**Review of "Recent observations and glacier modeling point towards near complete glacier loss in western Austria (Ötztal and Stubai mountain range) if 1.5°C is not met"**

The study by Hartl, Schmitt, and colleagues uses a new version of the OGGM glacier model, called OGGM-regional, to make updated glacier volume predictions for the Ötztal and Stubai regions. They calibrated and validated this model using new glacier area and volume data and a new calibration procedure described in Aguayo et al. (2023). Furthermore, they compare their updated simulations with the original version of OGGM (default) as well as with results from other regional/global glacier model studies (e.g., Zekollari et al., 2019; Cook et al., 2023).

The study finds that glaciers in the Ötztal and Stubai regions may decline faster than projected by other large-scale glacier models. It estimates that if global warming is limited to +1.5°C, about 2.7% of glacier volume will remain by 2100 (so actually almost everything disappears). With higher warming levels (2-4°C), glaciers could disappear by or before 2100. The model's results align closely with observed mass balance data from WGMS (especially after 2000) and area changes from 1997 to 2006 (not used in calibration), indicating strong performance of OGGM-regional and showing reliability + a clear step forward in regional glacier modelling.

In my view, the study is well-presented, well-written, detailed, and scientifically intriguing. It uses high-quality data for initialization and calibration, highlighting the challenges in calibrating large-scale glacier models, which often lack enough observational data (and model structure). Including more data, as done here, improves clearly the performance of these large-scale models.

While the results provide new, more pessimistic estimates of how regional glaciers in western Austria will respond to warming, the study's approach and methodology are even more compelling to me. I also really like the approach of modelling the glaciers using different warming levels, rather than under specific SSP scenarios.

I only have some **textual comments/suggestions** which I hope could help the authors to finalise their paper:

- The title is very compelling. Well done!
- Line 6: Suggestion: different climate scenarios -> different warming levels?
- Line 9-11: I did not completely get this extrapolation. In the abstract, it seems that the area/volume change rate is extrapolated, but further on in the paper, I think it is more the average observed surface elevation changes that are extrapolated, right? I find that this gets also a little bit too much attention in the abstract (which I find in general very well written)
- Line 20: Under +2°C, 0.4% remains, so I would expect that under +2.7°C, somehow 0.1 or 0.2% would remain? "Less than 1%" seems a bit too positive
- Line 27: Example of these local factors? Do you mean debris?
- Line 46-47: Reference?
- Line 31: What do you mean with m of elevation per year? I would stay with the standard unit of m w.e. per year?
- Line 33: … losses observed for smaller glaciers

- Line 45: cannot -> could not
- Line 64: Any reason why you not directly mention here OGGM and then also refer to Maussion et al. (2019)?
- Line 67: driven by?
- Line 70: Border with? Border on sounds a bit strange
- Figure 1:
  - The grey lines in the lower inset are hardly visible. Consider using a different (stronger, more contrasting) colour.
  - Add m a.s.l. to the scale bar for the elevation.
  - Can you increase the upper inset a bit to show entire Austria?
  - Add a north arrow to the plot
  - I also suggest to use panel labels (e.g., a-b-c)
- Line 84: This sentence needs a reference to a study quantifying this evolution
- Line 85: The abbreviation DEM has already been declared in the introduction
- Line 100: replace ";" by a ","
- Line 103: larger region studies -> regional/global studies?
- Line 104: Not extremely important, but suggest to use the same order of the mentioned studies as in line 100
- Line 116: DEM abbreviation has been used before (2x)
- Line 118: Is this density the density in the study regio or in general?
- Table 3: Why is Daniel Farinotti mentioned twice?
- Line 139: Maybe add this information in line 128? … using ArcMap GIS software
- Line 143-146: I do not completely get this part. Do you mean exclusion instead of inclusion?
- Line 147-149: Repetition of what was sad before?
- Line 152: Did you yourself apply this multi-person mapping approach?
- Line 164-165: This sentence could be removed to save some space
- Line 190: How was the ice volume determined for glaciers without measurements?
- Line 202: No need to refer here to Zekollari et al. (2024) in my opinion. OGGM is described in Maussion et al. (2019;2023), right?
- Line 214: What do you mean with no further volume or area thresholds?
- Line 247: regional data = regional ice thickness observations?
- Line 256-259 -> super interesting! So having 2 area inventories allows to calibrate this parameter
- Line 269: Since 2006 -> between 2006 and 2017/18
- Figure 3:
  - Panel b and c-> Replace m/a to m $yr^{-1}$ (which you use in the text and caption)
  - The labels are all pretty small, you might try out to make the figure/labels a bit larger
- Line 276: Interesting -> maybe refer to Kneib et al. 2024?
- Line 303: Why are the other glaciers not working?
- Figure 4: Again pretty small labels, try to increase the size
- Figure 5: Increase the size of this figure, for me this is one of the key results of the paper -> area is way better matched by OGGM-regional
- Line 318: until beyond -> by?
- Line 337: Don't -> do not

- Figure 6 -> make Figure much larger (very little detail can be see now with the figure being so small)
- Line 349-350: This is a bit contra-intuitive for me. As glacier mass is lost, the small glaciers are lost faster, so their contribution decreases?
- Line 363: Maybe note here that Kneib et al. (2024) show the contribution and impact of such avalanching on Argentiere glacier.
- Line 382: What do you mean with observed area 1979?
- Line 383: “compared to … “ could be removed, as this is rather logic
- Line 390-391: very interesting finding!
- Line 420: this is rather logic when comparing +1 to +2°C with warmer scenarios… I guess the comparison with Zekollari 2019 is a more valid comparison for GloGEMflow
- Line 426: Is the main result not related to the fact that Cook et al. (2023) uses Hugonnet’s mass balance as is for future projections and thus shows committed mass loss more than future projections?
- Line 433-435: For which scenario is this?
- Line 439: Do you think taking into account more complex dynamics can results in more volume remaining? i.e., that flowline models show too fast ice losses (although differences are small)
- Line 487: Could remove region of interest (ROI) in this sentence