

Washington County Water Consortium

May 1, 2024

2 to 3:30 pm

Remote meeting - Zoom

(If you are not on the Consortium listserv, please email

Adriana.Atcheson@co.washington.mn.us for the Zoom link and access code)

Agenda

2:00 – 2:05 **Welcome**

Introductions, Announcements

2:05 – 2:50 **Taking Action on Climate Change & Preparing for the Future**

Topic: Learn more about climate projections for the St. Croix watershed and how you can take action to prepare for its effects. Will go over mitigation actions that individuals can take to reduce their carbon emissions, and adaptation actions that can be taken to prepare for the effects of climate change that are projected to occur.

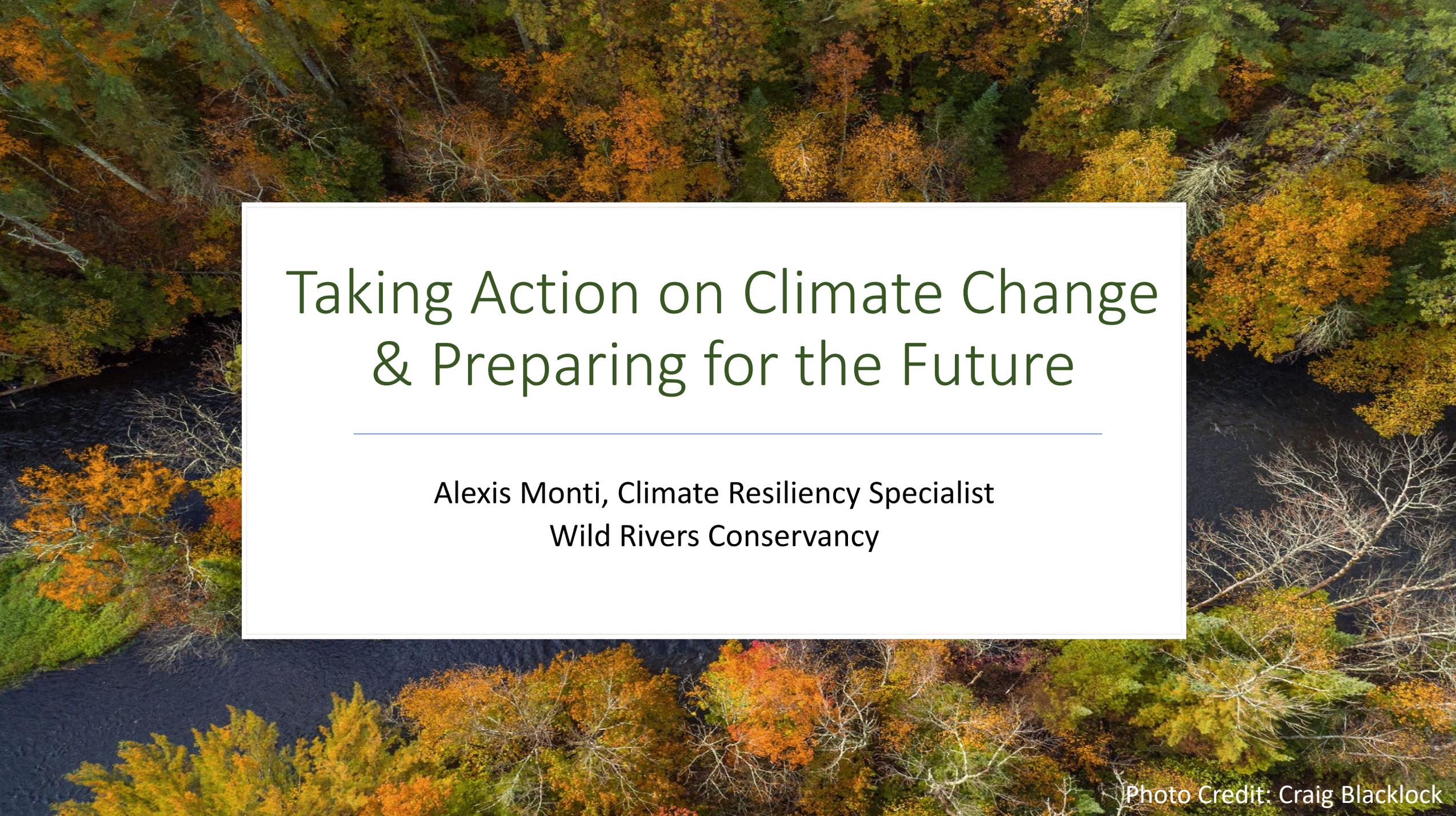
Presenter: Alexis Monti, Climate Resiliency Specialist, Wild Rivers Conservancy

2:50 – 3:15 **An Introduction to Climate Land Leaders**

Topic: Co-founder Teresa Opheim will share about this network of land stewards who are transforming their lands to address the climate crisis and provide habitat.

Presenter: Teresa Opheim, Executive Director, Climate Land Leaders

3:15 – 3:30 **Questions/Adjourn**



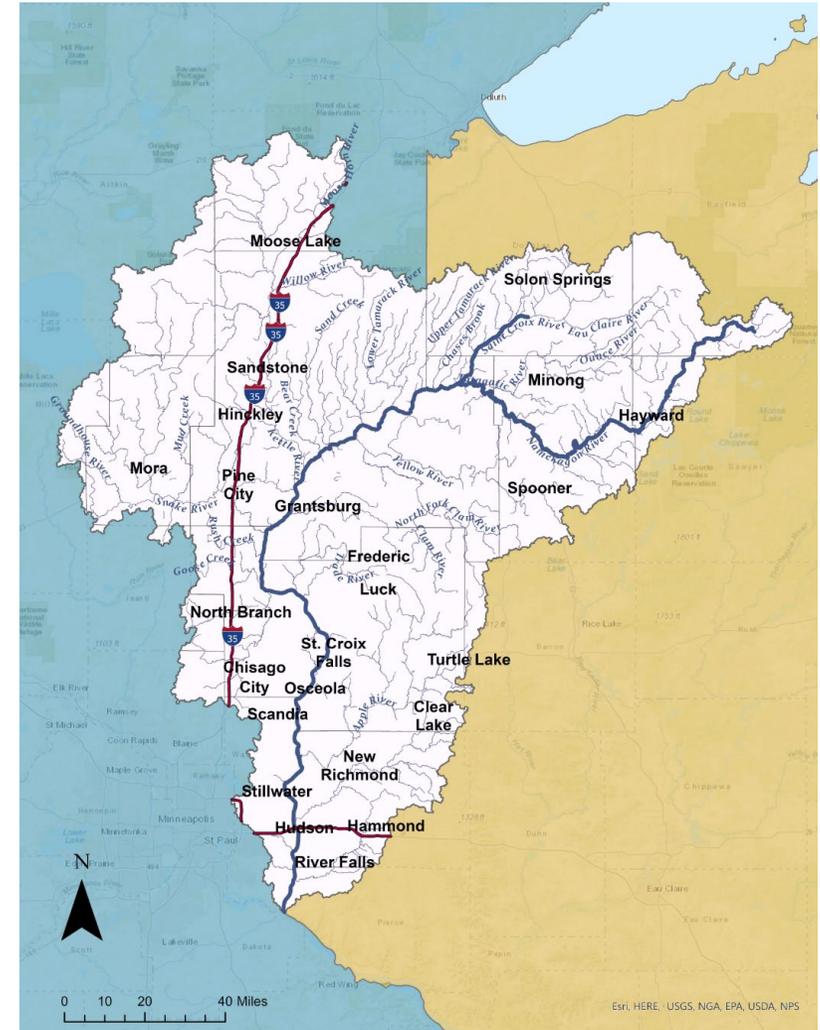
Taking Action on Climate Change & Preparing for the Future

Alexis Monti, Climate Resiliency Specialist
Wild Rivers Conservancy

The St. Croix Watershed



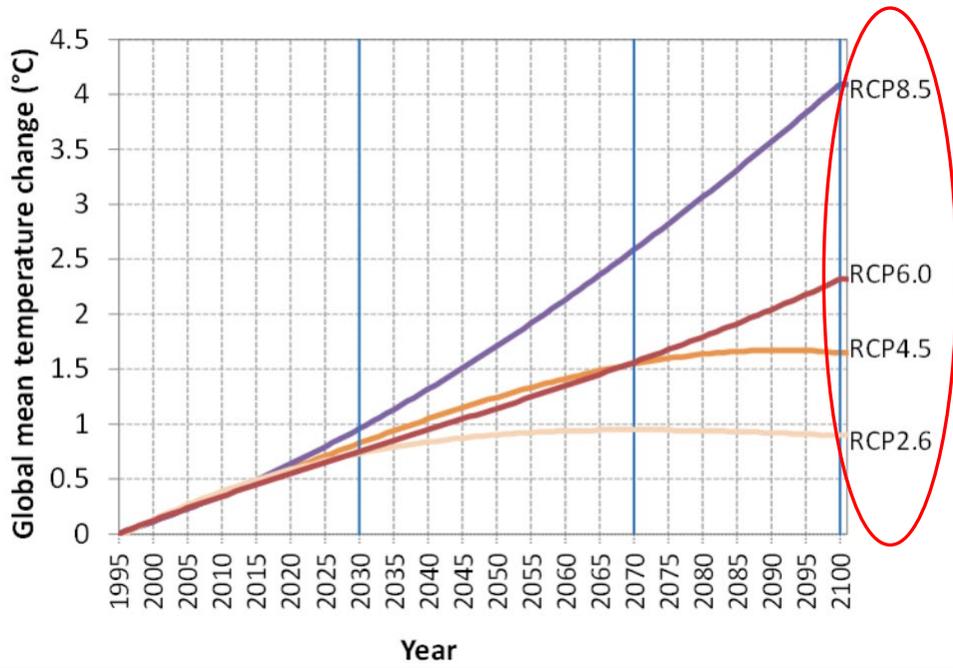
- Roughly the size of New Jersey, half in MN and half in WI
- Includes St. Croix and Namekagon River
- High ecosystem value – mostly forested
- 75% of land is owned by private landowners
- Faces threats of climate change, fragmentation, & development





Climate Change Projections & Impacts

Reading Climate Projections...



What is an RCP?

RCP = Representative Concentration Pathways

There are four scenarios used in climate change projections: RCP 2.6, RCP 4.5, RCP 6 and RCP 8.5. The higher the number, the more severe climate impacts will be.

RCP 4.5 = moderate scenario in which emissions peak around 2040 and then decline.

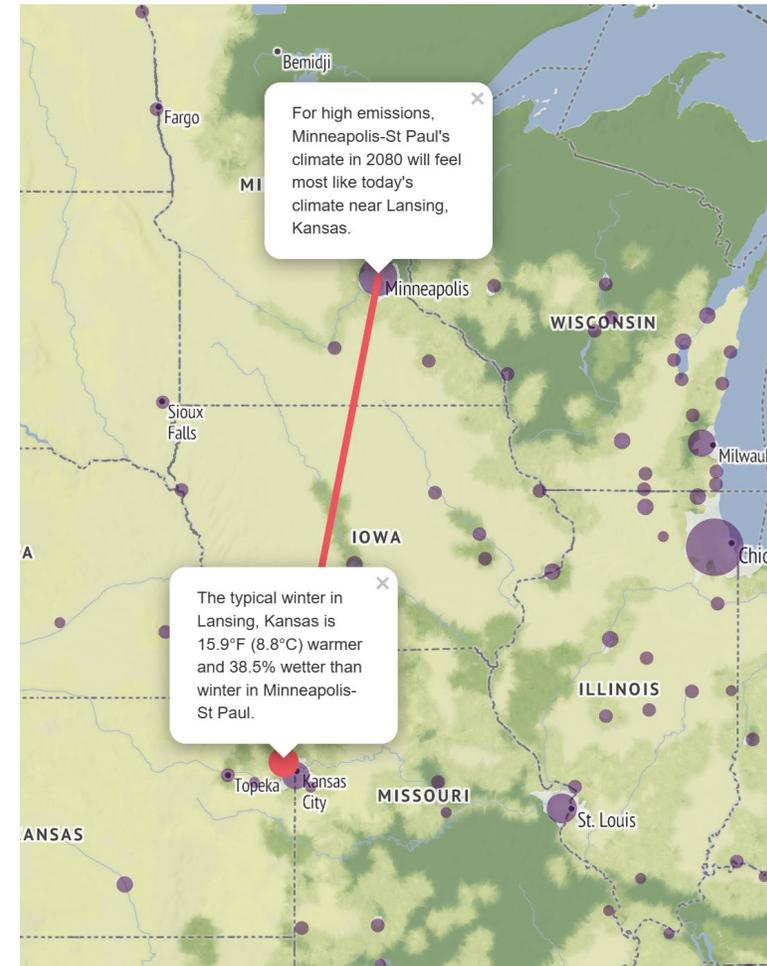
RCP 8.5 = highest emissions scenario in which emissions continue to rise throughout the twenty-first century.

[Image Source](#)

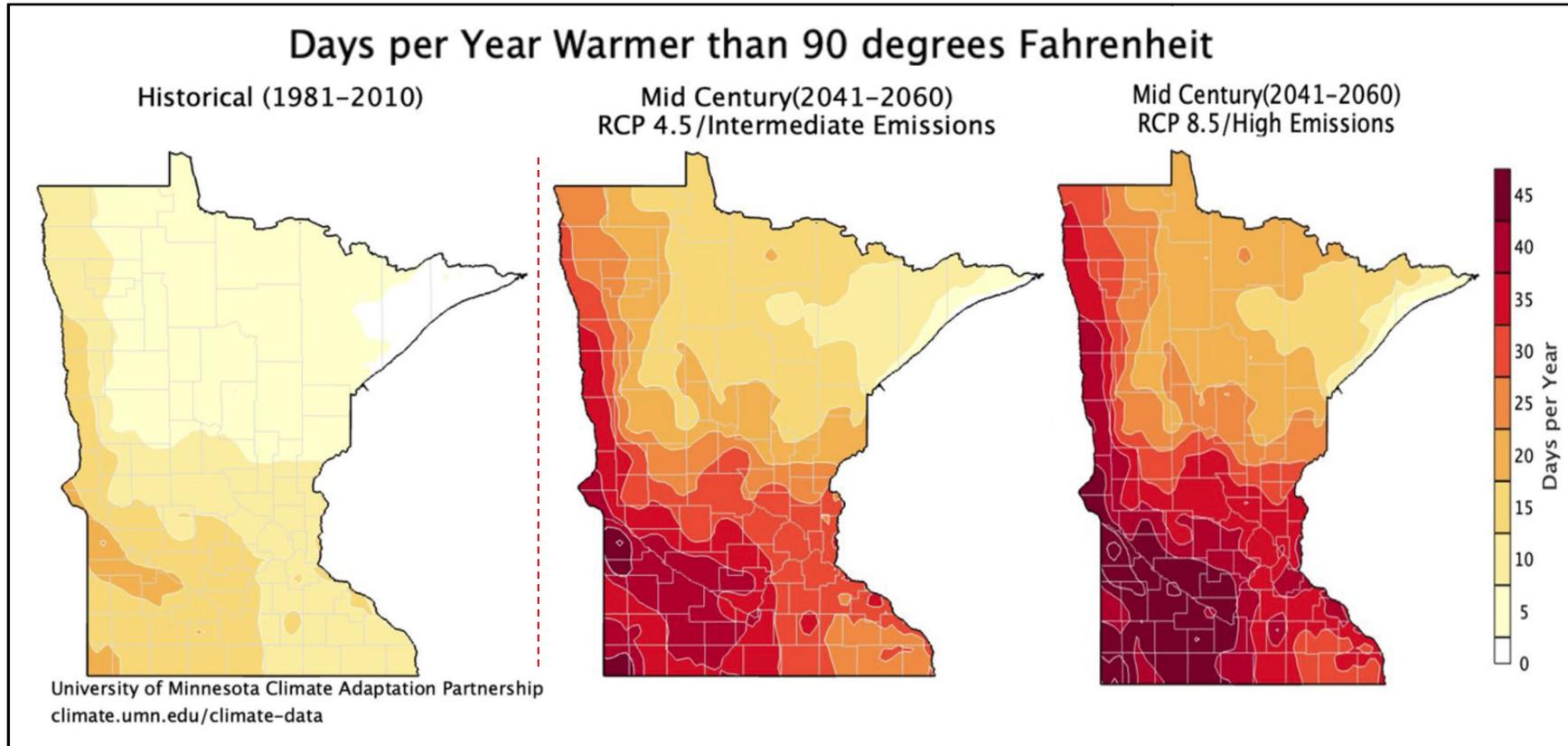
Layout of the Land – Climate in the Region

- Warming temperatures (especially in winter and overnight)
- Extreme precipitation swings (droughts/floods)
- Reduced ice cover and shortened ice duration
- Longer growing season
- Hardiness zones move north
- Increased invasive species pressure
- Longer allergy & tick season

[University of Maryland, Center for Environmental Science](#)



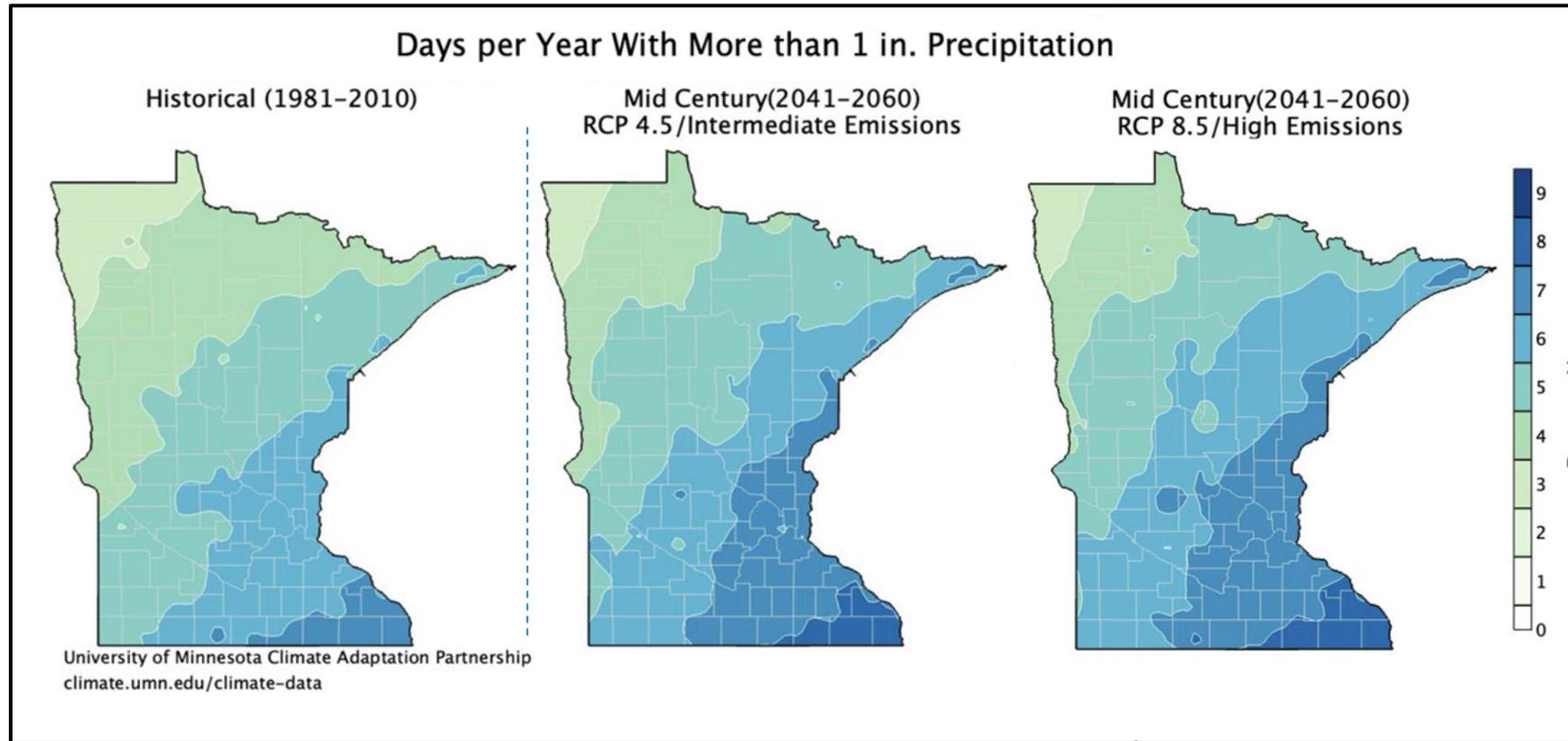
Warming Temperatures



***Minnesota is getting
Hotter***

Summary: From **1981-2010**, we had about **5-10 days per year over 90 degrees**. From **2041-2060**, we are likely to experience **20-30 days per year (RCP 4.5)** or **25-40 days per year warmer than 90 degrees Fahrenheit (RCP 8.5)**.

Precipitation Swings



**Minnesota is getting
Slightly Wetter**

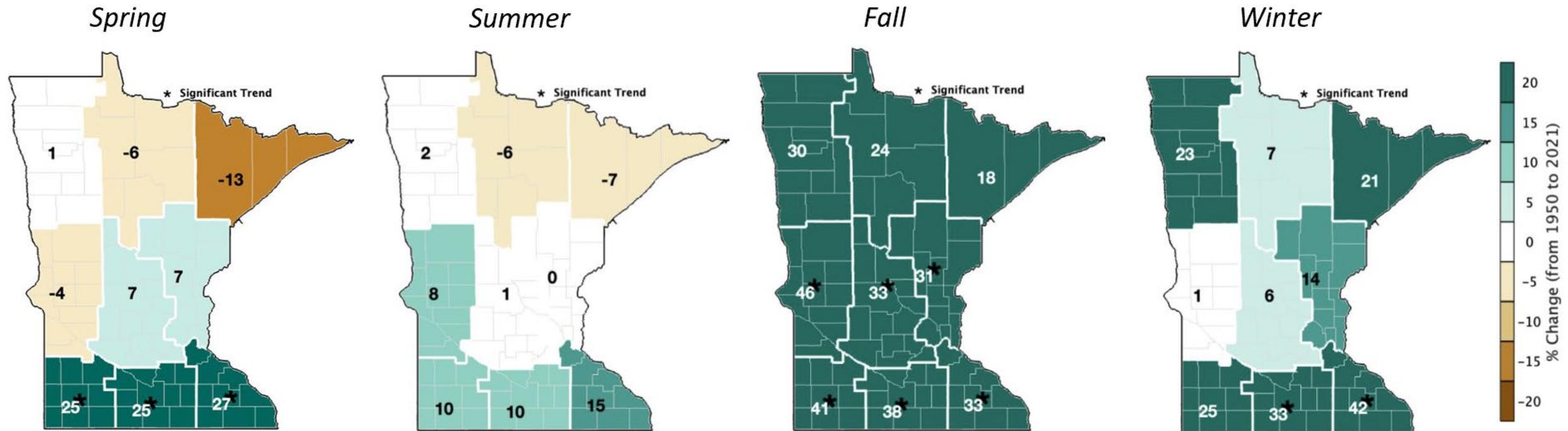
Summary: From **1981-2010**, we had about **3-8 days per year with over 1 inch of rain**. From **2041-2060**, we are likely to experience **3-9 days** per year (RCP 4.5 & RCP 8.5) with over 1 inch of rain.

*Not everything will change drastically! Although, this map doesn't show **when** the rain will fall.

Seasonal Precipitation Swings

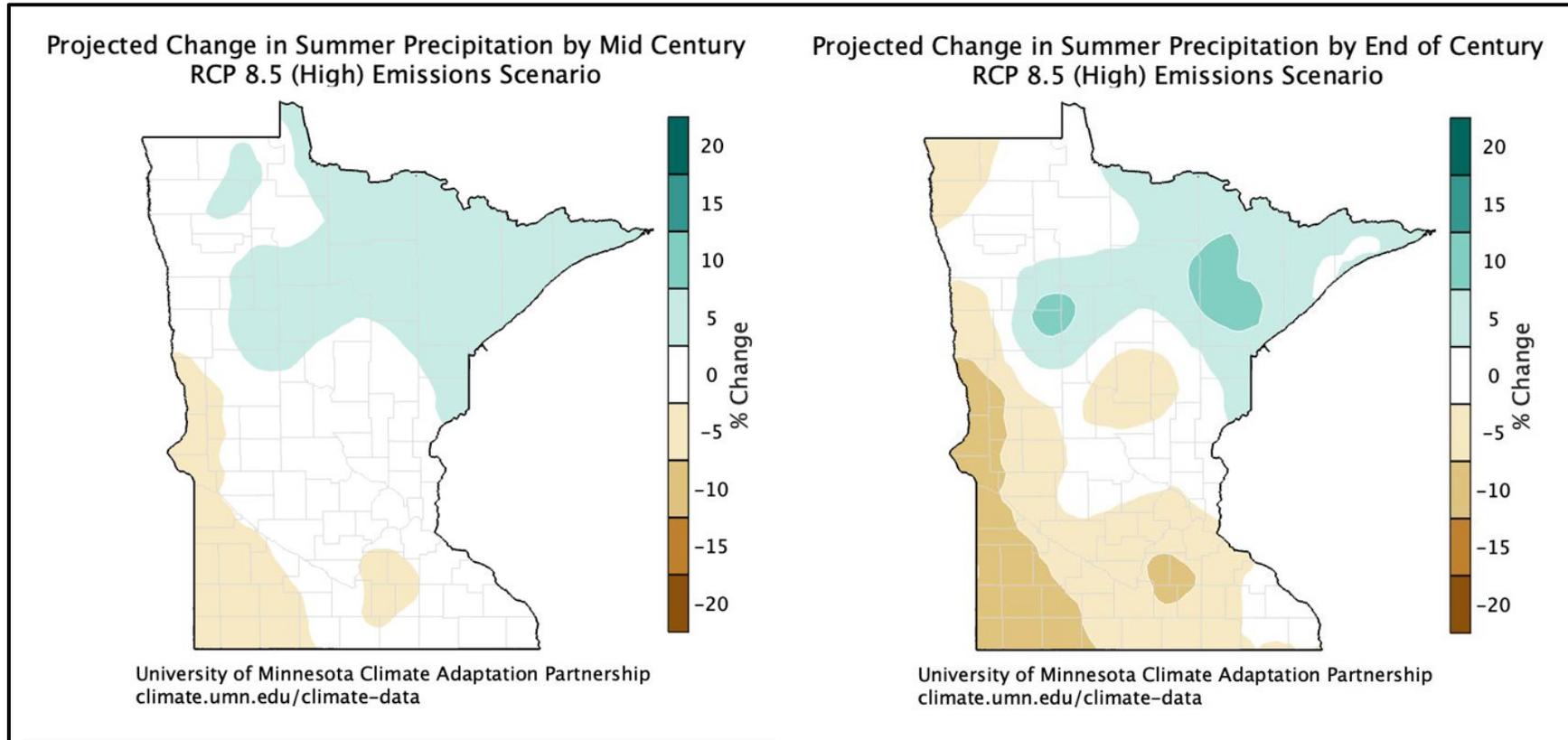


Observed % Change in Precipitation from 1950 to 2021 (70 years)



Summary: The St. Croix Watershed has already experienced an increase in precipitation. Especially in fall and winter

Summer Precipitation Swings



**St. Croix summers are
changing**

Summary: In the high emissions scenario, the St. Croix Watershed will experience areas of mild increases and decreases in *summer* precipitation. With many areas predicted to have no change in average summer precipitation
- Historical trends are not necessarily consistent with future projections

Interested in more Precipitation Data?

The grid displays 20 interactive map cards, each showing a map of Minnesota with a legend and a caption. The cards are organized as follows:

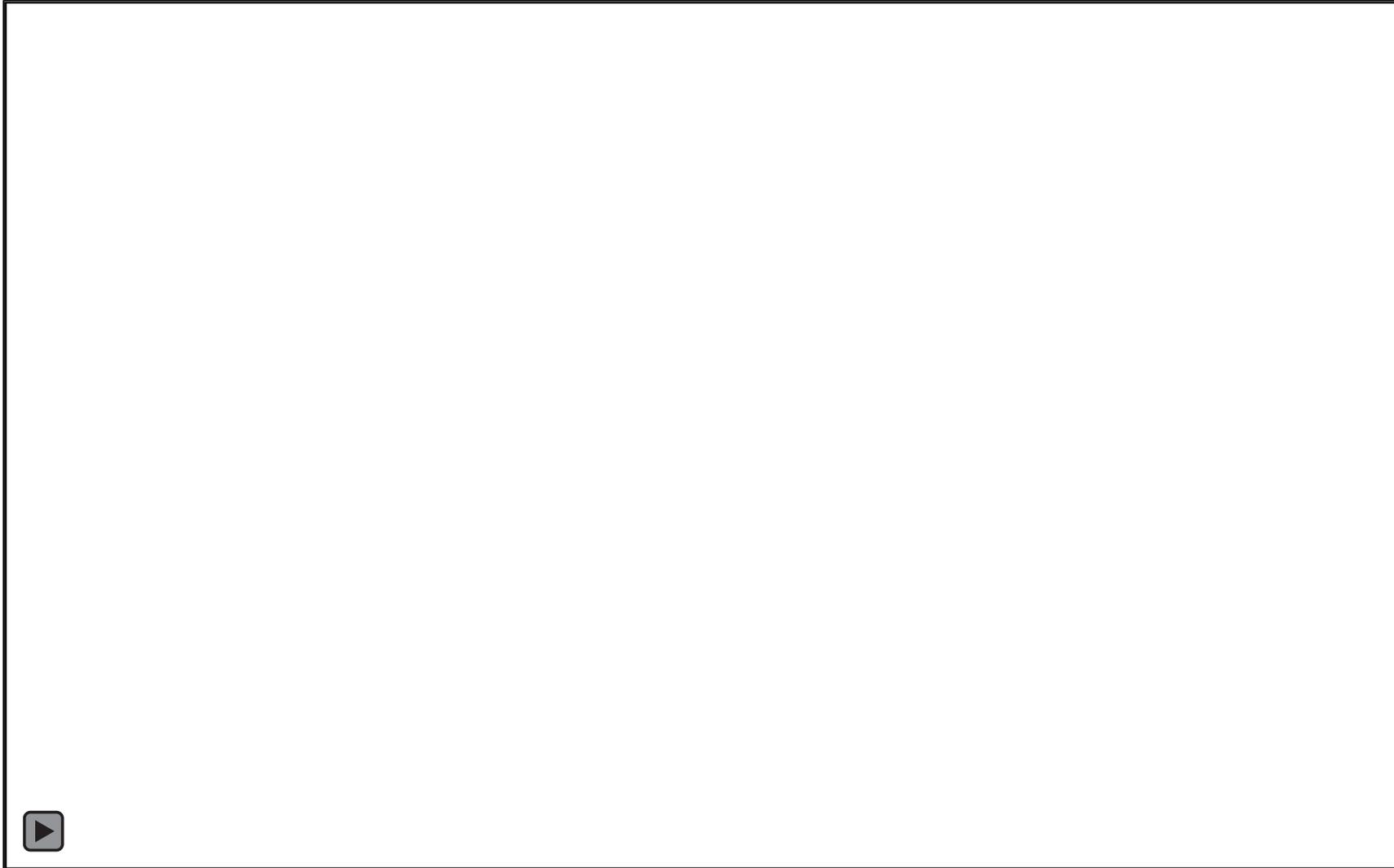
- Row 1:**
 - Annual precipitation 2041-2060 (RCP 4.5)
 - Days per 100 years with more than 4 inches
 - Days per 100 years with more than 5 inches
 - Days per 50 years with more than 3 inches
 - Annual precipitation 2081-2100 (RCP 4.5)
 - Days per 100 years with more than 4 inches
 - Days per 100 years with more than 5 inches
 - Days per 50 years with more than 3 inches
- Row 2:**
 - Days per decade with more than 2 inches
 - Days per year with more than 1 inch
 - Fall precipitation 2041-2060 (RCP 4.5)
 - Spring precipitation 2041-2060 (RCP 4.5)
 - Days per decade with more than 2 inches
 - Days per year with more than 1 inch
 - Mean fall precipitation 2081-2100 (RCP 4.5)
 - Mean spring precipitation 2081-2100 (RCP 4.5)
- Row 3:**
 - Summer precipitation 2041-2060 (RCP 4.5)
 - Winter precipitation 2041-2060 (RCP 4.5)
 - Summer precipitation 2081-2100 (RCP 4.5)
 - Winter precipitation 2081-2100 (RCP 4.5)

Each card includes a map of Minnesota showing projected precipitation changes. The maps are color-coded, with green representing historical conditions and blue representing projected changes. Each card also includes a 'Tags' section and a 'Caption' section. The captions describe the projected change in precipitation by the end of the century (2081-2100) assuming an intermediate (RCP 4.5) emissions scenario. The tags include 'Intermediate emissions, RCP4.5, extreme precipitation'.

Check out Minnesota Climate Adaptation Partnership's "Future in Minnesota Map Gallery"



Longer Growing Season



Growing Degree Days:

Light Map (1980–2009)



Dark Map (2070–2099)

Growing Season Length

MN-WI

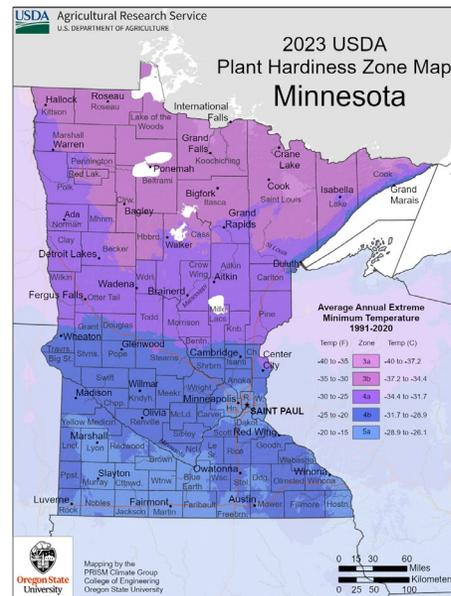
2-3.5 months/year

to

3.5-6 months/year

Plant Hardiness Zones

Plant hardiness zones (PHZs) can indicate the extent of winter stress that plants experience due to cold temperatures. These zones are based on the average annual extreme minimum temperatures (extreme winter lows). Horticulturists use this information to evaluate the cold hardiness of plants.



Shifting Hardiness Zones



Summary:

Currently, we are in **hardiness zone 5a-4a** in MN-WI. In the high emissions scenario, this could **change to zone 6-7** in 50-60 years.

Minimum temperature:

Current: -30s (F)

In 50-60 years: 0-10 (F)



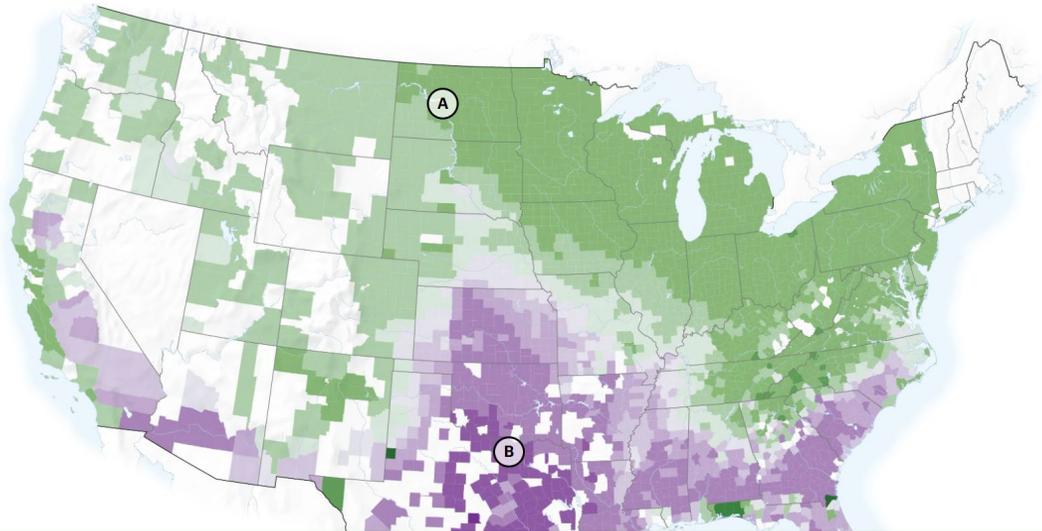
Farm Crop Yields

Farm Crop Yields: 2040-2060

RCP 4.5

With rising temperatures, it will become more difficult to grow food. Corn and soy are the most prevalent crops in the U.S. and the basis for livestock feed and other staple foods, and they have critical economic significance. Because of their broad regional spread, they offer the best proxy for predicting how farming will be affected by rising temperatures and changing water supplies.

High Emissions Moderate Emissions

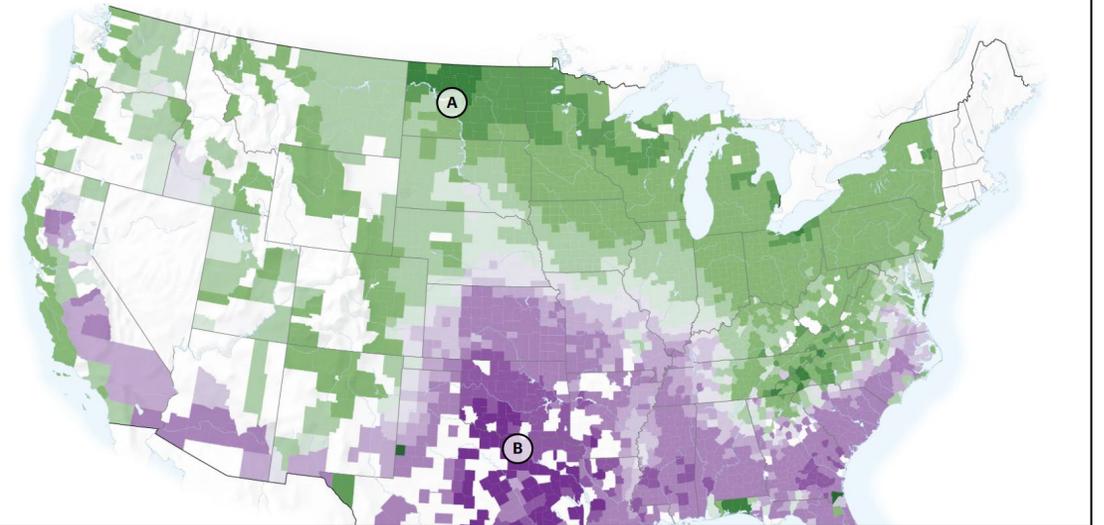
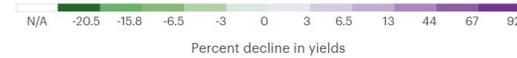


Farm Crop Yields: 2040-2060

RCP 8.5

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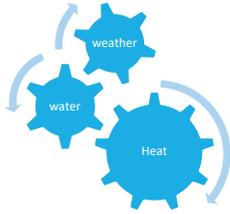
High Emissions Moderate Emissions



Summary

Crop yields are expected to **increase** in the Midwest by 3-15% by mid-century in both RCP 4.5 and RCP 8.5 Scenarios

It's all connected

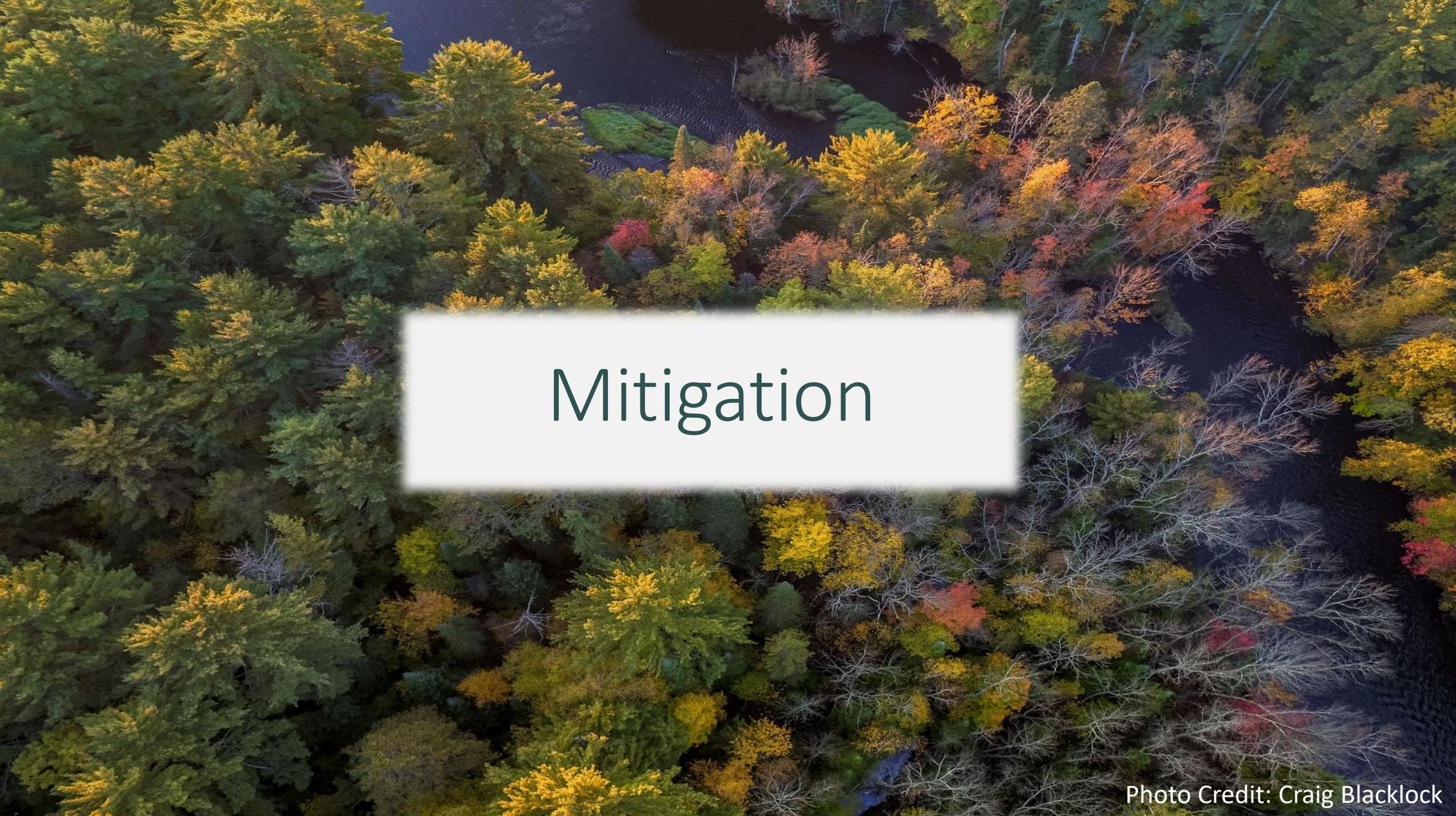




There's Still Hope – We Can Take Action

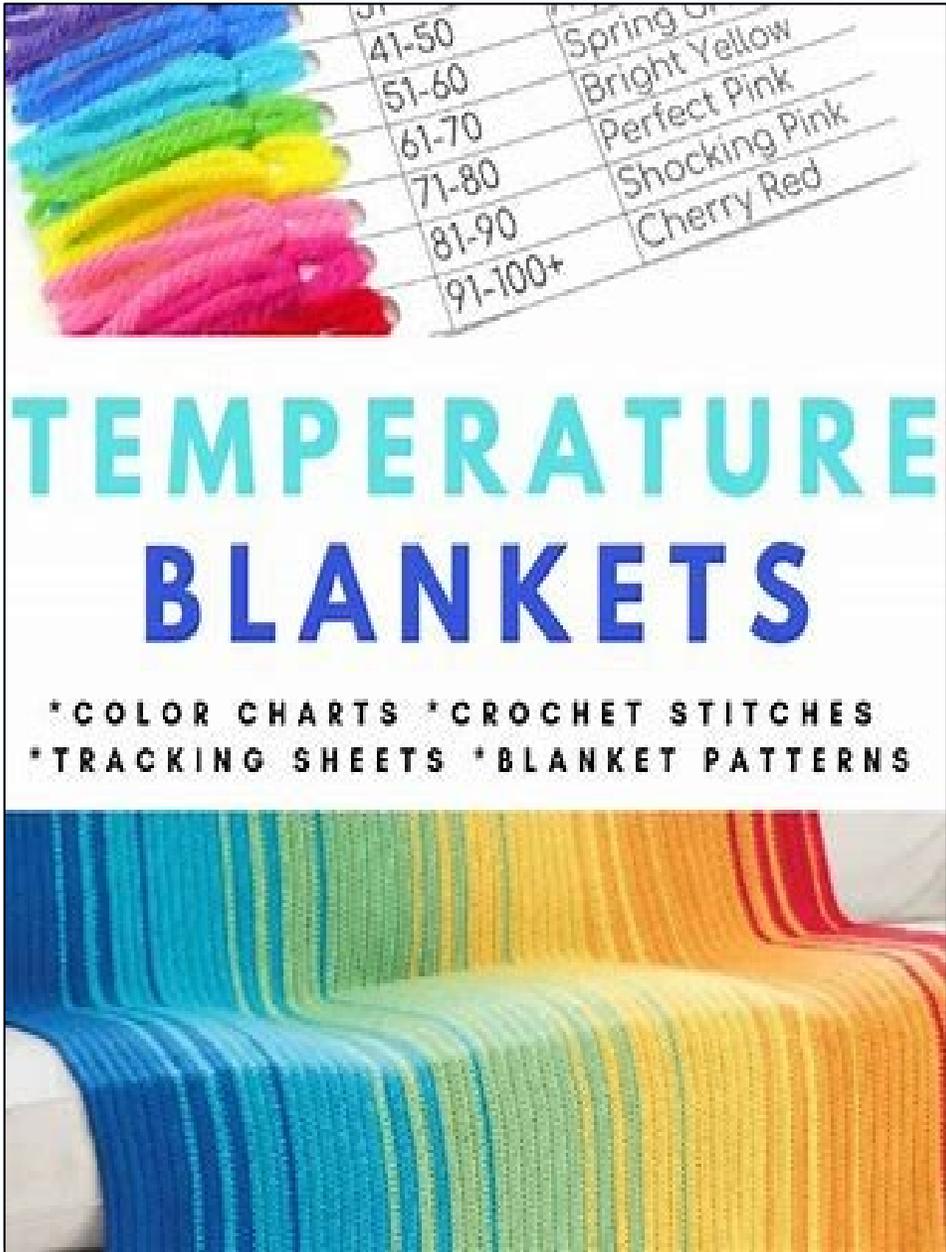
Two Main Actions:



An aerial photograph of a forest during autumn. The trees show a mix of green, yellow, orange, and red. A dark river or stream flows through the forest. A white rectangular box with a soft shadow is centered in the image, containing the word "Mitigation" in a dark green, sans-serif font.

Mitigation

Photo Credit: Craig Blacklock



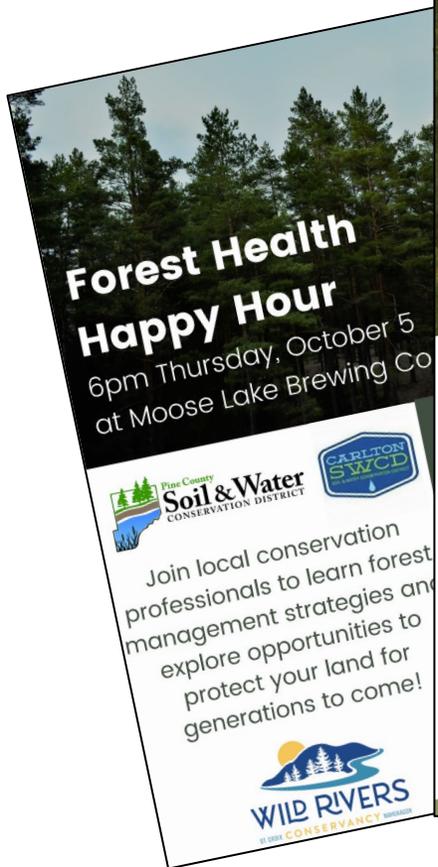
Lifestyle Choices

Small actions add up



- Shop Local
- Re-use
- Donate
- Save on Trips
- Create Green Space
- Ride Share
- Creative Cooking
- Get Outside
- Advocate
- Renewable energy
- Start the Conversation
- **Get creative!**

Land Stewardship



Forest Health Happy Hour
6pm Thursday, October 5
at Moose Lake Brewing Co

Join local conservation professionals to learn forest management strategies and explore opportunities to protect your land for generations to come!

Pine County Soil & Water Conservation District
CARLTON SWCD
WILD RIVERS CONSERVANCY MEMBER



St. Croix Watershed

You Can Permanently Protect Your Land

Join us on a land protection bus tour to learn more about options available to you
Tuesday, Sept. 12th, 10AM-4PM

10:00am-12:30pm	12:30pm-1:15pm	1:15pm-4:00pm
ODENDAHL CONSERVATION EASEMENT <ul style="list-style-type: none">Learn about conservation easements from Minnesota Land TrustHear a landowner's success storyLearn about restoration efforts from USFWS	LUNCH IN PINE CITY <ul style="list-style-type: none">Meet landowners & natural resources professionalsEnjoy a meal on us!	CHENGWATANA FEE-TITLE PROPERTY <ul style="list-style-type: none">Learn about fee-title acquisitions from Trust for Public LandAsk about the process with MN DNRDiscuss woodland resiliency with a UMN-Extension Forester

Free Event but registration required

Visit landtour2023.eventbrite.com to register or by scanning the QR code

Questions? Contact amonti@wildriversconservancy.org

MINNESOTA LAND TRUST | WILD RIVERS CONSERVANCY | CLEAN WATER LAND & LEGACY ENVIRONMENT | TRUST FOR PUBLIC LAND



YOUR FOREST'S POTENTIAL
Great Management Brews Great Beer

March 2, 2023 | 5-7 PM | Free
THREE TWENTY BREWING CO.
Pine City, MN

Healthy forests mean clean water... and better beer!

Join Pine County SWCD, Wild Rivers Conservancy, and natural resource professionals over a good brew and learn how to improve water quality by managing and protecting your own backyard.

Discussion will cover many aspects of land stewardship with time for questions. We'll even explore how local breweries are affected by the state of our forests and water quality. This event is for landowners of all kinds and folks interested in discovering how brewers rely on our natural resources!

Pine County Soil & Water Conservation District
THREE TWENTY BREWING CO.

REGISTER potential.eventbrite.com

Restorative Land Use:

- Rain Gardens
- Native Landscaping
- Pollinator Habitat
 - Lawns to Legumes (MN)

Permanent Land Protection:

- Fee-title Acquisition
- Conservation Easements

Carbon Credits:

- Family Forest Carbon Program

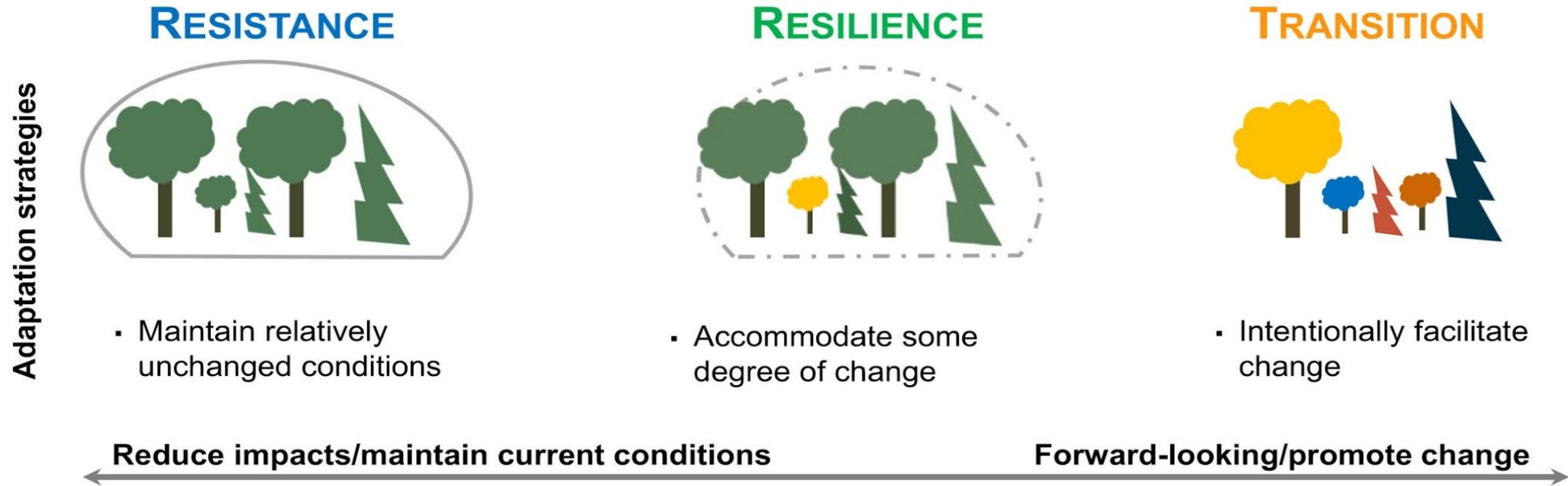


An aerial photograph of a river winding through a dense forest. The trees are in various stages of autumn, with some showing vibrant yellow and orange, while others are still green or have turned brown. The river is dark blue and reflects the surrounding landscape. The overall scene is serene and natural.

Adaptation

Photo Credit: Craig Blacklock

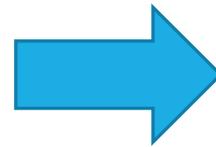
Three Main Options:



Resistance: Protect from change



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Example: Using resources to place an easement on source water. Increased resources will be needed for preservation over time

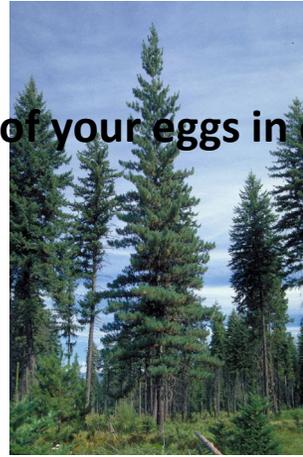
Resilience: Promote the ability to rebound



Example 1: Remove stressors (e.g. invasive species) from ecosystem to promote its ability to deal with change

Example 2: Design culverts with future climate conditions in mind

Use Diversity to Improve Resilience



Don't put all of your eggs in one basket

There will be climate change “winners” and “losers”. We can't predict the future perfectly but we can predict that more diverse ecosystems will be better suited to surviving and thriving



- Encourage diverse species, sizes, & ages

Transition: Actively encourage change



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Example 1: Change an ash-dominated forest to an oak-dominated forest

Example 2: remove grey infrastructure in exchange for green infrastructure

An aerial photograph of a river meandering through a dense forest. The trees are in various stages of autumn, with some showing bright yellow and orange, while others are still green or have turned brown. The river is a dark blue-grey color, reflecting the sky. The overall scene is misty and atmospheric, with soft light filtering through the trees.

General Best Practices

Photo Credit: Craig Blacklock

Get Involved

Newsletters

- The Drop – North Central Region Water Network
- East Metro Water Blog
- St. Croix 360

Volunteering

- Adopt a Rain Garden
- Adopt a Storm Drain
- Community Plantings

Community Science

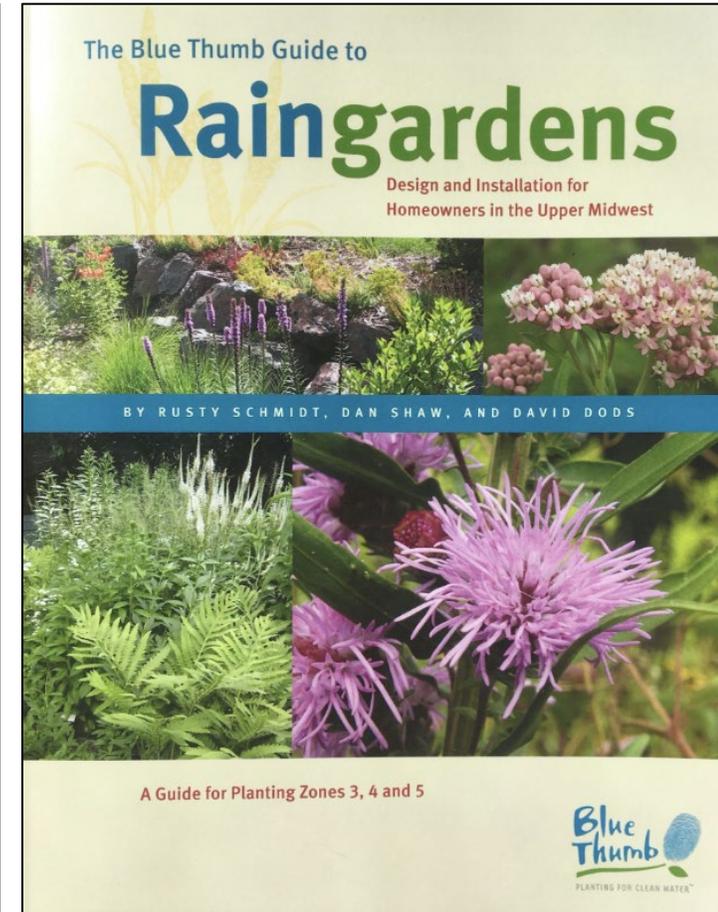
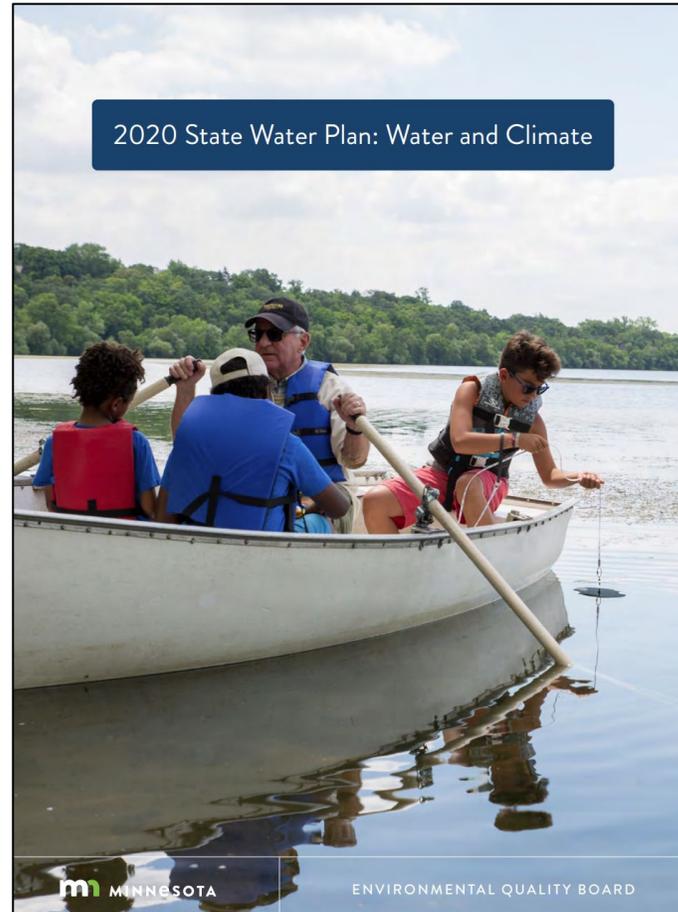
- CoCoRaHS
- WAV Water Quality Monitoring
- Salt Watch

... And many more!



Additional Resources

- [Water Resources | University of Minnesota Climate Adaptation Partnership \(umn.edu\)](https://climate.umn.edu/adaptation-partnership/)
- [We Are Water MN - Minnesota Humanities Center \(mnhum.org\)](https://mnhum.org/)
- [Shoreline Stabilization – Blue Thumb](#)
- [Why Plant for Clean Water? – Blue Thumb](#)
- [Source Water Protection - MN Dept. of Health \(state.mn.us\)](https://state.mn.us/health/source-water-protection/)
- [Water and Climate Information to Enhance Community Resilience \(MCAP\)](#)
- [Minnesota Agricultural Water Quality Certification Program | Minnesota Department of Agriculture \(state.mn.us\)](https://state.mn.us/agriculture/minnesota-agricultural-water-quality-certification-program/)



Questions?



Contact me:

Alexis Monti

Climate Resiliency Specialist

Wild Rivers Conservancy

E: amonti@wildriversconservancy.org

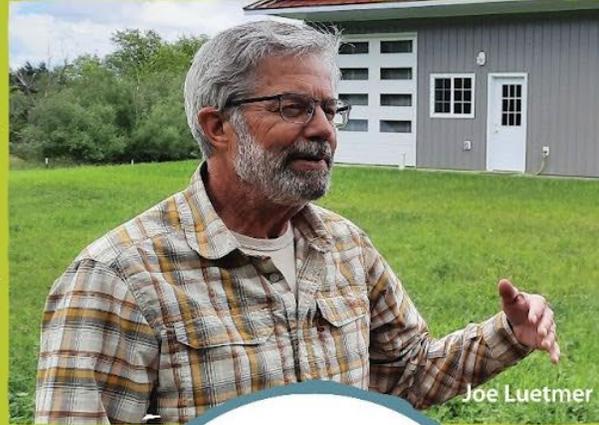
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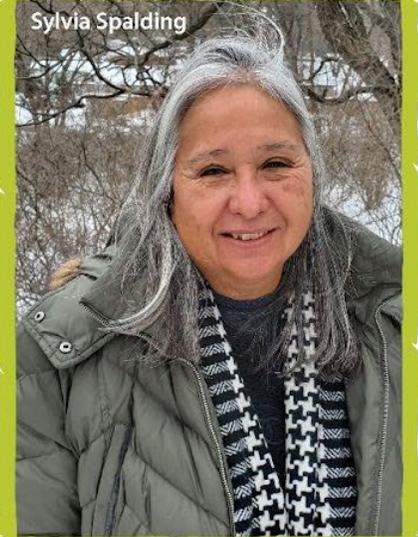
Opportunity: Would you like water quality data? Think pH, Dissolved oxygen, nitrates, phosphates, turbidity, and macroinvertebrates. Yes? Let's talk!



Jackie Armstrong

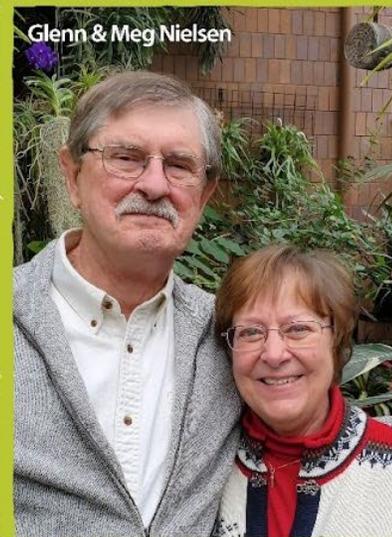


Joe Luetmer



Sylvia Spalding

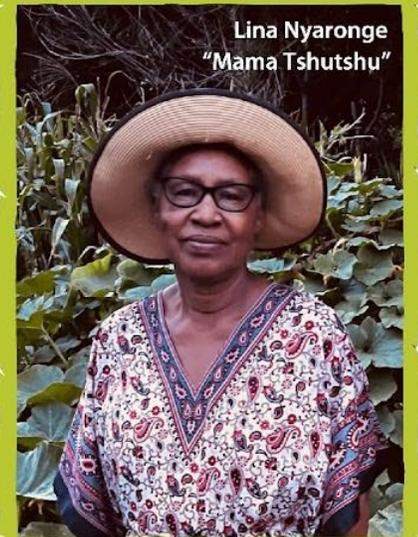
**CLIMATE
LAND
LEADERS™**



Glenn & Meg Nielsen



Ann Novak



Lina Nyaronge
"Mama Tshutshu"

OUR VISION

Stewards build soil health,
increase biodiversity and protect water
so that ecosystems and communities can thrive
in a rapidly changing climate



WHO DO WE SERVE?

- Own or control land
- Use land to address the climate crisis
- Implement stretch goals
- Share and learn



NOT “ABSENTEE LANDOWNERS”

Caretaker

Land stewards

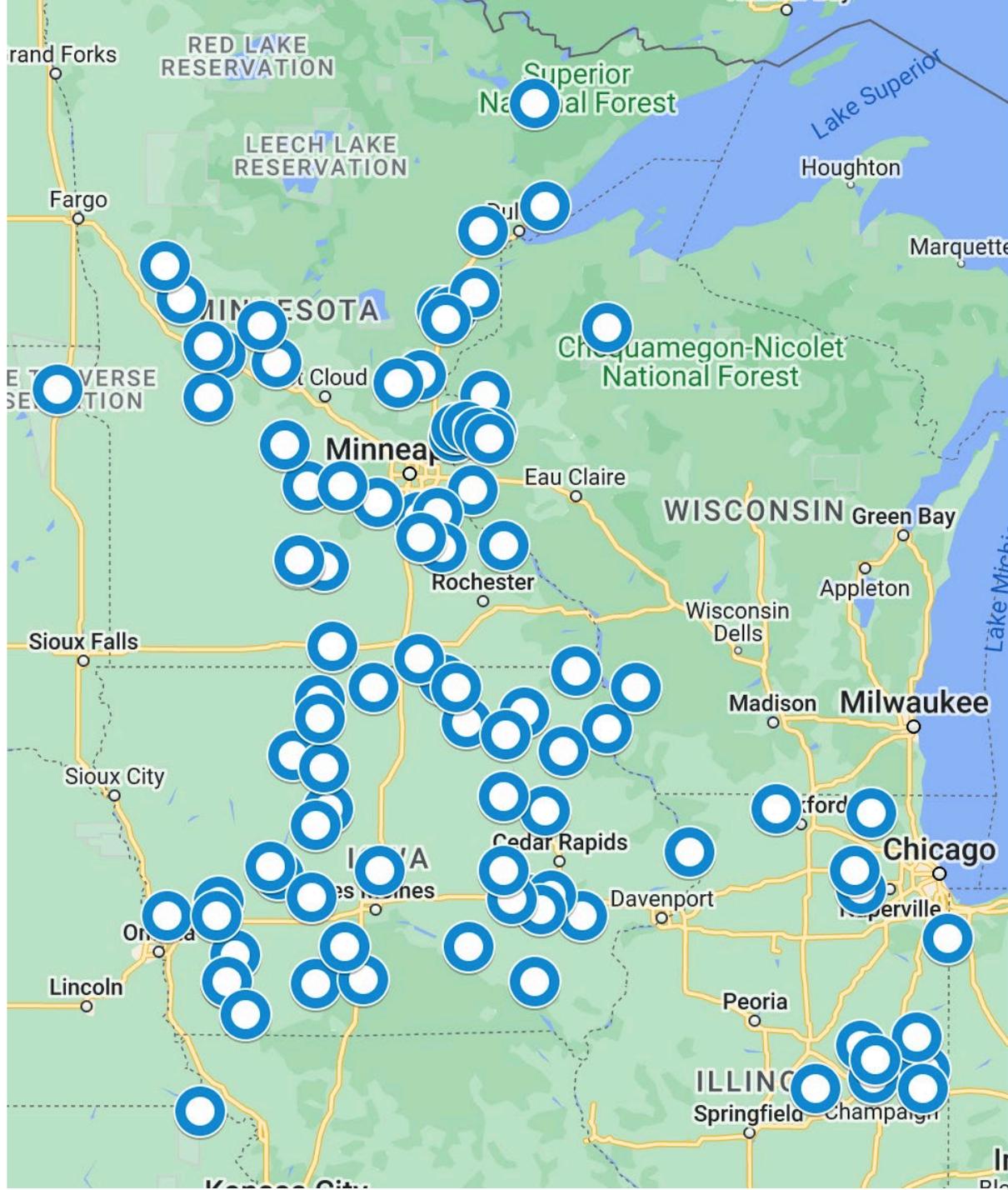
Leading with land

Land advocates

*Financially and morally invested in the health
of the land, plants and animals*



39,000 acres
... and we are growing



HIGHLY NETWORKED MEMBERS



OUR ACTIVATION APPROACH

Offer positive action after giving alarming news

Best spokespeople: Those going through what you are going through

Community of like-minded people

If you announce publicly you are going to do something, you are more likely to do it



BEST FOR CLIMATE: PERENNIALS

Away from corn and soybeans

Urgent need for:

Tree, shrub and grass plantings

Natural area restoration

Well-managed pasture systems

Reduced/no use:

agrochemical fertilizers and pesticides



The Bouska Sisters (NE IA)



- Plant 4,500 trees and shrubs on nine acres
- Plant prairie strips around borders of both farms (37 acres)
- Restore wetland (3 acres, total area in wetland is 6 acres)



Glenn and Meg Nielsen (SO MN)



- 50 acres of formerly cropped fields now in permanent cover
- Funding new infrastructure for tenant to graze livestock



POLICY IS THE DRIVER

- Prioritize climate
- Meet demand for land conservation
- Grows resilient farms and rural economies



Climate Land Leaders
are public spokespeople



**Equity:
Learning,
Sharing our resources**

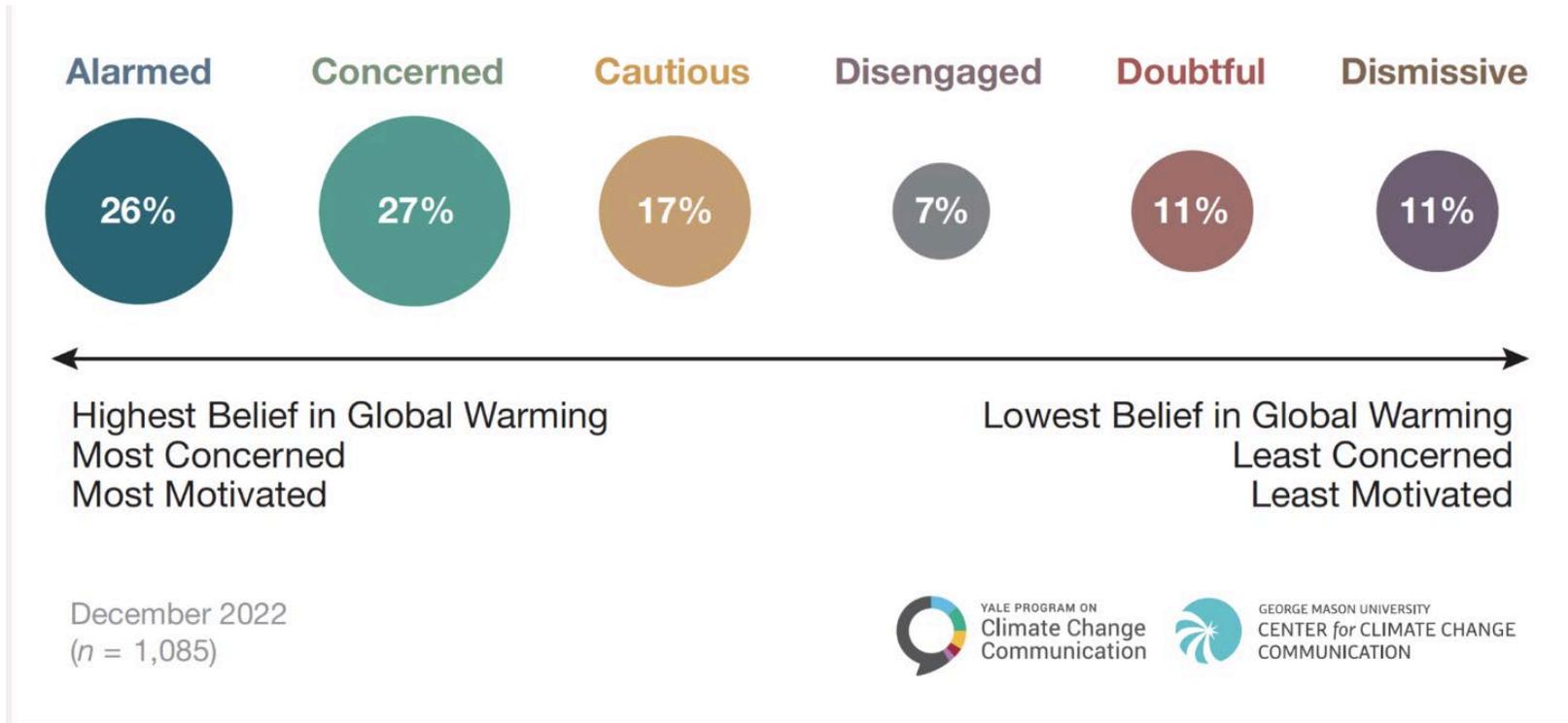
“What is enough to pass on to the next generation, and can we share our wealth with others?”

--Carol Bouska



ACTIVATE LANDOWNERS ...

WE HAVE LIMITED TIME



DOOM
=
DENIAL



Focus on “Active Hope”

“I once thought I didn’t have the agency to make change on a scale bigger than on my farm. I cannot thank you enough for opening the doors to a world of hope.”

--Climate Land Leader



“Tell me... did you do all that you could?”

—Ani DeFranco

Teresa Opheim

Teresa@climatelandleaders.org

www.climatelandleaders.org

