

Interactive comment on “Impact of anthropogenic activities on global land oxygen flux” by Xiaoyue Liu et al.

Anonymous Referee #2

Received and published: 6 June 2019

This paper takes maps carbon fluxes from fossil-fuel burning, fires, and net land exchanges and rescales them using conventional factors to produce O₂ flux maps. Additionally, the paper presents maps of O₂ loss from human and livestock respiration using assumptions about populations and metabolic rates.

I fail to see how these products are of value. There is no imminent threat of significant atmospheric O₂ loss, such that tracking O₂ for its own sake is an important environmental issue. The introduction to this paper has a sentence that gives a contrary impression, and is therefore quite misleading. The fluxes add little or nothing to our understanding of the global O₂ budget. The maps of O₂ loss from fossil-fuel burning are essentially those of Steinbach et al. (2011).

Another misleading element is the inclusion of human and livestock respiration in the

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balances. These fluxes are not of primary importance for the global carbon balance, and similarly cannot be important for O₂ balance. The fluxes are part of short-term loops which conserve CO₂ and O₂ overall. All food is derived from recent photosynthesis. I'm not aware of these fluxes being important in any context other than "horizontal displacement" as discussed, e.g. in Ciais et al (2008).

Ciais, P., A. V. Borges, G. Abril, M. Meybeck, G. Folberth, D. Hauglustaine and I. A. Janssens (2008). The lateral carbon pump, and the European carbon balance. *The Continental-Scale Greenhouse Gas Balance of Europe*, Springer: 341-360.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2019-36>, 2019.

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