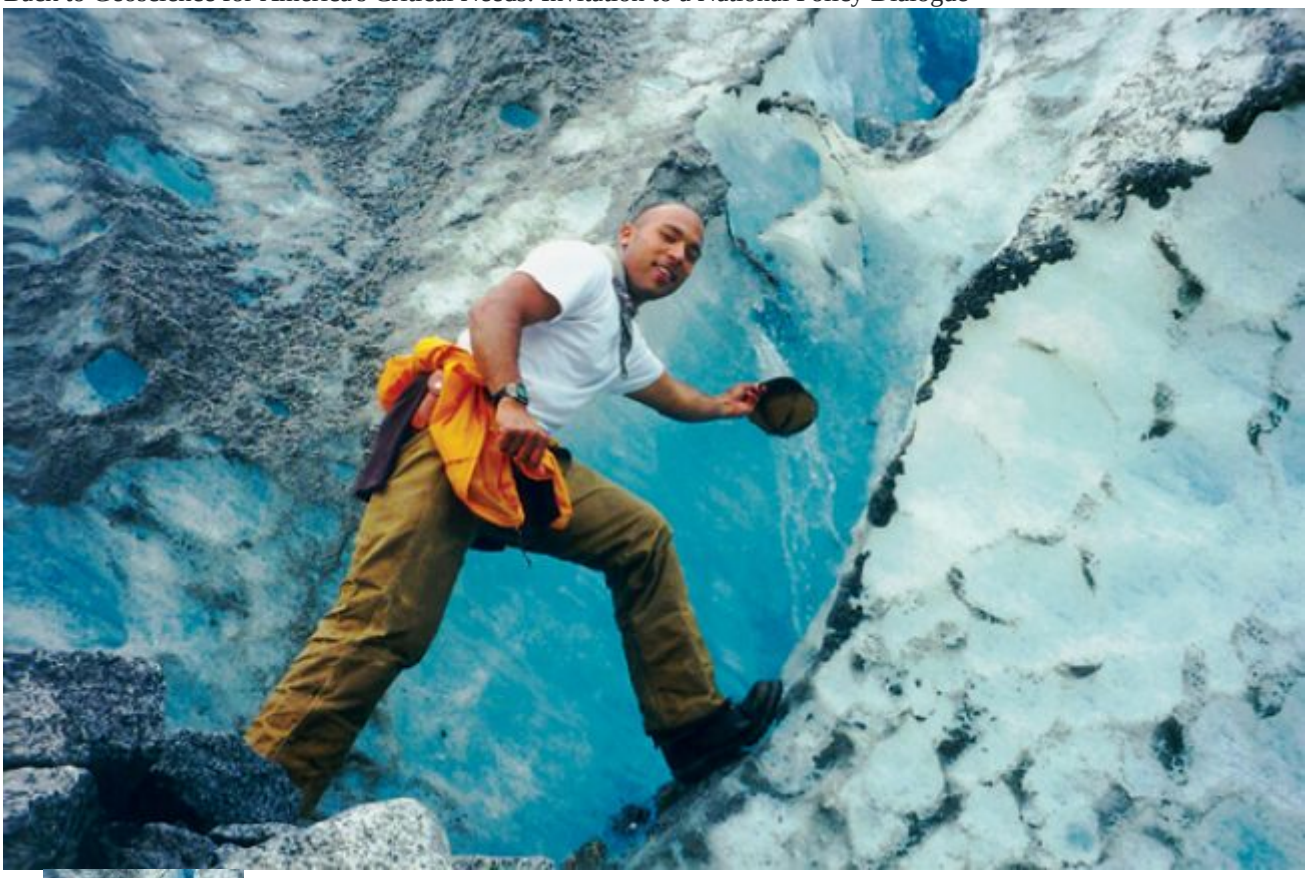
Critical Needs: Climate Change

Back to Geoscience for America's Critical Needs: Invitation to a National Policy Dialogue



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Confronting Climate Variability

Decades of scientific research show that Earth’s climate, the long-term seasonal averages of weather on a regional or global scale, changes as a result of both natural and human causes. Over the past century, global average temperatures have increased significantly.1 These changes drive sea level rise and exacerbate ocean acidification. Climate change will likely lead to greater storm surges, droughts, heat waves, flooding, and other events that could cost the nation billions of dollars and affect domestic and global security.

Geoscientists use rock and ice cores to study records of past climate, satellites and weather stations to monitor current climate, and sophisticated computer models to project future conditions. This information supports decisions about agriculture, human health, and critical infrastructure.

To better equip society for a changing climate:

Encourage research and improve models to understand the connection between Earth’s systems, human activity, and climate change. For more than four billion years, land, water, ice, and the ocean have helped shape, and have been shaped by, a changing climate. Understanding past climates through evidence preserved in the geologic record increases the accuracy of today’s climate models and the ability to forecast how ecosystems will respond to climate change.

Plan for the diverse and complex societal impacts of climate change. Holistic plans consider not just single weather events but extended effects, such as drought, crop failures, emerging diseases, and damage to ecosystems, which carry the potential for long-term social and economic impact. Information from geoscientists, who are familiar with the interrelated processes that impact climate, strengthens climate-change adaptation plans.

Evaluate strategies for limiting carbon in the atmosphere. Scientific evidence indicates that carbon in the atmosphere is a key factor in rising global temperatures. Reducing carbon generation and storing it in geologic formations, also known as carbon capture and storage (CCS), are effective ways to limit atmospheric CO_2.

References

1Temperature Anomalies Time Series, June 2015. National Oceanic and Atmospheric Administration. https://www.ncdc.noaa.gov/sotc/global/201506

Learn more

- Geoscience for America's Critical Needs: Invitation to a National Policy Dialogue (Webpage and Report), *American Geosciences Institute*

  This document outlines high-level actions to address major policy issues where the geosciences play a significant role. Download the report

- Critical Issues: Climate (Webpage), *American Geosciences Institute*
  Overview of the geoscience behind climate change issues.