

The Cryosphere Discuss., referee comment RC2 https://doi.org/10.5194/tc-2021-31-RC2, 2021 © Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.

Comment on tc-2021-31

Anonymous Referee #2

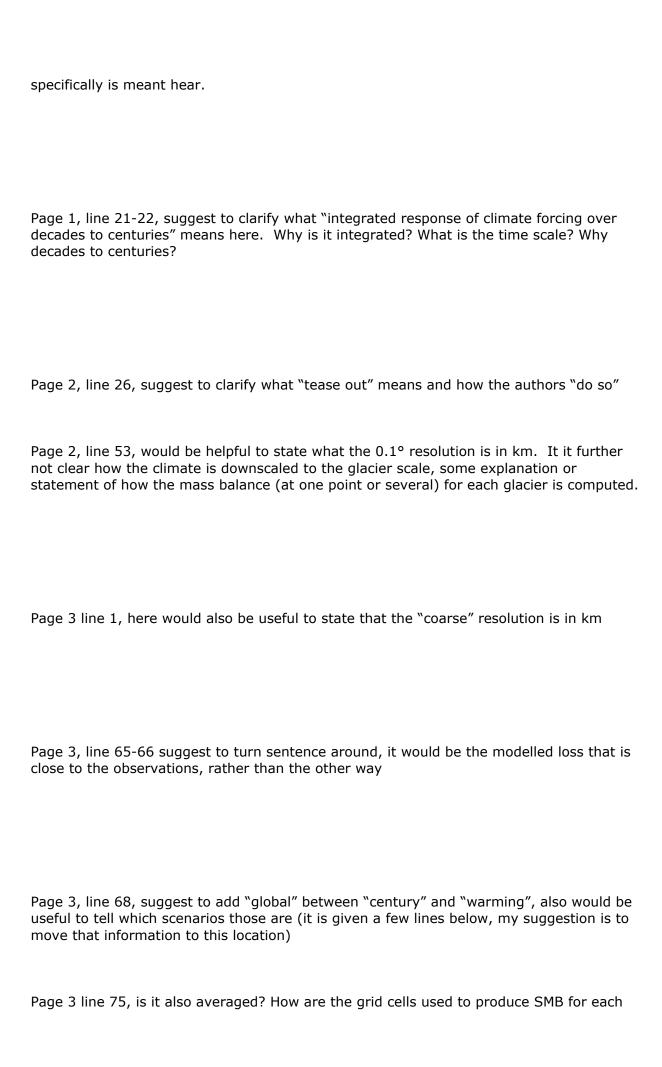
Referee comment on "Brief communication: Do 1.0, 1.5, or 2.0□°C matter for the future evolution of Alpine glaciers?" by Loris Compagno et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2021-31-RC2, 2021

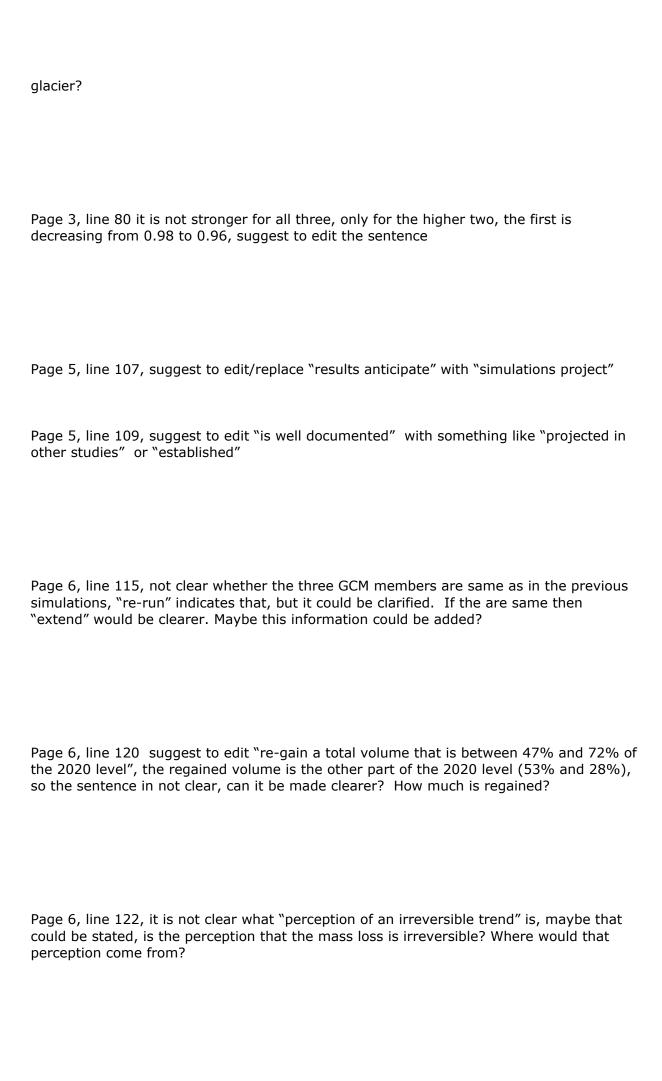
Review of Brief communication: Do 1.0°C, 1.5°C or 2.0°C matter for the future evolution of Alpine glaciers? by Loris Compagno, Sarah Eggs, Matthias Huss, Harry Zekollari and Daniel Farinotti [The Cryosphere Discuss. doi:10.5194/tc-2021-31]

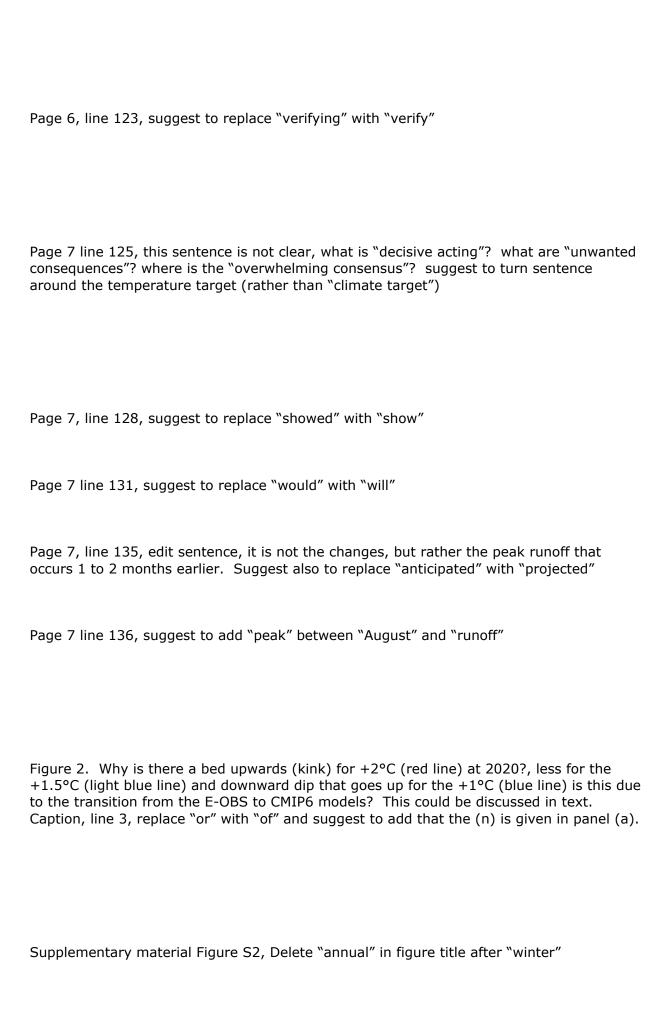
General comments

This brief communication presents model results from GloGEMflow for all glaciers in the Alps under forcing scenarios that project approximately 1.0°C, 1.5°C and 2.0°C warming until the end of the century, to cast light on what difference these different warming levels will have on the future of the Alpine glaciers. The experiments are well designed, model setup that has been used previously is applied for this specific study, and the conclusions drawn are interesting. The impact on glacier volume and glacier meltwater runoff in the European Alps is quantified and shown that even under 1.0°C warming about half of the glacier volume will be lost and with an additional degree of warming more than 80% may be lost. The authors emphasizes that every half a degree of warming counts when discussing the future of the glaciers. Further, simulations with same model beyond 2100 with strong mitigation scenarios indicate that a slow recovery of the glaciers in the European Alps may happen but authors call these preliminary results and urge that projections beyond 21st century will be analyzed. The paper is clearly written, and the conclusions are clear, some minor comments for improvements are suggested below.

Specific comments:
The abstract is very brief and only hints at the results and conclusions. Suggest to include the quantification presented in the conclusion also in the abstract and clarify what "glaciers might start recovering" actually mean, when does the recovery start (same for all scenarios)? What does recovery mean (full, partial)? Why do they recover? The abstract should really entice the reader to read on so in my opinion more information already here would be useful.
Technical corrections:
Page 1, Abstract, Line 5, suggest to edit "temperature targets" with "scenario" or "projections resulting in different temperature change". Suggest also to clarify what "implications" and what "changes" are meant, by adding a little more text this sentence would be more informative.
Page 1, line 8, suggest to delete "need to"
Page 1, line 12, sentence is not clear, what is ambitious about the targets? What important environmental change is to occur? My suggestion would be to write out what







In figure captions of S1 and S2 suggest to replace "of 72 glaciers" with "from 72 glaciers"

Suggest to edit figure caption S3 it is not only Modelled glacier evolution until 2300 but also temperature and precipitation evolution.

Table S2.1 replace "and" with "an" before "area" something strange in the parenthesis what does (given as "Area??) refer to?