

## ***Interactive comment on “Modelling the evolution of the Antarctic Ice Sheet since the last interglacial” by M. N. A. Maris et al.***

**J. Fastook (Referee)**

fastook@maine.edu

Received and published: 31 March 2014

I concur with Anonymous Reviewer #1 on most points put forward. Basically a sensitivity study with a more or less standard SIA/SSH ice sheet model. The novelty is the coupling with RACMO, but as reviewer #1 points out there are issues with the interpolation between LGM and PD climate that perhaps need to be addressed. For me one of the big questions I had was whether the sliding fraction was computed (based say of water accumulation from basal melting, which itself was not discussed at all) or is it specified? I am in favor of publication with some revisions.

"In the full review and interactive discussion the referees and other interested members of the scientific community are asked to take into account all of the following aspects:"

C359

1. Does the paper address relevant scientific questions within the scope of TC? Yes, addresses a sensitivity study of a current icesheet model
  2. Does the paper present novel concepts, ideas, tools, or data? No. This is a more or less standard SIA-SSH model. Are substantial conclusions reached? Yes, sort of. An estimate of volume change of Antarctica during collapse from LGM to PD 4. Are the scientific methods and assumptions valid and clearly outlined? Yes
  5. Are the results sufficient to support the interpretations and conclusions? Yes
  6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Not likely due to the fact that recreating the underlying model is a daunting task. However, given access to the model, reproduction would be possible.
  7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Yes
  8. Does the title clearly reflect the contents of the paper? Yes
  9. Does the abstract provide a concise and complete summary? Yes
  10. Is the overall presentation well structured and clear? Yes
  11. Is the language fluent and precise? No, some editing is needed
  12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Yes.
  13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? No
  14. Are the number and quality of references appropriate? Yes
  15. Is the amount and quality of supplementary material appropriate? There was none
- Minor Typography Points:

C360

line 7, page 87: “sheet and no spatial correction is made on account of the differences between” should perhaps be “because” instead of “on account”

line 26, page 88: “parameterisation” i believe is spelled “parameterization”

line 17, page 89: “Next to the enhancement factors” should perhaps be “In addition to the enhancement factors”

lines 20 and 24, page 92: Avoid inline equations

lines 15-16, page 93: “disables” is awkward, perhaps “precludes” instead?

line 14, page 96: “with respect tot the total ice velocity” should be “with respect to the total ice velocity”

line 15-16 page 96: “For ice shelves, sliding is the only driving force” Sliding is the mechanism, not the force...

lines 4-9, page 101: “However, the total ice volume is affected less by variations in min than in ESSA because with the variation of min the ice that is grounded on a bed below – 1000m is mostly affected, while with the variation of ESSA all grounded ice below 0m is affected.” needs to be re-written

---

Interactive comment on The Cryosphere Discuss., 8, 85, 2014.