AFOLU Working Group Technical Workshop

Advancing the mapping and monitoring of mangrove ecosystems

Date: 09-12 August, 2016

Place: Novotel, Ho Chi Minh City, Viet Nam

Background

Mangrove forests are recognized for their biological diversity and wide-range of ecosystem services, including high carbon storage capacity, estimated at some 20 Pg Carbon, globally[1]. Sustainable management of mangroves thus plays an important role in global climate change mitigation and adaptation efforts. Southeast Asia mangroves are considered the world's most diverse mangrove forests[2]. However, over much of their current and former distribution, they have been in flux due to both natural and anthropogenic forces. A recent study by National University of Singapore estimates that the rate of loss of mangrove ecosystems in Southeast Asia averaged 0.18% per year between 2000-2012 resulting in a cumulative loss of some 100,000 ha[3]. Accurate observation and timely monitoring with remote sensing technology can significantly increase our understanding of mangrove forest distribution, variability, and flux, thus supporting informed decision making for coastal zone management.

Mangrove forests are complex and often highly fragmented ecosystems, the spectral signal of which is significantly influenced by tidal effect and soil properties. While traditional pixel-based classification of Landsat, SPOT, and ASTER optical data has been widely applied for mapping mangrove forests, the increased availability of other types of data such as RADAR and LiDAR and development of new analysis and modeling methods

[1] *Donato et al., 2011*
[2] *World Atlas of Mangroves, 2011*
[3] *Richards and Friess, 2016*

offer an expanded range of options for monitoring mangrove forests[4]. These methods are currently being refined for applications ranging from identifying detailed characteristics of mangrove forests to increasing the scale and accuracy of mangrove distribution and change. This workshop aims to share the latest advances in mangrove forest mapping and monitoring and to encourage discussion on how to best apply available methods for diverse range of national objectives. The workshop organizers are dedicated to supporting improvements in the capacity of countries in the Mekong region to detect and monitor change in their dynamic landscapes. Regional needs assessment by SERVIR-Mekong identified better understanding of the changes in mangrove forests among the priorities for ecosystem valuation and for reporting to international climate change conventions. Similarly, SilvaCarbon counterparts have highlighted the need for knowledge transfer on operational methods for improved mangrove mapping in order to advance with their REDD+ MRV at national level.

In order to address these priorities and knowledge gaps, the workshop will take a closer look at existing methods that integrate remote sensing and field data and discuss the challenges and opportunities with upscaling such approaches at national and regional level. The workshop findings will be shared with the wider international community and considered in related upcoming activities such as a regional workshop on mangrove restoration and the SWAMP global mangrove conference.

Workshop Objectives

Goal: The workshop is designed to bridge the gap between latest technological advances and current decision-making for coastal zone management.

The specific objectives of the workshop are:

- Identify key policy, planning, management, and other decisions for which mangrove information is needed;
- Review current methods and technologies for mapping and monitoring mangrove distribution, structure, and condition;
- Identify current technical capacity needs and support required for improving the creation and use of mangrove data in the region.

Expected Outputs

- A policy brief targeting coastal zone decision-makers outlining the rationale for investing time and resources into improved mapping of mangroves and highlighting some readily available approaches to be integrated in the current work.
- A technical review summarizing the different approaches and providing references and sources for further learning.

[4] *Heumann, 2011*

Participation

Participants from Southeast Asia countries will represent:

- Government institutions responsible for coastal zone management
- Research and civil society stakeholders involved in mangrove forest conservation
- Remote sensing and ground inventory experts from the region and beyond, working on improved mapping of mangrove forests

Organizers

The workshop is organized under the umbrella of the **Agriculture, Forestry and Other Land Use (AFOLU) Working Group, part of LEDS Global Partnership,** focused on providing technical assistance, tools, training and platforms to support low-emission development across the agriculture, forestry and other land use sectors.

SERVIR-Mekong - The SERVIR-Global network of regional geospatial support hubs is an initiative of the U.S. National Aeronautics and Space Administration (NASA) and the United States Agency for International Development (USAID). SERVIR-Mekong, the newest hub in the network is a geospatial data for development program designed to respond to the needs of the Lower Mekong countries. It builds the capacity of governments and other key stakeholders in the Lower Mekong countries to employ publicly available satellite imagery and geospatial technologies for decision making related to climate change, environmental management, and disaster risk management. SERVIR-Mekong is implemented by the Asian Disaster Preparedness Center (ADPC) and its technical partners Spatial Informatics Group (SIG), Stockholm Environment Institute (SEI), and Deltares.

SilvaCarbon is a US Interagency initiative to build capacity for measuring and monitoring tropical forest and terrestrial carbon. The program utilizes the expertise of the different US agencies that contribute to the program and of a wide network of universities and development partners. SilvaCarbon Regional South and Southeast Asia program was initiated in 2013 and includes Bangladesh, Cambodia, Indonesia, Lao PDR, Nepal, the Philippines, Thailand and Viet Nam.

The Sustainable Wetlands Adaptation and Mitigation Program (SWAMP) is a collaborative effort by the Center for International Forestry Research (CIFOR), the USDA Forest Service (USFS) and Oregon State University with support from the US Agency for International Development (USAID). SWAMP is focused on generating knowledge that is relevant to policymakers and practitioners regarding the sustainable management of wetlands in the face of changing global climate and livelihoods oflocal community.

The USAID Low Emissions Asian Development (LEAD) program supports developing countries in Asia to achieve long-term, transformative development and accelerate sustainable, climate-resilient economic growth while slowing the growth of greenhouse gas emissions. The program supports and enhances country-led development programs, plans, and policies, and complements efforts of other international donors and organizations to support low emission development strategies (LEDS).

Forest Inventory and Planning Institute (FIPI) is a public service unit under the Ministry of Agriculture and Rural Development, established in 1969 with the following functions: forest inventory; forest and forest land planning; scientific research and technology transferring; training and international cooperation; and providing technical services to different

stakeholders. FIPI has more than 500 staff and consists of six Sub -FIPis and three scientific research centers.

Can Tho University (CTU) is an important state higher education institution in the Mekong Delta. Since its founding in 1966, CTU has been improving and developing itself, and is now a multidisciplinary University with nearly 100 undergraduates, 36 Master and 15 Doctoral training programs. CTU has over 2.000 staff members including nearly 1.200 teaching staff and 800 supporting staff. The Department of Land Resources focuses on 1) Land evaluation and land use planning and 2) Applying GIS and remote sensing to monitor land use changes over time.