

## Forestry and Agriculture Greenhouse Gas Modeling Forum

### Workshop #6: Forestry, Agriculture & Climate Change: Modeling to Support Policy Analyses

September 26-29, 2011—National Conservation Training Center  
Shepherdstown, West Virginia

Sponsored by: US Environmental Protection Agency, US Department of Agriculture,  
Agriculture and Agri-Food Canada

**Workshop Objectives:** (1) Identify key agriculture, forestry, and linked land-use change issues that will dominate upcoming climate change and energy policy discussions; (2) Discuss modeling capabilities for informing the policy process through improved understanding of the benefits, costs, and mitigation potential of alternative GHG reduction strategies in the forestry, agriculture and bioenergy sectors; (3) Discuss the modeling capabilities for estimating climate change impacts and possible adaptation strategies in the relevant sectors; (4) Highlight key scientific and economic uncertainties and risks that must be addressed in modeling for policy design and implementation and discuss use of risk management techniques as part of a systematic way to consider threats and vulnerabilities, and (5) Identify temporal differences with current modeling efforts, modeling issues to tackle over the next two years, and long-term gaps that are likely to persist beyond two years, including data needs.

#### Day 1: Monday, September 26, 2011

5:00–6:30 pm	Registration   <i>Entry Auditorium Building</i>
6:30–8:00 pm	Optional Dinner & Reception   <i>Main Dining Room</i>
8:00 pm	Informal Discussions   <i>Lounge</i>

#### Day 2: Tuesday, September 27, 2011

7:00–8:00 am	Breakfast   <i>Main Dining Room</i> Registration   <i>Entry Auditorium Building</i>
8:00 am	<b>Welcome and Workshop Overview</b>   <i>Classroom 151, Instructional West Building</i> Sara Ohrel • EPA Climate Change Division
8:15 am	<b>Keynote Address</b> <i>The Velocity of Climate Change</i> Chris Field • Carnegie Institution & Stanford University
8:45–10:00 am	<b>Session 1: Climate and Energy Policy Perspectives</b>

*Objective: Presenters will evaluate recent efforts to address climate change issues in various policy settings and identify current and future status and modeling needs related to climate, energy, and land use policy issues.*

Session Chairs: Sara Ohrel (EPA) and Jan Lewandrowski (USDA)

**Day 2: Tuesday, September 27, 2011**

William Hohenstein • USDA Global Change Program Office

Reid Harvey • EPA Climate Change Division

Bob McGregor • Agriculture and Agri-Food Canada

Barbara Bramble • National Wildlife Federation

Mariann Quinn • Duke Energy *invited*

Adrian Deveny • Office of Senator Jeff Merkley (D-OR) *invited*

Comments & Group Discussion

10:00 am Break

10:30–12:00 pm **Session 2: Managing Agriculture, Forests and Land Use Change to Mitigate GHGs**

*Objective: This session explores how agriculture, forests and land use change can mitigate the build-up of GHGs, examining the economic potential at different scales and under different assumptions and evaluates the effectiveness of different policy designs on target outcomes .*

Session Chair: Brian Murray (Nicholas Institute, Duke University)

*Global Perspectives on Agriculture and Forest Mitigation with Emphasis on Induced Land Use Change*

Petr Havlik • International Institute for Applied Systems Analysis

*Marginal Abatement Cost Curves for Mitigation Strategies in Canada's Managed Forests*

Emina Krcmar & Graham Stinson • Canadian Forest Service

Comments & Group Discussion

12:00 pm Lunch | *Main Dining Room*

1:00–5:15 pm **Session 2: Managing Agriculture, Forests and Land Use Change to Mitigate GHGs (continued)**

Session Chair: Brian Murray (Nicholas Institute, Duke University)

*Examining U.S. National Road Maps for Addressing Climate Change on Public and Private Lands: Meshing Opportunities, Risk Assessment, and Forest Policy*  
Ralph Alig & Elizabeth Reinhardt • USDA Forest Service

*Simulated Effects of Mandatory versus Voluntary Participation in Private Forest Carbon Offset Markets in the United States*

Greg Latta • Oregon State University

2:30 pm Break

3:00 pm *Estimating Investment Risk and Market Potential for Greenhouse Gas Abatement*  
Steven Rose • Electric Power Research Institute

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**Day 2: Tuesday, September 27, 2011**

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*Implications of Agricultural Productivity Change on Net Emissions and GHG Mitigation Potential*

Justin Baker • Nicholas Institute, Duke University

*Interaction of Agriculture and Energy in Global Greenhouse Gas Mitigation Scenarios*

Ronald Sands • USDA Economic Research Service

Comments & Group Discussion

6:00 pm Dinner | *Main Dining Room*

7:30 pm Informal Gathering | *Lounge*

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**Day 3: Wednesday, September 28, 2011**

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7:00–8:00 am Breakfast | *Main Dining Room*

8:00–12:15 pm **Session 3: Climate Impacts & Adaptation**

**Session 3.1: Modeling and Forecasting Climate, Biophysical Impacts, and Ecological and Economic Adaptation**

*Objective: The purpose of this session is to bring together both biophysical and economic modelers to characterize and evaluate the state of climate impacts modeling as well as uncertainties in observed and projected biophysical conditions (climate, weather, water, productivity, disturbances) and impacts and adaptation responses and effectiveness for managed and unmanaged lands.*

Session Chairs: Carol Adaire Jones (USDA Economic Research Service) and Jerry Hatfield (USDA Agricultural Research Service)

*Regional Climate Models and Linkages to Agricultural Models*

Linda Mearns • National Center for Atmospheric Research

*Modeling Climate Impacts on Agricultural Production*

Cynthia Rosenzweig • National Aeronautics and Space Administration

*Integrating Ecological and Economic Models in Climate Change Analyses*

Linda Joyce • USDA Forest Service

*Food Security and Climate Change: Current IMPACT Results and Future Plans*

Gerald Nelson • International Food Policy Research Institute

Comments & Group Discussion

10:00 am Break

10:30 am *Impact of Climate Change on Timber Markets and Global Carbon Sequestration*  
Brent Sohngen • Ohio State University

*Regional Economic and Environmental Impacts of Agricultural Adaptation to a Changing Climate in the United States*

Scott Malcolm • USDA Economic Research Service

**Day 3: Wednesday, September 28, 2011**

*Impact of Climate Change on US Agriculture: Econometric Estimation*  
Wolfram Schlenker • Columbia University

12:15 pm

Lunch | *Main Dining Room*

1:15–2:30 pm

**Session 3: Climate Impacts & Adaptation**

**Session 3.2: Panel Discussion: State of the Science and Implications for Risk Management and Policy (Where do we go from here?)**

Discussants

Jerry Hatfield • USDA Agricultural Research Service

John Antle • Oregon State University

David Cleaves • US Forest Service

Comments from other members of session & group discussion

2:30 pm

Break

3:00–5:30 pm

**Session 4: Bioenergy**

**Session 4.1: What are Models Saying about the Supply of Bioenergy Regionally and Temporally?**

*Objective: Assess the current state of models to address technical, logistical, and economic issues associated with large-scale adoption of bioenergy and explore key issues related to competition for land, net GHG emissions and other environmental impacts, role of bioenergy in GHG mitigation, and key uncertainties.*

Session Chair: Robert Beach (RTI)

*Bioenergy Supply, Land Use, and Environmental Implications*

Robert Beach • RTI International

*Projected Response of the Agriculture and Forest Sectors to National and Regional Renewable Electricity Standards*

Eric White • Oregon State University

*Identifying Supply and Demand Elasticities of Agricultural Commodities: Implications for the US Ethanol Mandate*

Michael Roberts • North Carolina State University

*International Implications of Bioenergy and Forests*

Brent Sohngen • Ohio State University

*The Role of Irrigation in Determining the Global Land Use Impacts of Biofuels*

Farzad Taheripour • Purdue University

Discussant

Bruce McCarl • Texas A&M University

Comments & Group Discussion

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**Day 3: Wednesday, September 28, 2011**

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6:00 pm Dinner | *Main Dining Room*  
7:30 pm Informal Gathering | *Roosevelt Room & Lounge*

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**Day 4: Thursday, September 29, 2011**

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7:00–8:00 am Breakfast | *Main Dining Room*

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8:00–11:30 am **Session 4: Bioenergy**

**Session 4.2: What are the Implications of Increased Reliance on Bioenergy?**

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*Economic and Land Use Implications of Biofuel Production: The Role of Policy*  
Madhu Khanna • University of Illinois

*Use of the Canadian Regional Agriculture Model (CRAM) in Bioenergy Analyses: Recent Innovations*  
Stephen Smith • Agriculture and Agri-Food Canada

*Effects of Expanded Bioenergy Production on Land Use and GHG Emissions*  
Chad Hellwinckel • University of Tennessee

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9:30 am Break

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10:00 am *Effects of Woody Biomass for Bioelectricity in the Southeastern US*  
Christopher Galik • Nicholas Institute, Duke University & Robert Abt • North Carolina State University

*Analyzing the Impacts of U.S. Biofuels Production and Trade Policies in a General Equilibrium Framework*  
Dileep Birur • RTI International

Discussant  
Patrick Westhoff • University of Missouri  
Comments & Group Discussion

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11:30 am **Wrap-Up Discussion: Workshop Review & Conclusion**

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Allison Thomson • Joint Global Change Research Institute  
Members of the Organizing Committee

12:30 pm Lunch | *Main Dining Room*

2:00 pm Shuttle departs for Dulles Airport

4:00 pm Shuttle arrives at Dulles Airport