

2021 Tribal Energy Webinar Series:
Tribal Energy for Resilience, Economic Development,
and Environmental Stewardship

April 28 : Planning for a Changing Climate

U.S. Climate Resilience Toolkit
and the Climate Explorer

LuAnn Dahlman, Co-Managing Editor, U.S. Climate Resilience Toolkit
Contractor to NOAA Climate Program Office



Meet the Challenges of a Changing Climate

Learn about potential climate hazards so you can protect vulnerable assets.

LEARN ABOUT THE STEPS TO
RESILIENCE >

READ CASE STUDIES OF BUILDING
RESILIENCE >

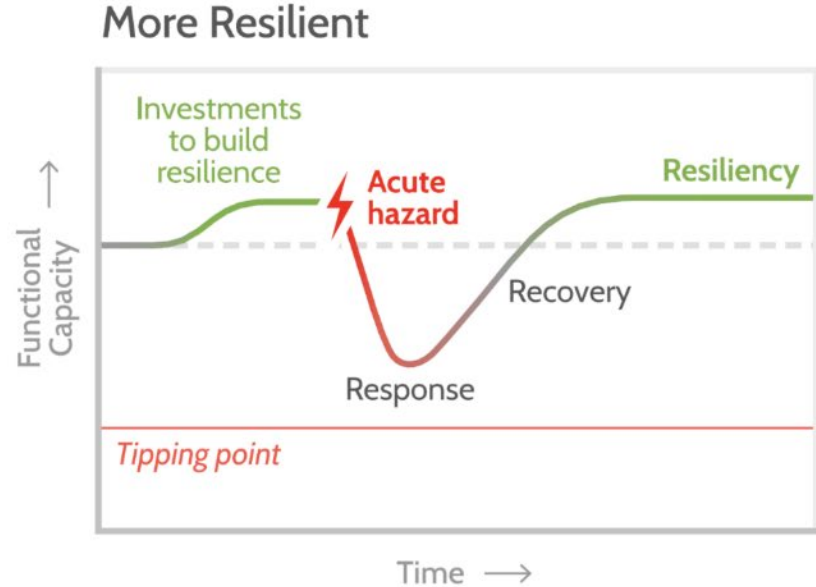
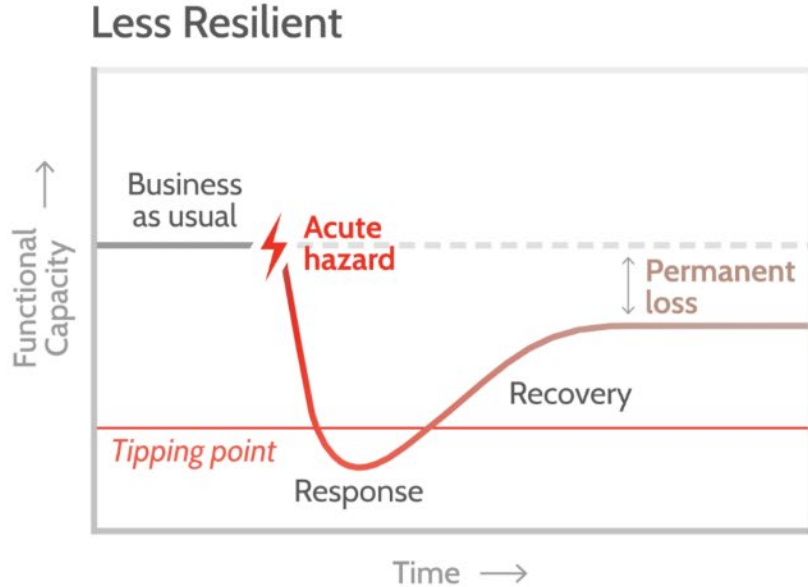
CHECK CONDITIONS PROJECTED
FOR THE FUTURE >

TOUR THE TOOLKIT ▾

toolkit.climate.gov

What is Resilience?

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



TOPICS



BUILT ENVIRONMENT >



COASTS >



ECOSYSTEMS >



ENERGY >



FOOD >



HEALTH >



MARINE >



TRANSPORTATION >



TRIBAL NATIONS >



WATER >



Tribal Nations

Climate change increasingly impacts places, foods, and lifestyles of American Indians. In Alaska—home to 40 percent of federally recognized tribes—reduced sea ice and warming temperatures threaten traditional livelihoods and critical infrastructure.

[Topics](#) > [Tribal Nations](#) >



SHARE



TWEET



PRINT

Key points:

- *Climate change threatens indigenous peoples' livelihoods and economies. Its impacts are projected to be especially severe for many of the 567 federally recognized tribes in the United States that depend on traditional places, foods, and lifestyles.*
- *Observed and future impacts from climate change threaten indigenous communities' access to traditional foods such as fish, game, and wild and cultivated crops. These resources have provided sustenance as well as cultural, economic, medicinal, and community health for generations.*
- *Of the 567 federally recognized tribes in the United States, 40 percent (229 tribes) live in Alaska Native communities. The rapid pace of rising temperatures, melting sea ice and glaciers, and thawing permafrost in Alaska is having a significant negative impact on critical infrastructure and traditional livelihoods in the state.*
- *Indigenous health is based on interconnected social and ecological systems that are being disrupted by a changing climate. Its impacts threaten sites, practices, and relationships with cultural, spiritual, or ceremonial importance that are foundational to indigenous peoples' cultural heritages, identities, and physical and mental health.*
- *Some native coastal communities are being forced to relocate to higher ground after experiencing more extreme storm surges, flooding, and sea level rise, which can impact cultural integrity and access to vital resources.*
- *Indigenous peoples often work proactively with a variety of partners to integrate traditional knowledges with technology tools and diverse research methods. However, institutional barriers severely limit some communities' adaptive capacities. Barriers include limited access to traditional territory and limitations of existing policies, programs, and funding mechanisms that account for the unique conditions of indigenous communities.*

Browse Topics

[Built Environment](#)

[Coasts](#)

[Ecosystems](#)

[Energy](#)

[Food](#)

[Health](#)

[Marine](#)

[Transportation](#)

[Tribal Nations](#)

– [Assessment and Planning](#)

– [Adaptation](#)

– [Mitigation](#)

– [Disaster Risk Reduction](#)

– [Relocation](#)

– [Capacity Building](#)

[Water](#)

Topic and Regional Narratives

User-friendly information, illustrations, and links for exploring the expected impacts on communities under a changing climate

U.S. Climate Resilience Toolkit

Steps to Resilience | Case Studies | Tools | Expertise | Regions | Topics

Relocation

Climate-related impacts are leading the relocation of tribal and indigenous communities, especially in coastal regions.

Climate-related impacts are forcing the relocation of tribal and indigenous communities, especially in coastal regions. These relocations, and the lack of government resources for funding to support them, are causing loss of community and culture, health impacts, and economic decline.

Relocation is a complex process and indigenous peoples, as many were migratory based on location of needed resources, often face a loss of connection to the land of their ancestors. However, climate-related impacts are forcing relocations today—often emergency and unplanned—especially after changes to their land become so severe that staying in place is no longer an option. When there are no, or only few, other plans available, relocation becomes a matter of survival and resilience for all concerned. Some tribes have already struggled with the consequences of relocation on their communities. For example, many traditional and sustainable tribal communities were forced to relocate to avoid the increasing levels of sea level rise (SLR) and coastal erosion. This required them to adjust and adapt to new and often less-than-ideal lands, move limited resources, and change traditional conditions. Forced relocation has caused the loss of ancestral lands and resources to be combined with the cascading effects of changing climate.

Many native communities in Alaska are at the mercy of the coastal United States—now facing relocation to a higher elevation to protect of climate change and other dangers, including food insecurity, sea level rise, development, and extraction practices on or near traditional lands. Such forms of displacement are leading to severe impacts on the health, wealth, and culture of native communities.

Case Studies

- Relocation in Alaska: Sustainable Adaptation to the Changing Coast (Native) - Alaska
- Quantifying the Impacts of Sea Level Rise on the Coastal Communities of Alaska
- Resilient Planning

Featured Tools

- Adaptation and Resilience Planning (ARRP) Toolkit
- Statewide Resilience in Alaska: Adaptation Planning (ARRP) Toolkit

Related Tools

- Adaptation
- Asset Adaptation
- Climate Resilience in Alaska: Community Resilience Planning (ARRP) Toolkit
- Coastal Change Resilience Planning (ARRP) Toolkit
- Coastal Change Resilience Planning (ARRP) Toolkit

Browse Topics

- Build Resilience
- Coasts
- Ecosystems
- Food
- Health
- Native
- Transportation
- Water
- Wildfires
- Assessment and Planning
- Adaptation
- Migration
- Disaster Risk Reduction
- Resilience
- Capacity Building

Case Studies

- Alaska Native Village Work to Enhance Local Ecosystems to They Can Handle Environmental Risks
- An Integrated Plan for Water and Long-Term Ecological Resilience
- How the Tribes of Utah Thrive
- Building Resilience in the Face of Climate Adaptation
- Defining a Place: Sustainable Adaptation Plan Support Level Decision-Making

Featured Tools

- Climate-Smart Conservation Planning and Implementation in the West
- Climate Support for the Assessment of Vulnerability (COASST)
- Adaptation Assessment
- Related Tools
- Adaptation
- Asset Adaptation
- Climate Change Adaptation Planning Manual for Coastal, Riparian and Multi-Occupant Communities
- Climate Change Adaptation Resource Center (ARRP)

U.S. Climate Resilience Toolkit

Steps to Resilience | Case Studies | Tools | Expertise | Regions | Topics

Adaptation

Climate change creates an uncertain future with multiple outcomes, including sea level rise, development, disaster risk reduction, and other impacts in coastal regions.

Although there is uncertainty about the rate and magnitude of projected temperature increases and future climate-related impacts, adaptive actions can provide benefits. Climate change adaptation actions often fall into several goals such as sustainable development, disaster risk reduction, and improvement in quality of life. However, economic development can also have multiple benefits, such as improved housing and economic growth. Such actions of development can also have a positive impact on the "top down" regional and national strategies may help. Tribal Nations deal with climate-related impacts such as food and water insecurity, prolonged drought, and degradation of culturally important places.

Case Studies

- Alaska Native Village Work to Enhance Local Ecosystems to They Can Handle Environmental Risks
- An Integrated Plan for Water and Long-Term Ecological Resilience
- How the Tribes of Utah Thrive
- Building Resilience in the Face of Climate Adaptation
- Defining a Place: Sustainable Adaptation Plan Support Level Decision-Making

Featured Tools

- Climate-Smart Conservation Planning and Implementation in the West
- Climate Support for the Assessment of Vulnerability (COASST)
- Adaptation Assessment
- Related Tools
- Adaptation
- Asset Adaptation
- Climate Change Adaptation Planning Manual for Coastal, Riparian and Multi-Occupant Communities
- Climate Change Adaptation Resource Center (ARRP)

Digital tools for climate resilience

Checklists, worksheets, guidebooks, data locators, map layers, and other information to help people understand weather and climate-related risk.



COMET-Farm

Farmers and ranchers use this carbon accounting tool to estimate their operation's greenhouse gas emissions and capacity for carbon sequestration, and to evaluate the impacts of alternative management strategies on their net emissions.

[Read more >](#)



Crop Decision Dashboard

This suite of decision support tools provides weather, climate, drought, and cropping data for agricultural advisors, producers, and decision makers in the nation's Corn Belt.

[Read more >](#)



Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu

This menu aligns with the Adaptation Workbook and other published adaptation menus, providing a framework to integrate indigenous and traditional knowledge, culture, language, and history into the climate adaptation planning process.

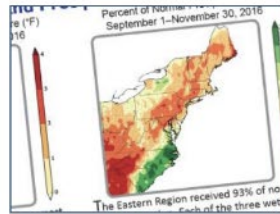
[Read more >](#)



Drinking Water Mapping Application to Protect Source Waters (DWMAPS)

Community members can use this online mapping tool to find information about drinking water in their communities; professionals and planners can use the tool to update source water assessments and prioritize source water protection measures.

[Read more >](#)



Eastern Region Quarterly Climate Impacts and Outlook

Each issue of this two-page report describes weather and climate highlights from the previous quarter, and indicates the most likely temperature and precipitation conditions for the upcoming quarter.

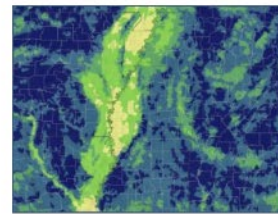
[Read more >](#)



Emergency Preparedness and Response: Natural Disasters and Severe Weather

Look to this website from the CDC to find out how to protect your, your family's, and your community's health and safety before, during, and after a natural disaster or severe weather event.

[Read more >](#)



EnviroAtlas

Access a range of interactive maps and resources to explore the benefits people receive from nature. Map analysis tools can help you understand potential ecological and human health outcomes of various activities.

[Read more >](#)



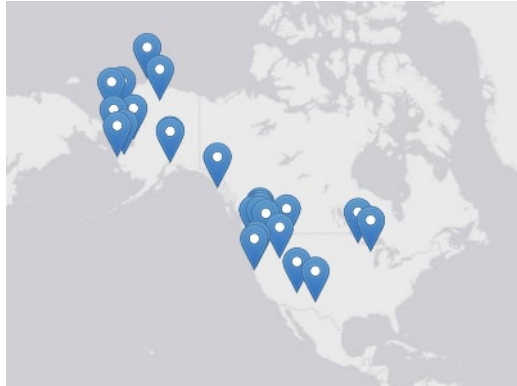
Environmental Sensitivity Index

Access maps to check the sensitivity of coastal resources to oil spills.

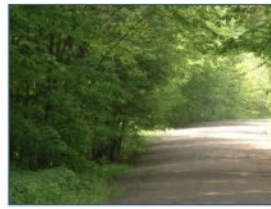
[Read more >](#)

Case Studies

Short stories about how people are confronting their climate-related hazards



Locations of the 28 Tribal Nations case studies currently in the U.S. Climate Resilience Toolkit



College of Menominee Nation's Sustainable Development Institute Builds Capacity for Tribal Climate Change Adaptation

The Institute—a regional service provider for many Tribal Nations—has developed a unique sustainable development model that incorporates traditional knowledges.

[Read more >](#)



Confederated Salish and Kootenai Tribes: Applying the Values Taught by Our Ancestors

Incorporating elders' wisdom in the process of systematically analyzing climate impacts and vulnerabilities in nine categories of tribal life prioritizes actions to take to enhance the evolution of an ancient culture, while protecting tribal traditions.

[Read more >](#)



Defending in Place: Shaktoolik's Adaptation Plan Supports Local Decision Making

Faced with challenges that force some villages to relocate, three governing entities worked together to come up with a single plan to keep residents and buildings safe while a longer-term solution is developed.

[Read more >](#)



How Vulnerable Are Salmon to a Changing Climate?

Researchers in Washington's South Fork Nooksack River are seeking to better understand the potential impacts of climate change on water quality and salmon recovery—a process they hope can be replicated and scaled in other watersheds across the country.

[Read more >](#)



Iñupiat Work to Preserve Food and Traditions on Alaska's North Slope

Residents of North Slope Borough, Alaska, look to solar-powered ice cellars and other strategies to preserve their traditional whaling lifestyle.

[Read more >](#)



Jamestown S'Klallam Tribe Plans for Change on the Olympic Peninsula

With valuable cultural and dietary assets at risk from sea level rise, this Pacific Northwest Tribe developed a plan to identify community adaptation priorities and concerns, and charted a course of action to address them.

[Read more >](#)



Looking to the Future on Alaska's North Slope

As ice retreats and energy resources along Alaska's North Slope become more accessible, diverse stakeholders consider potential futures and develop a science-informed view of the implications of development in the region.

[Read more >](#)



Mescalero Apache Tribe Adapts to a Warmer and Drier Climate

In the face of a changing climate, the Tribe is building capacity—and climate resilience—through forestry management, habitat protection, and an innovative approach to healthy eating.

[Read more >](#)

STEPS TO RESILIENCE

These steps help you document climate hazards that could harm the things you care about, decide which situations you most want to avoid, and come up with workable solutions to reduce your climate-related risks.

1 Explore Hazards

2 Assess Vulnerability & Risk

3 Investigate Options

4 Prioritize & Plan

5 Take Action



The Steps to Resilience



U.S. Climate
Resilience Toolkit

toolkit.climate.gov

1 Explore Hazards

2 Assess Vulnerability & Risks

3 Investigate Options

4 Prioritize & Plan

5 Take Action



Consider the things your community cares about, and explore the weather and climate-related hazards that could damage them.

Engage your community to consider what could happen.

Assets

Property and Public Services

- Businesses
- Homes
- Critical facilities
- Cultural resources

Roads & Mobility

- Ability to move people & goods
- Access to food & health care

Economy

- Jobs & Employees

People & Socioeconomics

- Services for sensitive populations
- Housing

Hazards



Wildfires

From 1980 to 2018, 16 billion-dollar wildfires were responsible for more than ~\$79 billion in damages and 344 deaths.



Drought

From 1980 to 2018, 26 billion-dollar droughts were responsible for more than \$244 billion in damages and the second highest number of deaths of all hazards with 2,993 deaths.



Inland Flooding

From 1980 to 2018, there were 29 billion-dollar flood events that were responsible for over \$123.5 billion in damages and 543 deaths.



Tornadoes

U.S. tornadoes cause \$400 million in damages and kill about 70 people every year.



Hurricanes

From 1980 to 2018, hurricanes caused the most damage (\$920 billion) and caused the most deaths (6,487). Each event averages \$22 billion in damages.



Coastal Flooding

Coastal floods are caused by events such as high tides, storm surges, strong waves, and heavy precipitation. The average frequency of high-tide flooding is already 50% greater than in year 2000.



Winter Storms

From 1980 to 2018, 16 billion-dollar winter storm events were responsible for more than \$47 billion in damages and 1,044 deaths.



Landslides

U.S. landslides cause over \$1 billion in damages and kill 25 to 50 people every year. They affect all 50 states and U.S. territories.

Extreme weather and climate-related events that could result in damage to your assets are potential hazards. To zero in on the hazards that are relevant for your location, ask:

Common Weather and Climate-Related Hazards

- | | | |
|---|------------------------------------|--|
| <input type="checkbox"/> Avalanche | <input type="checkbox"/> Heat Wave | <input type="checkbox"/> Riverine Flooding |
| <input type="checkbox"/> Coastal Flooding | <input type="checkbox"/> Hurricane | <input type="checkbox"/> Strong Wind |
| <input type="checkbox"/> Cold Wave | <input type="checkbox"/> Ice Storm | <input type="checkbox"/> Tornado |
| <input type="checkbox"/> Drought | <input type="checkbox"/> Landslide | <input type="checkbox"/> Wildfire |
| <input type="checkbox"/> Hail | <input type="checkbox"/> Lightning | <input type="checkbox"/> Winter Weather |

- What types of weather events have caused damage in your region in the past?
- What does "normal" weather look like during each season?
- What trends do long-term records of weather observations show?
- What climate conditions are projected for future decades in your location?

[Explore past storms in the Storm Reports Database »](#)

[Check past climate conditions in Climate at a Glance »](#)

[Check future climate projections in the Climate Explorer »](#)

[Check drought status in the U.S. Drought Portal »](#)

[View your state's climate trends in State Climate Summaries »](#)

[Check future shoreline locations in the Sea Level Rise Viewer »](#)

The Steps to Resilience



U.S. Climate
Resilience Toolkit

toolkit.climate.gov

1 Explore Hazards

2 Assess Vulnerability & Risks

3 Investigate Options

4 Prioritize & Plan

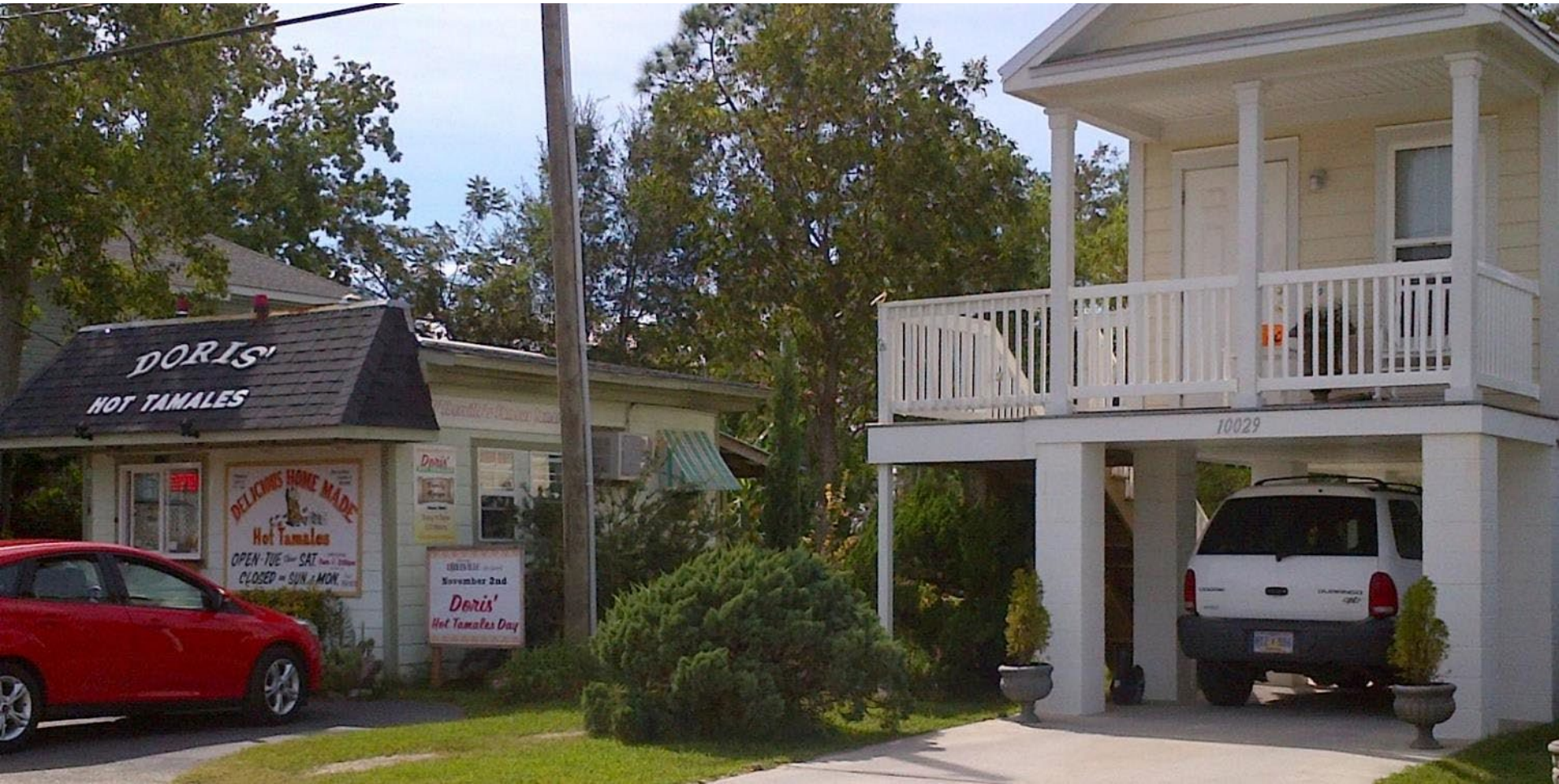
5 Take Action



Determine which of your assets are most vulnerable.

Gather data to understand your risk (both financial and societal).

Same exposure to flooding, different vulnerability





U.S. Climate
Resilience Toolkit

toolkit.climate.gov

The Steps to Resilience

1 Explore Hazards

2 Assess Vulnerability & Risks

3 Investigate Options

4 Prioritize & Plan

5 Take Action



Make a list of the potential solutions your community is willing to support.

Check what other communities who faced similar problems have done.

Identify options: Target all aspects of vulnerability and risk



Reduce Exposure



Reduce Sensitivity of Key Systems



Build Capacity for Response and Recovery

Build Adaptive Capacity

The Steps to Resilience



U.S. Climate
Resilience Toolkit

toolkit.climate.gov

1 Explore Hazards

2 Assess Vulnerability & Risks

3 Investigate Options

























4 Prioritize & Plan

5 Take Action

Decide which projects in what order will do the most to reduce risk for your community.

→ Your vulnerability and risk assessments will serve as documentation of your process as you apply for grants or raise funds.

Among your approved options, set priorities based on “traffic light” voting by stakeholders across a number of categories

Approved options	Ability to increase resilience	Economic feasibility	Low environmental impact	Ability to implement in our county
Option 1		 	 	
Option 2			 	 
Option 3				
Option 4				
Option 4 <i>with</i> Option 3				



The Steps to Resilience

- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 Prioritize & Plan
- 5 Take Action



Implement the top project on your prioritized list. Continually move on to the next project as resources become available.

Monitor your progress. Go back to Step 1 annually to keep your community aware of changing hazards and risk.



Meet the Challenges of a Changing Climate

Learn about potential climate hazards so you can protect vulnerable assets.

LEARN ABOUT THE STEPS TO
RESILIENCE >

READ CASE STUDIES OF BUILDING
RESILIENCE >

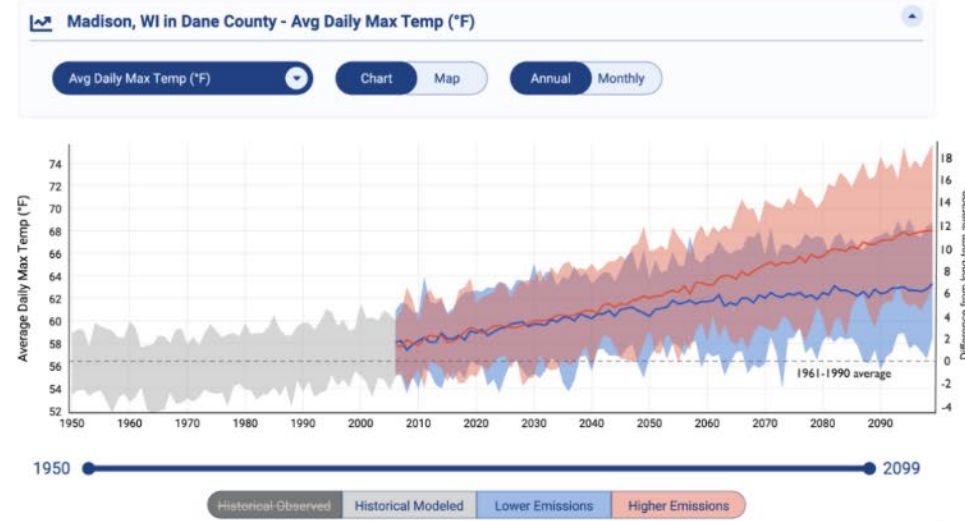
CHECK CONDITIONS PROJECTED
FOR THE FUTURE >

TOUR THE TOOLKIT ▾

toolkit.climate.gov

CLIMATE EXPLORER

Explore interactive graphs and compare time-series maps showing climate projections and observations for any county in the contiguous United States. You can also explore historical temperature and precipitation observations at hundreds of climate stations, and view observed and projected days of high-tide flooding at more than 90 coastal tide-gauge stations.



[LAUNCH THE CLIMATE EXPLORER >](#)

[ACCESS AN INTRODUCTORY
VERSION OF THE TOOL >](#)



The Climate Explorer

Explore graphs and maps of historical and projected climate variables for any county in the contiguous United States.

New!

Climate projection charts are now available for boroughs in Alaska.

To get started, enter a county, city, or zip code



or choose from the following suggested cities:

New York City, NY

Los Angeles, CA

Chicago, IL

Phoenix, AZ

Houston, TX

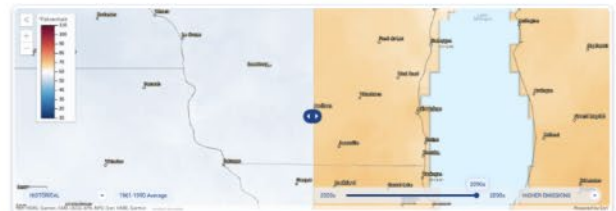
Anchorage, AK

crt-climate-explorer.nemac.org

Phoenix, AZ



Select one of the following for Phoenix, AZ in Maricopa County



Climate Maps



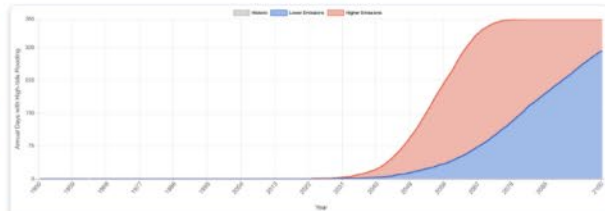
Compare past and projected future conditions in your county.



Climate Charts



Check past and projected values for climate variables.



High-Tide Flooding



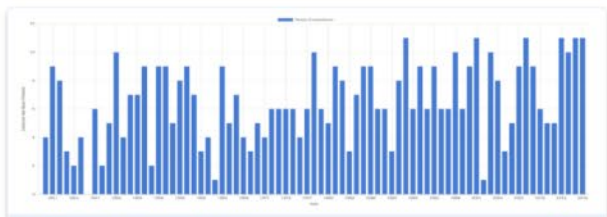
View the number of high-tide floods in the past and projected for the future.



Historical Weather Data



Compare daily weather at local observing stations to long-term climate.



Historical Thresholds



Check how often temperature or precipitation has exceeded user-defined values.

Ready to plan for resilience?



Resources from our partners can help you identify what matters to your community and evaluate how climate change could affect it:

- Check your exposure to extreme events such as wildfires and flooding
- Identify social vulnerabilities across urban areas
- Get step-by-step guidance for completing a vulnerability assessment or crafting an action plan.

[Explore planning tools →](#)



Phoenix, AZ



Stations



Phoenix, AZ in Maricopa County - Avg Daily Max Temp (°F)

Avg Daily Max Temp (°F)



Chart

Map

Annual

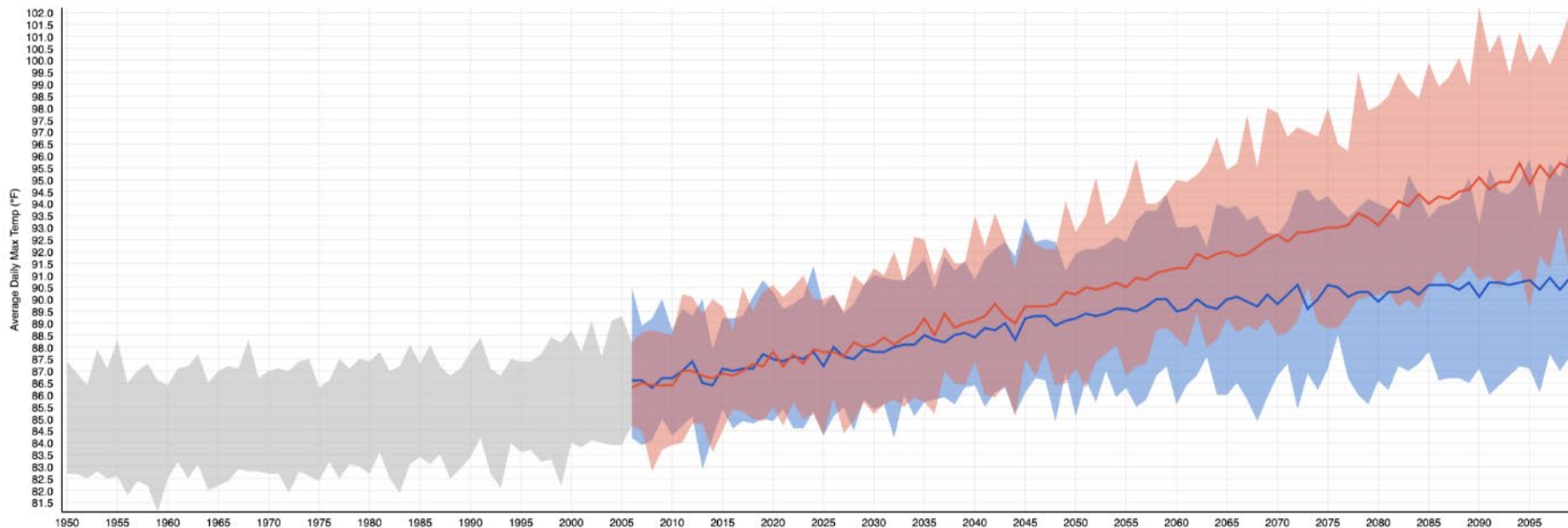
Monthly



Downloads



About the graph



1950

2099

Historical Observed



Historical Modeled



Lower Emissions



Higher Emissions





Phoenix, AZ



Stations

Phoenix, AZ in Maricopa County - Avg Daily Max Temp (°F)

Avg Daily Max Temp (°F)



Chart

Map

Annual

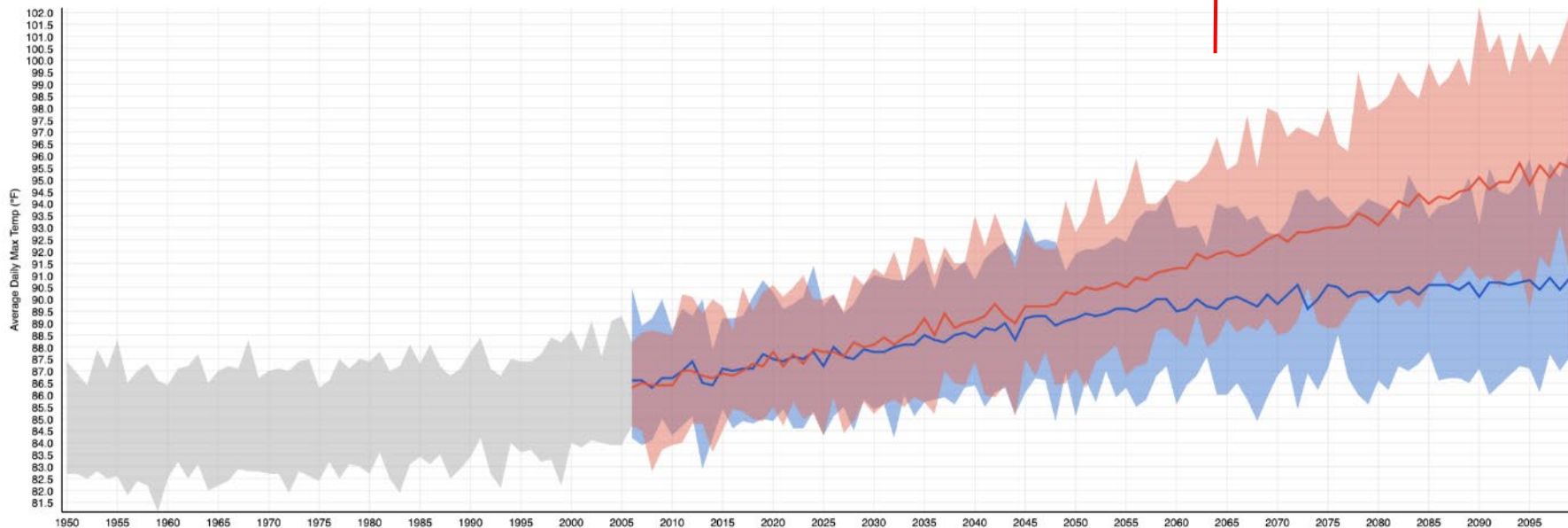
Monthly



Downloads



About the graph



1950

2099

Historical Observed



Historical Modeled



Lower Emissions



Higher Emissions





READING THE LOCAL CLIMATE CHARTS

Historical Observed



Observed annual averages, shown as the difference from the long-term average for the late 1900s. The horizontal line from which bars extend up and down is the average from 1961-1990.

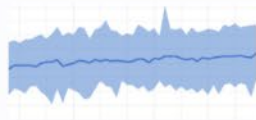
Note: Checking how observations vary within the range of historical modeled values can help you recognize how future observations may vary about the range of projected values.

Historical Modeled



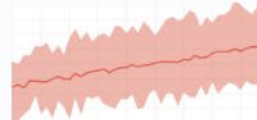
Range of climate model output for historical period (1950-2006). Also called hindcasts or simulations.

Lower Emissions



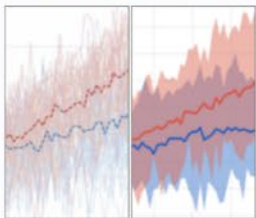
Range of climate model projections for 2006-2100 if global emissions of heat-trapping gases are stabilized by 2040 and then dramatically reduced. Blue line shows weighted mean of all projections at each time step.

Higher Emissions



Range of climate model projections for 2006-2100 assuming global emissions of heat-trapping gases continue increasing through 2100. Red line shows weighted mean of all projections at each time step.

HOW WE REPRESENT GLOBAL CLIMATE MODEL RESULTS



On the left, multiple lines represent the range of global climate model results for each of two possible futures, one in red and one in blue. On the right, the example from Climate Explorer uses single bands of color to show the full range of model results for the same two possible futures.

The top of each color band represents the highest projected value among all the models at each time step for each scenario; the bottom of the band represents the lowest projected value. The dark median line within each band highlights the trend for each scenario, yet future observations are expected to vary across the full range of projections, just as historical observed values vary about the historical modelled values.

Phoenix, AZ

Stations

Phoenix, AZ in Maricopa County - Avg Daily Max Temp (°F)

Avg Daily Max Temp (°F)

Chart

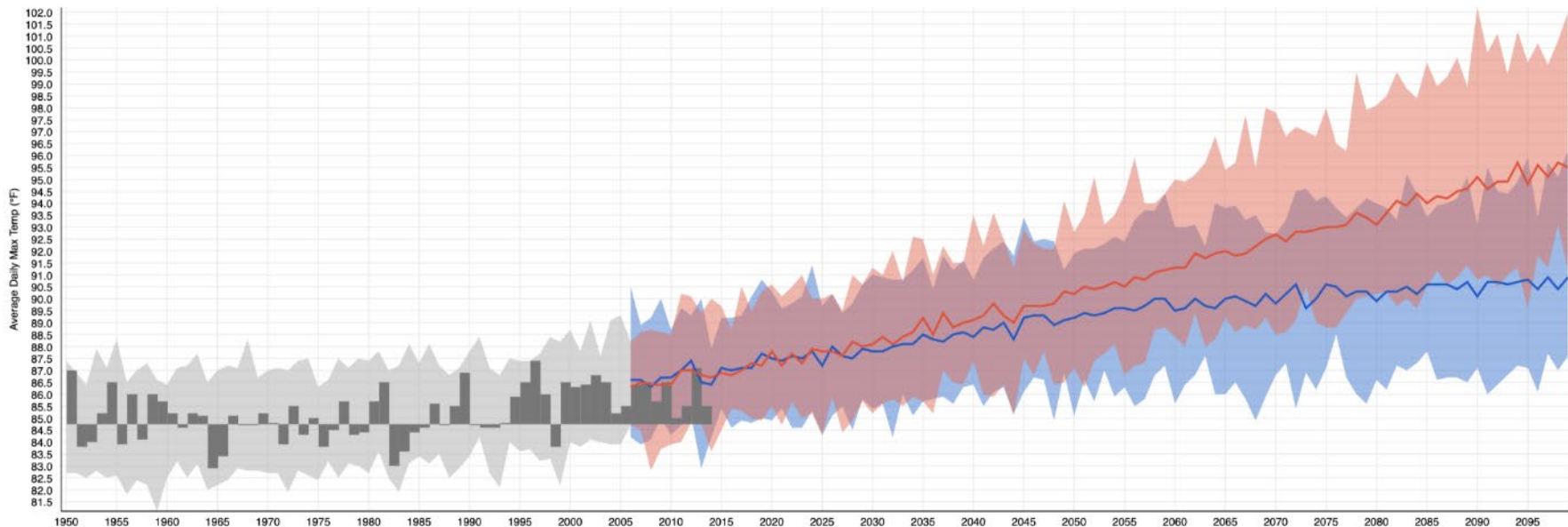
Map

Annual

Monthly

Downloads

About the graph



1950

2099

Historical Observed

Historical Modeled

Lower Emissions

Higher Emissions



Phoenix, AZ



Stations



Phoenix, AZ in Maricopa County - Avg Daily Max Temp (°F)

Avg Daily Max Temp (°F)



Chart

Map

Annual

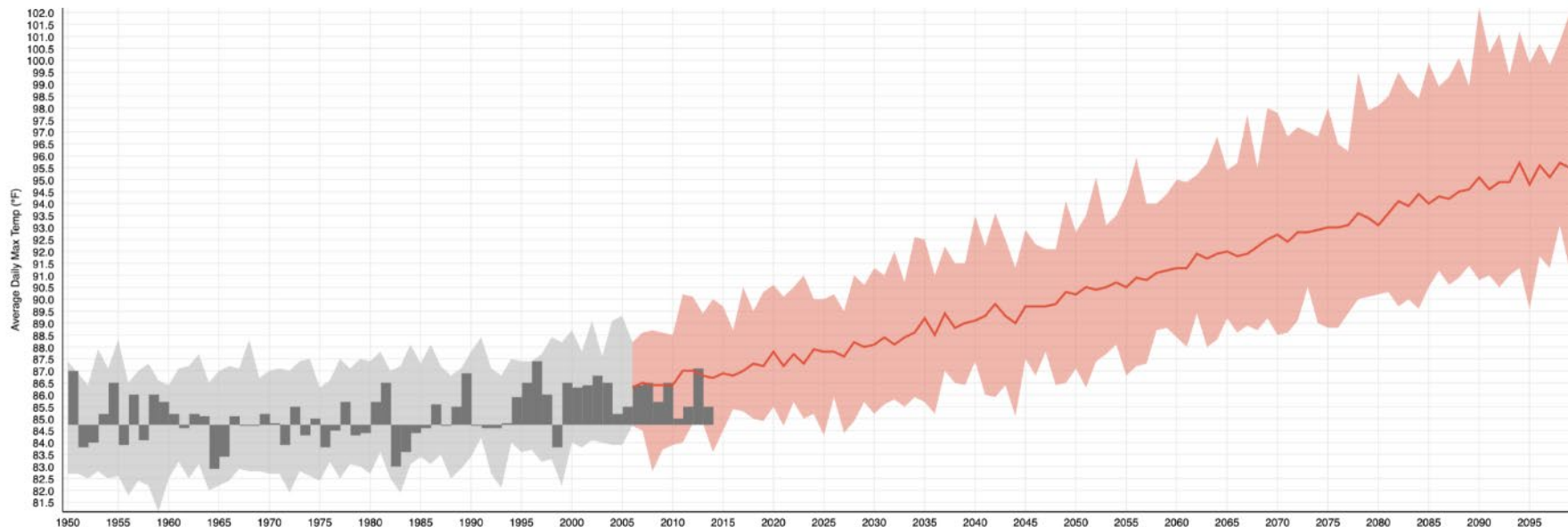
Monthly



Downloads



About the graph



1950

2099

Historical Observed



Historical Modeled



Lower Emissions



Higher Emissions



Phoenix, AZ

Stations

Phoenix, AZ in Maricopa County - Avg Daily Max Temp (°F)

Avg Daily Max Temp (°F)

Chart

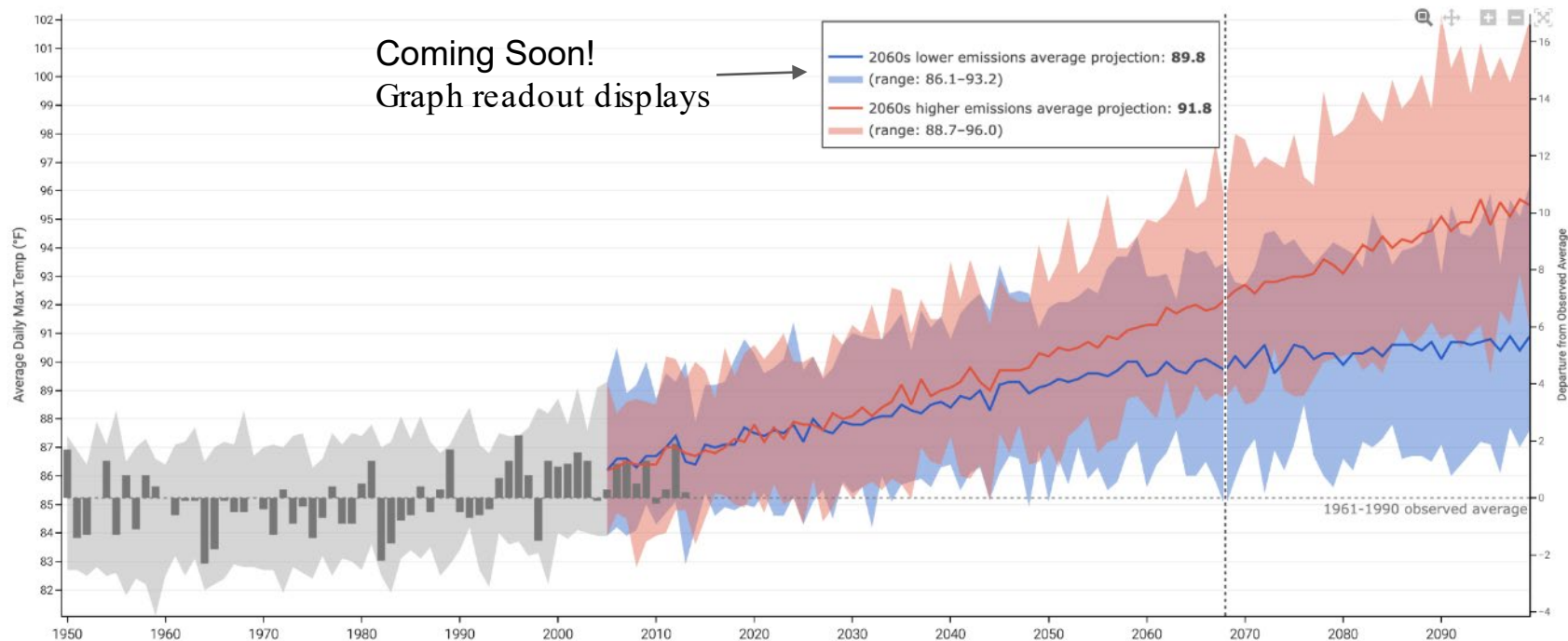
Map

Annual

Monthly

Downloads

About the graph



Historical Observed

Historical Modeled

Lower Emissions

Higher Emissions



Phoenix, AZ



Stations



Phoenix, AZ in Maricopa County - Avg Daily Max Temp (°F)

Avg Daily Max Temp (°F)



Chart

Map

Annual

Spring

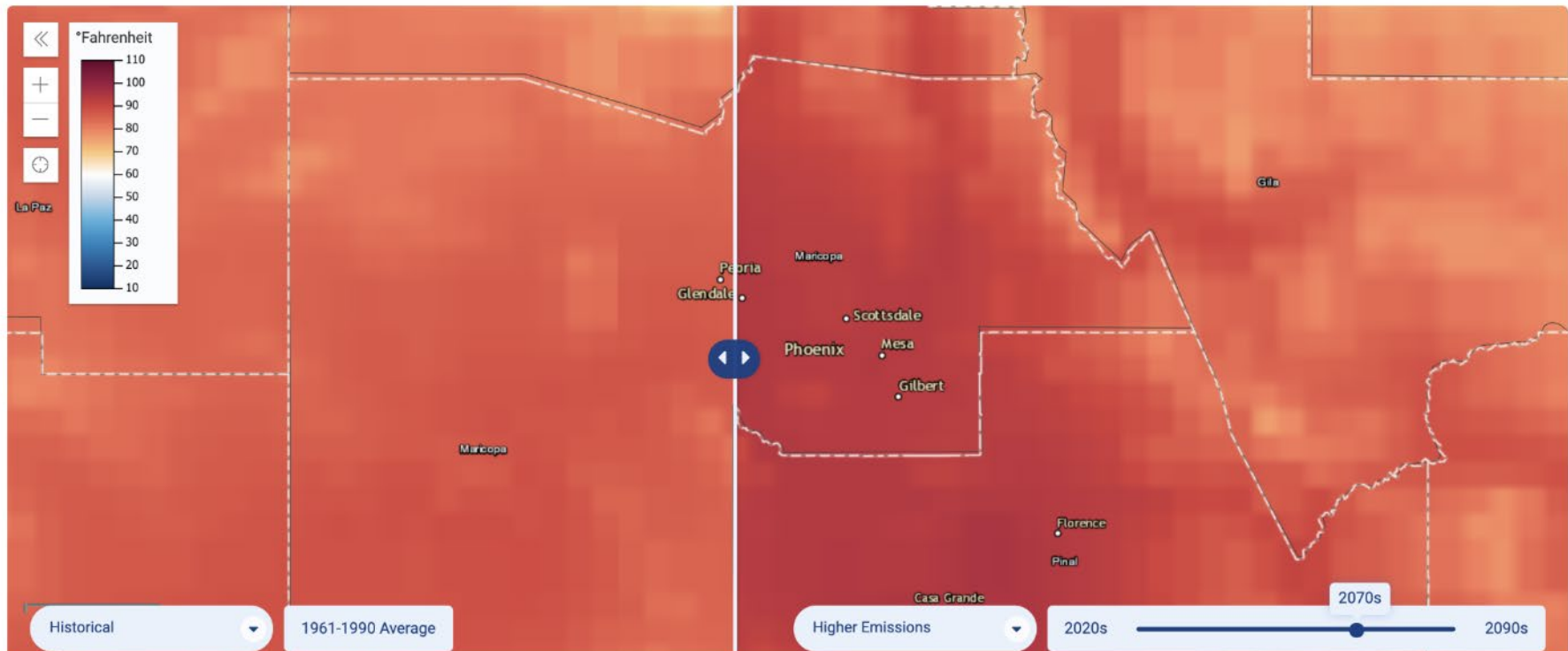
Summer

Fall

Winter



Downloads



Phoenix, AZ

Stations

Phoenix, AZ in Maricopa County - Avg Daily Max Temp (°F)

Avg Daily Max Temp (°F)

Chart

Map

Annual

Monthly

Downloads

About the graph

Temperature

Avg Daily Max Temp (°F)

Avg Daily Min Temp (°F)

Days w/ max > 90°F

Days w/ max > 95°F

Days w/ max > 100°F

Days w/ max > 105°F

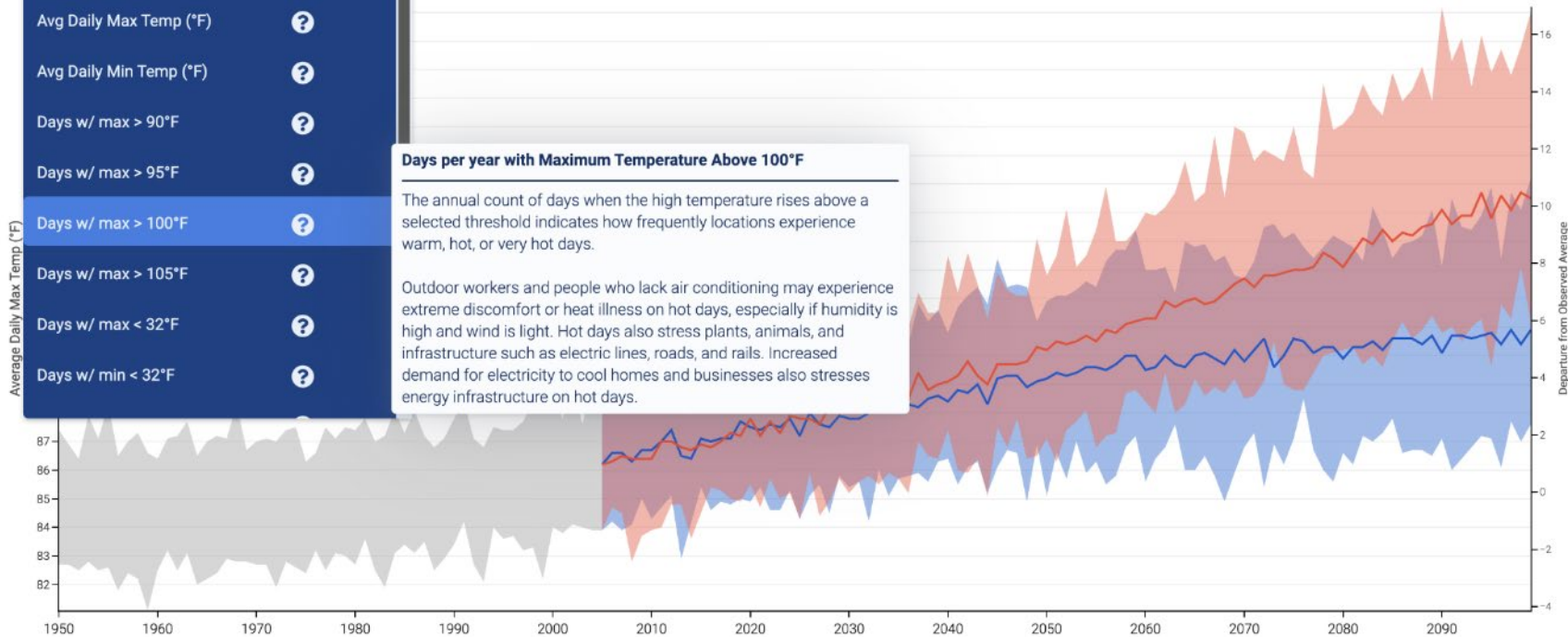
Days w/ max < 32°F

Days w/ min < 32°F

Days per year with Maximum Temperature Above 100°F

The annual count of days when the high temperature rises above a selected threshold indicates how frequently locations experience warm, hot, or very hot days.

Outdoor workers and people who lack air conditioning may experience extreme discomfort or heat illness on hot days, especially if humidity is high and wind is light. Hot days also stress plants, animals, and infrastructure such as electric lines, roads, and rails. Increased demand for electricity to cool homes and businesses also stresses energy infrastructure on hot days.



Historical Observed

Historical Modeled

Lower Emissions

Higher Emissions



Phoenix, AZ



Stations

Phoenix, AZ in Maricopa County - Days w/ max > 100°F

Days w/ max > 100°F



Chart

Map

Annual

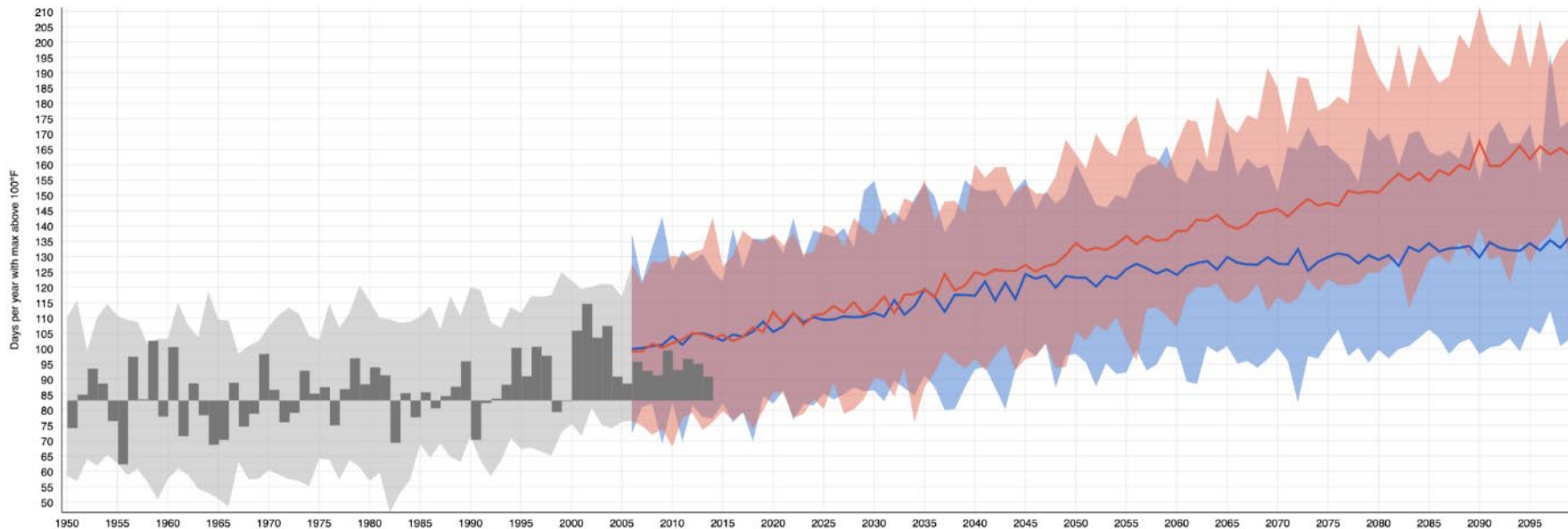
Monthly



Downloads



About the graph



1950



2099

Historical Observed



Historical Modeled



Lower Emissions



Higher Emissions



Phoenix, AZ

Stations

Phoenix, AZ in Maricopa County - Days w/ max > 100°F

Days w/ max > 100°F

Chart

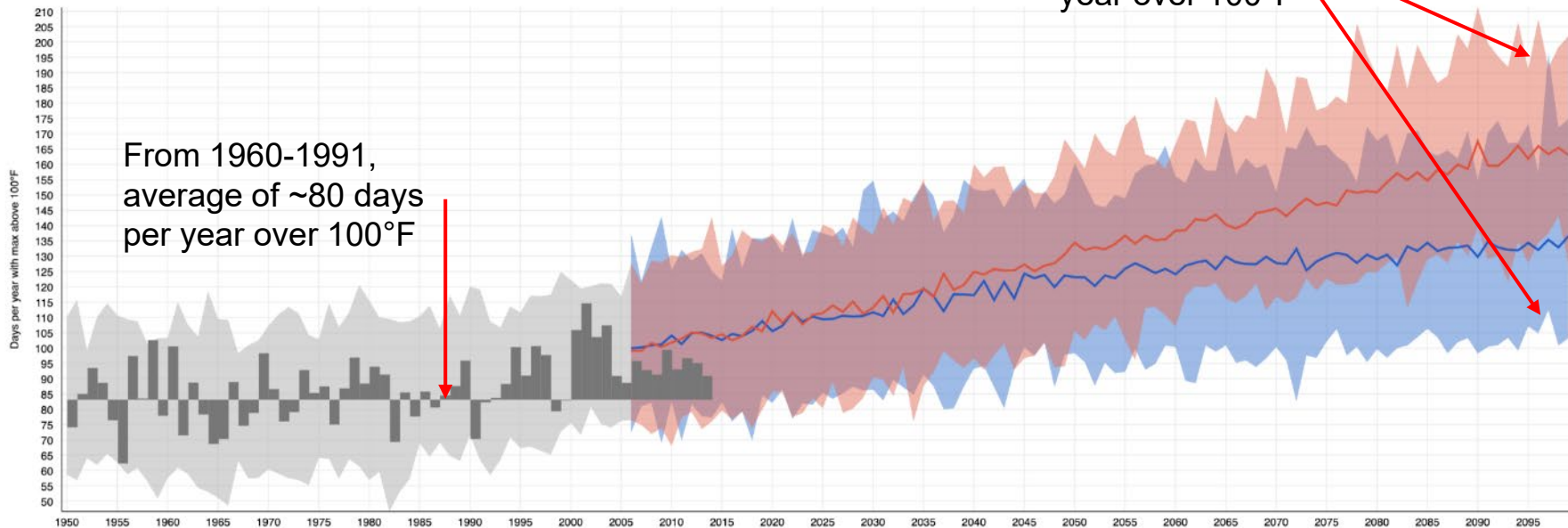
Map

Annual

Monthly

By the late 2000s, projections range from 110 to 200 days per year over 100°F

From 1960-1991, average of ~80 days per year over 100°F



1950

2099

Historical Observed

Historical Modeled

Lower Emissions

Higher Emissions



Phoenix, AZ



Stations



Phoenix, AZ in Maricopa County - Days w/ min < 32°F

Days w/ min < 32°F



Chart

Map

Annual

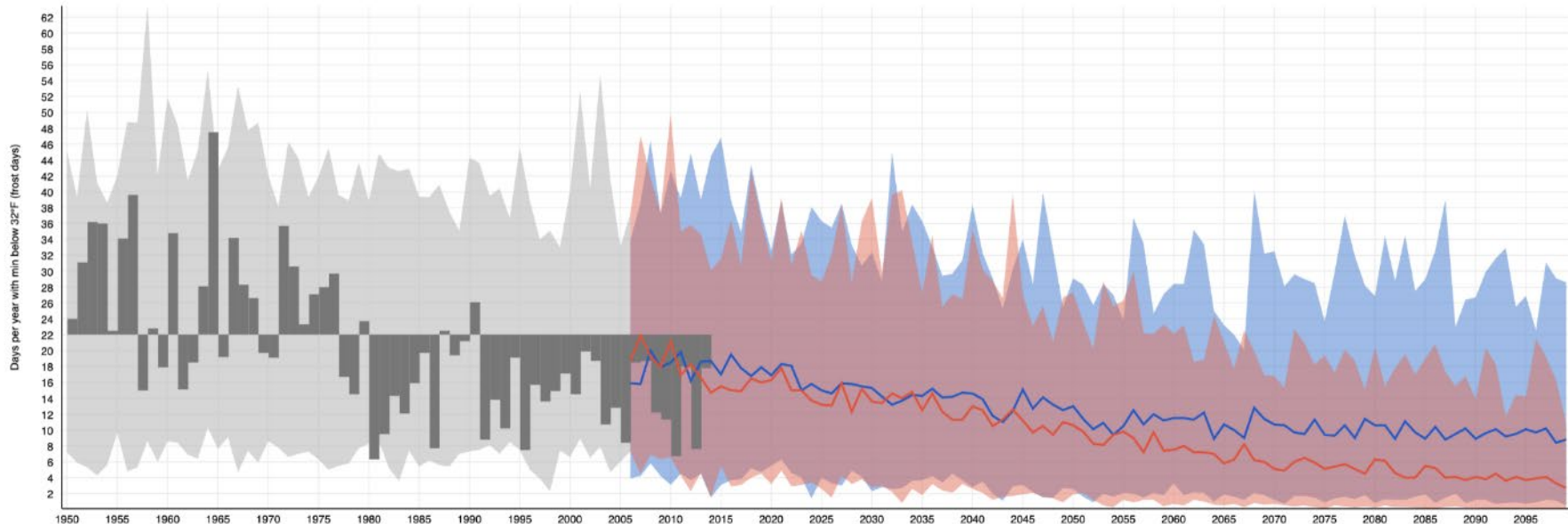
Monthly



Downloads



About the graph



1950

2099

Historical Observed



Historical Modeled



Lower Emissions



Higher Emissions





Phoenix, AZ



Stations



Phoenix, AZ in Maricopa County - Total precipitation

Total precipitation



Chart

Map

Annual

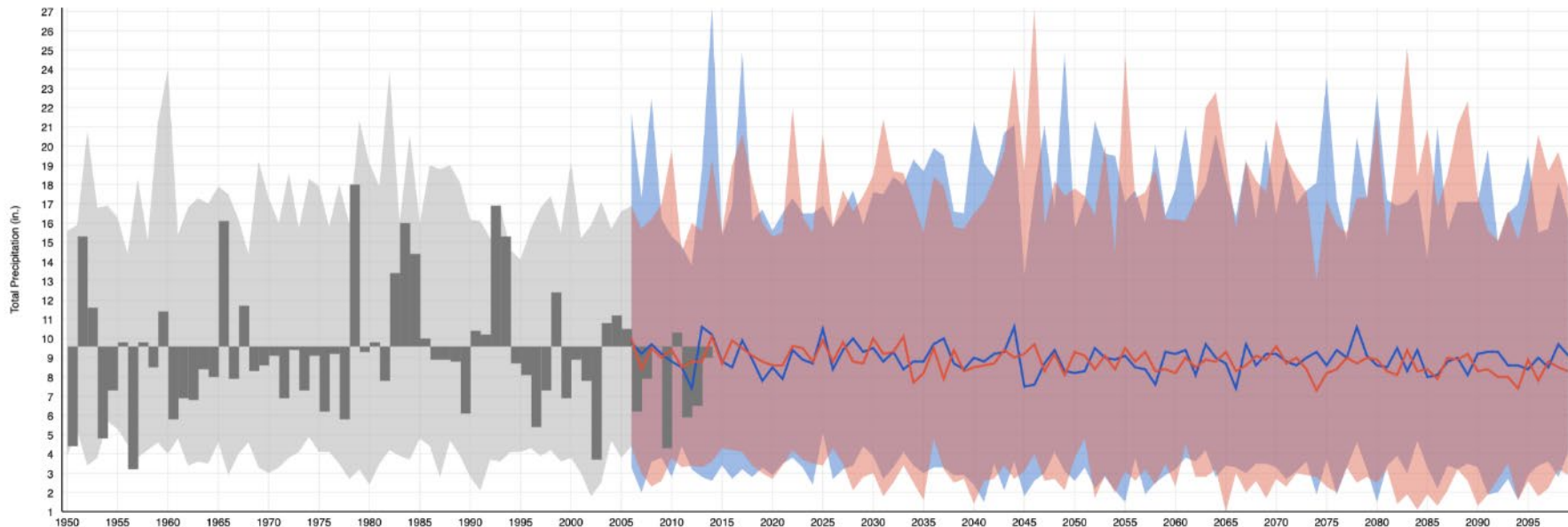
Monthly



Downloads



About the graph



1950



2099

Historical Observed

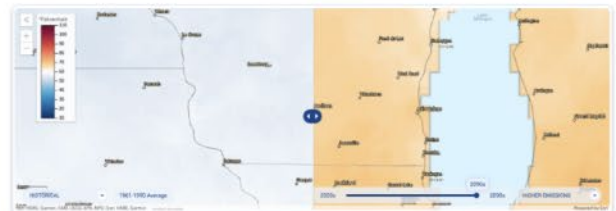
Historical Modeled

Lower Emissions

Higher Emissions

Phoenix, AZ

Select one of the following for Phoenix, AZ in Maricopa County



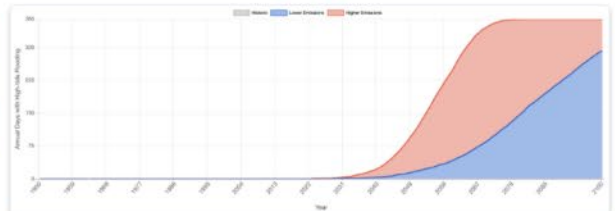
Climate Maps

Compare past and projected future conditions in your county.



Climate Charts

Check past and projected values for climate variables.



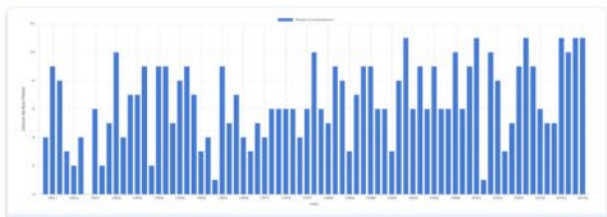
High-Tide Flooding

View the number of high-tide floods in the past and projected for the future.



Historical Weather Data

Compare daily weather at local observing stations to long-term climate.



Historical Thresholds

Check how often temperature or precipitation has exceeded user-defined values.

Ready to plan for resilience?

Resources from our partners can help you identify what matters to your community and evaluate how climate change could affect it:

- Check your exposure to extreme events such as wildfires and flooding
- Identify social vulnerabilities across urban areas
- Get step-by-step guidance for completing a vulnerability assessment or crafting an action plan.

[Explore planning tools →](#)

Thank you for your attention.

U.S. Climate Resilience Toolkit: <https://toolkit.climate.gov>

General Inquiries Email: noaa.toolkit@noaa.gov

LuAnn Dahlman: luann.dahlman@noaa.gov