



The Climate Resilience Toolkit and 5-Step Planning Process

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The CRT v1.0 was first published in Nov 2014.

The front page offers multiple entry points for finding & exploring climate-related decision-support tools, information, & subject matter expertise.

The screenshot shows the homepage of the U.S. Climate Resilience Toolkit. At the top, there is a navigation bar with the logo, the title 'U.S. Climate Resilience Toolkit', and links for 'Get Started', 'Taking Action', 'Tools', 'Topics', and 'Expertise'. A search bar is also present. The main header features a large map background with the text 'Meet the Challenges of a Changing Climate' and a subtext 'Find resources and a framework to understand and address climate issues that impact people and their communities.' To the right of this header is a vertical list of five numbered steps: 1. Identify the Problem, 2. Determine Vulnerabilities, 3. Investigate Options, 4. Evaluate Risks & Costs, and 5. Take Action. Below the header is a section titled 'Find Out How People Are Building Resilience' which contains four video thumbnails with titles: 'Traditions and Traditions: Adaptation on Tribal Lands (5:44)', 'Resilient Learning Sky Islands (3:24)', 'Working for Wind (3:07)', and 'Adapting to Climate Change: A View from the Ground (5:10)'. At the bottom, there are three columns: 'Climate Explorer' with a map of the United States, 'Site Overview' with a photo of two people working on a laptop, and 'Featured' with text about an 'Adaptive Workbook for Natural Resource Managers' and a link to 'Learn More'.

Resilience is the capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption.

Our society will not make decisions based solely on Climate and Weather

- People must be able to integrate climate information with their other **value drivers (things they care about)**
- Information must be **relevant** to their values & motivations
- They must **trust** the information source
- Adaptation is easiest understood through a **resilience** frame and successful **paths walked by others**



Water Resources

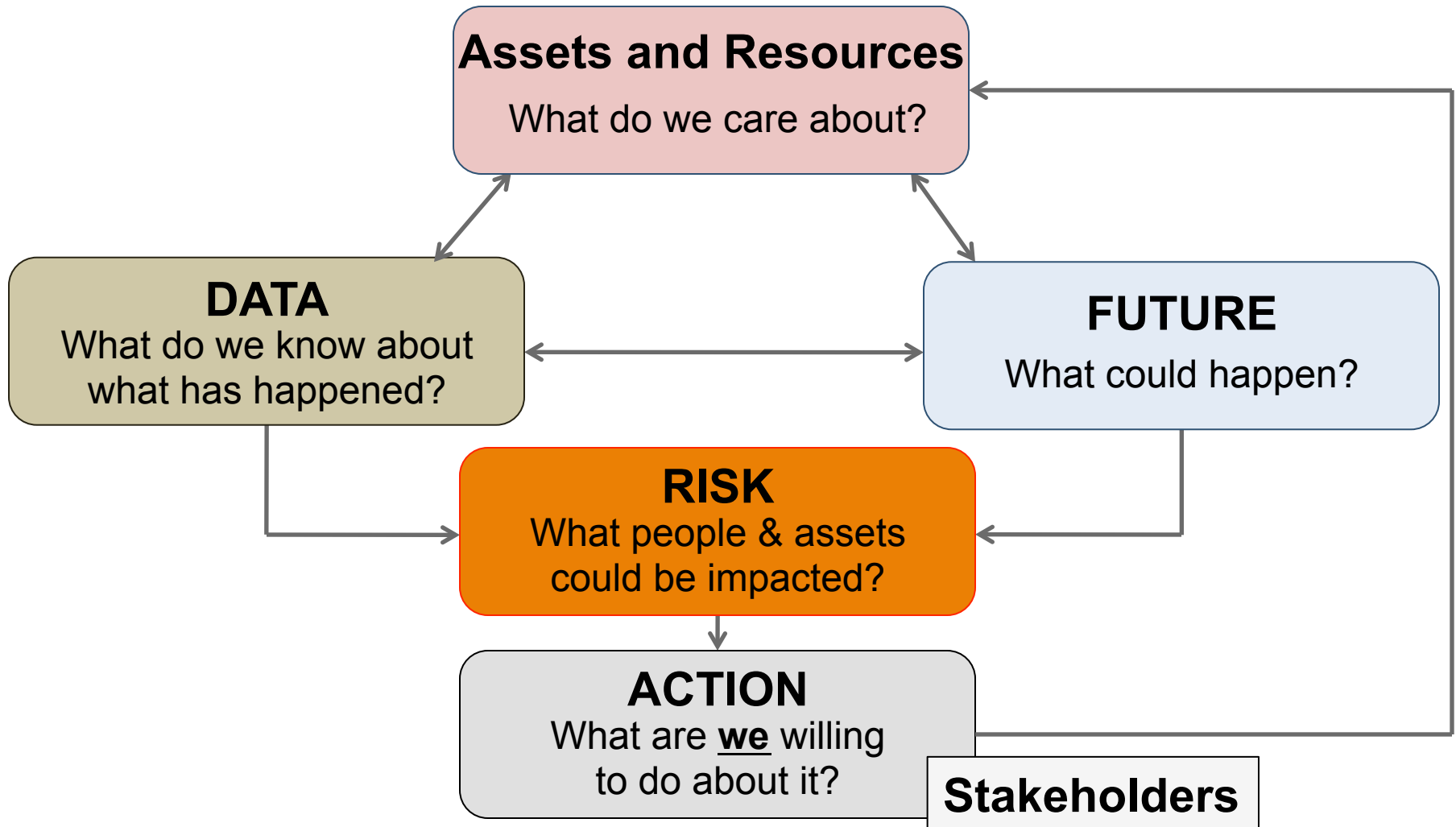


Development Pressure



Energy Costs

Adaptation isn't totally a linear process



5-Step Adaptation Workflow (Getting Started Steps)

from the U.S. Climate Resilience Toolkit

Step 1 : Identify the Problem

Did you know?

Step 2 : Assess your vulnerability

Why should we care?

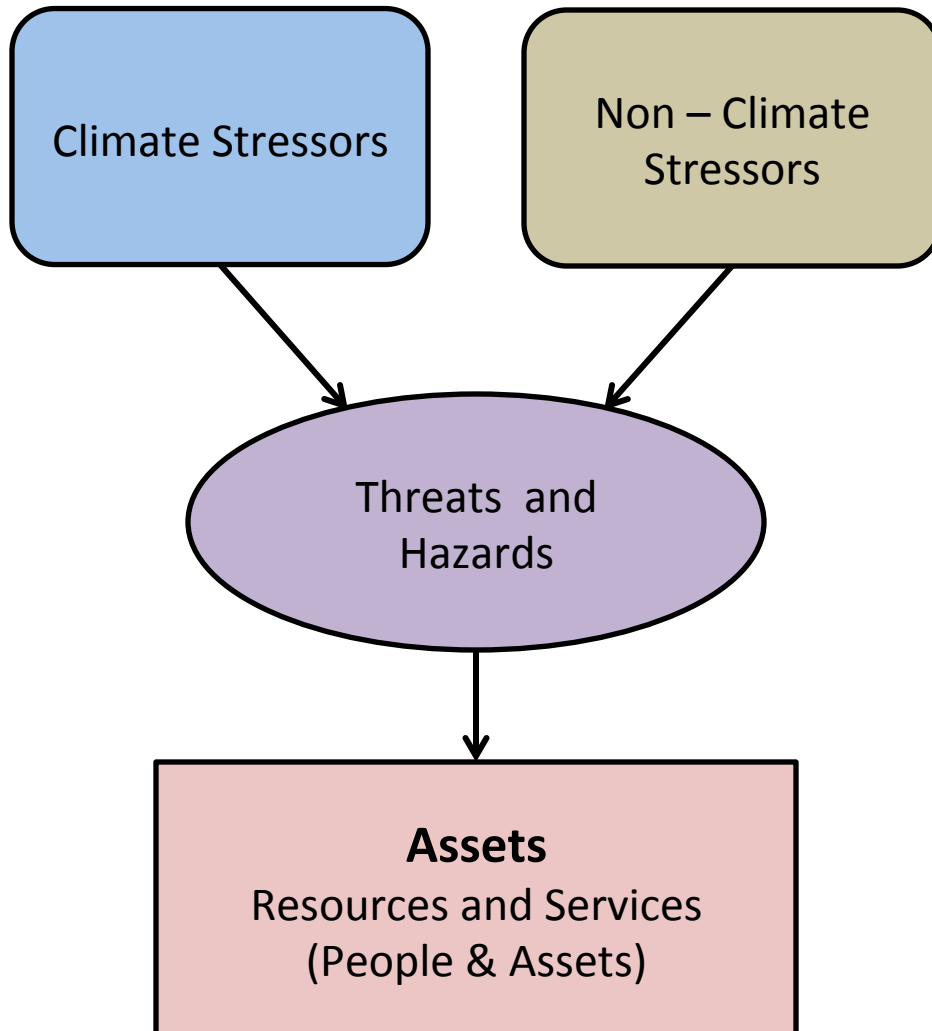
Step 3 : Identify options to build
resilience

Step 4 : Evaluate the risk and
choose the best option

What can we do about it?

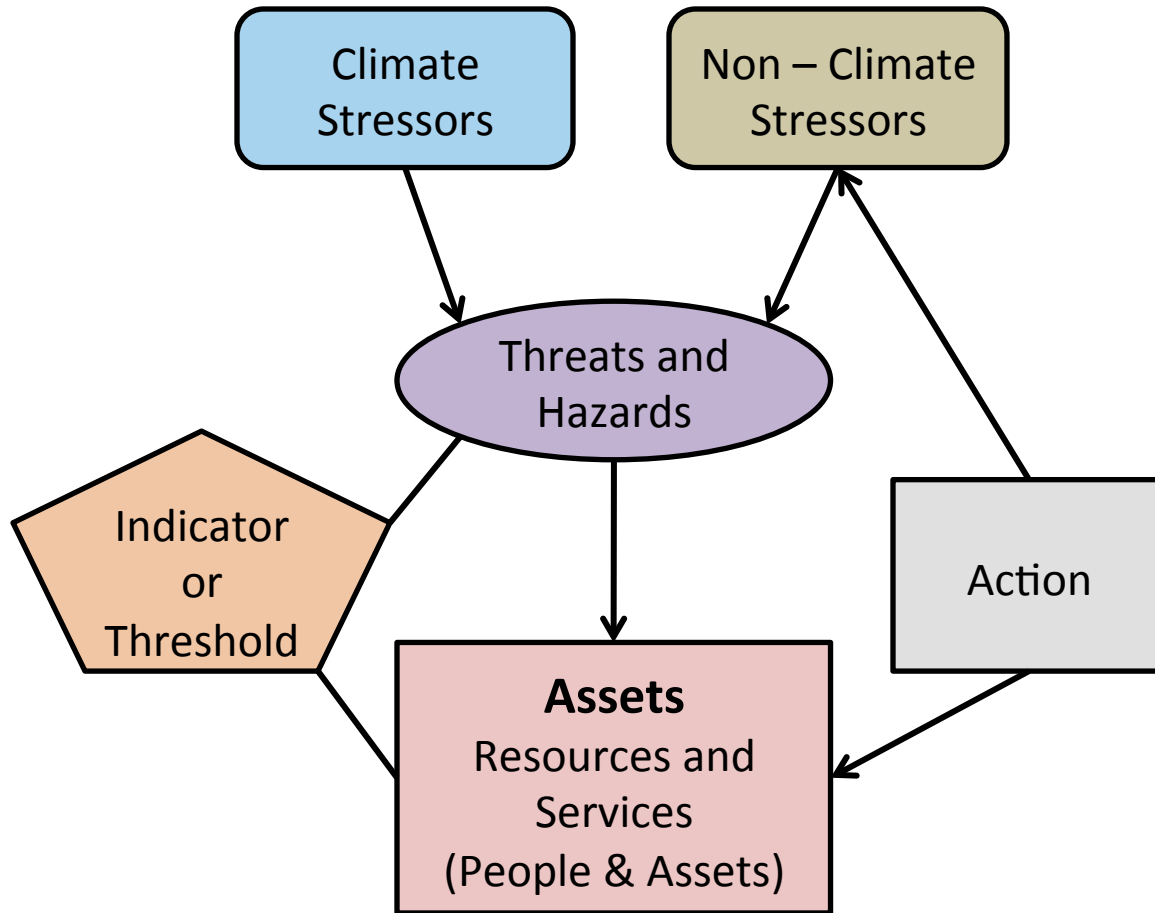
Step 5 : Implement – Take Action!

A Conceptual Model for Building Resilience



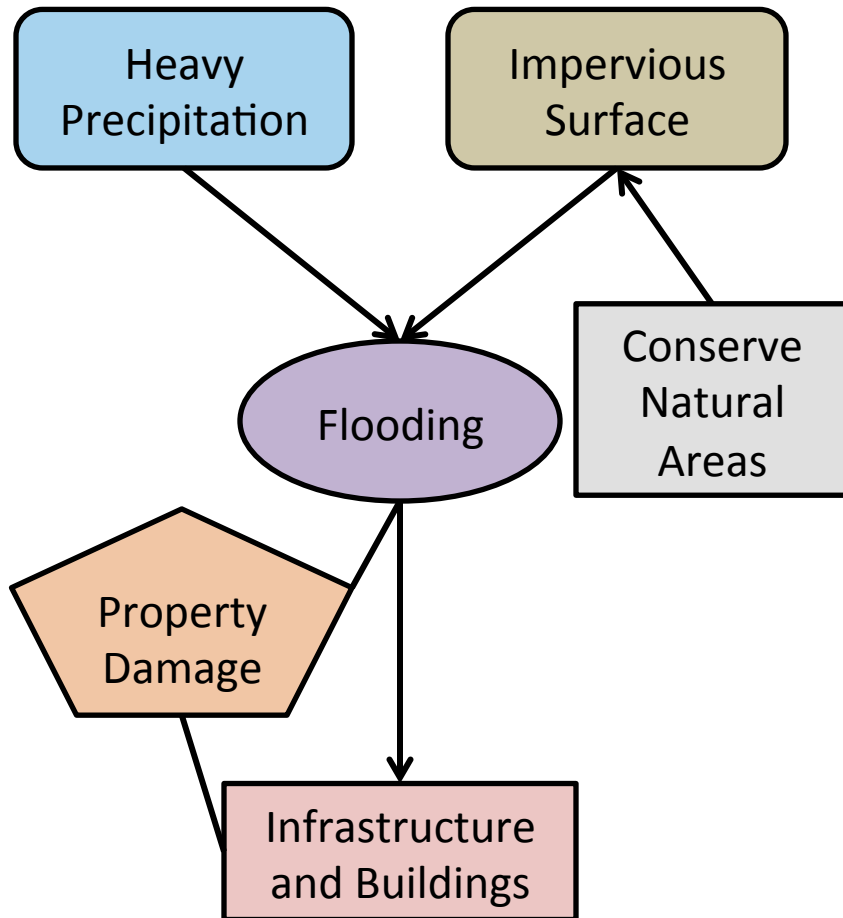
- Decisions are driven by **Assets (Resources and Services)**
- When these assets are impacted, those impacts effect our quality of life and livelihoods.
- Remember, stressors are both climate and non-climate related

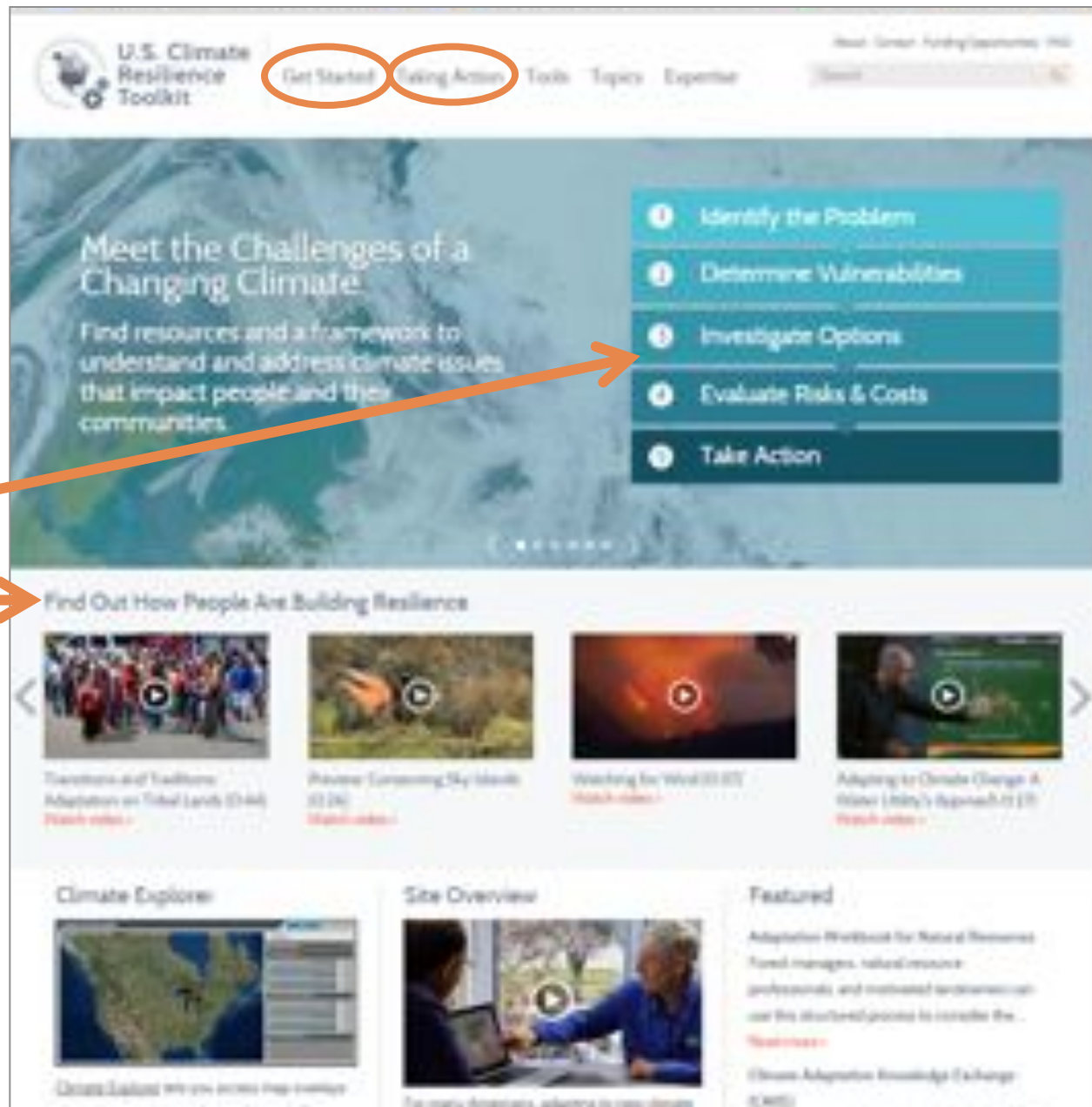
A Conceptual Model for Building Resilience



- In Step Two, we start quantifying the model
- For each Asset, look at primary Threats that are impacting. We want to look at each “Impact Pair” Separately
- Do we have data to quantify the relationships? Are there indicators or thresholds?
- Based on understanding of cause-and-effect relationships, we can assess costs & benefits of possible actions.

For example...

[illegible]



Logic of Site:

Getting Started Steps

Case Studies of people

Taking Action

The CRT addresses nine climate-related **topics** & **sub-topics**.

This page acts as a table of contents & point-of-entry for topic-based exploration of climate-related hazards.

There's an interagency virtual team of subject experts behind each of these topic sections.



Each Topic section has a main narrative page, excerpted from the 3rd U.S. National Climate Assessment, to help people understand where, how, & why our nation is experiencing climate-related hazards.

The purpose of the topic section is to provide science-based contextual information to help people begin to identify, understand, & communicate about climate stressors in their communities & businesses.



U.S. Climate
Resilience
Toolkit

[Get Started](#)
[Taking Action](#)
[Tools](#)
[Topics](#)
[Expertise](#)



Water Resources

Key points:

- In response to Earth's warming oceans and atmosphere, precipitation patterns are changing. Across the nation, the amount of rain falling in the heaviest precipitation events is increasing, and climate models suggest this trend will continue. Flooding risks suggest both precipitation will increase in southern states and decrease in the Southeast.
- Based on results from climate models, scientists project an increase in the frequency of flooding along coastal shorelines in many areas of the United States.
- Models also indicate an increase in the length of dry periods across most of the United States; drier higher temperatures lead to greater evaporation and water loss from the ground, so seasonal drought will increase. In some regions, changing conditions and increased demand will challenge the reliability of municipal water supplies.
- Water storage and land systems subject to erosion, slope, climate variability and change impact flood systems and flow interactions. The links between these systems mean they are susceptible to cascading effects from one system to the next, which can have impacts on construction and businesses.
- Decreases in the quantity of water available in the natural environment pose threats to the stability of food and aquatic ecosystems.

Source: U.S. Global Change Research Program

Changes in the water cycle

The water cycle encompassing all processes that move water through different parts of the Earth system is a naturally dynamic and vital. As climate varies, the role of each process responds by increasing or decreasing across different regions and over varying time scales. A central result of these changes is an increase in the frequency and severity of extreme water conditions (such as drought or too little water at certain times).

Water has obvious connections to other sectors of society. The reality of too much water (flooding) or too little water (drought) can impact health, agriculture, businesses, infrastructure, ecosystems, and economies. Both flooding and drought present challenges for human and natural systems across all sectors.



The water cycle is a continuous process of water through different parts of the Earth system. The water cycle is a dynamic system that responds to changes in climate. The water cycle is a continuous process of water through different parts of the Earth system. The water cycle is a dynamic system that responds to changes in climate.



Precipitation and runoff

Patterns of when, where, in what form, and how much precipitation falls are changing. Over the past century, the intensity and frequency of the heaviest rainfall events have increased significantly across most of the contiguous United States.

Recent Topics

- Air
- Coastal Flood Risk
- Ecosystem Vulnerability
- Energy Supply and Use
- Flood Resilience
- Human Health
- Transportation and Supply Chain
- Urban Systems
- Water Resources**
 - Manage Water Supply
 - Flooding
 - Drought
 - Ecosystems

Subtopic pages provide additional information about a particular facet of the topic; e.g., “Municipal Water Supply.”

Note the **Taking Action** (case studies) and **Related Tools** sections in the right hand navigation, where all of our case studies and tools are cross-walked with all of our subtopics throughout the CRT — i.e., our “no wrong door” approach to navigation.

[illegible]

Coming soon: A new **Water Resources Dashboard** where people can go to access **forecasts & outlooks** of weather & climate conditions from days to months into the future...

U.S. Climate Resilience Toolkit


Get Started | Taking Action | Tools | **Topics** | Expertise

Topics > Water Resources > Drought >

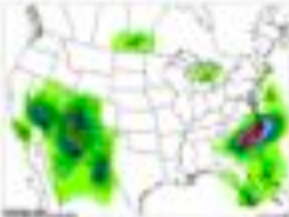
Water Resources Dashboard

Tools are available to help you manage your climate-related risks and opportunities, and to help guide you in building resilience to extreme events. Browse the list below, or filter by topic and tool functionality in the boxes above. To expand your results, click the Clear Filters link.


Forecasts & Outlooks




U.S. National Weather Forecasts
Several lines of descriptive text goes here. Several lines of descriptive text goes here. Several lines of test goes here. Several lines of test goes here.
[Visit data source >](#)




24-hour Precipitation Total
Several lines of descriptive text goes here. Several lines of descriptive text goes here. Several lines of test goes here. Several lines of test goes here.
[Visit data source >](#)




Weather Model Analyses & Guidance
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[Visit data source >](#)



Probability of Exceeding a Precipitation Threshold
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[Visit data source >](#)



U.S. Precipitation Outlooks
Several lines of descriptive text goes here. Several lines of descriptive text goes here. Several lines of test goes here. Several lines of test goes here.
[Visit data source >](#)



U.S. Hazard Outlooks
Several lines of descriptive text goes here. Several lines of descriptive text goes here. Several lines of test goes here. Several lines of test goes here.
[Visit data source >](#)

Screen Topics

- Coastal Flood Risk
- Computers & Resilience
- Energy Supply and Use
- Food Resilience
- Human Health
- Transportation and Supply Chain
- Tribal Nations
- Water Resources
 - Municipal Water Supply
 - Wetlands
 - Drought
 - Storm Water
 - Water Resources Dashboard**

Taking Action

- Building Resilience: Optimizing Use of Infrastructure Supply >
- Managing Water for Highest Agriculture in the Central Arid Zone >
- Protecting the Agricultural Community to Build Climate Resilience >
- Climate Outlook: Help Water Supply Planning >
- Early Warning Information Increases Options for Drought Mitigation >


1 of 3 >>>

Tools

- Advanced Hydrologic Prediction System >
- Long-Range Outlook >
- Water Outlook: Evaluation of NOAA Outlooks >
- Ensemble-based Hydrologic Information System >
- Real-time Streamflow Reconstructions Model Test Page >

1 of 5 >>>

... as well as real-world **observations** of past and current water-related conditions.




U.S. Climate Resilience Toolkit

[Get Started](#)
[Taking Action](#)
[Tools](#)
[Results](#)
[Support](#)

Home > [Water Resources](#) > [Dashboard](#)

Water Resources Dashboard

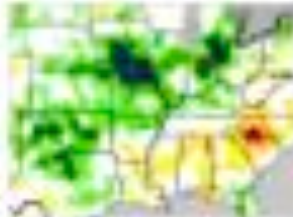
Tools are available to help you manage your climate-related risks and opportunities, and to help guide your building responses to extreme events. Browse the tool below, or filter by topic and/or tool functionality in the boxes above. To expand your results, click the Clear Filters link.



Current Drought

The comprehensive suite of graphical forecast products shows a range of information on current and projected drought levels for almost 4,000 stations in the contiguous United States.


[View Data Overview](#)



Soil Moisture Index

The comprehensive suite of graphical forecast products shows a range of information on current and projected soil moisture for almost 4,000 stations in the contiguous United States.


[View Data Overview](#)



Historic stream gauge data

The comprehensive suite of graphical forecast products shows a range of information on current and projected river levels for almost 6,000 stations in the contiguous United States.


[View Data Overview](#)



Flood Hazard Zones

The comprehensive suite of graphical forecast products shows a range of information on current and projected river levels for almost 4,000 stations in the contiguous United States.


[View Data Overview](#)



Monthly River Flows

The comprehensive suite of graphical forecast products shows a range of information on current and projected river levels for almost 4,000 stations in the contiguous United States.

[View Data Overview](#)



Monthly Soil Moisture

The comprehensive suite of graphical forecast products shows a range of information on current and projected river levels for almost 4,000 stations in the contiguous United States.

[View Data Overview](#)

Stream Gauge

- [Stream Gauge Data](#)
- [Temperature Vulnerability](#)
- [Energy Security and Use](#)
- [Food Security](#)
- [Human Health](#)
- [Infrastructure and Assets Chart](#)
- [Wild Rivers](#)
- [Water Resources](#)
 - [Hurricane Water Levels](#)
 - [Flooding](#)
 - [Drought](#)
 - [Droughts](#)
 - [Water Resources Dashboard](#)

Taking Action

[Building Your Resilience Plan: A Guide to the U.S. Climate Resilience Toolkit](#)

[Managing Water in a Changing Climate: A Guide to the U.S. Climate Resilience Toolkit](#)

[Reducing the Impact of Extreme Weather Events: A Guide to the U.S. Climate Resilience Toolkit](#)

[Climate Change and Water Supply Planning: A Guide to the U.S. Climate Resilience Toolkit](#)

[Early Warning Information: A Guide to the U.S. Climate Resilience Toolkit](#)

[Water Security: A Guide to the U.S. Climate Resilience Toolkit](#)

Tools

[Access and Manage Your Data](#)

[Crop Decision Dashboard](#)

[Water Security: A Guide to the U.S. Climate Resilience Toolkit](#)

[Drought: A Guide to the U.S. Climate Resilience Toolkit](#)

[Flood: A Guide to the U.S. Climate Resilience Toolkit](#)

The **Taking Action** section now has 96 case studies relating to every CRT topic, and from every region in the United States.

Use the menus (upper right) to quickly filter by topic, by the 5 steps to resilience, &/or by region.

U.S. Climate Resilience Toolkit

Get Started **Taking Action** Tools Topics Expertise


Read Contact Funding Opportunities FAQ

Search

Taking Action

Filter by topic ▼ Filter by steps to resilience ▼ Filter by region ▼


Communities and businesses are taking action to reduce their vulnerability to climate-related impacts and to build resilience to extreme events. The stories below illustrate the application of the process and tools featured in this Toolkit. Browse the stories, or filter by topic, step to resilience, and/or region in the boxes above. To expand your results, click the Clear Filters link.



Partnerships Promote Healthy Forests and Clean Water

Two major fires and subsequent flooding events created havoc on a critical watershed and reservoir that supplies Denver, Colorado, with water. Now, a public-private partnership is working to ensure a clean, reliable water supply.


[Read more >](#)



Restoring Surfers' Point: Partnership's Persistence Pays Off

Coastal erosion has repeatedly damaged bike paths and parking lots near Ventura, California. It took local groups with varying viewpoints more than a decade to agree upon a strategy, but the first phase of their solution is now complete.


[Read more >](#)



Show Don't Tell: Visualizing Sea Level Rise to Set Planning Priorities

City officials in Tybee Island, Georgia, recognized sea level rise as a growing problem for their community. Visualizations from a sea level rise viewer helped them raise awareness of the city's vulnerabilities and set priorities for adaptation efforts.


[Read more >](#)



Climate Outlooks Increase Farmer's Odds for Success


From weeks-long dry spells to extreme precipitation events, farmers face significant challenges in bringing crops to market. Here's how one grower uses seasonal climate forecasts to increase his chances for success.

[Read more >](#)




Waterfront Restaurant Rebuilds to Remain Open Through Future Storms

Property owners in New Jersey can check their vulnerability to sea level rise and storm surge using an




Ranchers in Marin County Consider Carbon Credits

Ranchers are participating in a pilot project to improve carbon storage and reduce net greenhouse gas emissions. After quantifying their



Browser-Based Tools Show Current and Historical Crop Cover and Health

To manage their businesses successfully, farmers and food production companies need to



Quantifying Risk Shows Value of Replacing Highway

Louisiana's Highway I carries a significant fraction of the gas and oil that comes from the Gulf of Mexico to distribution points in the United

All Taking Action case studies are cross-walked with the five **Steps to Resilience** process, our **Tools** compendium, and all relevant **Topics & Sub-topics**. Where appropriate, links are also provided to **Additional Resources** online.

The screenshot displays the 'U.S. Climate Resilience Toolkit' website. The top navigation bar includes links for 'Get Started', 'Taking Action' (highlighted in orange), 'Tools', 'Topics', and 'Expertise'. A search bar is located on the right. The main content area features a large image of a bridge over a river, with a text overlay titled 'Integrating Education and Stormwater Management for Healthy Rivers and Residents'. Below this, a section titled 'The challenge' describes the City of Ann Arbor's situation with the Huron River. To the right of the main text is a sidebar with a 'Steps to Resilience' section containing five steps, with 'Step 5: Take Action' highlighted in orange. Below the steps are sections for 'Tools' and 'Topic', both of which are circled in orange. The 'Tools' section lists three items, and the 'Topic' section lists several related topics. At the bottom of the sidebar is a section for 'Additional Resources', also circled in orange.

U.S. Climate Resilience Toolkit

Get Started Taking Action Tools Topics Expertise

Taking Action > Integrating Education and Stormwater Management for Healthy Rivers and Residents >

Integrating Education and Stormwater Management for Healthy Rivers and Residents

The City of Ann Arbor recognized stormwater runoff as a growing threat to the quality of their water supply. They're addressing the issue with two complementary strategies.

The challenge

Situated on the Huron River in southeastern Michigan, the city of Ann Arbor is a leader in sustainable planning and climate action. However, changes in both average precipitation and the intensity of extreme storm events over the last century threaten the health of the city's residents and the community's treasured environmental features. The Huron River provides 85 percent of the city's drinking water, and when it rains nearly 100 percent of the city's stormwater flows back into the river. Pollution from stormwater runoff decreases the quality of water available for human use, and also has a negative impact downstream on aquatic and wetland ecosystems. Over the last sixty years (1950-1981 versus 1981-2010), Ann Arbor's average annual precipitation increased by 25 percent. This dramatic increase, along with an increase in the severity of extreme rain events across the region, creates a need for more on-site stormwater management solutions to reduce runoff and maintain a healthy and vibrant river system.

The solution

In 2006, the City of Ann Arbor updated the rate structure for its stormwater utility. To encourage property owners to manage stormwater on-site, they set new rates based on the amount of impervious surface on each property. The new, more equitable rate structure provides an incentive to manage stormwater on-site. The utility, which generates over \$5 million per year, funds operations and maintenance projects for the stormwater system, water quality improvement projects, stormwater education, implementation of environmental regulatory or remediation plans, and green infrastructure projects that reduce strain on the stormwater system. Additionally, the city offers stormwater credits to both commercial and residential property owners who take steps to reduce stormwater runoff on their property.

Educating the public and building support

Steps to Resilience:

- Step 1: Identify the Problem
- Step 2: Determine Vulnerabilities
- Step 3: Investigate Options
- Step 4: Evaluate Risks & Costs
- Step 5: Take Action

Tools:

- Cross Impacts & Adaptation Tool (CIAT) >
- National Stormwater Calculator-Climate Assessment Tool >
- Storm Water Management Model >

Topic:

- Ecosystem Vulnerability > Water Resources >
- Human Health > Extreme Events >
- Human Health >
- Building Health Care Sector Resilience >
- Element 5: Environmental Protection and Strengthening of Ecosystems >
- Water Resources > Municipal Water Supply >
- Water Resources > Flooding >
- Water Resources > Ecosystems >

Additional Resources:

- A2 Community Climate Partnership Video >

Our main 'Tools' page presents dozens of science-based decision-support tools.

Users can quickly filter by **parent topic** of interest, or by desired **functionality**, or both.

U.S. Climate Resilience Toolkit

Get Started Taking Action **Tools** Topics Expertise

Tools

Tools are available to help you manage your climate-related risks and opportunities, and to help guide you in building resilience. List below, or filter by topic and/or tool functionality in the boxes above. To expand your results, click the Clear Filter button.

Filter by parent topic ▼ Filter by category ▲

- Identify Vulnerabilities (106)
- View Past/Current Conditions (82)
- Analysis/Download Data (67)
- Check Applied Forecasts (51)
- Engage/Communicate (45)
- Find Adaptation Planning Support (42)
- Recover/Rebuild (18)
- Visualize Climate Projections (15)

Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use

This toolkit presents information on 18 different land-use tools (generally used legal devices) that could be used to preemptively respond to threats that sea level rise poses to public and private coastal development and infrastructure.

[Read more >](#)

Adaptation Workbook for Natural Resources

Forest managers, natural resource professionals, and motivated landowners can use this structured process to consider the effects of climate change on forests and related ecosystems.

[Read more >](#)

Advanced Hydrologic Prediction Service

This comprehensive suite of graphical forecast products shows a range of information on current and projected river levels for almost 4,000 stations in the contiguous United States.

[Read more >](#)

AgroClimate—Tools for Managing Climate Risk in Agriculture

Interactive tools and climate information provide support to improve crop management decisions and reduce production risks associated with climate variability, climate change, and extreme weather events in the southwestern United States.

[Read more >](#)

Alaska Climate and Weather Highlights

Access information on historical or recent storms and other climate-related events in Alaska and surrounding waters.

[Read more >](#)

Alaska Coastal Profile Tool

Explore how beach and coastal elevation profiles along Alaska's coastline have changed over time.

[Read more >](#)

Alaska Shoreline Change Tool

Analyses of aerial photos and satellite imagery reveal how Alaska's shoreline has changed over time. Projecting observed rates of change into the future provides predictions of where the shoreline will be in coming decades.

[Read more >](#)

Alaska ShoreZone Coastal Mapping and Imagery

Access millions of aerial photos of the coast in Alaska and the Pacific Northwest. This habitat mapping and classification system, paired with a huge database of aerial photos, enables responders to plan an oil spill response or resource managers to identify vulnerable habitat.

Every tool has a landing page with these details:

- » Summary overview
- » Web address
- » All relevant topics and subtopics
- » Add'l documentation about the tool
- » Links to training and tutorials (where available)
- » Agencies & entities who provide & maintain tool

U.S. Climate Resilience Toolkit

Get Started | Taking Action | Tools | Topics | Expertise

Climate Resilience Evaluation & Awareness Tool (CREAT)

Diagnose and optimize the building sector and ecosystem resilience, and use the tool to develop and implement climate change resilience and adaptation strategies in your area.

CREAT provides access to the most recent research, assessment of climate change impacts and helps with operational climate resilience such as sea level rise, shifting precipitation patterns, temperature changes, and extreme weather may impact their operations. The freely available software requires a computer running a recent version of the Microsoft Windows operating system.

CREAT provides a way to authorize climate resilience to their assets using both traditional risk assessment and scenario-based decision making. The tool also provides data analysis for comparing local historical conditions with downscaled climate model projections for the future. CREAT helps users quantify losses based on regional differences in climate change projections and designing adaptation where needed for the types of losses being considered. Following assessment, CREAT provides a series of risk reduction and cost reports that enable the user to evaluate various adaptation options as part of long-term planning.

CREAT helps climate resilience and communicate the risks from climate impacts and generate adaptation to decision makers, stakeholders, and citizens.

Last modified: 6 months ago (06/10/2016)

Writepage

- [Climate Resilience Evaluation & Awareness Tool \(CREAT\)](#)
- Topics**
- [How Resilience: Resilience from the Ground Up](#)
- Taking Action**
- [How Resilience: Resilience from the Ground Up](#)
- Training / Tutorials**
- [CREAT Tool User](#)
- [CREAT Awareness](#)
- Partners**
- [U.S. Environmental Protection Agency \(EPA\) Office of Research and Development \(ORD\) Climate Change](#)

U.S. Climate Resilience Toolkit | Home | About Us | What's New | Contact Us | Privacy Policy | Sitemap | Feedback

The **Climate Explorer** is a main, featured tool in the CRT. It has an instructional landing page to show people how to use it.

Users can **launch** Climate Explorer from this page, or from the CRT's front page, and most case studies in the 'Taking Action' section.

The screenshot shows the U.S. Climate Resilience Toolkit website. The header includes the logo, navigation links (Get Started, Taking Action, **Tools**, Topics, Expertise), and a search bar. The main banner features a map of the United States with the text: "Climate Explorer—Visualizing Climate Data in Maps and Graphs. Learn about this interactive tool and the data it displays. Follow tutorials to learn about the tool's map features and how to manipulate and interpret its graphs." A red circle highlights the "Launch Climate Explorer" button. Below the banner, the "About the Tool and Data" section describes the tool's purpose and data sources. The "Navigating the map" section lists instructions for zooming, panning, and toggling map styles, accompanied by a small map interface. The "Exploring map layers" section provides instructions on selecting themes and toggling layers, with a screenshot of the "LAYERS" tab showing "Coastal Flood Risk" selected under the "TOPICS:" section.

U.S. Climate Resilience Toolkit

Get Started Taking Action **Tools** Topics Expertise

Search

Tools > Climate Explorer—Visualizing Climate Data in Maps and Graphs

Climate Explorer—Visualizing Climate Data in Maps and Graphs

Learn about this interactive tool and the data it displays. Follow tutorials to learn about the tool's map features and how to manipulate and interpret its graphs.


Launch Climate Explorer


About the Tool and Data

Climate Explorer is a research application built to support the U.S. Climate Resilience Toolkit. The tool offers interactive visualizations for exploring maps and data related to the toolkit's Taking Action case studies.

Map layers in the tool represent geographic information available through climate.data.gov. Each layer's source and metadata can be accessed through its information icon. Climate Explorer graphs display 1981–2010 U.S. Climate Normals for temperature and precipitation, overlain with daily observations from the Global Historical Climatology Network–Daily (GHCN–D) database. Please note that GHCN–D data have been checked for obvious inaccuracies, but they have not been adjusted to account for the influences of historical changes in instrumentation and observing practices. GHCN–D data are useful for comparing weather and climate, but for long-term climate change analyses, we recommend the National Climatic Data Center's [Climate at a Glance](#).

Navigating the map

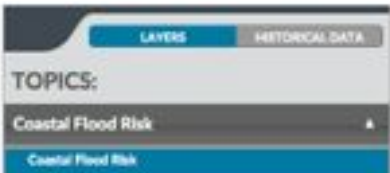
- Zoom in or out using your mouse wheel or the plus and minus icons  at top left.
- To pan—or move around on the map—click and drag.
- Toggle between a street map and satellite imagery using the button at the bottom left.



Exploring map layers

Find and display available data layers from the **LAYERS** tab at top right.

- Select any Theme from the top drop-down menu to see the list of layers associated with that theme. Available layers appear in two groups, **Climate Stressors** and **People and Assets Impacted**.
- Turn any layer on or off by checking its box.



CLIMATE EXPLORER

LAYERS


HISTORICAL DATA

TOPICS:

Water Resources

Climate Stressors

☒ Current Drought 

☐ Flood Hazard Zones 

People and Assets Impacted

☐ Social Vulnerability Index 

☐ Population Density (2000) 

☐ Land Cover (2011) 

LAYER INFORMATION

Current Drought

Source: US Drought Monitor

Regional scale drought status (updated every Thursday)

Drought



Exploring map layers

Find and display available data layers from the LAYERS tab at top right.

- Select any Theme from the top drop-down menu to see the list of layers associated with that theme. Available layers appear in two groups, Climate Stressors and People and Assets Impacted.
- Turn any layer on or off by checking its box.

LAYERS

HISTORICAL DATA

TOPICS:

Coastal Flood Risk

Coastal Flood Risk

CLIMATE EXPLORER

LAYERS

HISTORICAL DATA



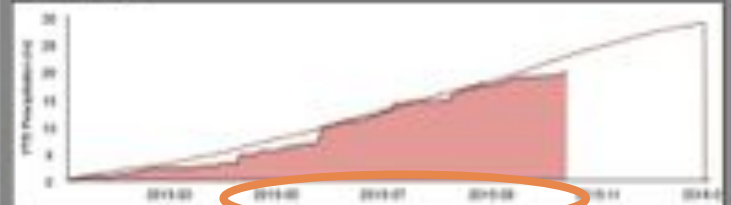
STATION DETAIL:

TEMPERATURE

PRECIPITATION

(1) MARQUETTE MI

PRECIPITATION



(2) BERGLAND DAM MI

PRECIPITATION



(3) STAMBAUGH 23SE MI

PRECIPITATION



Exploring map layers

Find and display available data layers from the LAYERS tab at top right.

- Select any Theme from the top drop-down menu to see the list of layers associated with that theme. Available layers appear in two groups, Climate Stressors and People and Assets Impacted.
- Turn any layer on or off by checking its box.

LAYERS

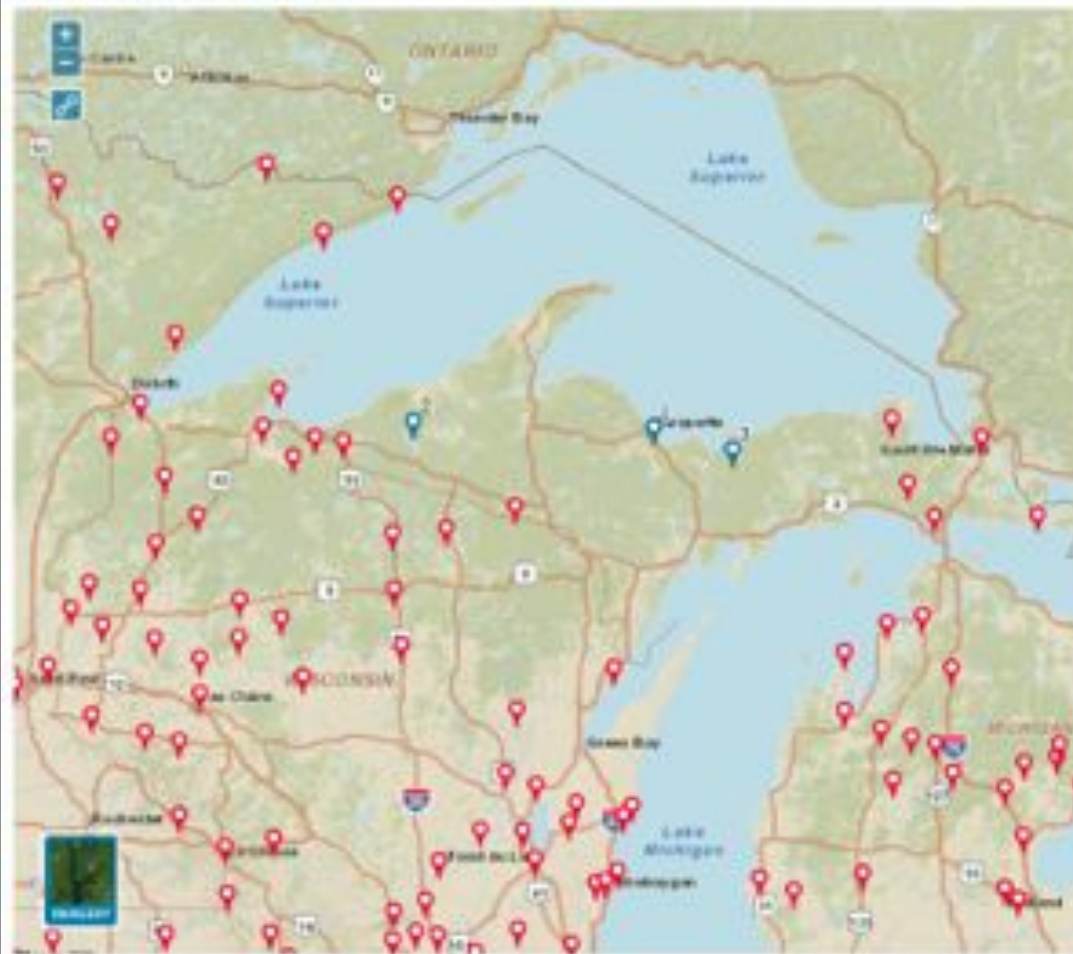
HISTORICAL DATA

TOPICS:

Coastal Flood Risk

Coastal Flood Risk

CLIMATE EXPLORER



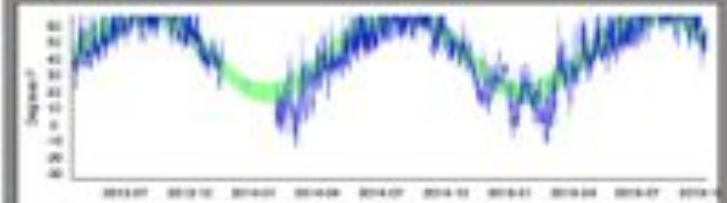
STATION DETAIL:

HISTORICAL DATA

TEMPERATURE PRECIPITATION

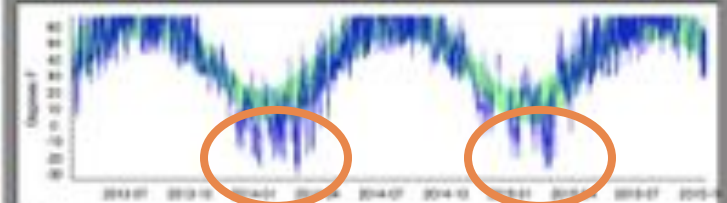
(1) MARQUETTE MI

TEMPERATURE



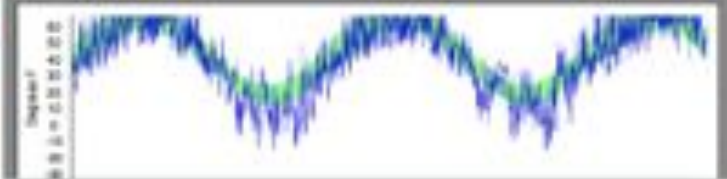
(2) BERGLAND DAM MI

TEMPERATURE



(3) MUNISING MI

TEMPERATURE



Exploring map layers

Find and display available data layers from the **LAYERS** tab at top right.

- Select any Theme from the top drop-down menu to see the list of layers associated with that theme. Available layers appear in two groups, Climate Stressors and People and Assets Impacted.
- Turn any layer on or off by checking its box.

LAYERS **HISTORICAL DATA**

TOPICS:

Coastal Flood Risk

Coastal Flood Risk



[Help](#) + [Find Experts](#) +

Find Experts

Regional and locally-focused centers across the nation are available to help you build resilience to climate-related changes and impacts in your community. Browse the maps below, then click on an orange marker to see that office's location, the services it provides, and other information.

- **State Climatologists**
 - U.S. Offices
- **NOAA**
 - ROSA
 - Regional Climate Centers
 - NOAA Regional Climate Services Dir.
 - National Weather Service
 - River Forecast Centers
 - Sea Grant
 - National Estuarine Research (NERF)
- **USDA**
 - Regional Climate Hubs
- **Department of the Interior**
 - Climate Science Centers
 - Landscape Conservation Coops

Regional Climate Hubs

Midwest

[Area, IA](#) | [View Website](#) |

USDA's Regional Climate Hubs deliver information to farmers, ranchers, and forest landowners to help them adapt to climate change and weather variability. The Hubs build capacity within USDA to provide information and guidance on technologies and risk management practices at regional and local scales.

Area(s) served: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin

We offer a small but growing catalog of **Training Courses** to build climate knowledge as well as skill and capacity to use science-based tools for decision-making.

Users can easily filter by different categories, type of training, and level of difficulty.

The screenshot displays the U.S. Climate Resilience Toolkit website. The header includes the logo, navigation links (Get Started, Taking Action, Tools, Topics, Expertise), and a search bar. The 'Expertise' link is circled in orange. Below the header, the 'Training Courses' section is visible, featuring a filter dropdown menu that is open, showing categories like Climate Products, Climate Change, Climate Variability, Climate 101, Climate Adaptation & Mitigation, Communication, Climate Attribution & Extreme Events, and Strategic Planning. The main content area lists training courses, including 'Advanced Climate Variability and Change Course' and 'An Introduction to the Downscaled Climate and Hydrology Projections Website'. Each course entry includes a thumbnail image, category, type of training, difficulty scale, module time, and source.

U.S. Climate Resilience Toolkit

Get Started Taking Action Tools Topics **Expertise**

Search

Training Courses


The training courses here can help you acquire the tools, skills, and knowledge you need to address climate change, and are offered in at least one of three formats: online audio-visual products ("On Demand"), Scheduled Lecture Series, and residence training courses ("Onsite, Instructor-Led"). These courses feature scientific information adapted from authoritative sources, and have been pilot tested with users and other subject matter experts and may be updated periodically.

Filter by category: ▲ Filter by type of training: ▼ Filter by difficulty scale: ▼

- Climate Products (1)
- Climate Change (3)
- Climate Variability (3)
- Climate 101 (6)
- Climate Adaptation & Mitigation (2)
- Communication (3)
- Climate Attribution & Extreme Events (1)
- Strategic Planning (1)

Advanced Climate Variability and Change Course

This three-day residence training course provides advanced knowledge in climate variability and approaches and tools for developing local climate studies.




Category: Climate Variability, Climate Change, Climate Products, Climate Attribution & Extreme Events
Type of Training: Onsite, Instructor-Led
Difficulty scale: Advanced

Source: [National Weather Service](#)

An Introduction to the Downscaled Climate and Hydrology Projections Website

These two videos serve as an introduction to the Downscaled Climate and Hydrology Projections website. This website, the result of a collaboration between several federal and non-federal partners, provides access to downscaled climate and hydrology projections for the contiguous United States and parts of Canada and Mexico, derived from contemporary global climate models. In the first video, a hydrologic engineer at the Bureau of Reclamation's Technical Service Center, in Denver, introduces the website and provides an overview of the MetEd lesson, Preparing Hydro-climate Inputs for Climate Change in Water Resources Planning. This lesson provides background information needed to use the projections site effectively to retrieve climate and hydrology projections data for impacts analysis. In the second video, another lecturer steps through the process of retrieving projections data using the website.




Category: Climate Change
Type of Training: Online, Self-Guided
Difficulty scale: Intermediate
Module time (approx): 0:25

Source: [MetEd/USCAR Registration](#)

CanVis: A Tool for Visualizing Coastal Changes and Potential Adaptation Strategies

CanVis is a tool for visualizing coastal changes and potential climate adaptation strategies. Users will learn: (1) to recognize how visualizations can change behavior; (2) the four steps for creating visualizations using CanVis; and (3) potential applications of the software. Both instructor-led and self-guided options are offered online.



Category: Communication
Type of Training: Online, Scheduled Lecture Series
Online, Self-Guided
Difficulty scale: Beginner
Module time (approx): 2:00

Source: [NOAA Digital Coast](#)

Our semantic web **search tool** allows users to quickly search the CRT site; or the entire U.S. federal gov't & grantees.

Use the **filters** menus to winnow result sets by **topic** of interest and/or **resources** type.

U.S. Climate Resilience Toolkit

Get Started Taking Action Tools Topics Expertise

About Contact Funding Opportunities FAQ

Search

Search + Results +

powered by webLyzard

health resilience assessment tool

Filter: Human Health Risks + Tool + All Federally Funded Sites +

1536 documents found. You can narrow your results with the above filter settings.

Health Impact Assessments A Tool for Designing Climate Change Resilience into Green Building and Planning Projects

www.cornell.edu

Impact Assessments A Tool for Designing Climate Change Resilience into Green Building and Planning Projects. on Wed, 08/21/2013 - 20:24. Title Health Impact Assessments A Tool for Designing Clim ...

VA Verification Assessment Tool - BusinessUSA

business.usa.gov

process and applicability of the Veteran's First policies, we have developed the Verification Assessment Tool. The Verification Assessment Tool is a firm's assessment, designed to provide the (VOSBs/S ...

USGCRP Climate & Health Assessment

www.globalchange.gov

Assessment. The USGCRP Climate and Health Assessment will be an evidence-based, quantitative assessment of observed and projected climate change impacts on human health in the United States. Developme ...

Community Health Resilience Guide and Toolset

toolkit.climate.gov

strengthen community health resilience across the country. The CHRI site combines a Community Health Resilience Planning Guide with Community Health Resilience-related tools. The tools on the site can ...

Webinar on Cornell Soil Health Assessment: A Diagnostic Approach for Evaluating and Managing Soil Health Adapt-N blog

blogs.cornell.edu

beyond nutrient limitations and excesses currently limit agroecosystem sustainability. resilience to drought and extreme rainfall, and progress in soil and water conservation. On much of today's agric ...

Metadata Access Tool for Climate and Health - MATCH

toolkit.climate.gov

Metadata Access Tool for Climate and Health, known as MATCH, is a searchable clearinghouse of publicly available federal metadata—or data about data. It provides links to datasets on both climate and ...

FACT SHEET: Strengthening the Climate Resilience of the Health Care Sector - The White House

www.whitehouse.gov

change impacts on the sector are both a public health and an economic threat. The HHS climate resilience guide, titled "Primary Protection: Enhancing Healthcare Resilience for a Changing Climate," is ...

Our **Funding Opportunities** page presents a curated list of about two dozen grants offered by federal agencies & NGOs for municipalities & businesses seeking funds to help them recover from a disaster, or to build resilience to climate hazards.

U.S. Climate Resilience Toolkit

Get Started Taking Action Tools Topics Expertise

About Contact **Funding Opportunities** FAQ

Search

Home > About >

Funding Opportunities

Many of the strategies for increasing climate resilience come with a price tag. In the United States, a range of government entities and private foundations offer financial and technical resources to advance local adaptation and mitigation efforts. At the global scale, The World Bank and other organizations support financial strategies to build resilience. For your convenience, we have gathered information and links describing funding opportunities that may be relevant for building climate resilience. Please follow the external links to learn about any program.

- **NOAA 2015 Regional Coastal Resilience Grant Program**
The Regional Coastal Resilience Grant program will support regional approaches to undertake activities that build resilience of coastal regions, communities, and economic sectors to the negative impacts from extreme weather events, climate hazards, and changing ocean conditions. Eligible applicants include nonprofit organizations, institutions of higher education, regional organizations, private (for profit) entities, and local, state, and tribal governments. Up to \$5 million will be available; award amounts will range from \$500,000 to \$1 million. **Proposals are due by July 24, 2015.**
- **NOAA Habitat Conservation Coastal Ecosystem Resiliency Grants**
The Coastal Ecosystem Resiliency awards will fund projects that develop healthy and sustainable coastal ecosystems through habitat restoration and conservation. NOAA anticipates that \$4 million will be available in 2015 for 1-3 year projects. Projects will primarily be funded through cooperative agreements; typical awards will range from \$500,000 to \$1 million. **Applications are due by July 2, 2015.**
- **Building Blocks for Sustainable Communities**
The EPA's Building Blocks for Sustainable Communities provides quick, targeted technical assistance to selected communities using a variety of tools that have demonstrated results and widespread application.
- **Partnership for Sustainable Communities**
The U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA) work together to help communities nationwide improve access to affordable housing, increase transportation options, and lower transportation costs while protecting the environment. The site's [map of grants](#) shows information on awards already made through Partnership programs.
- **FEMA (Federal Emergency Management Agency) Preparedness (Non-Disaster) Grants**
FEMA provides state and local governments with preparedness program funding to enhance the capacity of their emergency responders to prevent, respond to, and recover from a range of hazards.
- **FEMA Hazard Mitigation Assistance**
FEMA's Hazard Mitigation Assistance grant programs provide funding to protect life and property from future natural disasters.
 - Hazard Mitigation Grant Program (HMGP) assists in implementing long-term hazard mitigation measures following a major disaster.
 - Pre-Disaster Mitigation (PDM) provides funds for hazard mitigation planning and projects on an annual basis.
 - Flood Mitigation Assistance (FMA) provides funds for projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP) on an annual basis.
- **FEMA Disaster Survivor Assistance**
Disaster survivors can find step-by-step instructions for preparing to apply for assistance, completing an application for assistance, and following up after receiving disaster assistance.

Some Observed & Projected Regional Changes

