Earth Syst. Sci. Data Discuss., author comment AC2
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Reply on RC1

Giacomo Grassi et al.

Author comment on "Carbon fluxes from land 2000–2020: bringing clarity to countries' reporting" by Giacomo Grassi et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2022-104-AC2, 2022

Thank you very much for the useful comments. Please find below a point-by point reply (in bold) to your comments.

This analysis by Grassi et al. compiles a new, up-to-date, gap-filled data set of annual emissions of CO2 from land-use change for individual countries. The data set is based on country reports to the UNFCCC, including annual GHG inventories from Annex 1 countries and several types of communications from non-Annex 1 countries. The data set provides a valuable resource; it will be important for the imminent global stock take.

The study compares the new data set with two other commonly cited analyses of LULUCF emissions (UNFCCC and FAO) and provides reasonable explanations for differences. It also explains why the data that were compiled by the Washington Post were somewhat different.

The paper is well written and clear. The data set will be used by many scientists and policy makers. The authors are well qualified scientists involved with the IPCC, FAO, and UNFCCC .

A consequence of the comparisons is that the paper identifies future needs, such as: Are current rates of deforestation in the tropics increasing (Feng et al., 2022) or decreasing (FAO, HYDE)? How important are emissions from non-forests (e.g., peats)? Are forests getting denser (biomass increasing)? Or the reverse? Altogether, this is a valuable and unique contribution to the carbon and climate change communities.

Thank you very much for the nice words and the useful comments.

We added in the conclusion the following text, inspired by the reviewer's comment: "Furthermore, our analysis reinforces the urgency for the global models used in the Global Carbon Budget (Friedlingstein et al. 2022) to address research questions such as: Is managed land a net sink or a net source globally? Have rates of deforestation in the tropics been increasing or decreasing in the last two decades ? How important are emissions from non-forest lands?"