

***Interactive comment on “Long-term contributions of Baffin and Bylot Island Glaciers to sea level rise: an integrated approach using airborne and satellite laser altimetry, stereoscopic imagery and satellite gravimetry” by A. S. Gardner et al.***

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The paper by Gardner et al appears to be a valuable study of the contribution of Baffin and Bylot Island glaciers to sea-level rise. I am sure it will appeal to readers of The Cryosphere.

I read this paper with interest, mainly because I have just completed and published a study of the long-term contribution of Patagonian glaciers to global sea-level rise. Our methods were slightly different and we took a longer-term view (Little Ice Age to

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present) than this present study (last 50 years). Gardner et al use DEM comparisons; we used a method involving the reconstruction of the three-dimensional geometry of glacier snouts.

I would like to see this study by Gardner et al published but the comparison with the sea-level contribution from other glaciers globally needs more work. For example, comparisons with Patagonian glaciers are made in the abstract but not developed in the Discussion.

The two key papers on the sea-level contribution from glaciers in Patagonia (Rignot et al., 2003; Glasser et al., 2011) are not cited; instead the authors rely on the Ivins et al (2011) isostatic study. There is nothing wrong with citing that study but please note that there are others as well including the Chen et al (2007) GRACE study.

Sorry if this sounds rather parochial, but if comparisons are to be made with sea-level contribution calculations made elsewhere then citations to the relevant studies need to be added to support these comparisons.

I suggest adding (as a minimum) the information contained in the references below.

References

Chen, J.L., Wilson, C.R., Tapley, B.D., Blankenship, D.D. and Ivins, E.R. 2007. Patagonia icefield melting observed by Gravity Recovery and Climate Experiment (GRACE). *Geophys. Res. Lett.* 34:L22501

Glasser, N.F., Harrison, S., Jansson, K.N., Anderson, K. and Cowley, A. 2011. Global sea-level contribution from the Patagonian Icefields since the Little Ice Age maximum. *Nature Geoscience* 4, 303–307

Rignot, E., Rivera, A. and Casassa, G. 2003. Contribution of the Patagonia Icefields of South America to Sea Level Rise. *Science* 302 (5644), 434-437.