

Review of An assessment of the disequilibrium of Alaskan Glaciers
By Otto et al.

SUMMARY

This is my second time reviewing the manuscript. This study investigates the state of disequilibrium of ~5600 glaciers in Alaska using a well-published “model”/equation that links mass-balance anomalies and retreat in terms of length. The analyses focus on how different response times and the shape of the climate forcing affect the state of disequilibrium. Overall, they find the glaciers are in a state of severe disequilibrium and thus a lot of retreat is already inevitable in the future. The manuscript is suitable for the Cryosphere and contains new knowledge about Alaskan glaciers.

The revised version of the manuscript is much easier to follow, albeit at times a bit redundant between description in figures and text. That said, in the first round, I had to read the article twice to understand what was done. This second round of review, I have the benefit of already reading the article twice, so it's hard to know how much improvement is from the slight changes they made to the sections compared to being familiar with it already. I'll also note that the response to many comments in the last round was that things were related to the authors' preferred writing style (e.g., use of acronyms, variables, in-line equations; not using a traditional convention of sections but rather merging results in the introduction, methods, etc.). I'll defer to the editor on whether these changes should be made or not. In my opinion, they greatly hinder readability, and I've highlighted some examples of these below so the editor can quickly assess for themselves.

Assuming the writing style/format of the manuscript is suitable to the editor, I thus recommend minor revisions.

Major Comment

L433-435: It should not be on the reader to determine regional variations. Furthermore, as the authors noted in their response to other comments, they have chosen to deliberately “guide a reader” through various aspects of the study but then leave this entirely to the reader. Specifically, they are now asking a reader to (i) look at a table in the appendix that breaks down various metrics as a function of size, (ii) go to Figure 2 and use the color-coding in Figure 2a paired with Figure 2b to get a sense of the regional variations in size, and (iii) to form an interpretation of what these regional variations look like. I have spent a couple minutes trying to do this and it's borderline impossible to infer anything meaningful. If regional variations are an important aspect of this study, then there should be a short summary here of the main takeaways. Even better, is to provide a table in the appendix that explicitly breaks things down by region. If the authors do not deem this to be important, then remove this reference or state that future work could investigate regional variations or something similar.

Specific Comments

L53-56: The authors have chosen to keep results in the introduction. I don't understand the rationale for doing this, so defer to the editor on whether this is appropriate or not.

L56-61: The stark contrast between “traditional” writing practices (e.g., ending the introduction with a statement on what each section does) and “non-traditional” writing (e.g., mixing results with the introduction, methods, etc.) is a bit jarring. This was noted in the last round of reviews, so I defer to the editor on whether this is appropriate or not.

L75: are absolute brackets needed? It seems preferable not to be absolute in order to show the direction of change.

L84: remove the comma in the citation.

L97: delete the comma after the colon.

L163 or L167: If these are Order 2 RGI regions, state this explicitly.

Figure 3: is there a reason not to use “cumulative dens.” To be consistent with the PDF in (a)?

L299-306: here are good examples of where in-line equations look odd and reduce readability. Rather than write an equation for L300-301 that $f_{eq} = 0.57$, one could write “The median fractional equilibration is 0.57 meaning the average glacier still has ...”

L301: “still has still has”

L320-336: a good example of (i) the text repeating the figure caption and (ii) a considerable amount of methods in a “results” section. I understand the authors’ desire to put relevant methods near results and not use a traditional layout. In my opinion, this writing style becomes redundant and breaks up the narrative. Again, I simply mention here to point out to the editor as the authors have already made their opinion clear.

L365: appear to be missing a space after scenario,

Figure 9: move to Section 5.3 when it’s first used. I assume this will be done in a typeset.

L384 & Figure 9: given the explicit mention of uncertainty, can you add the uncertainty onto the figure?