

Climate change impacts on the United States

Long-term scientific observations show that the Earth's climate is now changing at a rapid rate, and indications are that even greater climate change is very likely this century. The National Assessment of the Potential Consequences of Climate Variability and Change, part of the United States Global Change Research Program, is a major ongoing effort to understand what climate change means for the United States. In 2000, the National Assessment Synthesis Team, a committee of government, university, industry, and nongovernmental organization experts, wrote an Overview of the Assessment (*Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*. Cambridge University Press. 154 pages). This overview is based on a longer, referenced "Foundation" report. The National Park Service participated in workshops on this report and reviewed various draft documents.

The overview summarizes past and predicted changes in America's climate, and discusses how the nation and its ecosystems may consequently change in the future. Regional overviews are also provided, focusing on possible climate changes in different parts of the country and key issues facing each region. The regional reviews cover the Northeast, Southeast, Midwest, Great Plains, West, Pacific Northwest, Alaska, islands in the Caribbean and the Pacific, and native peoples and homelands. In addition, the report addresses the key issues and implications of climate change for five sectors: agriculture, water, human health, coastal areas and marine resources, and forests.

Mike Soukup, Associate Director for Natural Resource Stewardship and Science, observed "This document contains much useful information relevant to the future of every park.... Although it does not focus on national parks or protected areas per se, potential impacts to them can easily be inferred." Among the key findings of the report of relevance to national park units:

- The United States will very likely become substantially warmer. Droughts and flash floods are also likely to become more frequent and intense. Heat waves are very likely to increase in frequency, but milder winters also are likely in some areas.
- Many ecosystems are highly vulnerable to the projected rate and magnitude of climate change. A few, such as alpine meadows in the Rocky Mountains and some barrier islands, are likely to disappear entirely in some areas. Others, such as forests of the Southeast, are likely to experience major species shifts or break up into a mosaic of grasslands, woodlands, and forests. Losses in local biodiversity are likely to accelerate.

- Sea-level rises are very likely to cause the loss of some barrier beaches, islands, marshes, and coastal forests through the 21st century.
- Increased carbon dioxide and ocean temperatures, combined with other stresses, will possibly exacerbate coral reef bleaching and die-off.
- It is very probable that rising temperatures will cause further permafrost thawing, damaging roads, buildings, and forests in Alaska.
- Reduced summer runoff, increased winter runoff, and increased demands are likely to compound current stresses on water supplies and flood management, especially in the western United States.
- Increases in water temperature and changes in seasonal patterns of runoff will very likely disturb fish habitat and affect recreational uses of lakes, streams, and wetlands.
- Coastal inundation from storm surge combined with rising sea level will very likely increase threats to water, sewer, transportation and communication systems, and buildings.

Those interested in reading the overview will find it posted on the Internet in html and pdf formats. The URL is: <http://www.usgcrp.gov/usgcrp/Library/nationalassessment/overview.htm>.

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THE POTENTIAL CONSEQUENCES OF CLIMATE VARIABILITY AND CHANGE

Overview

National Assessment
Synthesis Team

U.S. Global Change
Research Program

