

Earth Syst. Sci. Data Discuss., referee comment RC2  
<https://doi.org/10.5194/essd-2020-388-RC2>, 2021  
© Author(s) 2021. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Comment on **essd-2020-388**

Anonymous Referee #2

---

Referee comment on "Land-use harmonization datasets for annual global carbon budgets" by Louise Chini et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-388-RC2>, 2021

---

Louise Chini et al. "Land-Use Harmonization Datasets for Annual Global Carbon Budgets"

### GENERAL:

This paper discussed the methodologies used to produce LUH2-GCB updates and extensions, and described specific details of LUH2-GCB2019 dataset and comparisons with previous LUH datasets. As a newest update, LUH2-GCB2019 dataset made some changes compared with previous datasets, especially correcting cropland and grazing areas of Brazil. This paper is very timely and important for users of this LUH2-GCB2019 or previous versions to better select land use data as input for state-of-the-art models in well-organized scientific assessments. I have only minor comments.

My main concern is the capability of LUH2-GCB2019 data capturing regional trends of forest changes. As shown in Figure 5, LUH2-GCB2019 has greater secondary forest areas in mid-high latitudes but lower areas in low latitudes than previous LUH2 v2h dataset over all key time points (2000, 2009 and 2015). These large differences has been related to the changes of wood harvesting used in LUH2-GCB2019, but the changes of spatial patterns on primary forests have not been shown in Figure 5. Please add this information into Figure 5 and further discuss whether this update on secondary forest is better than previous versions especially over China and India, where the recent studies by Chen et al. (2019) showing leading greening tendency. The greenness in China is mainly caused by the afforestation while that in India is likely related to expansion of cropland. Can LUH2-GCB2019 capture those trends?

Minor points:

Some acronyms need to be defined such as FAO, HYDE, BLUE and more at their first appearance.

Figure 5: The unit is fraction or %? Please add it into caption.

## **Reference**

Chen, C. and coauthors: China and India lead in greening of the world through land-use management, *Nature Sustainability*, 2, 122-129, 2019.