Atmos. Chem. Phys. Discuss., 8, S1309–S1312, 2008
www.atmos-chem-phys-discuss.net/8/S1309/2008/

Atmospheric Chemistry and Physics Discussions

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

Anonymous Referee #2

Received and published: 4 April 2008

General comments

The question behind the paper is highly relevant, i.e. is it possible to reconcile differences in estimates of C fluxes from LUCF among different scientific studies, and between these studies and the data submitted by countries to UNFCCC? Although the paper does not solve this complex question, in my view it represent a useful attempt on the right direction. However, I see the following problems/risks:

1) It seems that authors used data from the 2000 UNFCCC database (e.g. page 3486, page 3852 line 16 for EMI2). I strongly recommend author to use the latest available data (2005). The latest compilation of GHG data is available at

http://unfccc.int/resource/docs/2007/sbi/eng/30.pdf (Annex I GHG countries, submission 2007) and http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf (non-Annex I GHG countries). Furthermore, the UNFCCC secretariat released a new version of its GHG data interface, very easy to use. Since 2000, numbers have changed due to recalculation and (hopefully) more accurate and complete estimates. Thus, estimates at beginning at page 3846 are old: e.g., according to the latest submissions, average annual LULUCF sink (in Tg CO2 eq.) for the 1990s (1990-1999) is -789 for USA and -276 EU-15 (offsetting, respectively, 12 percent and 7 percent of total non-LULUCF emissions for the same period). I suggest to update these data throughout the paper. In addition, I suggest explain more clearly that UNFCCC data means only that it is archived in the UNFCCC database: the data itself come from the countries. It may be obvious for many, but not for all.

2) I see a risk of comparing apples with oranges. Authors seems to be aware of this risk (e.g. page 3846 lines 16-18), some doubts remains in my mind when reading at page 3845: "The terrestrial flux can be split into that part specifically attributable to changes in land use (+1.6 ś 1.1 PgC yr-1) and a residual component (-2.6 ś 1.7 PgC yr-1) that accounts for other environmental changes .... The residual terrestrial flux can be associated with a range of environmental changes (ENV) that include climate change (water and temperature), disease outbreaks, added nutrients (CO2 and nitrates), pollution damage (O3), and re-growth of vegetation in natural (unmanaged) land which is not included under the UNFCCC reporting guidelines for LUCF " What does it mean can be associated? The residual terrestrial flux is not only associated with ENV changes in natural (unmanaged) land which is not included under the UNFCCC, but also with changes due to management (i.e. the LU and F terms in LULUCF) actually reported to UNFCCC in the LULUCF sector. Furthermore, LULUCF inevitably contains also a component due to ENV changes (for this reason sinks from forest management were reduced by 85% and capped under Kyoto). Maybe it is just a misunderstanding, but please make more clear these concepts and also if/how the various models considered are comparable in terms of processes and definitions.

ACPD

8, S1309–S1312, 2008

Interactive Comment

3) I am a bit puzzled by the huge differences in these estimates in Fig.1: do they mean that LUC 2 to LUC 5 indicate that forests expanded globally during the 1990s? This contrasts with most other estimates from the literature, how do the authors explain this discrepancy (which inevitably affects most of subsequent estimates)?

Furthermore, other two points:

- the paper contains a lot of information, perhaps even too much, and although it is well written it is sometimes difficult too follow. I suggest authors considering if it is possible focusing on the most relevant points and eliminating what is not strictly necessary.

- the authors conclude that significant efforts are still needed: can they provide some hints on which are the best steps forward in their view?

Specific comments

Page 3846, line 8 (and elsewhere in the paper): I suggest using consistent units: moving from Tg to Pg and from CO2 to C does not help the reader.

Page 3848, lines 10-12. I do not fully agree: submission to UNFCCC (which includes all information on C pools reported by the countries) are downloadable from UNFCCC web site, and the reporting format is uniform within Annex I countries (or within non-Annex I).

Page 3848, line 17. I suggest to write : because of the ongoing negotiations on a mechanism of positive incentives for….

Fig. 1: the term crop and pasture land conversions is not fully clear to me; do (-) signs mean conversions (of forests) to crop and pasture land? and (+) signs mean expansion of forest to cropland and pasture ? I suggest to make it more clear. On the y-axis it should be km2 and not km-2 (also in fig. 5)

Table 6, I suggest to check EMI2 data with the latest available data in UNFCCC database (see above). Also, please consider that data from many non-Annex I coun-

ACPD

8, S1309–S1312, 2008

tries is highly un-reliable.

Page 3869, line 11 I suggest using compatible instead of consistent

---

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 3843, 2008.

ACPD

8, S1309–S1312, 2008

Interactive Comment