
# Welcome to the training!
# This document is your training syllabus

**This training will start the week of January 27, and finish by March 23, 2025.**

We look forward to helping you integrate climate change information into your real-world management project.

***Through this training, you'll be able to:***

- Identify locally-important climate change impacts
- Document the feasibility of project goals and climate-related challenges, and opportunities
- Develop tangible tactics to support ecosystem adaptation to changing conditions
- Use the Adaptation Workbook to create custom "climate-informed" project plan
- Learn how to communicate and discuss climate change impacts, challenges and opportunities with your audiences
- Access post-training support from NIACS staff during project planning and implementation

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## DATES: January 27, 2025 through March 23, 2025

The training runs over **eight** weeks (*including one break week*) and includes:

- **Recorded lectures** describing each step in the Adaptation Workbook (~20-25 min). These are designed to be **viewed *in advance* of your weekly discussion session.** All videos can be found here.
- **Weekly** discussion sessions (1 hour) to promote discussion of participant projects and related questions. Not recorded. *Required attendance*. We have emailed you the weekly meeting day and time.See page 4 for an outline weekly discussion details. Plan to attend your group discussion session on:
    - **Tuesday at 10a ET - Discussion Group 1** (Northeast region: CT, DE, NH, NJ, NY, MA, ME, MD, PA, RI, VT, WV)
    - **Wednesday at 11a ET/10a CT - Discussion Group 2** (Midwest region: IA, IL, IN, MI, MN, MO, OH, WI)
    - **Thursday at 11a ET/10a CT - Discussion Group 3** (All Urban Forest projects: Not geographically dependent)

- **Weekly** assignments in the AdaptationWorkbook.org platform to help you create an adaptation plan.
- We are offering three **optional** lecture sessions to cover topics that sometimes have greater interest. See sections below for more information.

### Technology

- Discussion sessions will be held on the Zoom virtual meeting platform. All meetings for this training will occur on the Zoom platform.
    - This link will be used for all groups and special live presentations: https://michigantech.zoom.us/j/82594556221?pwd=7IBmASqjga85V3omVAIuvOZRwkxErH.1 Password: **2025appo**
    - Use computer audio, or phone: (646) 931 3860; Meeting ID: 825 94556221. International numbers available: https://michigantech.zoom.us/u/kdmBuLSit5
- You will use the online Adaptation Workbook learning platform: https://adaptationworkbook.org.
    - **Note for group projects:** A single account should be shared among multiple users for group projects or assign a notetaker.
- Weekly training details and additional resources corresponding with each step of the adaptation workbook will be shared on our 2025 APPo Training Page, and recorded lectures will be posted on the NIACS YouTube playlist.
- Please be aware we will neither use nor allow AI notetakers at this training.

### Training contacts

Contact Danielle Shannon, and Maddy Baroli with any questions. This training is supported by the USDA Forest Service, USDA Climate Hubs, and the Northern Institute of Applied Climate Science.

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## Syllabus Contents

Click to jump to any section of this document:



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# Training Format

This training follows a five-step process to develop climate change adaptation projects using the online Adaptation Workbook (www.adaptationworkbook.org). The training format will include individual time to complete a single step of the Adaptation Workbook, followed by a group discussion to review and get you set up for the next step. The

training consists of weekly **discussions** (live), **recorded videos** on the Adaptation Workbook, and **homework** (on your own).

## Recorded Lectures

For the Adaptation Planning and Practices Online Training (APPo), a series of recorded lectures are provided to explain each step of the Adaptation Workbook. **We ask everyone to watch the video for that week's step before completing the Adaptation Workbook and attending the discussion**.

- For example, before attending the discussion session in the second week of the training, you should watch the video covering Step 2 and start the Step 2 homework in the Adaptation Workbook.
- Recorded lectures will be made available weekly on our 2025 APPo Training Page, and on the NIACS YouTube playlist.
- Each lecture will be posted online on our 2025 APPo Training Page. Each video is ~15-20 minutes long.

## Weekly Discussion Sessions

**We will host weekly 1-hour discussion sessions for all participants (not recorded), required attendance.** Participants will attend regional discussion groups and utilize activities and break-out groups to discuss key aspects of developing adaptation plans. Plan to attend your regional group discussion session *at the specified* time. **We will email your session assignment and send calendar invitations.** Please let us know if the time/day does not work for you.

## Optional expert presentations

We are offering three **optional** sessions to cover topics that sometimes have greater interest. These sessions will be a mix of presentation and discussion and we will record each session. Please attend if you are interested but remember this is an optional opportunity.

- **Friday, January 31** at 1:00p-2:00p ET/12:00p-1:00p ET. "*Forest Carbon Foundations"* with Dr. Adrienne Keller. Michigan Technological University. Northern Institute of Applied Climate Science.
- **Monday, February 3** at 1:00p-2:00p ET/12:00p-1:00p CT. "*Assessing tree species future habitat using the USDA Climate Change Tree Atlas*" with Dr. Steve Matthews, Ohio State University, USDA Forest Service.
- **Tuesday, February 11** at 2:00p-3:00p ET/1:00p-2:00p CT. "*Considering carbon alongside other management goals*" with Dr. Luke Nave. Michigan Technological University. Northern Institute of Applied Climate Science. Read about forest carbon adaptation strategies here.

# Education credits

This training has been **approved** for 20 continuing forestry education credits (category 1) by the Society of American Foresters and 13.5 continuing education units from the International Society of Arboriculture. We will provide additional details about how to receive credits for the training during the sessions. Please let us know if you would like us to apply for credits from another organization that is beneficial to your work. Credits are given to those who attend the entire training.

# Training Schedule & Weekly Assignments

| Session date and topic | Purpose | Weekly Instructions & Assignments |
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| **Pre-work**<br><br>**Training preparation** | **Pre-work assignments are to document project details.** Please complete it before the first discussion session!<br><br>The weekly assignment is focused on documenting Step 1: defining goals and objectives and project details. | • **Read the training syllabus (this document!)**<br><br>• **View the recorded lecture** for Step 1 on our 2025 APPo Training Page, and on the NIACS YouTube playlist.<br><br>• Create an account on www.adaptationworkbook.org. See the 'Getting Started with the Adaptation Workbook' section on page 9 of this document for instructions on creating an account.<br><br>• Use the worksheet you've registered with to complete Step 1 of the Adaptation Workbook and the associated homework section #1. Find your Step 1 worksheet in this folder.<br><br>• **Complete Homework #1. Document your project with a short description.** After you add your project on the Homework #1 (AdaptationWorkbook.org). Describe your project's place, general goals/objectives, and 1-2 sentences on what makes this project area special. *(15 min to complete)*<br><br>• [Optional] Browse the adaptation demonstration project library to learn how others have integrated climate considerations into land planning (https://forestadaptation.org/demos).<br><br>• [Optional] Review the Adaptation Workbook chapter of the Forest Adaptation Resources, 2nd edition for Step 1 and Step 2 instructions.<br><br>• [Optional] Read Diversity, Equity, Inclusion, and Accessibility for Land Management \| USDA Climate Hubs<br><br>• [Optional] **Get ahead and begin next week's readings on climate change.** |
| **Week of 1/27/25**<br><br>**Training Introduction, Defining Goals and Objectives** | The discussion session will recap Step 1: defining goals and objectives. Participants are encouraged to introduce themselves and their projects and discuss their goals and objectives.<br><br>Join the **optional lecture** session!<br><br>The weekly assignment is focused on Step 2: climate change impacts and vulnerabilities. | • Attend your scheduled discussion session to review Step 1.<br><br>• Join the *optional* lecture on **Friday, January 31 1:00p-2:00p ET /12:00p-1:00p CT.** "*The basics of forest carbon cycling*" with Dr. Adrienne Keller. Michigan Technological University. Northern Institute of Applied Climate Science.<br><br>• **View the recorded lecture** for Step 2 on our 2025 APPo Training Page, and on the NIACS YouTube playlist.<br><br>• See the additional resources & optional reading section of this document for a collection of regionally-focused resources to support this step.<br><br>• Complete Step 2 of the Adaptation Workbook: Assess climate impacts and vulnerabilities. |

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| | | • Complete Homework 2 at the end of Step 2.<br>• *Set aside 2-4 hours for completion since this is a more involved step* |
| **Week of 2/3/25** | The discussion session will recap Step 2: climate change impacts and vulnerabilities. Participants will share regional and local-scale climate vulnerabilities that may affect their project goals and objectives.<br><br>Join the **optional lecture** session!<br><br>The weekly assignment is focused on Step 3: management challenges and opportunities. | • Attend your scheduled discussion session to review Step 2.<br>• Join the *optional* lecture on **Monday, February 3 at 1:00p-2:00p ET/12:00p-1:00p CT**."*Assessing tree species future habitat using the USDA Climate Change Tree Atlas*" with Dr. Steve Matthews, Ohio State University, USDA Forest Service.<br>• **View the recorded lecture** for Step 3 our 2025 APPo Training Page, and on the NIACS YouTube playlist.<br>• Complete Step 3 of the Adaptation Workbook: Evaluate objectives considering climate impacts.<br>• Complete Homework 3 at the end of Step 3. |
| **Week of 2/10/25** | Discussion session will recap Step 3: management challenges and opportunities. Having evaluated their management objectives in light of the climate vulnerabilities they identified, participants will discuss their shared or unique considerations.<br><br>Join the **optional lecture** session!<br><br>The weekly assignment is focused on Step 4: adaptation strategies, approaches, and tactics. It is **not due until after the break week.** | • Attend your scheduled discussion session to review Step 3.<br>• [Optional] Set up project check-in with instructors (mid-training check-in).<br>• Join the *optional* lecture on **Tuesday, February 11 2:00p-3:00p ET /1:00p-2:00p CT.** "*Considering Carbon Alongside Other Management Goals*" with Dr. Luke Nave. Michigan Technological University. Northern Institute of Applied Climate Science<br>• **View the recorded lecture** for Step 4 our 2025 APPo Training Page, and on the NIACS YouTube playlist.<br>• **View a presentation** describing Adaptation Concepts, available here (27 minutes long). ***Required***<br>• Review the list of Adaptation Strategies and Approaches for your focus area (forests, urban, or forest watersheds). Details on menus for other focus areas (several are in development) are available here.<br>• Optional videos: Adaptation Strategies for Forested Watersheds, an overview of various menus<br>• Complete Step 4 of the Adaptation Workbook: Identify adaptation approaches and tactics.<br>• Complete Homework 4 at the end of Step 4. |

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| | | • *Set aside 2-4 hours for completion since this is a more involved step* |
| **BREAK: Week of 2/14/25**<br><br>**No discussion sessions** | No discussion sessions | • Use extra time to complete homework and schedule office hours with instructors if needed.<br><br>• Familiarize yourself with adaptation menus at https://adaptationworkbook.org/strategies<br><br>• [Optional] Set up project check-in with instructors if you haven't done so already! |
| **Week of 2/24/25** | Discussion session will recap Step 4: adaptation strategies, approaches, and tactics. Participants will discuss approaches of resistance, resilience, and transition, and share any specific adaptation tactics they identified.<br><br>Weekly assignment is focused on Step 5: monitor and evaluate effectiveness. | • Attend your scheduled discussion session to review Step 4.<br><br>• **View the recorded lecture** for Step 5 our 2025 APPo Training Page, and on the NIACS YouTube playlist.<br><br>• Complete Step 5 of the Adaptation Workbook: Monitor the effectiveness of implemented actions.<br><br>• Complete Homework 5 at the end of Step 5.<br><br>• See this document's additional resources & optional reading section for a collection of resources to support this step.<br><br>• [Optional] Set up project check-in with instructors if you haven't done so already! |
| **Week of 3/3/25** | The discussion session will recap Step 5: monitor and evaluate effectiveness. Participants will consider methods and tools for measuring the effectiveness of implemented adaptation actions, and share if they plan to do any monitoring.<br><br>The weekly assignment is focused on climate communications and wrapping up the adaptation workbook. | • Attend your scheduled discussion session to review Step 5.<br><br>• **View the recorded lecture** on climate communication on our 2025 APPo Training Page, and on the NIACS YouTube playlist.<br><br>• Finish up any loose ends in the Adaptation Workbook.<br><br>• Complete Homework 6 within the Adaptation Workbook. |
| **Week of 3/10/25**<br><br>**Climate Change Communication** | The discussion session will recap climate communications. Participants will consider how to effectively communicate climate change and adaptation with core audiences.<br><br>The weekly assignment is focused on wrapping up the adaptation workbook and | • Attend your scheduled discussion session to review climate communications.<br><br>• Finish up any loose ends in the Adaptation Workbook.<br><br>• **Sign up to present next week!** Use this form to sign up for a presentation slot.<br><br>• Summarize your project to share with the other participants as well as your colleagues and partners in a |

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| | preparing to briefly share your adaptation project (using a provided PowerPoint template). | PowerPoint presentation (templates will be provided). Use the template in this folder, then once complete upload your presentation to this folder.<br>• In 5 minutes, present a brief overview of your adaptation plan. |
| **Week of 3/17/25**<br><br>**Share Your Adaptation Project (participant presentations)** | This final session features project presentations from the training participants. | • Participants briefly share their adaptation projects!<br>• Complete the Evaluation Form so we can improve the training next year.<br>• Sign up for Continuing Education Credits if you need them. |

## Time Commitment

To get the most out of this training, we expect you to fully participate. **All participants are expected to view the recorded lectures and attend the weekly discussion sessions (1-1.5 hours of instruction each week).** We realize that things come up from time to time. If you need to miss a session, please let us know ahead of time. If you anticipate missing more than two sessions, you may want to defer participation for another time. To provide participant flexibility, all recorded lectures and optional presentations will be posted to the NIACS Training YouTube page. All slide presentations will be posted within the Adaptation Workbook learning platform.

In addition to discussion session time, **there will be 2-4 hours of homework each week.** This is our estimate of time needed to thoughtfully develop a climate adaptation plan and includes time needed to complete reading assignments. The amount of time you spend on homework depends on the complexity of your project and the level of detail you want to put into your adaptation plan.

## Technology and Equipment Needed

There are technological requirements required to access the Zoom virtual meeting platform, and when using the AdaptationWorkbook.org learning platform. At a minimum, you will need high-speed internet access or a phone line. We prefer that participants use a webcam and headset connected directly to their computer audio if possible, please use your computer audio rather than a phone line. You may also need to disable pop-up blockers or firewalls for accessing the online Adaptation Workbook and Zoom webinar software. We are available to help troubleshoot potential issues before class, please contact us.

## Accessibility

If you have a disability and require certain accommodations to fully participate, please let us know before the beginning of the training. We will work with you to ensure your needs are met.

# Accessing Weekly Recorded Lectures & Live Discussions

### Recorded lectures

We have curated specialized lectures discussing each step of the Adaptation Workbook process and additional resources on climate communication. Recordings are available on the training landing page.

### Weekly Discussion Sessions

All meetings for this training will occur on the Zoom platform. This link will be used for all groups and special live presentations:
https://michigantech.zoom.us/j/82594556221?pwd=7IBmASqjga85V3omVAIuvOZRwkxErH.1
**Password**: 2025appo

Use computer audio, or phone: (646) 931 3860; Meeting ID: 825 94556221. International numbers available: https://michigantech.zoom.us/u/kdmBuLSit5

**Contact:** Danielle Shannon, and Maddy Baroli with any questions. This training is supported by the USDA Forest Service, USDA Climate Hubs, and the Northern Institute of Applied Climate Science.

# Resources & Optional Readings

## Resources for Step 2

**Review regional climate impacts** by watching a recorded presentation (~25 min) and/or reading a climate report for your specific geographic area.

- All regional ecosystem vulnerability assessments authored by NIACS are here.
- Urban forest vulnerability (video), Chicago Wilderness Ecosystem Vulnerability (report)
- Central Appalachians (Maryland, Ohio, West Virginia) (report, summaries, video)
- Central Hardwoods (Illinois, Indiana, Missouri) (report, summaries)
- Northwoods (Michigan, Minnesota, Wisconsin) (reports, video)
- New England and Northern New York regions (report, storymap, video)
- Mid-Atlantic (Delaware, Maryland, New Jersey, New York, Pennsylvania) (report, video)
- Outside of the Northeast and Midwest regions – please follow up with resources relevant to your regions such as: California, Pacific Northwest, Inter-mountain West and Colorado, Canada (eastern provinces), Southeast.

**Optional additional information to check out** - on tree species vulnerability, and shifts in heat and hardiness zones, hydrology.

- Find tree species habitat suitability handouts within a particular region, state, or city.
- Explore the Climate Change Atlas for eastern trees and birds.
- Explore Shifts in Growing Degree Days, Plant Hardiness Zones, and Heat Zones using this interactive story map. Use known plant species heat/hardiness zone characteristics to evaluate how these species may cope in a changing climate.
- Explore the effects of climate on forest hydrology (36 min. video presentation)
- Find even more resources for your state at www.adaptationworkbook.org/resources

## Resources for Step 5

**Optional reading on monitoring:**

- Janowiak et al. 2017. Assessing Stand-Level Climate Change Risk Using Forest Inventory Data and Species Distribution Models

**Michigan State University Forest Climate & Carbon Program materials:**

- https://www.canr.msu.edu/news/topic-1-carbon-inventory-data-and-calculations
- https://www.canr.msu.edu/fccp/FCCP-ORL/tree-measurement-video-series

# Instructors & Contact Information

This training is hosted by a team of experienced instructors specializing in climate adaptation. Contact us with any questions:

- Danielle Shannon
- Maddy Baroli
- Courtney Peterson
- Samantha Myers
- Patricia Leopold
- Maria Vicini
- Becca Rooney
- Martha Sample
- Mattison Brady
- Adrienne Keller
- Luke Nave

***Learn more about our team at***: https://forestadaptation.org/team

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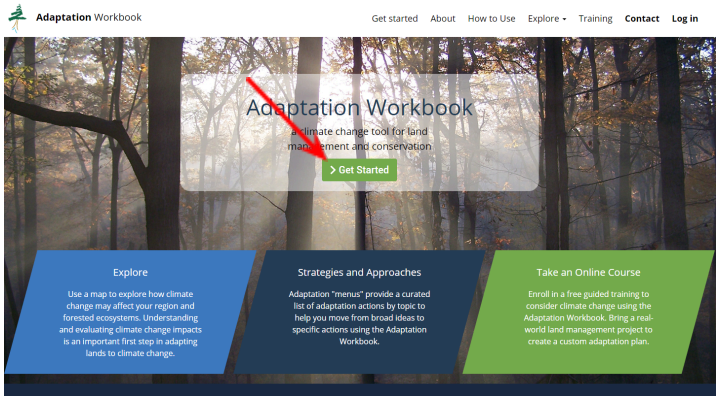
# Getting Started with the Adaptation Workbook

Please set up your Adaptation Workbook account (If you haven't already done so) the week before the training begins so that we can make the features available to you before you start.

- **If you have a small team,** use one person's email address to create an account that you can share among the group. You can then take turns working on the project and decide how to tackle assignments among your team.

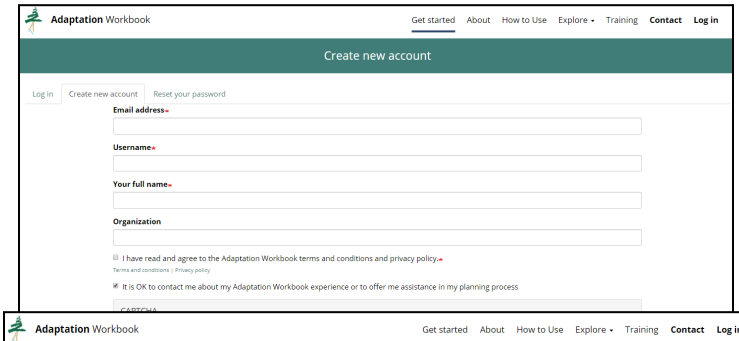
- **If you used a different email address** to create your Adaptation Workbook account than the one you used when you registered for the training, please send the correct address to Danielle Shannon (dshannon@mtu.edu) so that your email/account can be associated with the training.



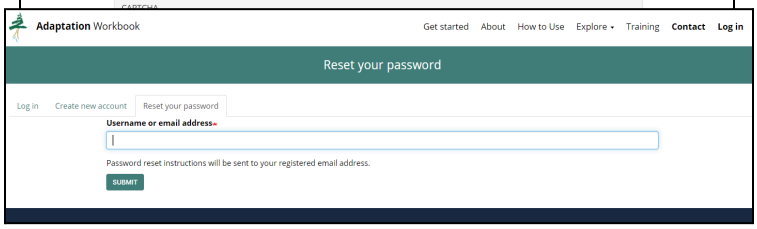

# Creating an Account

a. Navigate to www.adaptationworkbook.org. Click on the green button “Get Started”, to create an account

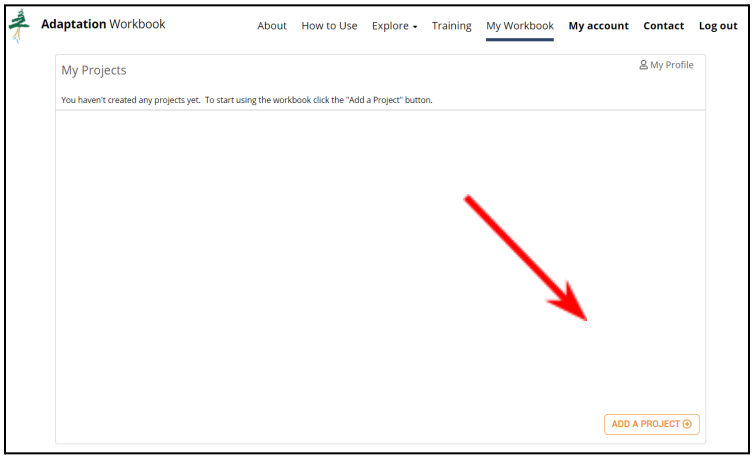
b. Create a new account by entering a username, email address, and other information. Be sure to check the terms and conditions/privacy policy check box, as well as the check box allowing us to help you as you go through the workbook. When you have entered all of the information, click “Create a new account.”




c. The following screen will direct you to confirm your new account. You will need to check the email of the account that you’ve linked to the Adaptation Workbook, find a confirmation email (from info@adaptationworkbook.org), and click the confirmation link. Your confirmation email should arrive within a few hours. Check your spam folder if you don’t see it in your inbox! The link will take you to a one-time login screen that will require you to create a site password. Click “Log in” and create a password on the following screen.




d. Once logged in, you will see your Workbook dashboard. This is where you will add a project.




**IMPORTANT! *******************

Although you can use the Adaptation Workbook in its regular configuration at any time, you will need to create a project on AdaptationWorkbook.org web to use during the Planning and Practices training in order to access training content and additional materials. Please wait until after Lecture 1 to create a project.

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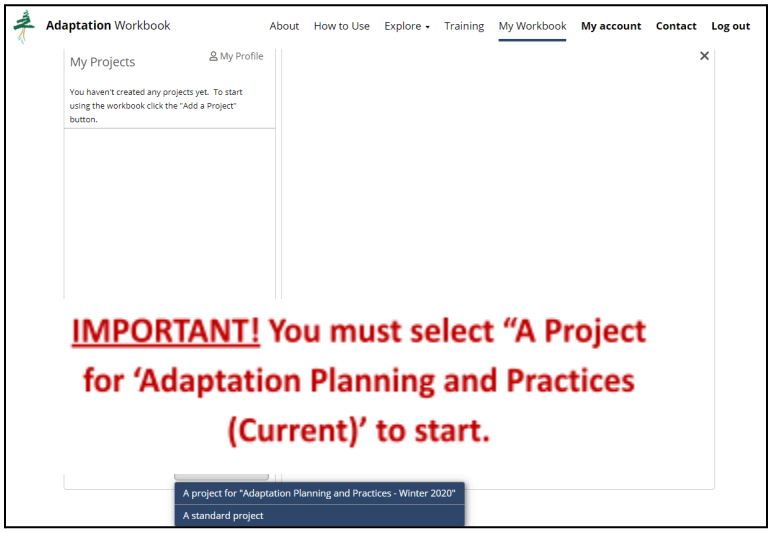
## Starting a Project in the Adaptation Workbook – Session 1 Homework

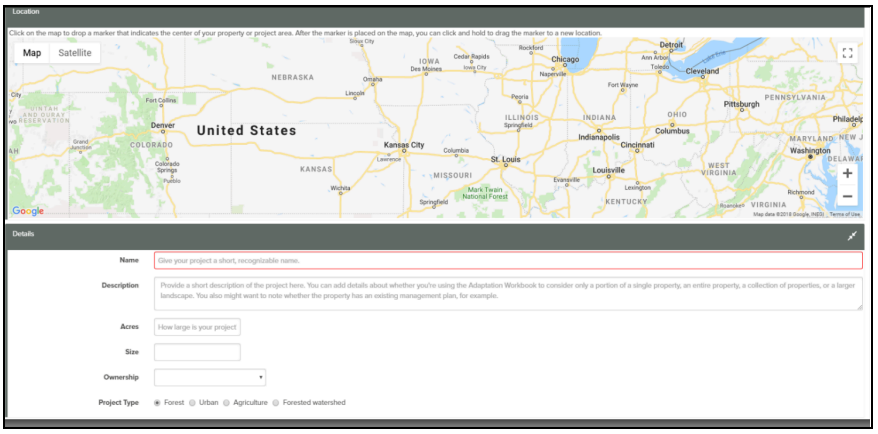
a. When you log into the Adaptation Workbook, you will be sent to the project dashboard.

b. Click on the orange “Add a Project” button and then select “A Project for Adaptation Planning and Practices - 2024 (Current)”



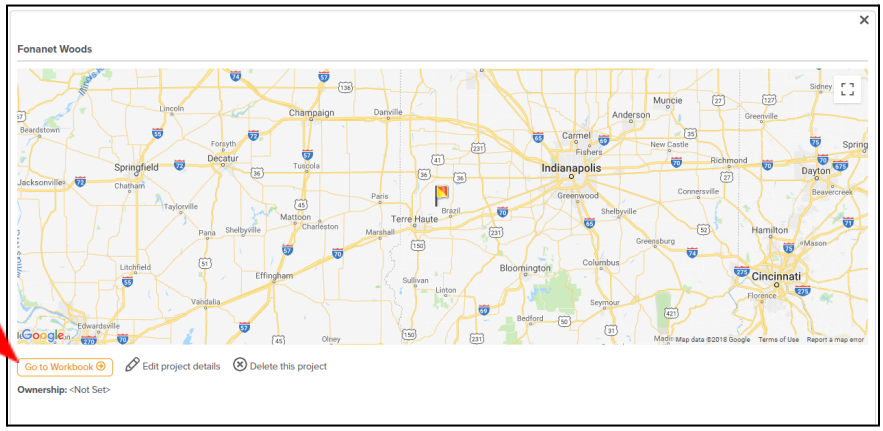
c. Place a marker at the approximate location of the project. Note that if you want to maintain privacy, you can select a nearby intersection or town. Some tips for placing the marker are:

- Use the (+) and (-) buttons to zoom in and out.
- Click and hold the map to pan the view.
- A single click will place the marker on the map.
- To move the marker, click and drag it to the desired location.

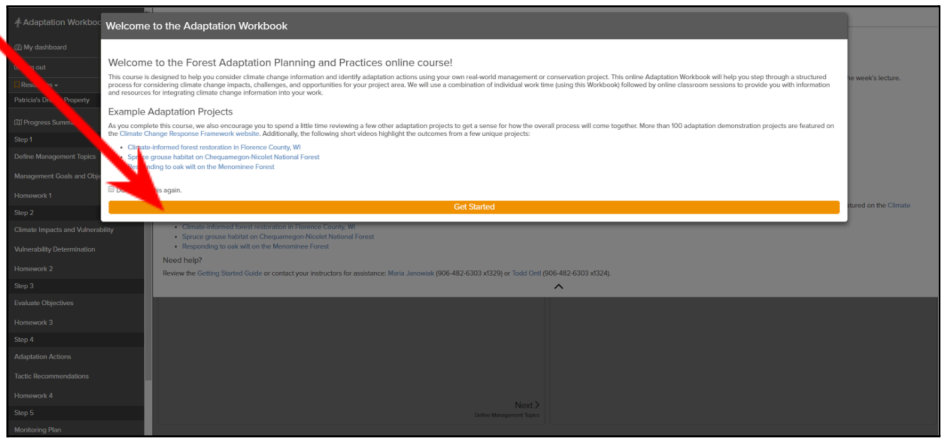



d. Enter a project name, description, acreage, and ownership. The level of detail that you provide is up to you—this information will be included in the project summary report that you may want to produce upon completion. For "project type" select the theme of your project (e.g. Forest, Urban, Forested Watershed).

e. This project will now appear in your dashboard. To begin your project, click "Go to Workbook."




f. A dialog box will appear with more information about the training. Read the information and click the "Get Started" orange button




**Find a full tutorial for each step of the workbook here.**
**Any questions or issues?**

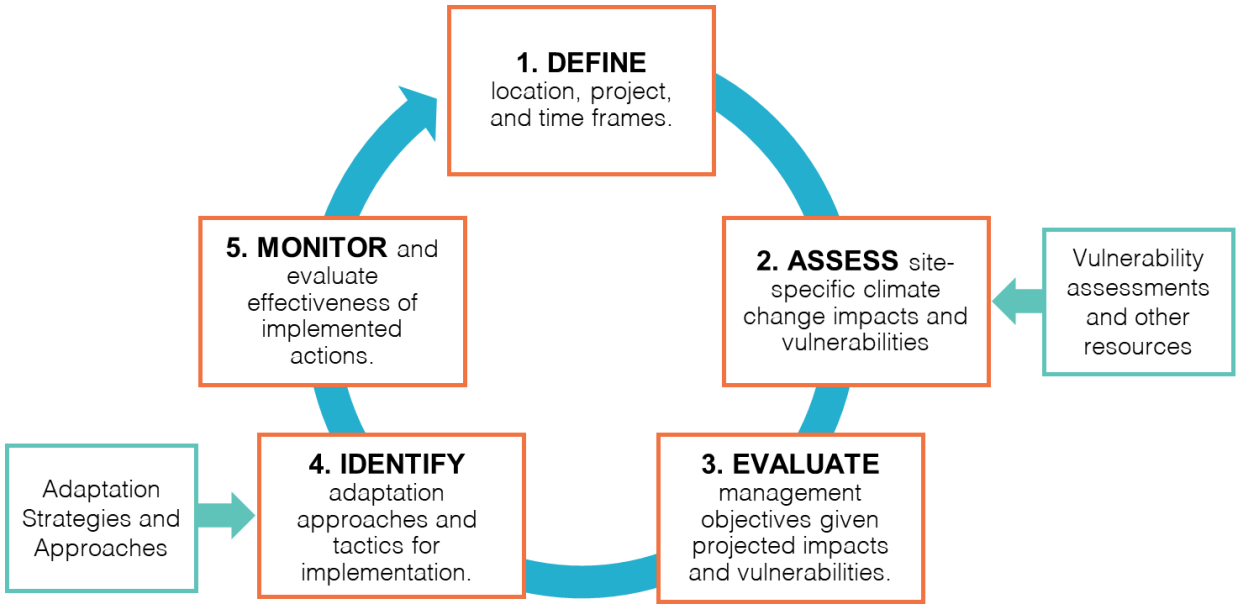
**Contact…**

Danielle Shannon at dshannon@mtu.edu
Maddy Baroli at mjbaroli@mtu.edu

# Adaptation Workbook Steps in Brief

This is a brief outline of the Adaptation Workbook process.
You can find a full tutorial for completing each step here.

Find the full process in the Forest Adaptation Resources: Climate change tools and approaches for land managers, 2nd edition (Swanston et al. 2016) and as an online tool at www.adaptationworkbook.org.




## Step 1: DEFINE location, project, and time frames.

**"What are your management goals and objectives for the project area?"**
The first step is to describe the project area and your management objectives before considering the potential effects of climate change. This may include identifying:

- Any ecosystem types, stands, or other distinct areas that you want to consider individually
- Any short- or long-term milestones that can be used to evaluate progress

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

**"What climate change impacts and vulnerabilities are most important to this particular site?"**
Climate change will have a wide variety of effects on the landscape, and not all places will respond similarly. List site-specific factors that may increase or reduce the effects of climate change in your project area, such as:

- Site conditions, such as topographic position, soils, or hydrology
- Past and current management
- Forest composition and structure

- Susceptibility to pests, diseases, or other stressors that may increase

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

**"What management challenges and opportunities may occur as a result of climate change?"**
This step explores management challenges and opportunities that may arise under changing conditions. For each of your management objectives, consider:

- Management challenges and opportunities given the climate impacts you identified previously
- The feasibility of meeting each management objective under current management
- Other considerations (e.g., administrative, legal, or social considerations) beyond climate change that may affect your ability to meet your management objectives

## Step 4: IDENTIFY adaptation approaches and tactics for implementation.

**"What actions can enhance the ability of the ecosystem to adapt to anticipated changes and meet management goals?"**
Generate a list of adaptation tactics —prescriptive actions specifically designed for your project area or property and your unique management objectives. Use the menus of Adaptation Strategies and Approaches as a starting point for identifying specific management tactics (e.g., what, how, when) that you can implement. As you develop tactics, consider the:

- Benefits, drawbacks, and barriers associated with each tactic
- Effectiveness and feasibility of each tactic

## Step 5: MONITOR and evaluate the effectiveness of implemented actions.

**"What information can be used to evaluate whether the selected actions were effective and inform future management?"**
Monitoring metrics can help you determine whether you are making progress on your management goals and evaluate the effectiveness of those actions. When identifying monitoring items, work to identify monitoring items that:

- Can tell you whether achieved your management goals and objectives
- Can tell you whether the adaptation tactics had the intended effect
- Are realistic to implement

### This brief summary summarizes the entire process detailed in this publication:

Download and read the Forest Adaptation Resources: Climate change tools and approaches for land managers, 2nd edition (Swanston et al. 2016) publication at https://www.fs.usda.gov/treesearch/pubs/52760