New technology needed to monitor rain forest 'tsunami'

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Human impact on tropical forest ecosystems has reached a "tsunami" stage, say scientists, and will require a new generation of sophisticated remote-sensing technology to monitor the changes. Speaking at a January 12, 2009 symposium "Will the Rainforests Survive? New Threats and Realities in the Tropical Extinction Crisis*," hosted by the Smithsonian Institution, Gregory Asner of the Carnegie Institution's Department of Global Ecology presents new estimates of the global human impact on rain forests, including not only deforestation but also the extent of selective logging and forest regeneration.

Asner and his co-authors Tom Rudel of Rutgers University, Mitch Aide from University of Puerto Rico, Ruth DeFries of Columbia University, and Ruth Emerson from Carnegie compiled their estimates using data from satellite observations, published field surveys, and a sampling of Google Earth™ images. They highlight that roughly 1.4% of the world's tropical humid forests was deforested between 2000 and 2005, and that as of 2005 more than half of the forests contained 50% or less tree cover.

"Selective logging is more difficult to recognize and quantify than outright deforestation, so there have been few estimates of its impact," says Asner. "But we found that around 28% of humid tropical forests are undergoing some level of timber harvesting."

"The overall impacts of selective logging on biodiversity are far less dramatic than the wholesale losses incurred by deforestation," he adds, "but nonetheless it can fundamentally alter forest habitat."

The researchers also found that at least 1.7% of humid tropical forests are in some stage of secondary regrowth, mostly in hilly or mountainous regions marginal for large-scale agriculture and ranching.

But Asner emphasizes that the precision of these estimates is limited by current technologies, especially considering the difficulty of resolving fine-scale vegetation changes. New technologies to resolve subtle forest changes, such as the new sensors being developed by the Jet Propulsion Laboratory and Carnegie, will be necessary as the rainforest "tsunami" continues to sweep through tropical ecosystems in the coming decades.

*Symposium Website: www.si.edu/tec/

Source: Carnegie Institution