

## **K&C Phase 3 – Mangrove Watch**

### *Protocols for field data collection*

Science Team meeting #16 – Phase 3 Kick-off  
JAXA TKSC/RESTEC HQ, Tsukuba/Tokyo, October 17-21, 2011

- Mangroves vary greatly in structure and function, largely as a result of topography, substrate, latitude and hydrology
- Individual trees with trunk diameters >1 m to shrub-like stands > 1m
- Aboveground biomass may range from >500 Mg/ha in riverine and fringe mangroves of the Indo-Pacific region to about 8 Mg/ha for dwarf mangroves (Kauffman and Cole 2010, Kauffman et al. 2011)
- Mangroves have been classified into four major associations of differing structure, corresponding to physical, climatic and hydrologic features of the environment in which they exist:
  1. fringe or coastal mangroves
  2. riverine or estuarine mangroves
  3. basin mangroves
  4. dwarf or scrub mangroves
- Estimates of global extent of mangroves range from 14 to 24 million ha

Asia (34– 42% of the world's total)  
Africa (20%)  
North and Central America (15%)  
Oceania (12%),  
South America (11%)  
Australia (7%) (Giri *et al.* 2011)

➤ Mangroves are keystone coastal ecosystems providing numerous environmental services and critical ecological functions, affecting both upland and oceanic resources.

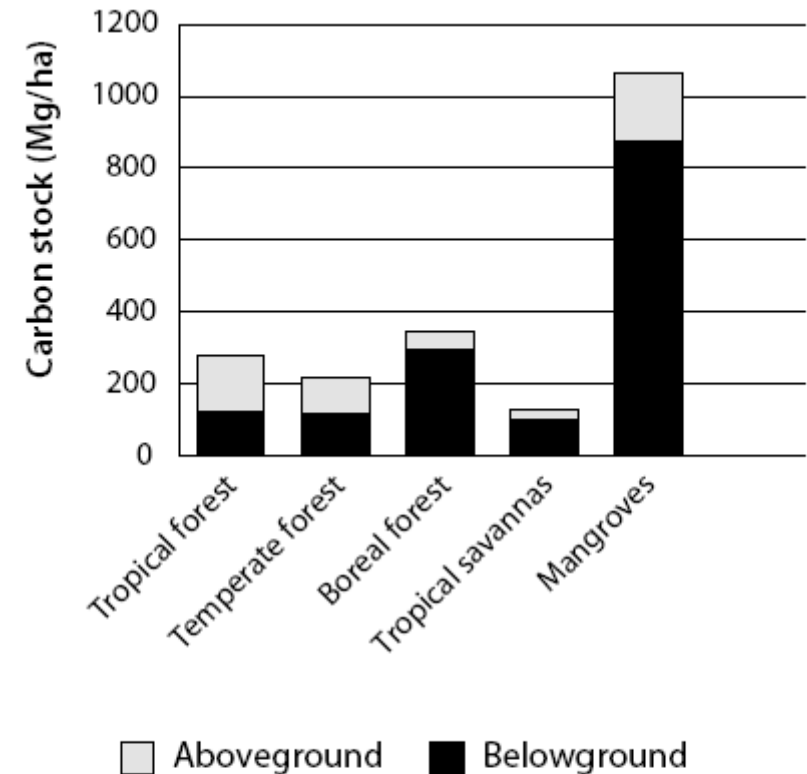


Figure 3. Total ecosystem carbon pools (aboveground and belowground) for some major land cover types of the world

Source: Data for all forests, except mangroves are from IPCC (2001) and Laffoley and Grimsditch (2009). Mangrove forests are those of the Asia-Pacific region (Donato *et al.* 2011, Kauffman *et al.* 2011)

## WORKING PAPER

**Protocols for the measurement, monitoring and reporting of structure, biomass and carbon stocks in mangrove forests**

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The purpose of this report is provide ideas and approaches to accurately measure, monitor and report species composition and structure, aboveground biomass, and carbon stocks of mangrove ecosystems.

It outlines the rationale, design, field measurements, analysis and reporting for carbon assessments in mangrove ecosystems, with a focus on consistency with international standards.

While the focus is on mangroves, the approaches generally apply to other wetland forests as well.



- biologically relevant and statistically valid approaches to the efficient and accurate assessment of ecosystem structure, biomass and carbon stocks of mangrove forests
- general conceptual background
- specific instructions for the collection and analysis of biometric data
- specific recommendations for overall sampling design, plot layout and measurements
- calculation of uncertainties in carbon stocks

<http://www.cifor.org/nc/online-library/browse/view-publication/publication/3749.html>

**Best Practice Field Guide for Assessing and Estimating Coastal Wetland Carbon Stock, Sequestration Rates and Emissions Rates**