



THE WOODS HOLE RESEARCH CENTER

149 Woods Hole Road · Falmouth, MA 02540-1644 USA
Telephone 508.540.9900 · Fax 508.540-9700 · www.wbrc.org

Modeling and Mitigation Workshop Assesses Interactions Among Climate, Forests, and Land Use in the Amazon Basin

March 12, 2008

On February 25 and 26, over 50 scientists gathered for a two-day workshop in Manaus, Brazil, to discuss the current state of knowledge on the feedbacks between deforestation and climate in the Amazon and what research is required to avoid catastrophic change. Collaborators from the Woods Hole Research Center, Universidade Federal de Minas Gerais, Duke University, *Instituto de Pesquisa Ambiental da Amazônia*, Harvard University, Universidade Federal de Viçosa, University of Wisconsin – Madison, Oxford University, University of Edinburgh, The United Kingdom Meteorology Office and the Brazilian center for weather forecasting and climate studies (CPTEC) participated.

Professor Virgilio Viana, Secretary of Environment and Sustainable Development of Amazonas State, Brazil, opened the workshop with comments on the visionary program of the Amazonas State Government. Viana emphasized that Amazonas has become a model of sustainable, forest-based development by replacing the previous paradigm, which assumed that forests were nothing but unproductive land, with the understanding that forests are worth more standing than cut.

The workshop focused on how to reduce the risk of a vicious cycle of forest impoverishment in which forest clearing and degradation foster drought and further degradation. Dan Nepstad, a senior scientist at the Woods Hole Research Center acknowledged that forest die-back has already begun, noting that uncontrolled fires from poor farming practices were degrading large swaths of the southern Amazon and making them susceptible to further fires and drought. However, he also emphasized that it is a time of hope because large-scale conservation is gaining momentum, driven by the Brazilian government, which is implementing its "Amazon Region Protected Area" program to greatly expand and police protected areas and by commodities markets (soy, beef, ethanol), which are driving compliance with environmental and social legislation by farmers.

Throughout the workshop, scientists from the collaborating institutions gave short presentations of their current research, including work on the latest developments in the sophisticated computer programs required to address the fundamental questions of Amazonian ecological integrity and recent insights into the ways in which vegetation play an important role in the climate of the Amazon and the globe. Several important conclusions emerged from these talks and discussions: 1) clearing and forest fragmentation decreases local rainfall but only after a threshold of 100s km² is deforested; 2) large scale deforestation of greater than 100,000 km² appears to significantly decrease rainfall, not only where deforestation occurs, but over forested regions throughout the Amazon; and 3) the response of the river flow to deforestation is complicated and leads to unexpected results with decreased river flow in some streams and increased river flow in others depending on how much and where deforestation takes place.

Carlos Nobre, director of CPTEC, gave the closing address in which he emphasized the importance of focused investment in education and research to address this global issue. He outlined a program an ideal program that would create a Brazilian national program on Amazon ecology modeled after a one that has made Brazil one of the world leaders in the aerospace industry.



THE WOODS HOLE RESEARCH CENTER

149 Woods Hole Road · Falmouth, MA 02540-1644 USA
Telephone 508.540.9900 · Fax: 508.540-9700 · www.wbrc.org

Michael Coe, an associate scientist at the Woods Hole Research Center and one of the workshop organizers, summarized, "This workshop was important because it brought together conservation organizations, scientists and policy makers. The outcomes of this workshop will help us develop a blueprint for our research efforts in the coming years on what may be one of the most important environmental questions: What amount and location of forest is required to guarantee a healthy environment? This meeting will also help conservation organizations prepare for the future because as the results in this meeting showed, unfettered deforestation will have strong impacts on the health of the entire Amazon and local conservation efforts will result in significant returns."

The Gordon and Betty Moore Foundation and the US National Science Foundation generously sponsored this workshop.