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Climate of the Past Discussions

Interactive comment on "The Antarctic Ice Sheet response to glacial millennial scale variability" *by* Javier Blasco et al.

Anonymous Referee #2

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In their manuscript, J. Blasco et al. are presenting some new, interesting and important model results on the millennial scale variability of the Antarctic Ice Sheet. This topic, despite its potential tremendous relevance to past and future climatic changes, has received up-to-now very little attention, and I am glad that the current study provides some useful results. Overall, the paper is well structured and well written. The results are clearly presented. I therefore strongly recommend publication, and I only have a few very minor comments listed below, that the authors may or may not consider.

1 - The model description starts with the introduction of the two anomalies: orbital and millennial, with respective time histories alpha(t) and beta(t). In the following of the paper, only the millennial part is explored and discussed. Since this is the topic of the paper, I have little to say about that, except that the orbital forcing seems to play a role

in the starting point of the paper, that is the LGM state. It seems to me a bit strange to introduce the parameter alpha(t), and then set it to zero. It think that it would be useful to add some information of the orbital response of the model: has the model been run with a varying alpha(t) ? If so, the authors could add some information, like a map or an ice volume number for the simulated present day. If not, the authors should say so explicitly and write "alpha" without a time dependence, since it is a constant.

2 – page 5 line 16-17: it is OK to impose "artificially large" numbers to keep the model in the range of reasonable values. Still, I am curious and would like to know what limits "the ice sheet advance beyond the continental-shelf break" in the real world. . .

3 – page 6 line 31 "is has" -> has

4 – page 6 line 32 "grounding" -> grounding-line

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