

Are we confident of LULUCF inventories?

On the importance of verification activities

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Why verification?

According to IPCC, the purpose of verifying national GHG inventories is to establish their reliability and to check the accuracy of the reported numbers by independent means.

The overall goals are:

- Provide inputs to improve inventories;
- Build confidence on estimates and trends;
- Help to improve scientific understanding.

Verification refers to the collection of activities and procedures conducted during the planning/development, or after completion of an inventory, that can help to establish its reliability for the intended applications of the inventory. Verification refers to those methods that are external to the inventory and apply independent data, including comparisons with inventory estimates made by other bodies or through alternative methods. Verification activities may be constituents of both QA and QC.

Relatively limited information on verification is available in EU MS inventory reports!

There can be many approaches to verification, which can be applied also to subsets of the LULUCF inventories (see IPCC GPG 2003 Ch. 5.7), including:

- Comparison with other information:

- Independent peer-reviewed studies
- Independent inventories (including other MS' GHG inventories),
- International programmes and datasets e.g. FAO, JRC (e.g. EFFIS)

- Applying different methods:

- Lower tiers, higher tiers (e.g. models)
- Direct measurement of GHG emissions and removals, RS

Comparing different methods *does not mean expecting full match*. There could be good reasons for differences (e.g. different assumptions, definitions, etc.). However, in principle trends should be the same.

Given the significant improvements already done by most MS in the completeness of LULUCF reporting, an increased effort on verification would further improve the confidence on the reliability of the EU LULUCF inventory, and thus its quality.

1. Comparing a model with lower tier method

If a reviewer asks to compare the GHG inventory results with results from a lower tier approach, typically this is the reaction...

why hell they ask for such a comparison?



(tier 1)



(tier 2)



(tier 3 model)



(GHG inventory compiler)

1. Comparing a model with lower tier method

Review experience 1:

Significant sink reported in forests with tier 2. For the same period, FAO-FRA (e.g. tier-1) report gave a decrease in C stock (i.e. a source). This should be explained. Lack of communication among inventories agencies in charge of reporting to FAO and UNFCCC was the main reason of different approach/assumption/data used.

Review experience 2:

Forest emissions and removals reported using an extremely complex model (perceived as black box); the fact that sub-sections of the models were peer-reviewed is not enough; comparison with a tier 2 method + explanation of the differences increased the confidence on models' results.

Example of recent tier-1 global estimates:

OPEN ACCESS

IOP PUBLISHING

Environ. Res. Lett. 8 (2013) 015009 (10pp)

ENVIRONMENTAL RESEARCH LETTERS

doi:10.1088/1748-9326/8/1/015009

The FAOSTAT database of greenhouse gas emissions from agriculture

Francesco N Tubiello¹, Mirella Salvatore¹, Simone Rossi^{1,2},
Alessandro Ferrara¹, Nuala Fitton³ and Pete Smith³

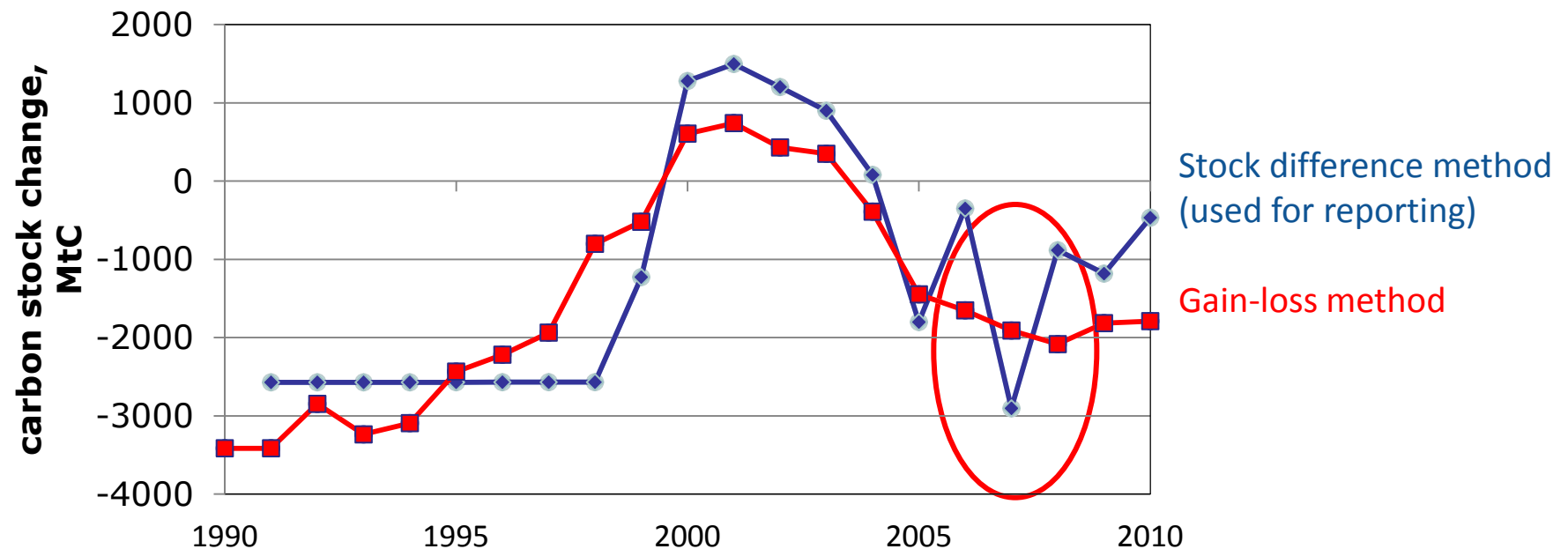
Global estimates of carbon stock changes in living forest biomass: EDGARv4.3 – time series from 1990 to 2010

A. M. R. Petrescu¹, R. Abad-Viñas², G. Janssens-Maenhout¹, V. N. B. Blujdea^{2,3}, and G. Grassi²

2. Comparing “Stock difference” vs. “gain-loss”

IPCC provides two methods for estimating C stock changes in biomass: “Stock difference” and “gain-loss”. Whenever it is possible, comparing these two methods is a powerful verification exercise.

Example (from review experience):



3. Comparing GHG inventory with an independent model

(see next presentation!)