

IPCC Greenhouse Gas Inventories and remote sensing

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Function

- IPCC is a scientific body under UN auspices – *not itself a UN Convention*
- IPCC develops the methodologies at the UNFCCC's request, countries use the methodologies to report emissions estimates to UNFCCC, not to IPCC itself
- International consensus on use of IPCC methods is extremely valuable; inconceivable that UNFCCC itself could agree such detailed guidance

Key passage from REDD+ Decisions

1. *Requests* developing country Parties,...

c) to use the most recent IPCC guidance and guidelines, as adopted or encouraged by the COP...as a basis for estimating anthropogenic forest-related greenhouse gas emissions...and removals..., forest carbon stocks and forest area changes

d) to establish, according to national circumstances and capabilities, robust and transparent national forest¹ monitoring systems and, if appropriate, sub-national systems as part of national monitoring systems that:

(i) use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating... anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;

(ii) provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities;

(iii) are transparent and their results are available and suitable for review as agreed by the COP;

2. *Recognizes* that further work may need to be undertaken by the IPCC, in accordance with any relevant decisions by the COP

IPCC Guidance

2003 Good Practice
Guidance (Land-use, Land
Use Change and Forestry)

2006 Guidelines Vol 4
(Agriculture, Forestry and
Other Land Use)



<http://www.ipcc-nggip.iges.or.jp/>

RS in the IPCC Guidelines

- General coverage in GPG 2003 and 2006 GL is about using RS to obtain information on land areas – i.e. on *activity data* rather than *emission factors*
- Recognises optical, radar and lidar; and aerial photography as well as satellites, also importance of correlation with ground based information, especially in deriving land cover from land use.
- No mapping of RS onto REDD+ activities, or detailed consideration of how RS and GB data might potentially be used in conjunction to obtain emission factor as well as activity data.
- In Oct 2013 IPCC held an expert meeting on these techniques – report is in preparation. My impression that whilst much excellent research is underway, IPCC's focus on AD as the operational contribution of RS remains correct.

Generic challenges – GOFC-GOLD contribution

- Realistic assessment of boundary between research and operational inventory systems – latter require stable methods, applicable in a wide variety of circumstances with reliable data streams, not prohibitively expensive either financially or in terms of computing power, and with the transparency needed for UNFCCC review.
- Demystification – consider clarifying statements such as *A hybrid approach combining automated digital segmentation and/or classification techniques with visual interpretation and/or validation of the resulting classes/polygons should be preferred as simple, robust and cost effective method.*
(Sourcebook, p 2-16)

Some specific challenges

Scientific debate on the magnitude of a) deforestation
b) deforestation + degradation, c) deforestation, degradation and associated LUC

Treatment of REDD+ activities other than deforestation.

Treatment of reference levels – Source book claims RLs as a focus but could be clearer. Is stratification by drivers the key to this? Would improve inventory efficiency as well as provide linkage to reference level assessment

Clarity on conservativeness

Remote sensing other IPCC land classes – there is increasing interest in the landscape as a whole

Remote sensing and the LULUCF agreement, especially disturbances

Relationship between GFOI, IPCC and GOFC-GOLD

- IPCC: operational guidance for greenhouse gas inventories
- GFOI: operational guidance for users and suppliers of RS data for use in greenhouse gas inventories consistent with IPCC guidance
- GOFC-GOLD: continuously updated review of applicable science and technologies relevant to IPCC and GFOI.