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Geoscientific Model Development Discussions

Interactive comment on "Tiling soil textures for terrestrial ecosystem modelling via clustering analysis: a case study with CLASS-CTEM (version 2.1)" *by* Joe R. Melton et al.

Anonymous Referee #2

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In this study, the authors investigate a tiling approach for soil textures in CLASS-CTEM with a clustering analysis to identify representing soil textures. It is an interesting study and provides useful information to land modelers although the effect on the terrestrial carbon cycle is relatively small. There are some minor issues that I would like the authors to explain before the manuscript can be accepted for publication.

1) Can you explain more about the treatment of surface heterogeneity in your model? Is the subgrid variability of PFTs represented by a single tile?

2) Why is the sum of the weight percent soil textures less than 100 %?

3) It seems that the effects on C cycle from the sensitivity test (section 3.1) is larger

than the realistic simulations (section 3.2, 3.3). Why?

4) Do the differences depend on the vegetation type?

5) GPP abbreviations need to be explained at line12 on page7.

6) Table 1. Are there any differences in individual components of evaporation (i.e. soil evaporation, transpiration) or runoff (surface runoff and base runoff)?

7) Figure 9. Is ΘI in tile E larger than in other tiles? If so, can you explain why? Is it related to the representation of runoff processes?

8) How much does the runtime increase in the global simulation? The variable number of tiles may effectively represent surface heterogeneity while saving computational resources.

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