

General comments

The authors attempted to clarify the emissions differences between datasets developed with different approaches. Overall, this paper is well written and would be helpful, particularly for those communities working closely with the datasets used in the paper. The dataset itself may not be something unique, instead, this paper could support the future GHG emissions inventory synthesis work in Europe and potentially other Annex I parties in the world.

However, possibly by the nature of this type of dataset, the text seems to be a bit lengthy and tedious, especially the result section. Although the authors described the details of the data sources and models used in this work, the dataset itself may not be easy to use/understand for users new to this field. And, the focus appeared to be more on LULCF rather than fossil fuel emissions (no economic sector breakdown), which looks a bit unfair in comparing uncertainty between anthropogenic emissions and land fluxes.

A list of jargon and abbreviations as an appendix, a brief description of targeted users, and potential data usage/applications might be helpful. Lastly, providing a list of the key take-home messages in the introduction or conclusion remarks may help the reader to grasp the paper's contents (and narrow down sections relevant to the readers).

Specific comments

I:148-163 It looks a bit controversial to see "A comprehensive investigation of detailed differences between all datasets is beyond the scope of this paper" in the intro and relatively detailed comparisons between datasets (especially LULUCF) in the result. Which is the actual focus?

I:390-395 Adding a specific figure number that support each statement (e.g., Fig1a) would be helpful.

I:413-415 (Figure 1 caption) Should this statement be replaced with Top-down or the graphic representation is wrong? The LULUC breakdown is not presented for Top-down in the plot.

I: 484-1024 Section 3.3 CO₂ land fluxes (3.3.1 through 3.3.5), about the Figures (two panel comparisons), how to interpret the differences between this work and Petrescu et al., (2021)? The difference sometimes very big.

I:552 Figure 3 is a bit hard to understand. Could this be a table instead?

I: 1025 This sub-section could be one independent section (i.e., section 3.4) as the content is more focused on uncertainty as a whole. Bringing this section before diving

into details for each components (fossil fuel emissions and land fluxes) could be an option.

l:1169 It might be true that ecosystem flux estimations are more complex than fossil fuel emission estimations but should note that this is only the case when fuel statistics and accurate emission factors are available (as discussed in section 2.2 first paragraph).

Technical corrections

- l:307 Correct the font of "The nations"
- l:591 Bold the sub-section title "forest land" to be consistent with the following section.
- Figure 3,4,7,8,9 have two images (one is faded out, the other is clear). Why tp panels are faded?
- Figure 11 caption is center-aligned.
- [l:1025] "3.3.6. Uncertainties in top-down and bottom-up estimates" Check the section format/font.