

ENERGY MODELING FORUM
Workshop on Climate Change Impacts and Integrated Assessment (CCI/IA)

Snowmass, Colorado
July 28 – August 7, 2008
Agenda

Sunday, July 27

6:00-8:00 PM *Registration and Informal Reception for Attendees and all Guests
Gatehouse, Top of the Village*

Monday, July 28:

7:30 AM *Continental Breakfast-Gatehouse, Top of the Village*

8:00 Registration Continues

**RESEARCH PRIORITIES AND HARMONIZING LAND USE/LAND COVER IN
EARTH SYSTEM AND INTEGRATED ASSESSMENT MODELS**

Workshop Organizers: Tony Janetos, Kathy Hibbard and John Weyant

Note: The goals of this workshop are two-fold: (1) address current issues for land use/emissions harmonization strategy based on 'Handshake Document' and (2) initiate extensive set of discussion on Research Priorities in land cover/land use modeling and observations based on 'Research Priorities' white paper.

8:45 AM **Welcoming Remarks** • John Weyant, Stanford University

Research Priorities: Modeling Challenges

9:15 **Overview of Goals and Objectives for Meeting**

- Tony Janetos/Kathy Hibbard

9:30 **Summary of Research Priorities Document**

- Tony Janetos/Kathy Hibbard

Modeling Challenges: Model development, application, cooperation, evaluation

10:00 **Overview of methods used by IAM's to characterize land-use, land-use changes, and implications for climate models**

- Jae Edmonds

10:30 Questions and discussion

11:00 *Break*

11:30 **Overview of methods used by ESM's to characterize land-cover, land-cover changes and implications for land-use**

- Peter Cox

12:00 Questions and Discussion

12:30 PM *Lunch*

1:30 Discussion on challenges for modeling land cover and land use across disciplines: economic, technologic, biophysical and biogeochemical interactions

3:00 *Break*

- 5:00 Adjourn/Informal Discussion
- 6:30 *Opening Dinner for attendees and ALL family and guests*

Tuesday, July 29:

7:30 AM *Continental Breakfast – Gatehouse, Top of the Village*

Data Challenges

- 9:00 **Overview of previous day’s discussion**
 - Tony Janetos/Kathy Hibbard
- 9:30 **Observation Challenges: Introduction**
 - Tony Janetos
- 10:00 **Understanding and reconciling land use/land cover datasets (HYDE, SAGE, DISCOVER, GLCF, GLCC): data requirements for models and their uncertainties**
 - Johannes Feddema
- 10:30 *Break*
- 11:00 **Using satellite data for tracking land-cover changes and deforestation**
 - Martin Herold
- 11:30 Questions and discussion
- 12:30 PM *Lunch*
- 1:30 **Issues in land-use change with respect to carbon cycle:**
 - Richard Houghton
- 2:00 Questions and discussion
- 3:00 *Break*
- 3:30 Review and finalize discussion with goal to determine which 4 or 5 major research areas that both communities think need to be pursued to facilitate coordination
- 5:00 Adjourn/Informal Discussion

Wednesday, July 30:

7:30 AM *Continental Breakfast – Gatehouse, Top of the Village*

Summary of Harmonization Progress and Pitfalls

- 9:00 **Overview of ‘Handshake Document’**
 - Steve Rose/Kathy Hibbard
- 9:30 **Harmonization progress, remaining issues for climate models**
 - Steve Froelking
- 10:00 Questions and discussion
- 10:30 *Break*
- 11:00 **Harmonization progress, remaining issues: IA Models**
 - Detlef van Vuuren
- 11:30 Questions and Discussion
- 12:00 **Overview and Discussion for Land Use/Land Cover Harmonization**
- 12:30 PM *Lunch*
- 1:30 Continue Discussion for Land Use/Land Cover Harmonization

- 2:00 Overview and Discussion for Emissions Harmonization:
- 3:00 *Break*
- 3 30 Overview and Discussion for Extension to 2300
- 4:00 Wrap-up, decisions made and next steps
- 5:00 Adjourn/Informal Discussion

Thursday, July 31

7:30 AM Continental Breakfast – Gatehouse, Top of the Village

CHALLENGES IN INTEGRATED ASSESSMENT

- 8:30 **Introduction** • Richard Richels
- 8:45 **Questions on the mind of Global Climate Change policy makers** ((US Centric Viewpoint)
 - Jeff Frankel
 - Jack Fellows
- 9:45 **Potential Role of Analysis**
 - Charles Kolstad
- 10:45 *Break*
- 11:00 **How Effective has Analysis been in Informing Decision Making**
 - Brian Flannery
 - Tony Janetos

12:00 PM Lunch

- 1:00 **Overview of Integrated Assessment**
 - John Weyant
- Case Studies in Integrated Assessment** (Each session will have 20 minutes of Q&A)
- 2:00 **MIT Model**
 - Jake Jacoby
- 3:00 **PNL Model**
 - Jae Edmonds
- 4:00 *Break*
- 4:15 **RIVM**
 - Tom Kram
- 5:15 Adjourn/Informal Discussion

6:30PM Western BBQ for Attendees and ALL Guests, Snowmass Rodeo Grounds

Friday, August 1

7:15 AM Continental Breakfast – Gatehouse, Top of the Village

Challenges in Integrated Assessment (continues)

- 8:00 Review of Agenda for day 2
 - Richard Richels
- Case Studies of Integrated Assessment: Model Components (each session will have time for 20 minutes Q&A)
- 8:45 **Modeling of Impacts**
 - Richard Tol
- 9:45 **Modeling of Technology**
 - Geoff Blanford

- 10:45 *Break*
- 11:00 **Modeling of the carbon cycle**
 • Tom Wigley
- 12:00 PM *Lunch*
- 1:00 **Potential value of Integrated Assessment** – Physical Science Viewpoint
 • Ian Kraucunas
 • Jerry Meehl
 • Ben Santer
 • Jorge Sarmiento
- 2:30 *Break*
- 3:00 **Way forward** – Panel
 • Jim Sweeney
 • Molly Macauley
 • Jerry Meehl
 • Tom Wilbanks
- 5:00 Adjourn/Informal Discussion

Sunday, August 3

- 7:00 PM *Informal Reception & Dessert Gathering for Attendees and all Guests*
 Gatehouse, Top of the Village

Monday, August 4:

7:30 AM Continental Breakfast – Gatehouse, Top of the Village

THE ECONOMICS OF TECHNOLOGIES TO COMBAT GLOBAL WARMING

August 4-5, 2008

Organizers: Nebojsa Nakicenovic and William Nordhaus

Purpose of the Workshop. A major set of unresolved economic and policy issues in global warming is the development and deployment of new technologies, primarily energy technologies. The need to make a smooth transition from existing technologies to new low-carbon technologies will be the major challenge in coming decades. Historical changes of such importance such as the transition from traditional energy forms to fossil energy have been very disruptive but have resulted in unprecedented economic development and improvements in human well being. At the same time, understanding of the dynamics of technological change is the least understood part of the global warming nexus. In addition, it is critical to understand and develop the policy instruments that will guide markets, entrepreneurs, and not-for-profit participants in undertaking the necessary research, development, and commercialization.

The conferences will address key issues from the areas of underlying science and engineering, economic theory, modeling, entrepreneurship, policy instruments, and case studies. The purpose will be to develop insights that will help analysts, businesses, and governments to consider fruitful approaches to support of technology and policy in this area.

Morning (9am – 12pm)

Opening remarks: William Nordhaus and Nebojsa Nakicenovic

Session I: Basic science and engineering of new technologies, energy, CO₂ fundamentals

Chair: Hugh Pitcher (JGCRI)

Papers:

Doug Arent (NREL)

David Greene (ORNL)

Howard Herzog (MIT)

Tom Wilbanks (ORNL)

Discussants: Jae Edmonds (JGCRI), Brian Flannery (Exxon Mobile)

12:00 pm Lunch

Afternoon (1 – 5pm):

Session II: Theory of induced innovation, economics of R&D, government policies and instruments

Chair: Jim Sweeney (Stanford)

Papers:

Scott Barrett (Johns Hopkins)

Dan Newlon (NSF)

Bill Nordhaus (Yale)

Bob Vallario (DOE) and Graham Pugh (DOE)

Discussants: Charlie Kolstad (UCSB), David Warsh (Boston Globe)

General Discussion on the First Day (4 – 5)

Conference Dinner at 7 pm

Tuesday August 5

Morning (9am – 12pm):

Session III: Diffusion of new technologies, policies and uncertainty

Chair: Paco de la Chesnaye (EPRI)

Papers:

Arnulf Gruebler (IIASA and Yale)

Rob Lempert (RAND)

John Weyant (Stanford)

Discussants: Gary Yohe (Wesleyan), Richard Tol (ESRI)

12:00 pm Lunch

Afternoon (1 – 5pm):

Session IV: Modeling issues, integrated assessment, modeling technological change, R&D and investment requirement

Chair: Richard Richels (EPRI)

Papers:

Leon Clarke (JGCRI), Jae Edmonds (JGCRI)

Nebojsa Nakicenovic (IIASA and TU-Wien)

Detlef van Vuuren (RIVM)

Discussants: Makiko Kainuma (NIES), Emanuele Massetti (Venice and Yale)

Closing of the Workshop (4 – 5)

Wrap up Panel: Personal reflections of the session chairs (circa 5 minutes each)

General Discussion on the Conference

Adjourn at 5 pm

Wednesday, August 6:

7:30 AM Continental Breakfast – Gatehouse, Top of the Village

DEALING WITH UNCERTAINTY IN CLIMATE POLICY ANALYSES

Organized by Gary Yohe

9:00 Introduction, Context, and Plans

- Gary Yohe

9:30 Returning to Uncertainty

- John Weyant

10:15 *Break*

10:45 Uncertainty and the Social Cost of Carbon

- Richard Tol

11:30 Discussion

12:00 PM Lunch

Afternoon Session – Uncertainty, Risk and Adaptation

1:30 Introduction and Context

- Gary Yohe

1:45 Motivation from the Argonne Workshop (July 21-22, 2008)

- Ian Foster

2:30 Long-term Water Management under Climate Uncertainty

- Rob Lempert

3:15 *Break*

3:30 Quantifying Uncertainty: Experience with Structured Expert Judgment

- Roger Cooke

4:15 Discussion

5:00 Adjourn/Informal Discussion

6:30PM Closing Workshop Dinner for Attendees and all Guests

Thursday, August 7

7:30 AM Continental Breakfast – Gatehouse, Top of the Village

Uncertainty, Risk and Mitigation

9:00 Introduction and Context

- Gary Yohe

9:15 Energy and Climate Uncertainty Computations Run on Super Parallel Computers

- Don Hanson

10:00 Uncertainty and Climate Policy

- Emanuele Massetti

10:45 *Break*

11:15 Risk Hedging Strategies

- Keywan Riahi

12:00PM Lunch

Afternoon Session – Discussion and Planning

- 1:30 Coping with Uncertainty and Risk within the EPA
 • Steve Rose
- 2:15 Discussion – Next Steps and Closing Remarks

Friday, August 8

- 7:30 AM *Continental Breakfast – Gatehouse, Top of the Village*
- 9:00 Informal Discussion and Planning