



# Climate Change Communication Guide

## Knowing & Interacting with Your Audience



# ABOUT THIS GUIDE

This Climate Change Communication Guide has been designed to help National Park Service staff at all units within the National Park Service engage visitors in conversations about climate change impacts and actions. The Guide is not meant as a “how to,” but rather as an aide to interact with a variety of audiences. Research has suggested that the National Park Service is a trusted source of information<sup>1</sup> making your role exceptionally valuable in communicating the consequences of climate change at your park and on the wider park system.

## Key Climate Change Messages



- **Human activities are changing the Earth’s climate.**
- **Climate change affects national parks and the treasures they protect.**
- **The National Park Service is addressing climate change.**
- **The choices you make today do make a difference.**

# INTRODUCTION

This guide is divided into two sections: Audience and Impacts. The first section of this guide introduces the Global Warming's Six Americas audience segments (Figure 1). In regards to climate change, this survey distinguishes between six distinct audiences within the United States, each of whom have a different response to the issue of climate change in terms of beliefs, perceptions, and influences. Understanding the differences between these groups is important for effective communication and engagement. You will also gain insight into questions commonly asked by the audience segments and suggested ways in which to engage and appeal to different audiences. When we better understand how our audiences think and how they feel, we can speak to their concerns more directly to make a more meaningful connection.

The next section of the guide, the impacts section, highlights specific climate change impacts on national parks and is a tool for driving the message home. This section is organized by ten bioregions of the United States.

Through gaining understanding and knowledge about the different audiences among the American public we hope this guide will be helpful in more effectively communicating about climate change within the parks system. Additionally, we hope this guide will be a useful tool in creating positive, memorable, and meaningful experiences for both park staff and visitors alike.

Park visitors are interested in learning about climate change while visiting a park<sup>2</sup>. When engaging in climate change conversations, it is always important to tell your own park story. Encourage questions and the sharing of observations. Keep communication simple, concrete, and relatable.



There is a great need at this time for messages that communicate the complexities of climate change and the actions that can be taken.



- Jonathan Jarvis. Director, National Park Service at Joshua Tree National Park, 2009

# CONTENT

Pages 6-15

Audiences

Figure 1:  
Global Warming's Six Americas  
Figure 2:  
Types of Questions Asked  
By Audiences  
Alarmed  
Concerned  
Cautious  
Disengaged  
Doubtful  
Dismissive

Pages 15-27

Impact

Regional Climate Impacts  
Alaska Boreal and Arctic  
Arid Lands  
Atlantic Coast  
Eastern Woodlands and Forests  
Great Lakes  
Gulf Coast  
Pacific Coast  
Pacific Islands  
Prairie Potholes and Grassland  
Western Mountains and Forests

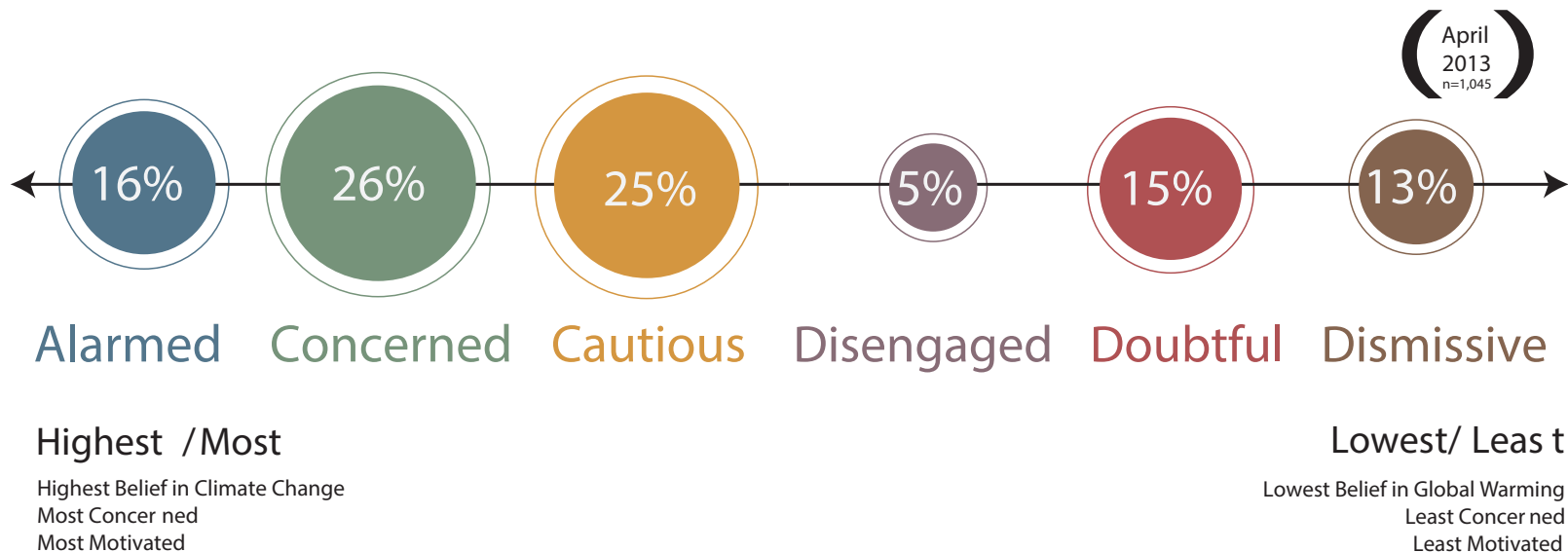
Pages 27-30

Resources

Communicating Climate Change  
References and Resources  
Additional Information

# GLOBAL WARMING'S SIX AMERICAS

Figure 1: The Global Warming's Six Americas audience categories resulted from nationally representative surveys conducted by research teams at George Mason University and Yale University on American's climate change beliefs, behaviors, concerns, and level of involvement with the issue.



# TYPES OF QUESTIONS ABOUT CLIMATE

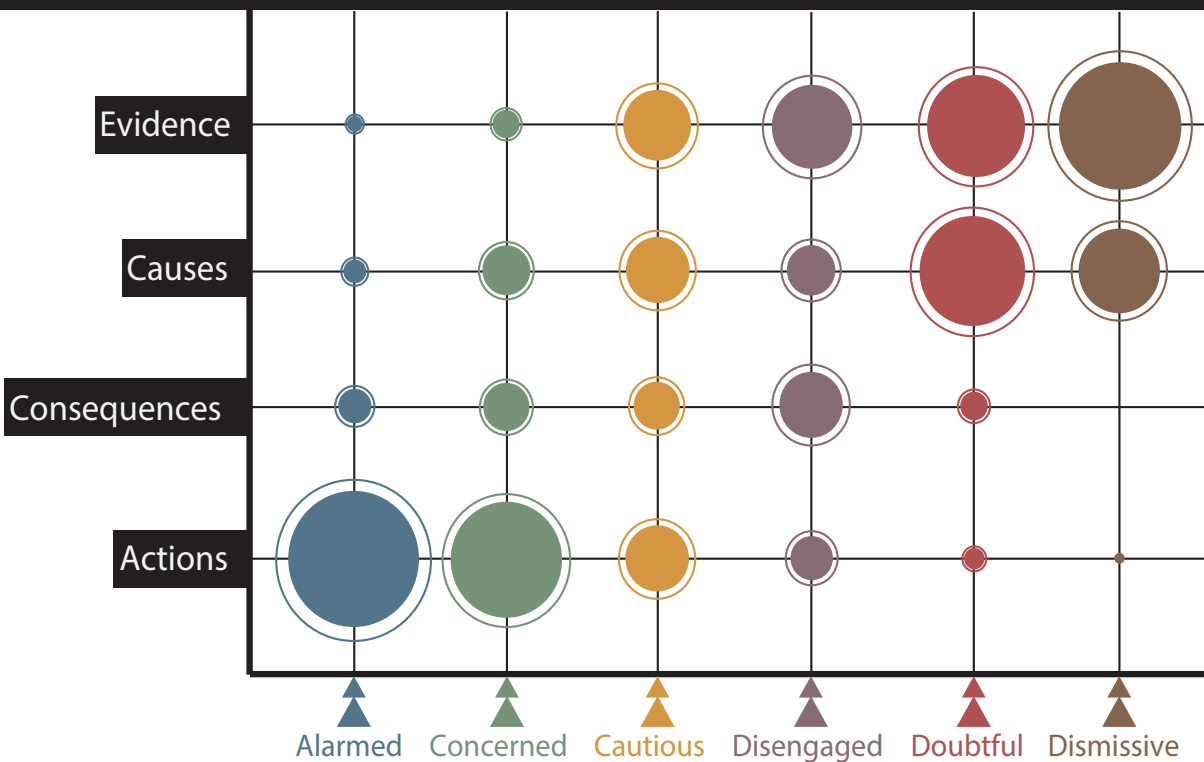


Figure 2 shows what types of questions individuals in each audience category would most like to ask an expert on climate change. Responses were grouped into questions seeking information about 1) the evidence that climate change is happening, 2) what is causing it, 3) what will the consequences be, and 4) what actions individuals and society can take to respond to climate change.

The larger the circle, the more frequently questions of that type were asked.



# ALARMED

Alarmed individuals are convinced that climate change is happening and is human-caused. They believe the threat is urgent, and is harming or will very soon harm them and others around the world. They support a variety of bold national policies and are already changing their own lifestyles to be part of the solution. They show their advocacy through consumption choices by favoring environmentally responsible businesses and reducing their home energy use. Consuming a lot of public media, they stand as opinion leaders and citizen advocates.

This audience typically focuses on consequences of climate change and actions everyone can do (Figure 2).



16%

## Questions You May Be Asked

- A) Is the park being harmed by climate change?
- B) How is climate change affecting or going to affect my and others' experience here?
- C) What is the park doing to help reduce global warming?
- D) How can I help and will it make a difference?

## Suggested Communication Tips

- 1) Telling stories about local park impacts rather than causes will resonate best.
- 2) Work to activate, not convince them. Quench their thirst for what they can do to help, empowering them to be part of the solution.
- 3) Encourage more citizen engagement and provide tips for greener park visits, travel, and for home energy reduction behaviors.



# CONCERNED

The Concerned are also very sure climate change is happening, is human-caused, and use their purchasing power to favor environmentally responsible businesses. The level of urgency they feel is much lower; they do not think about the issue as often as the Alarmed nor do they feel as personally threatened. They believe climate change will be harmful in the future. While they support a strong national response, they are less personally involved in the issue and do not take on much, if any, citizen advocacy. Their attention to media and public affairs is average.

Similar to the Alarmed, the Concerned primarily focus on actions that can be taken and the causes of climate change (Figure 2).



26%

## Questions You May Be Asked

- A) Do we still have time to reduce the effects of climate change here?
- B) How can we tell that climate change is mostly human-caused as opposed to natural variation?

## Suggested Communication Tips

- 1) Focus on what the park is doing to minimize its contribution to climate change, and what it is doing to protect its natural and cultural resources.
- 2) Show visitors the current and anticipated impacts of climate change on the park.
- 3) Reference scientific findings when correcting misconceptions and to explain gaps in understanding.
- 4) Guide and spark their tendency for environmentally conscious consumerism by giving examples of existing green and sustainable practices in the park.
- 5) Connect the importance of action to the idea of providing a better future for present and future generations of their family.

# CAUTIOUS

Although Cautious individuals believe climate change is a problem, they have less urgency and certainty it is happening and human-caused than the Alarmed and Concerned. They do not pay much attention to environmental news, consider climate change a low priority, and do not feel personally affected by it. Although they have uncertainty about its actual occurrence, they are interested in positive and negative climate change impacts, and have some concern about potential harm to people. Beyond energy conservation, they are not necessarily involved in other ways to address climate change.

However, they moderately support a range of possible policies.

This audience is mostly motivated to ask about causes, but also may wonder about evidence of climate change (Figure 2).



25%

## Questions You May Be Asked

- A) Is climate change being felt in the park now?  
How do you know?
- B) Is climate change really mostly human-caused or is it just due to natural changes in the environment?

## Suggested Communication Tips

- 1) Convey climate change is real, human caused, already harming people, and there is scientific consensus. (An effective way to phrase the consensus is: Based on the evidence, more than 97% of climate scientists have concluded that human-caused climate change is happening.)
- 2) Use visual media and real examples in the park; gradually expand to other areas if possible.
- 3) Build on their perceptions that energy conservation makes sense financially (cost-savings).
- 4) Lead by example - explain what is being done in the park to conserve energy and how much money it saves. Demonstrate that these are positive, simple actions shared by many people like them.

# DISENGAGED

The Disengaged generally does not know much about climate change or whether it is happening, and does not give the issue much thought. This segment typically has received less formal education and is less financially well off than other segments of the population. While the Disengaged are typically politically inactive, they are open-minded regarding the issue, and tend to have strong religious values. Importantly, they are interested in learning what they and the wider community can do to reduce climate change's impacts.



5%

While they may not ask questions about climate change frequently or actively, when surveyed, Disengaged individuals commonly may ask a wide range of questions, though are most interested in the evidence, consequences, and causes of climate change (Figure 2).

## Questions You May Be Asked

- A) Overall, is climate change beneficial or harmful?
- B) Is climate change natural, human-caused, or both?
- C) How do you know climate change is real and/or happening? Can you see it at the park?

## Suggested Communication Tips

- 1) Demonstrate how people similar to them are being harmed already, or will be harmed, and that climate change is a public health issue (this specific point may be important to include in discussions at parks adjacent to more highly vulnerable communities).
- 2) Emphasize that the vast majority of scientists agree that climate change is real and human caused.
- 3) Explore ways that we collectively, NPS and individuals, can meet this challenge through the opportunities to adapt to impacts and to reduce our carbon footprint.

# DOUBTFUL

The audience that falls into the Doubtful category is close to being evenly split among those who think climate change is happening, those who think it is not, and those who are unsure. They are not all that concerned or worried about changes in climate, holding the belief that if it does exist, it is due to natural environmental changes, and is a distant threat several decades in the future. They are comfortable with the amount of action America is currently taking to address climate change and do not believe much more, if any, additional action is necessary. However, they do view energy efficiency measures as sensible and typically support policies that promote U.S. energy security.

They are most interested in the causes and evidence of climate change (Figure 2).



15%

## Questions You May Be Asked

- A) How do you know that human activities have more of an effect on Earth's climate than natural environmental variation?
- B) What are the causes of climate change?
- C) What evidence of climate change can you show me in the park?

## Suggested Communication Tips

- 1) Start by establishing the consensus: Based on the evidence, more than 97% of climate scientists have concluded that human-caused climate change is happening.
- 2) Don't attempt to persuade; instead correct misperceptions by presenting understandable scientific facts and avoid restating myths.
- 3) Place emphasis on how conservation, and particularly energy conservation, can save money.
- 4) When answering questions, try to use examples within the park(s).

# DISMISSIVE

On the opposite end of the spectrum from the Alarmed, are the Dismissive. The individuals in this group are highly engaged in the issue but strongly believe climate change is not happening and is likely a hoax. They also feel they are well informed on the issue, following information sources that share their views. Other beliefs include: there is no threat to people or nature, the nation does not need to act, and many scientists agree with their viewpoint. While

opposing government action, they are active in making energy-efficient home improvements for financial savings benefits.

They pay the most attention to cause and evidence-based facts (Figure 2).



13%

## Questions You May Be Asked

- A) What evidence proves climate change is really happening at this park?
- B) How do you know changes at the park are due to climatic changes?
- C) How do you know climatic changes are not just due to natural variation?

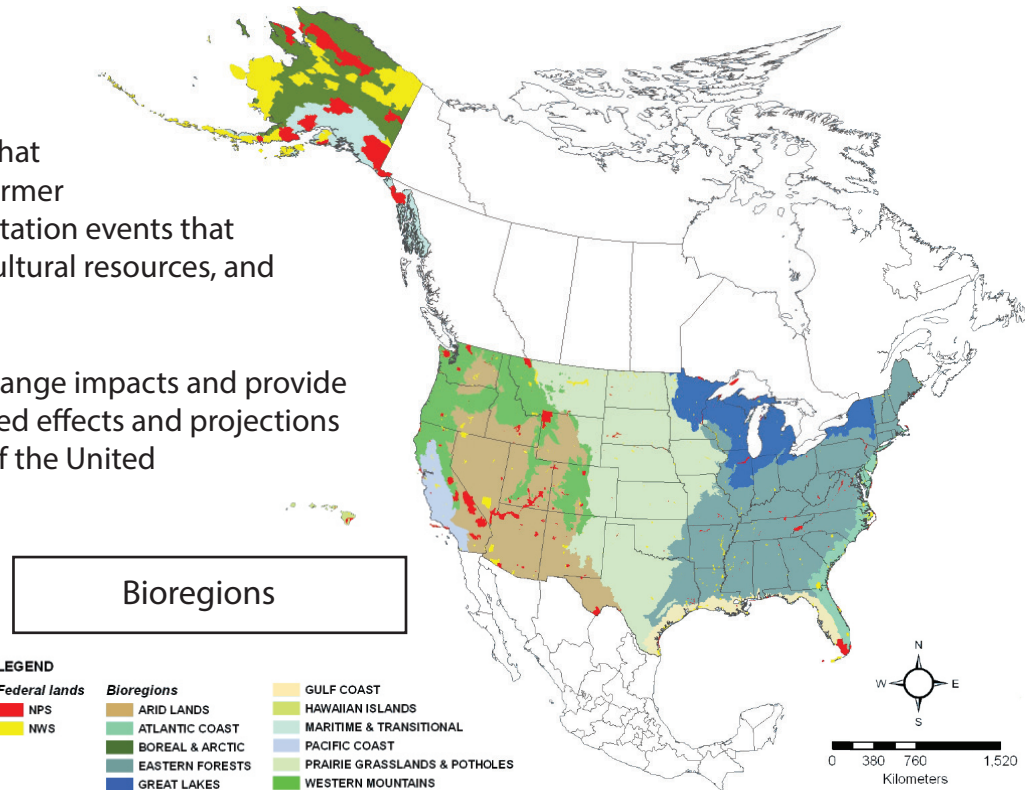
## Suggested Communication Tips

- 1) Rather than trying to win an argument, remain polite when dealing with criticism because it may shape how receptive visitors around you evaluate your credibility.
- 2) Support and encourage saving money through energy conservation.
- 3) Remind them there are instances where we must act responsibly without being 100% certain.
- 4) Provide concrete and real examples of climate change happening within the park(s).
- 5) Promote a positive message by explaining the benefits of addressing climate change.
- 6) It is okay to politely disengage from the conversation if mutual respect cannot be reached.

# REGIONAL CLIMATE IMPACTS

Some climate change impacts to parks are visible while others are not. In our complex ecosystems, climate effects on one element, also impact others. Scientists already know that some regions are experiencing a trend of warmer temperatures and increased extreme precipitation events that are directly impacting vegetation, wildlife, cultural resources, and recreational activities.

In this section, we highlight some climate change impacts and provide links to detailed talking points about observed effects and projections of what is likely to come for ten bioregions of the United States. These should help you identify your park's climate story. Sharing that story and conveying solutions that your park and other parks are doing, while being mindful of how different audiences process climate change information will help you be more effective when engaging visitors.



# REGIONAL CLIMATE IMPACTS

## Examples of Common Climate Change Impacts on the Park Visitor Experience

Redistribution of tourism and recreational activities may occur as ideal climates are likely to shift toward higher altitudes.

Changes in composition and range of terrestrial and aquatic wildlife may impact recreational fishing.

Decreased intensity of fall foliage coloration due to more frequent drought conditions.

Fire season length and severity increasing as some areas become hotter and drier.

Increase in coastal erosion will affect travel and tourist destinations.

Impacts to human health include: increased incidence of heat-related illnesses (stress, stroke); respiratory distress and asthma; allergies; increased prevalence of waterborne pathogens and vector-borne illnesses such as Lyme disease, West Nile Virus, and dengue fever.

More intense storms and flooding will impact historic sites and other park infrastructure. Visitor centers, roads, and trails may have to close temporarily or permanently due to extreme weather events.

Reduction in snowpack could significantly reduce opportunities for winter recreational activities such as snow shoeing or cross country skiing.



# ALASKA BOREAL AND ARCTIC



PRECIPITATION

## What We Know

Since the 1960s, melt date in Northern Alaska has advanced by 8 days.



TEMPERATURE

More precipitation in western & interior Alaska, less in the Arctic: altered patterns & warmer temps mean more fresh water discharge & sea level rise.



VEGETATION

Growing season has lengthened by 2.6 days in the past 10 yrs.



WILDLIFE

Shifts in sea ice extent affect timing of the Bering Sea's plankton bloom, resulting in shifts in marine mammal populations.



CULTURAL RESOURCES

Relocation of subsistence activities more expensive & time consuming.

## Projections

Mean frost days (< 32oF; < 0oC) will decrease by 20 to 40 days by end of 21st century.

Thawing permafrost may release mercury & organic pollutants into aquatic environments.

Conversion of tundra to shrubland.

Reduction or elimination of arctic & alpine birds' breeding habitats.

Glacial & ice melt may lead to discovery of cultural artifacts at prehistoric sites.

For more information on impacts on the Alaska Boreal and Arctic, scan the QR code below.



# ARID LAND

## What We Know



PRECIPITATION

Most extreme multi-year drought in the last 500 years, reduced water for people & nature.



TEMPERATURE

Warmer & earlier springs by 2-3 weeks over past 50 years.



VEGETATION

Insect outbreaks increasing tree, shrub & grass mortality.



WILDLIFE

Animal species shifts North; changes in timing of life cycles.

## Projections

Less precipitation leads to changes in runoff patterns, increased flood risk.

Rains longer into the winter, less snow fall, shortened snowpack season, & snow melting earlier in spring.

Increasing temperatures and dryness will cause increased wildfire season, causing a great loss of vegetation.

Desert bighorn sheep populations going extinct in desert climates.

For more information on impacts on the Arid Land, scan the QR code below.



# ATLANTIC COAST

## What We Know



PRECIPITATION

Precipitation increased overall; more winter rain than snow.



TEMPERATURE

Sea surface temperature increasing in both north & south of region.



VEGETATION

For plants, blooming is about 3 days earlier for every 1°C increase.



WILDLIFE

First arrival dates of migrant birds shifted on average about 13 days earlier; mating/breeding seasons about 10-13 days earlier for some species.

## Projections

Net increase in the conditions to increase the number of severe thunderstorms.

Summer heat index increase & warmer winters.

Reduction in synchrony between plants & pollinators.

On average, first arrival dates of migrant birds has shifted to 13 days earlier.

For more information on impacts on the Atlantic Coast, scan the QR code below.



# EASTERN WOODLANDS AND FORESTS



PRECIPITATION

## What We Know

Heavy precipitation events increased (rainfall of > 2 in. in 28 hrs.).



TEMPERATURE

Decrease in extremely cold temperature days; frost free season longer by 2 weeks.



VEGETATION

Growing season lengthening; spring arriving earlier.



WILDLIFE

Birds, butterflies and alpine herbs boundaries shifting 3.8 mi (6.1 km) per decade.

## Projections

Stream flow extremes expected to increase; higher in winter & spring, lower in summer compared to past.

Frost free season could be extended 4 to 8 weeks.

Longer droughts, increased flooding & heat waves will cause stress to plants.

Coordination of predator-prey, & pollinator-plant lifecycle timing will become unbalanced.

For more information on impacts on the Eastern Woodlands and Forests, scan the QR code below.



# GREAT LAKES



PRECIPITATION

## What We Know

Precipitation in winter more variable than in summer.



TEMPERATURE

Warmer summer surface water temperatures in Lakes Michigan, Huron, & Superior.



VEGETATION

Growing season expanding due to later first freeze & earlier last freeze.



WILDLIFE

Breeding patterns & winter distribution of birds altered.



CULTURAL RESOURCES

Historic structures and archaeological resources vulnerable to temperature, wind, moisture changes, & pests.

## Projections

Reduced lake-effect snowfall may impact ecologically/economically vital species.

Region will get even warmer.

Longer growing season & warmer winters increase risks from insects & disease.

Distribution of fish altered with water temperature changes.

More frequent and intense severe storms and floods pose threats to historic structures.

For more information on impacts on the Great Lakes, scan the QR code below.



# GULF COAST



PRECIPITATION

## What We Know

Since the 1970s, significant warming has occurred, especially in winter months.



TEMPERATURE

Annual rainfall has increased by 20-30% or more over the past 100 years.



VEGETATION

Sea level rise threatens mangroves and wetlands, increasing tidal flooding impacting coastal forest species.



WILDLIFE

Tropical species are moving into the U.S. from Mexico; Florida has 5 new species of tropical dragonflies and butterflies.

## Projections

July heat index will increase, winter cold spells will decrease, and frost line will shift northward.

Net increase of severe thunderstorm days, especially in Gulf of Mexico and Atlantic coastal regions.

Coastal forests are expected to be reduced due to conversion to salt marshes.

Bonefish, flounder, gag grouper, gray snapper and other important Florida game fish are highly vulnerable to sea level rise.

For more information on impacts on the Gulf Coast, scan the QR code below.



# PACIFIC COAST



PRECIPITATION

## What We Know

More drought.



TEMPERATURE

Increase in rain & decrease in snow events.



VEGETATION

Longer growing season & spring plant bloom dates earlier by 5-10 days since 1950.



WILDLIFE

Declining native zooplankton, salmon, west coast groundfish.



CULTURAL RESOURCES

Archaeological sites of America's native settlers with artifacts or historic structures (e.g. Point Reyes) threatened by erosion & storm surges.

## Projections

Decreased average streamflow; more flooding in winter.

More frequent extreme hot events & less frequent & severe cold ones.

Tree species decline due to decreasing summer fog & increasing drought.

Rising seas inundate seabird habitats.

Permanence of historic structures makes them harder to move and therefore more vulnerable.

For more information on impacts on the Pacific Coast, scan the QR code below.





# PACIFIC ISLANDS



PRECIPITATION

## What We Know

Heavy downpours in Hawaii increased ~12% between 1958 & 2007; total rainfall declined in past 2 decades.



TEMPERATURE

Sea surface & deep ocean temperatures are warmer.



VEGETATION

Wetland kalo is losing ideally cool water for cultivation & irrigation.



WILDLIFE

Marine species populations that rely on coral for breeding, food, & protection are declining.



CULTURAL RESOURCES

Coastal archeological sites are threatened by erosion & storm surges; beaches are threatened by SLR; coral resources declining affecting local economies; agriculture (terrestrial & aquatic inconsistent with past.

## Projections

With sea level rise, higher storm surges, coastal erosion, flooding, & saltwater infiltration of freshwater resources are occurring.

Air & ocean temperatures expected to continue to increase.

Cloud forests will continue to decline as temperature, rainfall & humidity shift.

Increased flooding, and increased damage from storm surges; decrease in water quality and biodiversity.

For more information on impacts on the Pacific Islands, scan the QR code below.



# PRAIRIES POTHOLES AND GRASSLANDS



PRECIPITATION

## What We Know

9% increased precipitation overall in prairie pothole; about 5-20% in SD, OK, TX & KS.



TEMPERATURE

Less temperature difference between day & night; less cold & more hot days.



VEGETATION

Productivity of native grasslands will be significantly impacted, mainly due to spring & winter seasonality changes in precipitation impacting soil moisture.



WILDLIFE

Drying up of this region disrupts migratory duck species, especially waterfowl & grassland birds; breeding is disrupted by encroaching woody vegetation.

## Projections

More extreme events, rainfall and length between events; changes will destroy wetland habitat, releasing stored carbon.

Summer temperature increases will be greater than winter increases.

Tallgrass prairie plant species becoming more diverse because of rainfall variability & quantity.

Positive effects of warming for duck populations will be countered by wetland loss due to drought.

For more information on impacts on the Prairies Potholes and Grasslands, scan the QR code below.



# WESTERN MOUNTAINS AND FORESTS



PRECIPITATION

## What We Know

Rain instead of snow, earlier snow melt, & changes in river flow.



TEMPERATURE

Spring & summer 1987 to 2003 warmest period on record.



VEGETATION

Growing season has increased by about 2 days since 1948.



WILDLIFE

Substantial upward shift in elevation limit for half of small-mammal species in Yosemite.

## Projections

Reduced snowpack & earlier runoff will limit water for irrigation & agriculture & impact fish populations.

Reduced snowpack & earlier runoff will limit water for irrigation & agriculture & impact fish populations.

In California, a shift from needle-leaved toward broad-leaved trees.

Temperature & precipitation changes may increase hantavirus, plague, & West Nile virus in wildlife.

For more information on impacts on the Western Mountains and Forests, scan the QR code below.



# COMMUNICATING ABOUT CLIMATE CHANGE IN NATIONAL PARKS

The National Park system provides excellent opportunities to engage citizens in climate change dialogue since tangible examples of climate change impacts can be seen first-hand. Park Service staff can lead by example and facilitate conversation in order to motivate others to take action. Knowing your park's climate change impacts and audience perspectives, will assist you in meeting the needs and concerns of visitors. Communicating with a diverse audience, based upon a better understanding of their prior knowledge, beliefs, and values can have a significant impact, encourage them to learn more and take action to mitigate their contribution to climate change. Presenting messages in ways that resonate with your visitors by translating complex science into understandable terminology and sharing place-based examples can provide clarity to questions or concerns people have about climate change.

# REFERENCES & RESOURCES

## Cited References

1. Leiserowitz, A., Maibach, E., Roser-Renouf, C. & Smith, N. (2011) Global Warming's Six Americas, May 2011. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication.
2. Thompson, J. (2013) Building Place-Based Climate Change Education through the Lens of National Parks and Wildlife Refuges. Place-based Climate Change Education Partnership.
3. Leiserowitz, A., Maibach, E., Roser-Renouf, C., Feinberg, G., Howe, P. (2013) Americans' actions to limit global warming in April 2013. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication.

## Photography

Cover  
Ranger guided canoe trip,  
Everglades National Park. Photo by NPS

Page 4  
2013 Climate Change Communication Interns,  
Kenilworth Park & Aquatic Gardens.  
Photo by I. Barin

## Additional Resources

Center for Climate Change Communication,  
George Mason University  
[www.climatechangecommunication.org/reports](http://www.climatechangecommunication.org/reports)

US Global Change Research Program Reports  
[www.globalchange.gov/resources/reports](http://www.globalchange.gov/resources/reports)

Audience Segmentation Quiz  
[www.uw.kqed.org/climatesurvey/index-kqed.php](http://www.uw.kqed.org/climatesurvey/index-kqed.php)

EPA's Climate Impacts & Adaptation Regional Map  
[www.epa.gov/climatechange/impacts-adaptation](http://www.epa.gov/climatechange/impacts-adaptation)

NPS Climate Change Response Program  
[www.nps.gov/subjects/climatechange](http://www.nps.gov/subjects/climatechange)

NPS Climate Friendly Parks  
[www.nps.gov/climatefriendlyparks](http://www.nps.gov/climatefriendlyparks)

Sustainable Operations  
[www.nps.gov/sustainability](http://www.nps.gov/sustainability)

Earth to Sky Partnership  
[www.earthtosky.org](http://www.earthtosky.org)

Climate Access  
[www.climateaccess.org](http://www.climateaccess.org)



4C

George Mason University  
Center for Climate Change Communication



This guide was made possible and produced through a partnership between the National Park Service and the Center for Climate Change Communication (4C) at George Mason University. The content was developed by NPS Climate Change Communication Interns: Jenell Walsh-Thomas, Nora Davis, Tim Kelly, and John Kotcher. Designed by Ian Barin and edited by Sarah Erickson. We greatly appreciate the guidance and substantial contributions provided by Angie Richman, NPS Climate Change Response Program, and Giselle Mora-Bourgeois, Urban Ecology Research Learning Alliance.

### For More Information Contact

Jenell Walsh-Thomas, MS  
PhD Student  
Center for Climate Change  
Communication  
George Mason University  
4400 University Drive  
Research Hall 256C, MS 6A8  
Fairfax, VA 22030  
jwalshth@gmu.edu

Diane Pavek, PhD.  
Research and T&E Coordinator,  
Botanist  
Natural Resources & Science,  
National Capital Region  
4598 MacArthur Blvd, NW  
Washington, DC 20007  
Phone: 202-339-8309  
Diane\_Pavek@nps.gov

### Scan the QR Code Using Your Smartphone

Complete Bioregion  
Climate Change  
Talking Points Reports

Understanding the Science of  
Climate Change Talking Points

[www.nps.gov/subjects/climatechange/resources.htm](http://www.nps.gov/subjects/climatechange/resources.htm)

