

Interactive comment on “Estimate of Greenland and Antarctic ice-sheet total discharge from multiple GRACE solutions” by Ida Russo et al.

Pippa Whitehouse (Editor)

pippa.whitehouse@durham.ac.uk

Received and published: 21 April 2019

Dear authors,

Two referees have evaluated the manuscript, and I would like to thank them for their thoughtful comments. However, you will see that both referees express major concerns, with the main points summarized as:

1) Lack of novelty: as detailed in the reviewer comments, the methods detailed in this manuscript have been implemented in many other studies – some relevant references are listed by reviewer 2 – and applied to more recent data sets. The new contribution provided by this study is not clear.

2) In addition to only considering data up to 2010, both reviewers note that the surface

mass balance models that you use are out of date and have been superseded by more recent products.

3) The literature cited in the introduction of the manuscript need updating. You only cite one article from the last five years and many of the references are over a decade old. A much more up-to-date assessment of the current state of knowledge is needed to put this study into context.

4) A detailed description of the methods is lacking, meaning that your results are not reproducible.

5) There is no consideration of uncertainties. In particular, there is no discussion of the uncertainty associated with the postglacial rebound correction that must be applied to the GRACE data.

6) Given your finding that one of the GRACE data sets differs significantly from the other three solutions, the above two points should be covered in much more detail to permit a thorough assessment of the robustness of your results.

Due to the fundamental nature of these points, and other technical issues raised by the reviewers, I am sorry to say that my decision is to reject this manuscript. The reviewers note the effort that has gone into this work, so I hope that you will find their comments constructive, and that their feedback will help you produce an improved version of the manuscript. Thank you for submitting your manuscript to The Cryosphere, and please do consider this journal as a publication platform for your future work.

Pippa Whitehouse

Handling Editor, The Cryosphere

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2019-16>, 2019.

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Discussion paper

