

Review of the revised version of the manuscript

The biogeophysical climatic impacts of anthropogenic land use change during the Holocene

by Smith et al.

submitted for publication in *Climate of the Past*

Major comments:

The manuscript has been improved for the inquiries mentioned in the review and all the points were addressed in an adequate manner – I very much appreciated the detailed response on each point.

Still one concern in my opinion relates to the robustness of the conclusions and statements related to the global importance of land use changes during the (early) Holocene given uncertainties related to the i) idealized character of the experiments (time slices) ii) the reconstruction of land use itself and iii) the fact that only one model is used – I addressed a suggestion to put those very strong arguments into perspective.

After these points have been addressed and implemented including some technical corrections I suggest the final publication of the manuscript.

Specific comments:

Abstract: try avoid abbreviations (i.e. South-east Asia)

line 18/19: use a subscript for CO₂ and CH₄

p. 10 ll 58ff: this sentence is very loosely added – please try to integrate it better in the context of the arguments stated above.

p. 10 Mean sea level pressure – maybe try to link the chapters of upper tropospheric dynamics and MSLP because they are also both physically related. One or two sentences at the beginning of the chapter would help the reader to find a connection.

p13. l. 18ff. Please move this paragraph at the beginning of the chapter that the reader is already aware from the beginning that precipitation from GCM is afflicted with large uncertainties – a hint on uncertainties on realistically simulating snow cover with GCMs is also important.

p.15 l.19: I find this argument is too strong and it should be put into perspective – please explicitly state that you find this in i) your model ii) under specific model configurations and iii) that most proxy data

indicate a cooling trend throughout the Holocene over the extratropical hemisphere (see also the data-model comparison of SST sensitive proxies of Lohmann et al. 2013)

Figures: In my copy of the pdf the graphs and figures were reproduced with a very low quality. The authors should take care that the figures and graphs are reproduced with a considerably higher resolution so that at least in the pdf version all details in the graphs can be seen.

Reference:

Lohmann, G., M. Pfeiffer, T. Laepple, G. Leduc, and J.-H. Kim, 2013: A model-data comparison of the Holocene global sea surface temperature evolution. *Clim. Past*, 9, 1807-1839, doi:10.5194/cp-9-1807-2013.