

# Climate Change and the Fate of the Amazon



Oriel College  
Harris Lecture Theatre  
University of Oxford  
20-22 March 2007

The potential large-scale possible dieback of the Amazon rainforest is one of the most profound impacts of climate change in the 21st century. This workshop explores this threat in detail, examining the likelihood of such change, the mechanisms that may lead to biome-threatening climate change, and the resilience or vulnerability of both the biome and its human populations to such change. We will also examine the potential consequences for the region and the planet, and explore strategies for preparation, adaptation, and mitigation.

## **Sessions:**

*Mechanisms of Climate Change in Amazonia*  
*Insights from Recent Droughts: A Model for the Future?*  
*Physiology of a Forest Under Stress*  
*Lessons from Prehistoric Climate and Vegetation Change*  
*Humans and Forests in a Changing Amazon*  
*Conservation and Adaptation*  
*Crafting Policy in the Face of Politics: The Amazon in the Context of Brazil*  
*Global Impacts, Global Politics, Global Action*

**Workshop Conveners:** *Yadvinder Malhi (Univ of Oxford), Richard Betts (Hadley Centre) and Timmons Roberts (Univ of Oxford)*

## **Sponsored By:**

*Environmental Change Institute*  
*Oxford University Centre for the Environment*  
*James Martin 21<sup>st</sup> Century School*  
*Centre for Brazilian Studies*  
*Tyndall Centre for Climate Change Research*  
*Met Office Hadley Centre*  
*Oriel College*

Tuesday, 20 March 2007

9 am – 11 am *Registration*

**Introductory Session**

11 – 11:20 am

**Welcome**

Derek Morris (*Provost, Oriel College*)

Diana Liverman (*Director, Environmental Change Institute*)

11:20 – 11:40 am

**Climate Change and the Fate of the Amazon: An Introduction to Conference Structure and Aims**

Yadvinder Malhi (*Oxford Univ Centre for the Environment*)

11:40 – 12:20 pm

**Tipping Points in the Earth System**

John Schellnhuber (*Director, Potsdam Institute for Climate Impacts Research*)

12:20 – 1:00 pm

**Gradual Climate Change or “Tipping Points” in the System?**

Carlos Nobre (*Chair, International Geosphere-Biosphere Programme*)

1:00 – 2:00 pm

Lunch – Oriel College

**Mechanisms of Climate Change in Amazonia**

2:00 – 2:40 pm

**Was the Amazon Drought of 2005 Human Caused?**

Peter Cox (*Prof of Climate Systems, Univ of Exeter*)

2:40 – 3:20 pm

**Climate in the Amazon Basin: from Interannual Variability to Climate Change**

Jose Marengo (*Brazilian Centre for Weather and Climate Prediction*)

3:20 – 4:00 pm

**What are the Patterns of Climate that Threaten the Amazon Biome?**

Phil Harris (*Centre for Ecology & Hydrology*)

4:00 – 4:30 pm

*Tea*

4:30 – 5:10 pm

**How Robust is the HadCM3 Amazon “Dieback” Result?**

Chris Huntingford (*Centre for Ecology & Hydrology*) and Rosie Fisher (*University of Sheffield*)

5:10 – 5:50 pm

**The Influence of Amazonian Forests and their Loss on the Chemistry of the Atmosphere**

Laurens Ganzeveld (*Wageningen University, Netherlands*)

**Public Lecture**

7:00 – 8:00 pm

**Climate Change: Prospects for Nature**

Thomas Lovejoy (*President, The H. John Heinz III Center for Science, Economics and the Environment*)

**Venue: The Museum of Natural History**

Followed by

Reception and Dinner for Conference Participants –

**Venue: The Museum of Natural History**

Wednesday, 21 March 2007

**Insights from Recent Droughts: A Model for the Future?**

- 8:30 – 9:10 am **The Extent and Impacts of the 2005 Amazon Drought**  
Luiz Aragão (*Univ of Oxford*)
- 9:10 – 9:50 am **Change in Mature Amazonian Forests, 1980-2005**  
Oliver Phillips (*School of Geography, Univ of Leeds*)
- 9:50 – 10:30 am **Biodiversity Erosion in Fire-Prone Amazonian forests**  
Carlos Peres (*School of Environ Sciences, Univ of East Anglia*)

10.30 – 11:00 am Coffee

**Physiology of a Forest Under Stress**

- 11:00 – 11:40 am **The Possible Impacts of Drought on Amazonian Forests**  
Patrick Meir (*School of GeoSciences, Univ of Edinburgh*)
- 11:40 – 12:20 pm **Effects of Rising Temperatures and CO<sub>2</sub> Concentration on the Physiology of Tropical Forests**  
Jon Lloyd (*Prof of Earth System Science, Univ of Leeds*)
- 12:20 – 1:00 pm **Physiological Responses to Temperature and CO<sub>2</sub> and the Extent of the Amazon Forest**  
Sharon Cowling (*Dept of Geography, Univ of Toronto*)

1:00 – 2:00 pm *Lunch: Oriel College*

- 2:00 – 2:40 pm **Structure of Amazonian Vegetation in the First Half of the 21<sup>st</sup> Century**  
Marcos Costa (*University of Viçosa, Brazil*)

**Lessons from Prehistoric Climate and Vegetation Change**

- 2:40 – 3:20 pm **How Stable or Variable is the Climate of Amazonia?**  
Frank Mayle (*School of GeoSciences, Univ of Edinburgh*)
- 3:20 – 4:00 pm **Legacies of Pre-Columbian Disturbance on Amazonian Forests**  
Mark Bush (*Prof of Biological Science, Florida Inst of Tech*)

4:00 – 4:30 pm *Tea*

**Humans and Forests in a Changing Amazon**

- 4 :30 – 5:10 pm **Contemporary Processes in Amazonia and Implications for the Future of Amazonia**  
Michael Keller (*Complex Systems Research Center, Univ of New Hampshire*)
- 5:10 – 5:50 pm **Interactions between Amazon Economies, Ecosystems and Climate from 1996 to 2050: Opportunities for Policy Interventions**  
Dan Nepstad (*Senior Scientist, Woods Hole Research Centre*)
- 5:50 - 6:30 pm **Land-Use Decision-Making and the Future of Amazonia**  
Stephen Perz (*Dept of Sociology, Univ of Florida*)

**Keynote 2**

- 7:30 – 8:30 pm **Public Forum: Futures for the Amazon?**  
Martin Wood Lecture Theatre  
Carlos Nobre, (*Director of International Geosphere Biosphere Programme*)  
Maria Ikeda, (*Environment Section, Brazilian Embassy, London*)  
Anthony Hall (*Reader in Social Planning in Developing Countries, London School of Economics and Political Science*)  
Daniel Nepstad (*Senior Researcher, Woods Hole Research Centre, USA*)

Thursday, 22 March 2007

**Conservation and Adaptation**

- 9 – 9:40 am **How Can Conservation Strategies Plan for Climate Impacts in Amazonia?**  
Tim Killeen (*Conservation International, Bolivia*)
- 9:40 – 10:20 am **Amazon Conservation Biology: The Challenge of Representing Biodiversity in a Changing Environment**  
George Powell and Juan Carlos Riveros (*WWF*)
- 10:20 – 11:00 am **Human Dimensions of Climate Change: The Vulnerability of Small Farmers in the Amazon**  
Eduardo Brondizio (*Dept of Anthropology and Anthropological Center for Training and Research on Global Environmental Change (ACT), Indiana University*)
- 11 – 11:30 am *Coffee*
- Crafting Policy in the Face of Politics: The Amazon in the Context of Brazil**
- 11:30 – 12:10 pm **Adaptive Governance: a Remedy for Amazonia?**  
Emily Boyd (*Oxford Univ Centre for the Environment*)
- 12:10 – 12:50 pm **Amazon Interventions and Climate Change**  
Don Sawyer (*Instituto Sociedade População e Natureza, ISPN*)
- 12:50 – 2:00 pm *Lunch: Oriel College*
- 2:00 – 2:40 pm **What Drives Environmental Policymaking in the Brazilian Amazon?**  
Maria Carmen Lemos and Timmons Roberts (*Oxford Univ Centre for the Environment*)
- 2:40 – 3:20 pm **Social-science perspectives on environmental changes in the Brazilian Amazon**  
Diogenes Alves (*Instituto Nacional de Pesquisas Espaciais, INPE, Brazil*)
- 3:20 – 3:50 pm *Tea*
- Global Impacts, Global Politics, Global Action**
- 3:50 – 4:30 pm **What Impact Would the Dieback of Amazonia Have on Regional and Global Climate, Carbon, Water, and Energy Cycles?**  
Richard Betts (*Hadley Centre for Climate Prediction and Research*)
- 4:30 – 5:10 pm **The Potential of Reducing Emissions from Deforestation to Protect the Amazon and Mitigate Climate Change**  
Johannes Ebelling (*EcoSecurities, UK*)
- 5:10 – 5:50 pm **The Geopolitics of Reducing Emissions from Deforestation in Developing Countries**  
Kevin Conrad (*Coalition for Rainforest Nations*)
- Concluding Session**
- 5:50 – 6:30 pm **Roundup, Discussion, and Next Steps**  
Yadvinder Malhi (*Univ of Oxford*)
- 6:30 pm *Adjourn*