

## ***Interactive comment on “Emulation of long-term changes in global climate: Application to the late Pliocene and future” by Natalie S. Lord et al.***

**L. Skinner (Editor)**

luke00@esc.cam.ac.uk

Received and published: 11 July 2017

Dear Natalie Lord and co-authors,

You will have seen that two reviews of your manuscript have now been provided. Both of these are generally supportive of publication and recommend as much. However, it is also clear that both reviewers feel that publication should be made contingent on at least one major revision and some other more detailed adjustments. The main weakness that is perceived by both reviewers is the need for a more explicit description and discussion of the limitations of the 'emulation' approach that has been adopted. This comment bears specifically on the ability of the emulator to 'predict' climate adjustments where significant ice sheet changes and/or irreversible transitions occur. I

C1

think it is a reasonable proposition that the 1,000-1,000,000yr timescale is indeed one in which such changes are not only possible, but also likely to occur. Furthermore, such considerations are likely to be paramount for one of the stated motivations of this approach to long-term prediction: the need to foresee climatic changes, including e.g. glacial erosion and/or lithospheric loading, that may bear on the long-term safety of nuclear waste disposal sites. I do suspect that readers will wish to understand clearly the applicability (and its bounds) of a long-term prediction that does not admit of glacial advance, isostatic adjustment and 'irreversible' changes (non-linear climate adjustments that are not 'smooth'); however, you may have a robust response to this proposition.

I would therefore like to invite you to submit at your earliest convenience a full response to the reviewers' comments, as well as suitably revised manuscript that takes into account the reviewers' comments, including in particular the main comment regarding a clear description and discussion of the 'limitations' of the emulation approach that is adopted.

Yours sincerely, Luke Skinner

---

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2017-57>, 2017.

C2