

***Interactive comment on “Can we reconcile differences in estimates of carbon fluxes from land-use change and forestry for the 1990s?” by A. Ito et al.***

**A. Ito et al.**

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We thank F. Achard for his constructive suggestions for improving the methodological description of the paper.

In page 5 in Introduction: " We concentrate our efforts on the period since 1990 when the UNFCCC data sets began."; You may be more explicit on this point as it is / will be a crucial item for the REDD discussion (selection of a reference period). You may add that year 1990 is used as a reference year for the Kyoto protocol including the Clean Development Mechanism (See in particular Schulze et al. 2003 Science about this reference year for CDM LULUCF projects). Schulze E-D, Mollicone D, Achard F, Matteucci G, Federici S, Eva HD, Valentini R (2003) Making deforestation pay under

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the Kyoto protocol? Science 299:1669

We added the reference and the following text: We note that the year 1990 is used as a reference year for the Kyoto protocol including the Clean Development Mechanism (Schulze et al. 2003).

The structure of section 2.2 is a bit confusing when looking at Table 2 which summarizes the different models used in the study, in particular in relation to the numbering of the approaches. E.g. it is not clear why bookkeeping approaches described in section 2.2.2 are numbered EMI1 & EMI5 when EMI4 & EMI5 would be more logical after the first set of three inventory approaches.

This has been corrected in the revised manuscript.

In section 3.3: "The global flux for EMI8 was calculated by summing the consolidated estimates from the ten regions (i.e. those described by Houghton, 2003) that are represented in all data sets." It is not clear to me why the ten regions are mentioned. Is there any part of the world missing (I do think so when looking at the 10 regions of Houghton 2003? it related to computational aspects (ie not possible to compute the full world?

The calculation method for EMI8 and the ten regions are described in subsection 2.2.4. The regional data are available for only 10 regions from EMI4 (Houghton, 2006). We replaced "i.e. those described by Houghton, 2003" with "see subsection 2.2.4" in the revised text. We added the following text in subsection 2.2.4: Technically, the ten regions do not cover the entire global land area, which is treated in the global biogeochemical models (EMI6 and 7). Thus the totals in the ten regions are slightly different from the global totals. However, the differences between the two values are much smaller than those between different data sets.

When commenting on the differences in estimates of LUC areas over 1990s for Brazil in section 3.4.2, you may refer to Eva et al. for LUC6 when mentioning the GLC2000

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data set (Eva H D, Belward A S, De Miranda E, Di Bella C M, Gond V, Huber O, Jones S, Sgrenzaroli M and Fritz S 2004 A land cover map of South America Global Change Biol. 10 732 45)

We added the reference.

In 3.4.1 when comparing inverse model fluxes for Temperate North America with the bottom-up inventories examined here for the USA, a table may help here.

We added a table (Table 8).

In 3.4.2 when comparing the available inverse model fluxes for Tropical and South America with our consolidated bottom-up method for the decade 1991 2000 it could be also compared to bottom-up estimates of LUCF in Amazonia or South America or (Achard et al., 2004; DeFries et al., 2002, Houghton 2003) as these estimates were used in AR4.

We added the comparison with Achard et al. (2004) and DeFries et al. (2002), but did not include Houghton (2003), because this is not an independent comparison because the estimate from Houghton (2006) is used in our analysis. We note here that the Houghton (2003) estimate is within our uncertainty range. We added the following text: The estimate of total LUC emissions in EMI8 (0.4 PgC yr<sup>-1</sup>) during the 1990s is in between the estimates of Achard et al. (2004) (0.3 PgC yr<sup>-1</sup>) and DeFries et al. (2002) (0.5 PgC yr<sup>-1</sup>).

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