

Northern Institute of Applied Climate Science

Climate

Carbon

Bioenergy

§ Provides **practical** information, resources, and **technical assistance** related to forests and climate change

§ Supports the **integration** of climate change information into natural resource management



www.nrs.fs.fed.us/niacs/

Regional multi-institutional partnership among:



Michigan Tech

ncasi



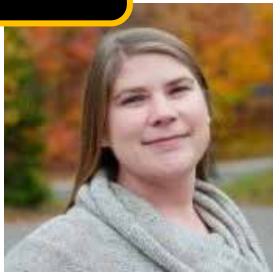
UNIVERSITY OF MINNESOTA

Meet the Crew!

Michigan Tech



Hannah Abbotts



Patricia Butler



Jim Klapperich



Kailey Marcinkowski



Kristen Schmitt



Danielle Shannon



Paula Zermeno



Leslie Brandt



Stephen Handler



Kate Heckman



Maria Janowiak



Zac Kayler



Todd Ontl



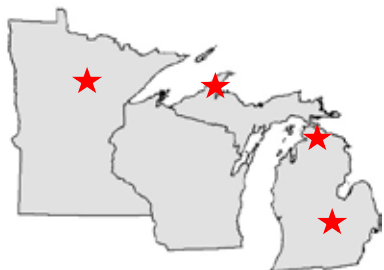
Chris Swanston



University of Michigan
BIOLOGICAL STATION



Luke Nave



Staff Locations

USDA Climate Hubs

National USDA effort to provide info & tools to managers & landowners

In Midwest and Northeast, a Northern Forests Sub Hub provides sector-specific assistance (coordinated by NIACS).

The graphic is a blue-themed informational poster for the USDA Northern Forests Sub Hub. At the top left is the USDA Climate Hubs logo. To its right, the text 'NORTHERN FORESTS SUB HUB' is displayed in white. A small map of the United States in the top right corner highlights the Midwest and Northeast regions. The central text reads 'The Climate Is Changing. How Will You Manage For It?'. Below this, there are several text boxes: a dark blue box with white text stating 'The region's forests are a national asset; they contain: 42% of U.S. forests, 32% of U.S. timberland, and 41% of U.S. population'; a white box with orange text titled 'The climate is changing' and a paragraph about climate impact, followed by a list of temperature and precipitation changes from 1900-2010; a white box with orange text titled 'Science delivery' and a paragraph about the sub hub's role; a white box with orange text titled 'The Sub Hub assists' and a list of stakeholders; a white box with orange text titled 'How to participate' and a paragraph about welcoming regional partners; and a white box with orange text titled 'The Sub Hub highlights regional resources related to'.

USDA CLIMATE HUBS **NORTHERN FORESTS SUB HUB**

The Climate Is Changing.
How Will You Manage For It?

The Northern Forests Sub Hub assists natural resource managers, woodland owners, and others interested in forests with integrating climate change information into planning, decision making, and management activities.

The region's forests are a national asset; they contain:

- 42% of U.S. forests
- 32% of U.S. timberland
- 41% of U.S. population

The climate is changing

The climate has changed and will continue to do so. How might climate change impact northern forests?

In the last century (1900 – 2010)

- Temperatures have risen 1.5 to 2°F
- Precipitation has increased more than 10% (0.4 inches per decade)

Science delivery

The USDA Climate Sub Hub delivers science-based tools and information to land managers so they can make climate-informed decisions now.

The Sub Hub is a collaborative effort between agencies, universities, states, tribes and other groups. Connecting land managers to the vulnerabilities and risks northern forests face in a changing climate, while also providing the tools necessary to manage for it.

The Sub Hub assists

- Professional Resource Managers
- Cooperative Extension agents
- Private Landowners
- USDA Technical Service Providers

How to participate

The USDA Northern Forests Sub Hub welcomes all regional partners to participate and

The Sub Hub highlights regional resources related to

<http://climatehubs.oce.usda.gov/midwest-subHub-forestry>

Climate Change Resource Center

National FS site for natural resource professionals

- Topic pages
- Tools reviews
- Video library
- Adaptation examples
- Education modules



www.fs.usda.gov/ccrc/

Climate Change Response Framework

Northwoods

64 million acres
Minnesota, Wisconsin, Michigan

New England

52 million acres
New York, Vermont, New Hampshire,
Maine, Massachusetts, Connecticut,
Rhode Island

Mid-Atlantic

60 million acres
Pennsylvania,
Maryland, Delaware,
New Jersey, New York

Urban Chicago

Central Hardwoods

42 million
acres
Missouri,
Illinois, Indiana

Central Appalachians

28 million acres
Ohio, West Virginia, Maryland

6 Ecoregional Projects

246 Million Acres

14 National Forests

75+ Partners

(Federal, State, Tribal, Private)

Climate Change Response Framework

Home Our Approach Projects Demos Products Partners Resources Contact



Partnerships



Vulnerability Assessments



Forest Adaptation Resources



Demonstration Projects

News & Events

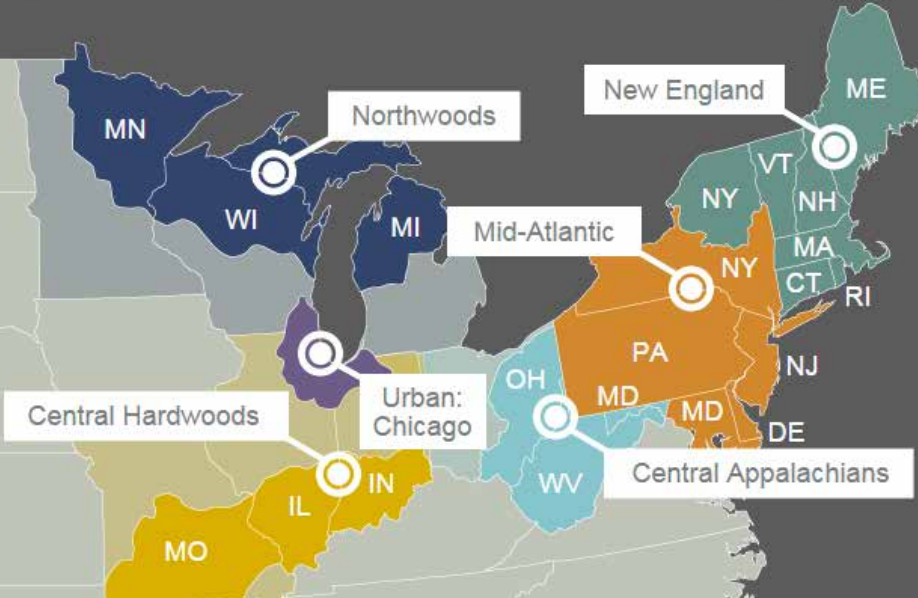


NIACS launches online Adaptation Workbook for forest management and

What is the Climate Change Response Framework?

The Framework is a collaborative, cross-boundary approach among scientists, managers, and landowners to incorporate climate change considerations into natural resource management. It provides an integrated set of tools, partnerships, and actions to support climate-informed conservation and forest management.

Six Framework projects encompass 19 states, including 14 National Forests and millions of acres of forestland. Each regional project interweaves four components: science and management partnerships, vulnerability assessments, adaptation resources, and demonstration projects. Learn more about how the components interact to build a flexible, scalable, and effective Framework at [Our Approach](#). Use the interactive map to learn more about Framework activities in your region.



Climate Change Response Framework

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Partnerships



Vulnerability Assessments



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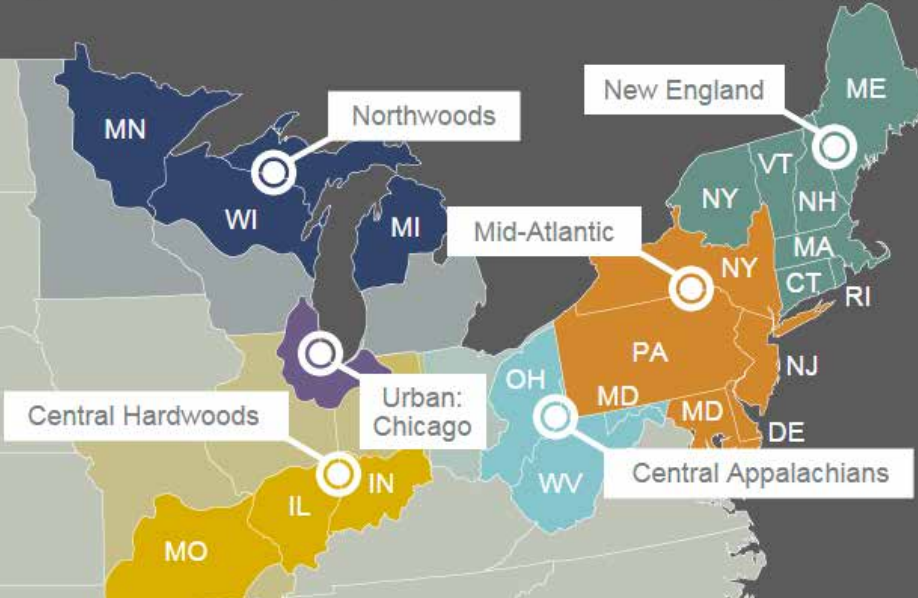


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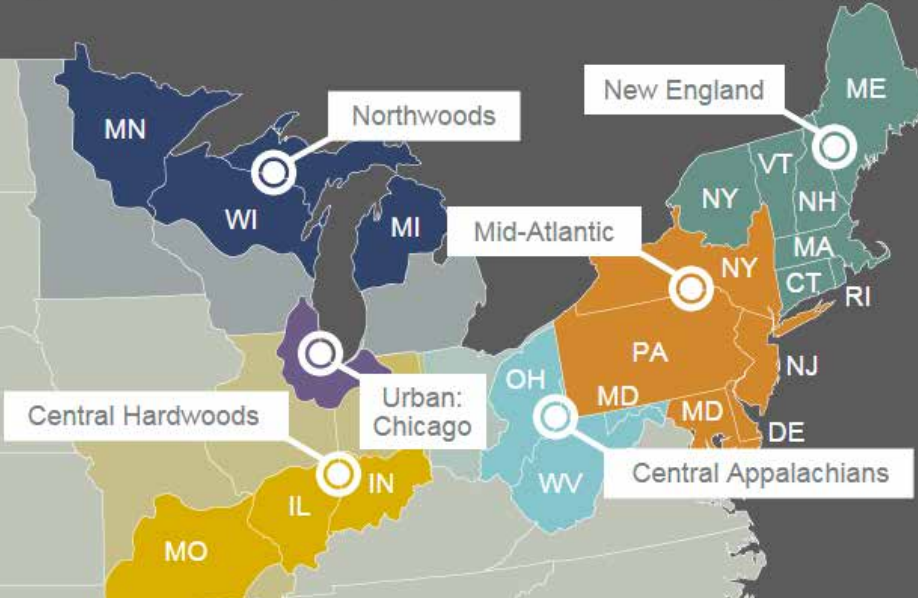


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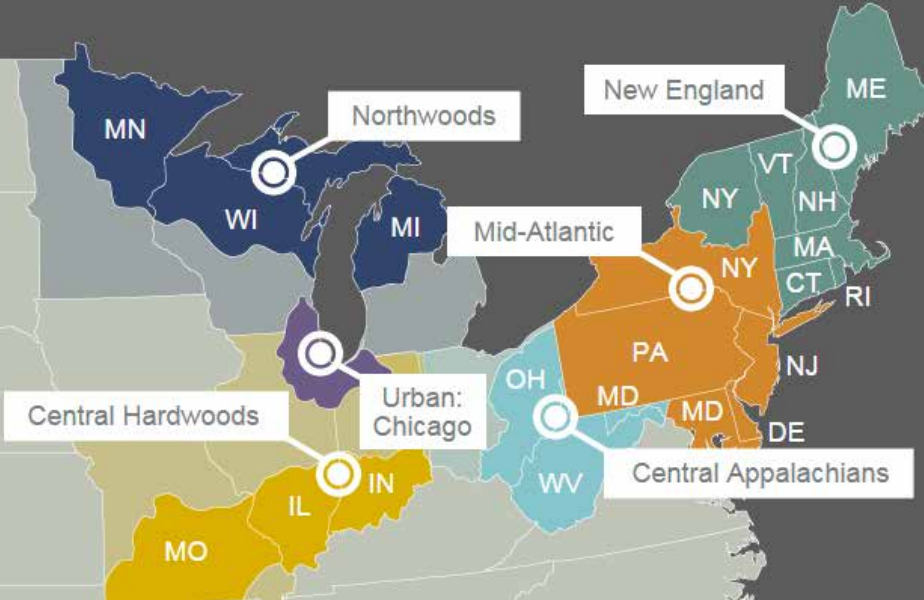


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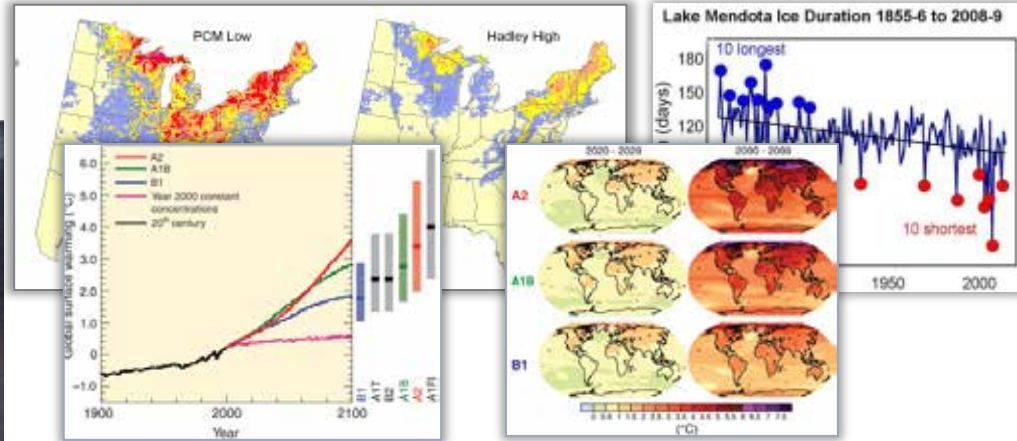
www.forestadaptation.org

Vulnerability Assessment

- Focus on forest ecosystems
- Synthesize findings of state/regional assessments & scientific lit.
- Address vulnerabilities of individual tree species and forest or natural community types
- Provide historical and modeled climate change information
- Use forest impact models to project changes for tree species
- Use panels of scientists and managers with local expertise to put scientific results in context



How to use this info to respond?



Invasives

Natural Forest
Dynamics

Landowner
Objectives

Timber Sale
Revenue

Forest
Health

Past
Management
History

Wildlife
Habitat

Disturbance:
Past + Future

Management Plan
Requirements

**Climate
Change**

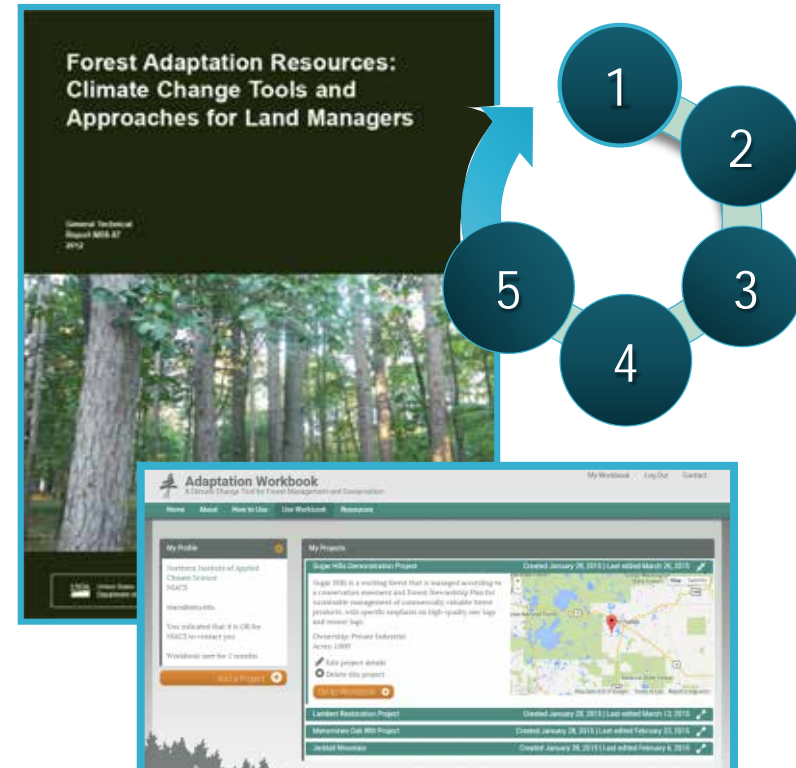
And more!!

Deer



Forest Adaptation Resources

- Process for integrating climate change into management & conservation projects
- Designed for a variety of natural resource managers (public, private, tribal, NGO, ...)
- Tailored to **eastern forest types**
- Does **NOT** make recommendations
- **Workbook**: Print/excel/word versions, **NEW online version!**



Adaptationworkbook.org

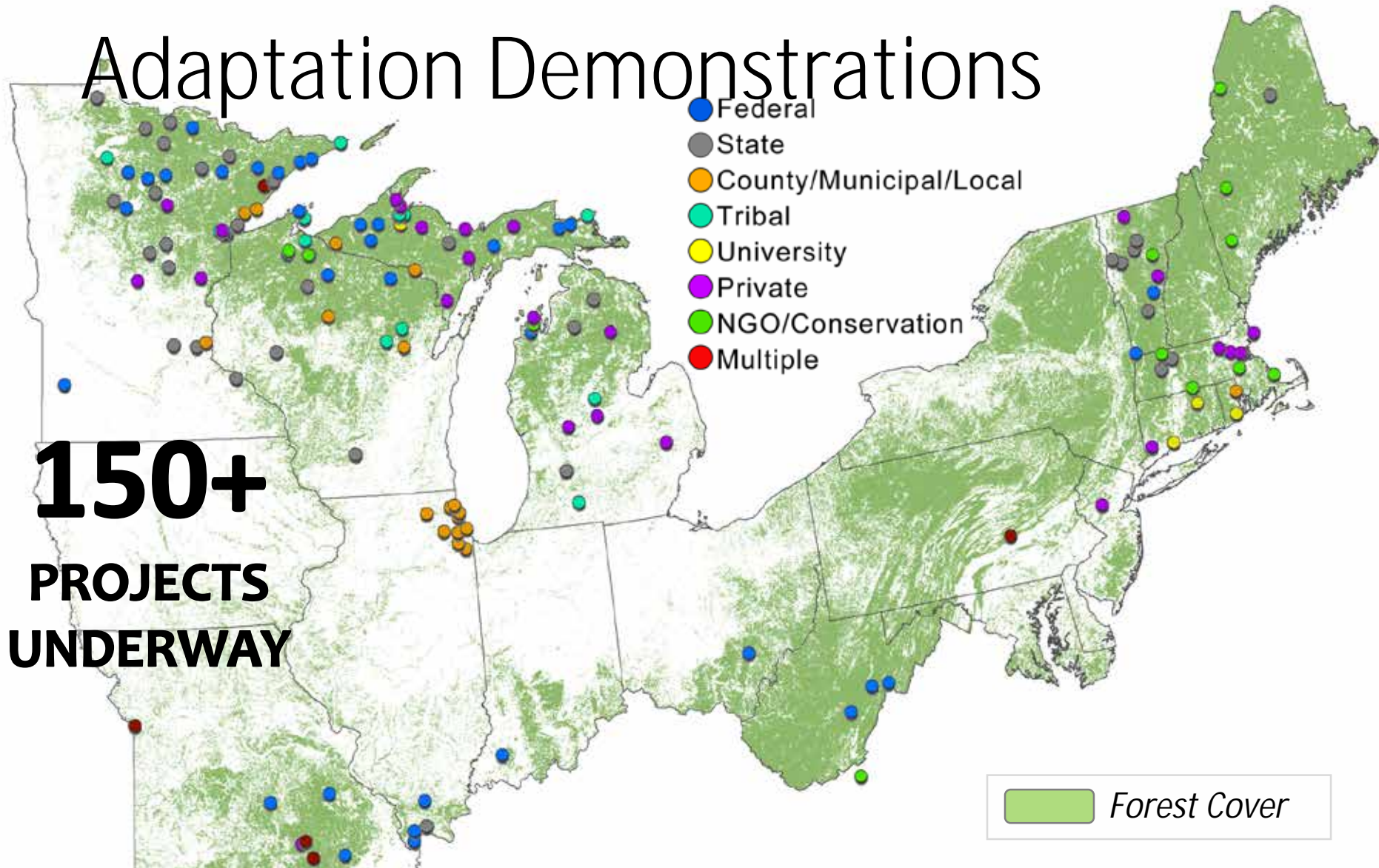
Use the workbook with us

Hands-on training for professionals available!

forestadaptation.org/fapp

Swanston and Janowiak 2012;
www.nrs.fs.fed.us/pubs/40543

Adaptation Demonstrations



Adaptation Demonstrations

- Provide **real-world examples** of forest management activities that:
 - Enhance the ability of forests to cope with changing conditions
 - Achieve land owner management goals
- Foster **cross-ownership** dialogue and learning
- Illustrate **diverse goals** and approaches

Adaptation Demonstrations



Lambert Run

How do you “restore” an ecosystem in the 21st Century?