GOFC-GOLD working group activities on Reducing Emissions from Deforestation

M. Herold, R. DeFries, F. Achard
GOFC-GOLD Land Cover Team
## UNFCCC and earth observations of land cover

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### Post-Kyoto commitments

- National LULUCF reporting (Annex I) & CDM A/Reforestation
- Evolving global programs
- National case studies

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### GOFC-GOLD

- DUE Kyoto Inventory GSE Forest Monitor.
Reducing emissions from deforestation

- UNFCCC by itself provides neither a mandate nor an incentive for reducing emissions from deforestation in developing countries

- Several party submission to SBSTA emphasize importance of remote sensing:
  - i.e. EU, Coalition for Rainforest Nations, Bolivia, Indonesia, Norway, Thailand, Vanuatu

- UNFCCC Cairns REDD workshop report (March 2007):
  - “remote sensing is viewed as an important and verifiable method for monitoring forest area and forest cover and their changes”
  - “couple with ground-truthing and reliable carbon stock inventories”
Concept of compensated reductions

Rates of deforestation in the Brazilian Amazon (INPE 2006)

- **Estimated deforestation from satellite data**
- **Expected deforestation (historical reference or projected baseline)**
- **Measured deforestation (i.e. from satellite data)**
- **Reductions suitable for compensation**
Measuring gross carbon emissions (concept)

\[ C_{gr\_em} = \left( \sum_{i=1}^{m} A_{loss(i)} \cdot C_{loss(i)} \right) + \left( \sum_{j=1}^{n} A_{dgr(j)} \cdot C_{dgr(j)} \right) \]

- \( A_{loss} = \) Area of deforestation (ha)
- \( C_{loss} = \) Carbon emission from deforestation (t/ha)
- \( A_{dgr} = \) Area affected by degradation (ha)
- \( C_{dgr} = \) Carbon emission from degradation (t/ha)

\[ \text{for forest types } i \ldots m \]
\[ \text{for degrad. types } j \ldots n \]

\( \rightarrow \) area change most dynamic and to be observed from satellite

GOFC-GOLD
GOFC-GOLD ad hoc working group

• International platform of technical experts providing community consensus input to political discussions:
  – Independent from political discussions, specific opinions and institutions
  – Responding to policy process (SBSTA)

• 2 GTOS submissions to SBSTA (2006 and 2007):
  – Satellite monitoring is the only objective approach in developing countries
  – Forest changes can be monitored with confidence for assessing and comparing historical and future rates of deforestation
  – Consensus technical guidance on current and future EO capabilities for monitoring deforestation
Ensure contribution through participation

- GOFC-GOLD working group initiation
- 1st GOFC-GOLD workshop
- GTOS/GOFC report
- ED SBSTA side event
- GTOS submission I
- COP11 Montreal Agenda item 6 (Subm. PNG)
- Subm. of view by parties I
- 1st SBSTA workshop
- 2nd GOFC-GOLD workshop
- ESA/GOFC Side event + booth
- GTOS submission II
- COP12 Nairobi
- Subm. of view by parties II
- 2nd SBSTA workshop
- ESA/GOFC Side event
- GTOS submission II
- SBSTA 26
- 3rd SBSTA workshop
- COP13 Bali
- 2nd GOFC-GOLD workshop
- ESA/GOFC booth + Side event
- 3rd SBSTA workshop
- COP13 Bali

Scientific and methodological issues
Policy options and incentives
- post 2012 Implement.? 

- Jul ’05 Dec ’05 Feb/ Mar’06 May ’06 Aug ’06 Nov ’06 Fe Ma Ap Ma ’07 Nov ’07

UNFCCC

- GOFC-GOLD

- GOFC Sourcebook

- GOFC-GOLD Sourcebook
REPORT OUTLINE
Reducing Greenhouse Gas Emissions from Deforestation in Developing Countries: Considerations for Monitoring and Measuring

R. DeFries, F. Achard, S. Brown, M. Herold, D. Murdiyarso, B. Schlamadinger, C. de Souza

- Executive summary
  - Common statements on technical feasibility
- Context from agenda item 6 of COP-11
- Monitoring deforested area
  - Can be done with confidence, variety of methods
- Monitoring degraded forest area
  - Important, more challenging
- Monitoring carbon stock changes
  - Already established in IPCC + remote sensing
- Estimating emissions
  - Area x carbon stock change

August 2006
www.fao.org/gtos/pubs.html
Global Observation of Forest and Land Cover Dynamics

MODIS/MERIS-type sensors
Deforestation (<10-20 ha)
(intra-) annual
Hot spots of forest change
Top-down standards

Global observations

Landsat/Spot-type sensors
Deforestation (<0.5-1 ha)
(inter-) annual
Regionally-tuned forest degradation mapping
Bottom-up flexibility

Regional/ national observations

Wall-to-wall mapping
Sampling approach

Change in forest
area and density

Fine-scale/ in-situ observations

Nat./Reg. forest inventories
In-situ/plot data
Targeted remote surveys
FAO statistics
Models relating forest change to carbon emissions
IPCC-LULUCF / AFOLU

Estimation of carbon emissions
Main conclusions

• REDD: account for gross carbon emission only in existing forest areas on a national basis

• Minimum requirement for historic deforestation reference:
  – 1990/00/05 national level monitoring of gross deforestation (1 ha MMU)

• Measurement and monitoring system should be simple and provide conservative estimates

• Different national conditions require use of different sensors, methods, and capacity building

• Benefits from existing global datasets and initiatives
  – FAO FRA 2010, MODIS VCF hot spots, GLOBCOVER

• A source book will be prepared for best practices at national level
Sourcebook development

- Sourcebook of methods for monitoring, measuring and reporting changes in national greenhouse gas emissions resulting from REDD activities
- Status of policy discussions and agreed UNFCCC methods
- (Near-) complete draft:
  - Ch 1 + Ch 2 Background and Scope (Brown/Herold)
  - Ch 3.1 Monitoring Deforestation (Achard/DeFries)
  - Ch 3.2 Monitoring Degradation (Souza/Mollicone/Pandey)
  - Ch 4 Measuring Changes in Carbon Stocks (Brown et al)
  - Ch 5 Estimation of averted emissions (Brown)
  - Ch 6 Guidance on reporting (Grassi)
- Living document to evolve with policy decisions
- Presentation for open review
  - First: Bolivia w/s participants, LC-IT, few experts
  - Presentation at COP13 (CD)
UNFCCC COP13 presence

1) Decisions anticipated at UNFCCC-COP13 in Dec. 2007

2) GOFC-GOLD side event at CIFOR forest day (8. Dec 2007):
   - Background and Scope of the Sourcebook (Herold)
   - Monitoring deforestation (DeFries)
   - Monitoring forest degradation (DeSouza)
   - Changes in Carbon Stocks (Brown)
   - Reporting (Grassi)
   - Review process and discussions (Herold/Achard)

3) ESA booth to distribute sourcebook

4) Potential COP side event presence

5) Sourcebook for methods & procedures will evolve over time

6) REDD Special issue in Environmental Research Letters
Remarks for LC-IT

- Exiting time for EO community to make difference - political mandate more specific than ever
- Constraints and problems still affect the adoption of EO based land cover observations:
  - Need for case studies/experiences to help developing countries build their historical deforestation databases
  - Observation gaps, data continuity, availability (and costs)
  - Monitoring of forest degradation
  - Accuracy assessment procedures (change in change!)
- Continuing role for GOFC-GOLD working group
  - Assist REDD policy process
  - Sourcebook draft development
  - In addressing EO-related constraints
Web resources

- **GOFC-GOLD:**

- **GOFC-GOLD land cover project office:**
  - http://www.gofc-gold.uni-jena.de/

- **Land cover IT newsletter:**
  - http://www.gofc-gold.uni-jena.de/sites/letter.html

- **GCOS implementation plan to the UNFCCC:**
  - http://www.wmo.ch/web/gcos/

- **EO and reducing emissions from deforestation:**
  - http://www.gofc-gold.uni-jena.de/sites/deforest.php