

Geosci. Model Dev. Discuss., referee comment RC1
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Comment on gmd-2022-68

Anonymous Referee #1

Referee comment on "Low sensitivity of three terrestrial biosphere models to soil texture over the South American tropics" by Félicien Meunier et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2022-68-RC1>, 2022

- In this paper, the authors tested the impact of aggregation of soil texture data to coarser resolutions on model simulations, and the sensitivity of vegetation and soil carbon to soil texture in three popular Terrestrial Biosphere Models (TBMs). They demonstrate that vegetation and soil carbon are, for the most part, insensitive to soil texture. Data aggregation to coarse resolutions from TBMs hinder most of the soil texture spatial variability.
- First, I would like to acknowledge the importance of studying the influence of soil texture in models. I believe it's a subject that hasn't received as much attention as it should lately. I was surprised to see the lack of sensitivity of models to soil texture, and I'm glad this paper is bringing this up.

Major comments:

- My most important concern is regarding the relevance of the aggregation of soil texture input data. I think the point the authors make is valid, however, it's an issue that models have with most data input, as the scale at which they work is coarse. What I mean is that although it is good to point this out, I don't think it's groundbreaking or surprising. Therefore, I'm not sure it's worth having this result as the main finding of the paper. I think the other result about the sensitivity of the vegetation and soil C to soil texture is much more important and should be the focus of the paper. While the soil data aggregation could be a secondary finding. I liked the suggestions provided in the discussion on how to address this issue in models. However, in the abstract and conclusions, I think the framing should be more directed towards a place where models could improve by providing some measure of uncertainty with the selection of soil texture.
- Regarding the same topic, I think it's worth reinforcing in the discussion or the abstract why it's important to consider the uncertainty in the influence of soil texture in vegetation activity and drought, particularly for large scale/ecosystem level studies.
- About the biomass, GPP and soil carbon simulations' comparison with observed data: can you provide more information in how this comparison was done? The methods don't provide much detail on what was done and it's difficult to understand exactly what you did. I think it was a correlation analysis, but I'm not completely sure that was it.

Minor comments:

- I provided some minor comments in the attached pdf file.

Please also note the supplement to this comment:

<https://gmd.copernicus.org/preprints/gmd-2022-68/gmd-2022-68-RC1-supplement.pdf>