Comment on essd-2022-104

Richard Houghton (Referee)


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.