

# CLIMATE CHANGE RESILIENCY RESOURCES

## CLIMATE TOOLKIT

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EPA Region 7



# Meet the Challenges of a Changing Climate

Find resources and a framework to understand and address climate issues that impact people and their communities.

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



## Step 1: Identify the problem

*Focus on climate stressors that threaten people, buildings, natural resources, or the economy in your area.*

### Steps to Resilience:

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

## Facing climate problems and finding climate opportunities

In addition to the everyday concerns and challenges of running a business or community, every enterprise also faces some risk of being disrupted by the impacts of climate variability and change. In some locations, occasional events such as high-tide coastal flooding make it clear that rising seas are likely to become a problem. In other places, the threat of extended drought or flooding from intense rains may not be obvious, yet these problems can still occur. As our planet warms, new issues or increased chances for past impacts threaten everyone.

### Taking Action:

[Assessing the Timing and Extent of Coastal Change in Western Alaska](#) >

An interactive map based on four decades of satellite images helps residents, resource managers, and stewards of the land anticipate and plan for coastal change.

[Motivating the Agricultural Community to Build Climate Resilience](#) >



## Step 2: Determine Vulnerabilities

*Identify specific populations, locations, and infrastructure that may be impacted by the climate problem you identified.*

### Steps to Resilience:

- 1 Step 1: Identify the Problem
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### Focus first on known issues

Start your list of vulnerabilities with places, people, and resources that have been impacted by climate-related events in the past. As our climate continues changing, impacts are likely to increase, so damages from past events can be considered as a baseline when considering what's vulnerable.

### Taking Action:

[Seasonal Climate Forecast Serves as a Call to Action](#) ›

Faced with an increased chance for heavy precipitation and flooding, an emergency manager in Oregon spread the word, encouraging groups to be prepared.

## Taking Action

Communities and businesses are taking action to build resilience to extreme events. The stories below illustrate the application of the process and how to expand your results, click the Clear Filters link.



### Boosting Ecosystem Resilience in the Southwest's Sky Islands

Conservation organizations teamed up to document the climate vulnerability of mountain springs that support unique ecosystems

Filter by climate threat/stressor: ▲

- Sea level rise/storm surge/coastal flooding (34)
- Drought (24)
- Extreme precipitation (22)
- Extreme events (fires/storms/hurricanes/tornadoes) (21)
- Increased temperatures (warming) (17)
- General climate change (16)
- El Niño/La Niña/climate variability (14)
- Flooding (inland/riverine) (14)
- Changes in growing seasons (12)
- Reduced sea ice/permafrost/snow (8)
- Temperature extremes (heat/cold) (5)
- Changing ocean conditions (4)

city's main source of water dwindle. They used the EPA's Climate Ready Water Utilities program to consider

Filter by parent topic: ▼

Filter by steps to resilience: ▼

Filter by region: ▼

to build resilience to extreme events. The stories below illustrate the application of the process and how to expand your results, click the Clear Filters link. To filter by parent topic, step to resilience, and/or region in the boxes above. To



### Water Resilience Options for Manchester-by-the-Sea

Manchester-by-the-Sea's wastewater treatment plant is located right on the coast. The town's water utility is working



### Assessing a Tropical Estuary's Climate Change Risks

Puerto Rico's San Juan Bay Estuary faces multiple threats, including heavy use by urban populations and impacts of climate change. A workbook from the EPA's Climate



### Watching for Wind: An Effort to Get the Upper Hand on Wildfire

After Santa Ana winds contributed to devastating wildfires in 2007, San Diego Gas & Electric worked with partners to monitor threats posed by the wind.

[Read more >](#)



### State Highway Administration Catalogs Vulnerabilities

Through the innovative use of a collection of tools, Maryland has begun identifying which of its roads and bridges are vulnerable to climate-related events.

[Read more >](#)



### Wind-Resistant Construction Key to Rebuilding for Resilience

After most of the city was flattened by a tornado, Joplin, Missouri's Mercy Hospital built a new facility, incorporating features to reinforce its resistance to wind.

[Read more >](#)



### Managing Water for Irrigated Agriculture in the Central Arizona Desert

In the Arizona desert, farmers depend on an ample supply of irrigation to grow their crops. As climate changes, irrigation managers face a host of issues to keep the water flowing.

[Read more >](#)



### Sediment Strategy Seeks to Save Salt Marsh Species



### Restoring Surfers' Point: Partnership's Persistence Pays Off



### Climate Outlooks Increase Farmer's Odds for Success



### Relocating Kivalina

Rising seas and coastal erosion are eating away at the barrier island on

Browse Tools

Climate Explorer

Find data on data.gov

Filter by parent topic: ▼

Filter by category: ▼

## Tools

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/or tool functionality in the boxes above. To expand your results, click the Clear Filters link.



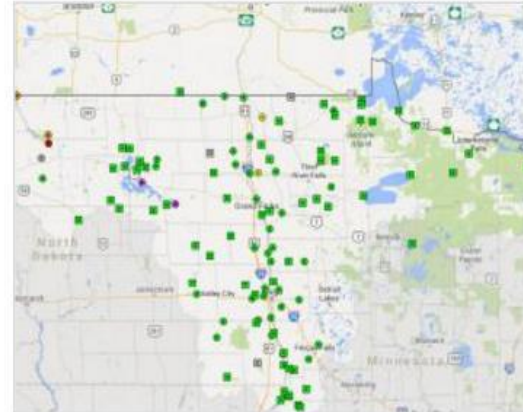
### Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use

This toolkit presents information on



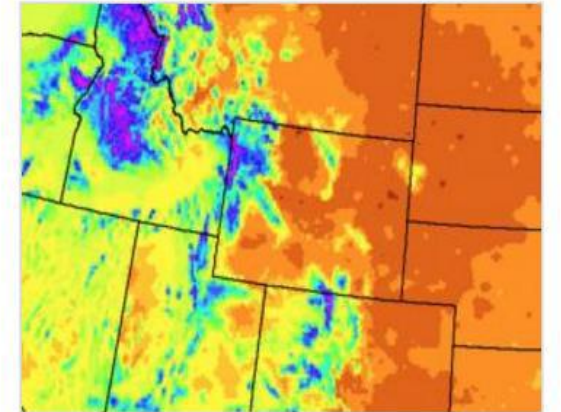
### Adaptation Workbook for Natural Resources

Forest managers, natural resource professionals, and motivated users can use this structured



### Advanced Hydrologic Prediction Service

This comprehensive suite of graphical forecast products shows a range of information on current and



### AgroClimate—Tools for Managing Climate Risk in Agriculture

Interactive tools and climate information provide support to



## 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.

» [Launch Climate Explorer in a new window](#)

Here you can find data related to climate change that can help inform and prepare America's communities, businesses, and citizens. You can currently find data and resources related to [coastal flooding](#), [food resilience](#), [water](#), [ecosystem vulnerability](#), [human health](#), [energy infrastructure](#), [transportation](#) and the [Arctic](#) region. Over time, you will be able to find additional data and tools relevant to other important climate-related impacts. Please share your [feedback](#).



Visit the [Climate Resilience Toolkit](#) to access resources and a framework for understanding and addressing the climate issues that impact people and their communities.



## Transportation and Supply Chain

### Key points:

- *Extreme events associated with climate change threaten transportation system chains, potentially disrupting production and distribution networks required for goods and services.*
- *Land-based transportation can be disrupted by elevated temperatures, increased extreme precipitation events, and inundation of roads from rising sea levels.*
- *Water-based transportation is subject to disruptions from changing water levels for inland navigation during drought and floods, and damage to coastal facilities from extreme weather events.*
- *Air transportation for people and cargo is subject to disruption from increased extreme weather events and elevated temperatures.*
- *Supply chains may be impacted by the disruption of transportation and telecommunication systems. Processes involving the extraction and delivery of raw materials or the distribution of goods can be interrupted by higher temperatures and increased frequency or intensity of extreme events.*

[Adapted from the Third National Climate Assessment.](#)

- Arctic
- Coastal Flood Risk
- Ecosystem Vulnerability
- Energy Supply and Use
- Food Resilience
- Human Health
- Transportation and Supply Chain
- Tribal Nations
- Water Resources

### Browse Topics

- > Arctic
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- > Human Health
- ✓ **Transportation and Supply Chain**
  - Land-Based Transportation
  - Waterborne Transportation
  - Aviation
  - Supply Chain Security
- > Tribal Nations
- > Water Resources



## Training Courses

Filter by category: ▼

Filter by type of training: ▼

Filter by difficulty scale: ▼

The training courses here can help you acquire the tools, skills, and knowledge you need to manage your climate-related risks and opportunities. All courses are free of charge, and are offered in at least one of three formats: online audio-visual presentations ("Online, Self-Guided" and "Tool Tutorial"), training webinars ("Online, Scheduled Lecture Series"), and residence training courses ("Onsite, Instructor-Led"). Each training module is accompanied with a test to help you evaluate your knowledge. These courses feature scientific information adapted from authoritative sources, prepared by recognized subject matter experts. The courses have been pilot tested with users and other subject matter experts and may be updated periodically, as needed.

### *Adapting to Climate Change: A Short Course for Land Managers*

Information in this short course summarizes the state-of-the-art science for natural resource managers and decision makers regarding climate variability, change, projections, and ecological and management responses. The course includes video lectures, interactive quizzes, literature citations, and links to further information. The lectures were videotaped at a 2008 workshop that included U.S. Forest Service and U.S. Geological Survey scientists, as well as U.S. Forest Service resource managers.



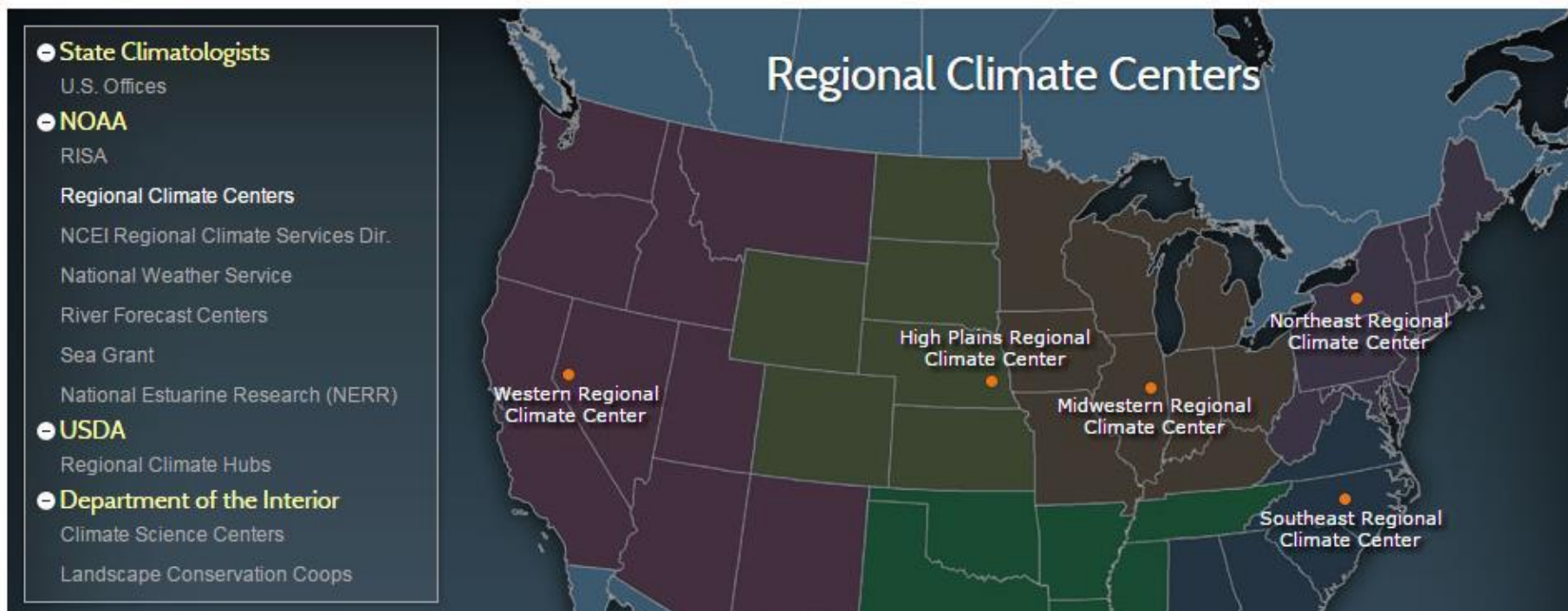
*Category:*  
*Climate Change, Climate Adaptation & Mitigation,  
Strategic Planning*  
*Type of Training: Online, Self-Guided*  
*Difficulty scale: Intermediate*

*Source:*  
[USDA Forest Service Climate Change Resource Center](#)

## 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. For more information about how federal agencies collaborate, see [Federal Agency Coordination](#).

Last modified: 21 September 2015 - 12:37pm





[Home](#) > [Expertise](#) >

## Federal Agency Coordination

The information below—describing how agencies work together when providing support for natural resource management—was itself developed through a collaborative effort among the U.S. Department of Agriculture (USDA), the U.S. Department of the Interior (DOI), and the National Oceanic and Atmospheric Administration (NOAA). Specific information about these regional science and information programs, as well as additional programs, can be found on the [Find Experts page](#).

### Coordinating regional support for natural resource management in a changing environment

Climate and weather variability affect a broad array of risks (such as drought, floods, changing growing seasons, and many others) that must be addressed by decision makers, including families, farmers, ranchers, foresters, state and tribal natural resource professionals, city managers, businesses, and others. Risks are not limited to a single region or scale, so to meet the information needs of decision makers, federal agencies must closely coordinate within the federal family as well as with state, local, and tribal entities. For example, impacts on water resources affect many different decision makers across the country, requiring action and engagement across many governing jurisdictions and scientific disciplines. Coordination is a vital part of ensuring that federally supported science and risk management efforts address needs, preparation, and responses in integrated ways to best meet the needs of the public.





## 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.

- **[Global Greengrants Fund](#)**

These grants offer international youth groups an opportunity to support grassroots solutions to social and environmental challenges. Each supported Greengrant is for people and the planet—both are honored in the grassroots initiative; grassroots—supports community-led initiatives and organizations; approved by expert advisors—identified by as effective, accountable, and in critical need of support; strategic—addresses the root causes of an issue; and responsive—responds to urgent issues in real time.

- **[Rural Energy for America Program](#)**

The Renewable Energy Systems & Energy Efficiency Improvement Loans & Grants program provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses to purchase or install renewable energy systems or make energy efficiency improvements.

- **[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

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1.1. Climate Change Adaptation Introductory Training for Local Governments

1.2. Training Welcome

1.3. Navigating This Module

1.4. Thinking About Climate

1.5. Training Sections

▼ 2. Climate Change Basics

2.1. Section 2. Climate Change Basics

2.2. Climate Change Language

2.3. Rising Temperatures

2.4. Changing Precipitation Patterns

2.5. Increased Drought and Wildfires

2.6. Sea Level Rise

2.7. Increased Intensity of Hurricanes

2.8. Reduced Permafrost

▼ 3. Vulnerabilities of Local Communities

3.1. Section 3. Vulnerabilities of Local Communities

3.2. Identifying Risks and

# Climate Change Adaptation Introductory Training For Local Governments



<http://www.epa.gov/communityhealth/local-government-climate-adaptation-training>

# EPA'S STUDENT WEBSITE

UNITED STATES • AGENCY FOR ENVIRONMENTAL PROTECTION

a student's guide to **GLOBAL CLIMATE CHANGE**

Learn the Basics

See the Impacts

Think Like a Scientist

Be Part of the Solution!

Climate Change Basics

SHARE

CALCULATE YOUR EMISSIONS  
start

TAKE A CLIMATE CHANGE EXPEDITION!  
Join us!

<http://www3.epa.gov/climatechange/kids/index.html>

# QUESTIONS?

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