

Line 8: Therefore

Motivation for the three criteria line 11 abstract?

Line 13: Cross-validation in abstract difficult as it is not clear what is meant with that term, to me it is not a universal known term.

Line 20/21: Last sentence to be amendment to derived from GRACE data over the period xxxx-yyyy. Because it is another period than the 1901-2018 you have to specify it.

Line 26: remove J.

Line 44: establish rather than establishing?

Line 50 often? Or many times?

Line 50: The sentence The Eis, 2021). Disturbs the flow of the paragraph. I suggest to leave it out.

Line 51: Unclear where this refers to. It can be either the current manuscript or the work by Eis et al.

Line 55: these models usually lack ice dynamics or geometric scaling rather than “the models .. scaling”

Line 59: the reasoning around energy balance models are hard to optimize is nonsense. You have already 5 parameters here. You could also develop an energy balance model with 5 parameters if you wish. I suggest you simply remove line 55-61 it does not add to the paper and only dismisses energy balance approaches which is not needed and not the purpose of your paper.

Line 70. I don't think it is correct to say that a comprehensive analysis is not yet possible. It has not been done but that does not mean that is impossible to do. It could be done , maybe for a shorter period or a smaller selection of glaciers. So please tune down this too firm statement.

The paragraph starting with line 73 to line 80 should be interchanged with the next.

Line 104: if you explains terms I suggest you also explain what you mean with cross-validation, you use it as if this is trivial and obvious but at this stage in the manuscript I have not yet any clue what you mean with it.

Line 105: as THE optimization..

Figure 1: It is useful but not really embedded in the text try to refer more often to the figure.

Line 205: It looks like the scale factor is simply taken from Bahr with an uncertainty. It seems to be that the scale factor should be derived from the total volume of glaciers as it follows from the Randolph data. If you don't do that it maybe that you over or underestimate the global ice volume from glacier and this then flaws your dV calculation because you can lose more if you have more and vice versa. So I think you have to find the scale factor for a time where you know the area and the global glacier volume (or better the individual glacier volume), being present-day. I therefore would like to see volume and area information I can compare with Randolph information. What is for instance your ice volume for present-day is it comparable to Randolph derived estimates? I believe that is lacking from the manuscript now.

Line 355 how do you know it is correctly, I believe you but I suggest to leave out from the text.

Figure 1 is a useful addition, but it should be more conceptual and better embedded in the text. If you decide to keep it so detailed you need many references to the figure in the text.

Figure 6 could be expanded with literature values for the GMSLR value of glaciers and this study. For the 20th century and a zoom for the satellite period

Table 4 I would prefer the information which is in the footnote to be in a separate column.