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Climate of the Past Discussions

Interactive comment on "Terminations VI and VIII (~ 530 and ~ 720 kyr BP) tell us the importance of obliquity and precession in the triggering of deglaciations" *by* F. Parrenin and D. Paillard

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First of all thank you very much for your editorial work.

Dear Frédéric, the two reviews indicate that major changes are needed before publication of this document. In some ways the reviews are related in requiring a more careful examination of your conclusion and its placing in context. Reviewer 1 would like you to explore the context for these two terminations against the other terminations more thoroughly. Reviewer 2 would like to see much more rigour in your statistics and in particular a better exploration of the stochastic aspects of the system. Reviewer 2 also calls for better visualisation. I agree with reviewer 2, between the work of the likes of

Michel Crucifix and Peter Huybers, there are examples of very neat visualisation of the forcings and responses at the terminations.

The manuscript has been expanded and now cover the following aspects: (1) detailed comparison of the model with the sea level data; (2) timing and duration of terminations; (3) complexity reduction and number of parameters in the model; (4) sensitivity to initial conditions, i.e. the stochastic vs deterministic question; (5) quantitative and qualitative importance of precession and obliquity in the deglaciation threshold.

One further point of my own. The benthic isotopes are not simply representative of sea level. Your response to the comment of Julia Hargreaves suggests that your model performs less well with respect to sea level during MIS 7. If you consider efforts to more closely reconstruct sea level during MIS 7 then you will see that in fact the discrepancy may be your naive scaling of d18O to sea level and not your model: Dutton et al 2009, Phasing and amplitude of sea-level and climate change during the penultimate interglacial, Nature Geoscience 2, 355 – 359.

We had a look at this problem but the study by Dutton et al. (2009) also suggests a high sea level during MIS7.1 which is difficult to reproduce during a 'glaciation' state.

While both reviewers are happy to see the eventual publication of the paper, it is not ready for publication before all of their points are addressed in full. I encourage a thorough revision and submission of full responses.

Please see our detailed answer to the reviewers as well as our revised and improved manuscript.

Interactive comment on Clim. Past Discuss., 8, 3143, 2012.