

# **USGCRP INTRODUCTION & OVERVIEW**

*from the*

## **Strategic Plan for the Climate Change Science Program**

By the agencies and staff of the  
US Climate Change Science Program

**Review draft dated 11 November 2002**

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11 November 2002

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Dear Colleague,

The Climate Change Science Program will hold the U.S. Climate Change Science Program Planning Workshop for Scientists and Stakeholders at the Marriott Wardman Park Hotel in Washington, D.C., from 3-5 December 2002. The purpose of the Workshop is to provide a comprehensive review of the discussion draft of the Strategic Plan for U.S. climate change and global change research. This Workshop will offer extensive opportunities for the scientific and stakeholder communities to provide comment and input to the Climate Change Science Program Strategic Plan. When finalized by April 2003, the Strategic Plan will provide the principal guidance for U.S. climate change and global change research during the next several years, subject to revisions as appropriate to respond to newly developed information and decision support tools.

We are writing to request your comments on the discussion draft of the Climate Change Science Program Strategic Plan. Comments on all elements of the plan from all communities are essential in order to improve the plan and identify gaps. In your review, we ask you to provide a perspective on the content, implications, and challenges outlined in the plan as well as suggestions for any alternate approaches you wish to have considered, and the types of climate and global change information required by policy makers and resource managers. We also ask that you comment on any inconsistencies within or across chapters, and omissions of important topics. For any shortcomings that you note in the draft, please propose specific remedies. To participate in the review it is not necessary that you review the entire plan.

We ask that comments be submitted by E-mail to <comments@climatescience.gov>. All comments submitted by 13 January 2003 will be posted on the <<http://www.climatescience.gov>> website for public review. While we are unable to promised detailed responses to individual comments, we confirm that all submitted comments will be given consideration during the development of the final version of the Strategic Plan.

Attached to this letter are instructions and format guidelines for submitting review comments. Following the instructions will ensure that your comments are properly processed and given appropriate consideration. If you wish to distribute copies of the plan to colleagues to participate in the review, please provide them with a copy of this letter as well as the attached instructions and format guidelines. We have posted the plan on the workshop website at <<http://www.climatescience.gov>>. PDF files for individual chapters of the plan can be downloaded from this site. If you have any questions, please contact: Sandy MacCracken at 1-202-419-3483 (voice), 1-202-223-3065 (fax), or via the address in the footer below.

We appreciate your contribution of time and expertise to this review, and look forward to your response.

Sincerely,

James R. Mahoney, Ph.D.  
Assistant Secretary of Commerce for Oceans and Atmosphere, and  
Director, U.S. Climate Change Science Program

## Instructions For Submission of Strategic Plan Review Comments

Thank you for participating in the review process. Please follow the instructions for preparing and submitting your review. Using the format guidance described below will facilitate our processing of reviewer comments and assure that your comments are given appropriate consideration. An example of the format is also provided. Comments are due by **13 January, 2003**.

- Select the chapter(s) or sections of chapters which you wish to review. It is not necessary that you review the entire plan. In your comments, please consider the following issues:
  - **Overview:** overview on the content, implications, and challenges outlined in the plan;
  - **Agreement/Disagreement:** areas of agreement and disagreement, as appropriate;
  - **Suggestions :** suggestions for alternative approaches, if appropriate;
  - **Inconsistencies:** inconsistencies within or across chapters;
  - **Omissions :** omissions of important topics;
  - **Remedies:** specific remedies for identified shortcomings of the draft plan;
  - **Stakeholder climate information:** type of climate and global change information required by representative groups;
  - **Other:** other comments not covered above.
- Please do not comment on grammar, spelling, or punctuation. Professional copy editing will correct deficiencies in these areas for the final draft.
- Use the format guidance that follows for organizing your comments.
- Submit your comments by email to <comments@climatescience.gov> by 13 January, 2003.

### Format Guidance for Comments

Please provide background information about yourself on the first page of your comments: your name(s), organization(s), area of expertise(s), mailing address(es), telephone and fax numbers, and email address(es).

- Overview comments on the chapter should follow your background information and should be numbered.
- Comments that are specific to particular pages, paragraphs or lines of the chapter should follow your overview comments and should identify the page and line numbers to which they apply.
- Comments that refer to a table or figure should identify the table or figure number. In the case of tables, please also identify the row and column to which the comment refers.
- Order your comments sequentially by page and line number.
- At the end of each comment, please insert your name and affiliation.

## **Format Example for Comments**

### **I. Background Information**

**Name(s):** John Doe

**Organization(s):** University College

**Mailing Address(es):** 101 1<sup>st</sup> Street, New York, New York, 10001

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**Area of Expertise:** Atmospheric Composition

### **II. Overview Comments on Chapter 5: Atmospheric Composition**

**First Overview Comment:** (Comment)

**Reviewer's name, affiliation:** John Doe, University College

**Second Overview Comment:** (Comment)

**Reviewer's name, affiliation:** John Doe, University College

### **III. Specific Comments on Chapter 5: Atmospheric Composition**

Page 57, Line 5: (Comment)

John Doe, University College

Page 58, Line 32 - Page 59, Line 5: (Comment)

John Doe, University College

Table 1-4, Row 3, Column 6: (Comment)

John Doe, University College

Please send comments by email to <comments@climatescience.gov>

## Foreword

In February 2002 President George W. Bush announced the formation of a new management structure, the Climate Change Science Program (CCSP), to coordinate and direct the US research efforts in the areas of climate and global change. These research efforts include the US Global Change Research Program (USGCRP) authorized by the Global Change Research Act of 1990, and the Climate Change Research Initiative (CCRI) launched by the President in June 2001 to reduce significant uncertainties in climate science, improve global climate observing systems, and develop resources to support policymaking and resource management.

The President's Climate Change Research Initiative was launched to provide a distinct focus to the 13-year old Global Change Research Program. The CCRI focus is defined by a group of uncertainties about the global climate system that have been identified by policymakers and analyzed by the National Research Council in a 2001 report requested by the Administration.

The Climate Change Science Program aims to balance the near-term (2- to 4-year) focus of the CCRI with the breadth of the USGCRP, pursuing accelerated development of answers to the scientific aspects of key climate policy issues while continuing to seek advances in the knowledge of the physical, biological and chemical processes that influence the Earth system.

This *discussion draft* strategic plan has been prepared by the thirteen federal agencies participating in the CCSP, with input from a large number of scientific steering groups and coordination by the CCSP staff under the leadership of Dr. Richard H. Moss, to provide a vehicle to facilitate comments and suggestions by the scientific and stakeholder communities interested in climate and global change issues.

We welcome comments on this draft plan by all interested persons. Comments may be provided during the US Climate Change Science Program Planning Workshop for Scientists and Stakeholders being held in Washington, DC on December 3 – 5, 2002, and during a subsequent public comment period extending to January 13, 2003. Information about the Workshop and the written comment opportunities is available on the web site [www.climatescience.gov](http://www.climatescience.gov). A specially formed committee of the National Research Council is also reviewing this draft plan, and will provide its analysis of the plan, the workshop and the written comments received after the workshop. A final version of the strategic plan, setting a path for the next few years of research under the CCSP, will be published by April 2003. We appreciate your assistance with this important process.

James R. Mahoney, Ph.D.  
Assistant Secretary of Commerce for Oceans and Atmosphere, and  
Director, Climate Change Science Program

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- Chapter 12. Grand Challenges in Modeling, Observations, and Information Systems

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- Chapter 15. Program Management and Review

Acronyms

Authors and Contributors

1                                   **USGCRP INTRODUCTION AND OVERVIEW**

2  
3   The United States Global Change Research Program (USGCRP) was created in 1989 as a  
4   high-priority national research program to address key uncertainties about changes in the  
5   Earth’s global environmental system, both natural and human-induced; to monitor, understand,  
6   and predict global change; and to provide a sound scientific basis for national and international  
7   decisionmaking. Since its inception, the USGCRP has strengthened research on global  
8   environmental change and fostered insight into the processes and interactions of the Earth  
9   system, including the atmosphere, oceans, land, frozen regions, plants and animals, and human  
10   societies. The USGCRP was codified by Congress in the Global Change Research Act of  
11   1990 (PL 101-606). The basic rationale for establishing the program was that the issues of  
12   global change are so complex and wide-ranging that they extend beyond the mission, resources,  
13   and expertise of any single agency, requiring instead the integrated efforts of several agencies.  
14

15   The USGCRP is organized into a set of linked research program elements, which together  
16   support scientific research across a wide range of interconnected issues of climate and global  
17   change. Each of these research elements focuses on topics crucial to documenting and  
18   monitoring change, improving projections of change, or developing useful products to support  
19   decisionmaking. The program focuses on these elements because they are all major  
20   components of the Earth’s environmental systems, they are undergoing changes due to a variety  
21   of natural and human-induced causes, and changes in one area affect processes and the state of  
22   the others such that it is not possible to understand how the Earth system or its any of its  
23   components (e.g., climate) will evolve without understanding important characteristics of the  
24   others.  
25

26   The research program elements include:  
27

28   **Atmospheric Composition**—USGCRP-supported research focuses on how the composition  
29   of the global atmosphere is altered by human activities and natural phenomena, and how such  
30   changes in atmospheric composition influence climate, ozone, ultraviolet radiation, pollutant  
31   exposure, ecosystems, and human health. Research addresses processes affecting the recovery  
32   of the stratospheric ozone layer; the properties and distribution of greenhouse gases and  
33   aerosols; long-range transport of pollutants and implications for air quality; and integrated  
34   assessments of the effects of these changes. Atmospheric composition issues involving  
35   interactions with climate variability and change—such as interactions between the climate system  
36   and the stratospheric ozone layer, or the effects of global climate change on regional air  
37   quality—are of particular interest at present.  
38

39   **Climate Variability and Change**—USGCRP-supported research on climate variability and  
40   change is being focused on how climate elements that are particularly important to human and  
41   natural systems—especially temperature, precipitation, clouds, winds, and storminess—are

## DRAFT

1 affected by changes in the Earth system that result from natural processes as well as from human  
2 activities. Activities in the program are specifically oriented toward predictions of seasonal to  
3 decadal climate variations (e.g., the El Niño-Southern Oscillation (ENSO)); improved  
4 detection, attribution, and projections of longer-term changes in climate; the potential for  
5 changes in extreme events at regional to local scales; the possibility of abrupt climate change;  
6 and ways to improve the communication of this information (including characterization of  
7 uncertainty) to inform national dialogue and support public and private sector decisionmaking.  
8

9 **Global Water Cycle**—USGCRP-supported research on the global water cycle focuses on the  
10 effects of variability and change in the water cycle and climate systems on the capacity of  
11 societies to provide adequate supplies of clean water; and how natural processes and human  
12 activities influence the distribution and quality of water within the Earth system and to what  
13 extent the resultant changes are predictable. Specific areas include: identifying trends in the  
14 intensity of the water cycle and determining the causes of these changes (including feedback  
15 effects of clouds on the global water and energy budgets as well as the global climate system);  
16 predicting precipitation and evaporation on timescales of months to years and longer; and  
17 modeling physical/biological processes (including interactions with human health) and human use  
18 of water, to facilitate efficient water resources management.  
19

20 **Land Use/Land Cover Change**—USGCRP-supported research on changes in land use and  
21 land cover focuses on the processes that determine the temporal and spatial distribution of land  
22 cover and land use change at local, regional, and global scales; how land use and land cover can  
23 be projected over timescales of 10-50 years; how the dynamics of land use, land management,  
24 and land cover change will affect global environmental changes and regional-scale environmental  
25 and socioeconomic conditions, including economic welfare and human health; and how global  
26 environmental changes will affect land use and land cover. Research will identify and quantify  
27 the human drivers of land use and land cover change; improve monitoring, measuring, and  
28 mapping of land use and land cover and the management of data systems; and develop  
29 projections of land cover and land use change under various scenarios of climate, demographic,  
30 economic, and technological trends.  
31

32 **Global Carbon Cycle**—USGCRP-supported research on the global carbon cycle focuses on: (1)  
33 identifying the size and variability of the dynamic reservoirs and fluxes of carbon within the Earth  
34 system and how carbon cycling might change and be changed in the future; and (2) providing the  
35 scientific underpinning for evaluating options being considered by society to manage carbon sources  
36 and sinks to achieve an appropriate balance of risk, costs, and benefits. Specific programs and  
37 projects focus on North American and oceanic carbon sources and sinks; the impact of land use  
38 change and resource management practices on carbon sources and sinks; projecting future  
39 atmospheric carbon dioxide and methane concentrations and changes in land-based and marine  
40 carbon sinks; and the global distribution of carbon sources and sinks and how they are changing.  
41



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1 **Ecosystems**—USGCRP-supported research on ecosystems focuses on: (1) how natural and  
2 human-induced changes in the environment interact to affect the structure, functioning, and  
3 services of ecosystems at a range of spatial and temporal scales, including those ecosystem  
4 processes that in turn influence regional and global environmental changes; and (2) what options  
5 society may have to ensure that desirable ecosystem goods and services will be sustained, or  
6 enhanced, in the context of still uncertain regional and global environmental changes. Among the  
7 specific focus areas are the structure and functioning of ecosystems, including cycling of  
8 nutrients, and how these nutrients interact with the carbon cycle; and key processes that link  
9 ecosystems with climate.

10  
11 **Human Contributions and Responses**—USGCRP-supported research on human  
12 contributions and responses to global change is relevant to each of the other research program  
13 elements. The current focus of this research is on the potential effects of global change on  
14 human health; human forcing of the climate system, land use, and other global environmental  
15 changes; regional and sectoral assessments of vulnerability and resilience; decision support  
16 under conditions of significant complexity and uncertainty; and integrated assessment methods.

17  
18 **Contents of Part II Chapters**—The chapters of Part II of the draft Strategic Plan provide an  
19 overview of each research program element, including research questions, an overview of the  
20 current state of knowledge, products and benefits from the research, needed scientific inputs to  
21 reach objectives, and linkages with other national and international programs.

22  
23 **International Linkages**—Internationally, the World Climate Research Programme, the  
24 International Geosphere-Biosphere Programme, and the International Human Dimensions  
25 Programme provide the broad framework within which US research efforts are coordinated  
26 with those of other nations. Robust collaborative efforts with international partners through the  
27 Integrated Global Observing Strategy and the Global Climate, Oceans, and Terrestrial  
28 Observing Systems enhance the productivity of US investments in observations. USGCRP  
29 agencies also have developed bilateral and multilateral cooperative activities with a range of  
30 developed and developing countries: a few examples include ongoing scientific cooperation with  
31 Japan and partnerships with international organizations and national governments to apply  
32 forecasts of ENSO and other products of the program. The program benefits from and  
33 supports activities in developing countries that serve both research and capacity-building  
34 purposes through the System for Analysis, Research, and Training, the Inter-American Institute  
35 for Global Change Research, and other efforts. International linkages particular to specific  
36 areas of research are described in relevant sections of each chapter. Chapter 14 provides an  
37 overview of international activities conducted under the Climate Change Science Program by  
38 the Climate Change Research Initiative and the USGCRP.