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Climate change and forests in Brazilian Amazonia

Abstract

Tropical forests are a key part of debates on climate change science and policy because of the prospect of large areas of Amazonian forest not surviving projected climate changes under “business as usual” scenarios, the substantial contributions that deforestation and other landscape modifications make to climate change, and the potential role of efforts to counter deforestation as part of a strategy to mitigate climate change in the coming decades. Because half of the dry weight of the trees in a tropical forest is carbon, either deforestation or forest die-off releases this carbon in the form of greenhouse gases such as carbon dioxide (CO_2) and methane (CH_4), whether the trees are burned or simply left to rot.

Tropical forests are vulnerable to projected changes in precipitation and temperature. These changes could therefore threaten the biodiversity of these forests and the traditional peoples and others who depend upon the forests for their livelihoods. Also threatened are the environmental services supplied by the forests to locations both near and far from the forests themselves. Greenhouse-gas emissions provoked by forest die-off due to climate change are part of a potential positive feedback relationship leading to more warming and more die-off. The Amazon forest is a focus of concern both because of the particularly severe impacts of climate changes predicted for this area and because the vast extent of this forest gives it a significant role in either intensifying or mitigating future climate change (see: http://philip.inpa.gov.br).