

The Honorable Ed Schafer
Secretary
US Department of Agriculture
Jamie L. Whitten Federal Building Room 200-A
12th & Jefferson Drive SW
Washington, DC 20250

February 15, 2008

Dear Secretary Schafer:

Synthesis and Assessment Product 4.3 (SAP 4.3), *The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity*, is one of 21 Synthesis and Assessment Products being developed by the U.S. Climate Change Science Program (CCSP) to address top-priority climate change research, observation, and decision support. The U.S. Department of Agriculture (USDA) is the Lead Agency in the preparation of SAP 4.3. Thirty seven authors from academia and Federal service prepared SAP 4.3 under USDA leadership through its Global Change Program Office and in cooperation with the University Corporation for Atmospheric Research (UCAR).

The U.S. Department of Agriculture established the Committee for the Expert Review of Synthesis and Assessment Product 4.3 (CERSAP) in accordance with the provisions of the Federal Advisory Committee Act (FACA), 5 U.S.C. App.2 § 9 (c), to provide advice to the Secretary of Agriculture on the conduct of SAP 4.3.

The CERSAP was given seven inquiries to address. Those inquiries, and CERSAP findings on each, are listed below.

1. *Are the goals, objectives, and intended audience of the product clearly described in the document? Does the product address all the questions as outlined in the prospectus?*

CERSAP finds that the goals, objectives, and intended audience for SAP 4.3 are clearly described in the document, and that the report's charge is appropriately addressed.

2. *Are the findings and recommendations adequately supported by evidence and analysis? If any recommendations are based on value judgments or the collective opinions of the authors, is this acknowledged and are adequate reasons given for reaching those judgments?*

SAP 4.3's findings and conclusions are well supported by evidence and the authors' analyses, as is the confidence ascribed to each. In keeping with the original requirements of the report, no recommendations have been made.

3. *Are the data and analyses handled competently? Are statistical methods applied appropriately? Are uncertainties and confidence levels evaluated and communicated appropriately?*

SAP 4.3's analysis is sound, thorough, and competent. As SAP 4.3 relies on the existing scientific literature, no new data were generated in producing SAP 4.3; therefore statistics are not at issue for the report. Confidence levels are evaluated and communicated appropriately.

4. *Are the document's presentation and organization effective? Are the questions outlined in the prospectus addressed and communicated in a manner that is appropriate for the intended audience?*

The document's presentation and organization are effective. The questions posed by SAP 4.3's prospectus are addressed and communicated in an effective way for its intended audience.

5. *Is the document scientifically objective and policy-neutral? Is it consistent with the scientific literature, including recent National Research Council reports and other scientific assessments on the same topic?*

CERSAP finds SAP 4.3 scientifically objective and policy-neutral. It is consistent with the scientific literature, including NRC and IPCC assessments.

6. *Does the summary concisely and accurately describe the content, key findings, and recommendations? Is it consistent with other sections of the document?*

The Executive Summary concisely and accurately describes SAP 4.3's content and key findings, and is consistent with the document as a whole.

7. *What significant improvements, if any, might be made in the document?*

In June, 2007, CERSAP reviewed the first draft of SAP 4.3 and provided 364 comments and suggestions for its improvement. Following revisions occurring in response to public comment on SAP 4.3 and interagency technical review, the CERSAP met again in February 2008. Suggestions from that meeting have been incorporated into the report. At this time, then, we believe no significant improvements can be made to SAP 4.3 within the report's prospectus-defined scope.

Improvements in the CCSP process itself, however, would lead to improved future assessments:

- a. First, the scope of this report limits the authors to consider the effects of climate change on these natural resources and ecosystem services, excluding consideration of potential adaptive responses, as adaptation is the subject of a separate (and uncorrelated) SAP. The effects of climate change on natural resources are uniformly significant, are often highly nonlinear, and can be

altered through economic adaptation. Consequently, future effects of climate change are highly dependent on mitigation efforts and carry with them some level of uncertainty. As a result, the actual effects may be substantially modified from those the authors of SAP 4.3 were charged with evaluating. Thus, the predicted effects on natural resources should be considered a likely example of the types of effects we might expect to see within the next 30 years, but should not be viewed as an explicit forecast. A more integrated assessment in the future which considers such relationships and feedbacks between climate, biotic and economic systems, would better inform decision makers.

- b. Second, we believe that portions of the established process for producing and reviewing the SAPs may impact the perceived technical credibility of the Assessments. CERSAP recommends that, for future assessments, the CCSP reexamine its review process so that non-Federal participants may, for example, maintain confidence that substantive changes will not occur to the document after they have completed their final review and provided a recommendation for placement in the interagency clearance process. Also, sufficient time must be available for adequate drafting and review to assure participants that scientific integrity is a paramount consideration in the process.

We find SAP 4.3 (version dated 2-13-08) to be a current, accurate, and comprehensive evaluation of the effects of climate change on agriculture, forests, arid lands, water resources, and biodiversity in the U.S., meeting or exceeding the standards enumerated above, and recommend that it be placed into the interagency clearance process and be adopted by CCSP.

CERSAP believes that SAP 4.3 makes an especially significant contribution in its consideration of current monitoring systems. CERSAP agrees with the finding that, in aggregate, monitoring systems are insufficient to provide timely detection and quantification of climate change driven changes of the resources covered by SAP 4.3. CERSAP urges an assessment of a broad spectrum of current monitoring systems that addresses necessary enhancements and crucial integration of those systems, which is needed to provide adequate detection and quantification capabilities. Specifically, the monitoring of climate change and its effects must be accomplished within an integrative framework that considers the Earth's changing climate, the responses of organisms and ecosystems to that climate, and the impacts of those alterations to human societal systems to be most effective in the development and evaluation of the necessary adaptive action plans. As SAP 4.3 demonstrates, the effects of climate change are already apparent and are increasing in magnitude. Consideration of climate change effects in ongoing land planning, resource management, program policy, and research activities is essential to assure sustainable availability of SAP 4.3 resources, which are necessary for the future well being and security of our Nation.

Sincerely,

Thomas Lovejoy
Chair, CERSAP
President, Heinz Center for Science, Economics, and the Environment

Committee for the Expert Review of Synthesis and Assessment Product 4.3 (CERSAP)

Membership

J. Roy Black

Professor
Department of Agricultural Economics
Michigan State University

David D. Breshears

Professor
School of Natural Resources
University of Arizona

Glenn R. Guntenspergen

Senior Landscape Ecologist
Patuxent Wildlife Research Center
US Geological Survey

Brian S. Helmuth

Associate Professor
Department of Biological Sciences
University of South Carolina

Thomas E. Lovejoy (Chair)

President
The H. John Heinz III Center for
Science, Economics, and the
Environment

Frank M. Mitloehner

Associate Cooperative Extension
Specialist
Department of Animal Science
University of California, Davis

Harold A. Mooney

Professor
Department of Biological Sciences
Stanford University

Dennis S. Ojima

Senior Scholar
The H. John Heinz III Center for
Science, Economics, and the
Environment

Charles Rice

Professor
Department of Agronomy
Kansas State University

William A. Salas

President & Chief Scientist
Applied Geosolutions, LLC

William T. Sommers

Research Faculty
Center for Earth Observing and Space
Research
George Mason University

Soroosh Sorooshian

Distinguished Professor
Department of Civil Engineering
University of California, Irvine

Eugene S. Takle

Professor
Department of Agronomy
Iowa State University

Carol A. Wessman

Professor
Cooperative Institute for Research in
Environmental Sciences
University of Colorado