

## Comment on esd-2020-94

Anonymous Referee #2

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Referee comment on "Bookkeeping estimates of the net land-use change flux – a sensitivity study with the CMIP6 land-use dataset" by Kerstin Hartung et al., Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2020-94-RC2>, 2021

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This manuscript describes a study looking at the contribution of several sensitivities underlying the net LULCC flux by assessing their relative importance using a bookkeeping model (BLUE) based on a LULCC dataset (i.e., LUH2). They compared the impacts of LULCC uncertainty, the starting time of the bookkeeping model simulation, net area transitions versus gross area transitions and neglecting wood harvest on estimates of the net LULCC flux. They also revealed how historical LULCC uncertainty affect the net LULCC fluxes in the future scenarios. This study is very interesting and the results could provide some insight into the sensitivities of net LULCC. Basically, in my opinion some minor issues should be addressed and improved before the manuscript can be published.

- The article title "Net land-use change carbon flux estimates and sensitivities...based on CMIP6 forcing" is a little misleading. The CMIP6 forcing refers to the LUH2 dataset in the manuscript, so I suggest changing the title to make it more accurate.
- I suggest that Table 2 and 3 can be combined into one table to make it easier to understand the setup of each sensitivity experiment.
- Some expressions in the manuscript are difficult to understand, so I suggest the author read through the whole text and rephrase some sentences. For example, L184, "It should be noted that even for the nine main experiments differences between the area evolution in BLUE compared to the LUH2 dataset occur."
- L256-258, panel a-> Fig. 3a; panel b-> Fig. 3b
- L313-314, "Uncertainty of wood harvest also explains why REG850 and LO850 produce the same amount of harvest emissions until 1700 (Fig. 2)". I cannot get the information from the Fig. 2, please confirm if this is about harvest emissions.
- In the introduction section, the author introduced example studies of Hurtt et al. (2011) and Gasser et al. (2020) in detail, which is good, but I suggest the author add some words about the shortcomings of previous research and the improvements of this work in comparison with the previous studies.