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Biogeosciences Discussions

Interactive comment on "How will organic carbon stocks in mineral soils evolve under future climate? Global projections using RothC for a range of climate change scenarios" *by* P. Gottschalk et al.

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We would like to thank the reviewer for his time and his suggestions to improve the manuscript.

1) NPP increases: Section 2.5 of the manuscript has been amended to clarify that NPP is not directly calculated with the MIAMI model, which only considers MAT and MAP. Baseline NPP values were provided by the integrated assessment model IMAGE 2.4, in which NPP is a function of air temperature, soil moisture status, CO2-fertilisation,

land cover and land cover history, nutrient availability, species characteristics and altitude (Van Minnen et al., 2006). These baseline NPP values were scaled according to changes in MIAMI-NPP values. Details are given in section 2.5. Further, baseline IMAGE-NPP data from the A2 scenario were compared to C4MIP A2 NPP results. We could show that IMAGE-NPP values for the A2 scenario are well within the spread of C4MIP-NPP predictions in all world zones. Please also refer to Figure 1 in section 2.5 of the manuscript.

2) The manuscript was amended to rigorously state "mineral global" SOC stocks throughout.

3) No model validation: The RothC model has been extensively evaluated and its performance reported from numerous sites and land cover types. If this were a new model, some validation would need to be provided, but these studies have been reported extensively in the literature (the studies are cited), and it is not considered necessary to repeat this again and distract from the projections presented here. We feel that it is sufficient to refer the reader to the details in the long list of references given. We have added a few more to the previous list, and have arranged them according to different application purposes so that the reader can readily access these evaluation / validation studies.

References

Van Minnen, J.G., Leemans, R., Ihle, F., 2000. Defining the importance of including transient ecosystem responses to simulate C-cycle dynamics in a global change model. Global Change Biology 6, 595-611.

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