

# SDSU Extension Tribal Activities



SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION

*Laura Edwards, State Climatologist*

*@SDSUclimate*

*November 16, 2022*

SDSU Extension is an equal opportunity provider and employer in accordance with the nondiscrimination policies of South Dakota State University, the South Dakota Board of Regents and the United States Department of Agriculture.

Learn more at <https://extension.sdstate.edu>.



# Land Acknowledgement

- ▶ South Dakota State University acknowledges the land it occupies across South Dakota is the ancestral, traditional and contemporary lands of the Oceti Sakowin, meaning Seven Council Fires, which is the proper name for the people referred to as Sioux. We acknowledge that before these sites were named South Dakota State University, they were called home by people of American Indian Nations indigenous to this region.
- ▶ The tribal alliance made up of individual bands of the Seven Council Fires is based on kinship, location and dialects: Santee-Dakota, Yankton-Nakota and Teton- Lakota. We acknowledge the sovereignty of the nine federally recognized Native Nations in South Dakota: Cheyenne River, Crow Creek, Flandreau Santee, Lower Brule, Oglala, Rosebud, Sisseton-Wahpeton, Standing Rock and Yankton Sioux Tribes.
- ▶ As a land-grant university, it is our mission to provide access to higher education to all. We are committed to building respectful and positive relationships with indigenous communities through academic pursuits, partnerships, historical recognitions, extension programs and enrollment efforts.

<https://www.sdstate.edu/wokini-initiative/land-acknowledgement>

# Drought Monitoring

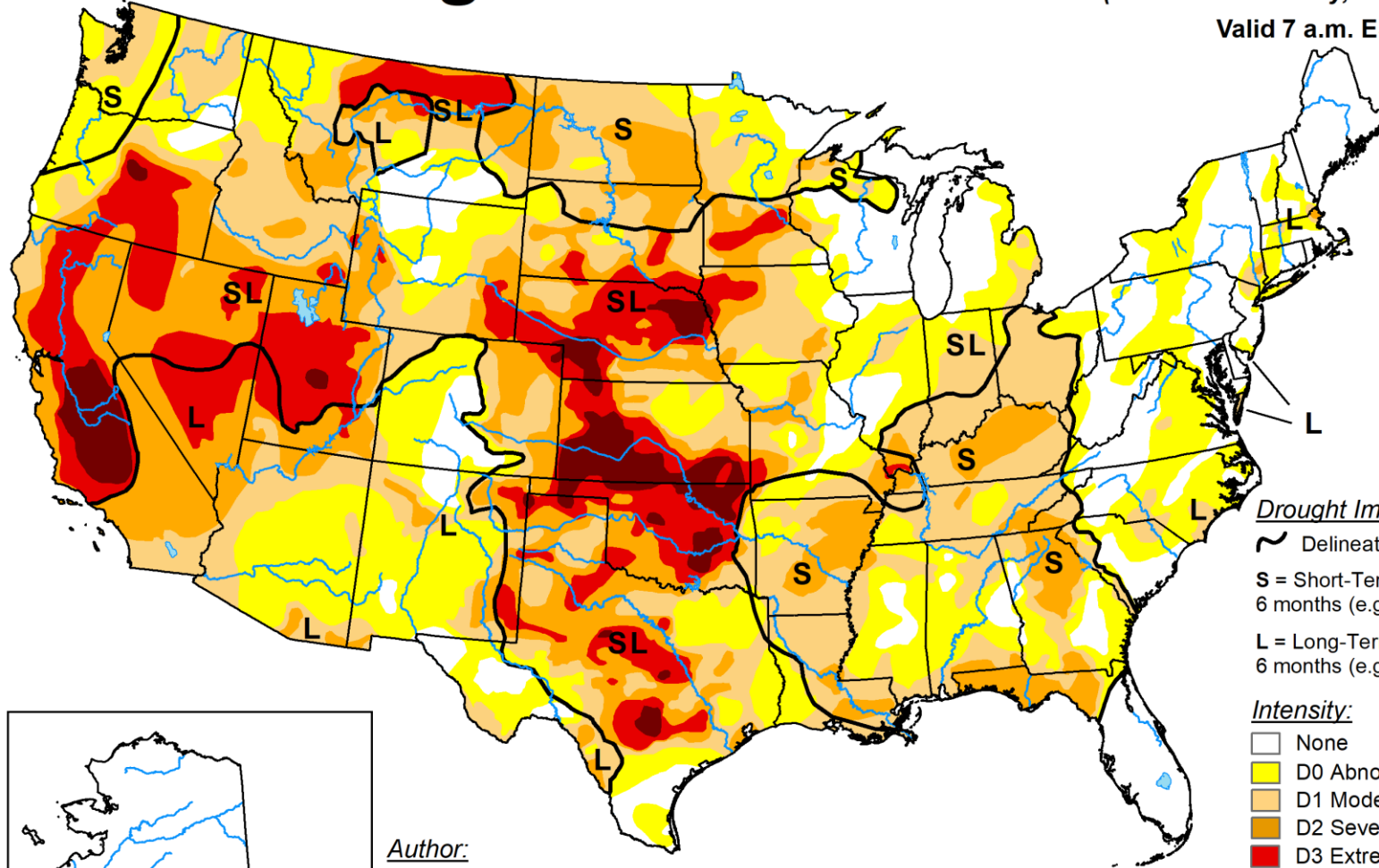


**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# U.S. Drought Monitor

November 8, 2022  
(Released Thursday, Nov. 10, 2022)

Valid 7 a.m. EST

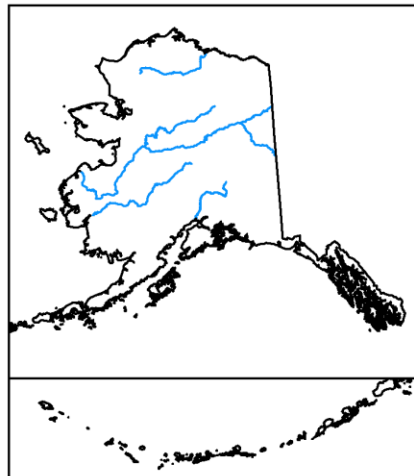


Drought Impact Types:

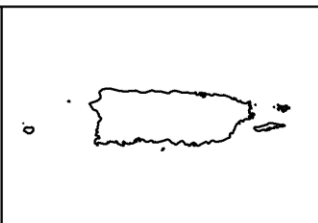
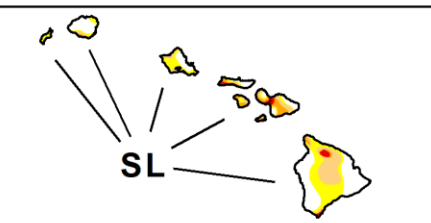
- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

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>

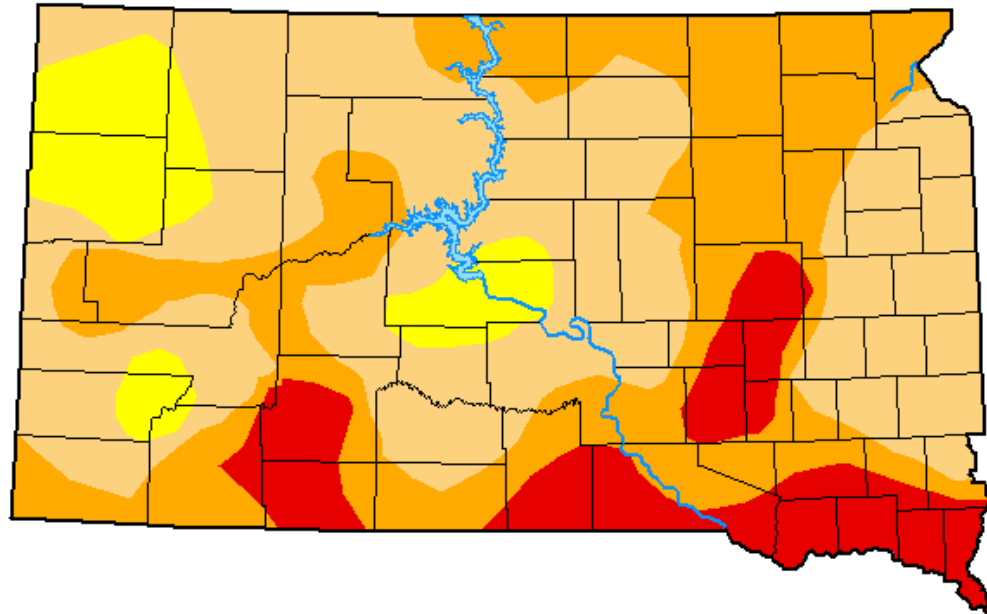


**SOUTH DAKOTA STATE UNIVERSITY EXTENSION**

[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

# U.S. Drought Monitor South Dakota

**November 8, 2022**  
(Released Thursday, Nov. 10, 2022)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	90.67	43.95	12.33	0.00
<b>Last Week</b> 11-01-2022	0.00	100.00	89.11	43.85	12.33	0.00
<b>3 Months Ago</b> 08-09-2022	40.84	59.16	34.04	7.56	3.52	0.00
<b>Start of Calendar Year</b> 01-04-2022	21.31	78.69	34.91	6.63	0.00	0.00
<b>Start of Water Year</b> 09-27-2022	6.81	93.19	61.01	19.02	3.59	1.25
<b>One Year Ago</b> 11-09-2021	19.76	80.24	53.98	8.31	0.00	0.00

Intensity:



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:

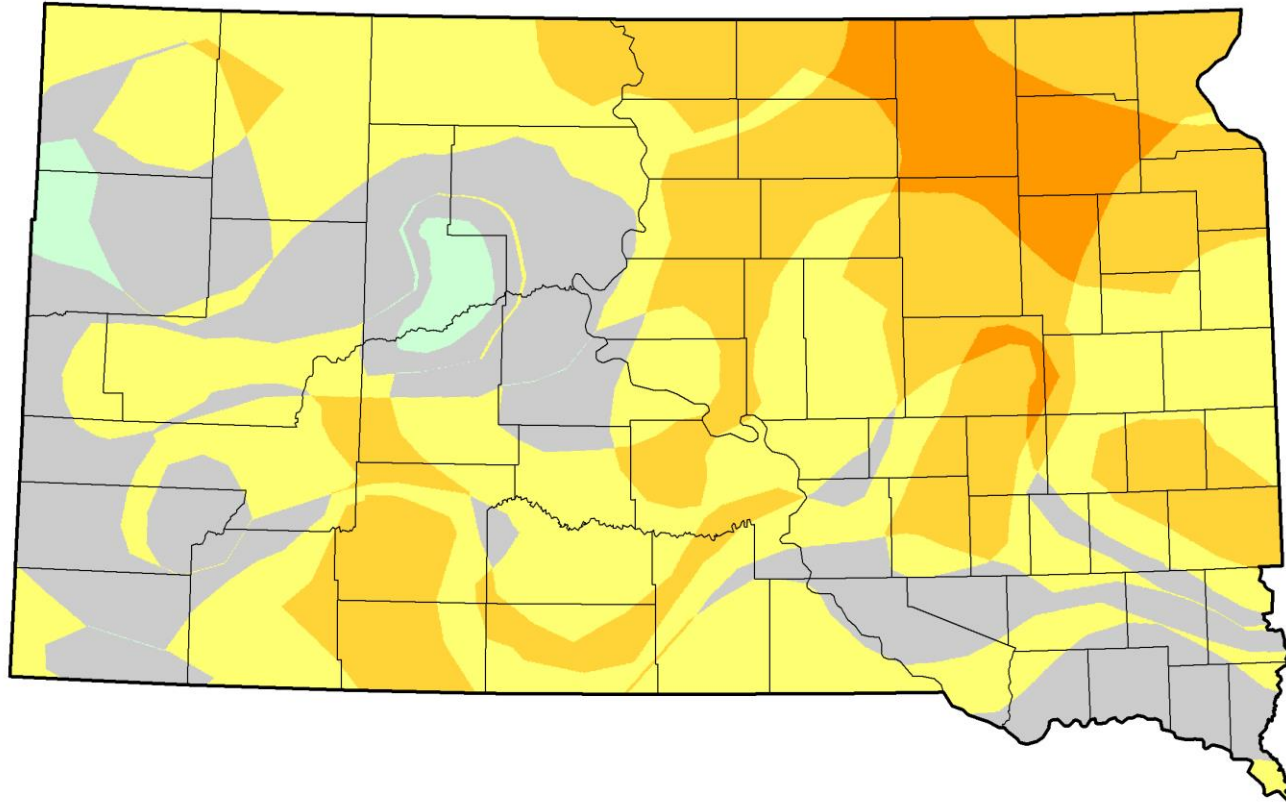
Brian Fuchs  
National Drought Mitigation Center




**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

# U.S. Drought Monitor Class Change - South Dakota 8 Week



-  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

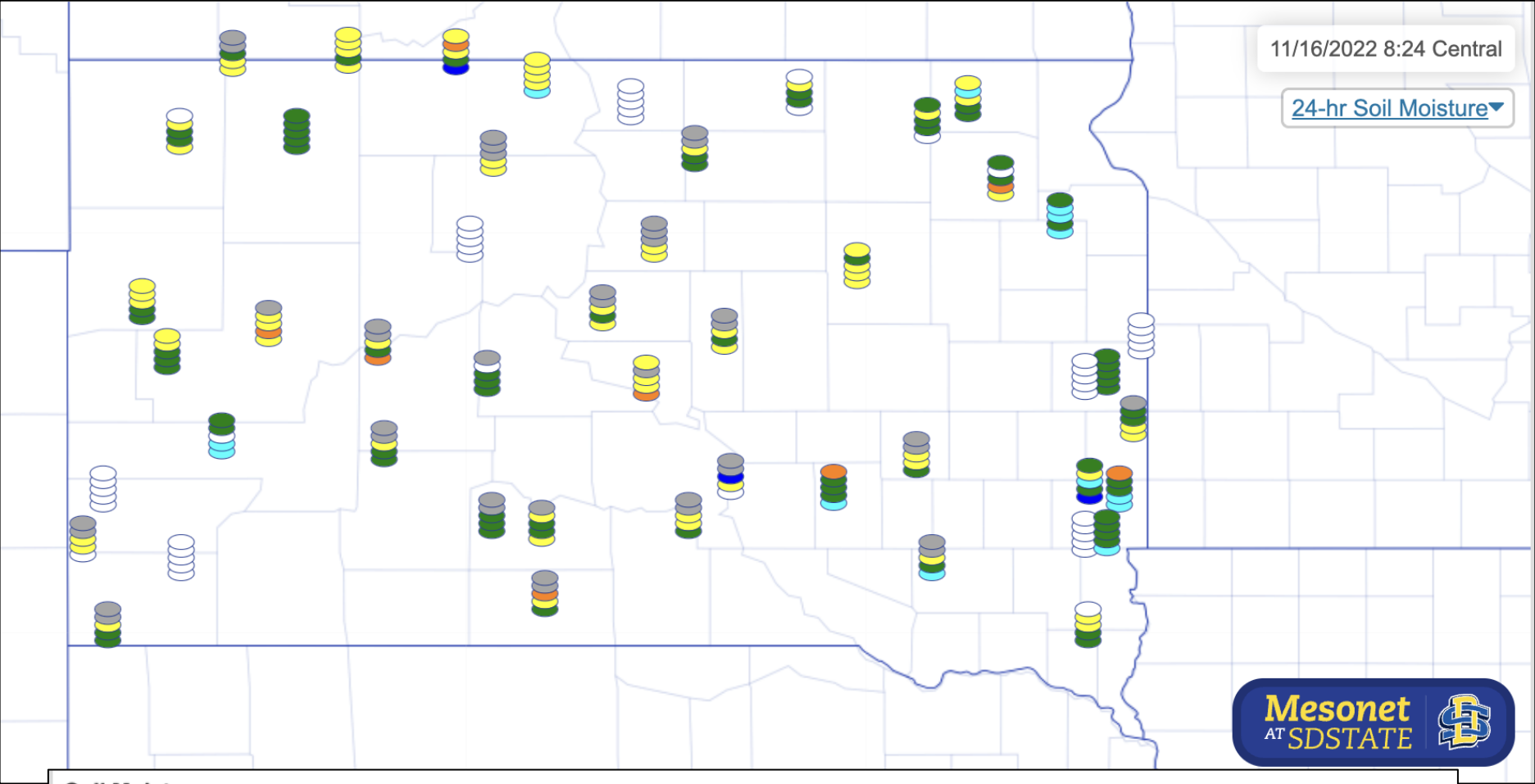
November 8, 2022  
compared to  
September 13, 2022

[droughtmonitor.unl.edu](http://droughtmonitor.unl.edu)



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Soil moisture



**Soil Moisture**

This map represents the five monitored layers of the soil moisture column (2, 4, 8, 20 and 40 inch depths). These are based on volumetric soil moisture and have not be calibrated to their local soil types.

- 0.5+
- 0.4
- 0.3
- 0.2
- 0.1
- 0
- Frozen
- Not Available



**SOUTH DAKOTA STATE UNIVERSITY EXTENSION**

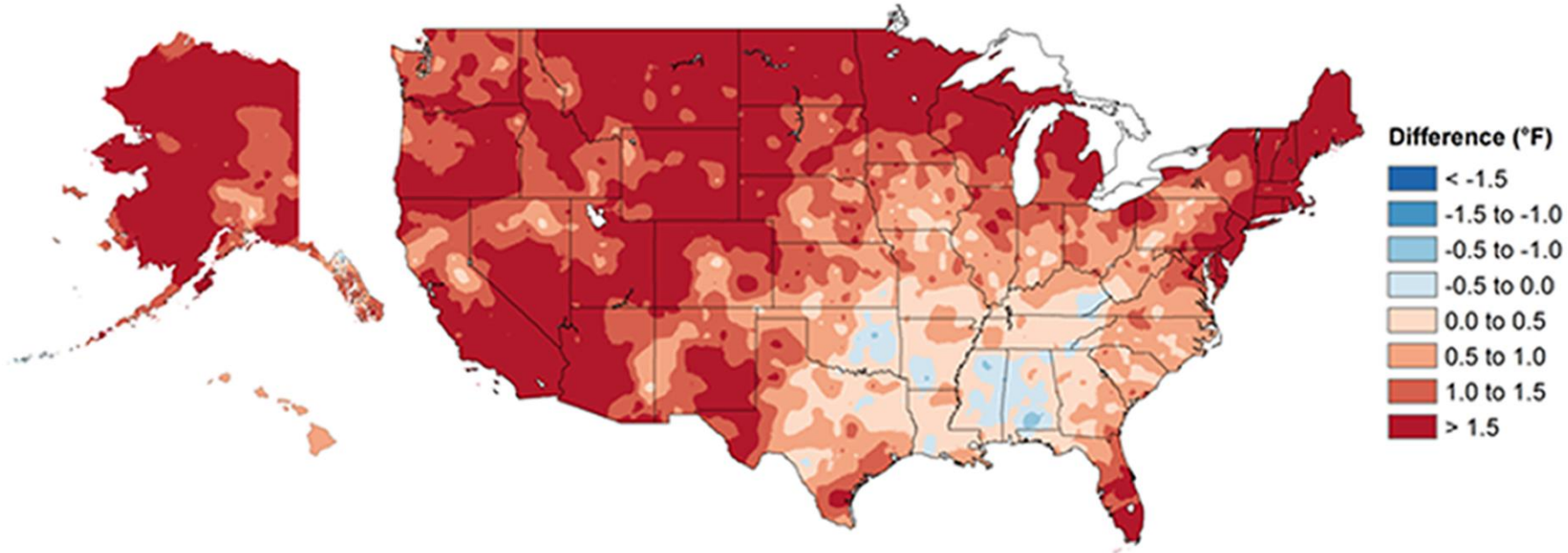
# Climate Change



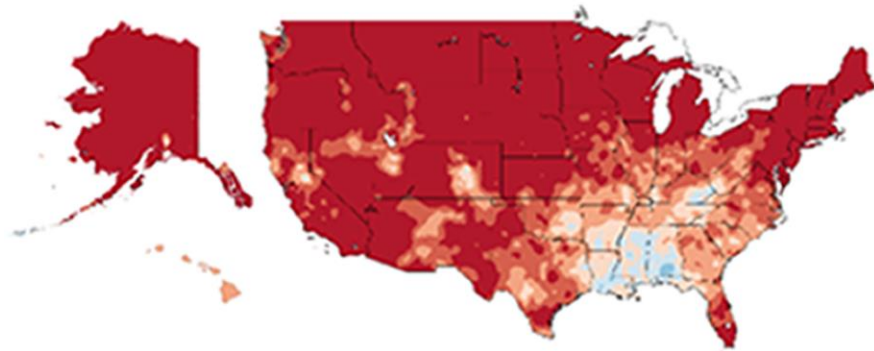
**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**



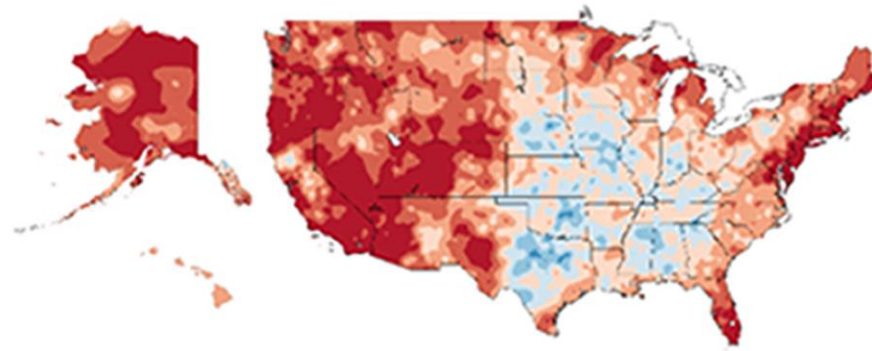
# Annual Temperature



## Winter Temperature



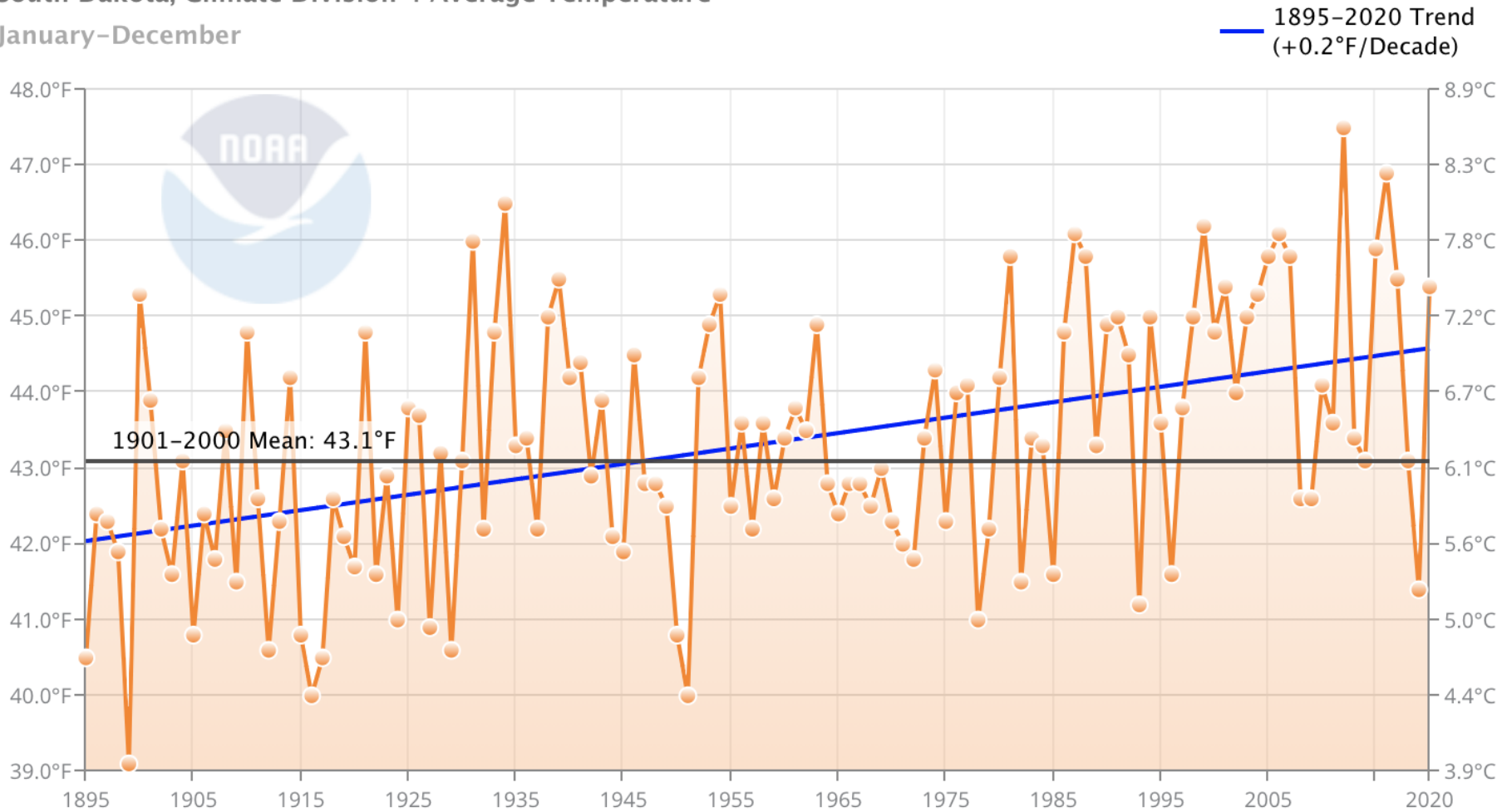
## Summer Temperature



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Black Hills Annual Average Temperature

South Dakota, Climate Division 4 Average Temperature  
January–December



Winter season is warming at a slightly faster rate (0.3 deg/decade) than the other seasons. The other 3 seasons are all about the same, about 0.2 deg/decade.



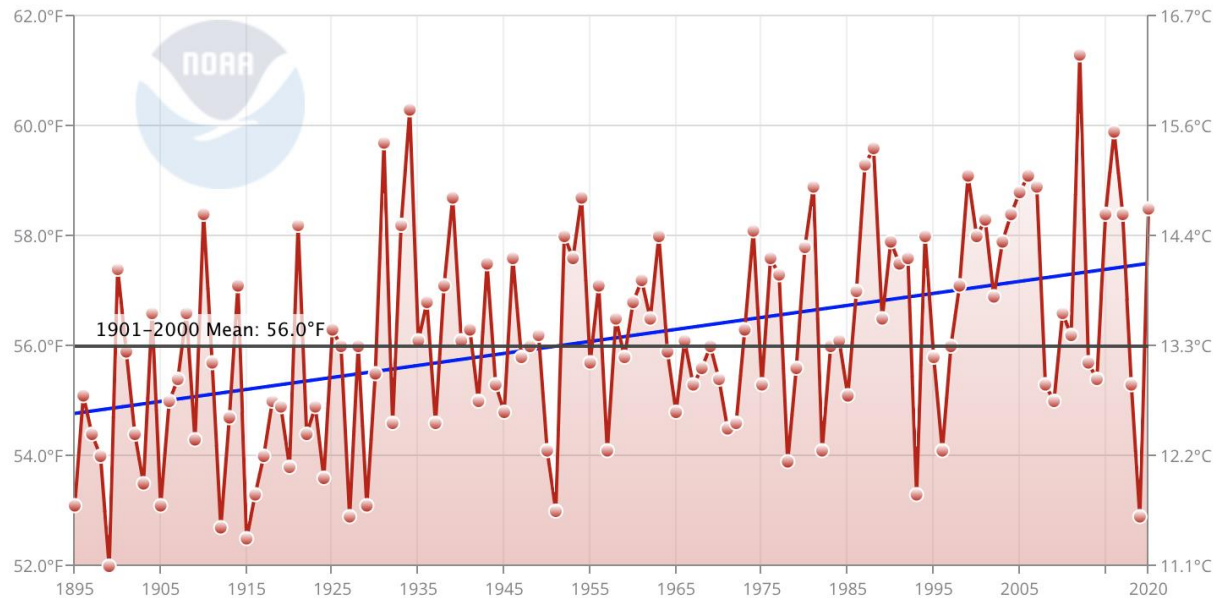
**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**



# Black Hills Maximum & Minimum Temperature Trends

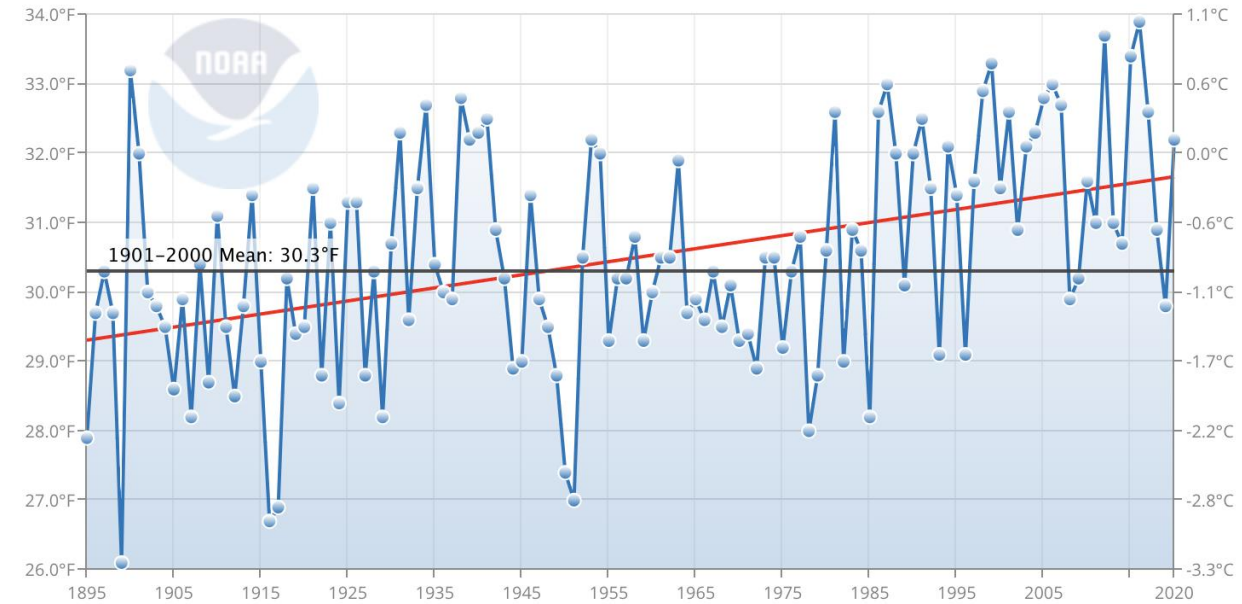
South Dakota, Climate Division 4 Maximum Temperature  
January–December

1895–2020 Trend  
(+0.2°F/Decade)

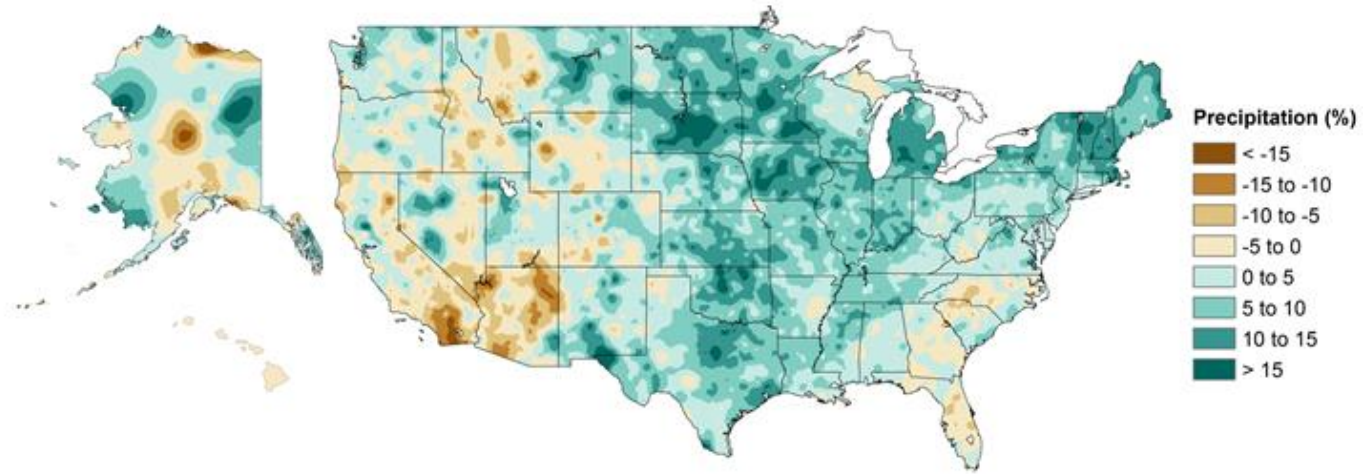


South Dakota, Climate Division 4 Minimum Temperature  
January–December

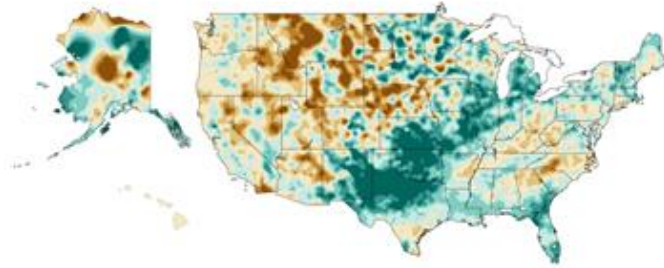
1895–2020 Trend  
(+0.2°F/Decade)



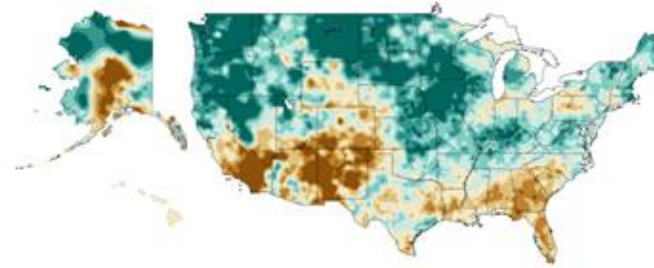
## Annual Precipitation



## Winter Precipitation



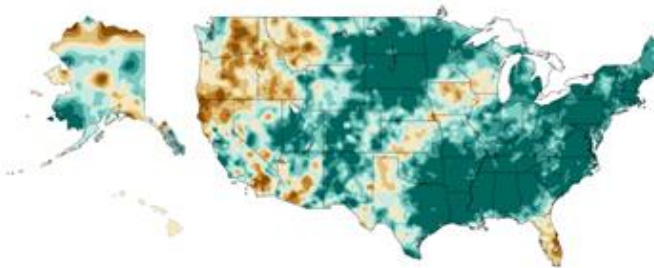
## Spring Precipitation



## Summer Precipitation



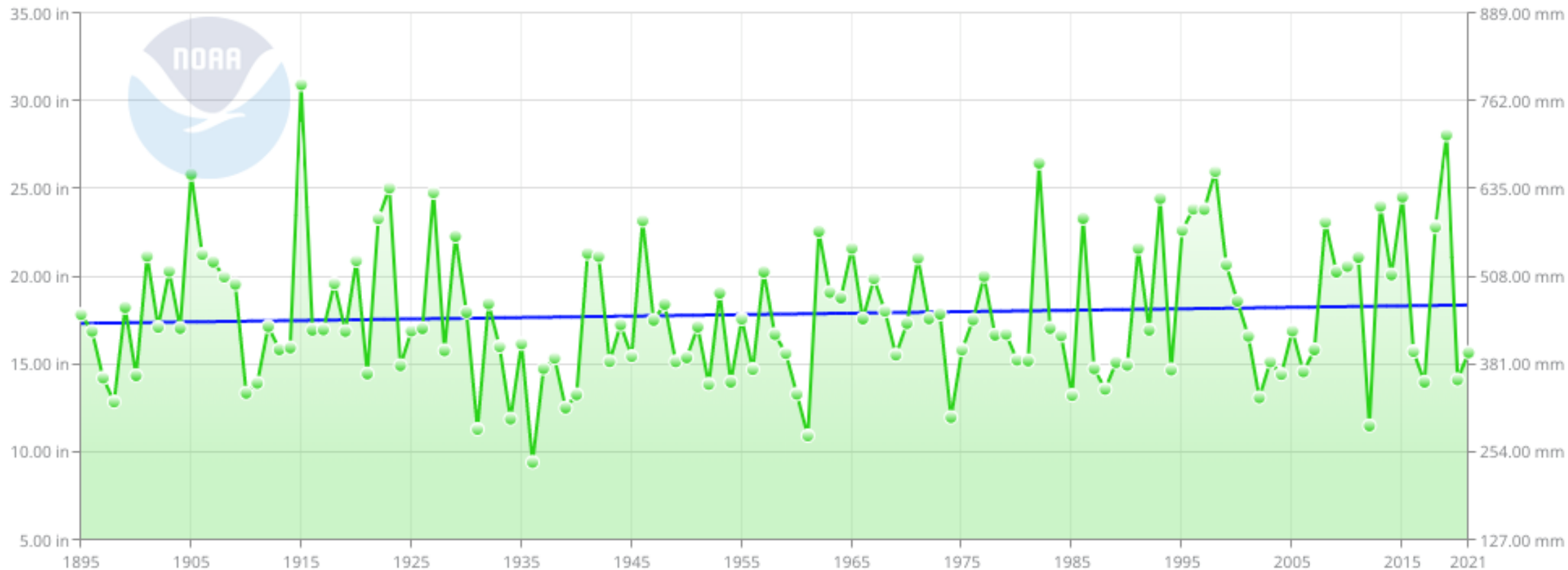
## Fall Precipitation



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Pennington County, South Dakota Precipitation January–December

1895–2021 Trend  
(+0.08 in/Decade)



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Freeze Date Tool

First Fall Freeze Date Map

Last Spring Freeze Date Map

Growing Season Length Map

First Fall Freeze Trend Map

Last Spring Freeze Trend Map

Growing Season Trend Map

## Trend in Last Spring 32 °F Freeze Date

Click on a county to see more data for that location.

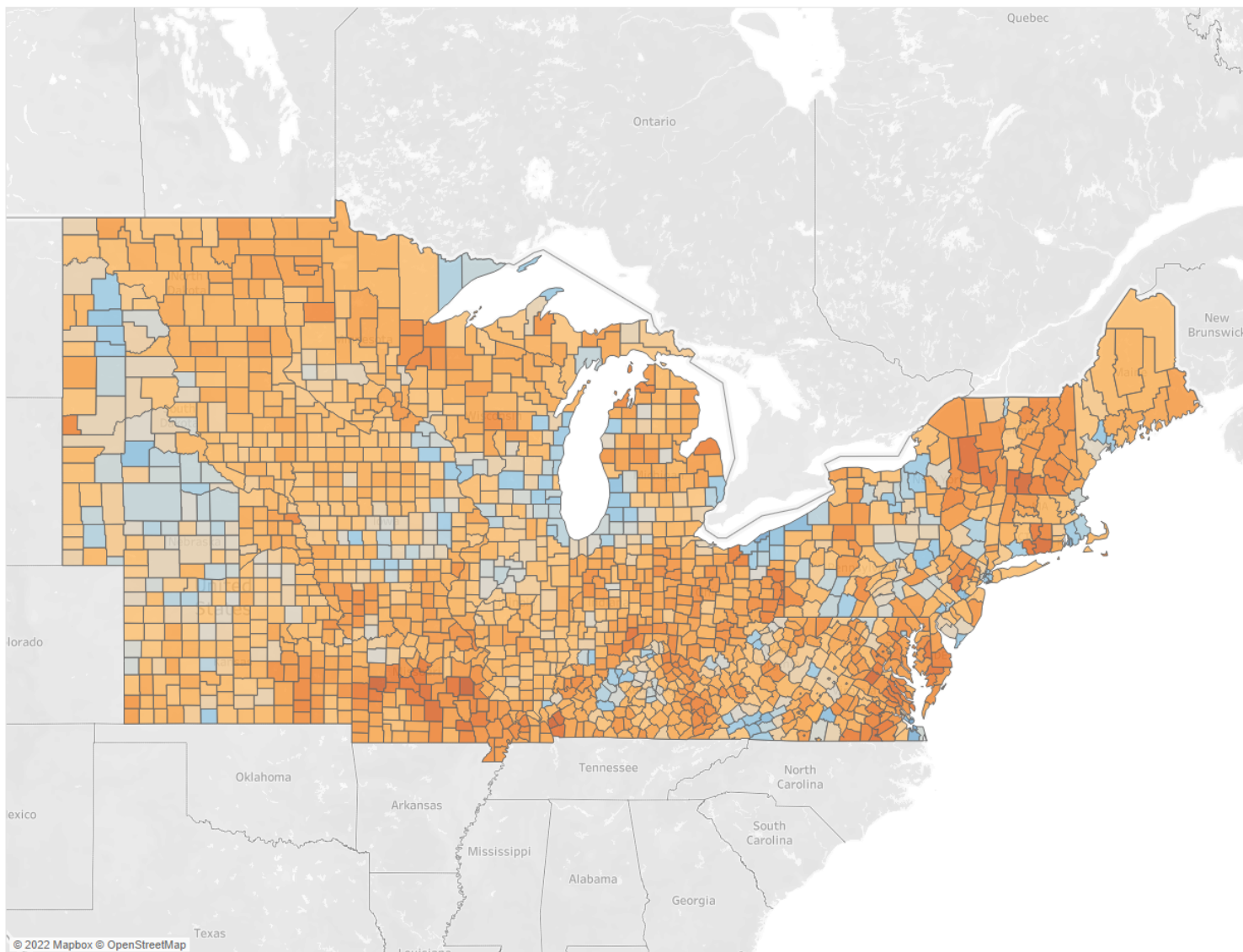
Decadal Change (Days)  
-5.0 5.0

Freeze Temperature:  
32 °F

Hide Non-Significant Trends

Yes  
 No

Download Image



Data from ACIS Gridded Dataset (1950-2021).

For more information about this tool and the data it uses, please click the "About" button below.

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

About

USDA Climate Hubs  
U.S. DEPARTMENT OF AGRICULTURE

MRCC  
Midwestern Regional  
Climate Center



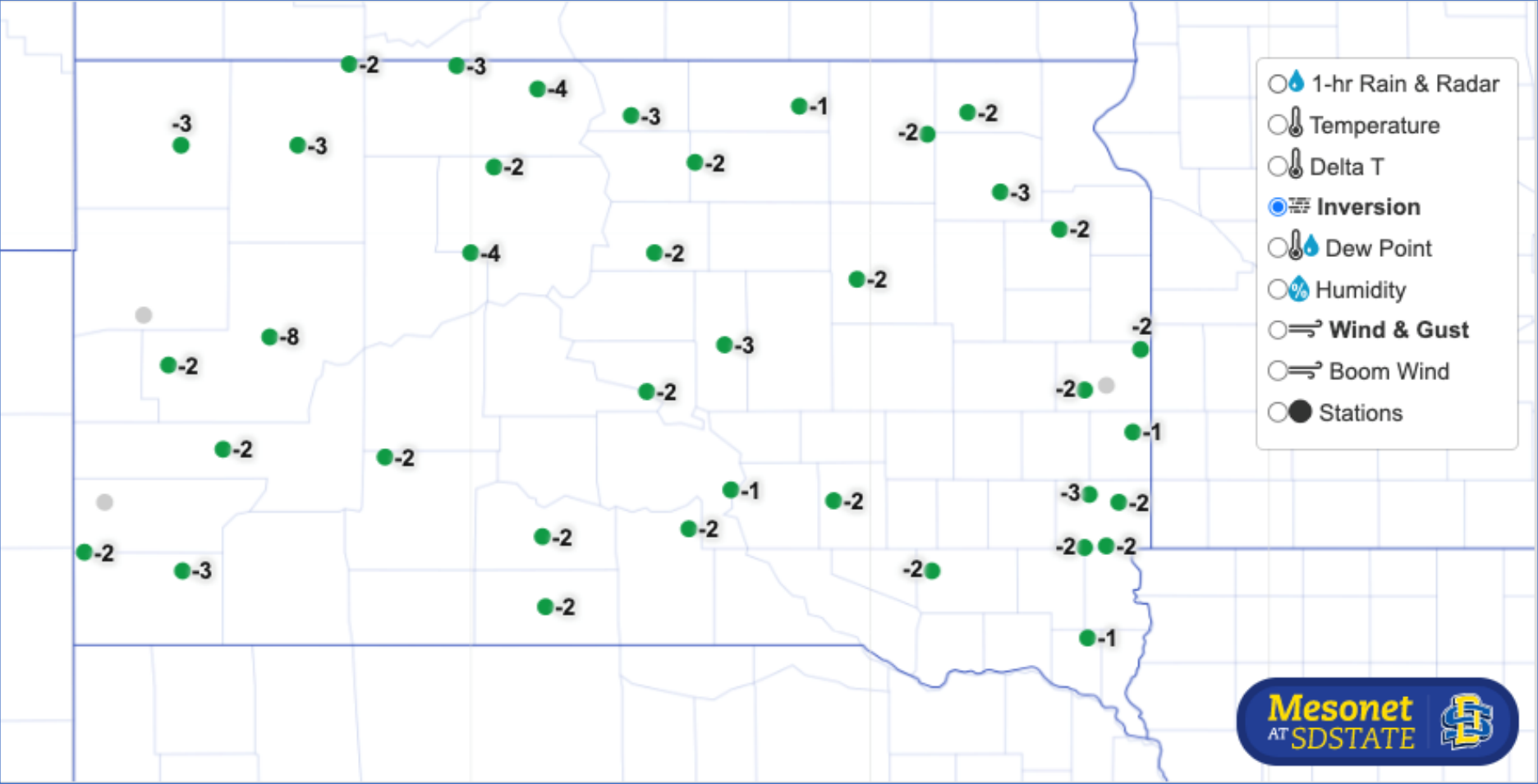
**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# SD Mesonet



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

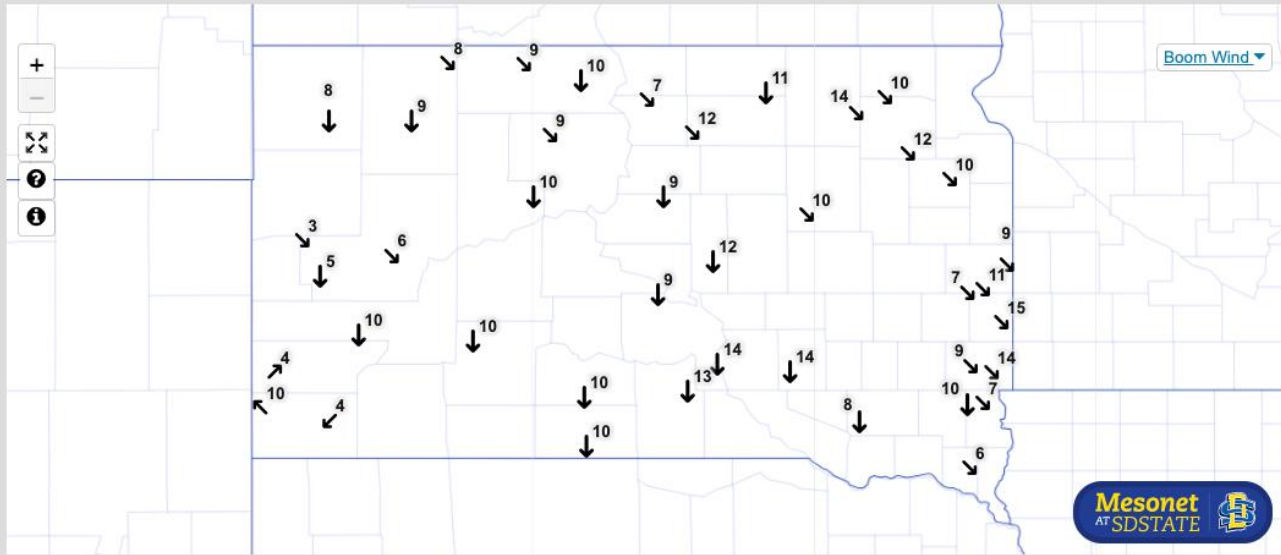
# Spray Tool (Inversions, pesticide application)



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**



Sturgis ↕




✉ Spray Record by Email

**Spray Tool: 2022-09-21 14:10 MDT** ↻

The Mesonet Spray Tool for Sturgis reports live weather conditions for pesticide applicators including inversion and wind.

Links: Sturgis [Dashboard](#) and [History](#), [DriftWatch](#), [Federal airport stations](#), [SDDA "Weather Recordkeeping" document](#)

**Temp & Humidity** ?

  
 No Inversion

**Temperature** 55°

**Dew Point** 41°

**Humidity** 59%

**Delta T** ● 8°

**Inversion** ● -2°

**Wind** ?

  
 NNW 7

**Direction** NNW(339°)

**Speed** ● 7 mph

**Gust** -

**Boom Spd** ● 5 mph

**Sky**

  
 Mostly Cloudy

**Sunrise** 06:39 AM

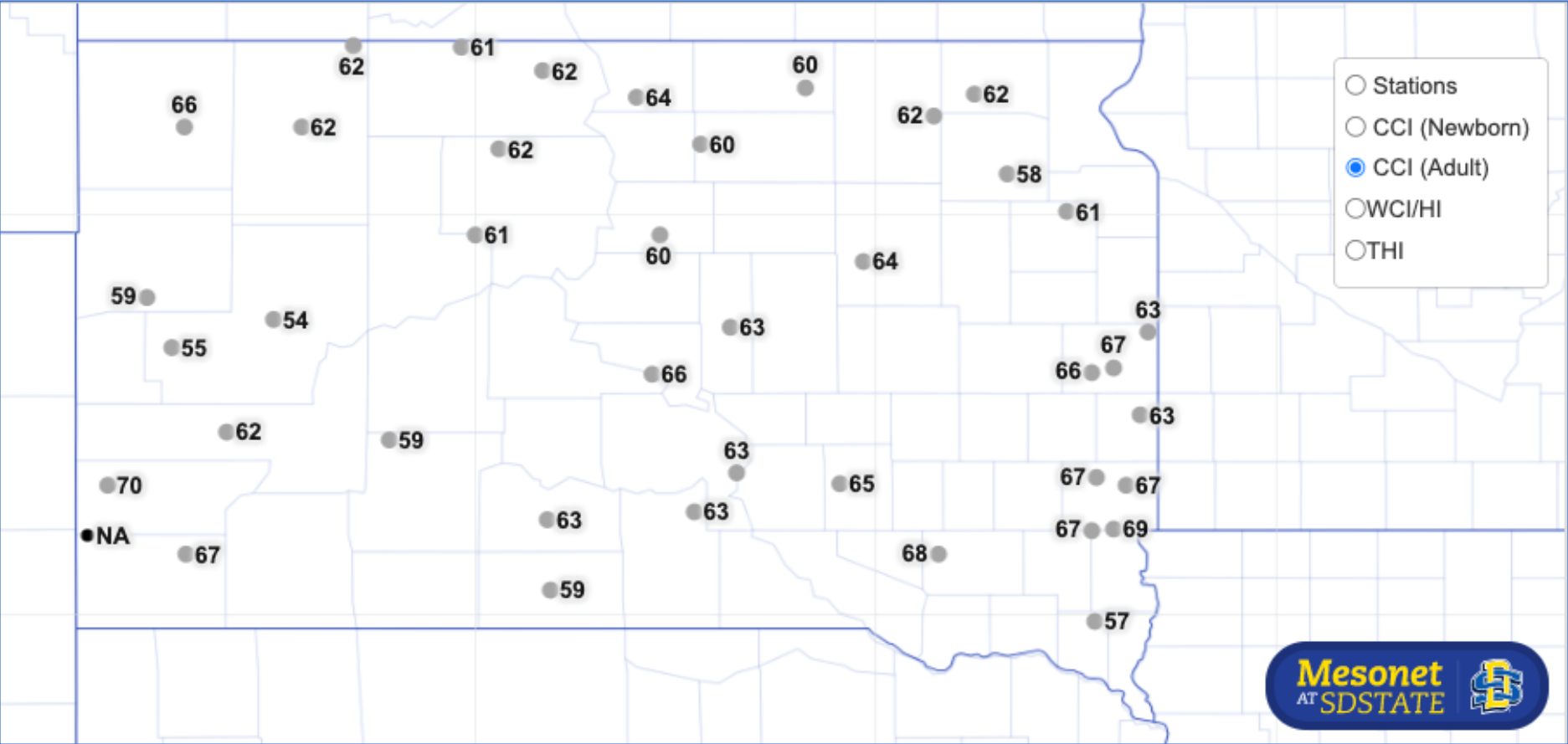
**Sunset** 18:53 PM

**NWS Forecast**

This Afternoon  
 Mostly sunny, with a high near 63. Northeast wind 7 to 10 mph, with gusts as high as 16 mph.

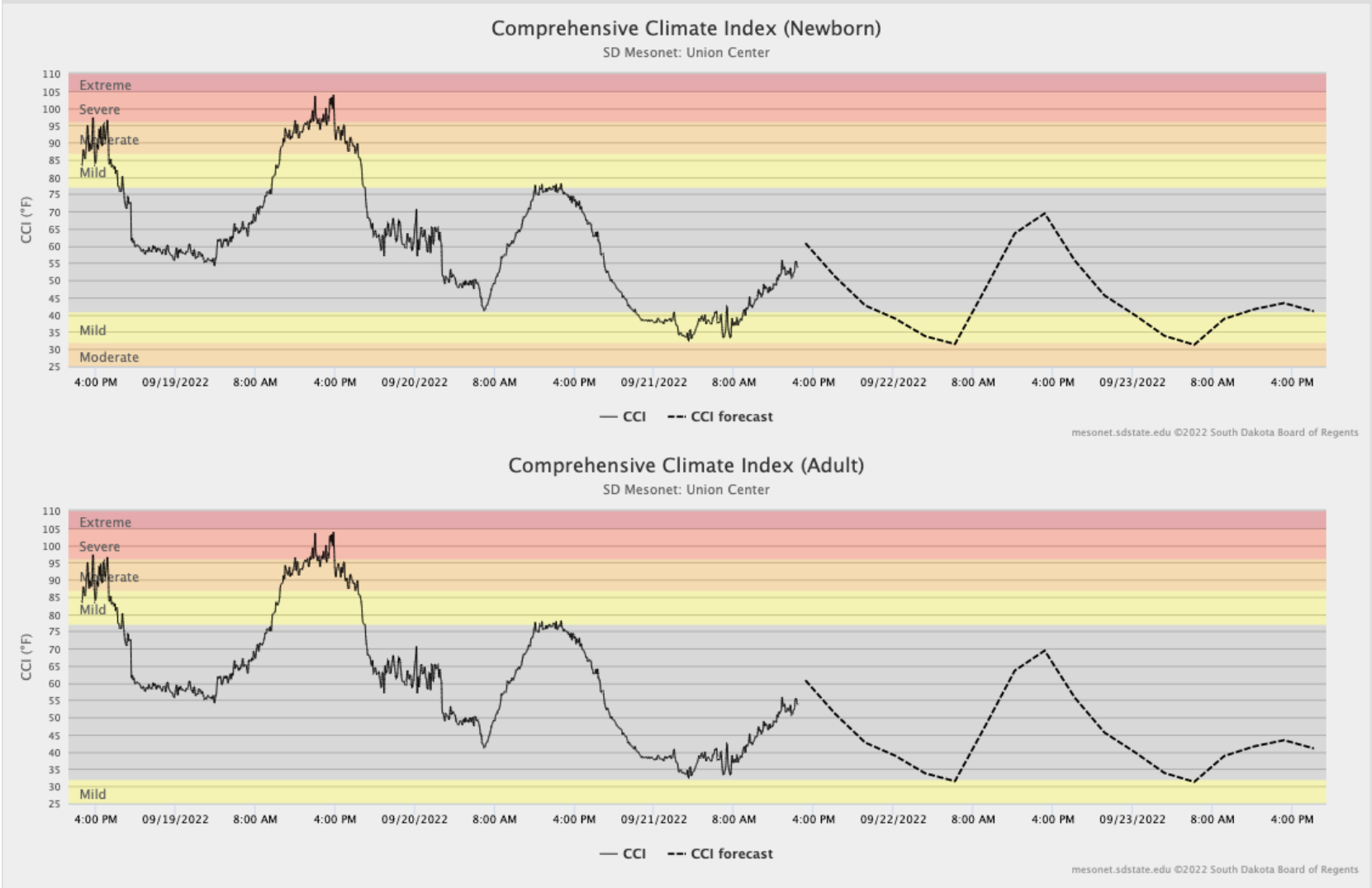


# Livestock Stress Tool



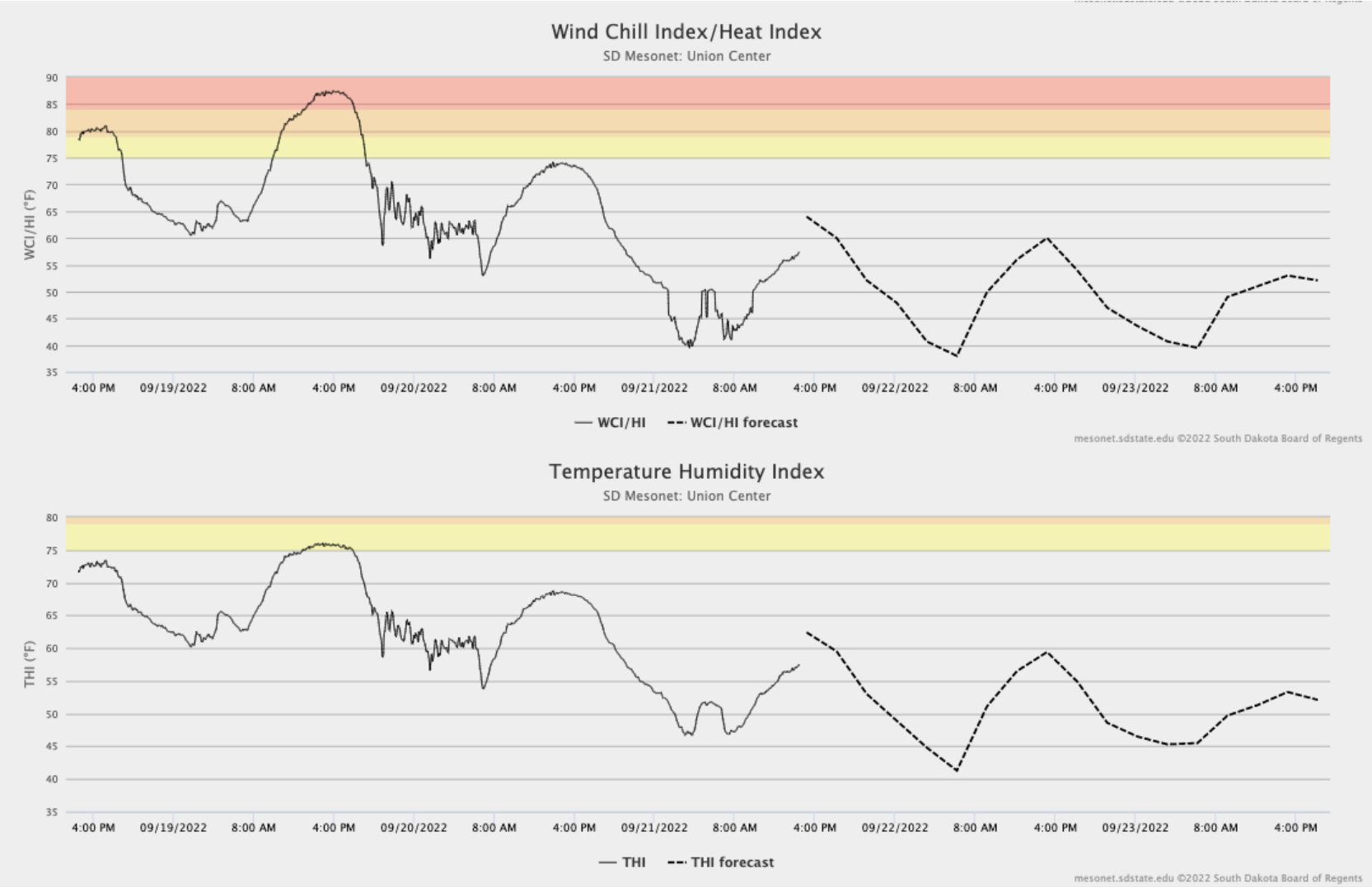
**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Livestock Stress Tool



**SOUTH DAKOTA STATE UNIVERSITY EXTENSION**

# Livestock Stress Tool



**SOUTH DAKOTA STATE UNIVERSITY EXTENSION**

# Climate Outlooks



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

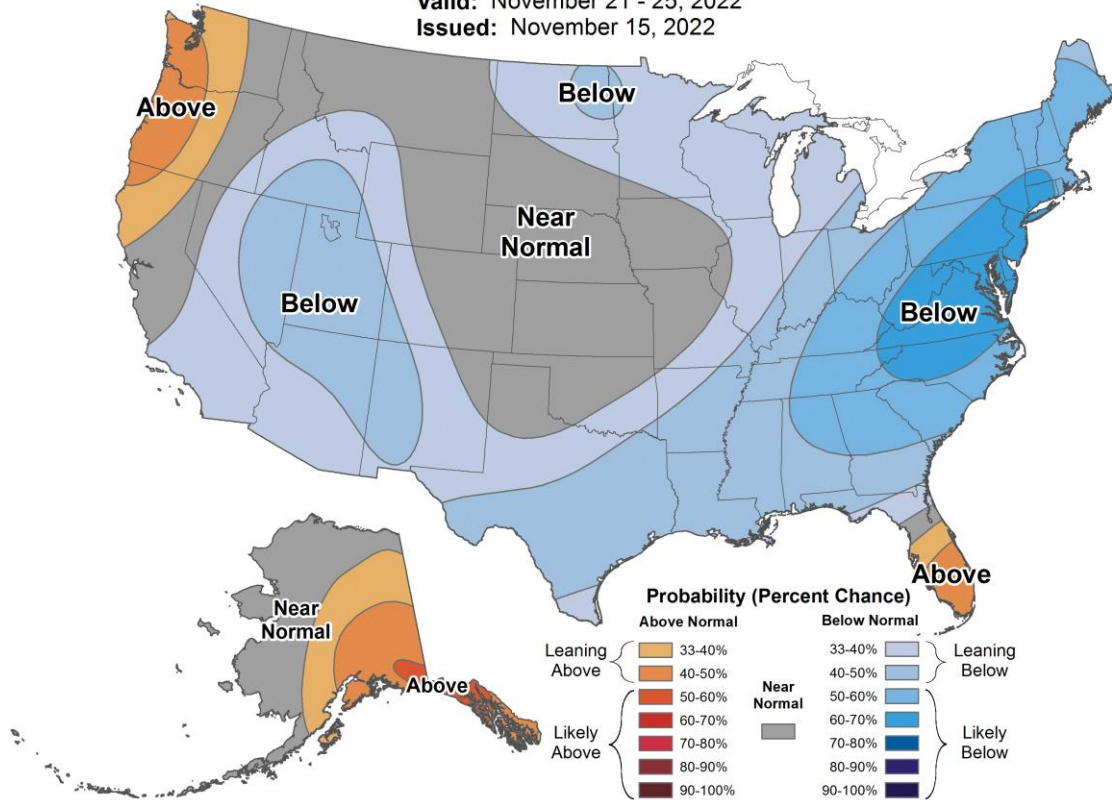
# 6-10 Day Outlook



## 6-10 Day Temperature Outlook



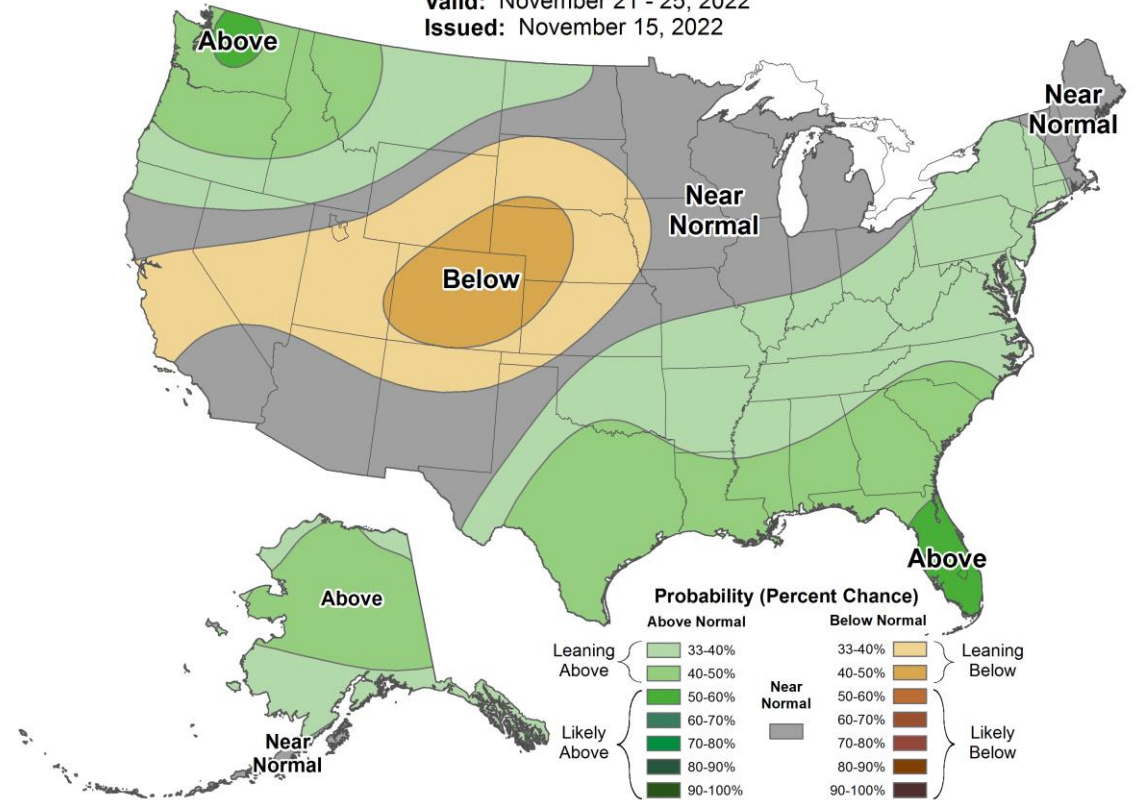
Valid: November 21 - 25, 2022  
Issued: November 15, 2022



## 6-10 Day Precipitation Outlook



Valid: November 21 - 25, 2022  
Issued: November 15, 2022



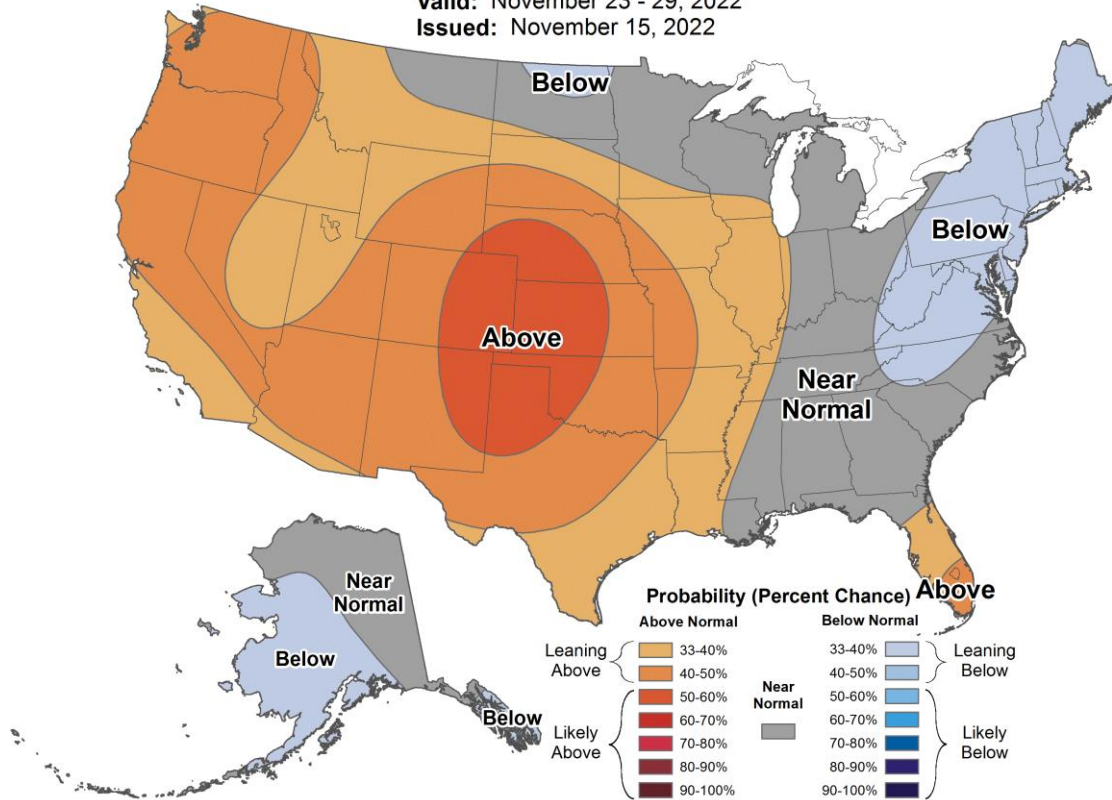
# 8-14 Day Outlook



## 8-14 Day Temperature Outlook



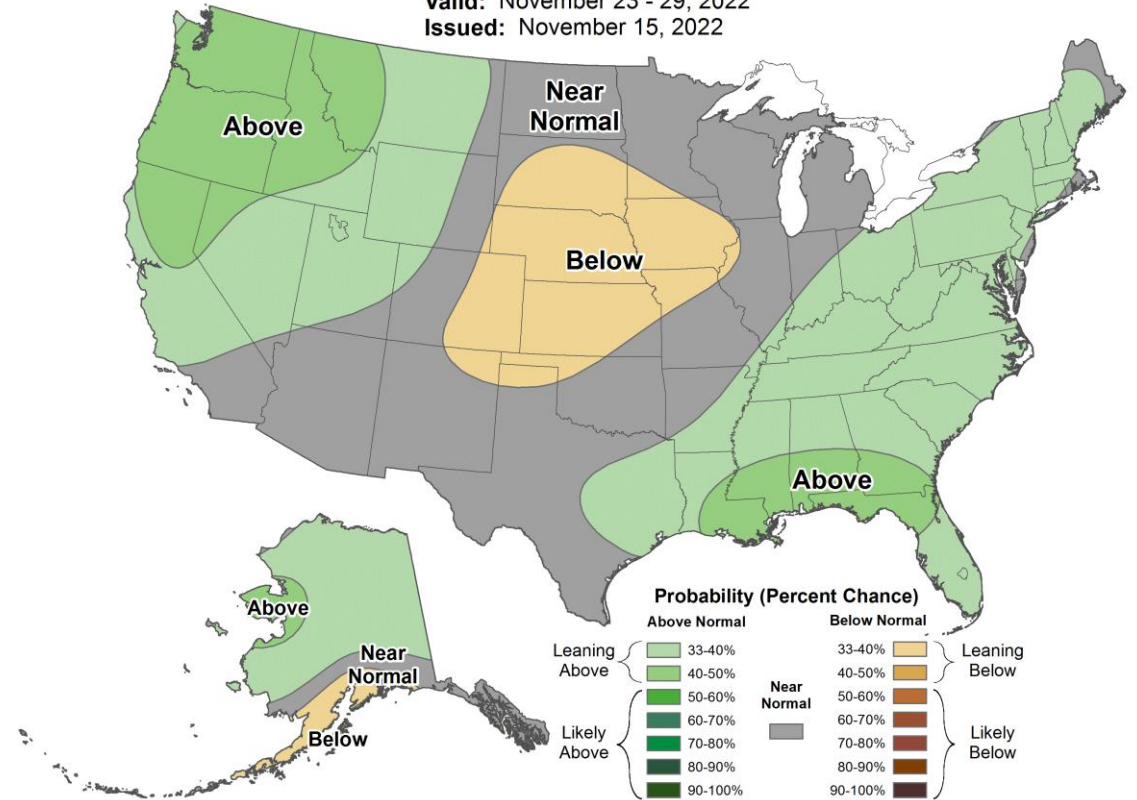
Valid: November 23 - 29, 2022  
Issued: November 15, 2022



## 8-14 Day Precipitation Outlook



Valid: November 23 - 29, 2022  
Issued: November 15, 2022





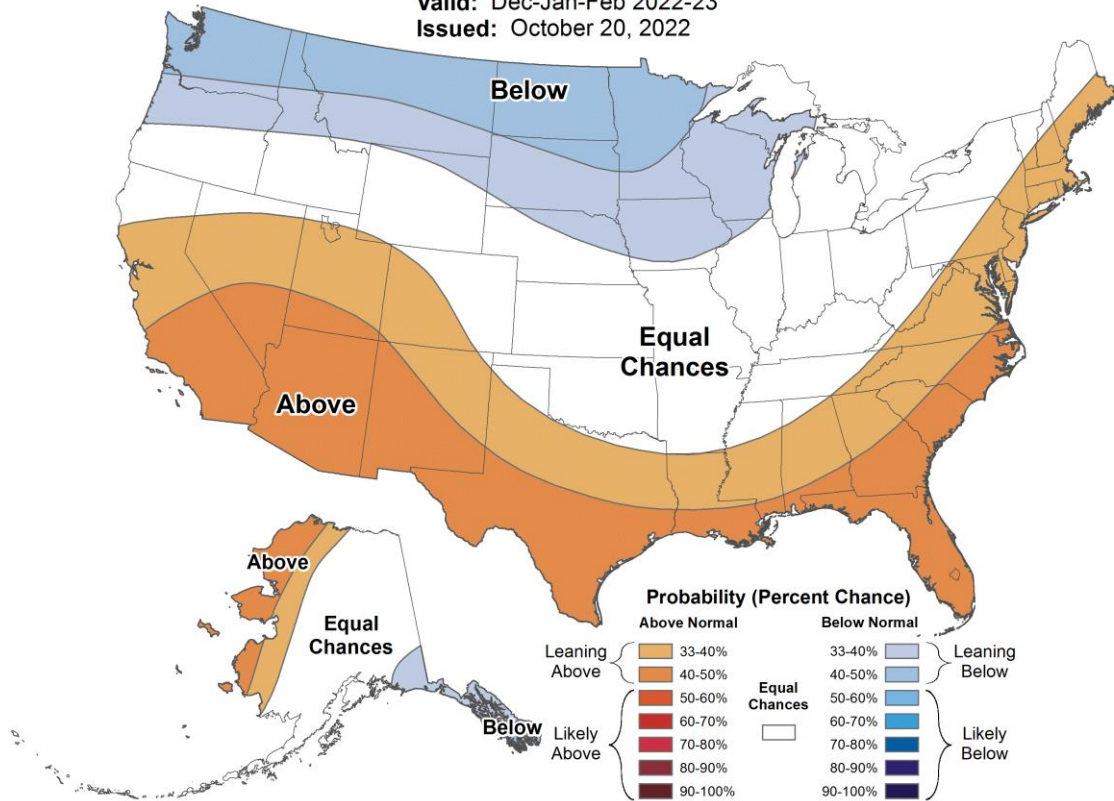
# December-February Outlook



## Seasonal Temperature Outlook



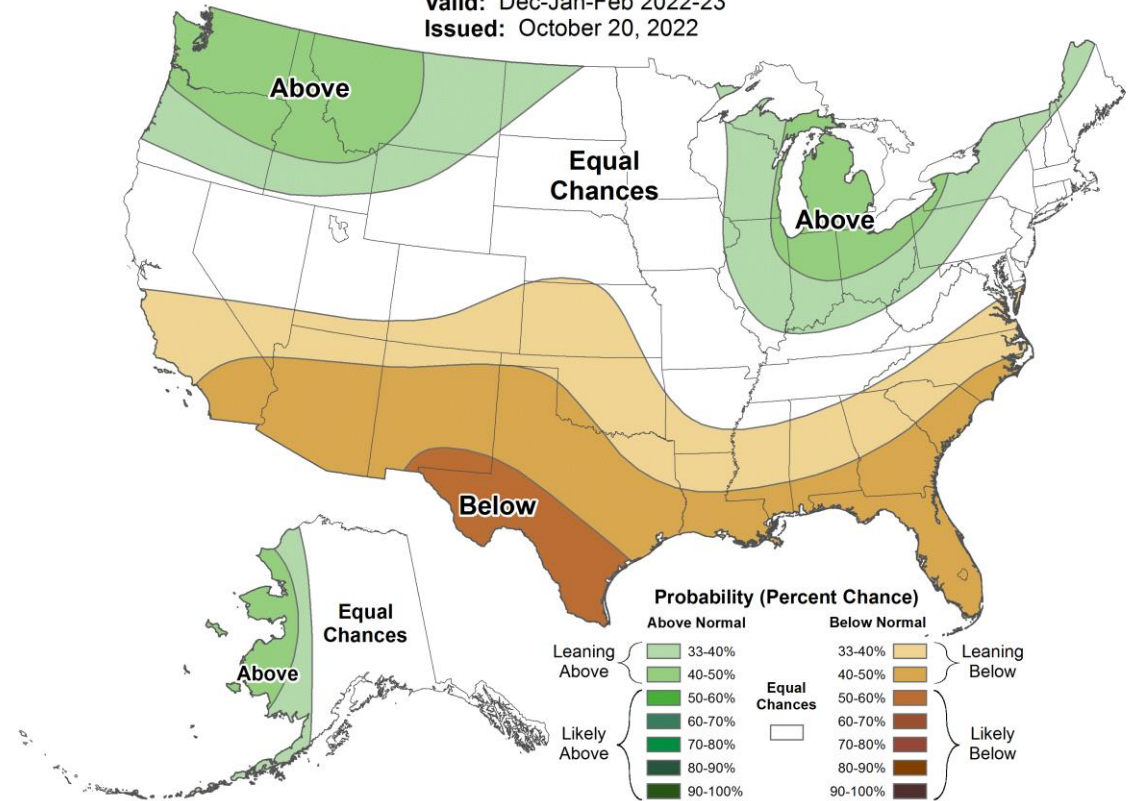
Valid: Dec-Jan-Feb 2022-23  
Issued: October 20, 2022



## Seasonal Precipitation Outlook



Valid: Dec-Jan-Feb 2022-23  
Issued: October 20, 2022







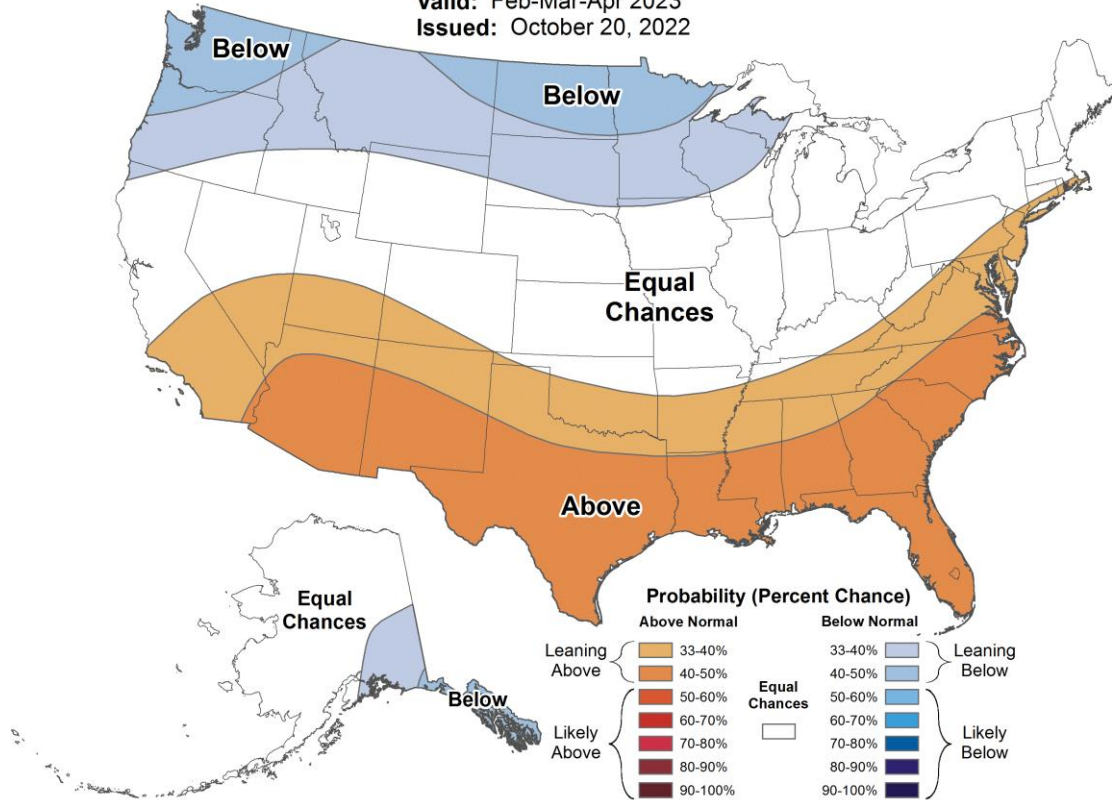
# February-April Outlook



## Seasonal Temperature Outlook



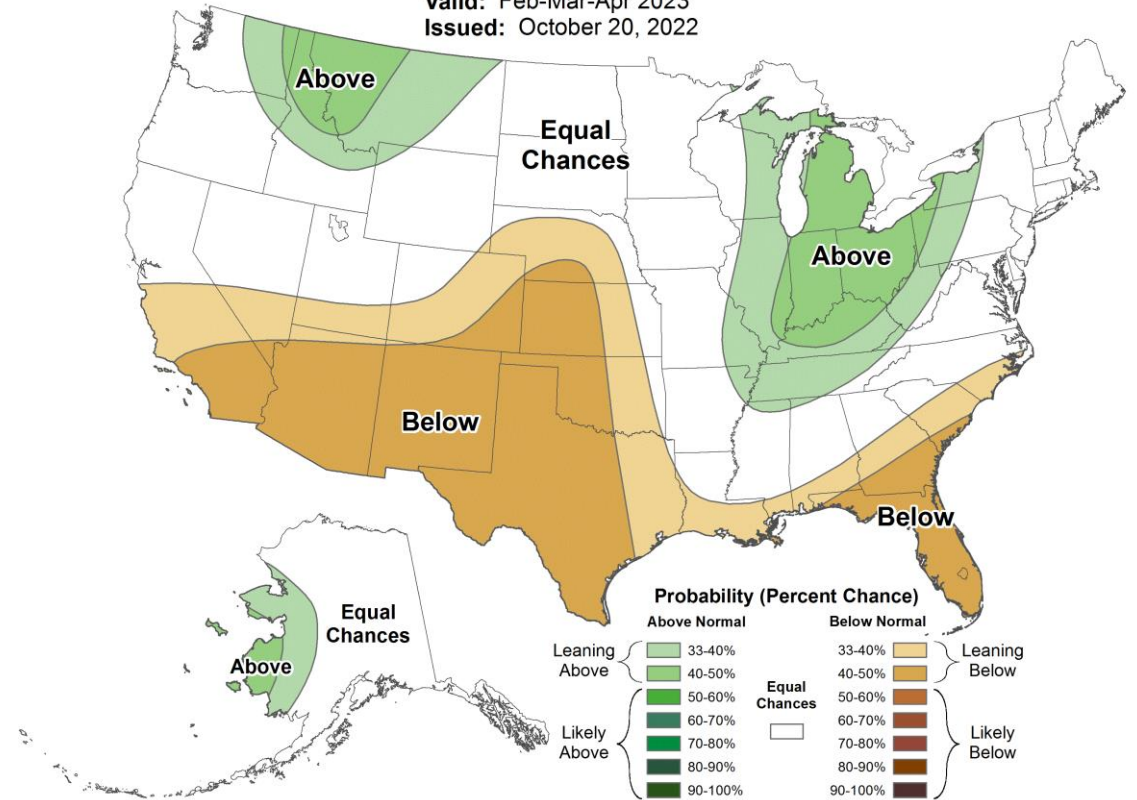
Valid: Feb-Mar-Apr 2023  
Issued: October 20, 2022



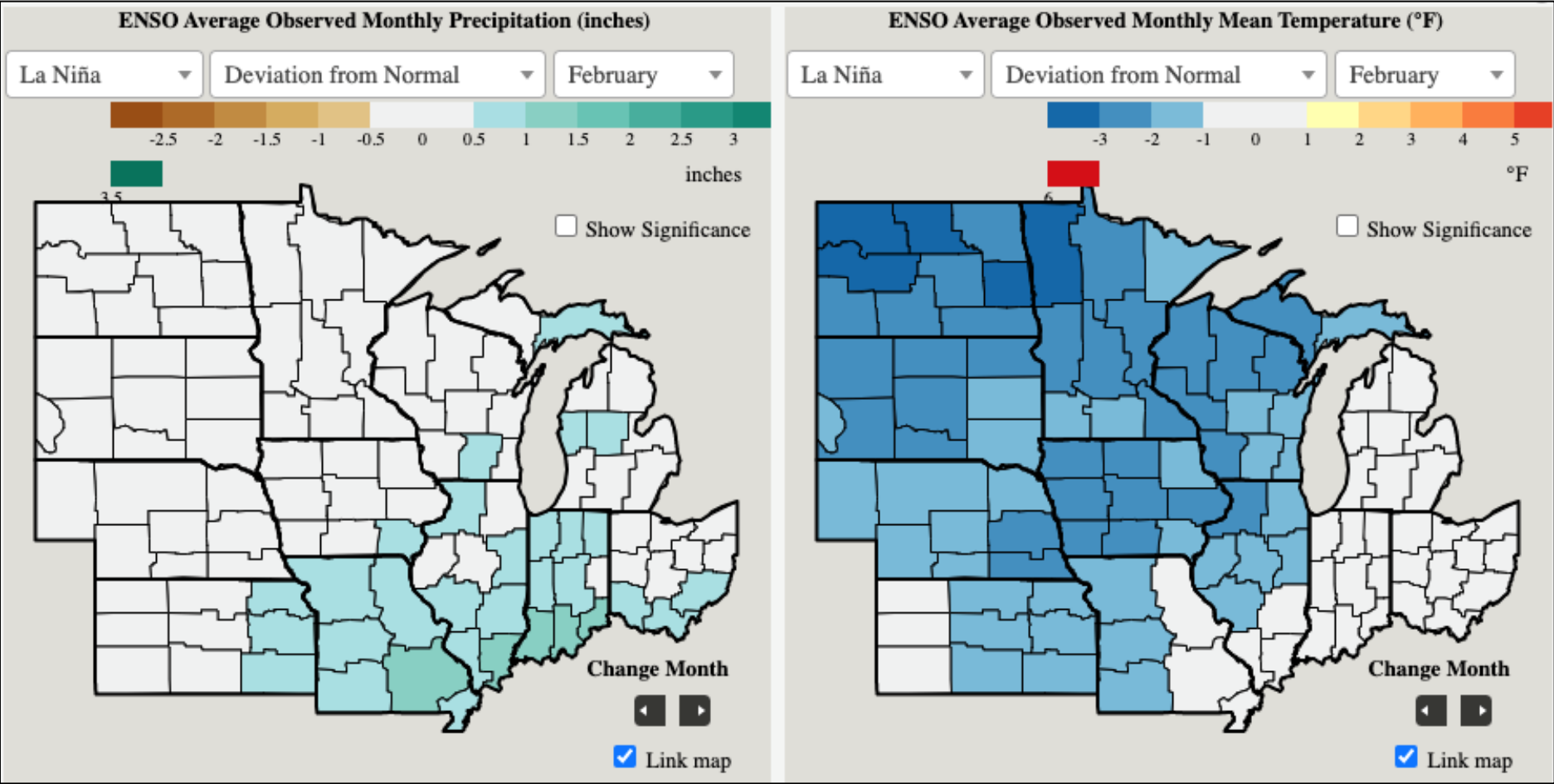
## Seasonal Precipitation Outlook



Valid: Feb-Mar-Apr 2023  
Issued: October 20, 2022



# Historical La Niña Conditions



<https://hprcc.unl.edu/agroclimate/cpv.php>



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Other SDSU Extension Programs



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# North Central Climate Collaborative (NC3)

- [Northcentralclimate.org](http://Northcentralclimate.org)
- Laura Edwards (lead), 12-state Extension collaboration
- Webinar every 2 months, next in December
- Occasional face-to-face workshops and seminars
  
- Hoping to expand nationally, including...
- Native Climate (formerly Native Waters, Arid Lands)
  - [Native-climate.com](http://Native-climate.com)
  - Monthly virtual meetings/webinars
  - October 2022 workshop with FALCON (First Americans Land-Grant Consortium)



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Watershed Summer Intern Program

- 12-week paid summer intern (hourly rate + stipend)
- Focused on watershed science, climate & natural resources
- Outreach/extension and research work
- Location options include: SDSU, NDSU, U of Nebraska, U of Wisc., U of Missouri, Iowa State, U of Illinois
  - SDSU locations include both Brookings & Aberdeen
- Applications for 2023 open later this fall
- <https://northcentralwater.org/watershed-management-research-and-outreach-internship-program/>



SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION

# Local Foods

- Dr. Rhoda Burrows (Rapid City), Dr. Kristine Lang (Brookings)
- Horticulture/gardening
- Partnering with Pine Ridge and others in the area
- Increase food independence
- Annual conference
  - Nov 17-19 in Sturgis
  - <https://extension.sdstate.edu/event/2022-south-dakota-local-foods-conference>



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Farm to School

- Jason Schoch (Rapid City, Kyle), Anna Barr (Mitchell)
- Includes 1 or more of the following:
  - Local food procurement
  - School or youth gardens
  - Education
- Workshops for local producers
- Online resource guide includes:
  1. Getting to Know Farm to School
  2. Building Your Farm to School Team
  3. School Purchasing Guide and Menu Planning
  4. Producer Farm to School Guide
  5. Use of Traditional Foods in Farm to School
  6. Local Foods Education
  7. School or Youth Gardens
  8. Additional Resources



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# The Grass is Greener on the Other Side: Developing Climate-Smart Beef and Bison Commodities

- Dr. Kristi Cammack (Rapid City)
- USDA grant \$80 million, led by SDSU
- Other major partners on the project include Millborn Seeds, Buffalo Ridge Cattle Company, AgSpire, Tanka Fund, Cold Creek Buffalo Company, SDSU Extension, the SDSU Center of Excellence for Bison Studies, the National Bison Association, Texas A&M University, Yard Stick, C-Lock and SmartScore.ai.
- create market opportunities for beef and bison producers who utilize climate-smart agriculture grazing and land-management practices.
- guide and educate producers on climate-smart practices most suited for their operations
- manage large-scale climate-smart data that will be used by producers to improve decision-making and create market demand for climate-smart beef/bison commodity markets



SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION



Thanks!



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

**Laura Edwards**  
**SDSU Extension State Climatologist**  
**SDSU Extension Aberdeen Regional Center**  
13 2<sup>nd</sup> Ave SE  
Aberdeen, SD 57401  
**Office: 605.626.2870**  
**Email: [laura.edwards@sdstate.edu](mailto:laura.edwards@sdstate.edu)**  
**Twitter: @SDSUclimate**  
**Facebook: SDSUExtClimate**



[extension.sdstate.edu](http://extension.sdstate.edu)