

Geosci. Model Dev. Discuss., referee comment RC1  
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## Comment on gmd-2021-389

Anonymous Referee #1

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Referee comment on "Soil-related developments of the Biome-BGCMuSo v6.2 terrestrial ecosystem model" by Dóra Hidy et al., Geosci. Model Dev. Discuss.,  
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In **Soil related developments of the Biome-BGCMuSo v6.2 terrestrial ecosystem model by integrating crop model components** the authors presents the latest implementations into the Biome-BGC model. The study is a good example of how to do a model description but maybe less so for model evaluation. The text and description (equations and simulation setup) are easy to read and follow.

I have two things that I think should be addressed: first the title, it mentions crops but the crop specific components are not that visible in the manuscript. This could be addressed by showing for instance the geography of cropland land management types in the data used. At the moment it's really hard to get from the results how the model are performing on different land covers. And maybe also showing the representative land cover classes on a map. This brings me on to the second part, although it is interesting to see how the updated parameters increased the overall model performance, but what are the simulated soil carbon stocks? I guess the evaluation of other components such as yields and aboveground biomass as well as fluxes will be presented in the following publication.

Some specific comments on the text:

Line 105: the supplied reference for this statement is pretty old, LPJ-mL, LPJ-GUESS, Orchidee, et.c. are all models that have implemented this after that publication.

Line 175-178: This is not novel for Biome-BGC, this sounds very much like what is carried out in LPJ-GUESS.

Line 714: Wrong model version?

Line 747-755: This whole paragraph is unfinished, especially which part is concerning grasslands and forests.

