MORECA

MOonitoring of large scale small holder REforestation projects for CArbon finance mechanisms

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Eco Makala programme

• Started in 2007. Ongoing
• Reforestation of around 5000ha
• Surroundings of the ViNP (Eastern DRC)
• Small holder fields (0,5-5ha)
• Executed by WWF Goma in collaboration with local associations and farmer-planters
• Charcoal provision to the local population
Forest Carbon projects

- Carbon finance mechanisms as A/R CDM and REDD > requirements > user needs:
  - **Eligibility** of the **lands**: a conclusive proof that the lands were not carrying forest between 1990 till present;
  - **Monitoring** of the **plantations** in terms of carbon uptake estimates.

=> Robust forest monitoring system and methodology are a necessity (and are the counter stones of carbon fin. mechanisms)
Objectives

- Elaboration and validation of a methodology based on optical and radar technology in order to:

  - define the eligibility of lands
    > forest definition (UNFCCC)
    > ref. year 1990

  - monitor a huge number of dispersed plantations
    > forest/non-forest
    > carbon uptake estimates

  in a cloudy mountainous tropical region
Scientific questions

- In the context of a large scale reforestation project (> 1000ha) on dispersed small holder grounds (0.5-5ha) in a cloudy and mountainous tropical region:
  - how to define whether a field parcel with a min. surface of 0.5ha is either a forest or not?
  - how to estimate the carbon stored in a field parcel with a min. surface of 0.5ha that meets the definition of a forest, based on extrapolation of field measurements?

=>Project design and location makes the use of remote sensing particularly relevant
Where?
Eligibility map

HR (Spot) 1990/1995/2000/2010

• Pre-treatment
• Multi-segmentation
• Classification

→ Eligibility map (not forested since 1990)

Change between 2004 and 2009 (Spot images Belspo)
Monitoring of plantations

VHR (GeoEye 2010 XS)

Planted in 2009

Planted in 2007
Biomass estimation

- Establish **empirical relationships** between derived **indices** and **estimates of carbon** by **multiple regressions** (Foody et al., 2003, Lu, 2005)