



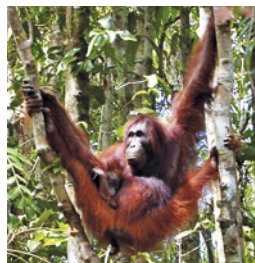
Photo by Daniel Murdiyarto

Tropical wetlands initiative

For climate adaptation and mitigation

Overview

Tropical wetlands are among the most productive ecosystems on earth, harbouring unique aquatic and terrestrial communities high in biodiversity. Many threatened species (including orangutans, clouded leopards and Sumatran tigers) find refuge in Indonesia's peat forests and mangroves, the most extensive in the world. Peatlands and mangroves also provide numerous ecosystem services to millions of coastal dwellers, who rely on them for life and livelihood. Coastal wetlands, especially mangroves, supply energy and nutrients to coral reefs and maintain fisheries by providing nursing and breeding habitat. Tropical wetlands protect inland areas from erosion, dissipate energy from storm surges and tsunamis, and buffer marine ecosystems from terrestrial sedimentation and pollutants. Peatlands and mangroves also store an immense amount of carbon from the steady accumulation of organic matter over millennia. Recent studies demonstrate that carbon pools in peat and mangrove forests are up to five times those of upland tropical, temperate and boreal forests, emphasising their significant role in the global carbon cycle. Ironically, mangroves and peatlands have the highest deforestation rates on Earth.



Climate adaptation and mitigation

Coastal wetland forests and their inhabitants are extremely vulnerable to the negative effects of climate change. Rising sea levels and increased frequency and severity of tropical cyclones are predicted for the next century, which will largely impact coastal zones and low lying islands. In addition to storing carbon, tropical wetlands perform critical ecological functions at the land-sea interface and provide numerous ecosystem services. These factors should identify them as target areas for climate mitigation and adaptation initiatives, including REDD+ (reducing emissions from deforestation and forest degradation, and enhancing forest carbon stocks in developing countries). Yet, ecosystem carbon pools and fluxes in wetland forests remain poorly quantified. Significant knowledge gaps exist regarding how land use changes impact carbon dynamics in tropical wetlands. Monitoring,

reporting and verification (MRV) of greenhouse gas emission reductions is a major technical hurdle to the implementation of REDD+ in countries and in early demonstration activities.

The TWINCAM project

The goal of the Tropical Wetlands Initiative for Climate Adaptation and Mitigation (TWINCAM) is to support the development of international REDD+ mechanisms in wetlands, and to significantly reduce current constraints on REDD+ implementation in wetlands throughout the tropics. This is being achieved by:

- Advancing the science and knowledge of MRV and greenhouse gas emissions specific to tropical wetlands by facilitating scientific consensus, conducting collaborative research, and sharing expertise in mapping and spatial data analysis. Standardised methods for wetland forest carbon inventories are being developed to determine the temporal and spatial dimensions of forest dynamics needed for effective MRV of tropical wetlands.
- Creating networks of permanent forest plots and professional staff designed to fill critical knowledge gaps in wetland carbon dynamics. By conducting collaborative field research in southeast Asia, these networks are providing essential information on the carbon inventories, baseline assessments, and monitoring techniques needed to implement REDD+ strategies in tropical wetlands. Activities also include measuring and monitoring important greenhouse gas (CO₂, CH₄, N₂O) emissions in converted and degraded tropical wetland forests.
- Building capacity and outreach of regional academic and research counterparts* for scientific inquiry and climate change research. This includes informing the public and policy makers about the interrelated issues of carbon stocks, climate change, land use and land cover change, and adaptation and mitigation approaches for tropical wetlands; and engaging local partners to take leading roles in REDD+ project design, implementation and MRV.

2011 Accomplishments

Building scientific consensus

- International workshop: Tropical Wetland Ecosystems of Indonesia: Science Needs to Address Climate Adaptation and Mitigation. Proceedings online: www.forestsclimatechange.org/events/workshop-on-tropical-wetland.html

- Numerous presentations and seminars at science and policy meetings throughout the globe
- Sponsored side event at the UNFCCC Subsidiary Body for Scientific and Technological Advice meeting, Bonn, Germany
- Development of standardised protocols for carbon stock assessment in peatlands and mangroves

Capacity building and training



- Creation and support of an Indonesian network of wetland scientists spanning eight regions from Sumatra to Papua. Participants were trained in standard protocols and completed wetland carbon stock assessments at their home sites
- Follow-up 'writeshop' to learn how to analyse and publish TWINCAM data
- Training workshops in Mexico
- Establishment of carbon analysis laboratory at Bogor Agricultural University
- Sponsorship of Indonesian graduate students at leading US institutions: Oregon State University, University of New Hampshire, and Indiana University

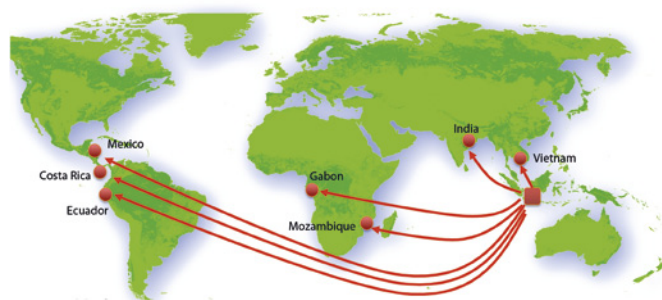
Wetlands research

- Over 50 Indonesian forest stands sampled to date, comprising an unprecedented dataset of above-and-belowground carbon storage in tropical wetlands. Research on alternative land uses and greenhouse gas fluxes in Indonesia will continue in 2012
- Additional sampling completed in Mexican coastal ecosystems



Future activities

Going global



In 2012, TWINCAM will expand throughout major tropical wetland areas of the world. Capacity building and research activities are planned for South Asia, Africa and Central and South America.

Data repository and management

As the TWINCAM network rapidly expands, there is an increasing need to properly store and manage the data generated. Data from TWINCAM sites will be reported and archived in a standard format to facilitate future data synthesis. Establishing a data repository is necessary to realise the full potential and power of the TWINCAM global dataset.

Communicating results

To raise awareness and promote science-based wetlands policy and management, TWINCAM will continue presenting results and recommendations through publications and presentations worldwide. TWINCAM communications target a broad audience including:

- International policy forum and IPCC processes
- National and local policymakers
- Scientific community
- General public

TWINCAM results highlight the importance of tropical wetlands in global carbon cycling, increase our understanding of carbon storage in wetlands, and emphasise the key role of wetlands in climate mitigation and adaptation strategies.

***Interested in REDD+ activities for tropical wetlands? Contact TWINCAM scientists to explore opportunities for partnership and collaboration throughout the tropics.**

Dr. J. Boone Kauffman
Dept. of Fisheries and Wildlife
Oregon State University & CIFOR
boone.kauffman@oregonstate.edu

Dr. Richard Birdsey
Northern Research Station
USDA Forest Service
rbirdsey@fs.fed.us

Dr. Daniel Murdiyarso
Forests and Environment Programme CIFOR
d.murdiyarso@cgiar.org

Dr. Kristell Hergoualc'h
Forests and Environment Programme CIFOR
k.hergoualc'h@cgiar.org

Dr. Matthew Warren
Northern Research Station
USDA Forest Service
mwwarren@fs.fed.us

Dr. Louis Verchot
Forests and Environment Programme CIFOR
l.verchot@cgiar.org

Dr. Joko Purbopuspito
Forests and Environment Programme CIFOR
j.purbopuspito@cgiar.org

www.cifor.org

www.ForestsClimateChange.org



Center for International Forestry Research

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