

Review on HESS manuscript
egusphere-2024-844: “On the hydrological significance of rock glaciers: A case study from Murtèl rock glacier (Engadine, eastern Swiss Alps) using below-ground energy-flux measurements, ground-ice melt observations and hydrological measurements”

The authors provide a comprehensive summary of the outstanding field experiments and previous hydrological research conducted at the Murtèl rock glacier. This study is certainly of interest to the hydrology readership. However, I have some major concerns:

Major Concerns:

1. Could you provide more details on the influence of precipitation in this research? For example, how does precipitation affect the ground heat flux measurements and what impact does it have on the below-ground water/ice content?
2. Ice content is generally more challenging to determine than water content in field experiments. How do the authors measure the ice content?
3. Section 2.2 provides an introduction to past hydrological and hydro-chemical investigations. While recognizing past work is important, this section is somewhat lengthy and detracts readers from the focus of the current research. Simplifying this section and focusing more on the authors' field experiments, for example, combining Section 2.1 and Section 2.2 together into Section 2 'Study Site', would improve the manuscript.
4. Although the area has been extensively studied in the past decades, and it is good to recognize others work, it seems that the manuscript spends too much space on reviewing others' work. For example, in the result section, there are a lot of sentences stating that some observations are consistent with some previous study, but this will make reader distracted from the

innovative points of this research. It might be better to move some of others work in results and discussion part to introduction, and distinguish the key unique findings in this research.

5. In Sections 3.2.3 and 4.3, the authors discuss latent heat flux and evaporation. Have the authors considered the role of sublimation, particularly when there is snow coverage, in the turbulent heat flux discussion?

Minor Suggestions:

1. The abbreviation 'EC' first appears in line 71, but its explanation is only provided in line 212. Please introduce the abbreviation upon its first occurrence. Similar to 'EC', the term 'SEB', which I guess is the surface energy balance, also has the similar problem. It first appears in Line 252, but surface energy balance first appears in Line 151. And please also check the upper/lower case together. For example, in Line 151, it appears that the sentence should be: The surface energy balance (SEB) and AL-internal heat fluxes towards.....
2. In line 269, Q_{LE} should refer to latent rather than sensible heat flux.
3. There is no need to add a subheading in line 361 (4.2.1 Field observations). The paragraph can directly follow line 360.
4. Some sentences are repeated, please check. For example, the sentence in the caption of Figure 2 is mentioned again in lines 349-350.