However, there is a lack of user-friendly interfaces for this information that has a perspective about climate patterns and risks.



Soil Temperature Climatology

4" Soil Temperature Climatology

Go to "Warms Above" View

Go to "Cools Below" View

Go to "Temperatures Given Date" View

Date When 4" Soil Temperature Cools Below 50°F

Select Threshold (°F)

50

Average Date

- | | |
|-----------------|-----------------|
| Sep 9 or Before | Dec 1-9 |
| Sep 10-19 | Dec 10-19 |
| Sep 20-30 | Dec 20-31 |
| Oct 1-9 | Jan 1-9 |
| Oct 10-19 | Jan 10-19 |
| Oct 20-31 | Jan 20-31 |
| Nov 1-9 | Feb 1-9 |
| Nov 10-19 | Feb 10-19 |
| Nov 20-30 | Feb 20 or Later |

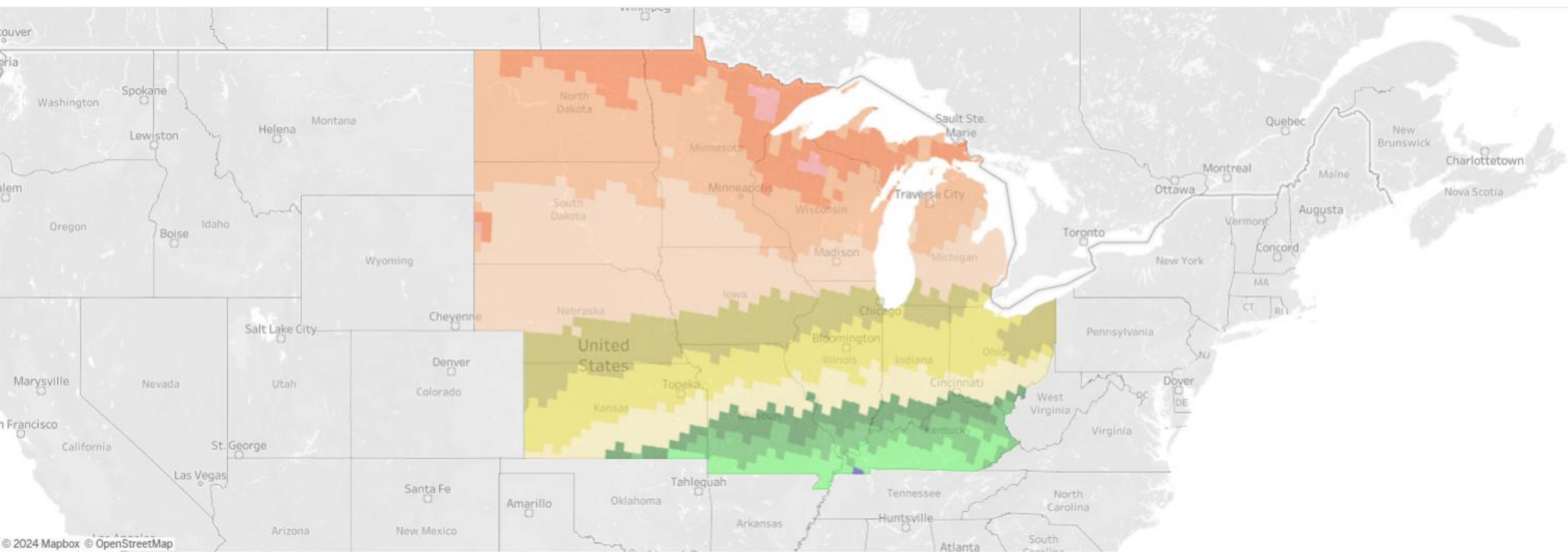
Climatology is based on 1991-2020 values at 4" depth. Map shows seven-day running average values. See About page for more information.

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



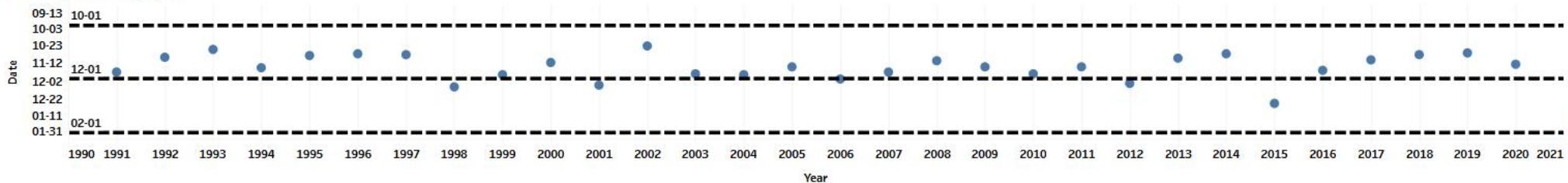
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About this Tool



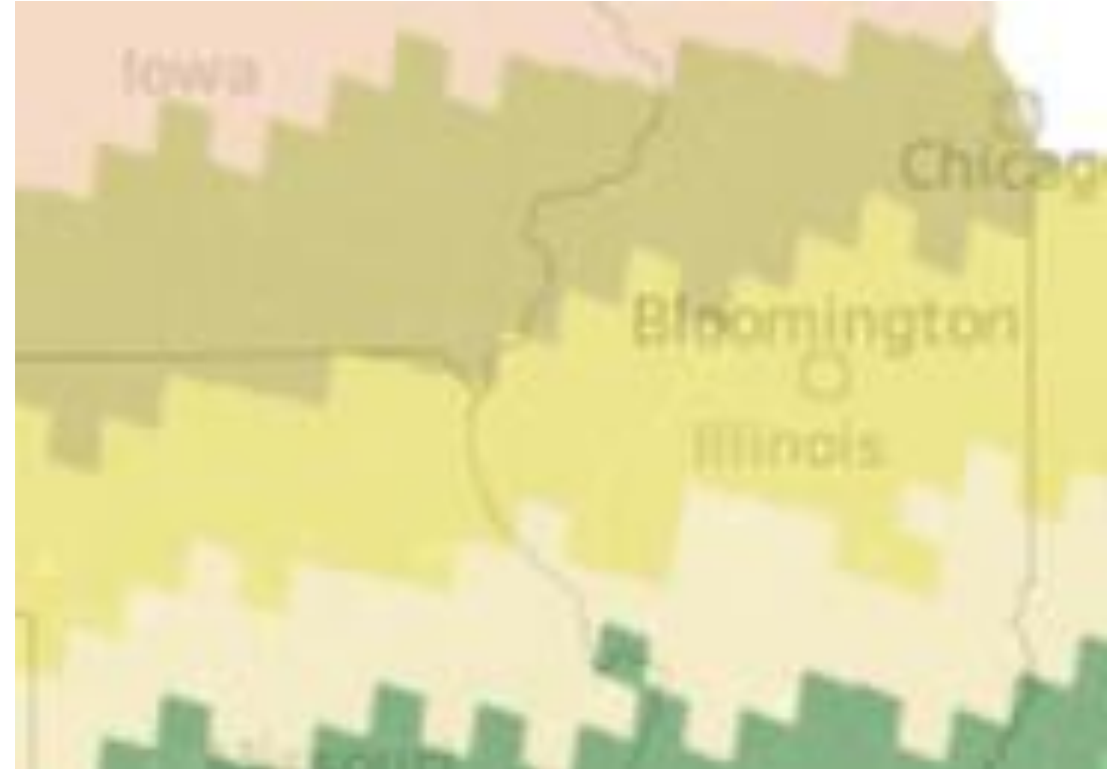
Dates of Occurrence over 1991-2020 Period

Click on a gridbox to display dates.



Soil Temperature Climatology

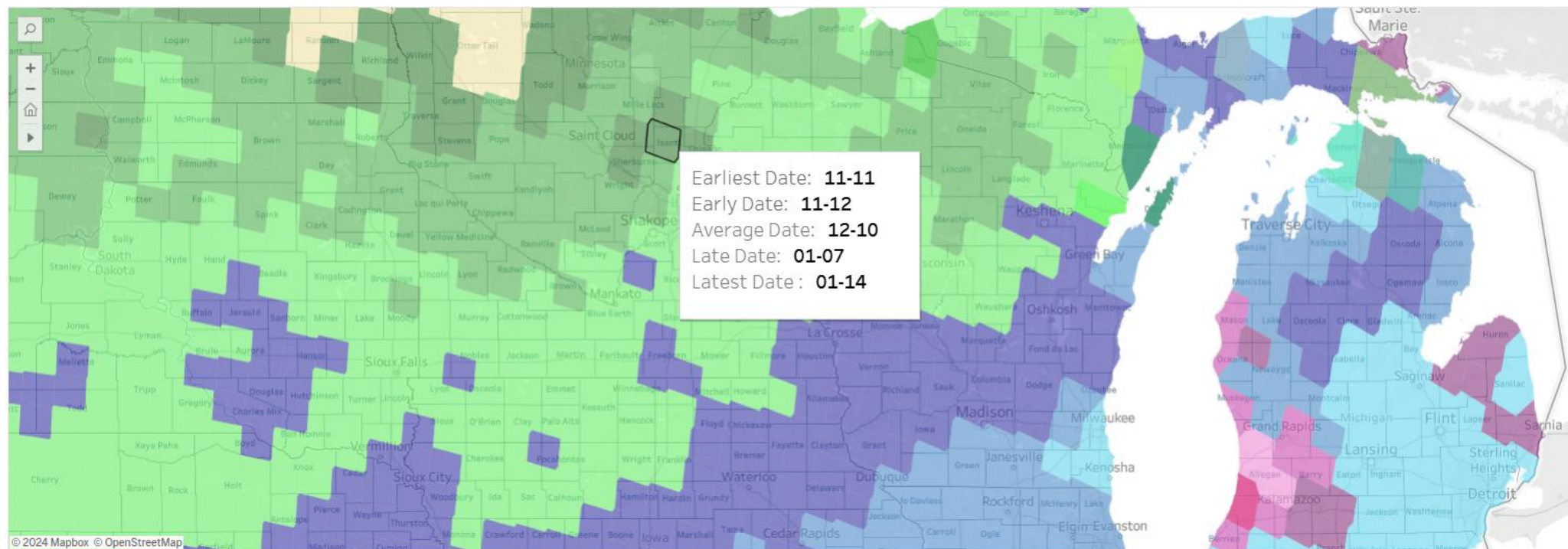
- Daily-resolution 4" soil temperature values from the NARR were obtained for the 1991 to 2020 period for much of the north-central U.S.
- Daily values composited into seven-day running mean values.
 - 02/10/2020: 02/04/2020-02/10/2020
- These values were then bias-corrected on a day-by-day basis using local weather networks.
- NARR soil T's used to calculate annual "warm above" and "cool below" dates and other statistics.
- We may expand this climatology to other regions in the future, but that will require further region-by-region analysis.



Soil Temperature Climatology

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

Date When 4" Soil Temperature Cools Below 32°F



Select Threshold (°F)

32

Average Date

- Sep 9 or Before
- Sep 10-19
- Sep 20-30
- Oct 1-9
- Oct 10-19
- Oct 20-31
- Nov 1-9
- Nov 10-19
- Nov 20-30
- Dec 1-9
- Dec 10-19
- Dec 20-31
- Jan 1-9
- Jan 10-19
- Jan 20-31
- Feb 1-9
- Feb 10-19
- Feb 20 or Later

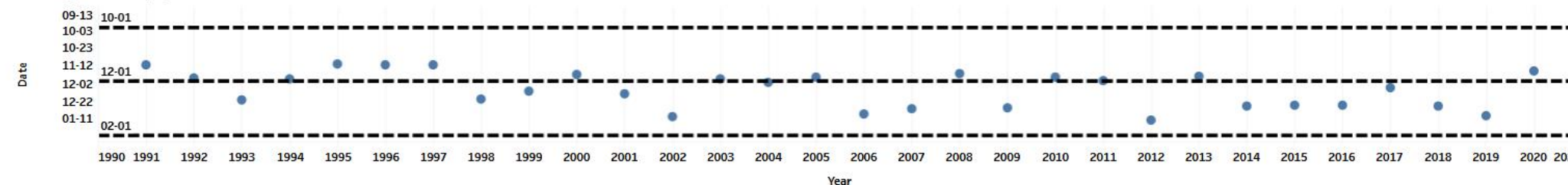
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Dates of Occurrence over 1991-2020 Period

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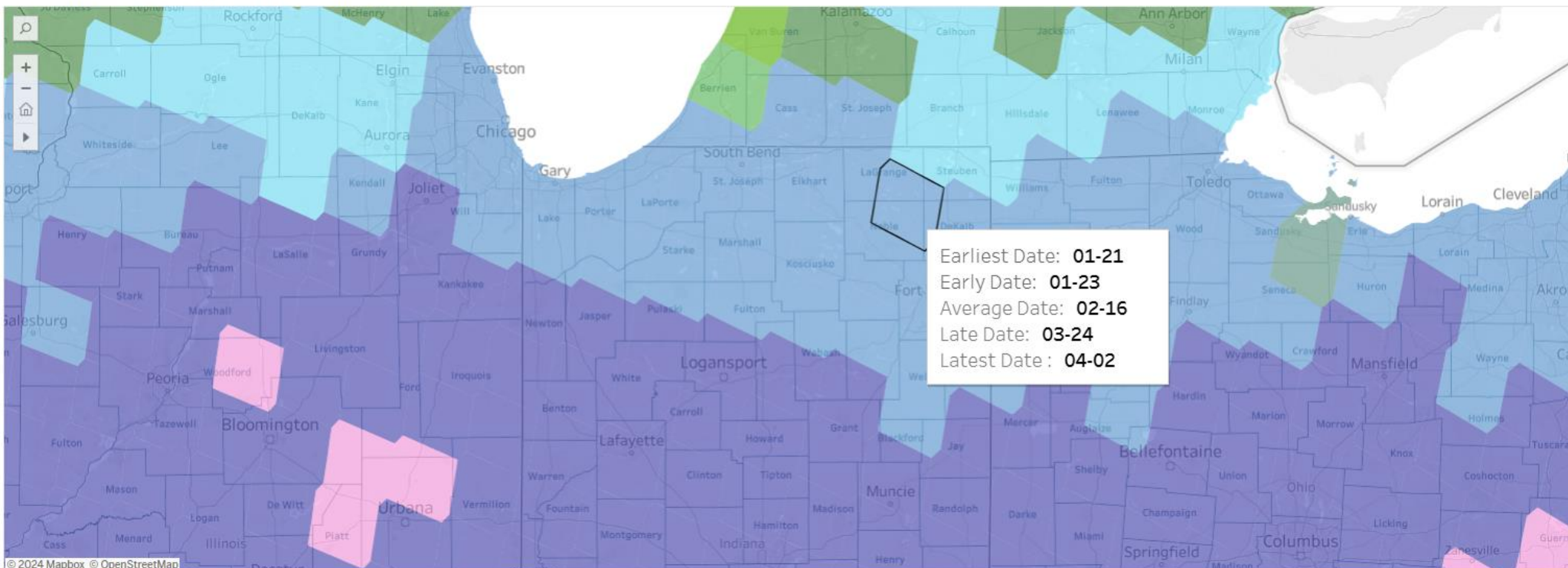
Soil Temperature Climatology

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

Date When 4" Soil Temperature Warms Above 32°F

Select Threshold (°F)

32



Average Date

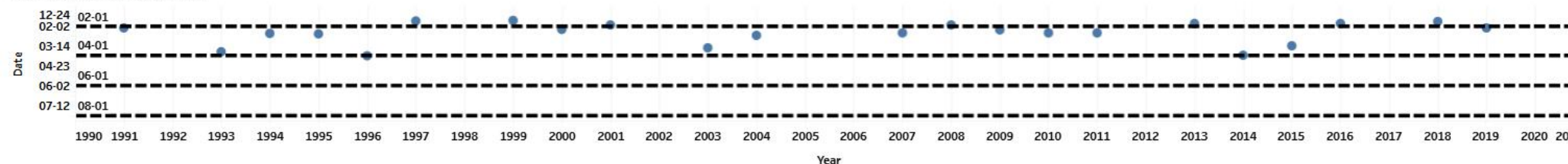
- Jan 9 or Before
- Jan 10-19
- Jan 20-31
- Feb 1-9
- Feb 10-19
- Feb 20-28
- Mar 1-9
- Mar 10-19
- Mar 20-31
- Apr 1-9
- Apr 10-19
- Apr 20-30
- May 1-9
- May 10-19
- May 20-31
- Jun 1-9
- Jun 10-19
- Jun 20 or Later

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Dates of Occurrence over 1991-2020 Period

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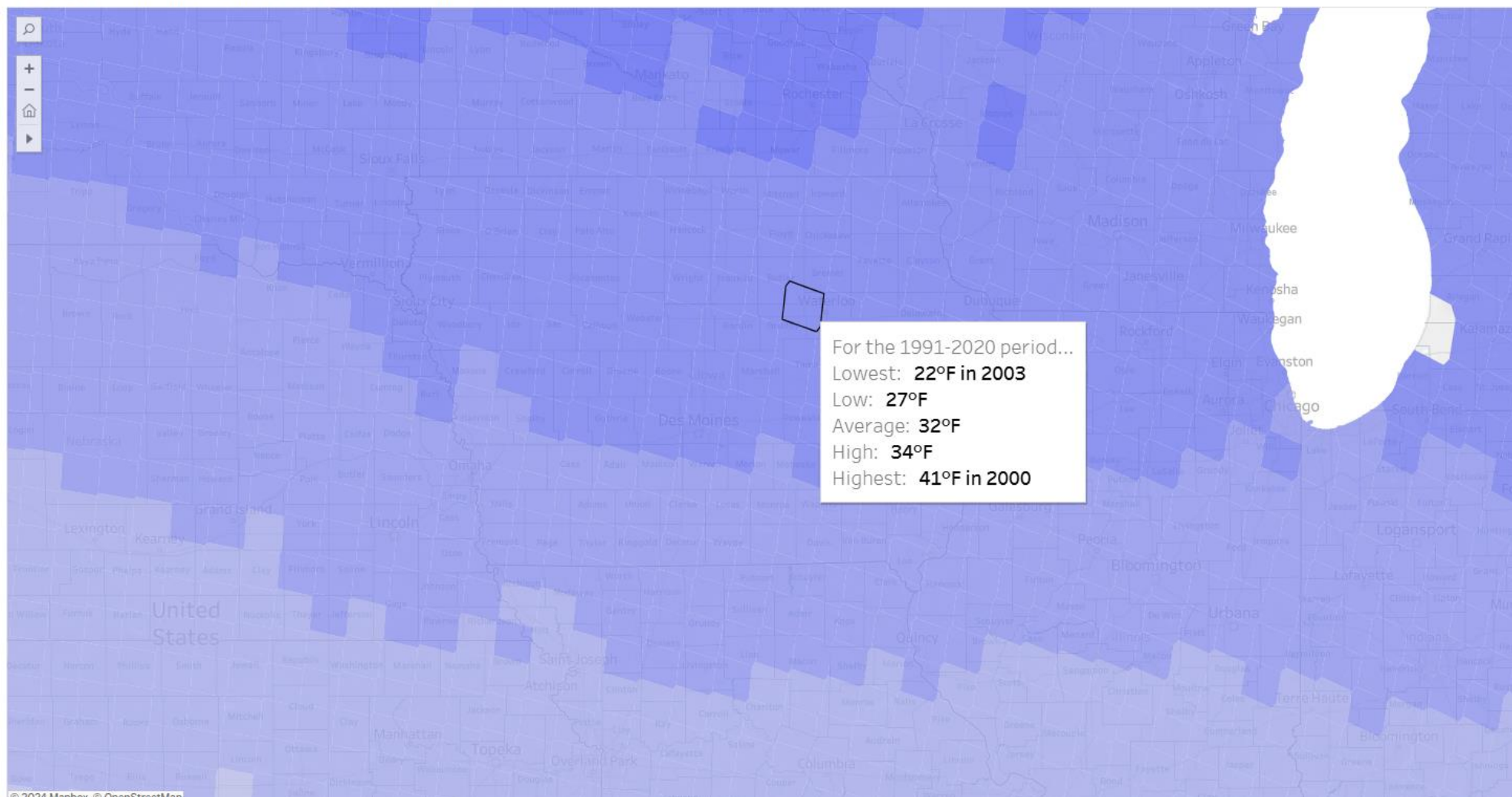
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About this Tool

Soil Temperature Climatology

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

Average 4" Soil Temperature on Selected Calendar Date



Select a Month

March

Select a Day

12

Average 4" Soil Temperature

- <30°F
- 30°F to 34°F
- 35°F to 39°F
- 40°F to 44°F
- 45°F to 49°F

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QUESTIONS?