

Interactive comment on “Future Antarctic bed topography and its implications for ice sheet dynamics” by S. Adhikari et al.

Anonymous Referee #1

Received and published: 4 February 2014

This manuscript reports important results of an analysis undertaken to understand the importance of viscoelastic rebound effects on the well-known problem of predicting the Antarctic Ice Sheet’s response to future climate change. The study comes up with two important conclusions which the community will want to know:

1. Opposite to the prevailing prejudice, the future (simultaneous) short-term crustal rebound behaviors will have a far more important impact on the ice-sheet’s future behavior than the accumulated long-term rebound that is underway from past changes.
2. Rebound effects tend to interact with ice-sheet driving stress and grounding line controls in a way that tends to stabilize the ice sheet. The magnitudes are not large in the current estimates, but even small changes in grounding line position can have large, amplifying consequences.

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I have no major comments other than to say that the paper is well written (modulo a need to have a good copy edit), the concepts are clearly explained and the figures expressive.

Things that I would suggest correcting:

page 202 lines 7-8 "ad nauseam" –probably shouldn't say this in reference to a description in another paper

page 209 line 3 "proportional"

page 214 line 1 "pervasive"

Interactive comment on Solid Earth Discuss., 6, 191, 2014.

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6, C13–C14, 2014

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