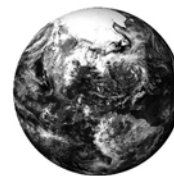


U.S. Climate Change Science Program

1717 Pennsylvania Ave, NW, Suite 250, Washington, DC 20006. Tel: +1 202 223 6262



U.S. Climate Change Science Program Workshop: Climate Science in Support of Decisionmaking November 14-16, 2005

Agenda

November 13, 2005

6:00 – 8:00 p.m. Registration

November 14, 2005

7:00 a.m. Registration (open all day)

SESSION 1 – CLIMATE INFORMATION NEEDS FOR DECISION MAKING

(9:00 – 11:45 a.m.)

Salon IV

Objectives

1. Describe the use of climate information for national, state and regional decision making
2. Provide an overview of CCSP approaches to decision support resources development
3. Introduce the workshop and define its goals

9:00 Call to order:

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

9:10 Keynote: The Role of Advanced Energy Technology in Climate Management

David K. Garman, Under Secretary, U.S. Department of Energy

9:25 Keynote: National and State Level Management of Climate Influences

Mike Johanns, Secretary, U.S. Department of Agriculture

9:40 Keynote: Climate Science and Commerce

Peter Lichtenbaum, Acting Deputy Under Secretary for International Trade, U.S.
Department of Commerce

9:55 Keynote: Enhancing the Scope and Utility of Climate Science

Ralph J. Cicerone, President, U.S. National Academy of Sciences

10:10 COFFEE BREAK

10:40 Keynote: One Company's Perspective on Climate Change and Climate Science
John Stowell, Vice President of Federal Affairs and Environmental Strategy, Cinergy Corporation

11:00 CCSP Update and Workshop Overview
James R. Mahoney

11:20 Decision Support Resources Development
Richard H. Moss, Director, U.S. Climate Change Science Program Office

11:45 LUNCH

SESSION 2 – EVALUATING ASSESSMENTS **(1:00 – 5:00 p.m.)**

Objectives

1. *Learn about the status of assessments being prepared (or recently completed) by CCSP, the Intergovernmental Panel on Climate Change (IPCC), the National Research Council (NRC), and other institutions*
2. *Develop recommendations to improve the conduct and utility of future assessments*

Each breakout session will be asked to address four cross-cutting questions to report back to plenary:

1. *Effectiveness*: What makes assessments more or less helpful to their intended users, and what can be done to improve their effectiveness?
2. *Assessment coverage*: Given the range of assessments being conducted, what should the priorities be for future assessments?
3. *Process*: What is needed to improve the process of framing, conducting, and communicating assessments? How can we improve the connection between basic knowledge generation and applications?
4. *Integrating assessments*: What are the opportunities for integrating assessments in the areas of forcing, climate, and sensitivity/adaptation, as well as for integrating U.S. and international assessments?

BREAKOUT 2A – CLIMATE FORCING PROCESSES

Salon VI

Chair: Jack Kaye, NASA

1:00 Overview of CCSP Goal 2: Forcing
Dan Albritton, NOAA

1:15 CCSP 2.1 Emissions Scenarios
John Houghton, DOE

- 1:30 Future IPCC Emissions Scenarios
Francisco de la Chesnaye, EPA
- 1:45 CCSP 2.2 North American Carbon Budget
Anthony King, Oak Ridge National Laboratory
- 2:00 IPCC Report on Carbon Capture and Storage
E.S. Rubin, Carnegie Mellon University
- 2:15 NRC Report on Radiative Forcing
Daniel Jacob, Harvard University
- 2:30 2007 WMO/UNEP Scientific Assessment of Ozone Depletion and CCSP 2.4
Ozone Depleting Substances
A. Ravishankara, NOAA
- 2:45 CCSP 2.3 Aerosol Impacts
Phil DeCola, NASA
- 3:00 COFFEE BREAK
- 3:30 **PANEL DISCUSSION**
Chair: Jack Kaye, NASA
Harlan Watson, U.S. Department of State
Jae Edmonds, Joint Global Change Research Institute
Arjun Makhijani, Institute for Energy and Environmental Research
Elaine Matthews, NASA
- 5:00 ADJOURN

BREAKOUT 2B – CLIMATE VARIABILITY AND CHANGE

Salon V

Chair: Margaret Leinen, NSF

- 1:00 Overview of CCSP Goals 1 and 3: Climate Variability and Change
Ants Leetma, NOAA
- 1:15 CCSP 1.1 Temperature Trends
Tom Karl, NOAA
- 1:30 CCSP 3.3 Climate Extremes
Tom Karl, NOAA
- 1:45 CCSP 1.3 Reanalysis of Historical Climate
Siegfried Schubert, NASA
- 2:00 CCSP 3.1 Climate Models
Anjali Bamzai, DOE
- 2:15 U.S. Modeling Contributions to IPCC
Jerry Meehl, National Center for Atmospheric Research
- 2:30 IPCC Working Group 1 Update
Susan Solomon, NOAA
- 3:00 COFFEE BREAK

3:30 **PANEL DISCUSSION**
Chair: Margaret Leinen, NSF
Antonio J. Busalacchi, University of Maryland
Dan Reifsnyder, U.S. Department of State
Linda Mearns, National Center for Atmospheric Research
David Robinson, Rutgers University

5:00 ADJOURN

BREAKOUT 2C – CLIMATE SENSITIVITY AND ADAPTIVE MANAGEMENT

Salon IV

Chair: Mike Slimak, EPA

1:00 Overview of CCSP Goals 4 and 5: Sensitivity/Adaptability and Uses of Climate Information

Thomas J. Wilbanks, Oak Ridge National Laboratory

1:15 CCSP 4.1 Sea Level Rise and Coastal Elevation

James Titus, EPA

1:30 CCSP 5.1 Observations and Use In Adaptive Management

John Haynes, NASA

1:45 CCSP 5.3 Using S-I Forecasts and Observations

Nancy Beller-Simms, NOAA

2:00 CCSP 4.7 Transportation

Mike Savonis, Department of Transportation

2:15 Millennium Ecosystem Assessment

Ian Noble, The World Bank (Invited)

2:30 Arctic Climate Impact Assessment (ACIA)

Robert Corell, American Meteorological Society

2:45 IPCC Working Group II Update

Cynthia Rosenzweig, NASA

3:00 COFFEE BREAK

3:30 **PANEL DISCUSSION**

Chair: Mike Slimak, EPA

Paul Stern, U.S. National Academy of Sciences

Granger Morgan, Carnegie Mellon University

Lara Hansen, World Wildlife Fund

Hugh Pitcher, Joint Global Change Research Institute

Fred Meyerson, University of Rhode Island

5:00 ADJOURN

POSTER SESSION AND RECEPTION

(5:20 – 9:00 p.m.) (Includes heavy hors d'oeuvres and drinks)

Salons III and IV

November 15, 2005

**SESSION 3 – CLIMATE INFORMATION FOR ADAPTIVE
MANAGEMENT**

(8:30 – 10:15 a.m.)

Salon IV

Objectives

1. *Describe efforts to facilitate application of climate and global change information in decision making*
2. *Report on Session 2 breakouts*
3. *Examine role of research in supporting adaptive management*
4. *Define goals for Session 4*

8:30 Call to order: **James R. Mahoney** – Session Introduction

8:40 Keynote: Global Earth Observations
Vice Admiral Conrad C. Lautenbacher, Jr., U.S. Navy (Ret.), Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator

9:00 Keynote: **Senator Ted Stevens**, Chairman, Senate Committee on Commerce, Science and Transportation

9:20 Reports by Session 2 Chairs
Chair: Joel Scheraga, EPA
Climate Forcing Processes - Jack Kaye, NASA
Climate Variability and Change - Margaret Leinen, NSF
Climate Sensitivity and Adaptive Management - Mike Slimak, EPA

9:50 Don't Ask Me What I Want, Ask Me What I Do
Mary Altalo, Executive Director, Ocean.US (elect)

10:00 Climate Science and Adaptive Management: What Are We Learning While We're Doing?
Roger Pulwarty, NOAA/University of Colorado

10:10 Introduction to Session 4
Joel Scheraga, EPA

10:15 COFFEE BREAK/ROOM RECONFIGURE

SESSION 4 – APPLICATIONS OF CLIMATE SCIENCE

(10:45 a.m. – 12:15 p.m.; 1:30 – 5:30 p.m.)

Objectives

1. *Discuss how well research is meeting the needs of decisionmakers*
2. *Describe development and application of resources to support adaptive management and climate policy development*
3. *Identify program needs and gaps*

Each breakout session will be asked to address four cross-cutting questions to report back to plenary:

1. *Effectiveness:* What are the barriers to using decision support resources in decision making, and how can these barriers be overcome? How can we continuously evolve our approach to decision support as we evaluate experiences and learn more?
2. *Information needs:* Across the applications covered in your breakout group, are there unmet high-priority information needs shared by user groups?
3. *Research priorities:* What observations and research are most needed to develop resources for meeting the needs identified in question 2?
4. *Communication:* What are the characteristics of effective communication of science to decision makers, and what is needed to better sustain a continuing dialogue? What are examples of successful decision support collaborations that should inform program design?

BREAKOUT – WATER MANAGEMENT: APPLICATION OF CLIMATE SCIENCE

Salon III

Chair: **Chet Koblinsky**, NOAA

WATER SUPPLY SCIENCE AND INFORMATION NEEDS

10:45 Moderator Introduction

Robert Livezey, NOAA, National Weather Service

10:55 **WA1.5** Managing Seattle's Water Supply in Context: Weather and Climate

Daniel Basketfield, Seattle Public Utilities

11:10 **WA1.1** Droughts and Floods: Better Predictions thru Attribution,

Martin Hoerling, NOAA

11:25 **WA1.2** Climate in Three Dimensions: Integrated Mountain Climate Observations

Kelly Redmond, Western Regional Climate Center

11:40 **WA1.3** Climate Forecasts and Reservoir Management – Possibilities and Challenges

Sankar Arumugam, North Carolina State University

11:55 **WA1.4** Experiences from the water resources and agricultural sectors during drought: What do users want? What do researchers want? What is needed?

Robert Webb, NOAA Climate Diagnostics Center

12:10 Wrap up

12:15 LUNCH

CLIMATE-RELATED DECISION SUPPORT FOR WATER ALLOCATION AND USE

1:30 Moderator Introduction

Bradley Udall, University of Colorado

1:35 **WA2.2** Users Making Decisions for Water Allocation

Eric Kuhn, Colorado Water Conservation District

1:55 **WA2.5** Adapting New York City's Water Supply and Wastewater Treatment Systems to Climate Change

Emily Lloyd, New York City Department of Environmental Protection

2:15 **WA2.3** Walking the Talk: RISA Drought Insights for CCSP

Gregg Garfin, University of Arizona, CLIMAS

2:35 **WA 2.1** A RISA Success Story – The Southeast Climate Consortium

James O'Brien, Florida State University

2:55 Wrap up

3:00 BREAK

3:30 **PANEL DISCUSSION**

Moderator: Chet Koblinsky, NOAA

Joseph Hoffman, Interstate Commission on the Potomac River Basin

Emily Lloyd, New York City Department of Environmental Protection

Gary Carter, NOAA, National Weather Service

Paul Houser, George Mason University

Phil Pasteris, USDA, National Resources Conservation Service, National Water and Climate Center

Daniel Basketfield, Seattle Public Utilities

5:30 ADJOURN

BREAKOUT – ECOSYSTEMS MANAGEMENT: APPLICATION OF CLIMATE SCIENCE

Salon IV

Chair: **William Hohenstein**, USDA

ECOSYSTEMS DECISION SUPPORT AND ADAPTIVE RESPONSES - I

10:45 Moderator Introduction

10:50 **EC1.1** Agriculture: The Role of Climate Science in U.S. Crop Insurance

Thomas P. Zacharias, National Crop Insurance Services

11:05 **EC1.2** Food Security: Providing a Science-Practice Interface to Decision Makers through Global Environmental Change and Food Systems (GECAFS) Decision Support System Research

Arvin Mosier, University of Florida

11:20 **EC1.3** Fire Management: Active Fire Observations from MODIS to Support Decision Making

- Ivan Csiszar**, University of Maryland
- 11:35 **EC1.4** Temperate Forests: Assessing Impacts of Changing Land Use, Climate and Atmospheric Chemistry on Forests of the Chesapeake Bay Watershed
Richard Birdsey, USDA Forest Service
- 11:50 **EC1.5** Wetlands: Designing Wetland Conservation Strategies under Climate Change
Jiayi Li, Pennsylvania State University
- 12:05 Discussion
- 12:15 LUNCH

ECOSYSTEMS DECISION SUPPORT AND ADAPTIVE RESPONSES - II

- 1:30 Moderator Introduction
- 1:35 **EC1.6** Adaptation: A Tool for Screening Projects for Risks from Climate Change
Ian Noble, The World Bank
- 1:50 **EC1.7** Climate and Fisheries Management: Ocean Climate Decision Making Systems For Predicting Catch In Pelagic Fisheries
Mitchell A. Roffer, Roffer's Ocean Fishing Forecasting Service, Inc.
- 2:05 **EC1.8** Arctic systems: The Implications of Climate Change in the Management of Vulnerable Species - A Case Study of Polar Bears
George Durner, USGS, Alaska Science Center
- 2:20 **EC1.9** Wildlife: The Nature Conservancy's Adaptation Efforts in Conservation Landscapes: Models for Federal Land Managers?
Sam Pearsall, The Nature Conservancy
- 2:35 **EC1.10** Human Health: Linking Health and Environmental Data in a Public Health Surveillance System
Doug Rickman, NASA
- 2:50 Discussion
- 3:00 BREAK
- 3:30 **PANEL DISCUSSION**
Moderator: William Hohenstein
Eric J. Walberg, Hampton Roads Planning District Commission
John A. Scrivani, Virginia Department of Forestry, Division of Resource Information
Dennis Stewart, U.S. Fish and Wildlife Service
- 5:30 ADJOURN

BREAKOUT – COASTAL MANAGEMENT: APPLICATION OF CLIMATE SCIENCE

Salon V

Chair: **Margaret Davidson**, NOAA

CLIMATE AND COASTAL INFRASTRUCTURE: APPLICATIONS AND INFORMATION NEEDS - I

- 10:45 Moderator Introduction, **Margaret Davidson and Ralph Cantral**
- 10:55 **CO1.1** Climate and Coastal Communities: Improving the Decision-Making Process
Eileen Shea, East-West Center
- 11:10 **CO1.2** Using Paleotemperature in Support of Decision Making Under Uncertainty of Hurricane Climate Variability
Kam-biu Liu, Louisiana State University
- 11:25 **CO1.3** Sea Level Rise: A Trendy Perspective
Len Pietrafesa, North Carolina State University
- 11:40 **CO1.4** Informing Decision Makers of the Potential Impacts of Sea Level Rise on the Coastal Region of New Jersey, USA
Michael Beavers, Princeton University
- 11:55 **CO1.5** Overview of Information Needed to Adapt to Rising Sea Level
James Titus, EPA
- 12:10 Wrap up
- 12:15 LUNCH

CLIMATE AND COASTAL INFRASTRUCTURE: APPLICATIONS AND INFORMATION NEEDS - II

- 1:30 **CO1.6** Sea Level Rise and Ground Water Sourced Community Water Supplies in Florida
Randall Freed, ICF Consulting
- 1:45 **CO1.7** Context and Climate Change Decisions: Lessons from Barrow, Alaska
Ronald Brunner, University of Colorado
- 2:00 **CO1.8** Climate Change and Coastal Cities: Information for Decision Making
Roberta Balstad, Columbia University
- 2:15 **CO1.9** A Resource Manager's Perspective on Applications and Information Needs
Susan Snow-Cotter, Massachusetts Coastal Zone Management Program
- 2:30 Discussion: Infrastructure Planning and Management Challenges
- 3:00 BREAK

CLIMATE AND COASTAL ECOSYSTEMS: SUPPORTING ADAPTIVE MANAGEMENT

- 3:30 **CO2.1** Understanding the Future of Coastal Wetlands in the Face of Sea Level Rise: Lessons from Coastal Louisiana
Denise Reed, University of New Orleans

- 3:45 **CO2.2 SELVA-MANGRO: An Integrated Landscape and Stand Simulation Model for Predicting Mangrove Forest Growth and Distribution across the Everglades Coastal Margin under Changing Climate**
Thomas Doyle, USGS
- 4:00 **CO2.3 Using Climate Change Information to Support Adaptive Coastal Conservation**
Lynne Hale, The Nature Conservancy
- 4:15 **CO2.4 An Information Guide for Strategic Management of Coral Reefs in a Changing Climate**
Jordan West, EPA
- 4:30 **CO2.5 A Resource Manager's Perspective on Supporting Adaptive Management**
Billy Causey, NOAA, Keys National Marine Sanctuary
- 4:45 **PANEL DISCUSSION**
Moderator: Margaret Davidson
Eileen Shea, East-West Center
Jim Titus, EPA
Susan Snow-Cotter, Massachusetts Coastal Zone Management Program
Billy Causey, NOAA, Keys National Marine Sanctuary
Denise Reed, University of New Orleans
Lynne Hale, The Nature Conservancy
- 5:30 ADJOURN

BREAKOUT – AIR QUALITY MANAGEMENT: APPLICATION OF CLIMATE SCIENCE

Salon VI

Chair: **Phil DeCola**, NASA

CLIMATE CHANGE, AIR QUALITY AND HUMAN HEALTH

- 10:45 Moderator Introduction
Phil DeCola, NASA
- 10:55 **AQ1.4 EPRI Workshop on Interactions of Climate Change and Air Quality: Findings and Recommendations**
Daniel Jacob, Harvard University
- 11:10 **AQ1.1 Review of the Health Effects Potentially Associated with Projected Changes in Concentrations of Air Pollutants and Aeroallergens**
Kristie Ebi, Exponent Health Sciences Group
- 11:25 **AQ1.2 Impact of Climate Change on Air Pollution Episodes in the United States**
Loretta Mickley, Harvard University
- 11:40 **AQ1.3 Ozone Air Quality Management through Methane Emission Reductions: Global Health Benefits**
J. Jason West, Princeton University
- 11:55 Discussion
- 12:15 LUNCH

LINKING CLIMATE CHANGE RESEARCH TO AIR QUALITY DECISIONS

- 1:30 Moderator Introduction
Bruce Doddridge, NASA
- 1:40 **AQ2.1** Toward an Integrated Observing System for Air Quality Decision Making
Doreen Neil, NASA
- 1:55 **AQ2.2** Integrating Climate Modeling and Remote Sensing Data to Improve Public Health Decision Support Tools – Part I
Stanley Morain, University of New Mexico, Earth Data Analysis Center
- 2:10 **AQ2.3** Supporting Long-Term Regional Air Quality Management in Response to Global Change
Dan Loughlin, EPA
- 2:25 **AQ2.4** Application of an Integrated Modeling System for Climate and Air Quality Change Studies at Regional to Local Scales
Xin-Zhong Liang, Illinois State Water Survey
- 2:40 **AQ2.5** Development and Evaluation of a Methodology for Determining Air Pollution Emissions Relative to Geophysical and Societal Change
Allen Williams, Illinois State Water Survey
- 2:55 Wrap Up
- 3:00 BREAK
- 3:30 PANEL DISCUSSION**
Moderator: Terry Keating, EPA
Bart Croes, California Air Resources Board
Gina McCarthy, Connecticut Department of Environmental Protection
Armond Cohen, Clean Air Task Force
Jeffrey L. Williams, Entergy Corporation
Patrick Kinney, Columbia University
- 5:30 ADJOURN

BREAKOUT – ENERGY SYSTEMS MANAGEMENT: APPLICATION OF CLIMATE SCIENCE

Salon I

Chair: **Jerry Elwood**, DOE

- 10:45 **EN0.1** Moderator introduction and CCSP Activities Informing Decision Making
Jerry Elwood, DOE
- 10:55 **EN0.2** Brief Overview: CCTP activities informing decision making
David Conover, DOE

SCIENCE INFORMING OPERATIONAL AND SHORT-TERM DECISION MAKING

- 11:10 **EN1.1** Climate Science Applications to Support Short-Term, Operational Decision Making
Robert Marlay, DOE
- 11:25 **EN1.2** NASA Satellite Measurements and Modeling Contributions to Decision Support in the Energy Sector
Richard Eckman, NASA
- 11:40 **EN1.3** Climate Forecasts for Improving Management of Energy and Hydropower Resources in the Western U.S.
Anthony Westerling, Scripps Institution of Oceanography
- 11:55 **EN1.4** Translating Research Results into Resource Plans at the State Level
Guido Franco, California Energy Commission

12:15 LUNCH

LONG-TERM PLANNING AND INVESTMENT, INCLUDING CARBON MANAGEMENT AND INTEGRATED ASSESSMENT

- 1:30 **EN2.1** Science Needs to Inform Long-Term Decision Making in the Energy Sector
Victor Niemeyer, Electric Power Research Institute
- 1:45 **EN2.2** Improving Climate Information for Hydroelectric Dam Relicensing
Kirstin Dow, University of South Carolina
- 2:00 **EN2.3** Planning Bio-Energy Options: Climate Feedbacks and Information Needs
Robin Graham, Oak Ridge National Laboratory
- 2:15 **EN2.4** Science for Carbon Management: Making Effective Connections Between Users and Producers of Information
Lisa Dilling, University of Colorado
- 2:30 **EN 2.5** The Future of Integrated Assessment Modeling as a Decision Support Tool for Energy and Climate
Gerry Stokes, Pacific Northwest National Laboratory
- 2:45 **EN2.6** Tools for Interactive Decision Making under Uncertainty on Energy and Climate Change
Jurgen Scheffran, University of Illinois

3:00 BREAK

PANEL DISCUSSION

- Moderator: Jerry Elwood**, DOE
Howard Gruenspecht, Energy Information Administration
Dina Kruger, Environmental Protection Agency
Robert Marlay, DOE

5:30 ADJOURN

November 16, 2005

SESSION 5 – SETTING PRIORITIES: OBSERVATIONS, RESEARCH, DECISION SUPPORT

(8:30 a.m. – 12:00 p.m.)

Salon IV

Objectives

1. Report on Session 4 breakouts
2. Discuss workshop findings and recommendations

8:30 Call to order: **James R. Mahoney**

8:35 Reports by Session 4 Chairs

Water Management – Chet Koblinsky, NOAA

Ecosystems Management – William Hohenstein, USDA

Coastal Management – Margaret Davidson, NOAA

Air Quality Management – Phil DeCola, NASA

Energy Systems Management - Jerry Elwood, DOE

10:00 COFFEE BREAK

10:30 Panel and Town Hall discussion – Setting Priorities: Implications of Workshop Findings and Suggested Next Steps

Moderator: **William H. Hooke**, American Meteorological Society

Susan Avery, University of Colorado

Antonio J. Busalacchi, University of Maryland

Anthony C. Janetos, Heinz Center

Aristides Patrinos, DOE

The panel will address four cross-cutting questions:

1. *Needs*: What information do we need to better support decision makers and refine CCSP's future decision support priorities? What are the most promising areas for future application of climate science?
2. *Current knowledge*: Given the answers to question 1, what types of research and observations would provide the greatest benefit to decision makers?
3. *Communication*: How can we better communicate knowledge to decision makers, and how can we more effectively maintain a continuing dialogue? What activities might CCSP contemplate in order to better connect the whole of the research enterprise to the public interest?
4. *Capacity*: What types of capacity do we most need to strengthen to build trust with and provide effective support to decision makers? (e.g., observations, data/information systems, nodes linking existing resources at a variety of spatial scales, training for use of climate and environmental data in decision support, analytic methods, tools, etc.)

11:50 Concluding Remarks, **James R. Mahoney**

12:00 Workshop concludes