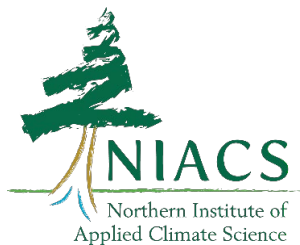
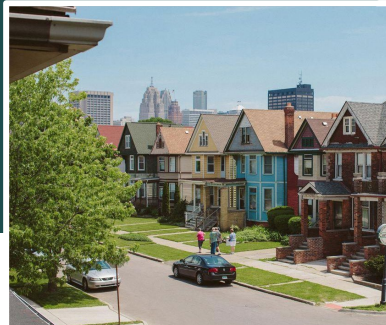
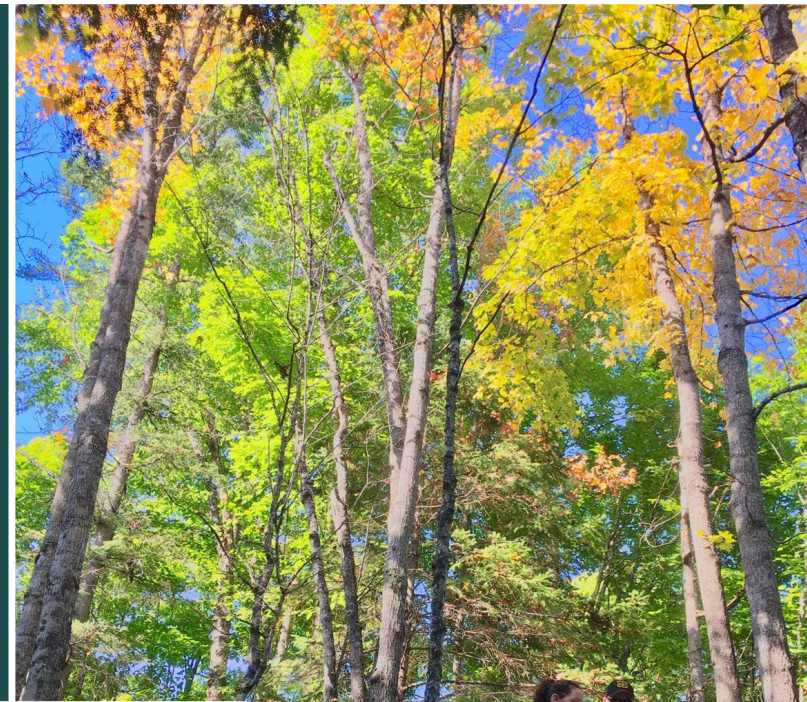


Wisconsin County Forests Association Climate Adaptation Workshops

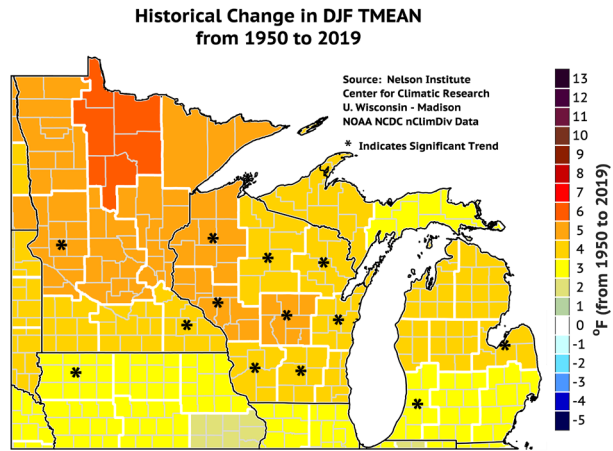
February 2023



**Wisconsin County
Forests Association**



Climate Change: It's everywhere you look



Solid Wood Locks Away Carbon



Why Should I Care?



**Wisconsin County
Forests Association**

“Sustaining Wisconsin’s economy and our forests through responsible management of a renewable resource.”

Why Should I Care?



Why Should I Care?

CLIMATE CHALLENGE

FIGHT CLIMATE CHANGE? CHOOSE SUSTAINABLE FOREST PRODUCTS.

Climate change is one of our most pressing global challenges, and sustainably managed forests are among our most important tools for addressing it. Over 375 million acres/152 million hectares of forestland are certified to the SFI Forest Management Standard. Sustainably managed forests at this scale absorb carbon at impressive rates, making them essential to reducing the impacts of climate change.

Certification is the best way to ensure that a forest is sustainably managed. Vigorous and healthy forests that are sustainably managed are more resilient to the impacts of climate change. SFI is [implementing a new Climate Smart Forestry Objective](#) that will require SFI-certified organizations to ensure forest management activities address climate change adaptation and mitigation measures.

Sustainably managed forests also produce wood products that sequester carbon for extended periods—often decades. SFI-certified wood products can replace the use of more carbon-intensive products like concrete and steel. That means sustainably managed forests fight climate change while they're growing—and long after they're harvested.

Companies are helping to mitigate climate change through the use of SFI standards. The SFI Forest Management Standard requires a number of practices with direct climate benefits, such as ensuring forests remain vigorous and healthy, requiring harvested areas to be promptly reforested, and requiring programs and practices that reduce the likelihood of wildfire and reduce the spread of damaging invasive species.

Vigorous and healthy forests are also resilient to threats such as fire and pests. Forest fires have long played a role in the evolution and function of natural ecosystems, but we are now seeing an increase in catastrophic fires that have dire consequences for our forests, wildlife, and communities. More than a billion acres/400 million hectares are at risk of fire each year in the U.S. In Canada, an average of about 2.5 million hectares/6 million acres of land burn every year. SFI provides practical solutions that can reduce the potential for damaging wildfires through careful management including a [new SFI Fire Resilience and Awareness Objective](#). SFI-certified organizations will be required to limit susceptibility of forests to undesirable impacts of wildfire and to raise community awareness of fire benefits, risks, and minimization measures.

SFI is the only forest certification standard to require certified organizations to support research on forest sustainability. Since 1995, SFI-certified companies have directly invested nearly \$1.8 billion in forest research that promotes resilient, sustainably managed forests.



2022 Forest Management Standard

- Objective 9 = “Climate-Smart Forestry”
 - Measure 9.1 = adaptation
 - Measure 9.2 = mitigation
 - Individual or cooperative efforts (State ICs)
 - Annual reporting for both measures

CLIMATE SMART
FORESTRY



Performance Measure 9.1 = Adaptation

- Indicator 1: Based on the best scientific information, Certified Organizations shall **identify climate change risks and prioritize them** based on likelihood, nature, and severity
- Indicator 2: Certified Organizations shall **develop an adaptation plan** to address priority climate change risks...
- Indicator 3: Certified Organizations shall document how their adaptation plan objectives and strategies fit within **broader regional climate adaptation strategies and plans**, where they exist
- Indicator 4: Certified Organizations shall **report annually** to SFI Inc. their progress towards achieving climate change adaptation strategies and plans.



Today



Today



Soon

Performance Measure 9.2 = Mitigation

- Indicator 1: Based on the best scientific information, Certified Organizations shall identify and address **opportunities to enhance the climate benefits associated with forest management** operations on the forests they own or manage...
- Indicator 2: Based on best scientific information, Certified Organizations shall identify and address **opportunities to enhance ecosystem resilience** for the forests they own or manage...
- Indicator 3: Based on best scientific information, Certified Organizations shall develop a program to **identify and address greenhouse gas emissions** within their operational control.
- Indicator 4: Certified Organizations shall **report annually** to SFI Inc. their measures to mitigate climate change associated with forest operations.



Not today, but we can discuss 9.2.1 & 9.2.2 later...

SFI Implementation Committee “Playbook”



SFI IMPLEMENTATION COMMITTEE PLAYBOOK CLIMATE SMART FORESTRY *Updated July 7, 2022*

INTRODUCTION TO SIC PLAYBOOKS

The requirements of the 2022 SFI Standards for Forest Management and Fiber Sourcing introduce new opportunities for engagement and collaboration via the SFI Implementation Committees (SICs). These opportunities focus on new or enhanced elements of the SFI Standards including Climate Smart Forestry, Fire Resilience and Awareness, and Conservation of Biodiversity (Forests of Exceptional Conservation Value - FECVs). In a recent survey conducted by SFI, an overwhelming majority of SFI certified organizations indicated interest in collaboration via the SICs on these requirements.

In response, SFI is developing a set of *SIC Playbooks* that provide resources and actionable tips for SICs. The SIC Playbooks draw from and build on the resources and information provided in the [SFI Standard Guidance](#) but go further in outlining specific steps and resources that could be mobilized by SICs. In addition to this SIC Playbook on Climate Smart Forestry (2022 Forest Management, Objective 9), an SIC Playbook on Biodiversity in Fiber Sourcing (2022 SFI Fiber Sourcing, Objective 1) is also available. A Playbook on Fire Resilience and Awareness (2022 Forest Management Objective 10) is in development. Others may also be developed in response to needs and requests of SICs.

An Iterative Tool: Please Send Us Your Feedback + Suggestions

In response to growing interest, this [Climate Smart Forestry SIC Playbook](#) is released as a resource that SICs can begin using immediately. However, it is a tool that will be refined as it gets utilized. SICs and certified organizations are encouraged to let the SFI team know what is helpful and what could be improved. We are also seeking suggestions for the best regional resources, as well as ideas and best practices that your SIC has identified in implementing the Climate Smart Forestry SIC Playbook in your region, state or province. Please provide feedback and suggestions to Nadine Block, SFI Senior VP Community and Government Relations, at nadine.block@forests.org.

SFI Climate Smart Forestry Playbook for SICs
Version 2

Lake States SIC Regional Assessment

Lake States SIC Climate Smart Forestry Regional Assessment

2022



The SFI 2022 Forest Management Standard has incorporated opportunities for cooperative efforts involving SFI Implementation Committees to meet various Indicators in this standard. SFI Inc. developed a [playbook](#) and hosted a national workshop on March 31 to discuss how Climate Smart Forestry Indicators could be addressed collaboratively.

On August 24th, 2022, SFI hosted a Lake States Regional Workshop specifically to help SICs in that region meet Performance Measure 9.1.

Performance Measure 9.1 Certified Organizations shall individually and/or through cooperative efforts involving SFI Implementation Committees or other partners identify and address the climate change risks to forests and forest operations and develop appropriate adaptation objectives and strategies. Strategies are based on best scientific information.

And Performance Measure 9.2

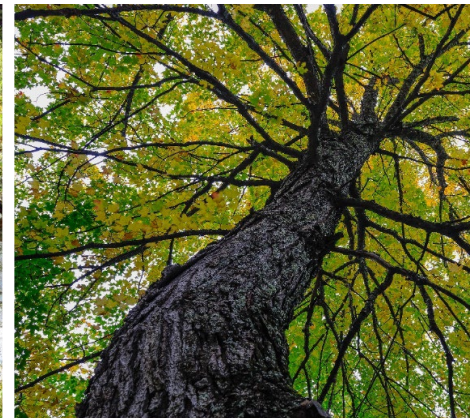
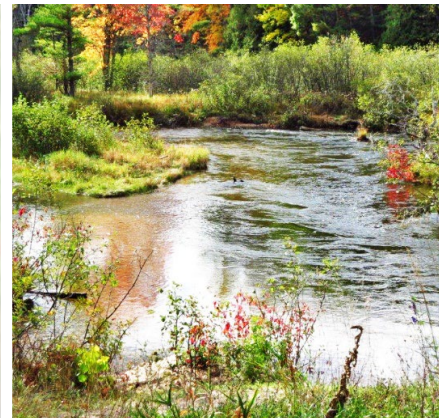
Performance Measure 9.2 Certified Organizations shall individually and/or through cooperative efforts involving SFI Implementation Committees or other partners identify and address opportunities to mitigate the effects associated with its forest operations on climate change.

The workshop was facilitated by Stephen Handler, Climate Adaptation Specialist, US Forest Service Northern Research Station and Northern Institute of Applied Climate Science (NIACS). The workshop helped SICs:

		Severity of Impacts				
		Negligible	Minor	Moderate	Major	Severe
Likelihood	Very Likely	Med. Low	Medium	Med. High	High	High
	Likely	Low	Med. Low	Medium	Med. High	High
	Possible	Low	Med. Low	Medium	Med. High	Med. High
	Unlikely	Low	Med. Low	Med. Low	Medium	Med. High
	Very Unlikely	Low	Low	Med. Low	Medium	Med. High

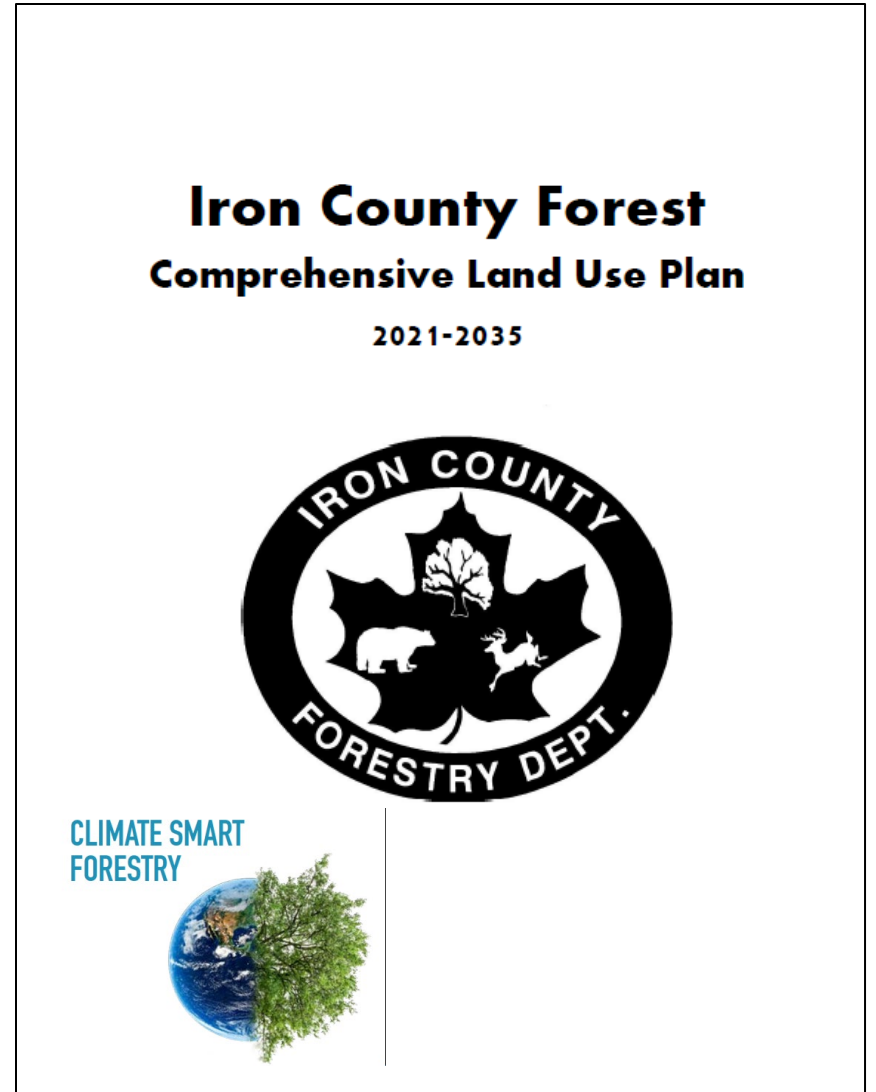
Goals for Today

1. Learn about the Climate-Smart Forestry expectations in the SFI Forest Management Standard.
2. Identify and prioritize climate change risks for individual forest types on your county forest.
3. Develop practical adaptation actions to address expected impacts.



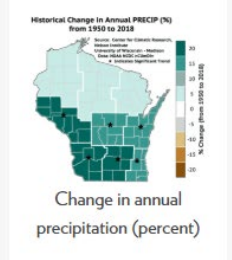
Expected Outcome

- Each county will be able to develop a custom climate adaptation plan
- Optional formats:
 - Amendment to 15-year County Forest Plan (Section 800)
 - Stand-alone document
 - Something else?
- We'll create a template and help you build it!



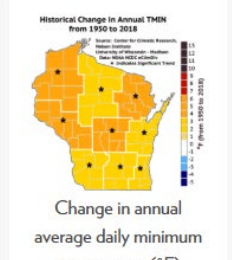
Wisconsin Initiative on Climate Change Impacts

- Useful information!
- WGs: Forestry, Water Resources, Fisheries, Plants and Natural Communities, etc.
- Links to climate maps, recorded presentations, and more



Historical Change in Annual PRECIP (%) From 1950 to 2018

Change in annual precipitation (percent)




Historical Change in Annual TMIN From 1950 to 2018

Change in annual average daily minimum temperature (°F)

Climate vulnerability assessment: Non-forested wetlands

Introduction: Climate change may bring higher temperatures, variable precipitation, and more frequent intense storms. This document provides a broad summary of potential impacts of climate change, and may provide a foundation for conservation planning in the face of an uncertain future.


Hydrology
Altered hydrology is the greatest anticipated impact to non-forested wetlands from climate change. The likelihood of more extreme precipitation events increases the risk of erosion and sedimentation as well as nutrient runoff, which can fuel the transportation and growth of non-native invasive plants and weedy native species. The impact of these events is likely to be greatest lower in the watershed, where flood waters collect for a longer period of time. In addition, winter temperature and precipitation



NRCS Staff
Runoff from large rain events carries sediments and excess nutrients into wetlands.

Invasive and aggressive species
Non-native invasive species are already a problem in many natural communities, especially in southern Wisconsin. Longer growing seasons disproportionately benefit invasives like reed canary grass, which can continue growing longer in the fall than native grasses and sedges. In addition, sedimentation and excess nutrients favor species like non-native cattail and Phragmites. Elevated levels of CO₂ may favor woody species, including invasive shrubs like glossy buckthorn. In general, non-native invasives species respond well to rapid environmental changes, including extreme storms, which can disturb soil and spread propagules.


Vulnerable species
With a few exceptions, many dominant non-forested wetland plants in Wisconsin also occur well to the south, indicating they may be less sensitive to changes in temperature than to changes in the delicate balance in hydrologic regimes and nutrients. Those species that may be most vulnerable tend to be associated with communities that occur at the southern edge of their range in Wisconsin, such as Boreal Rich Fen, Shore Fen and, in the southern part of the state, Bog Relict and Alder Thicket.



Elizabeth Czarapata
Longer growing seasons could benefit invasive species like reed canary grass.

CLIMATE IMPACTS

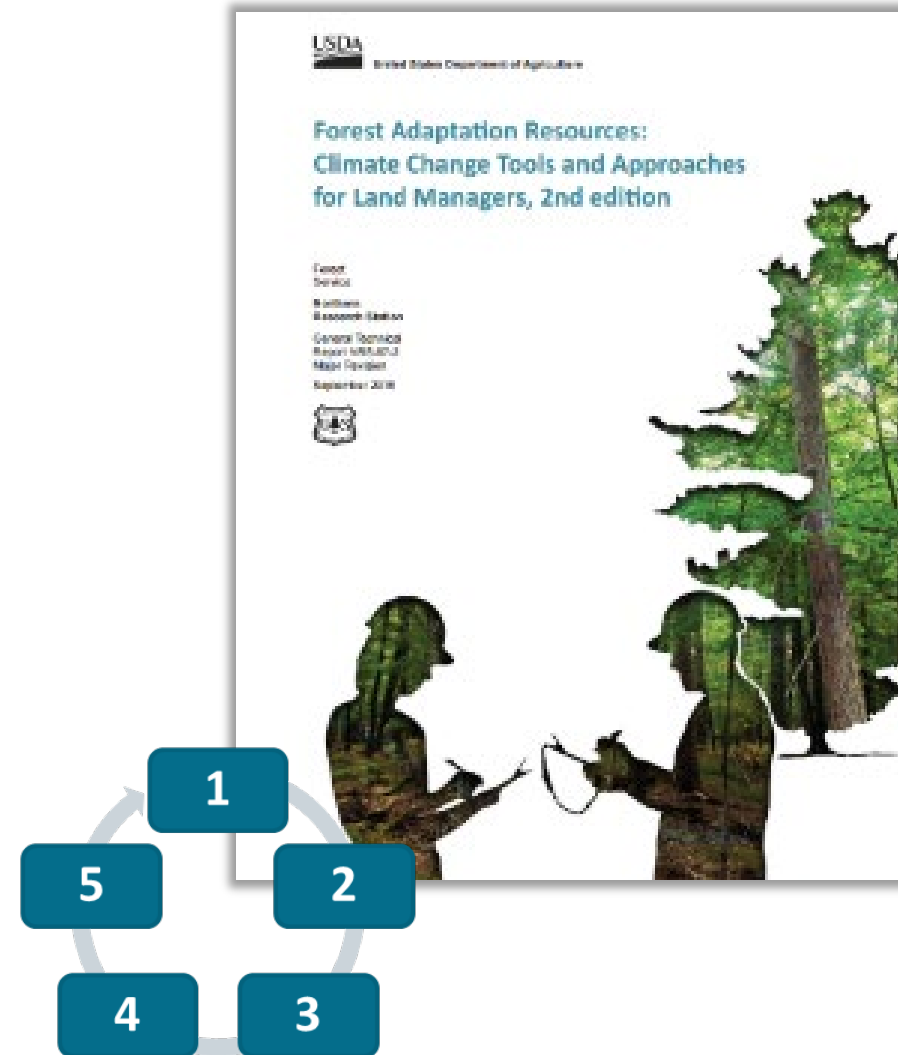
CONTACT US



Forest Adaptation Resources

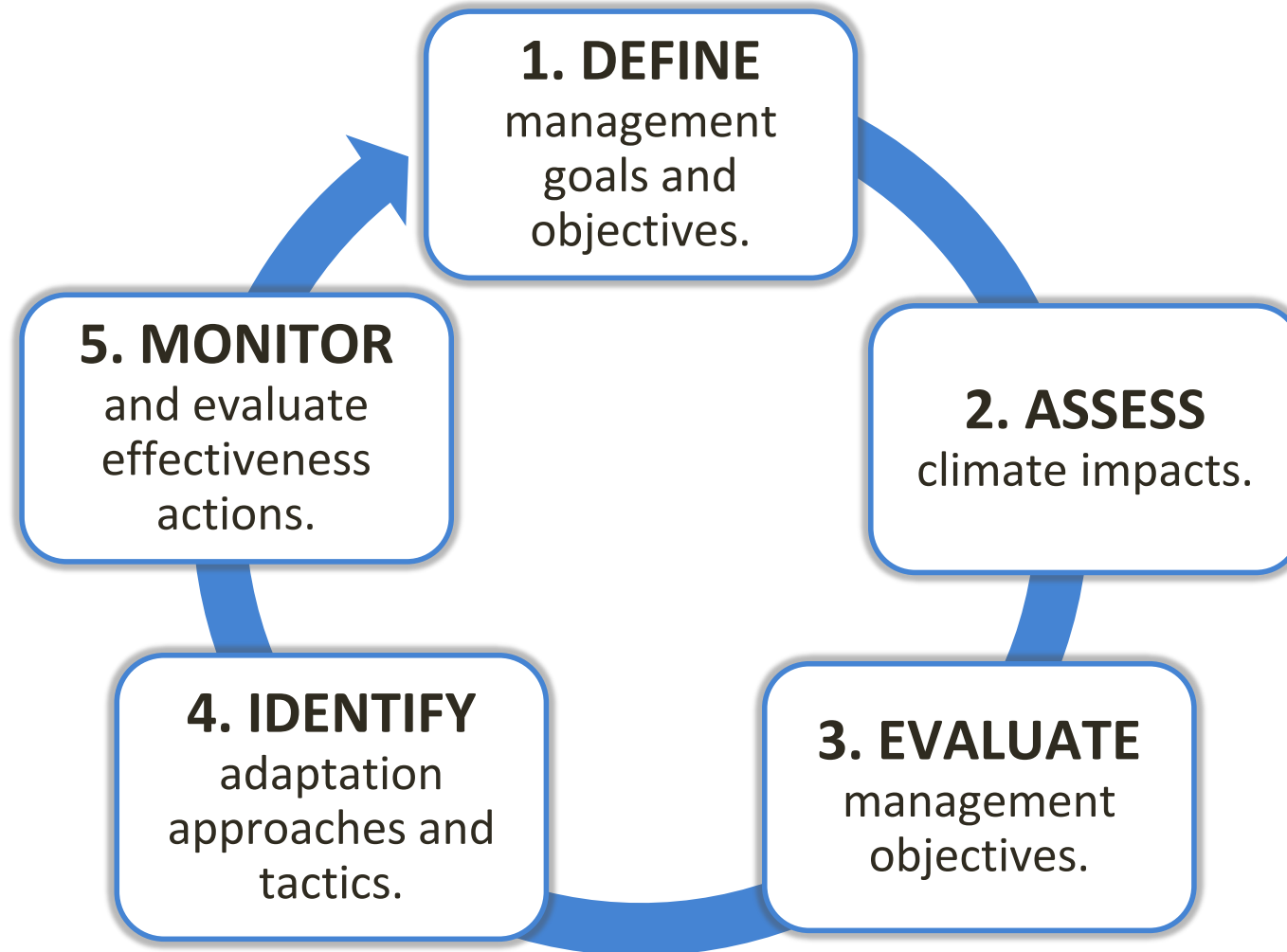
A flexible workbook and menu to address diverse needs

- Designed for a variety of land owners with diverse goals
- Does not make recommendations
- Includes:
 - Menu of adaptation strategies and approaches for forest management
 - Adaptation Workbook



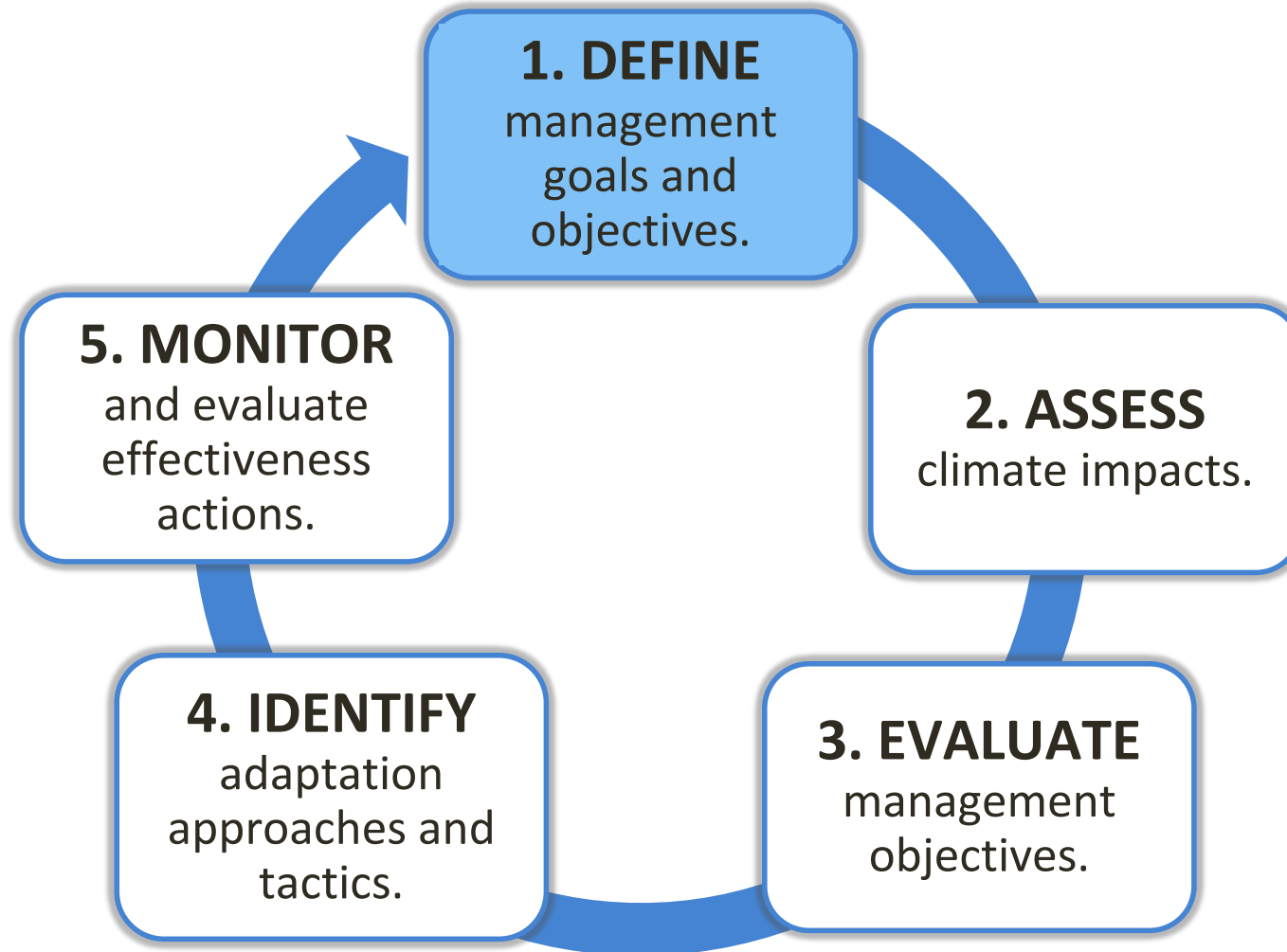
Adaptation Workbook Process

Provides “structured flexibility”



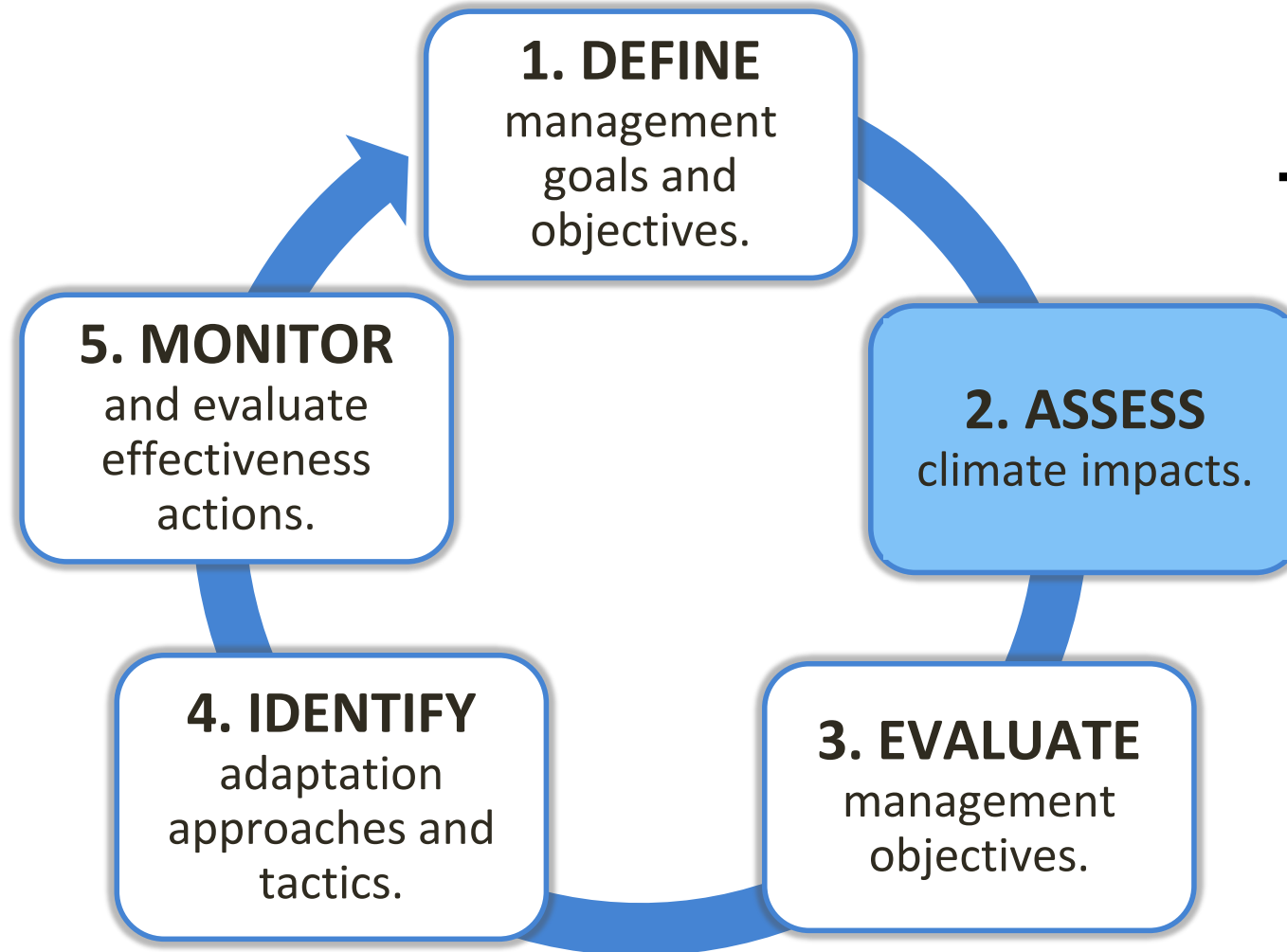
Adaptation Workbook Process

Provides “structured flexibility”



Adaptation Workbook Process

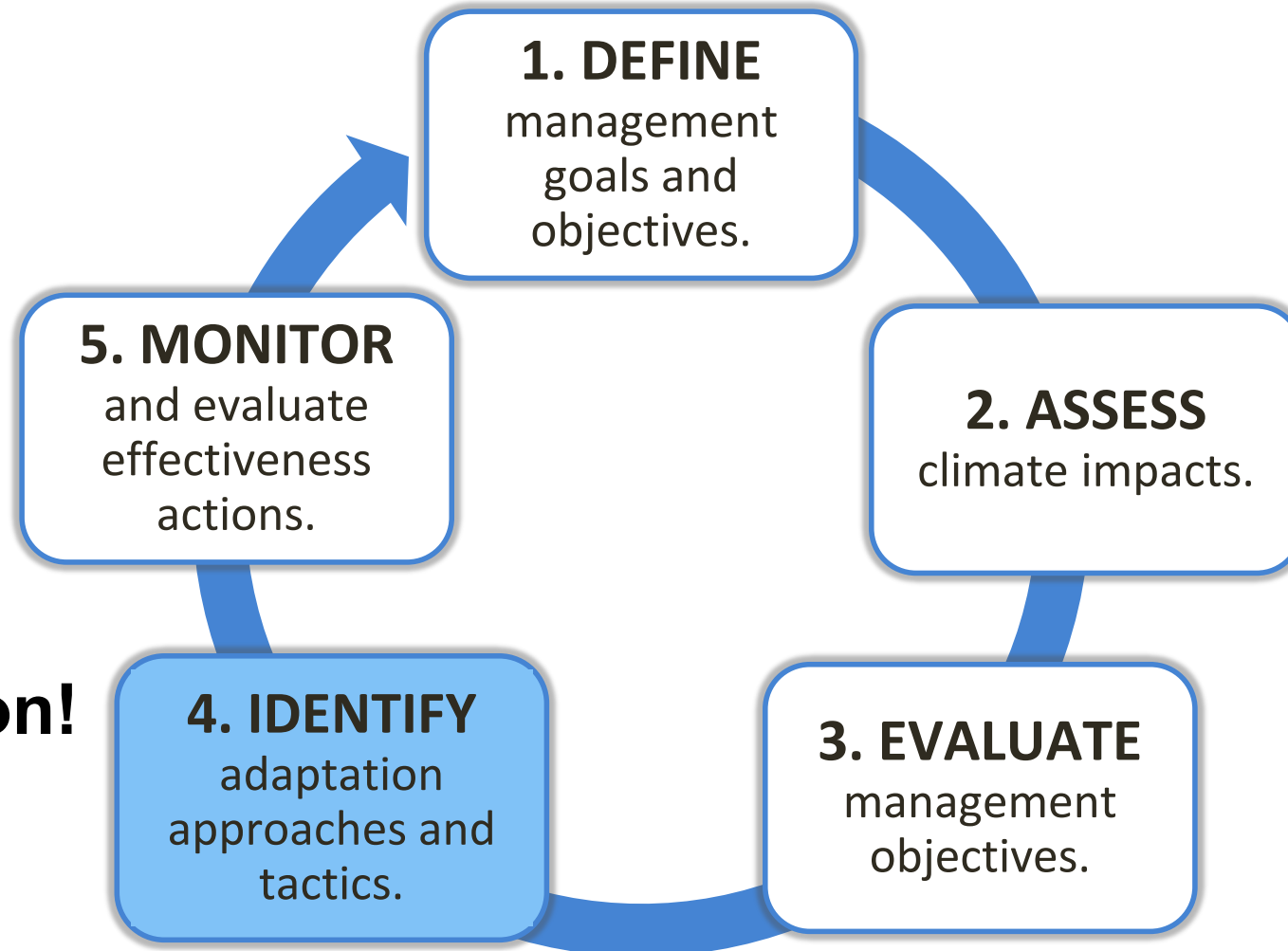
Provides “structured flexibility”



This morning!

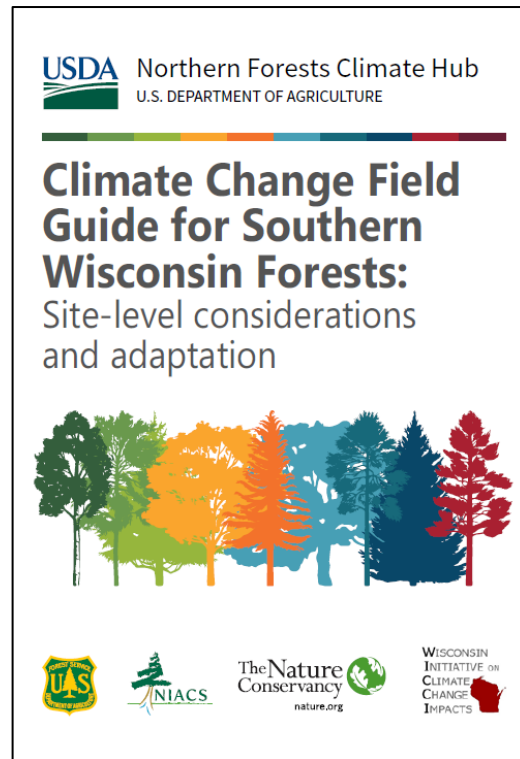
Adaptation Workbook Process

Provides “structured flexibility”

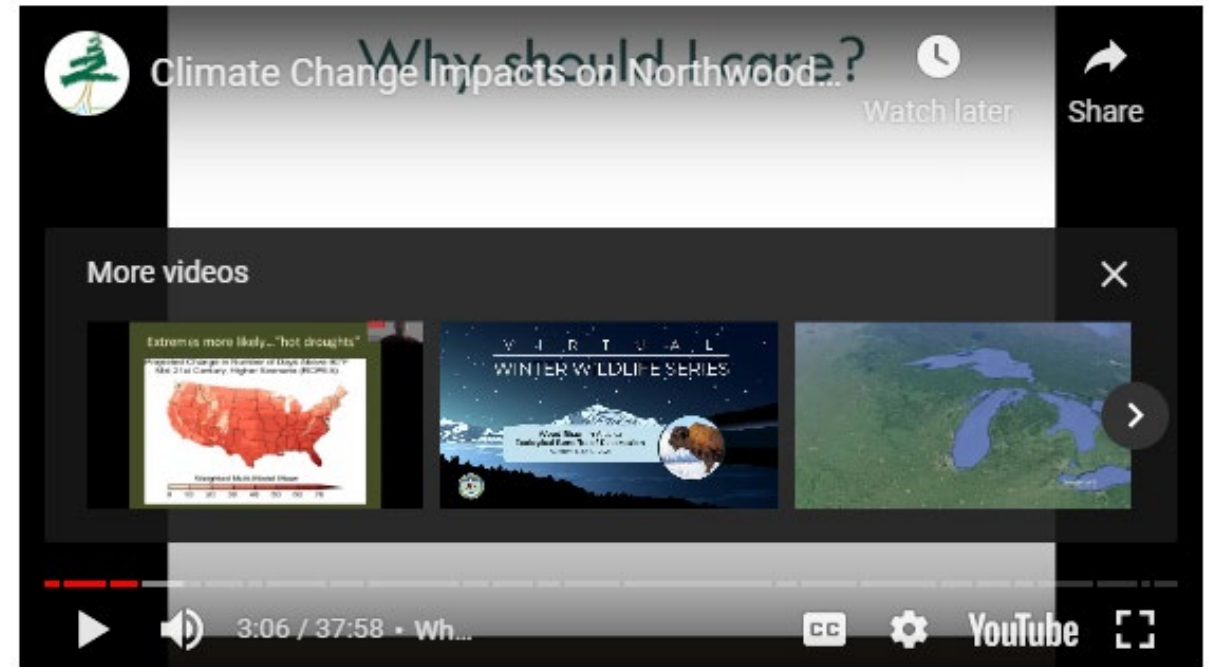


This afternoon!

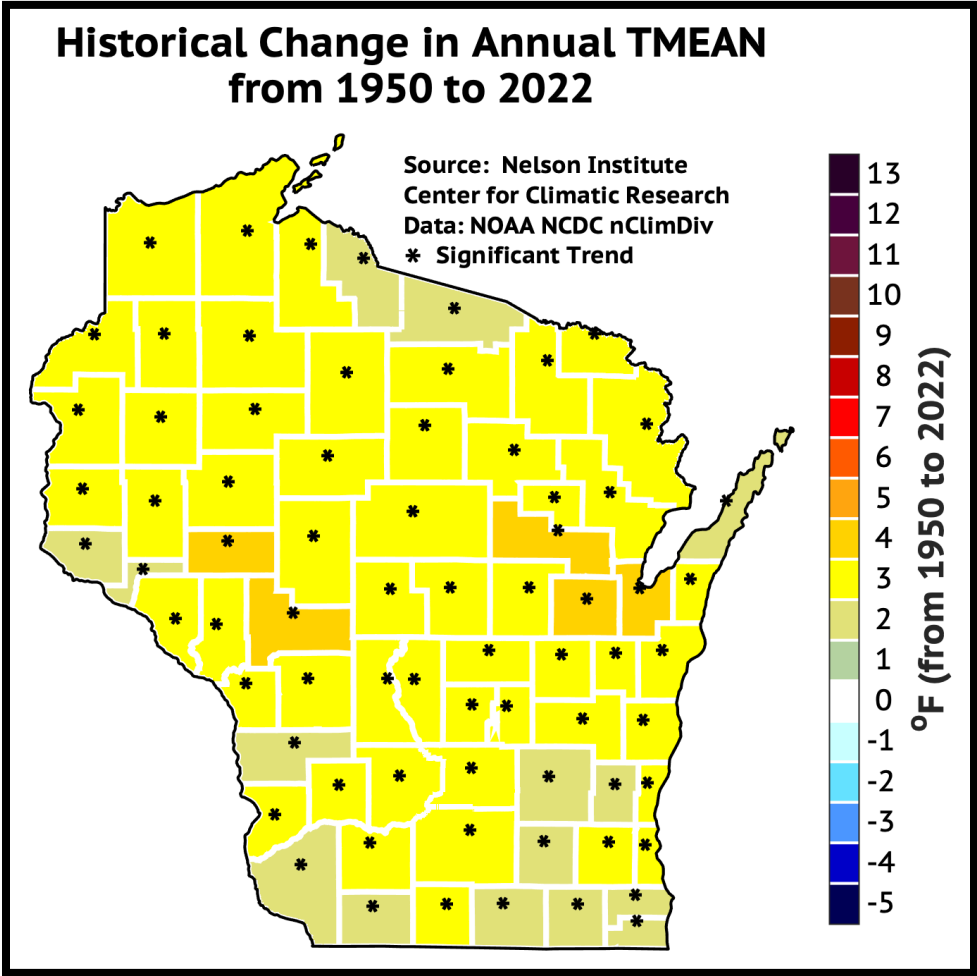
Climate Change Impacts - Recap



[Watch the recorded presentation](#) (on youtube)



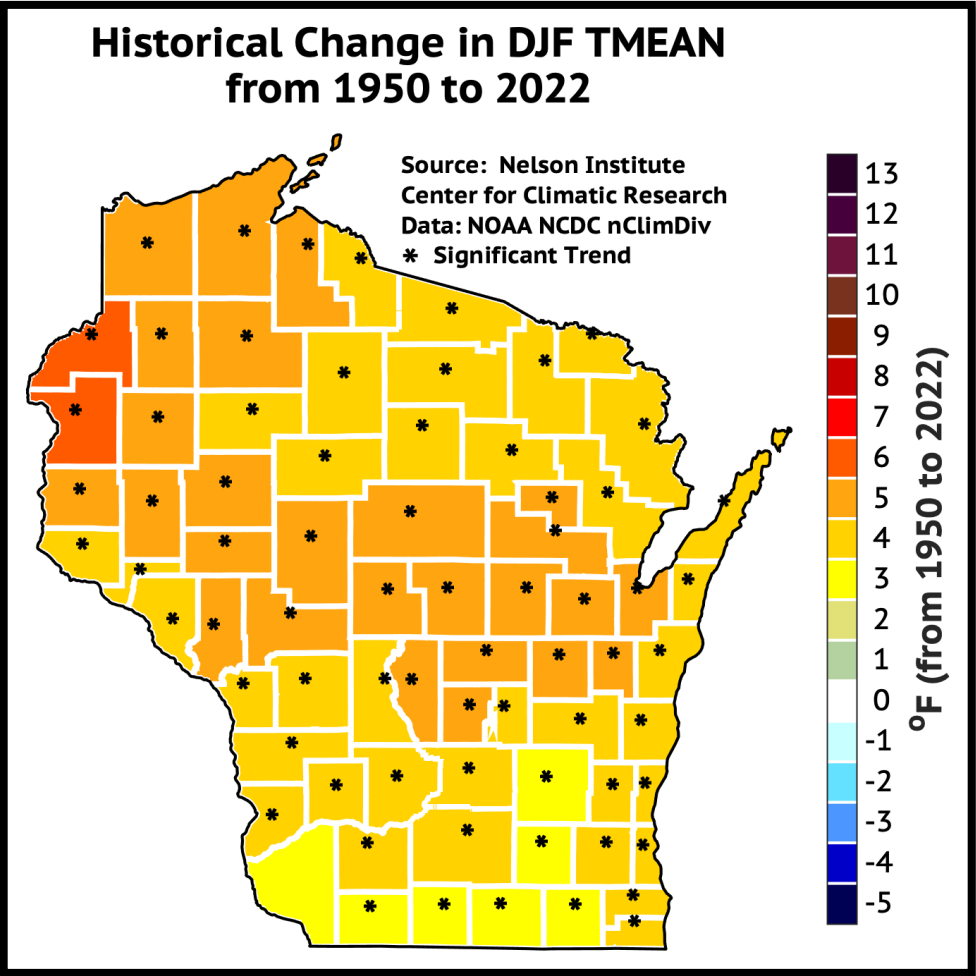
Temperature Change - Observed



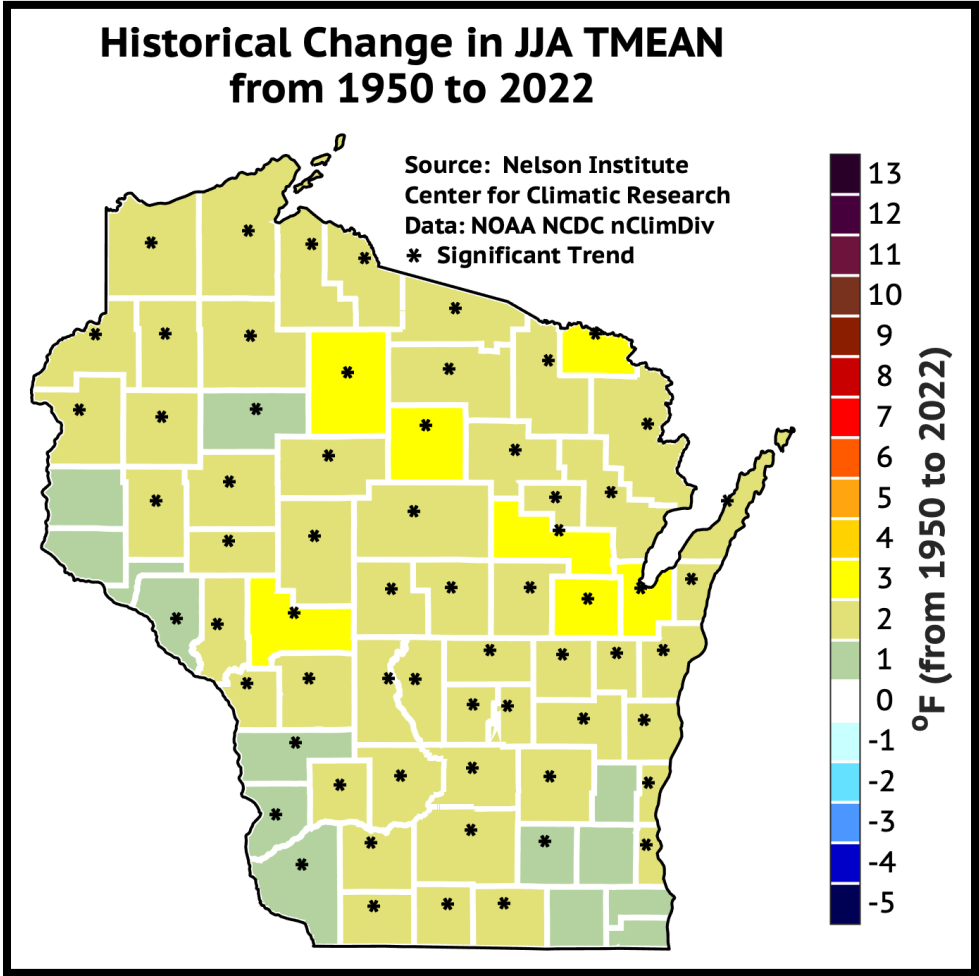
Annual

Dan Vimont, WICCI, UW-Madison

Temperature Change - Observed

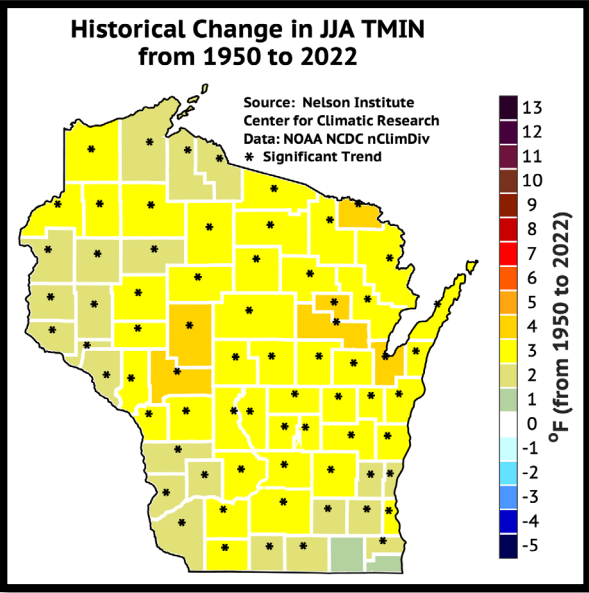


Winter

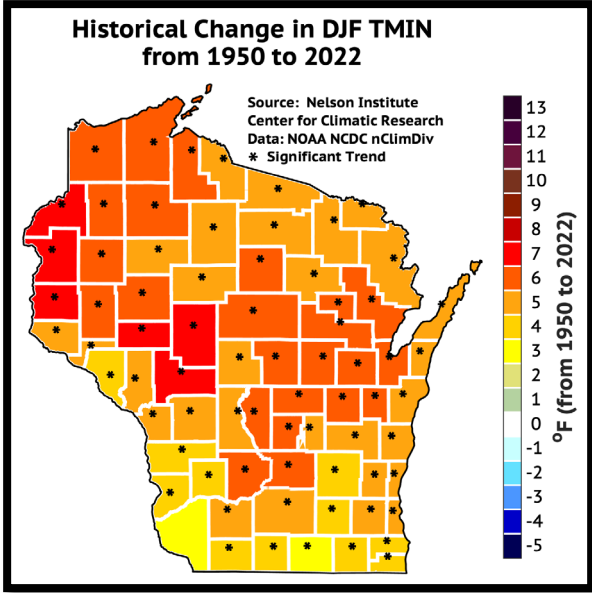


Summer

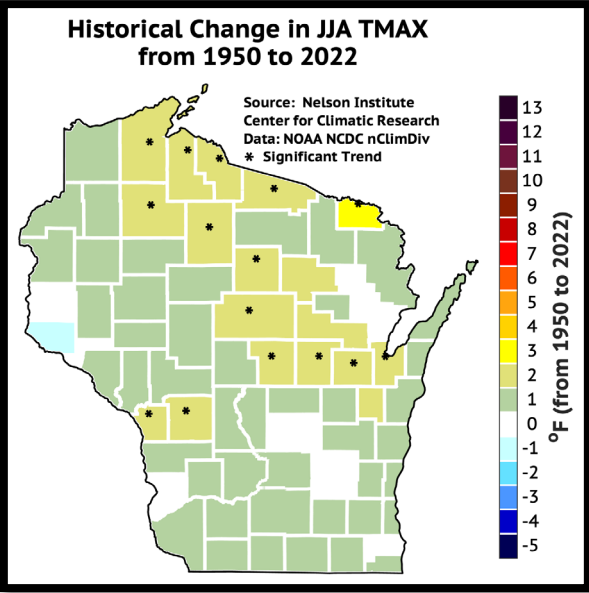
Temperature Change - Observed



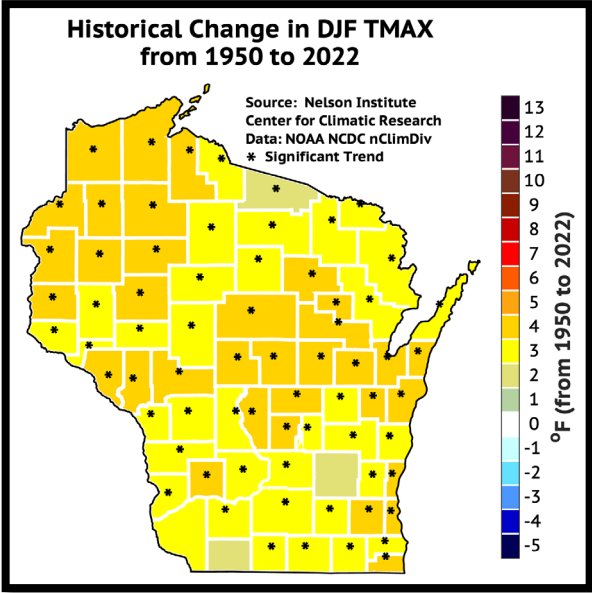
Summer Min



Winter Min

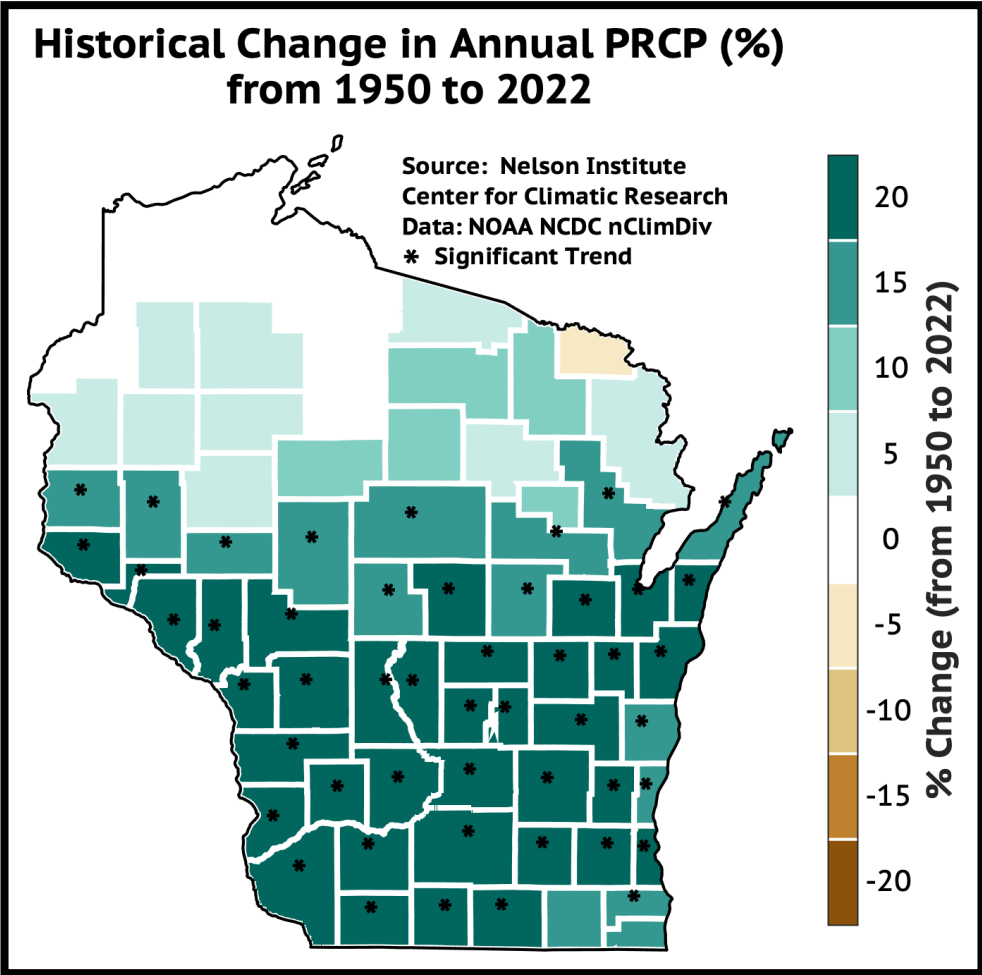


Summer Max



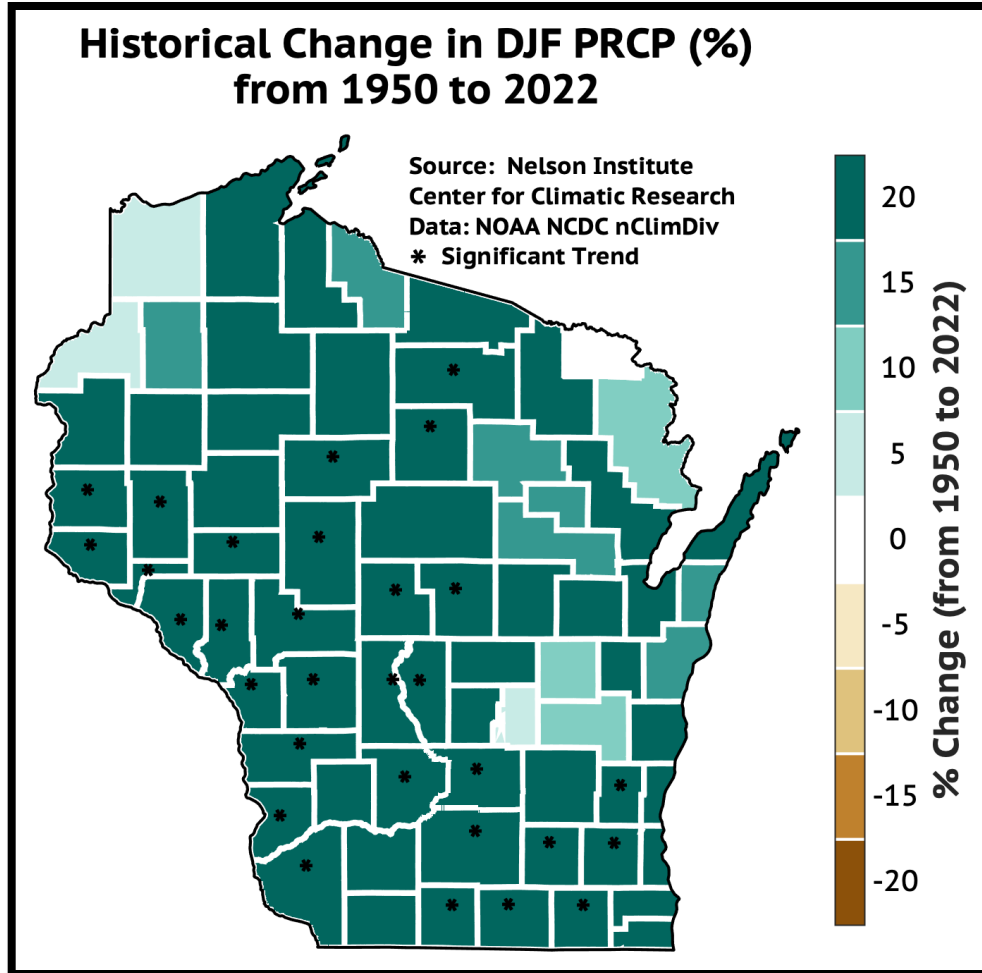
Winter Max

Precipitation Change – Observed

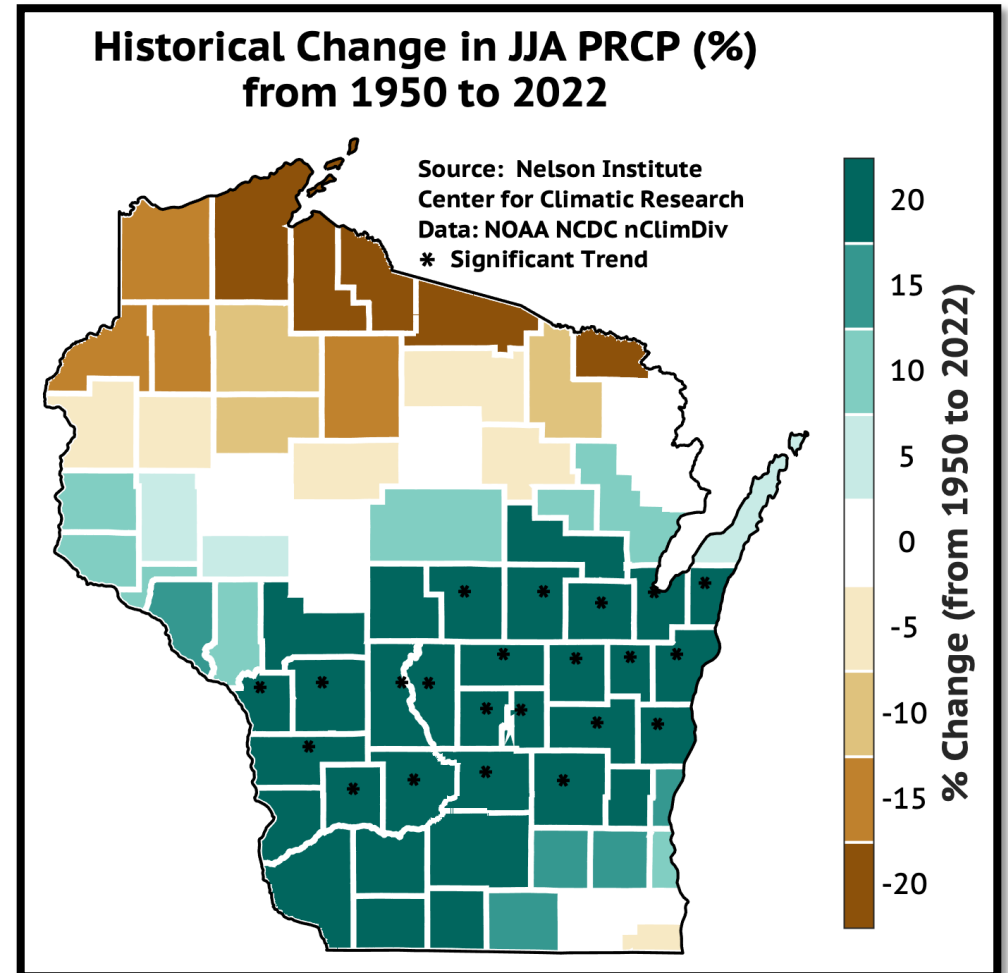


Annual

Precipitation Change – Observed



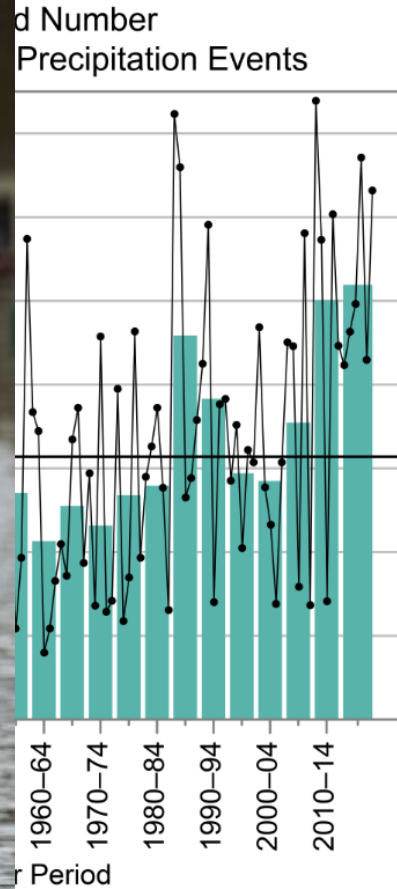
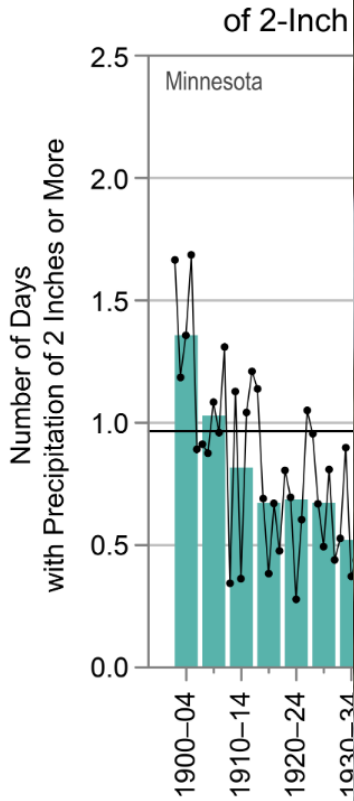
Winter



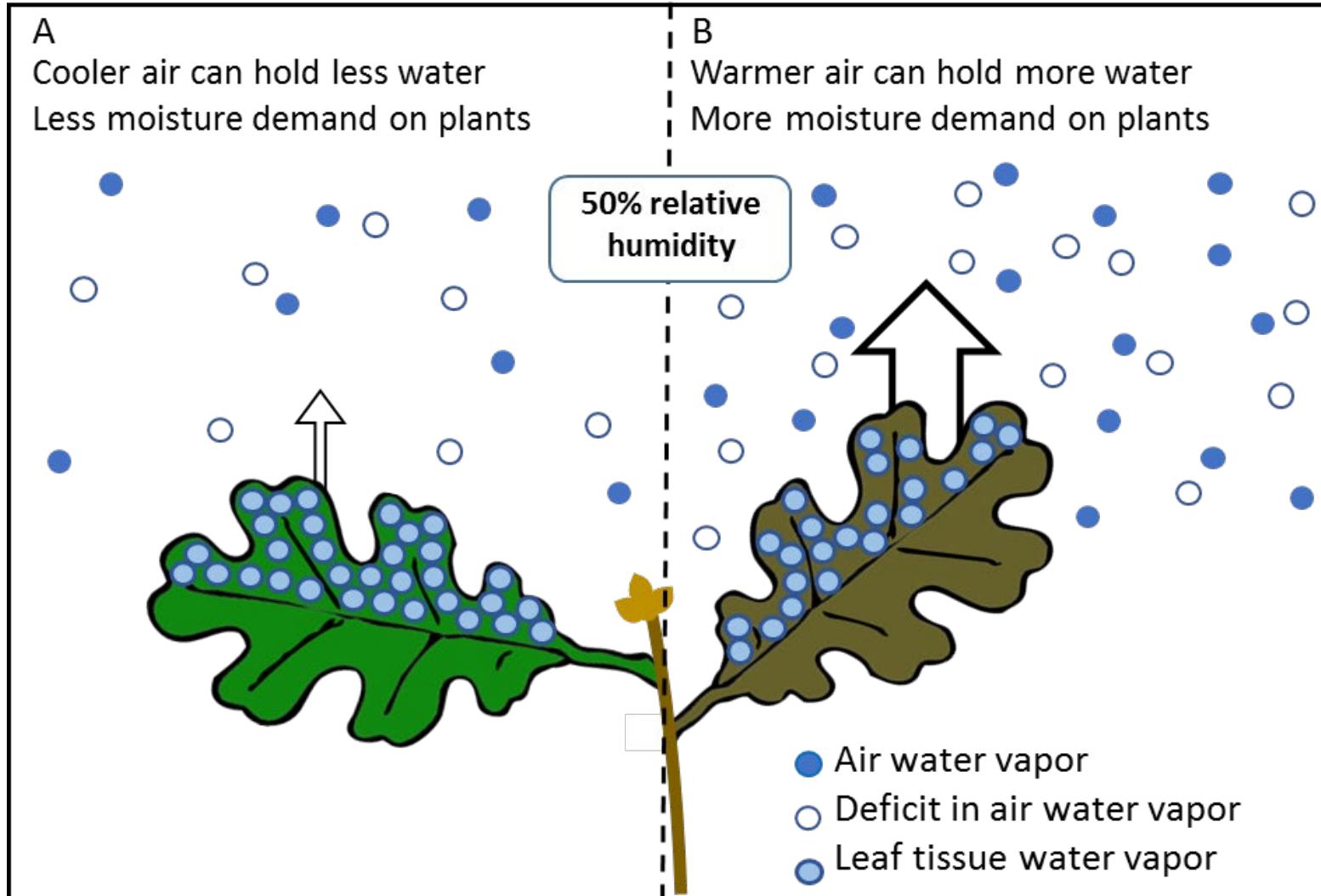
Summer

Heavy Precipitation - Observed

- Large rain events (2"+) have become more frequent



More Drought Stress

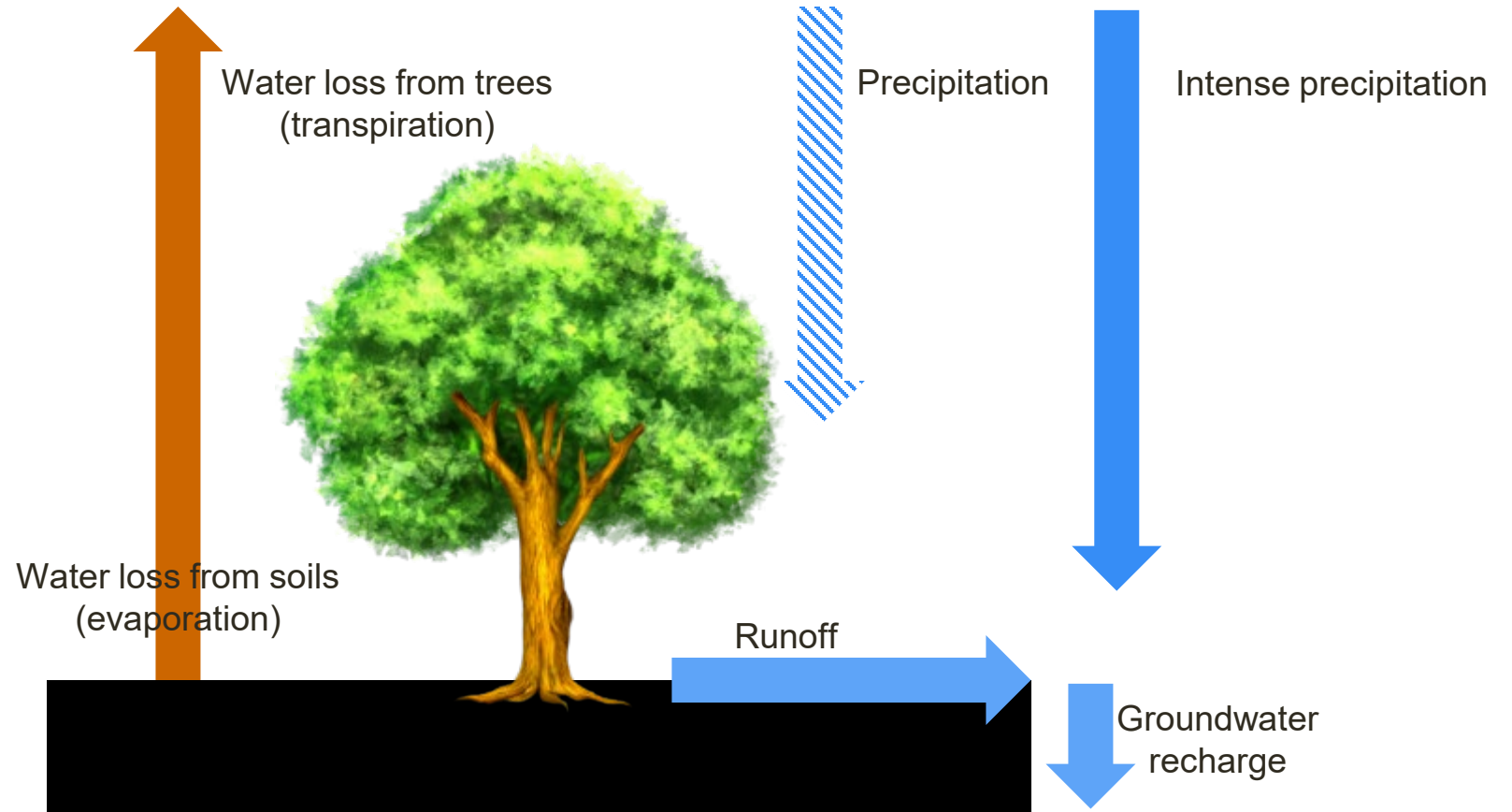


More Drought Stress

Greater uncertainty about future precipitation, but great risk of summer moisture stress

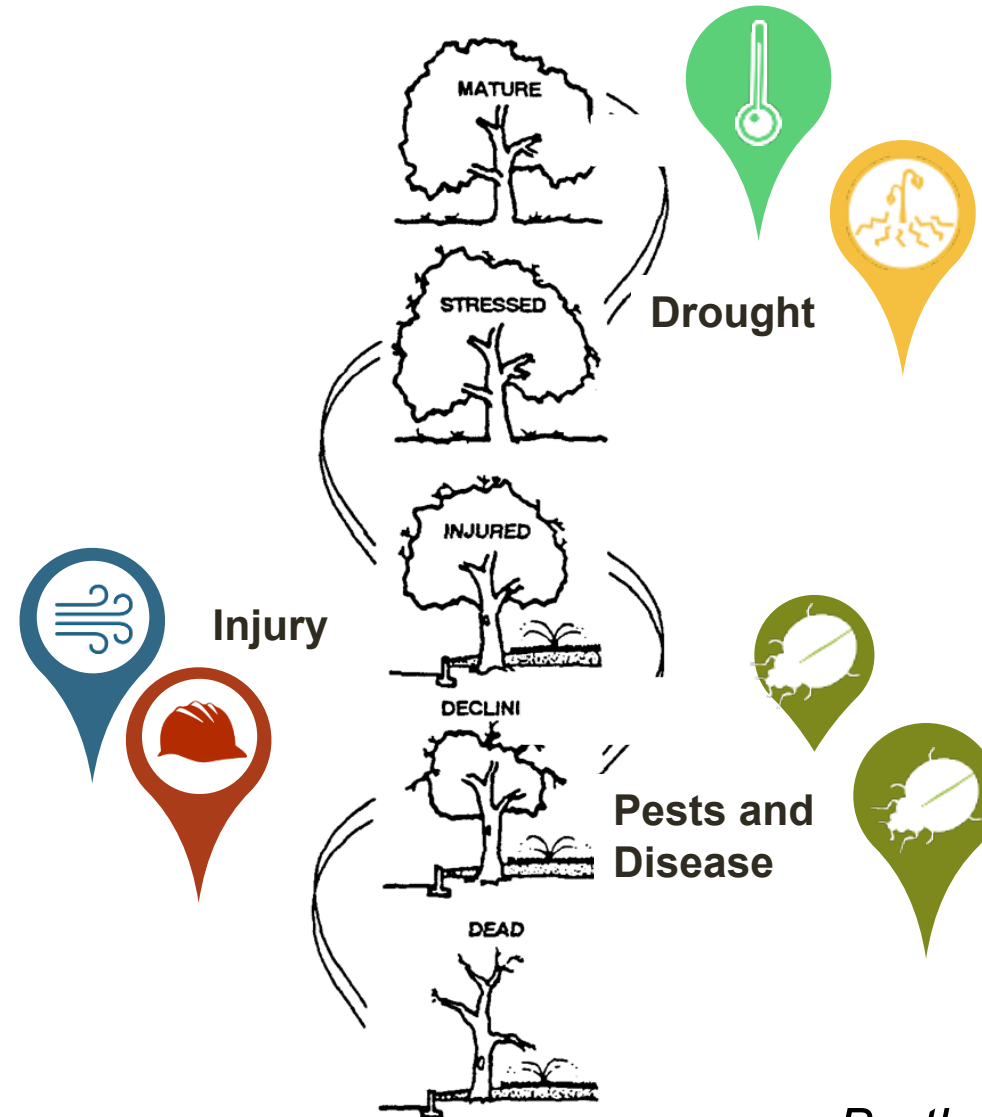
Risk may be greatest:

- Sites with drought-prone or shallow soils
- South-facing ridges
- Mesic species on drier sites (marginal sites or off-site)

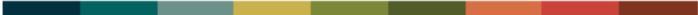


A “Threat Multiplier”

- Interactions can trigger big changes
 - Stress
 - Disturbance
 - Invasive species
 - Insect pests
 - Forest diseases



Climate Change Field Guides



Climate Change Field Guide for Northern Wisconsin Forests:

Site-level considerations and adaptation



USDA Northern Forests Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

Climate Change Field Guide for Southern Wisconsin Forests:

Site-level considerations and adaptation



Impacts by Forest Type

OAK BARRENS

Related DNR Forest Cover Types:
Oak, Jack pine, Red pine, White pine



222 K, L, R

Community Description



Occurs on drought-prone sites with sandy, nutrient-poor soil, typically outwash or lake plains and sandy terraces or thin soils over bedrock.



Trees are scattered or in groves, supporting sand prairie species, blueberry, or huckleberry.



Regular surface fire was the primary disturbance driving open structure and composition (5-20 year interval).



Major tree species: Black oak, with possible white, bur, and northern pin oak.



OAK BARRENS

60

61

Climate Change Vulnerability

Overall Vulnerability:
Will this community experience declining health, reduced extent, or identity changes by 2100?



Moderate-Low

Confidence:
How much evidence is available from research and observations? Does the evidence tend to agree or conflict?



Medium-high evidence Medium-high agreement

Climate Change Impacts: Neutral



The primary tree species in oak barrens (black, bur, and white oak) are expected to maintain or gain suitable habitat over the next century.



Increasing drought risk may slow or reduce the risk of mesic species encroachment in oak barrens.



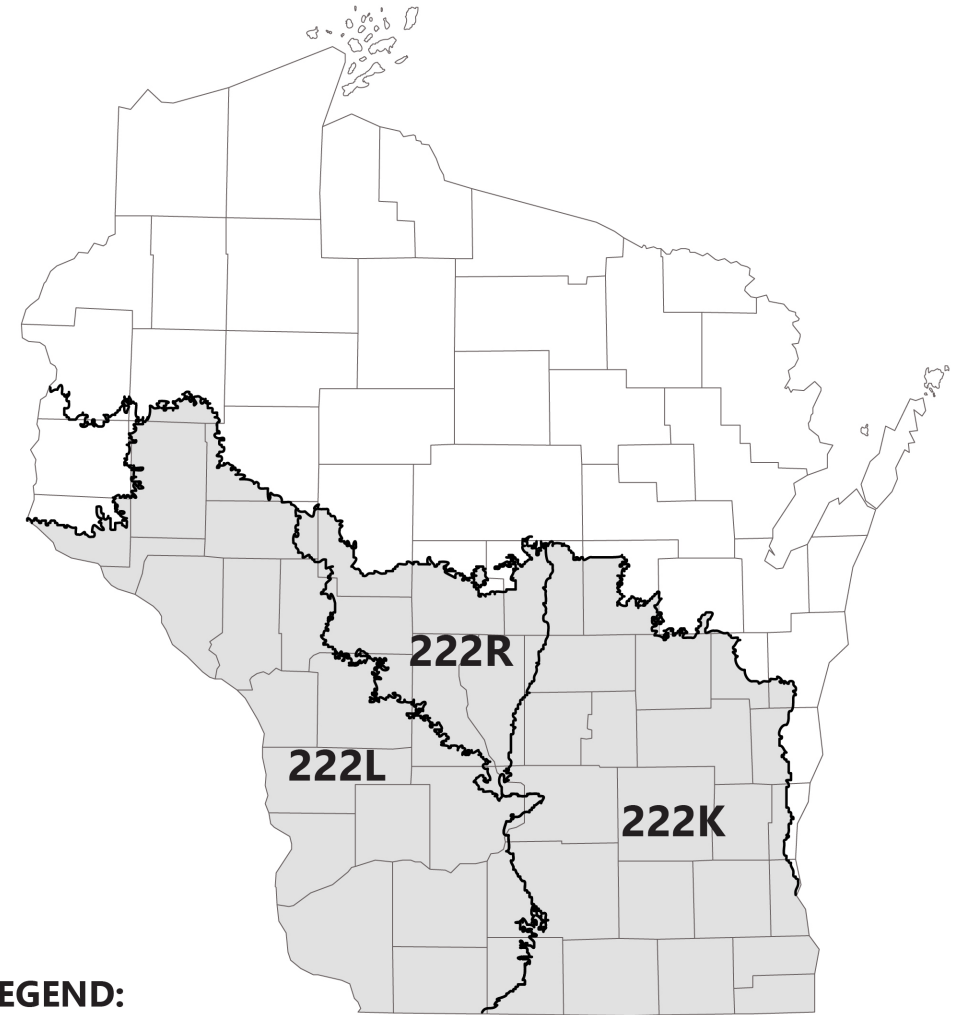
Species such as spotted knapweed, bluegrasses, brambles, or Pennsylvania sedge that can limit overall site diversity may benefit from longer growing seasons.



Shifting conditions may make it more difficult to apply prescribed fire in this community using conventional approaches.

Tree Species Info by EcoSection

SPECIES	LOW CLIMATE CHANGE (RCP 4.5)				HIGH CLIMATE CHANGE (RCP 8.5)	
	HABITAT		HABITAT		HABITAT	
	ADAPT	ABUN	CHANGE	CAPABILITY	CHANGE	CAPABILITY
Mockernut hickory	+	-	★		★	
Northern pin oak	+	•	▼	○	▼	○
Northern red oak	+	+	●	△	▼	△
Northern white-cedar	•	+	▼	▽	●	▽
Osage-orange	+	-	★		★	
Paper birch	•	•	▼	▽	▼	▽
Pecan*	-	-	★		★	
Pignut hickory	•	-	★		★	
Pin cherry*	•	+	▼	▽	▼	▽
Post oak	+	-	★		★	
Quaking aspen	•	•	▼	▽	▼	▽
Red maple	+	•	▼	○	▼	○
Red mulberry*	•	•	●	○	●	○
Red pine	-	•	▼	▽	▼	▽
River birch*	•	+	▼	▽	▼	▽
Sassafras*	•	-	★		★	
Scarlet oak	•	-	★		★	



LEGEND:

- County lines
- Ecological Section borders
- Laurentian Mixed Forest Province (222)

<https://forestadaptation.org/learn/resource-finder/tree-species-projections-ecological-sections-southern-wisconsin>

Operations!



Identify & Prioritize Climate Impacts



Activity:

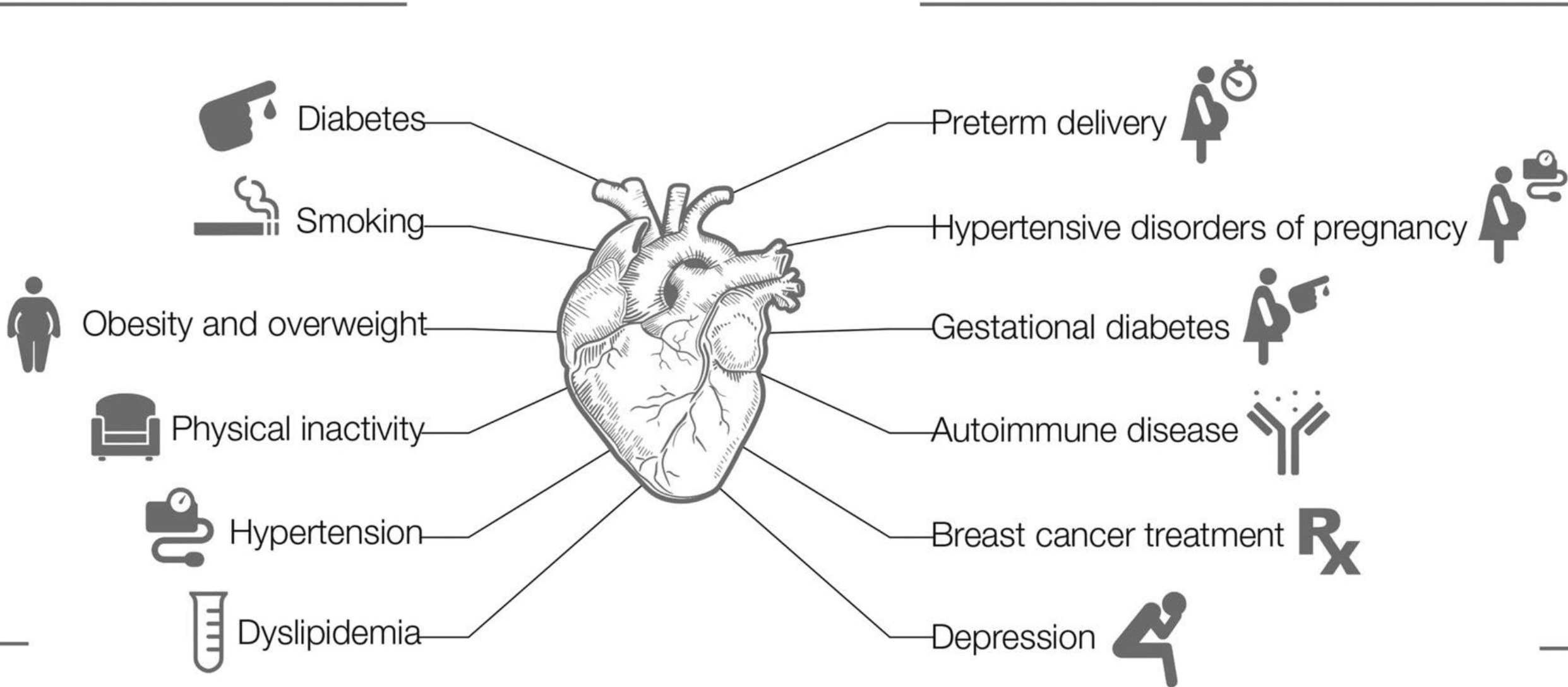
- Review field guides
- Select 3 high-priority climate impacts for each forest type
 - Climate impacts
 - Tree species information for your Ecosection
 - Operations
 - Other ideas!



Climate Impacts for Priority Forest Types & Site-Level Considerations

County:		Name:
Forest Type #1	Climate Change Impacts and Vulnerabilities Review information from field guide (forest type information, tree species projections, other information). What are the priority climate impacts for this forest type?	Site-Level Considerations Which places or which conditions are most vulnerable in your county? Do you have any "High Risk" conditions? Estimated % or acres of this forest type that are high/low risk?
Lowland Conifer	Impact #1: Pest outbreaks (ELB) Why is this a priority? Native pests, already here	
	Impact #2: Droughts + Warmer Temps Why is this a priority? Peat layers decompose	
	Impact #3: Extreme precip Why is this a priority? Water level changes, already disrupted hydrology	
	Bonus:	

High or Low Risk?



High or Low Risk?

Site-level Considerations Checklist

- ✓ Species diversity
- ✓ Structural diversity
- ✓ Regeneration
- ✓ Pests and diseases
- ✓ Prescribed fire
- ✓ Landscape position
- ✓ Drought risk/ soil moisture
- ✓ Access and operability
- ✓ Natural disturbances
- ✓ Past management
- ✓ Size and connectivity

63

Site-level Considerations

Site-level factors could make an oak barrens stand more or less vulnerable to climate change. Here are some factors to consider as you visit a particular site.

Factors that increase climate risk	Topic	Factors that decrease climate risk
Closed forest structure, canopy cover > 60%, shrub and subcanopy cover > 30%.	Overstory and subcanopy structure	Open forest structure, canopy cover 5-60%, shrub and subcanopy cover 0-30%, oak seedlings and sprouts common.
Ground layer diversity is low, or is dominated by aggressive natives or non-native invasive species. Bare soil resulting from anthropogenic disturbance is common.	Shrub and ground flora composition	Widespread cover of diverse native herbs, including native grass/ sedges other than Pennsylvania sedge (e.g., Junegrass, little bluestem). Few to no non-native invasives.
Site is small and isolated, surrounded by agricultural or developed land.	Size and connectivity	Site is part of a large complex of dry forest and sand prairie.
Landscape context, stand size, and lack of fuels or firebreaks limit the use of prescribed fire.	Prescribed fire	Site is well-suited for prescribed fire. Has been managed with prescribed fire in the past.

Activity:

- Review field guides
- Take notes for each of your forest types
 - Which risk factors apply to your county?
 - Estimates of % or acres that have “high risk” conditions?
 - Do some locations have higher risk than others?



Climate Impacts for Priority Forest Types & Site-Level Considerations

County:		Name:																								
Forest Type #1	Climate Change Impacts and Vulnerabilities Review information from field guide (forest type information, tree species projections, other information). What are the priority climate impacts for this forest type?	Site-Level Considerations Which places or which conditions are most vulnerable in your county? Do you have any "High Risk" conditions? Estimated % or acres of this forest type that are high/low risk?																								
Lowland Conifer	Impact #1: Pest outbreaks (ELB) Why is this a priority? Native pests, already here	<table border="1"> <thead> <tr> <th>Factors that increase climate risk</th> <th>Topic</th> <th>Factors that decrease climate risk</th> </tr> </thead> <tbody> <tr> <td>Only a few species dominate the site</td> <td>← Species diversity</td> <td>→ Site has a diverse mix of native tree species</td> </tr> <tr> <td>Simple structure and a single age class</td> <td>← Structural diversity</td> <td>→ A diversity of age classes on the site or across the landscape</td> </tr> <tr> <td>Ditches, roads, dams, or other changes have altered local hydrology</td> <td>← Natural processes</td> <td>→ Natural hydrology has been maintained</td> </tr> <tr> <td>Damage from forest pests or diseases such as tamarack sawfly or mistletoe</td> <td>← Pests and diseases</td> <td>→ No looming threats; stand is vigorous and healthy</td> </tr> <tr> <td>Small site that relies on precipitation inputs, prone to extreme water table changes</td> <td>← Water table fluctuation</td> <td>→ Large wetland with groundwater inputs and a stable water table</td> </tr> <tr> <td>Regeneration limited by deer or non-native species</td> <td>← Regeneration</td> <td>→ Tree regeneration is not limited</td> </tr> <tr> <td>Requires frozen ground or deep snow</td> <td>← Access and operability</td> <td>→ Can occur in seasons other than winter</td> </tr> </tbody> </table>	Factors that increase climate risk	Topic	Factors that decrease climate risk	Only a few species dominate the site	← Species diversity	→ Site has a diverse mix of native tree species	Simple structure and a single age class	← Structural diversity	→ A diversity of age classes on the site or across the landscape	Ditches, roads, dams, or other changes have altered local hydrology	← Natural processes	→ Natural hydrology has been maintained	Damage from forest pests or diseases such as tamarack sawfly or mistletoe	← Pests and diseases	→ No looming threats; stand is vigorous and healthy	Small site that relies on precipitation inputs, prone to extreme water table changes	← Water table fluctuation	→ Large wetland with groundwater inputs and a stable water table	Regeneration limited by deer or non-native species	← Regeneration	→ Tree regeneration is not limited	Requires frozen ground or deep snow	← Access and operability	→ Can occur in seasons other than winter
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Impact #2: Droughts + Warmer Temps Why is this a priority? Peat layers decompose																										
Impact #3: Extreme precip Why is this a priority? Water level changes, already disrupted hydrology																										
Bonus:																										

Adaptation taking action in preparation or in response to climate change.



Adaptation taking action in preparation or in response to climate change. **(and still meeting your goals)**



Adaptation taking action in preparation or in response to climate change. **(and still meeting your goals)**



Adaptation actions are designed to **intentionally** address climate change impacts and vulnerabilities in order to meet goals and objectives

Climate Change Adaptation

If you want a single “answer” for how to respond to climate change, it’s

“It depends”

It depends on **where** you are working and **what** you’re trying to achieve.

Adaptation Options

Resistance

Resilience

Transition



Adaptation Menu

- A collection of possible adaptation actions
- Allows the user to choose actions that make sense for their situation.

<i>Brunch Classics</i>			
Lemon Ricotta Pancakes Whipped Mascarpone Maple, Berries	15	AJ's Omelet Fontal Cheese, Spinach, Mushrooms	14
Cornflake Crusted French Toast Berries, Maple Syrup	15	Eggs Florentine Spicy Capicola, House-Made Cheddar Biscuit, Spinach	15
Bacon, Egg & Cheese Bacon, Two Eggs, Taleggio Cheese, Ciabatta	14	Porchetta Hash Poached Egg, Calabrian Chili Hollandaise	16
Avocado Toast Poached Eggs, Tomatoes, Chili Flakes, Sea Salt	15	Chia Pudding Chia Seeds, Toasted Coconut, Banana, Strawberry	14
Chicken Parmigiana Spicy Marinara, Fresh Mozzarella	22	Farmhouse Breakfast Two Eggs, House-Made Cheddar Biscuit, Chicken Sausage	14
Squid Ink fettuccine Vongole Little Neck Clams, Garlic, White Wine, Butter, Chili	22	Chicken Kale Caesar Chicken, Kale, Croutons	16
<i>Create Your Own Pasta</i>			
<i>Shapes</i>		<i>Sauces</i>	
Rigatoni Semolina, All-Purpose Flour, Olive Oil	14	Marinara San Marzano tomatoes, Garlic, White Wine, Basil, Chili	
Cavatelli All-Purpose Flour, Durum Flour, Eggs, Ricotta	15	Arrabiata All-Purpose Flour, Durum Flour, Eggs, Ricotta	+1
Tagliatelle All-Purpose Flour, Durum Flour, Eggs	15	Broken Meatball House Tomato Sauce with the Addition of Broken Meatballs	+4
Gluten-Free Rigatoni Gluten-Free All-Purpose Flour, Olive Oil, Eggs	16	Sunday Sauce House Tomato Sauce with Short Rib, Sausage, Veal	+4
Spaghetti Semolina, Durum Flour, Olive Oil	15	Roasted Garlic Pecorino Semolina, Durum Flour, Olive Oil	+2
Four Cheese Herb Ravioli Fontal, Ricotta, Parmesan, Pecorino	18	Carbonara Pancetta, Eggs, Peas, Pecorino	+3
<i>Sides</i>		<i>Brunch Cocktails</i>	
Pecorino Truffle Fries	8	Bloody Mary Vodka, Spiced Fresh DOP Tomato Juice, Horseradish	10/45
Potato Hash	6	Cointreau Spritz Cointreau Spritz, Aperol, Crème de Peche, Sparkling Wine	12/55
Bacon	6	Green Side Reyka Vodka, Green Juice, Lemon	12/55
Turkey Sausage	6	Morning Derby Bourbon, Grapefruit, Ginger, Carrot Juice	12/55
Field Greens	7	Sangria Red Wine, Fresh Fruit, Pisco, Crème de Peche	10/45
Two Eggs Any Style	6	Firing Squad Milagros Tequila, Cointreau, Fresh Lime, Grenadine	12/55
Beignets	8	Tall Mimosa Reyka Vodka, Cointreau, Jake's Mimosa Juice, Sparkling Wine	12/55
Baked Goods	10		



Adaptation Menu

- Connects broad adaptation ideas to specific actions



Adaptation Menus

- Forests
 - Urban Forests
 - Agriculture
 - Forested Watersheds
 - Tribal Perspectives
 - Forest Carbon Management
 - Recreation
 - Wetlands (non-forested)
 - Wildlife
 - Fire-adapted ecosystems
- Great Lakes Coastal Ecosystems
 - Grasslands*

Menu of Adaptation Strategies and Approaches

Developed for forests

Strategy 1: Sustain fundamental ecological functions.

- 1.1. Reduce impacts to soils and nutrient cycling.
- 1.2. Maintain or restore hydrology.
- 1.3. Maintain or restore riparian areas.
- 1.4. Reduce competition for moisture, nutrients, and light.
- 1.5. Restore or maintain fire in fire-adapted ecosystems.

Strategy 2: Reduce the impact of biological stressors.

- 2.1. Maintain or improve the ability of forests to resist pests and pathogens.
- 2.2. Prevent the introduction and establishment of invasive plant species and remove existing invasive species.
- 2.3. Manage herbivory to promote regeneration of desired species.

Strategy 3: Reduce the risk and long-term impacts of severe disturbances.

- 3.1. Alter forest structure or composition to reduce risk or severity of wildfire.
- 3.2. Establish fuelbreaks to slow the spread of catastrophic fire.
- 3.3. Alter forest structure to reduce severity or extent of wind and ice damage.
- 3.4. Promptly revegetate sites after disturbance.

Strategy 4: Maintain or create refugia.

- 4.1. Prioritize and maintain unique sites.
- 4.2. Prioritize and maintain sensitive or at-risk species or communities.
- 4.3. Establish artificial reserves for at-risk and displaced species.

Strategy 5: Maintain and enhance species and structural diversity.

- 5.1. Promote diverse age classes.
- 5.2. Maintain and restore diversity of native species.
- 5.3. Retain biological legacies.
- 5.4. Establish reserves to maintain ecosystem diversity.

Strategy 6: Increase ecosystem redundancy across the landscape.

- 6.1. Manage habitats over a range of sites and conditions.
- 6.2. Expand the boundaries of reserves to increase diversity.

Strategy 7: Promote landscape connectivity.

- 7.1. Reduce landscape fragmentation.
- 7.2. Maintain and create habitat corridors through reforestation or restoration.

Strategy 8: Maintain and enhance genetic diversity.

- 8.1. Use seeds, germplasm, and other genetic material from across a greater geographic range.
- 8.2. Favor existing genotypes that are better adapted to future conditions.

Strategy 9: Facilitate community adjustments through species transitions.

- 9.1. Favor or restore native species that are expected to be adapted to future conditions.
- 9.2. Establish or encourage new mixes of native species.
- 9.3. Guide changes in species composition at early stages of stand development.
- 9.4. Protect future-adapted seedlings and saplings.
- 9.5. Disfavor species that are distinctly maladapted.
- 9.6. Manage for species and genotypes with wide moisture and temperature tolerances.
- 9.7. Introduce species that are expected to be adapted to future conditions.
- 9.8. Move at-risk species to locations that are expected to provide habitat.

Strategy 10: Realign ecosystems after disturbance.

- 10.1. Promptly revegetate sites after disturbance.
- 10.2. Allow for areas of natural regeneration to test for future-adapted species.
- 10.3. Realign significantly disrupted ecosystems to meet expected future conditions.



To be used in the Adaptation Workbook decision-support framework – Swanston et al, 2016. Forest Adaptation Resources: climate change tools and approaches for land managers, 2nd edition <http://www.treesearch.fs.fed.us/pubs/52760> **More information can be found at www.forestadaptation.org/strategies**

Activity:

- Review adaptation menus
- Brainstorm adaptation actions for each of your forest types
 - Can you address each risk?
 - Common practice and new ideas!
 - Address site-level considerations



Check Your Work...

Do your adaptation ideas address:

- Your management Goals and Objectives?
- The priority climate change impacts?
- Special features/ considerations in your county?
- Stuff you're already doing as well as new ideas?
- A range of different adaptation options? (R/R/T)

Forest Type Discussions!



Performance Measure 9.1 = Adaptation

- Indicator 1: Based on the best scientific information, Certified Organizations shall **identify climate change risks and prioritize them** based on likelihood, nature, and severity
- Indicator 2: Certified Organizations shall **develop an adaptation plan** to address priority climate change risks...
- Indicator 3: Certified Organizations shall document how their adaptation plan objectives and strategies fit within **broader regional climate adaptation strategies and plans**, where they exist
- Indicator 4: Certified Organizations shall **report annually** to SFI Inc. their progress towards achieving climate change adaptation strategies and plans.

 **Today**

 **Today**

 **Soon**

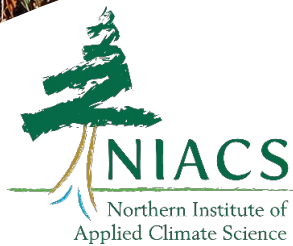
Next Steps

- Gaps or information needs?
- Next steps for you?
- Next steps for us (workshop organizers)?
- What support do you need?

What we heard yesterday:

- Plan template
- Share statewide/regional resources
- Clearinghouse of research on climate impacts, management practices, etc.
- Presentations/ discussions with county boards

Thank you!



**Wisconsin County
Forests Association**

