U.S. Climate Resilience Toolkit:

Visualizing Climate Data Projections for Decision Support

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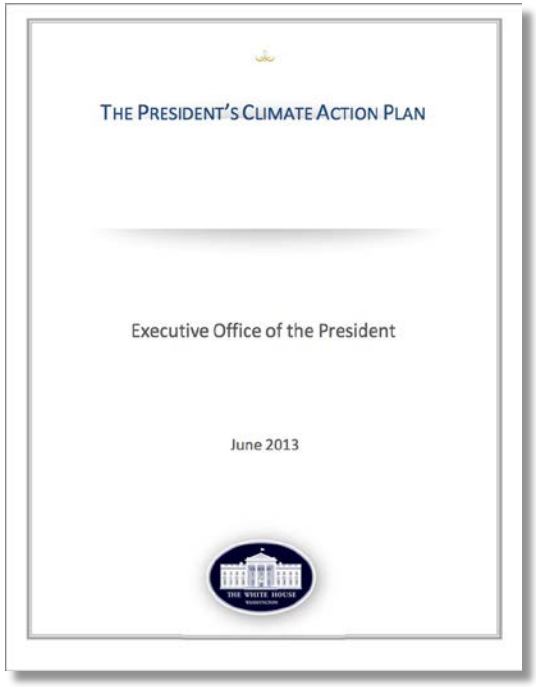
https://toolkit.climate.gov

March 4, 2016 • CPAS Workshop • Burlington, VT

The President's Climate Action Plan



June 25, 2013

President Obama spoke to the nation about climate change and unveiled his *Climate Action Plan,* soon followed by Executive Order 13653.

On launching a Climate Data Initiative: *"Consistent with the President's May 2013 Executive Order on Open Data – and recognizing that freely available open government data can fuel entrepreneurship, innovation, scientific discovery, and public benefits – the Administration is launching a Climate Data Initiative to leverage extensive federal climate-relevant data to stimulate innovation and private-sector entrepreneurship in support of national climate-change preparedness."*

On providing a Climate Resilience Toolkit: "*Federal agencies will create a virtual climate resilience toolkit that centralizes access to data-driven resilience tools, services, and best practices, including those developed through the Climate Data Initiative."*

Climate Data Initiative

climate.data.gov

- Raw materials for analysts, developers, and **data innovators**
- Climate, weather, and demographic data in **machine accessible** formats
- **Technical resources** for analysts, GIS specialists, etc.

Climate Resilience Toolkit

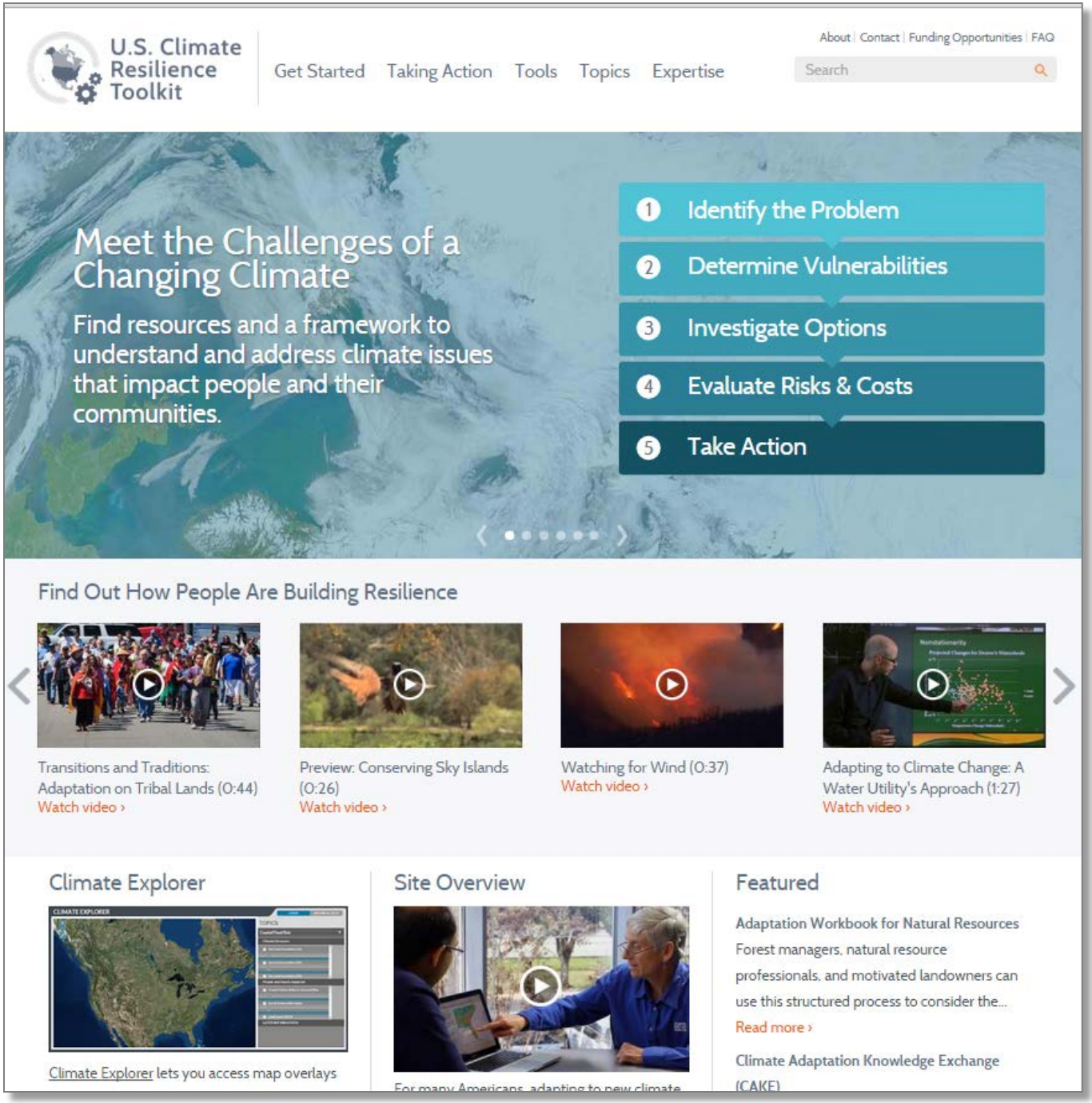
toolkit.climate.gov

- Summary-level scientific information provides context for **decision makers**
- **Case studies** and **tools** for adaptation efforts
- **Decision framework** for adaptation
- Access to regional **expertise** and **training** resources

toolkit.climate.gov

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

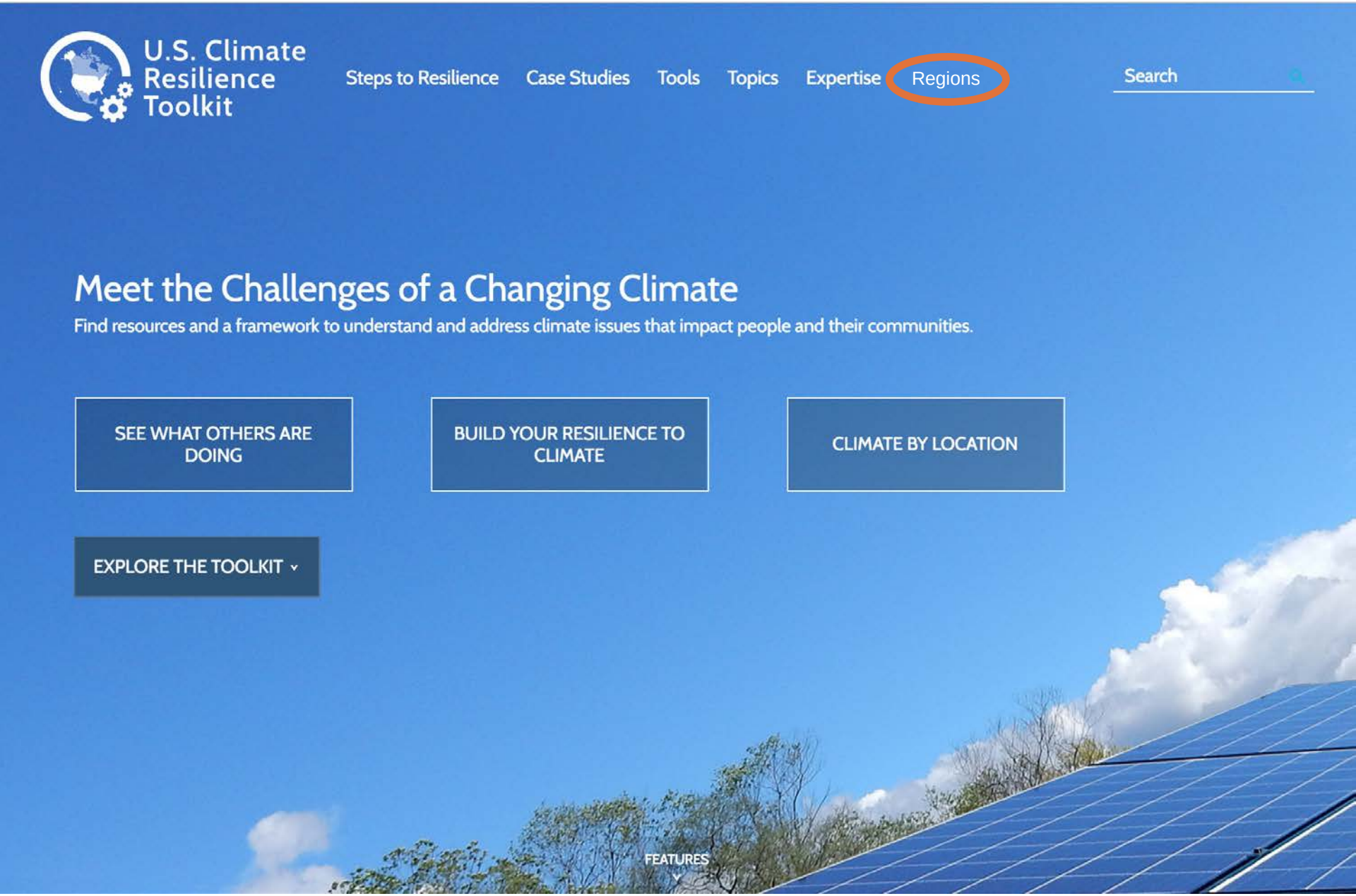
Serves "application-oriented professionals" — municipal planners, resource managers, & business leaders — who are seeking science-based tools, information, & expertise to help them build resilience.



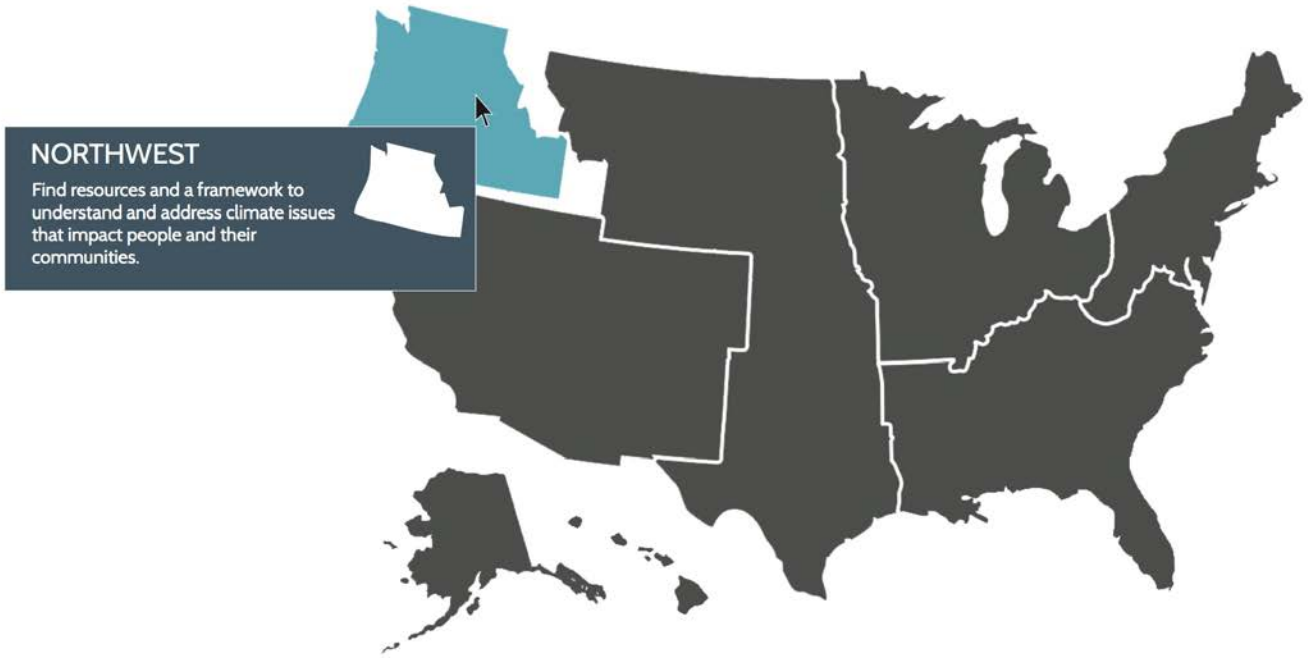
Review of accomplishments to date

- **Nine** topic narratives with subtopic sections, all cross-walked with 5-step planning process, tools, & case studies
- **98 case studies** nationwide for all regions & topics (more on the way)
- **221 tools** in our compendium (more on the way)
- **Two site evaluations** by external user groups; and **several focus group feedback sessions**
- Averaged about 33,000 visits per month in first year; **over 40,000 visits/month** in our 2nd year (so far)

What’s coming in Phase 1.5?


U.S. Climate Resilience Toolkit
Steps to Resilience
Case Studies
Tools
Topics
Expertise
Regions
Search
Meet the Challenges of a Changing Climate
Find resources and a framework to understand and address climate issues that impact people and their communities.
SEE WHAT OTHERS ARE DOING
BUILD YOUR RESILIENCE TO CLIMATE
CLIMATE BY LOCATION
EXPLORE THE TOOLKIT
FEATURES

BROWSE BY REGION



NORTHWEST

SOUTHWEST

GREAT PLAINS

MIDWEST

NORTHEAST

SOUTHEAST AND CARIBBEAN

HAWAI'I AND PACIFIC ISLANDS

ALASKA AND ARCTIC

Southwest

Increased heat, drought, and insect outbreaks, all linked to climate change, have increased wildfires. Declining water supplies, reduced agricultural yields, health impacts in cities due to heat, and flooding and erosion in coastal areas are additional concerns.

The Southwest is the hottest and driest region in the U.S., where the availability of water has defined its landscapes, history of human settlement, and modern economy. Climate changes pose challenges for an already parched region that is expected to get hotter and, in its southern half, significantly drier.

Increased heat and changes to rain and snowpack will send ripple effects throughout the region, affecting 56 million people – a population expected to increase to 94 million by 2050 – and its critical agriculture sector. Severe and sustained drought will stress water sources, already over-utilized in many areas, forcing increasing competition among farmers, energy producers, urban dwellers, and ecosystems for the region's most precious resource.

The region's populous coastal cities face rising sea levels, extreme high tides, and storm surges, which pose particular risks to highways, bridges, power plants, and sewage treatment plants. Climate-related challenges also increase risks to critical port cities, which handle half of the nation's incoming shipping containers. The region's rich diversity of plant and animal species will be increasingly stressed. Widespread tree death and fires, which already have caused billions of dollars in economic losses, are projected to increase. Tourism and recreation also face climate change challenges, including reduced streamflow and a shorter snow season, influencing everything from the ski industry to lake and river recreation.

Case studies

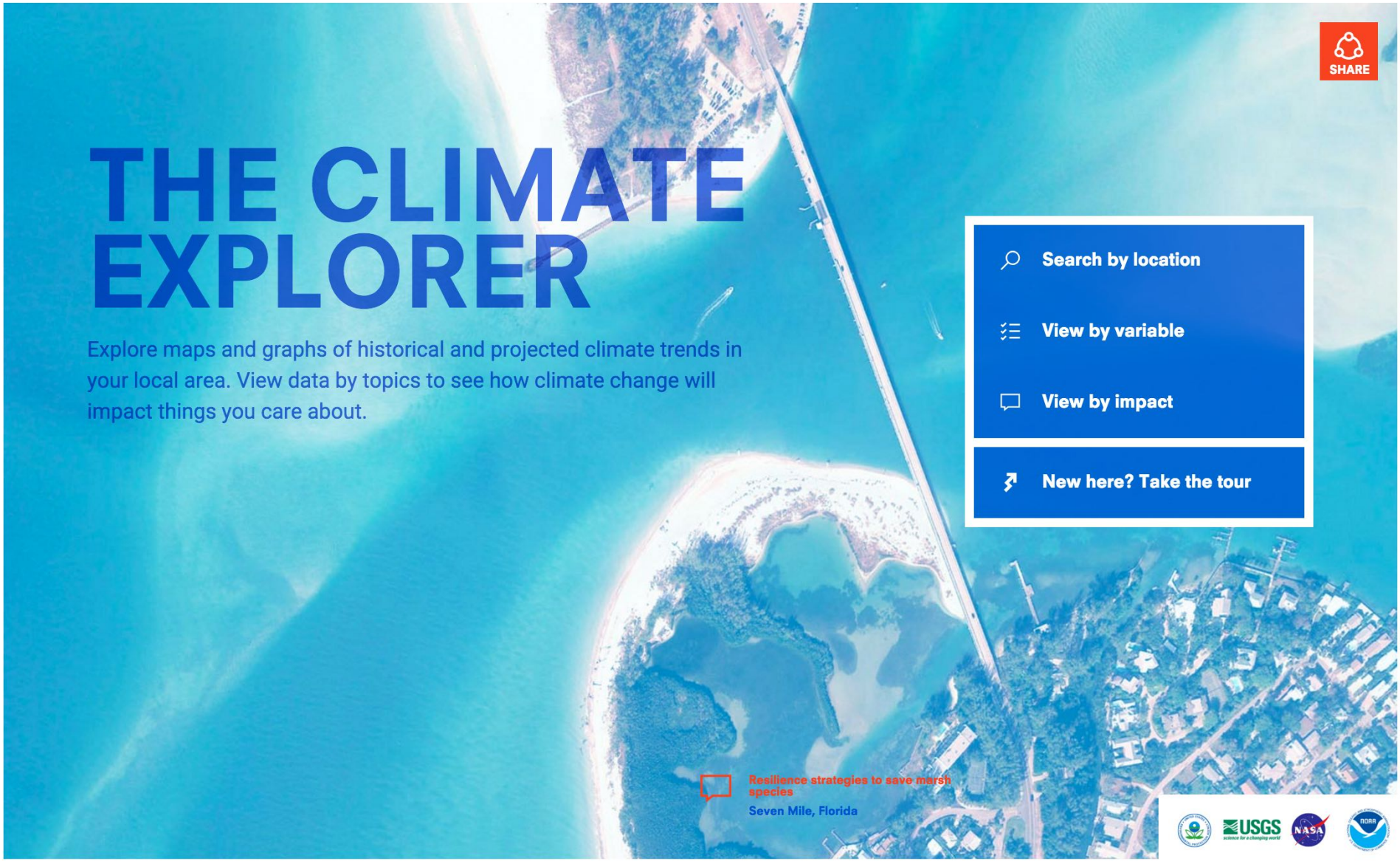
Fuel Management to Reduce Drought-Influenced Wildfire Risk in Colorado ›

Empowering Stakeholders to Engage in Planning for Sea Level Rise around San Francisco Bay ›

Surfer's Point Managed Shoreline Retreat Project ›

Ranchers in Marin County Consider Carbon Credits ›

From Forests to Faucets: Improving Water Quality for Denver ›



SHARE

THE CLIMATE EXPLORER

Explore maps and graphs of historical and projected climate trends in your local area. View data by topics to see how climate change will impact things you care about.

Search by location

View by variable

View by impact

New here? Take the tour

Resilience strategies to save marsh species

Seven Mile, Florida

SEATTLE, WA

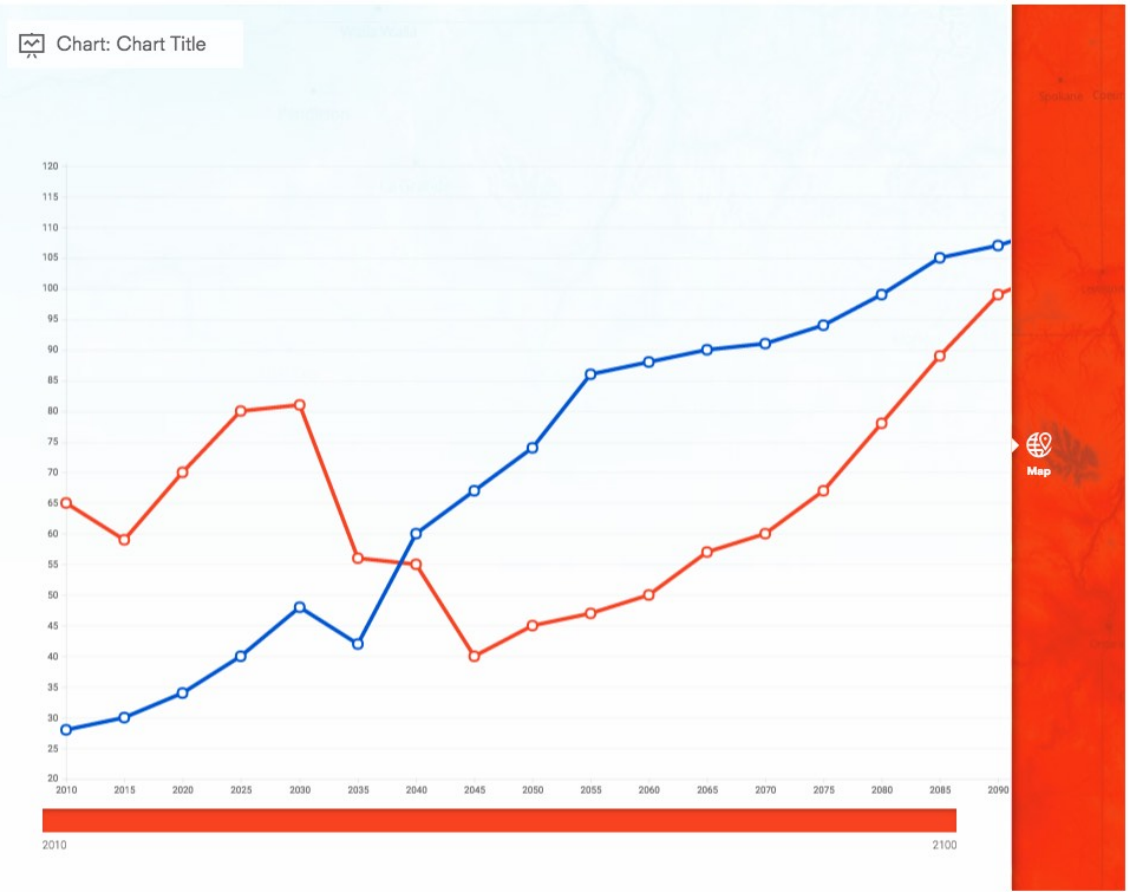
The following provides a summary of the data for the location you have chosen. Explore the summaries or click on the graph or map for more details.

JUMP TO: Temperature Precipitation Relevant Impacts

Temperature

Projected | Spring

- Average Mean
- Average Low
- Average High
- Hottest
- Coldest
- Days over 90°



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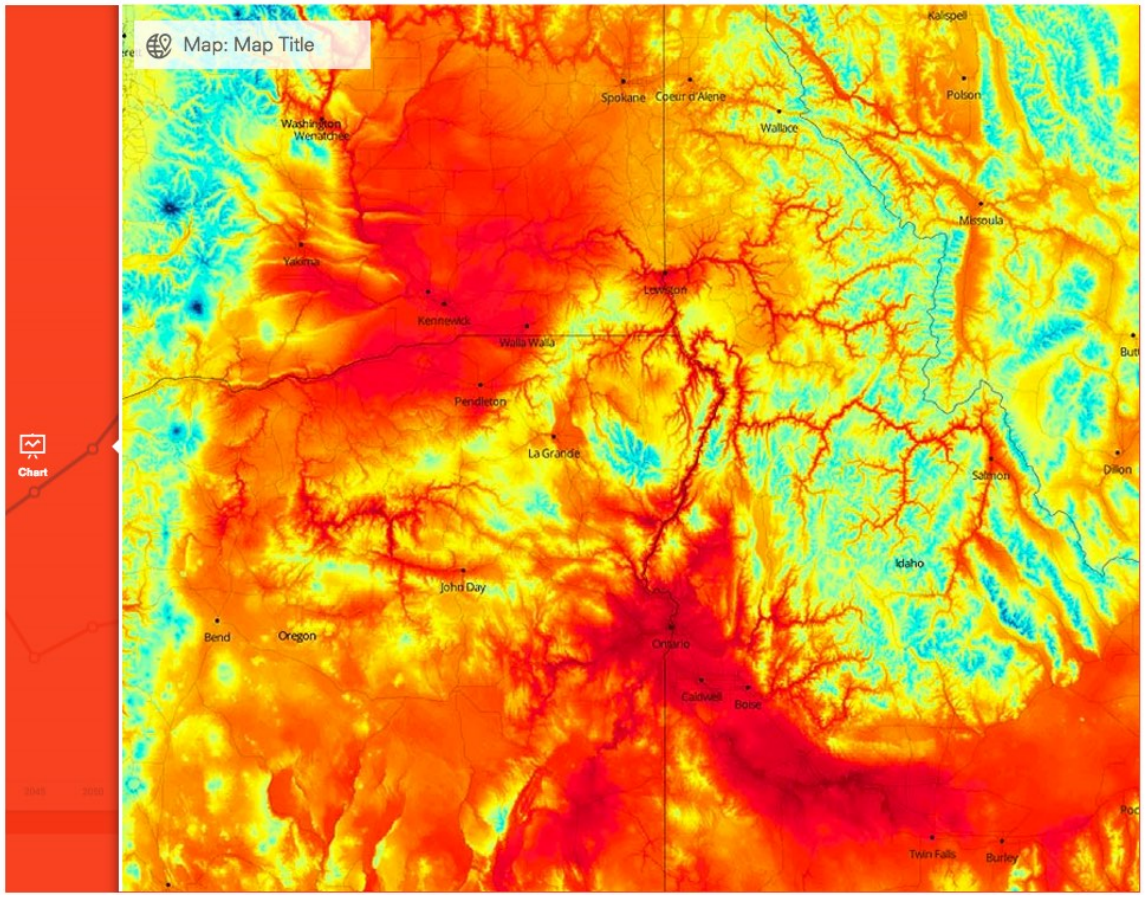
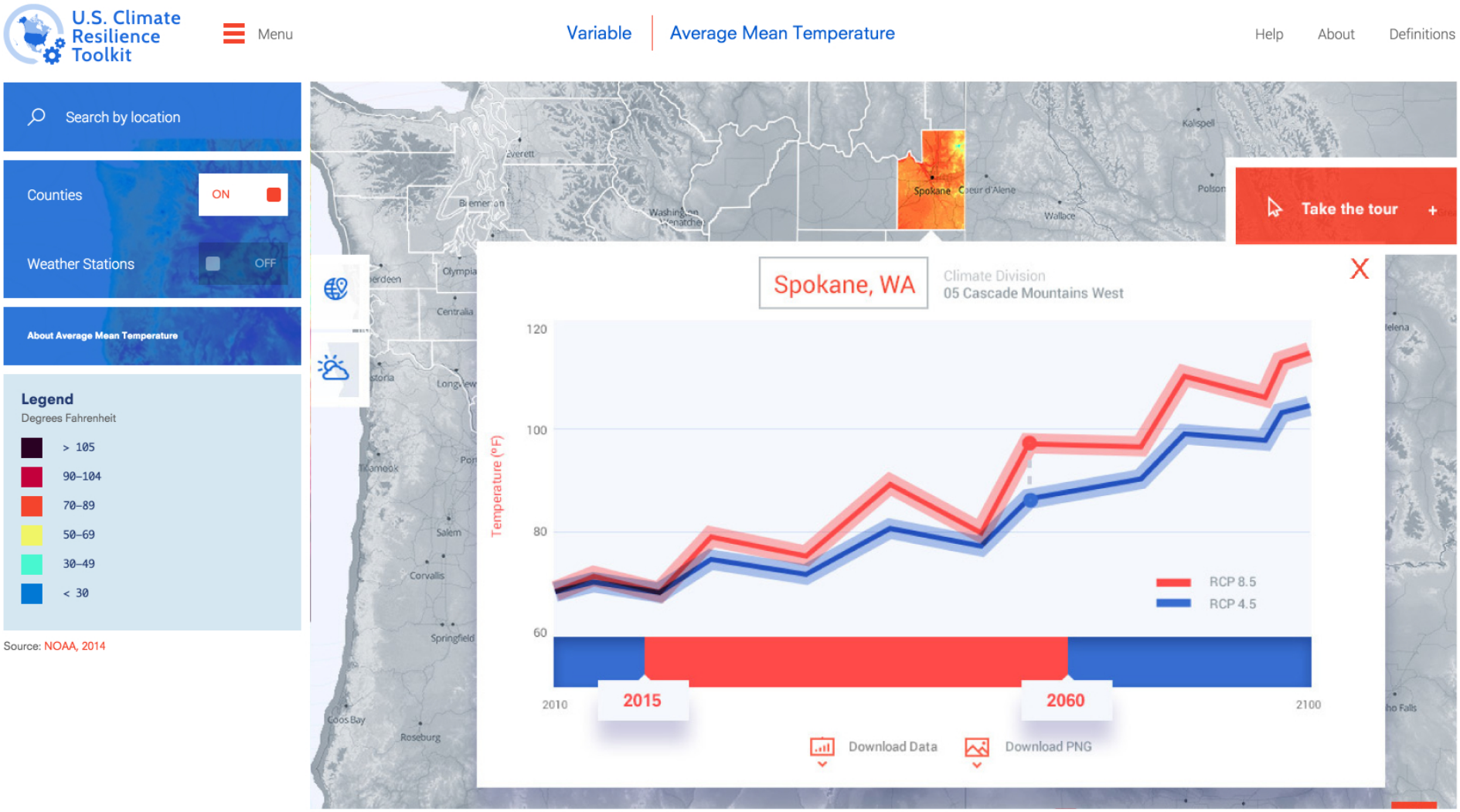



U.S. Climate Resilience Toolkit
Menu
Variable
Average Mean Temperature
Help
About
Definitions
Search by location
Counties
ON
Weather Stations
OFF
About Average Mean Temperature
Legend
Degrees Fahrenheit
> 105
90–104
70–89
50–69
30–49
< 30
Source: NOAA, 2014
Take the tour
Spokane, WA
Climate Division
05 Cascade Mountains West
Temperature (°F)
120
100
80
60
RCP 8.5
RCP 4.5
2010
2015
2060
2100
Download Data
Download PNG
Everett
Olympia
Centralia
Salem
Corvallis
Springfield
Roseburg
Coos Bay
Spokane
Coeur d'Alene
Wallace
Kalispell
Polson

Climate By Location Graphs (county scale)

Sample Controls

State VT

County Chittenden County

Frequency Annual

Time Period 30 Years Centered on 2075

Variable Mean Daily Maximum Temperature

Scenario RCP 8.5 and 4.5

Presentation Absolute

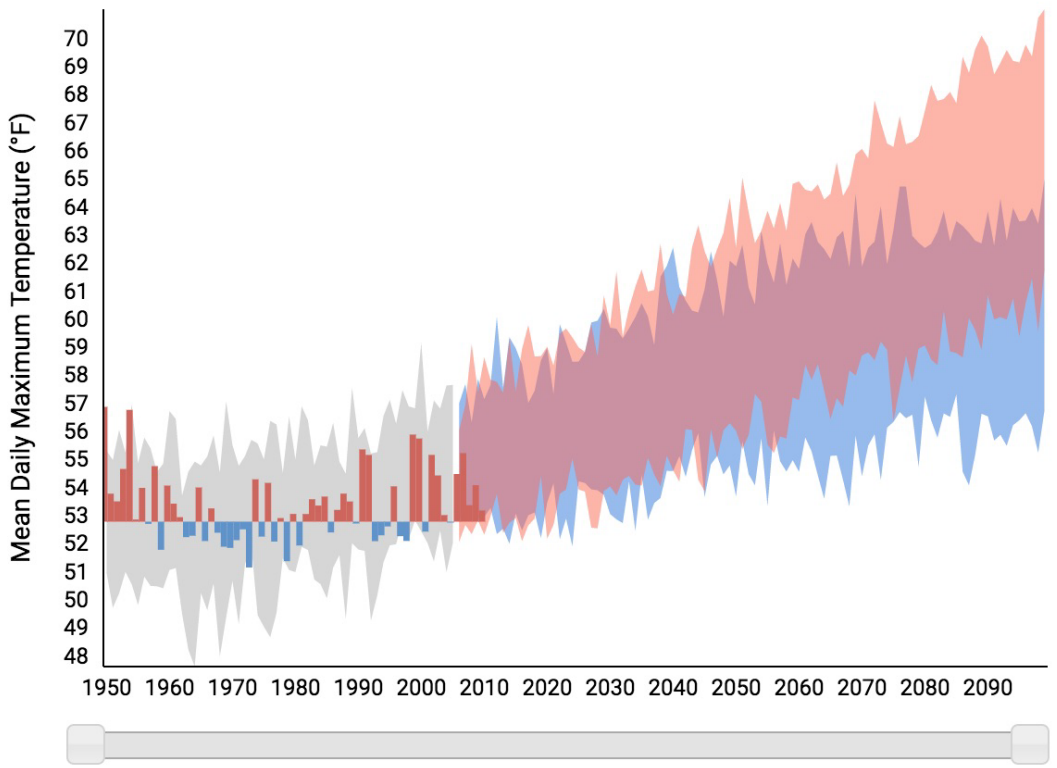
Range Band Min-Max

Show Medians Hide

DOWNLOAD DATA

DOWNLOAD IMAGE

Graph



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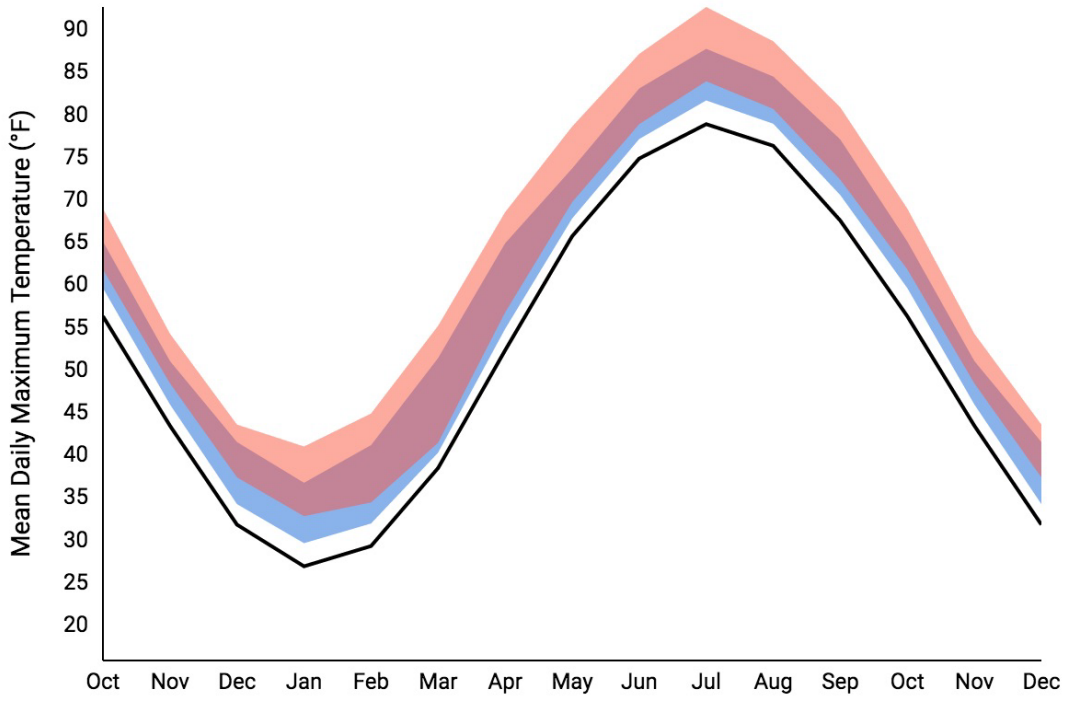


X-axis panning and zooming only enabled for annual frequency

Climate By Location Graphs (county scale)

Sample Controls

State VT

County Chittenden County

Frequency Seasonal

Time Period 30 Years Centered on 2075

Variable Mean Daily Maximum Temperature

Scenario RCP 8.5 and 4.5

Presentation Absolute

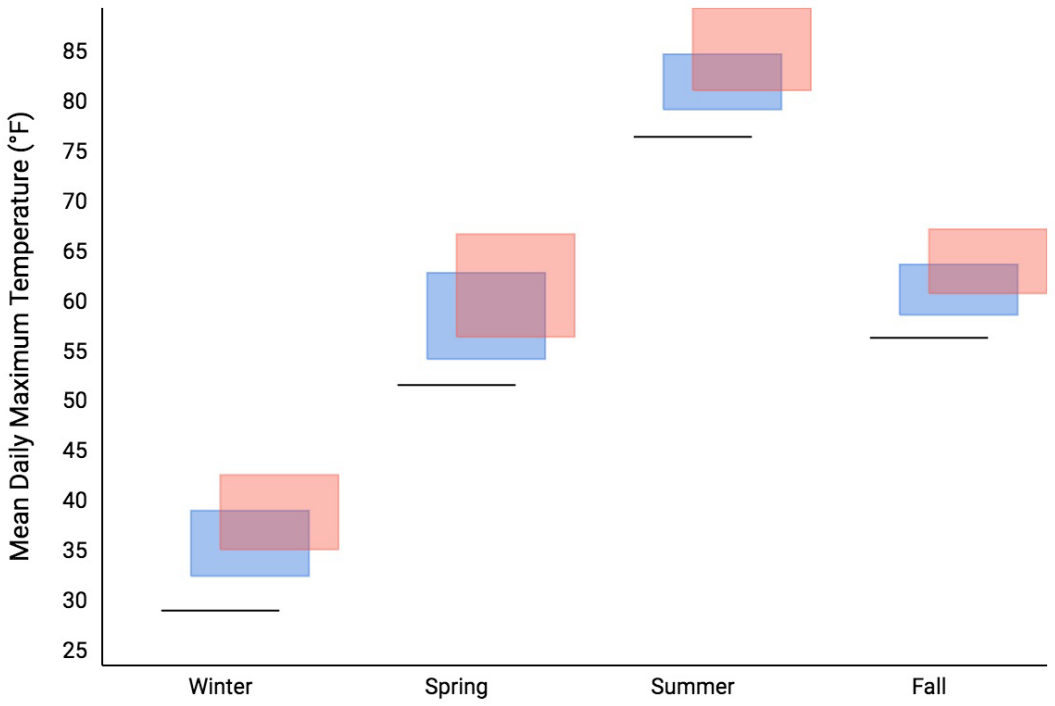
Range Band Min-Max

Show Medians Hide

DOWNLOAD DATA

DOWNLOAD IMAGE

Graph



X-axis panning and zooming only enabled for annual frequency

Phase 1.5 developments & next steps

- Rolled out “Arctic” section in August 2015, led by DOI
- Established new “Climate Projections” team, led by USGCRP; adding decision-relevant climate projections downscaled to county resolution
- Multiple stakeholder engagements held & more planned
- New site-wide design “refresh” coming in April 2016
- New “Marine Ecosystems & Fisheries” section coming in May 2016
- New “Reports” section coming in June 2016
- New “Regions” section coming in June 2016
- Climate Explorer v2.0 coming in June, with Climate by Location graphing functionality

Engagement plans & partners

- Working with NEMAC and others on engaging stakeholders in 5-Step Planning Process
- ACCO Climate Fundamentals Academies
- AmeriCorps
- CAKE – Climate Adaptation Knowledge Exchange
  - Also the National Adaptation Forum
- CPASW - Climate Prediction & Application Science Workshop (March 22-24) in Burlington, VT
  - To register, go to http://www.uvm.edu/~cpasw/
- RISAs – Regional Integrated Sciences & Assessments
- Rockefeller 100 Resilient Cities