

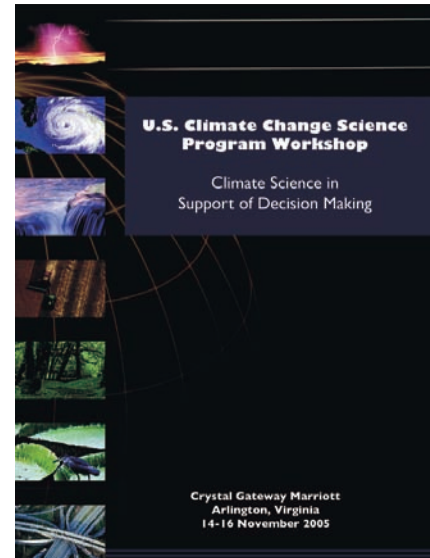
## DECISION SUPPORT: INFORMATION TO SUPPORT POLICY DEVELOPMENT AND ADAPTIVE MANAGEMENT

CCSP sponsors and conducts research that is ultimately related to policy and adaptive management decisionmaking. CCSP's decision-support approach is guided by several general principles, including:

- Early and continuing involvement of stakeholders
- Explicit treatment of uncertainties
- Transparent public review of analysis questions, methods, and draft results
- Evaluation of lessons learned from ongoing and prior decision-support and assessment activities.

### CCSP Workshop

CCSP held a workshop, *Climate Science in Support of Decisionmaking*, in November 2005 in which over 700 individuals participated, including an international audience of climate scientists, decisionmakers, and users of information on climate variability and change. A variety of sessions addressed recent and ongoing global change assessments, the application of climate science to adaptive management, and the use of climate information in analyses of policy options. Participants provided positive feedback on this set of opportunities to learn about CCSP's activities and exchange information with scientists, decisionmakers, and other stakeholders. CCSP will use insights from the workshop to guide current and future CCSP decision-support activities, including future forums for dialog on this aspect of the program.



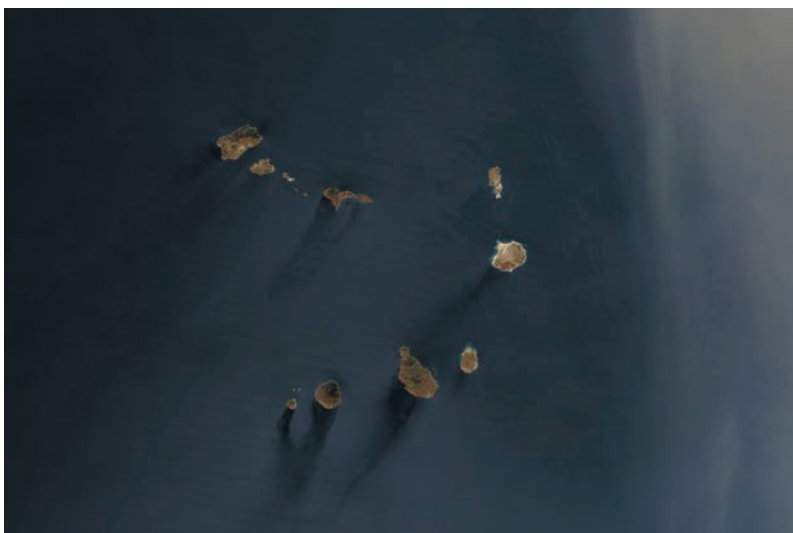
## Synthesis and Assessment Products

CCSP is generating synthesis and assessment products to support informed discussion and decisionmaking on climate variability and change by policymakers, resource managers, stakeholders, the media, and the general public. The first of these reports, on temperature trends in the atmosphere and at the Earth's surface, has been completed (see Climate Variability and Change chapter).

The synthesis and assessment products integrate research results focused on key issues and related questions frequently raised by decisionmakers. Current evaluations of the science can be used for informing public debate, policy development, and adaptive management decisions, and for defining and setting the future direction and priorities of the program. The synthesis and assessment products constitute an important new form of topic-driven integration of U.S. global change assessment efforts. These products will be U.S. Government disseminations, subject to the provisions of the Information Quality Act (Section 515 of the Treasury and General Government Appropriations Act of 2001) and the Federal Advisory Committee Act Amendments of 1997 (PUB. L. 105-153, SEC. 2(A), (B), DEC. 17, 1997, 111 STAT. 2689.).

The Decision Support chapter of this report provides a description of each of the products. More information about the products can be obtained from the CCSP web site at <[www.climatescience.gov](http://www.climatescience.gov)>.

The synthesis and assessment products are being generated by researchers in a process that involves review by experts, public comment from stakeholders and the general public, and final approval by the departments/agencies involved in CCSP. Formal endorsement of the products by the Federal Government will enhance their value for decisionmakers and the public at large. The program has prepared guidelines that describe steps to be followed in each of three phases of the preparation process: developing the prospectus, drafting and revising, and final approval and publication. This methodology for product development facilitates involvement of the research community and user groups in ensuring that the products are focused in a useful fashion and meet the highest standards of scientific excellence. The guidelines also encourage



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transparency by ensuring that public information about the status of the products will be provided through the Federal Register, on the CCSP web site, and through other means. If further clarification of specific issues is required, the NRC will provide advice on an as-needed basis to the lead agency responsible for the preparation of each product.

## SUMMARY OF SYNTHESIS AND ASSESSMENT PRODUCTS

**CCSP GOAL 1** Extend knowledge of the Earth's past and present climate and environment, including its natural variability, and improve understanding of the causes of observed variability and change.

1.1 Temperature trends in the lower atmosphere: Steps for understanding and reconciling differences.

1.2 Past climate variability and change in the Arctic and at high latitudes.

1.3 Re-analyses of historical climate data for key atmospheric features: Implications for attribution of causes of observed change.

**CCSP GOAL 2** Improve quantification of the forces bringing about changes in the Earth's climate and related systems.

2.1 A. Scenarios of greenhouse gas emissions and atmospheric concentrations.  
B. Global change scenarios: Their development and use.

2.2 North American carbon budget and implications for the global carbon cycle.

2.3 Aerosol properties and their impacts on climate.

2.4 Trends in emissions of ozone-depleting substances, ozone layer recovery, and implications for ultraviolet radiation exposure and climate change.

**CCSP GOAL 3** Reduce uncertainty in projections of how the Earth's climate and related systems may change in the future.

3.1 Climate models: An assessment of strengths and limitations for user applications.

3.2 Climate projections based on emissions scenarios for long-lived radiatively active trace gases and future climate impacts of short-lived radiatively active gases and aerosols..

3.3 Weather and climate extremes in a changing climate.

3.4 Abrupt climate change.

**CCSP GOAL 4** Understand the sensitivity and adaptability of different natural and managed ecosystems and human systems to climate and related global changes.

4.1 Coastal elevations and sensitivity to sea-level rise.

4.2 State-of-knowledge of thresholds of change that could lead to discontinuities in some ecosystems and climate-sensitive resources.

4.3 The effects of global change on agriculture, biodiversity, land, and water resources.

4.4 Preliminary review of adaptation options for climate-sensitive ecosystems and resources.

4.5 Effects of climate change on energy production and use in the United States.

4.6 Analyses of the effects of global change on human health and welfare and human systems.

4.7 Impacts of climate variability and change on transportation systems and infrastructure: Gulf coast study.

**CCSP GOAL 5** Explore the uses and identify the limits of evolving knowledge to manage risks and opportunities related to climate variability and change.

5.1 Uses and limitations of observations, data, forecasts, and other projections in decision support for selected sectors and regions.

5.2 Best-practice approaches for characterizing, communicating, and incorporating scientific uncertainty in decisionmaking.

5.3 Decision-support experiments and evaluations using seasonal-to-interannual forecasts and observational data.

# O U R C H A N G I N G P L A N E T

## Commitment to “Lessons Learned” in Decision Support and Assessment

To build on the experiences of earlier assessment activities, CCSP has requested that the NRC carry out an analysis of global change assessments that have addressed topics broadly similar to those encompassed by CCSP. The study will be approached in two steps:

- 1) The committee will conduct a comparative analysis of past assessments that have stated objectives similar to those of the CCSP. Specifically, the committee will examine the strengths and weaknesses of selected past assessments in the following areas:
  - Establishing clear rationales and appropriate institutional structures
  - Designing and scheduling assessment activities
  - Involving the scientific community and other relevant experts in the preparation and review of assessment products
  - Engaging the potential users of assessment products
  - Accurately and effectively communicating scientific knowledge, uncertainty, and confidence limits
  - Guiding plans for future global change research activities, including observation, monitoring, and modeling of past and future changes
  - Creating assessment products that are valued by their target audiences.
- 2) The committee will identify approaches (in terms of geographic scale, scope, assessment entity, and timing) and products that are most effective for meeting CCSP’s stated objectives for assessments.

