

## Review: Levermann &amp; Feldmann, tc-2018-252

Dear colleagues,

This is a very nice paper which is a pleasure to read. There is not much to criticize as Figures and Text are well crafted. Compared to the rest, I found the Discussion unfocused and rather weak. This part would profit from some comparisons with model parameter studies.

Overall, I think the paper should be published after the few minor comments below have been addressed.

Sincerely, Martin Lüthi

## Specific comments

- 1,9 “responses time”: something’s wrong here (also 10), maybe should be “response times”?
- 3,10 and other places: Please refrain from “full-Stokes” (an Elmer-Ice invention). Either these are the Stokes equations, or some approximation, e.g. SSA or SIA (where the “A” already means “approximation”).
- 3,14 The horizontal ice flux divergence.
- 3,21 The reader should be informed that  $b$  is the part of the ice sheet below ocean (which is obvious, but not clear until looking at Fig. 1). Where is  $b$  measured? is it an average? (OK, it’s given later, but maybe it could be indicated here?)
- 3,29 “transsects”? (plural)
- 3,32 Is there a rationale for PIG? How would the results look if some other glacier were chosen?
- 13,15 one comma too much in the citation.
- 13,17 What should the meaning be of this error comparison. An error of several 1000 m for bedrock would be, indeed unusable. Since everything is shallow, the errors should be discussed with respect of the respective scales, which differ by one to two orders of magnitude.