

Interactive comment on “Calving on tidewater glaciers amplified by submarine frontal melting” by M. O’Leary and P. Christoffersen

Anonymous Referee #1

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General comments:

Reading this manuscript has given me a sense of distress, not for any reason involving the science (which I believe to be of highest quality and of extraordinary creativity), but rather for reason of format and readability.

My first complaint is that the downloadable PDF version of the “for review” manuscript and the “html” version that is browsed by the TCD website are different! In one, Figure (1) has two panels, in the other, Figure (1) has only one panel. Also, when I searched for the textual citation to Figure (1) in the PDF version, I did not find it. The html version of the paper did not allow me to search for the word “Figure” and hence I was forced to look for the citation by eye and did not find it.

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A referee should not be given two different manuscript versions to review! Think of the work that would be wasted if the referee were to review the version that the authors and editor never looked at... the authors and editor would think the referee was a kook!

I opt to stop refereeing the manuscript at this point in a serious manner. Until the manuscript can be “fixed” into one form, it should not be reviewed.

Nevertheless, I do have comments based on my reading of the html version (I looked at the pdf version only after I attempted to figure out if Figure 1 was cited anywhere in the text, which I gather it is not).

The science in this manuscript is very good. The writing style is still too choppy and the organization is suffering from excessive familiarity (i.e., the authors view the path through the paper as logical, due to the fact that they know the story; however, the reader, represented by me, is getting lost on the path and not being able to understand or appreciate what is being developed). There are several instances of 1-sentence paragraphs (an overt sign of skeleton-thin writing that needs to be filled in with a little fat and muscle), and the “natural progression” of the narrative is sometimes piecewise continuous.

I recommend a complete rewrite of some of the introductory material and the material that describes the final results. Specifically, an “easy” introduction with a simple statement of what the problem under investigation is would be far better than the relatively unnecessary literature review that currently serves as the introduction. I would like to see a diagram that helps to explain the problem set up (hence my interest in searching for where Figure 1 was cited, and my confusion after finding that Figure 1 is different depending on which file you look at on the website). After the model is described, I would like to have a simple easy-going narrative to explain how it will be used, what the basic experiments will be, and what will be looked at in the model results in order to establish the key ideas that constitute the results.

In the conclusion, the results should be explained in a way that is “narrative” and ref-

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erence should be given to what aspect of the narrative is supported by the numerical experiments (i.e., telling the reader what the experiments have done to complete the picture).

I really like this work; but I feel that it would be remiss to say publish it in the current form: readers would not likely appreciate the very creative and outstanding insights that the work has given.

I recommend a revision of at least the Introduction, the Conclusion and the sections that present the figures. I also would like to see more “problem description and set up” with good diagrams (and a consistent view of figures in all versions of the manuscript that are on the TCD website).

I would be happy to review the manuscript again, and additionally provide greater input into suggested writing revisions. I can't do it now, however, because there are at least two different versions of the manuscript on the TCD website. This is a fatal flaw for refereeing in an efficient manner. The authors should be asking whether the TCD is providing a proper service at the review stage under the circumstances.

Specific comments:

1. The first paragraph of the introduction seems unrelated to the main subject of the paper, because undercutting of the faces of tidewater glaciers seems unrelated to the mass balance of large-scale ice sheets.
2. The second paragraph of the introduction seems too dependent on terminology in the Benn paper... I'm not sure I remember what “first order” and “second order” refer to, and the paper referred to is in a journal that I don't have immediate access to. I wonder if these concepts should be developed in more detail for the reader's benefit at this point in the paper.
3. I wonder if the second to last paragraph of the introduction might be, in fact, a perfectly good place to begin an introduction (thus making the introduction more directly

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related to the study that follows)..? In the last paragraph of the introduction (and elsewhere), sometimes 'Section' is used, sometimes the abbreviation... one or the other should be used consistently.

In Section 3.2, I ask whether a diagram might be helpful to readers to more quickly appreciate the elements of geometry being defined there.

Interactive comment on The Cryosphere Discuss., 6, 3287, 2012.

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