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GlobBiomass meeting, Vienna 2 February 2016
1. The challenge of training & validation of BIOMASS data

2. Forest Observation System (formerly IFBN)

3. Challenges
BIOMASS will deliver globally, twice per year, at 200x200m resolution, with 20% uncertainty over a five year period
Forest biomass is **difficult** to measure

Most biomass is in large trees
Native (non-planted) forests represent a large fraction of biomass

Tropical ‘High Carbon Stock’ forests are undersampled
BIOMASS requirements

1. **Timely forest AGB data.** Extensive new data collection is essential to calibrate and validate BIOMASS.

2. **Wide geographical spread** across the world’s high biomass forests. Fieldwork should apply global- & continental-scale sampling frameworks across biomes, focussed on the tropics.

3. **High quality data.** Species identity is critical, and measurements of tree diameter and height also require trained technicians. **This must apply strict standards to ensure data quality.**
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Engaging large networks

RAINFOR
Established 2000, based on data since 1980. Plots ca 1 ha

CTFS
Established 1982 Plots 25-50 ha
1. Prioritize High Carbon Stock forests (mostly the tropics)
2. Use **EXISTING** plots: RAINFOR/AFRITRON/CTFS
3. Promote two key concepts:
   - **super-sites**
   - **two-scale approach**
4. Make these data available to the EO community
Super-sites

- In the tropics, a key limitation is not *building* but *maintaining* capacity in the tropics

- 50-100 sites around the world

- Strong, long-term monitoring at these super-sites
Not a new idea
Super-sites FOS specifications

1. At least 10 1-ha already established permanent sampling plots. Plots should be established and monitored according the best tropical forestry standards (Rainfor or CTFS protocols)

2. Aerial LiDAR scanning (ALS) over at least 1000 ha, with minimal quality requirements

3. terrestrial LiDAR scanning (TLS) at (at least) two of the permanent plots, and if possible all 10 plots

4. weather/soil moisture measurements
Two-scale approach

- Establishing 10 1-ha plots is NOT an easy task (it is EXPENSIVE).
- Forest plots are often NOT established randomly in space.
- ALS data offers a simple way to SCALE UP AT LANDSCAPE SCALE.
Two-scale approach

Ground-based inventories (0.1-0.5 km$^2$ sampled)

Small-footprint LiDAR map (10-100 km$^2$ sampled)

Global L2 BIOMASS product

HH, VV, HV

Radar

Lidar

TRAINING

TRAINING
Implementation

Phase 0
Proof of concept (governance, demonstration web portal)

Phase 1
Network development

Phase 2
Operational phase: plot remeasurement

2016
2017-2018
2018-
1. The challenge of training & validation of BIOMASS

2. Forest Observation System

3. Challenges
Many partners are from developing countries.

Data contributors work in conditions that are often difficult physically and institutionally, and occasionally dangerous or even impossible.

Consequently the partners of this effort must be adequately trained, equipped, insured, and paid.