

Interactive comment on “Brief Communication: Global glacier mass loss reconstructions during the 20th century are consistent” by B. Marzeion et al.

Anonymous Referee #1

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General comments: It is hard to fault this paper. The authors address an important issue – the apparent mismatch between different reconstructions of 20th Century mountain glacier volume changes, and they discover that this issue is now reconcilable, at least at a global scale. The paper is short, focussed, generally well written and appropriately illustrated. I would like to see this paper published quickly, with just a few changes (see below).

Specific comments: Section 3.2 should be expanded from a short paragraph to ~3 paragraphs. The authors should start by pointing out the regions where the match between different methods is good (and has been previously), explaining why. They should then discuss locations where mismatches have now been resolved (this is the
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current focus of the section and it should be retained). They should finish by explaining where the match remains poor, and why. It would be helpful to make suggestions here (e.g., we don't know why, or more/better mass balance measurements or further updates of RGI, are required in region x, climate data needs more evaluation in region y, satellite data have limited usefulness in region z – providing an indication of the greatest needs and priorities). What are the other sources of uncertainty and mismatch? Dealing with surface debris cover? Iceberg calving? Some of the discussion that I propose here may be speculative and the authors can make this clear ('we speculate..') but providing this short 'road map' will help the field to move forward. I am confident that the authors have the knowledge to write this short section.

Technical corrections: Title, abstract and paper body. The authors refer to 'Global glacier mass loss'. 'Loss' should be replaced with 'change'. Even though the overall pattern is of glacier mass loss, the rate of loss has changed through time (and regionally, there have been periods of mass gain).

Pg 3808: Line 1. Use 'Recent estimates. . .' and remove 'that were published in recent years'.

Line 19. 'However' and 'this' shouldn't be used at the start of a new paragraph. This sentence (lines 19-21) needs to be rewritten.

Pg 3809: Lines 4-6. Avoid starting a sentence with 'But', and clarify the meaning of this sentence. It is confusing.

Lines 26-29. Please split into two or more sentences.

Pg3811:

Line 8 (and elsewhere in paper): 'Pentadal' is not in common usage in the English language. It would be straightforward to replace this with '5-year' and it wouldn't take up much more space.

Line 18. 'Note that the results presented in this paper as Leclercq'. Rewrite in active
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voice. 'Note that the results that we present as Leclercq 2011...'

Interactive comment on The Cryosphere Discuss., 9, 3807, 2015.

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