AUTHORS & CONTRIBUTORS

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

Contents

- Letter from 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
- Excerpts from the Strategic Plan:
 - o Foreword
 - o Table of Contents
 - **o** Authors and Contributors

US Climate Change Science Program 1717 Pennsylvania Ave., NW Suite 250 Washington, DC 20006 Tel: +1 202 223 6262 Fax: +1 202 223 3065

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 <<u>http://www.climatescience.gov></u>. 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 <u>identify the page and line numbers</u> 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 1st Street, New York, New York, 10001 Phone (s): 800-555-5555 Fax(es): 800-555-6666 E-mail(s): John.Doe@univ.edu 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 <u>www.climatescience.gov</u>. 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

Table of Contentsof theStrategic Plan for the Climate Change Science Program

Chapter 1. Introduction

Part I. The CCRI

- Overview
- Chapter 2. Research Focused on Key Climate Change Uncertainties
- Chapter 3. Climate Quality Observations, Monitoring, and Data Management
- Chapter 4. Decision Support Resources

Part II. The USGCRP

- Overview
- Chapter 5. Atmospheric Composition
- Chapter 6. Climate Variability and Change
- Chapter 7. Water Cycle
- Chapter 8. Land Use/Land Cover Change
- Chapter 9. Carbon Cycle
- Chapter 10. Ecosystems
- Chapter 11. Human Contributions and Responses to Environmental Change
- Chapter 12. Grand Challenges in Modeling, Observations, and Information Systems

Part III. Communication, Cooperation, and Management

- Chapter 13. Reporting and Outreach
- Chapter 14. International Research and Cooperation
- Chapter 15. Program Management and Review

Acronyms

Authors and Contributors

1 2	Authors and Contributors
3	PART I. THE CLIMATE CHANGE RESEARCH INITIATIVE (CCRI)
4	Chapter 2. Research Focused on Key Climate Change Uncertainties
5	Chet Koblinsky, NASA and CCSP
6	Waleed Abdalati, NASA
7	Dan Albritton, NOAA (Atmospheric Composition Working Group Co-Chair)
8	Roger Dahlman, DOE (Carbon Cycle Working Group Co-Chair)
9	Phil Decola, NASA (Atmospheric Composition Working Group Co-Chair)
10	Jared Entin, NASA (Water Cycle Working Group Co-Chair)
11	Rick Lawford, NOAA (Water Cycle Working Group Co-Chair)
12	Jessica Orrego, CCSP
13	Diane Wickland, NASA (Carbon Cycle Working Group Co-Chair)
14	Chapter 3. Climate Quality Observations, Monitoring, and Data Management
15	Lead Authors
16	Chet Koblinsky, NASA and CCSP
17	Margarita Conkright, NOAA and CCSP
18	Howard Diamond, NOAA
19	Wanda Ferrell, DOE (Working Group on Data and Information Chair)
20	Tom Karl, NOAA
21	Tom Spence, NSF (Working Group on Observations and Monitoring Chair)
22	Contributors
23	Waleed Abdalati, NASA
24	Dan Albritton, NOAA
25	Jeff Amthor, DOE and CCSP
26	James Andrews, ONR
27	Michael Dettinger, USGS
28	James Dodge, NASA
29	John L. Faundeen, USGS
30	Eric C. Itsweire, NSF
31	John A. Jensen, NOAA
32	Michael Johnson, NOAA
33	Ants Leetmaa, NOAA
34	David Legler, CLIVAR
35	Sydney Levitus, NOAA
36	Sandy MacDonald, NOAA
37	James Mahoney, NOAA and CCSP
38	James McGuire, NOAA
39 40	Leslie Meredith, NASA
40	Richard Moss, CCSP
41	Lola M. Olsen, NASA

 Lawrence Pettinger, USGS Steve Piotrowicz, NOAA Cynthia Rosenzweig, NASA Steve Shafer, USDA Brent Smith, NOAA Sidney Thurston, NOAA Kevin Trenberth, UCAR Francesco Tubiello, NASA Sushel Unninayer, NASA 	
 3 Cynthia Rosenzweig, NASA 4 Steve Shafer, USDA 5 Brent Smith, NOAA 6 Sidney Thurston, NOAA 7 Kevin Trenberth, UCAR 8 Francesco Tubiello, NASA 	
 4 Steve Shafer, USDA 5 Brent Smith, NOAA 6 Sidney Thurston, NOAA 7 Kevin Trenberth, UCAR 8 Francesco Tubiello, NASA 	
 5 Brent Smith, NOAA 6 Sidney Thurston, NOAA 7 Kevin Trenberth, UCAR 8 Francesco Tubiello, NASA 	
 6 Sidney Thurston, NOAA 7 Kevin Trenberth, UCAR 8 Francesco Tubiello, NASA 	
 7 Kevin Trenberth, UCAR 8 Francesco Tubiello, NASA 	
9 Suchal Unningvar NASA	
9 Sushel Unninayer, NASA	
10 Stan Wilson, NOAA	
11 Chapter 4. Decision Support Resources	
12 Lead Authors	
13 Susan Avery, CIRES and CCSP	
14 Tom Baerwald, NSF	
15 Jae Edmonds, PNL	
16 Jay Fein, NSF	
17 David Goodrich, NOAA	
18John Houghton, DOE	
19 David Legler, CLIVAR	
20 Richard Moss, CCSP	
21 Claudia Nierenberg, NOAA	
22 Joel Scheraga, EPA	
23 <u>Contributors</u>	
24 Kris Ebi, EPRI	
25 Harvey Hill, NOAA	
26 Ants Leetmaa, NOAA	
27 Linda Mearns, NCAR	
28 Granger Morgan, Carnegie Mellon University	
29 John Weyant, Stanford	
30 Tom Wigley, NCAR	
 31 32 PART II. THE U.S. GLOBAL CHANGE RESEARCH PROGRAM (USGCRP) 	n
52 TAKT II. THE 0.5. OLODAL CHANGE RESEARCH TROORAM (050CK)
33 Chapter 5. Atmospheric Composition	
34 <u>Lead Authors</u>	
35 Dan Albritton (Co-Chair), NOAA	
36 Phil DeCola (Co-Chair), NASA	
37Don Anderson, NASA	
38Jim Gleason, NASA	
39Terry Keating, NSF	
40 Dina Kruger, EPA	
41 Michael Kurylo, NASA & NIST	

1	Joel Levy, NOAA
2	Peter Lunn, DOE
3	Jarvis Moyers, NSF
4	Anne-Marie Schmoltner, NSF
5	Henry Tyrrell, USDA
6	Darrell Winner, EPA
7	Contributors
8	Ron Ferek, ONR
9	Mary Gant, HHS
10	Chapter 6. Climate Variability and Change
11	Lead Authors
12	Randy Dole (Co-Chair), NOAA
13	Jay Fein (Co-Chair), NSF
14	Dave Bader, DOE
15	Ming Ji, NOAA
16	Tsengdar Lee, NASA
17	David Legler, CLIVAR
18	Mike Pavich, USGS
19	Contributors
20	Anjuli Bamzai, NOAA
21	Steve Meacham, NSF
22	Tony Socci, EPA
23	James Todd, NOAA
24	Chapter 7. Water Cycle
25	Lead Authors
26	Rick Lawford, NOAA (Co-Chair)
27	Jared Entin, NASA (Co-Chair)
28	Susanna Eden, CCSP
29	Wanda Ferrell, DOE
30	Harvey Hill, NOAA
31	Jin Huang, NOAA
32	L. Douglas James, NSF
33	Pamela L. Stephens, NSF
34	Sushel Unninayar, NASA
35	Contributors
36	Mike Dettinger, USGS
37	John Furlow, EPA
38	David C. Goodrich, USDA
39	William H. Kirby, USGS
40	Dave Matthews, DOI

1 2	Mark A. Weltz, USDA Jon Werner, USDA
3	Chapter 8. Land Use/Land Cover Change
4	Lead Authors
5	Tom Loveland, USGS (Co-Chair)
6	Garik Gutman, NASA (Co-Chair)
7	Contributors
8	Ken Andrasko, EPA
9	Richard Aspinall, NSF
10	Virgil C. Baldwin, USDA
11	Keya Chatterjee, NASA
12	Matt Fladeland, NASA
13	Bill Hohenstein, USDA
14	Chris Justice, UMD
15	Sally Kane, NOAA
16	John Kelmelis, USGS
17	David Kirtland, USGS
18	Nina Lam, NSF
19	Lawrence Pettinger, USGS
20	Catriona Rogers, EPA
21	Bill Sommers, USDA
22	Billie Turner, Clark U.
23	George Van Otten, USDA
24	David Wear, USDA
25	Chapter 9. Carbon Cycle
26	Lead Authors
27	Diane E. Wickland (Co-Chair), NASA
28	Roger Dahlman (Co-Chair), DOE
29	Jessica Orrego, CCSP
30	Richard A. Birdsey, USDA
31	Nancy Cavallaro, USDA
32	Sue Conard, USDA
33	Rachael Craig, NSF
34	Michael Jawson, USDA
35	Anna Palmisano, DOE
36	Don Rice, NSF
37	Ed Sheffner, NASA
38	David Shultz, USGS
39	Kathy Tedesco, NOAA
40	Charles Trees, NASA
41	Contributors

41 <u>Contributors</u>

- 1 Enriqueta Barrera, NSF
- 2 Marilyn Buford, USDA
- 3 Cliff Hickman, USDA
- 4 Carol Jones, USDA
- 5 Steven Shafer, USDA
- 6 Bryce Stokes, USDA

7 Chapter 10. Ecosystems

- 8 <u>Lead Authors</u>
- 9 Susan Herrod Julius (Co-Chair), EPA
- 10 Steve Shafer (Co-Chair), USDA
- 11 Jeff Amthor, DOE and CCSP
- 12 John Calder, NOAA
- 13 Susan Conard, USDA
- 14 Knute Nadelhoffer, NSF
- 15 Don Scavia, NOAA
- 16 Woody Turner, NASA

17 <u>Contributors</u>

- 18 Larry Adams, USDA
- 19 Nancy Cavallaro, USDA
- 20 Pat Megonigal, Smithsonian Institute
- 21 Jessica Orrego, CCSP
- 22 Catriona Rogers, EPA
- 23 Chuck Trees, NASA

24 Chapter 11. Human Contributions and Responses to Environmental Change

- 25 Lead Authors
- 26 Janet Gamble, EPA (Co-Chair)
- 27 Caitlin Simpson, NOAA (Co-Chair)
- 28 <u>Contributors</u>
- 29 Mitch Baer, DOE
- 30 Tom Baerwald, NSF
- 31 Rebecca Clark, NIH
- 32 Mary Gant, HHS
- 33 Bill Hohenstein, USDA
- 34 John Houghton, DOE
- 35 Carol Jones, USDA
- 36 David Kirtland, USGS
- 37 Melinda Moore, HHS
- 38 Claudia Nierenberg, NOAA
- 39 Robert O'Connor, NSF
- 40 Warren Piver, NIH
- 41 Joel Scheraga, EPA

1	Jim Titus, EPA
2	Juli Trtanj, NOAA
3	Chapter 12. Grand Challenges in Modeling, Observations, and Information Systems
4	Lead Authors
5	Chet Koblinsky, NASA and CCSP
6	Margarita Conkright, NOAA and CCSP
7	Contributors
8	David Bader, DOE
9	Peter Backlund, UCAR
10	Maurice Blackmon, NCAR
11	Howard Diamond, NOAA
12	Jay Fein, NSF
13	Wanda Ferrell, DOE (Working Group on Data and Information Chair)
14	Paul Filmer, NSF
15	Vanessa Griffin, NASA
16	Tom Karl, NOAA
17	Ants Leetmaa, NOAA
18	Les Meredith, USGCRP
19	Ken Mooney, NOAA
20	Lola Olsen, NASA
21	Aristides Patrinos, DOE
22	Lawrence Pettinger, USGS
23	Richard Rood, NASA
24	Bob Schiffer, NASA (ret.)
25	Tom Spence, NSF (Working Group on Observations and Monitoring Co-Chair)
26	Kevin Trenberth, UCAR
27	Warren Washington, NCAR
28	
29	PART III. COMMUNICATION, COOPERATION, AND MANAGEMENT
20	
30	Chapter 13. Reporting and Outreach
31	Lead Authors
32	Genene Fisher, CCSP
33	Susan Avery, CIRES
34	James R. Mahoney, NOAA and CCSP
35	Kathryn Parker, EPA
36	Kevin Rosseel, EPA
37	Nick Sundt, CCSPO
38	Robert Worrest, GCRIO
39	Chapter 14. International Research and Cooperation
40	Lead Authors

1	Louis B. Brown (NSF)
2	Contributors
3	Christo Artusio, State
4	Ko Barrett, USAID
5	Garik Gutman, NASA
6	Michael Hales, NOAA
7	Jack Kaye, NASA
8	Kate Maliga, NOAA
9	Linda Moodie, NOAA
10	Duane Muller, USAID
11	Carrie Stokes, USAID
12	Lisa F. Vaughan, NOAA
13	
14	U.S. CLIMATE CHANGE SCIENCE PROGRAM STAFF
15	Jeff Amthor
16	Susan Avery
17	Margarita Conkright
18	David Dokken
19	Susanna Eden
20	Genene Fisher
21	Stephanie Harrington
22	Chet Koblinsky
23	David Legler
24	Sandy MacCracken
25	James R. Mahoney, Director
26	Richard Moss, Plan Coordinator
27	Jessica Orrego
28	Rick Piltz
29	Nick Sundt
30	Richard Todaro
31	Bob Worrest