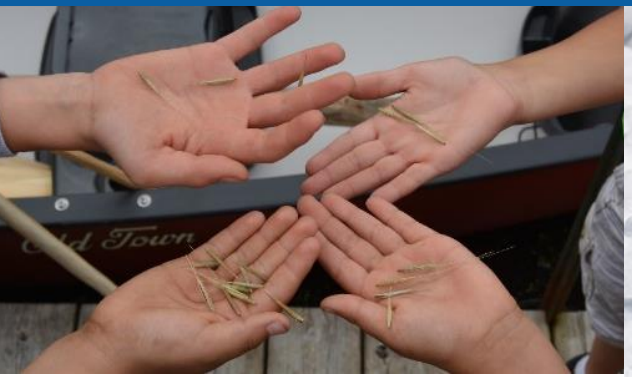
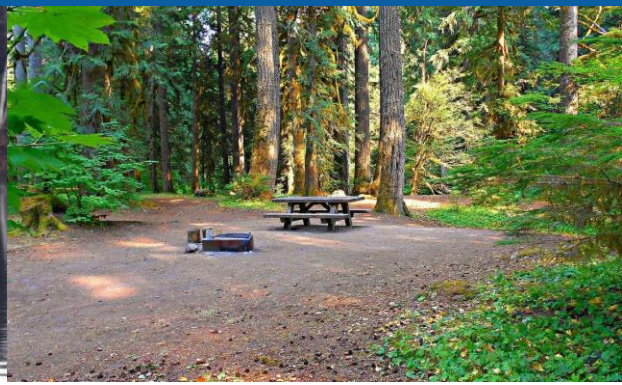
Climate Change Adaptation Menu Training: Chippewa National Forest and Leech Lake Band of Ojibwe



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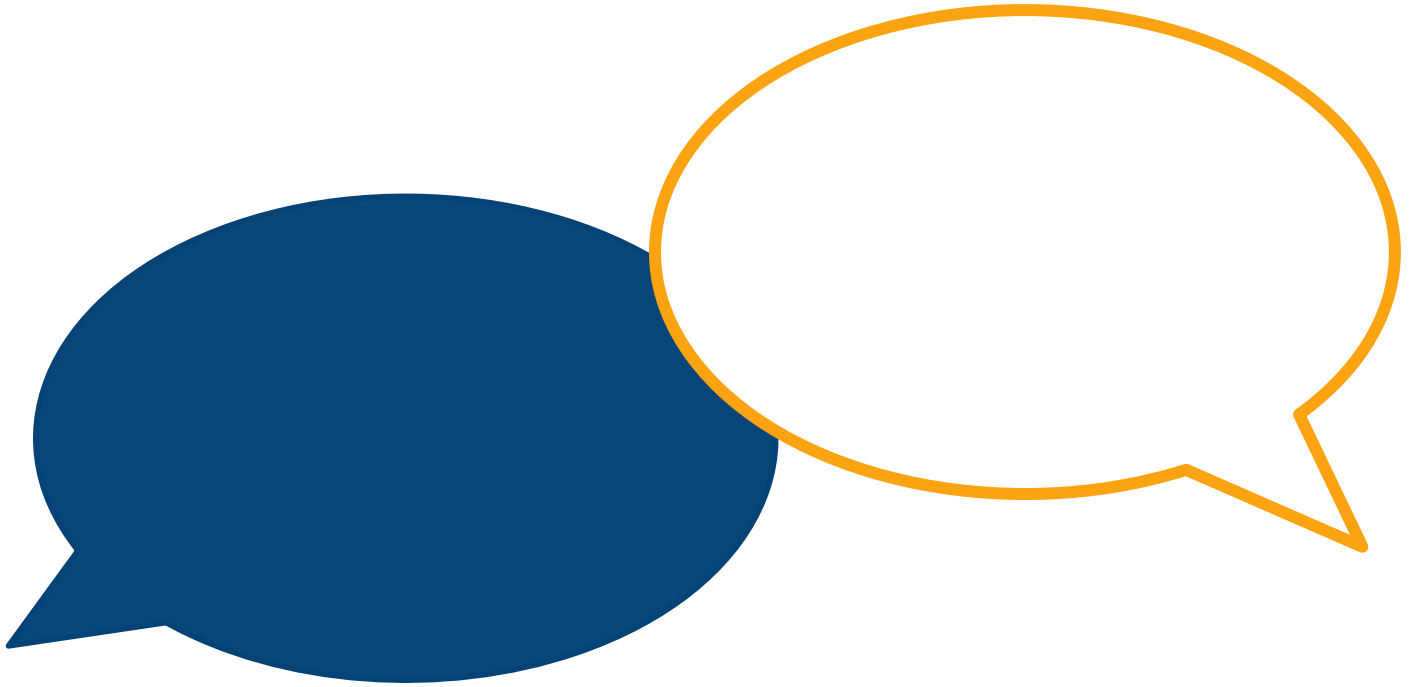
US
DEPARTMENT OF AGRICULTURE

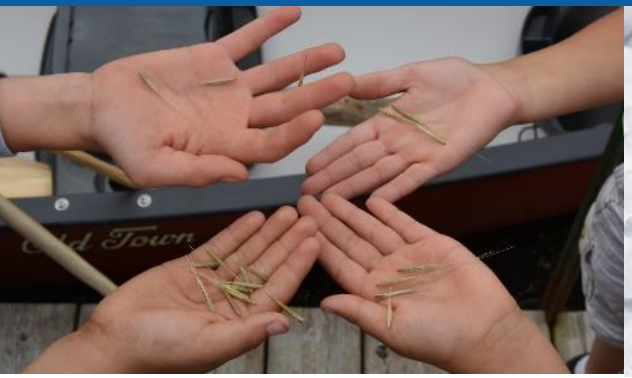
NIACS
Northern Institute of Applied Climate Science

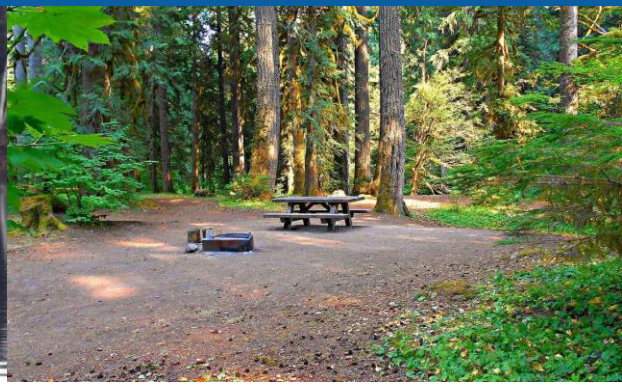
February 17-18, 2021

Introductions



Climate Change Adaptation Menu Training: Chippewa National Forest and Leech Lake Band of Ojibwe



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Northern Institute of Applied Climate Science (aka NIACS)

Climate

Carbon

Chartered by USDA Forest Service, universities, non-profit and tribal conservation organizations

NIACS
Northern Institute of Applied Climate Science

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

Michigan Technological University

Great Lakes Indian Fish & Wildlife Commission

The University of Vermont

University of Minnesota

American Forests

NCASI

Northern Institute of Applied Climate Science (aka NIACS)

Climate and Carbon Services

- Climate impacts modeling
- Vulnerability assessment
- Climate adaptation
- Carbon science & management
- Science translation & professional training

22 Staff Members (Forest Service/Universities)

- 11 climate adaptation specialists
- 6 research scientists
- 2 web specialists
- 3 GIS/lab specialists

Practical information

Adaptation resources

Technical assistance

NIACS
Northern Institute of Applied Climate Science

www.niacs.org

Why are we here?

- Get a quick recap of **regional and local climate change trends**.
- **Learn about several new adaptation menus,** covering a range of topics.
- Work on example projects to **brainstorm adaptation project ideas**.

www.facebook.com/ChippewaNF

What are we doing?

Day 1

- Climate change trends
- Activity: climate impacts
- Adaptation menus
- Activity: menu review

Day 2

- Activity: discussion roundtables
- Activity: developing example projects
- Activity: sharing examples

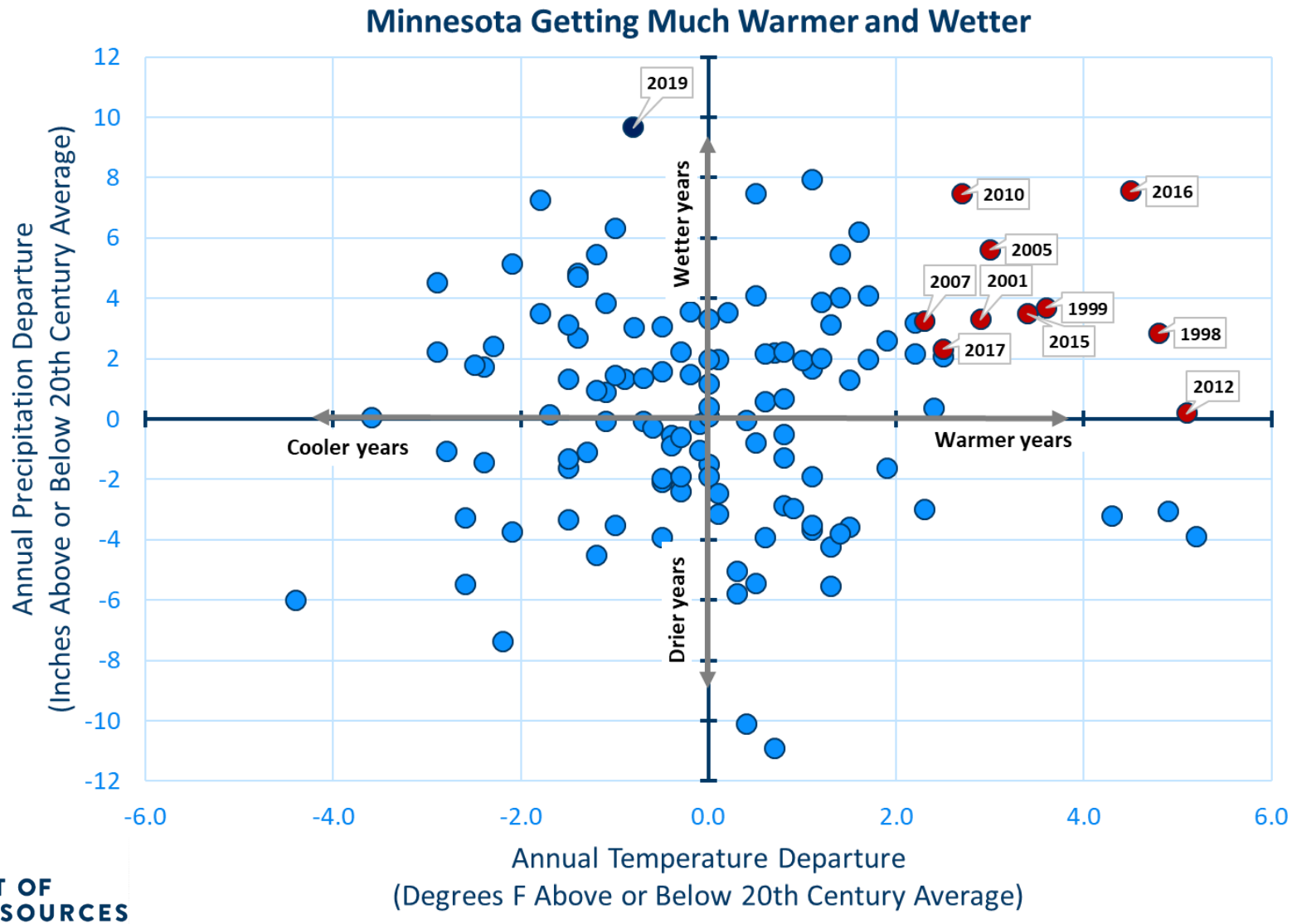
Climate change recap: The BIG THREE

- Annually: warmer and wetter
- Warmer winters
- More heavy rain

www.facebook.com/ChippewaNF

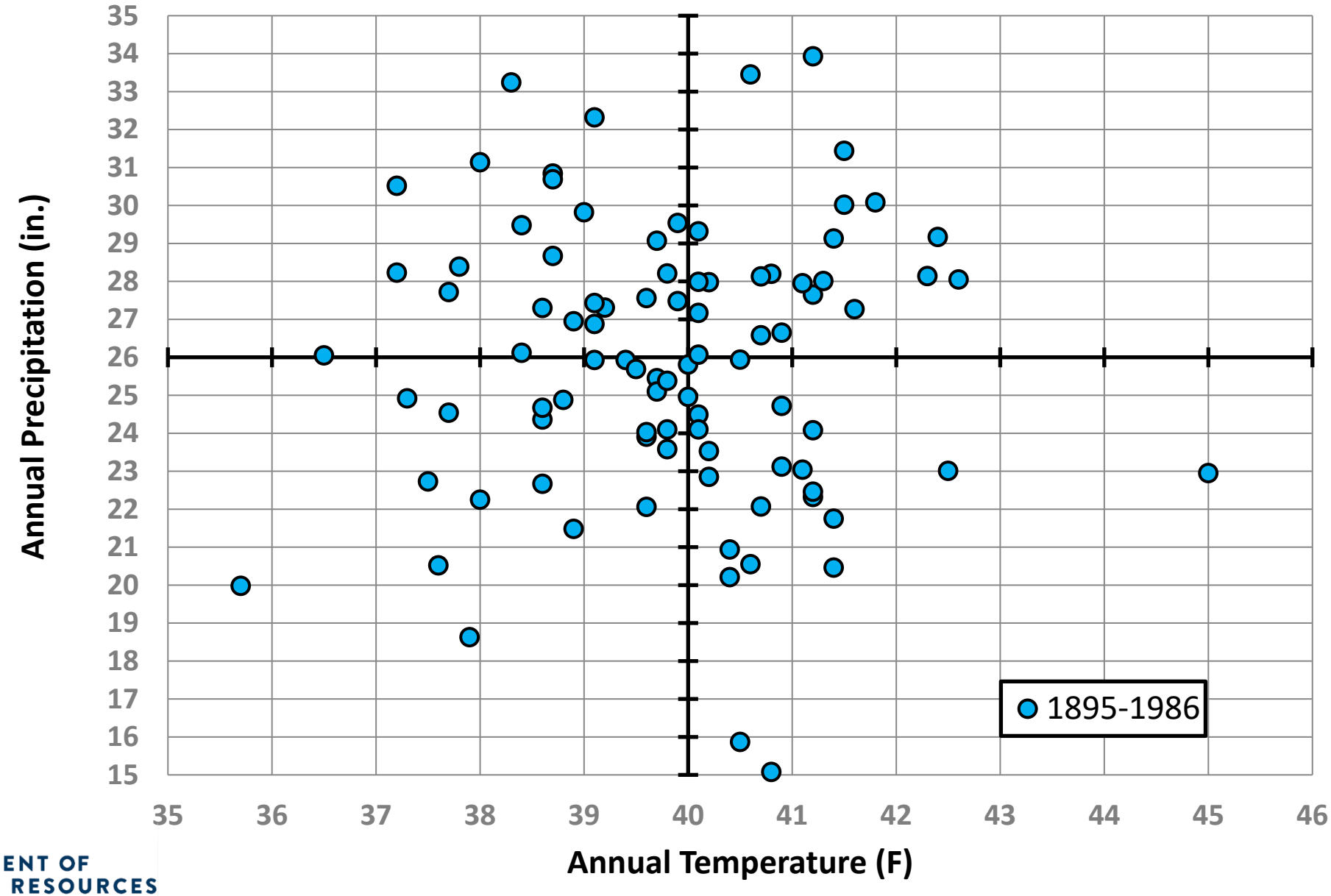
Source: Kenny Blumenfeld, Kenneth.Blumenfeld@state.mn.us

Wetter and Warmer Conditions Observed



DEPARTMENT OF NATURAL RESOURCES

Minnesota Average Temperature and Precipitation



DEPARTMENT OF NATURAL RESOURCES

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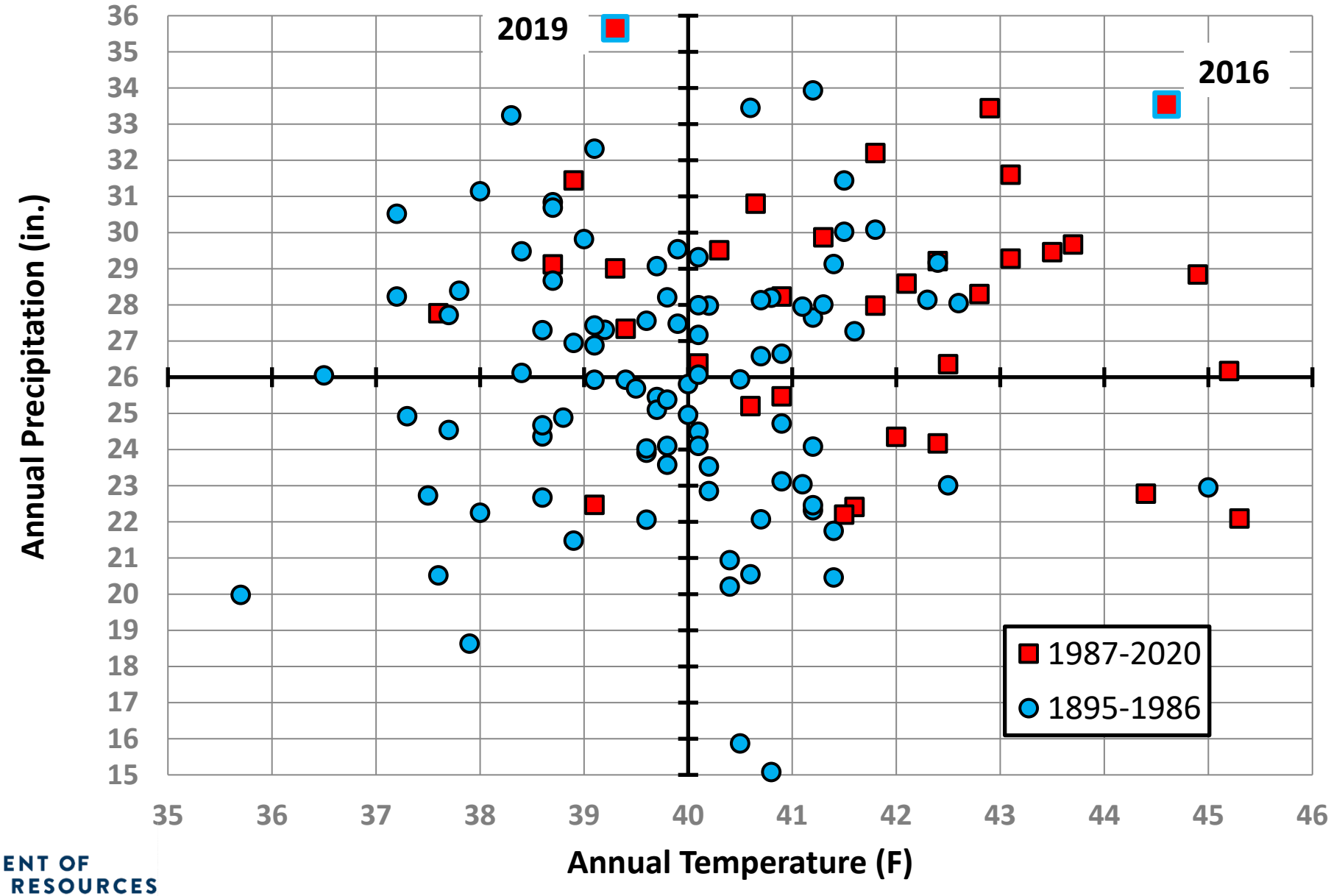
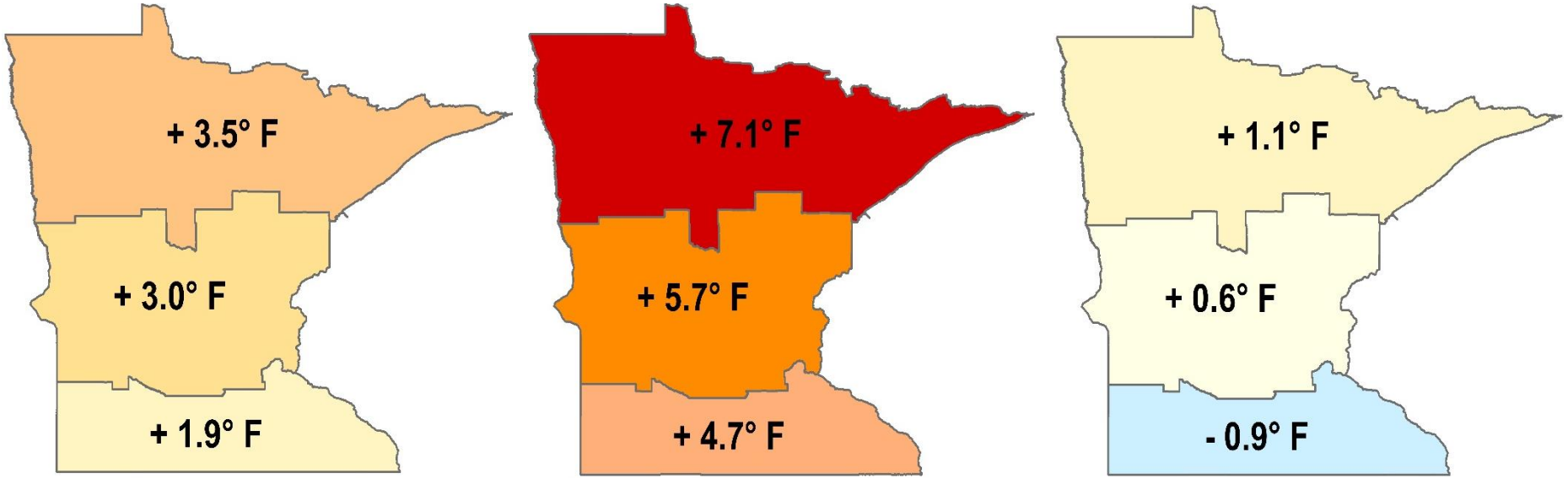


DEPARTMENT OF NATURAL RESOURCES

Warmer winters: where the action is

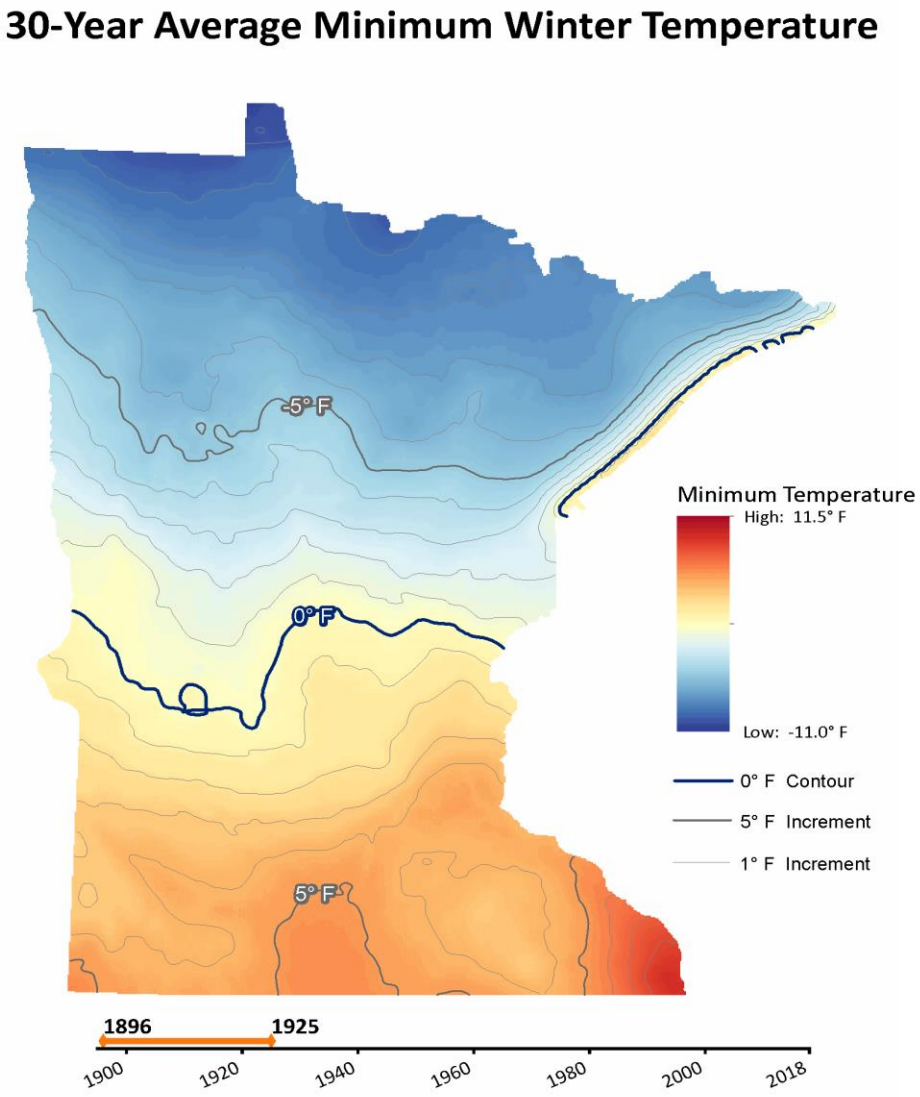
Total temperature change, 1895 – 2019



Annual Average | **Winter Lows** | **Summer Highs**

DEPARTMENT OF NATURAL RESOURCES

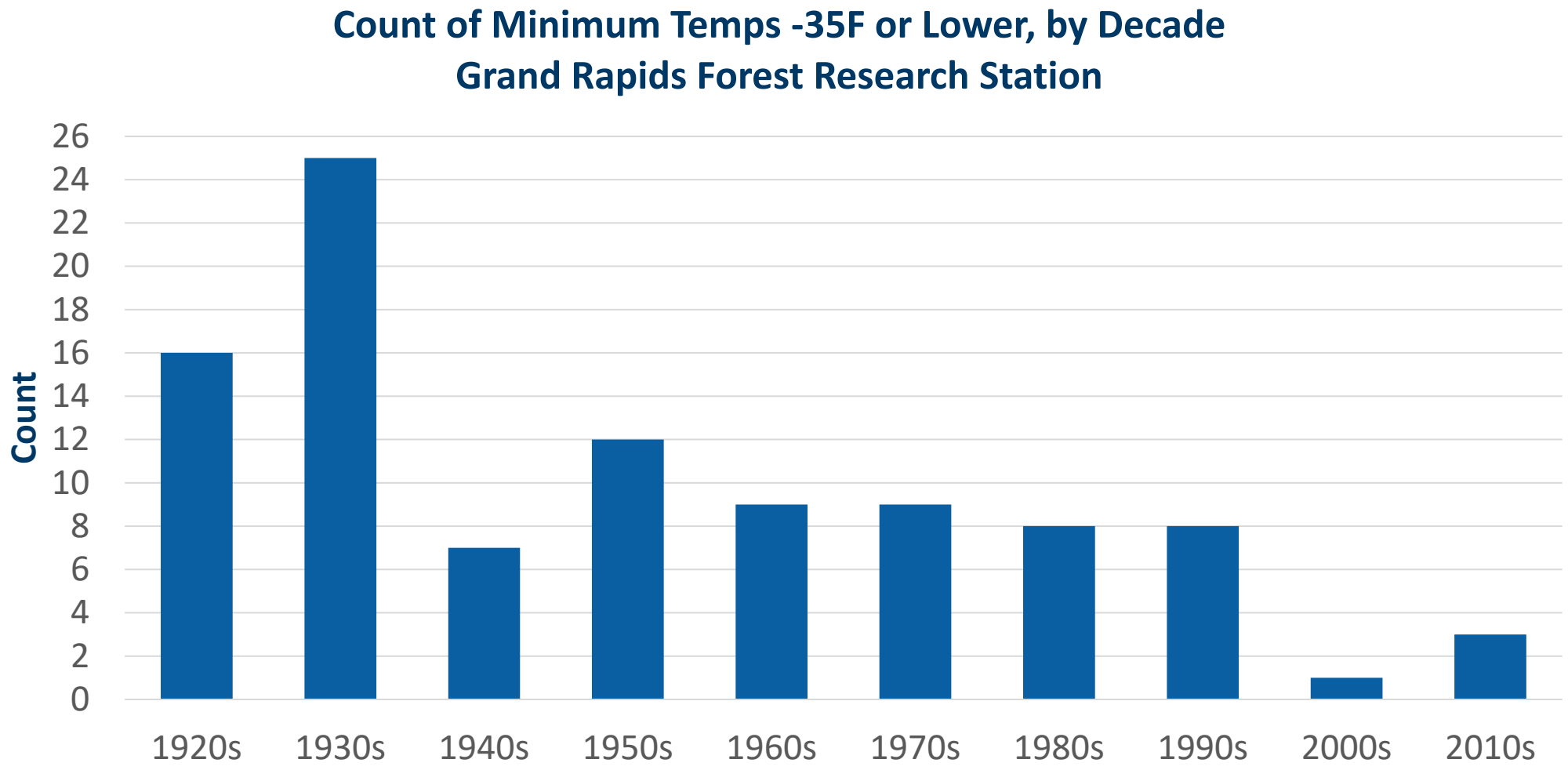
Warmer winters: where the action is



Courtesy B. Gosack,
MN DNR WHAF program

DEPARTMENT OF NATURAL RESOURCES

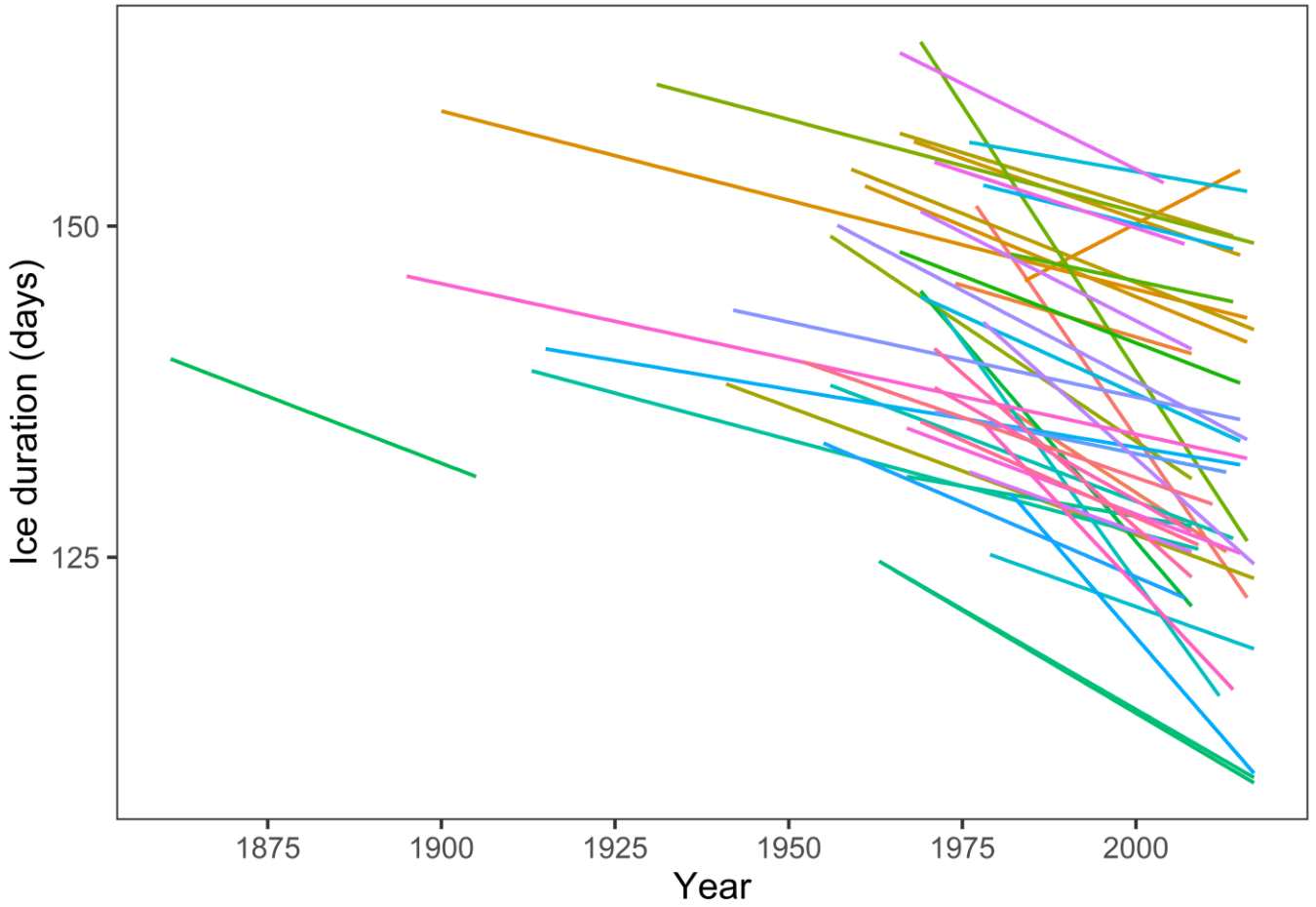
Warmer winters: cold extremes are vanishing



DEPARTMENT OF NATURAL RESOURCES

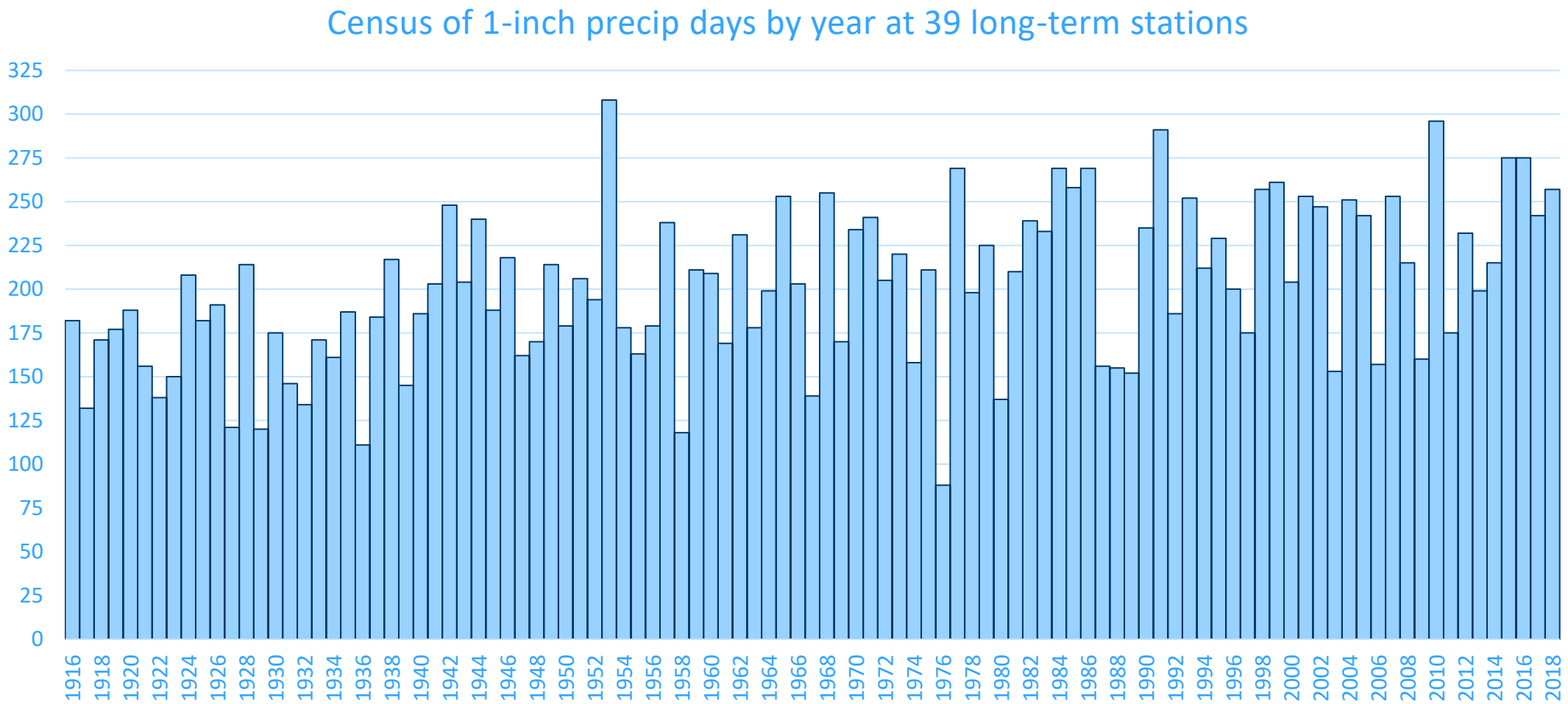
Warmer winters: lake ice

- Long-term state-avg decline is 1.8 days per decade
- Decline from 1987-2017 is ***4.2*** days per decade



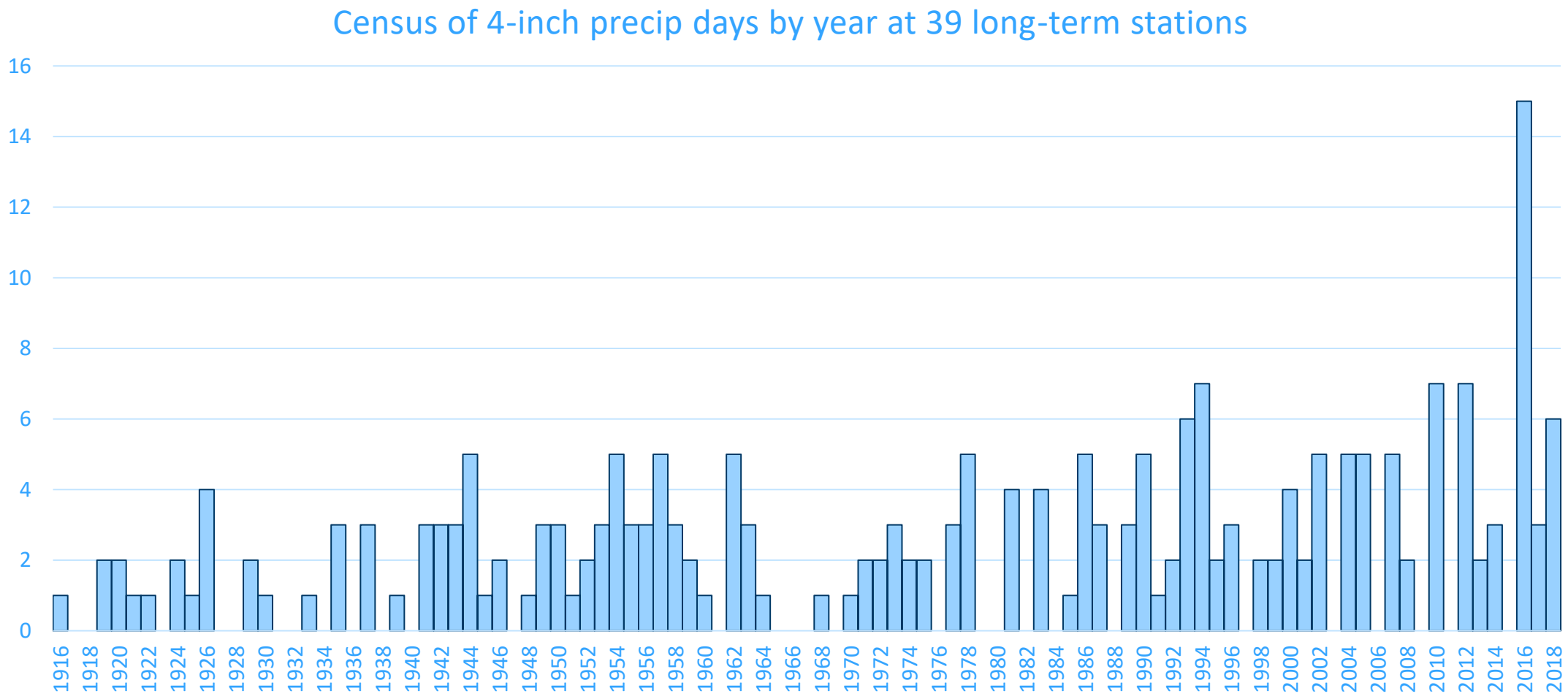
DEPARTMENT OF NATURAL RESOURCES

Heavy rainfall: 1-inch events



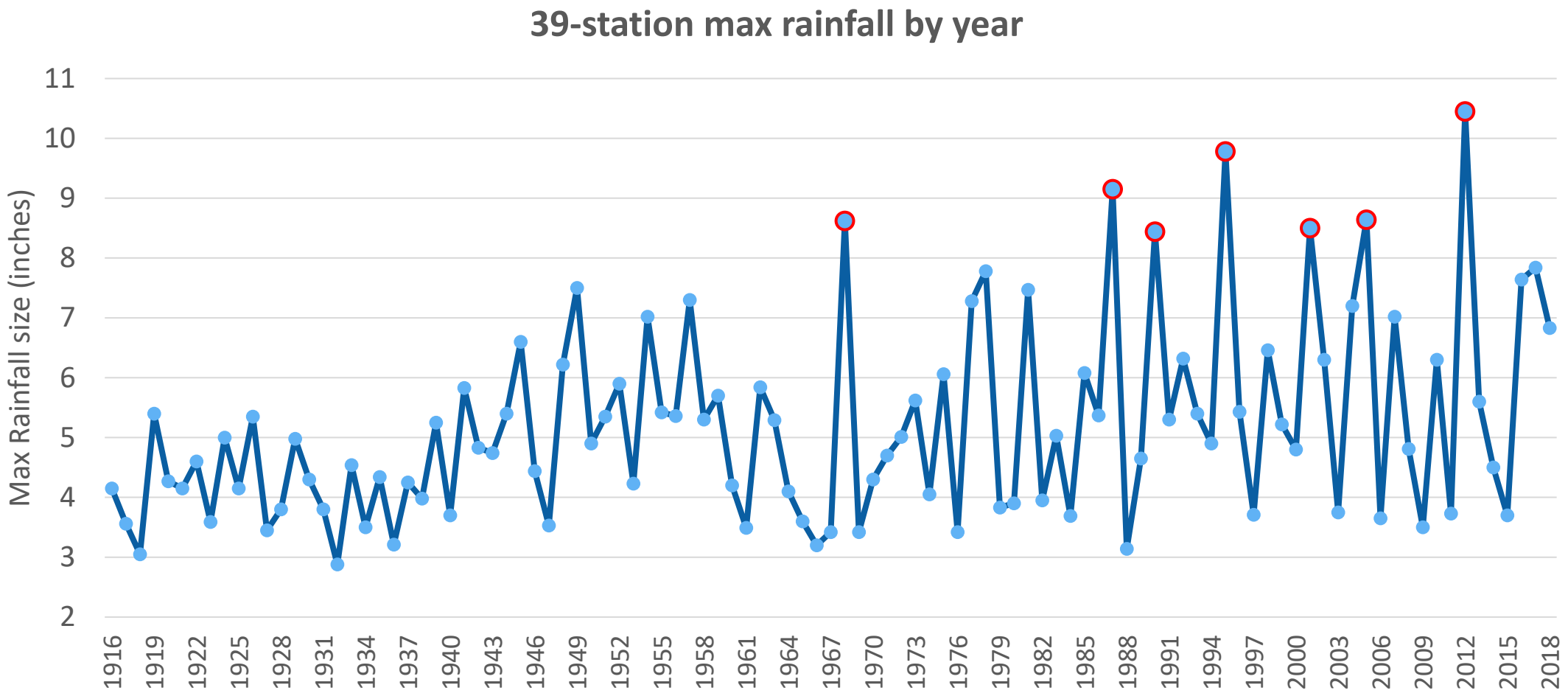
DEPARTMENT OF NATURAL RESOURCES

Heavy rainfall: 4-inch events



DEPARTMENT OF NATURAL RESOURCES

Heavy rainfall: Max rainfall is getting larger



DEPARTMENT OF NATURAL RESOURCES

Activity: Climate impacts

www.menti.com

Code: **48 09 02 9**

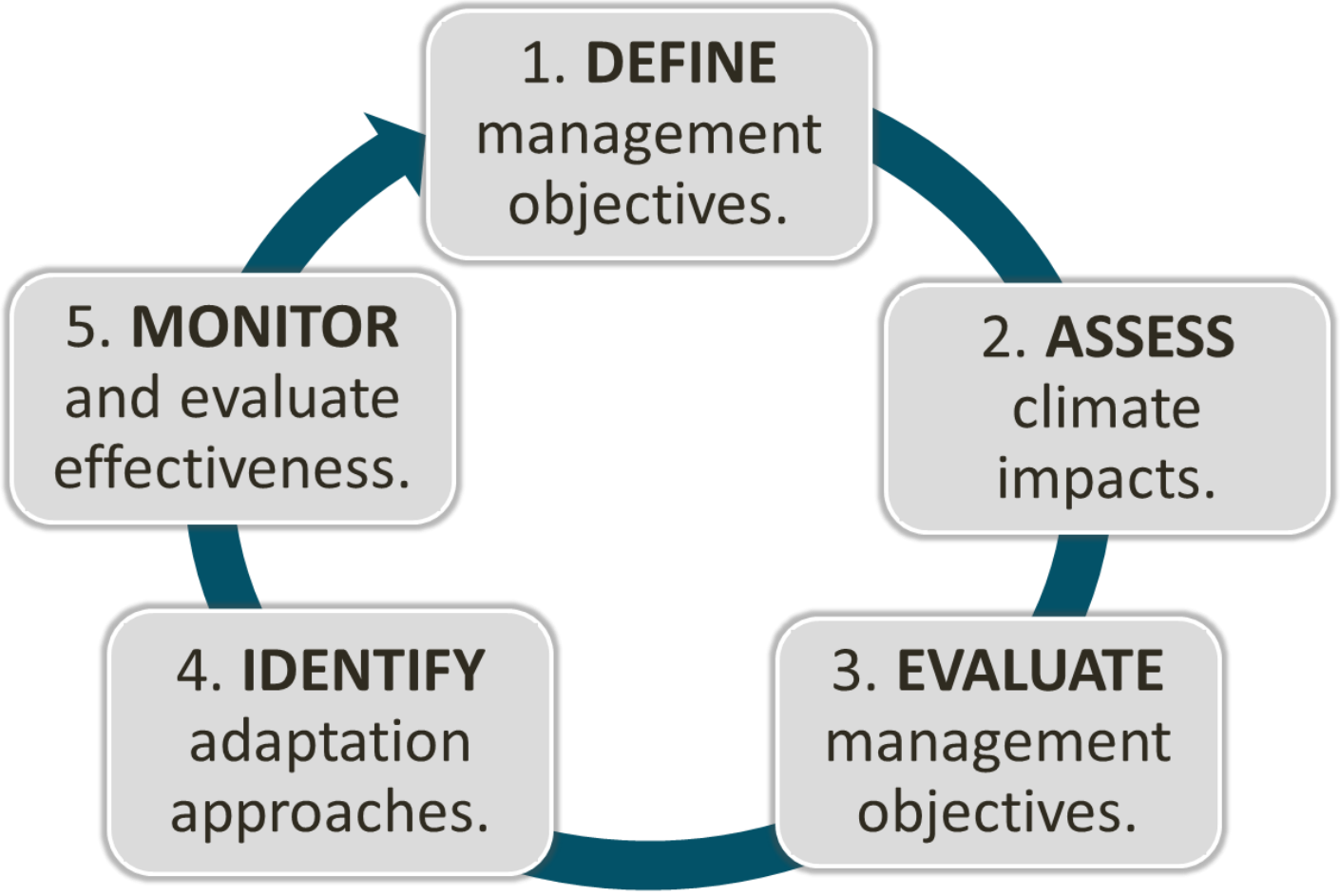
Adaptation is the adjustment of systems to respond to climate change.




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

Adaptation Workbook

A workbook process provides "structured flexibility"



www.nrs.fs.fed.us/pubs/52760

Adaptation Workbook

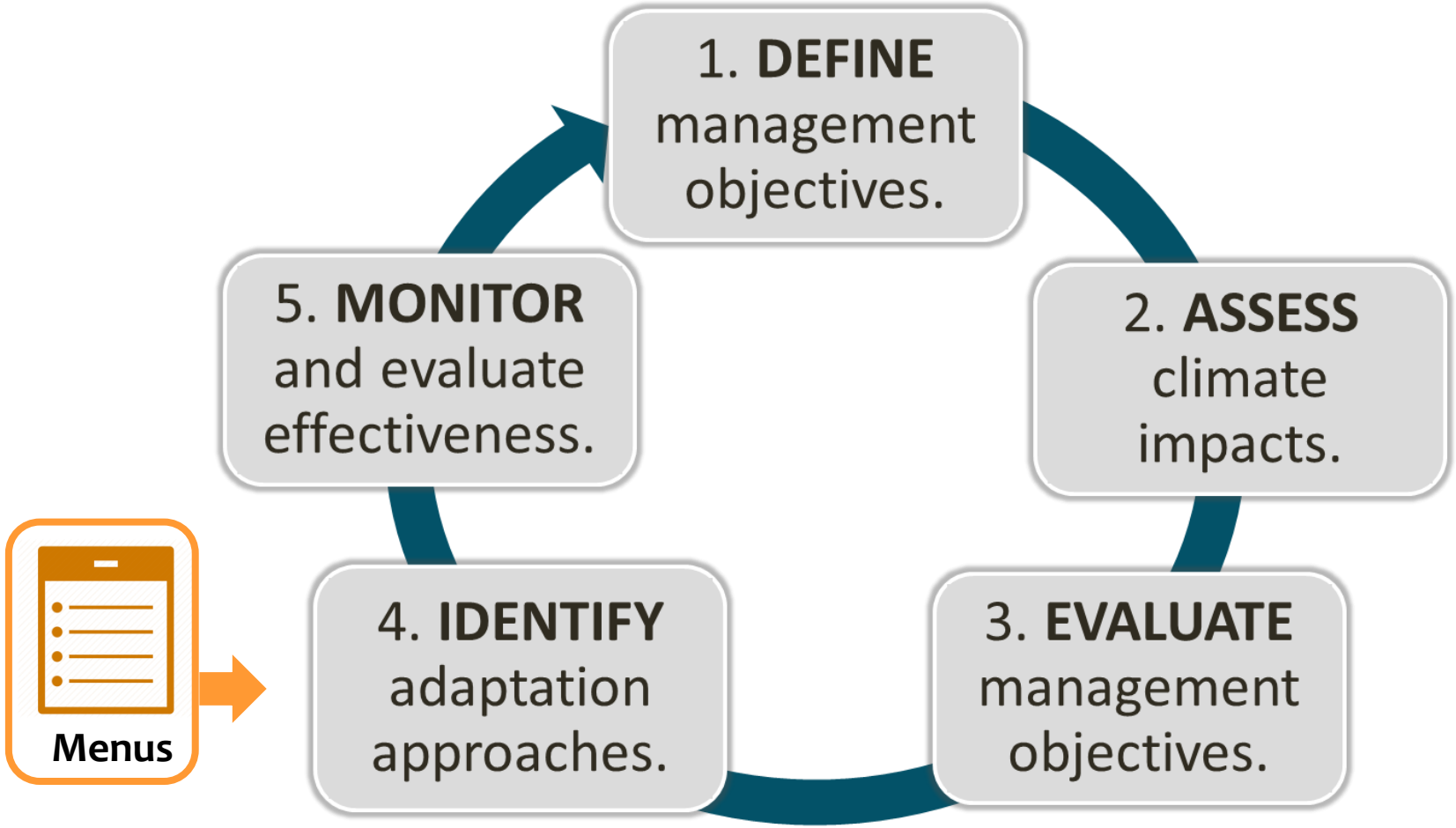
Systematic and designed for transparency.

Management Objectives	Challenges	Opportunities	Feasibility	Other Considerations

Adaptation Actions			Benefits	Drawbacks/ Barriers	Recommend Tactic?
Approach	Tactics	Time Frame			

Adaptation Workbook

A workbook process provides "structured flexibility"



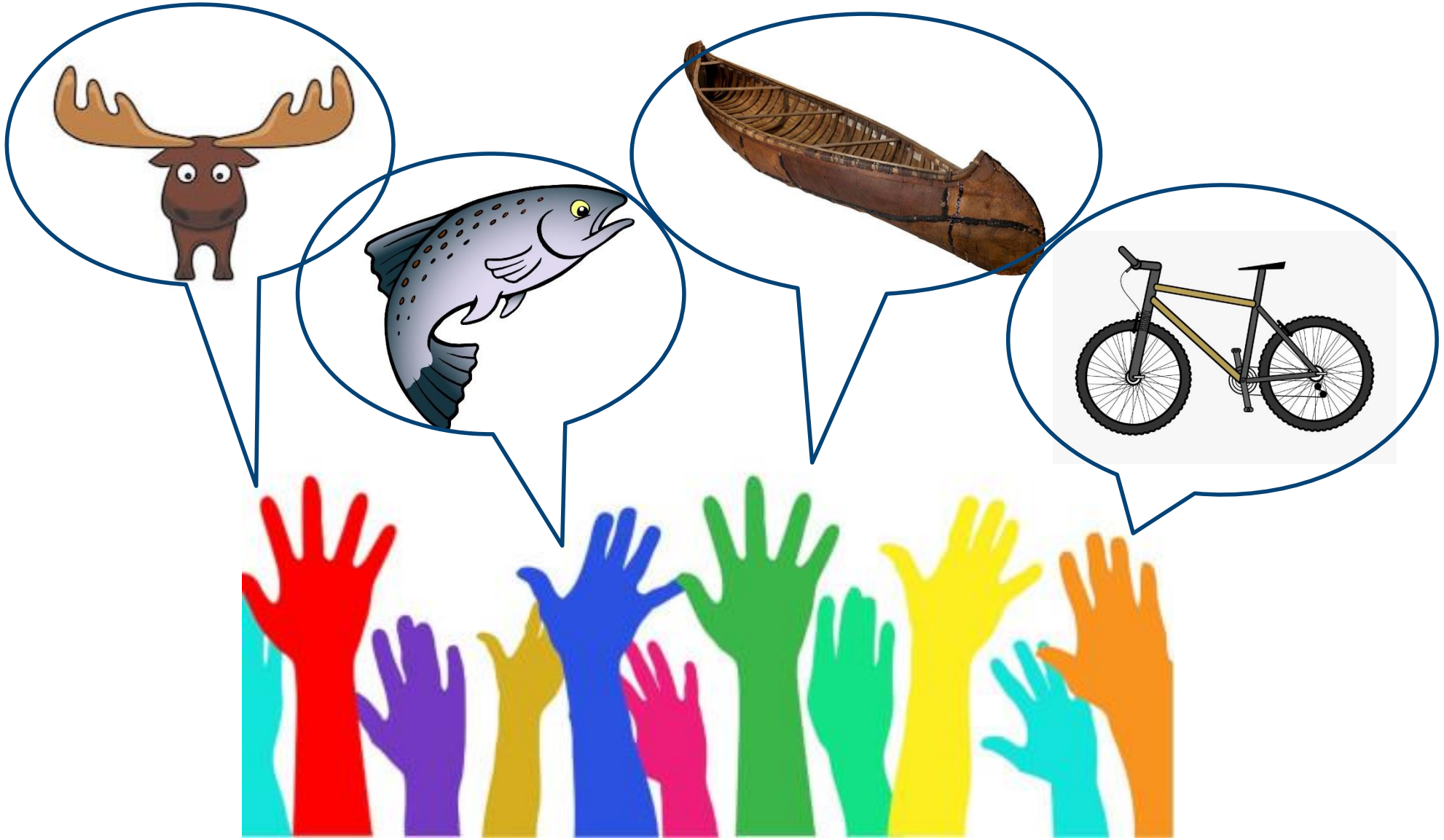
Adaptation Menus of Strategies and Approaches

A “menu” of **possible actions** that allows you to decide what is ***most relevant for a particular location and set of conditions.***

Adaptation Menus of Strategies and Approaches

- Connecting broad ideas to specific actions
- Consistent “hierarchy” of general and specific ideas
- Document the **intent** of adaptation actions.
- Boost creativity!

Adaptation Menus of Strategies and Approaches



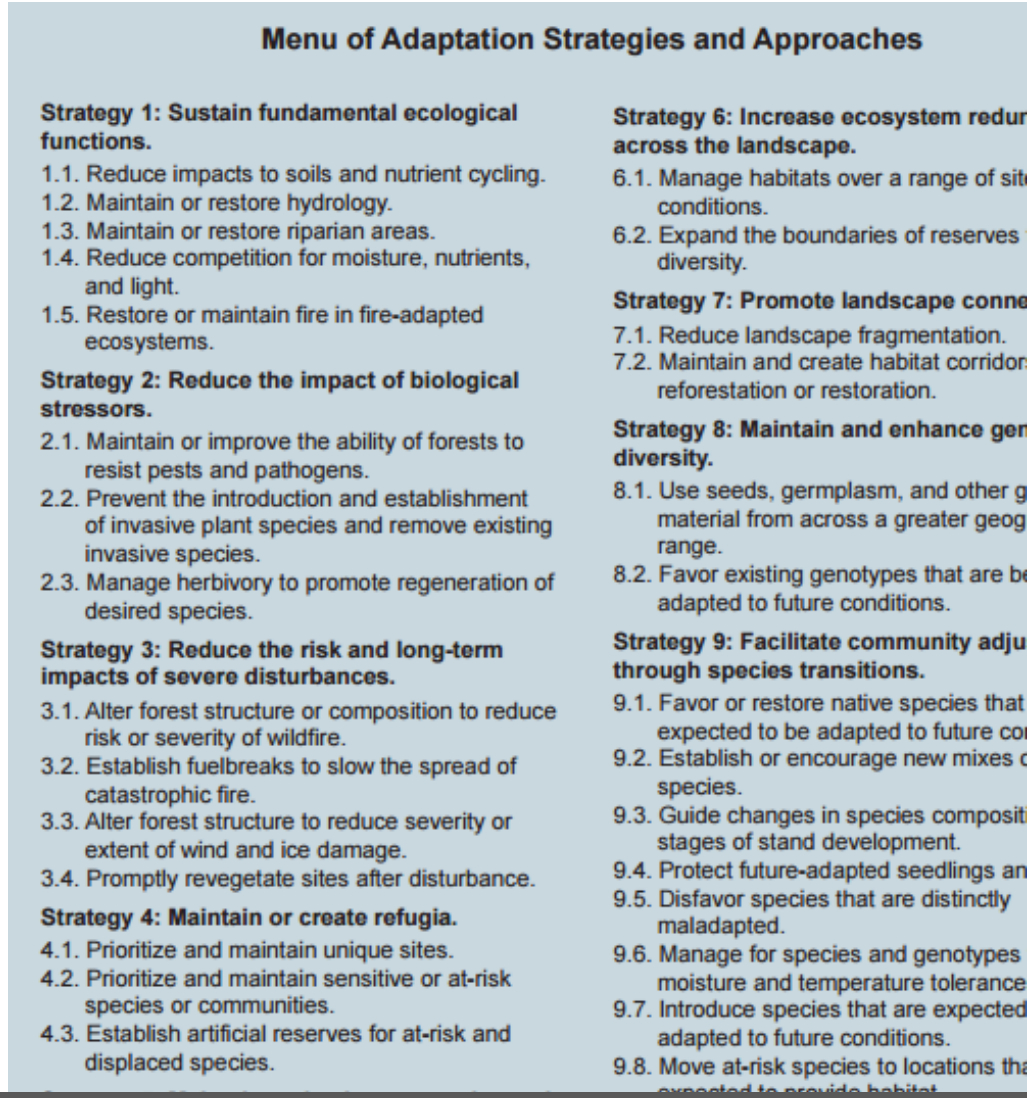
Adaptation Menus of Strategies and Approaches

Published:

- Forestry
- Urban Forestry
- Forested Watersheds
- Tribal Perspectives
- Agriculture
- Forest Carbon Management
- Recreation
- Non-Forested Wetlands
- Glacial Lake Fisheries

In Preparation:

- Fire-Adapted Ecosystems
- Wildlife Management
- Ocean Coastal Ecosystems
- Fresh-Water Coastal Ecosystems
- Grasslands



Menu of Adaptation Strategies and Approaches

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 6: Increase ecosystem redur across the landscape.

6.1. Manage habitats over a range of site conditions.
6.2. Expand the boundaries of reserves diversity.

Strategy 7: Promote landscape conne

7.1. Reduce landscape fragmentation.
7.2. Maintain and create habitat corridor reforestation or restoration.

Strategy 8: Maintain and enhance ger diversity.

8.1. Use seeds, germplasm, and other g material from across a greater geog range.
8.2. Favor existing genotypes that are be adapted to future conditions.

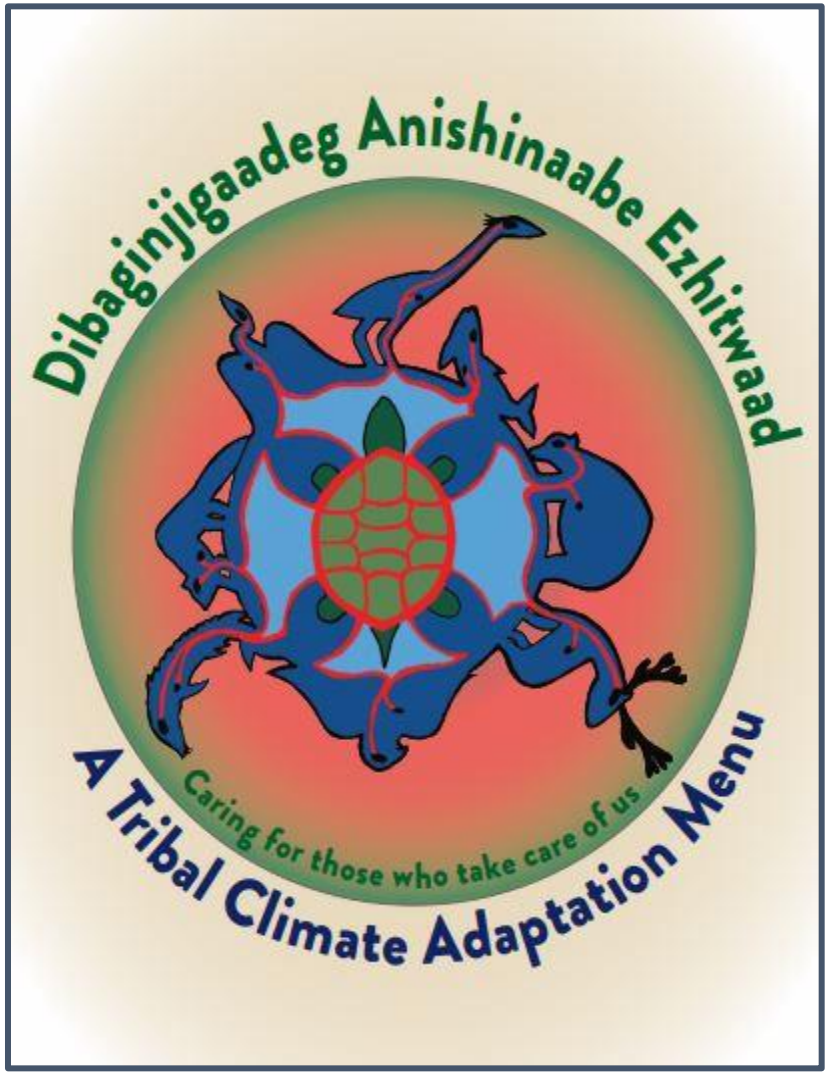
Strategy 9: Facilitate community adju through species transitions.

9.1. Favor or restore native species that expected to be adapted to future co
9.2. Establish or encourage new mixes o species.
9.3. Guide changes in species composit stages of stand development.
9.4. Protect future-adapted seedlings an
9.5. Disfavor species that are distinctly maladapted.
9.6. Manage for species and genotypes moisture and temperature tolerance
9.7. Introduce species that are expected adapted to future conditions.
9.8. Move at-risk species to locations tha

www.AdaptationWorkbook.org/strategies

Spotlight: Tribal Adaptation Menu

- Foundation of indigenous values (respect, reciprocity, etc)
- Ojibwe and Menominee perspectives, languages, concepts and values
- Helps express climate adaptation ideas through an indigenous lens, AND expresses the adaptation benefits of indigenous practices
- Communication tool for tribal and non-tribal partners



https://forestadaptation.org/learn/resource-finder/tribal-climate-adaptation-menu

Activity: Adaptation menu review

- Review adaptation menus that interest you!
- Download here: www.forestadaptation.org/learn/chippewa-national-forest-leech-lake-band-ojibwe-adaptation-menu-training

Take your own notes and be ready to discuss these questions:

1. *What's an adaptation approach that **you're already doing**?*
2. *Is there a **new adaptation approach** that you'd like to try soon?*
3. *Did something on the menu **surprise** you?*

Questions and Next Steps

- For tomorrow:
- Take a peek at other menus
- Think of an example “project” for tomorrow’s activity!
  - Something that you’re currently working on or that you’d like to work on soon.
  - Have some rough management goals and objectives in mind.

Thank you!

Climate Hubs

www.climatehubs.oce.usda.gov

Climate Change Resource Center

www.fs.usda.gov/ccrc

Climate Change Atlas

www.fs.fed.us/nrs/atlas/

NIACS Resources

www.forestadaptation.org/

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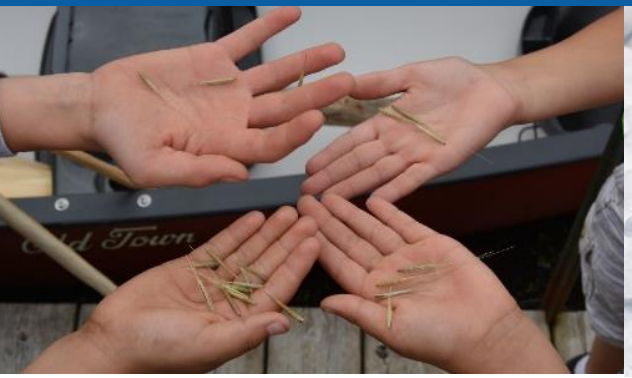
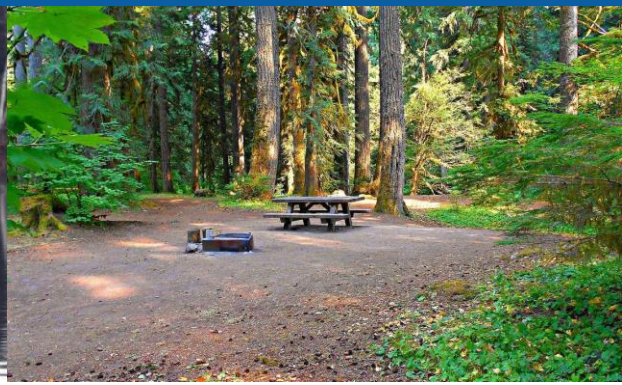
Climate Change Adaptation Menu Training: Chippewa National Forest and Leech Lake Band of Ojibwe



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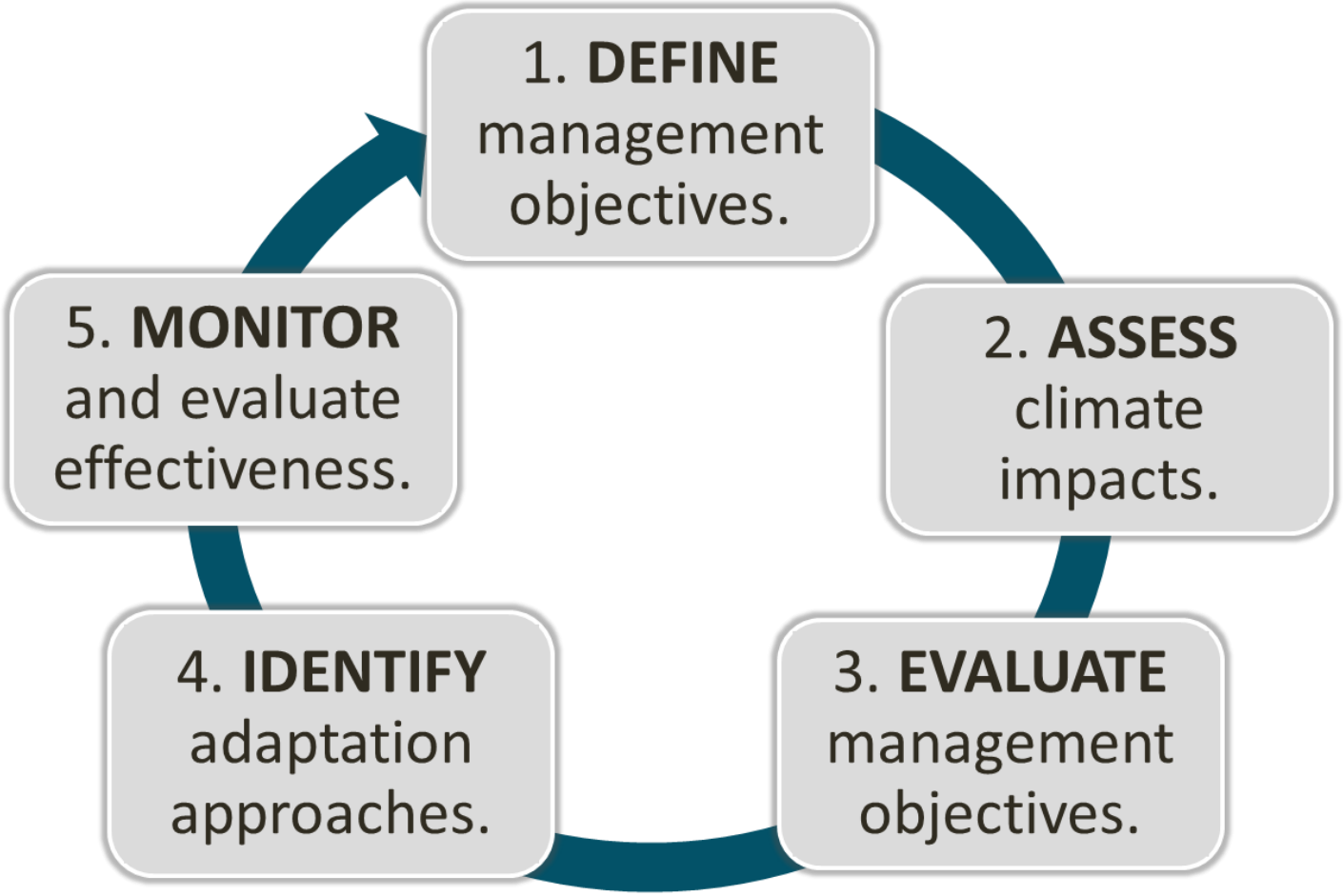
Activity: Menu discussion roundtables

Time	Room 1 (Kristen)	Room 2 (Stephen)	Room 3 (Danielle)
8:15 –8:35	Fire-Adapted Ecosystems	Wildlife	Forest Carbon
8:40 – 9:00	Outdoor Recreation	Forestry	Forested Watersheds
9:05 – 9:25	Tribal Adaptation Menu	Tribal Adaptation Menu	Tribal Adaptation Menu

Activity: Example adaptation projects

A workbook process provides "structured flexibility"



www.nrs.fs.fed.us/pubs/52760

Step 1: DEFINE area of interest, management goals and objectives, and time frames.

Step 1: DEFINE location, project, and management goals.

Management Goal	Management Objective	Time Frame
▪ Increase urban tree species diversity	▪ Have no more than 20 percent of a family, 10 percent of a genus and 5 percent of a species	15 years
▪ Increase canopy cover	▪ Increase % canopy from 20% to 30%	20 years
▪ Reduce invasive species cover	▪ Reduce area covered by invasive buckthorn from 10% to no more than 5%	10 years

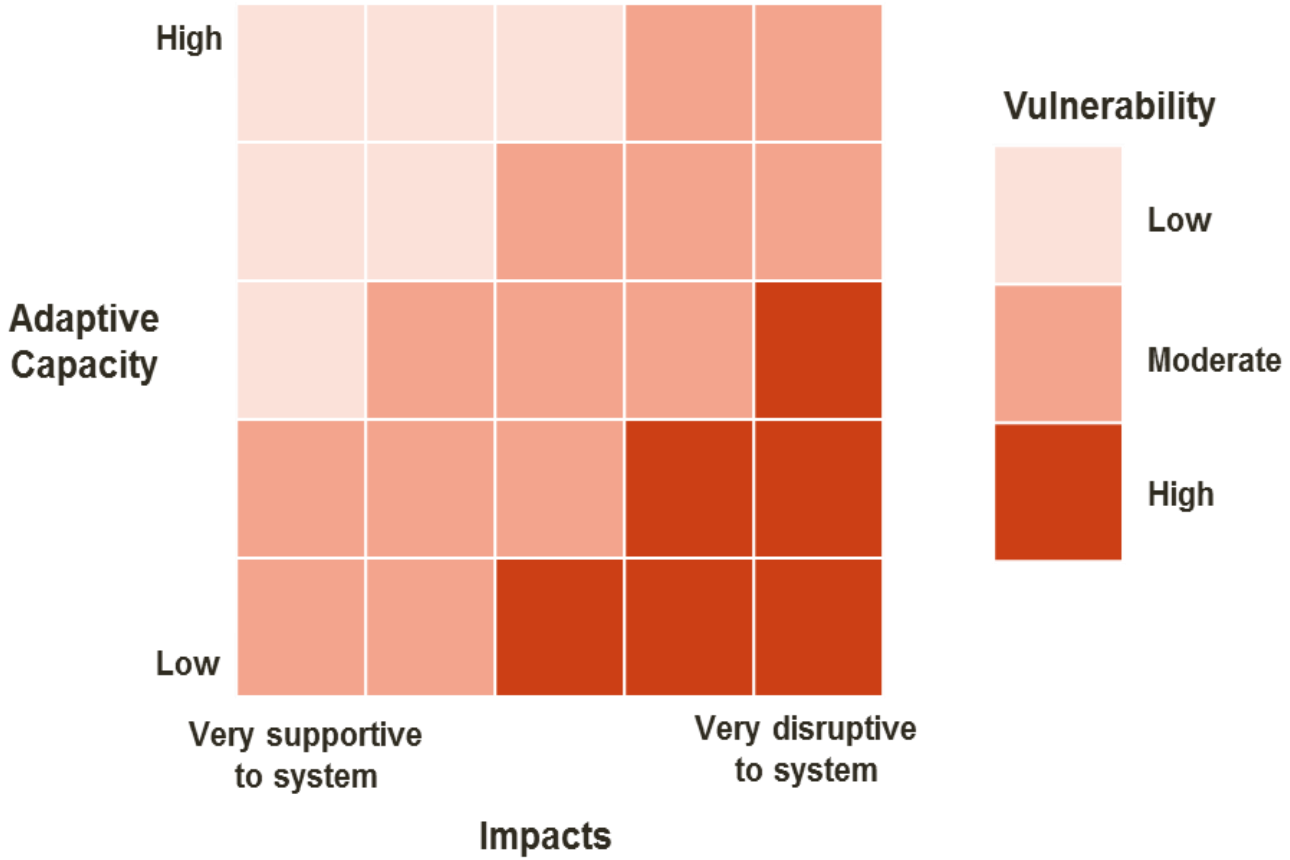
Step 2: Assess site-specific climate change impacts & vulnerabilities

Step 2: ASSESS site-specific climate change impacts and vulnerabilities.

Mgmt. Unit or Topic	Climate Change Impacts and Vulnerabilities	
	Regional	**For the Property or Project Area**
	From vulnerability assessments	*Based on your knowledge of the site or area*
Upland forest	More extreme precipitation events	Slope and soil on east side of property is vulnerable to flooding/ponding
	Increased potential for summer drought	Hill tops are especially vulnerable to growing season moisture stress

Step 2: ASSESS site-specific climate change impacts and vulnerabilities.

Vulnerability Determination



Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.

Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.

Feasibility – Can you meet your management objectives using current (business-as-usual) management actions?

High: We can do it!

- Opportunities > Challenges

Low: We'll need more resources or effort.

- Challenges > Opportunities

Step 4: Identify adaptation approaches and tactics for implementation

Step 4: IDENTIFY adaptation approaches and tactics for implementation.

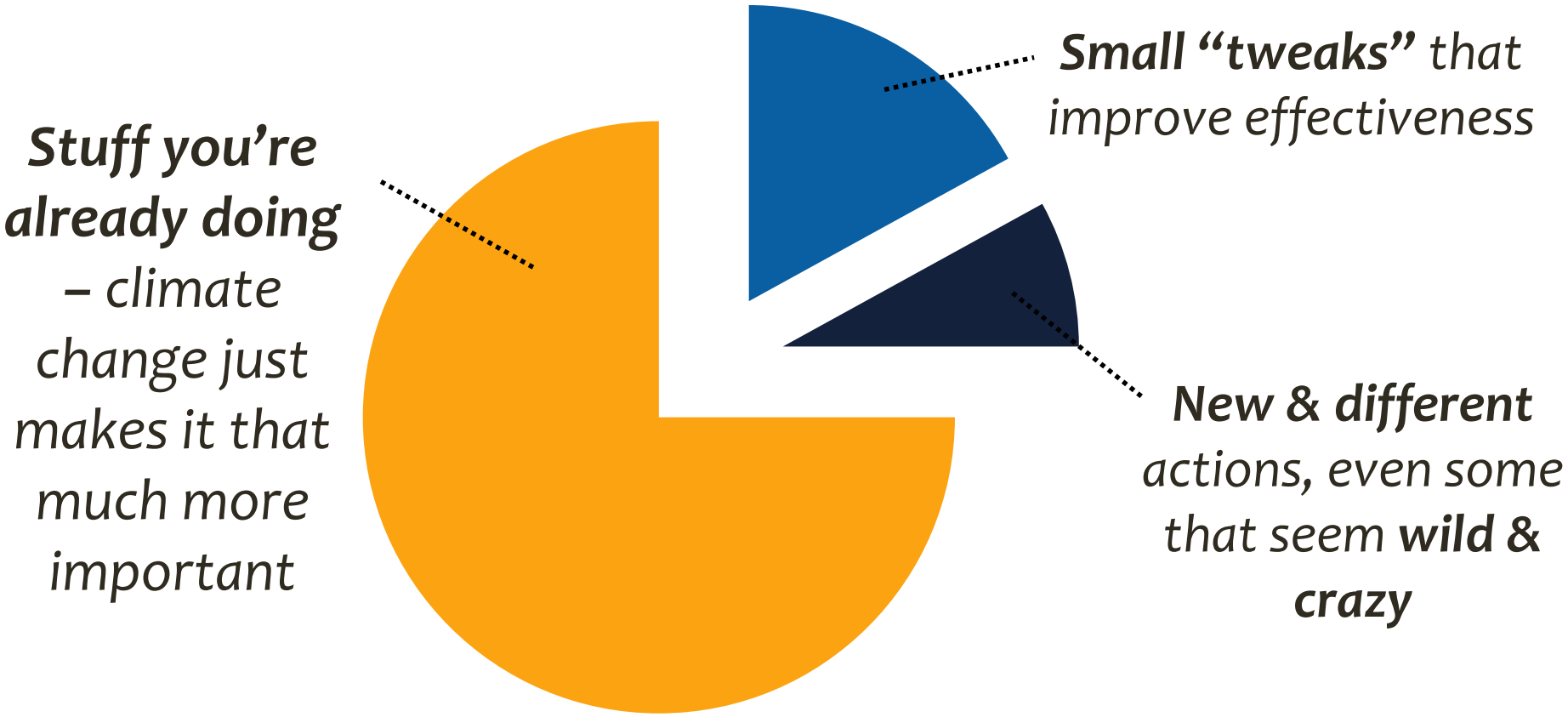
Approach – Select from the menu. Pick any that seem to make sense and help address the challenges.

Tactic – Describe a specific action you can take.

These details should ideally answer what, where, and how you will implement the actions.

Adaptation

- Try to sort your adaptation ideas into three different categories:



Step 5: Monitor and evaluate effectiveness of adaptation actions

Step 5: MONITOR and evaluate effectiveness of implemented actions.

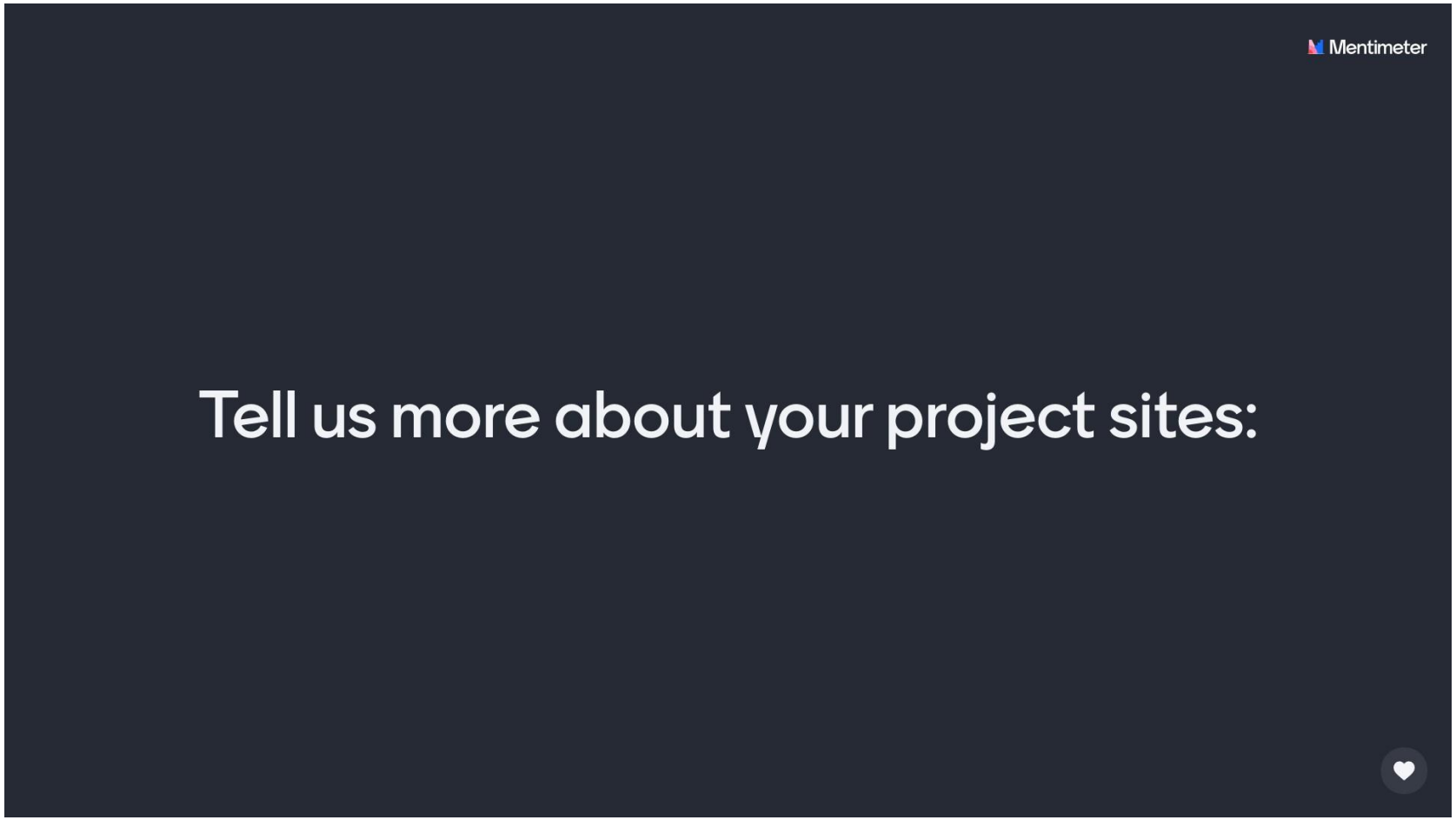
Example – Jerktail Mountain Woodland

Adaptation Monitoring Variable	Criteria for Evaluation	Monitoring Implementation
Fuel loads	reduce fuel loads; reduce leaf litter depth by 50% by first year after second burn	Use the National Park Service Fire Monitoring Handbook (FMH) plot design: 2 plots. Baseline monitoring and return first and second growing season after burn.
Tree basal area, growth, and composition	Increase in shortleaf pine, white oak, and chinkapin oak, and achievement of woodland structure.	Permanent inventory plots to be established
Shortleaf pine regeneration	Presence of shortleaf pine seedlings and saplings	Qualitative observation

Activity: Sharing examples

www.menti.com

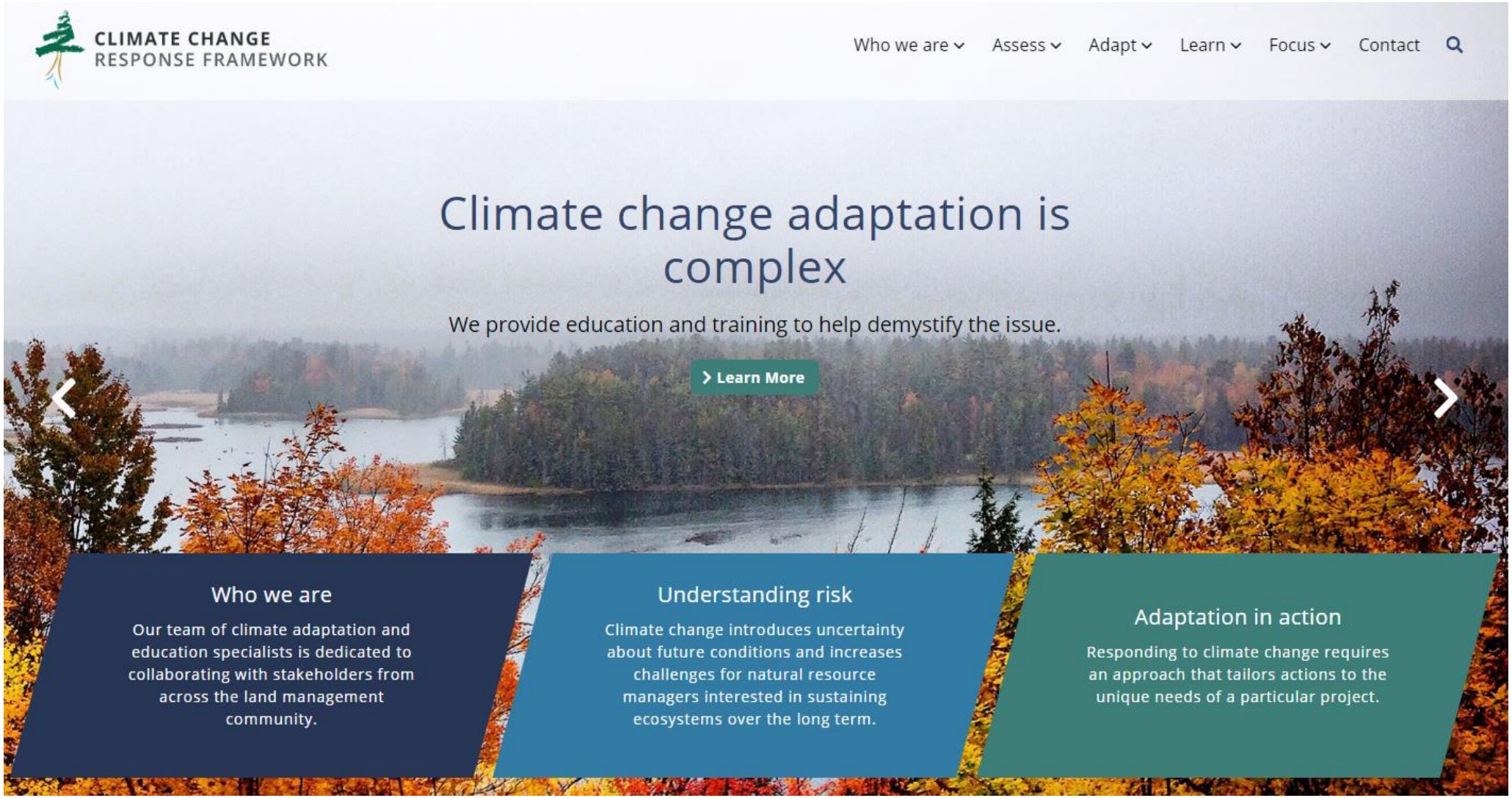
Code: **95 46 67 6**



Questions

- How do you envision using these adaptation menus going forward?
- What help can NIACS provide?
- Other questions or suggestions?

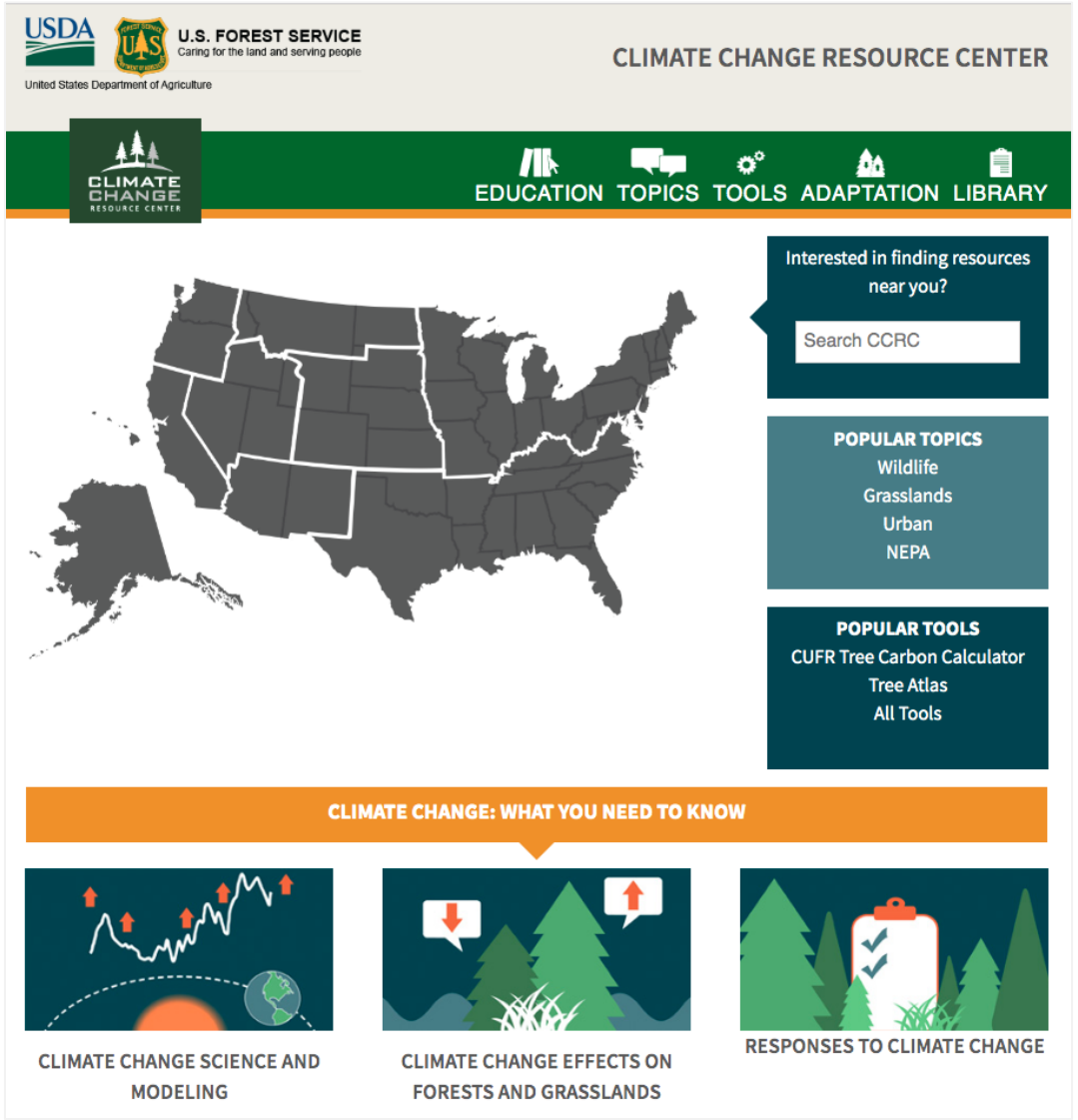
Climate Change Response Framework



www.forestadaptation.org

Climate Change Resource Center

- Written and organized for land managers
- Original content, links to tools and info
- Credible, science based, relevant



https://www.fs.usda.gov/ccrc/

Thank you!

Climate Hubs

www.climatehubs.oce.usda.gov

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NIACS Resources

www.forestadaptation.org/

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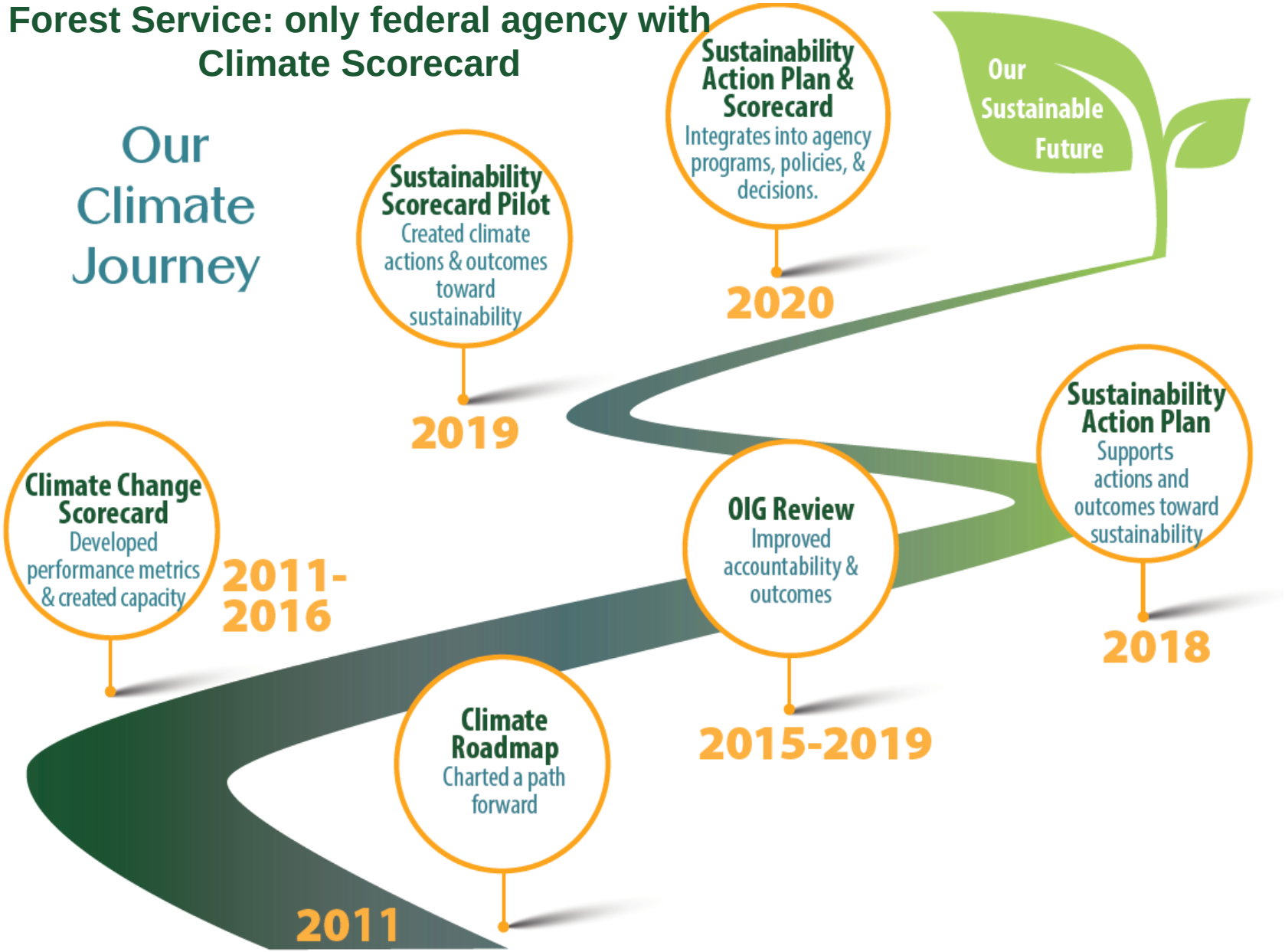
Forest Service: only federal agency with Climate Scorecard



Scorecard 2.0: Journey's Progress Stages

Sustainability Scorecard 2.0: Core Elements