The Cryosphere Discuss.,
https://doi.org/10.5194/tc-2018-281-AC2, 2019

The Cryosphere Discussions
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Interactive comment on "Permafrost distribution and conditions at the headwalls of two receding glaciers (Schladminger and Hallstadt glaciers) in the Dachstein Massif, Northern Calcareous Alps, Austria" *by* Matthias Rode et al.

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Received and published: 23 July 2019

Anonymous Referee #2

(1) Comments from Referee

a) The manuscript is quite complex displaying a large set of different methods, data and data analysis techniques. Especially in the results section the presentation gets complicated and lacks a clear structure.

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b) For example, it remains unclear what additional information the temperature/resistivity calibration should provide in this study since the measured resistivity values are interpreted solely based on resistivity values without reference to bedrock temperature distribution. Another example is the reconstruction of the former glacier surface.

c) The discussion is not convincing, and here the authors again mix up various aspects. The entire discussion of permafrost aggradation/degradation is poor and could be much further elaborate. The authors conclude that permafrost is only found at the northern exposed slopes, but no other expositions have been investigated.

d) Overall, I think that the findings are of limited interest to a greater audience and have only local value to stakeholders active on that mountain.

(2) Author's response

a) We clarified our scientific focus in all chapters and focused on the aims of this study: Detection, delimitation and characterization of permafrost in the rockwalls surrounding the retreating Schladminger and Hallstatt glaciers in the Dachstein area. The Results section has been entirely restructured and rewritten.

b) We clarified the question about the additional value of the temperature/resistivity calibration – we are thankful for this important suggestion. The calibration enables us to verify if the measured high resistivities in fact represent frozen rock or not. The reconstruction of the former glacier surface is now part of the chapter "study region" and builds the basic prerequisite for our methods and results.

c) The Discussion section has been entirely restructured and rewritten. It now follows the structure (1) General distribution of permafrost; (2) Significance of the ERT results; (3) Aggradation or degradation of permafrost. References to other expositions have been omitted. The Conclusions were focused and shortened which allowed us to reach much more concrete conclusions.

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d) We have now pointed out much clearer that the aims mentioned in (a) contribute to an overarching question which is of relevance for an international readership: how widespread glacier retreat will affect permafrost degradation and/or aggradation in alpine rock walls.

(3) Author's changes in manuscript

Due to the reviewer's suggestions, the paper has been thoroughly revised. Many passages were completely rewritten and considerably shortened in this process. Due to the extensive changes, it was no longer possible to track the individual changes.

The new manuscript is added as supplement file.

Please also note the supplement to this comment:
https://www.the-cryosphere-discuss.net/tc-2018-281/tc-2018-281-AC2-supplement.pdf

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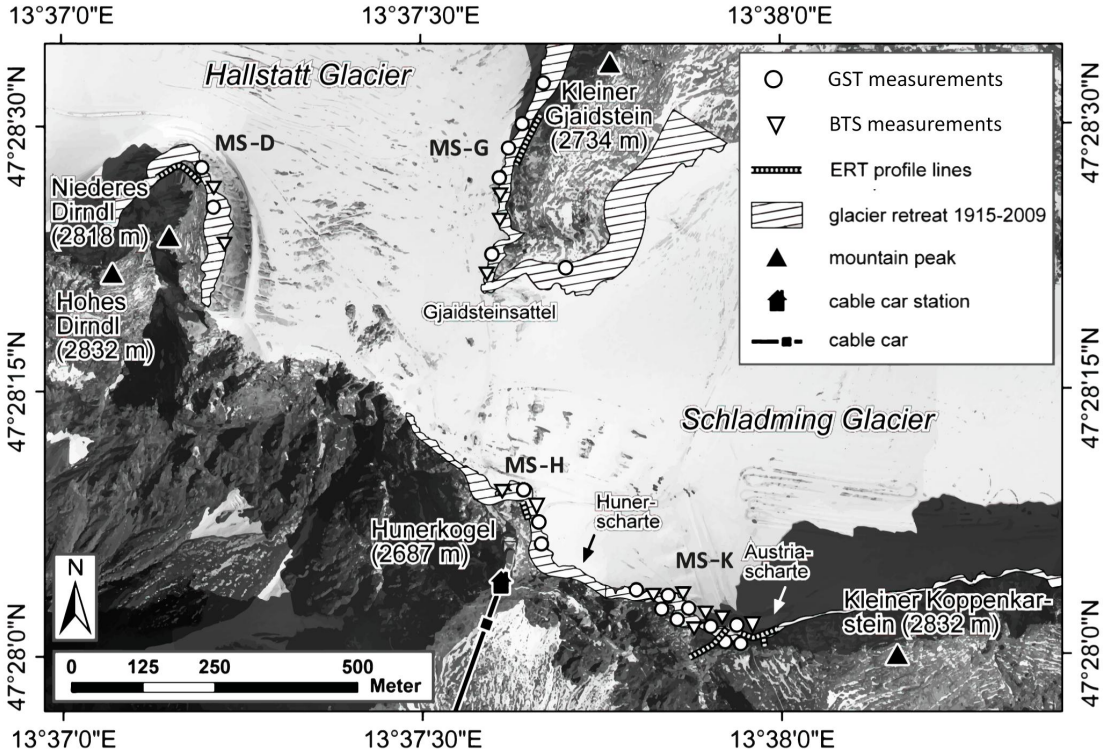

Fig. 1. Figure 3: Measurement locations of the different techniques (BTS, GST, ERT) at the studied rockwalls. Data source: Orthophoto by Province of Upper Austria 2013

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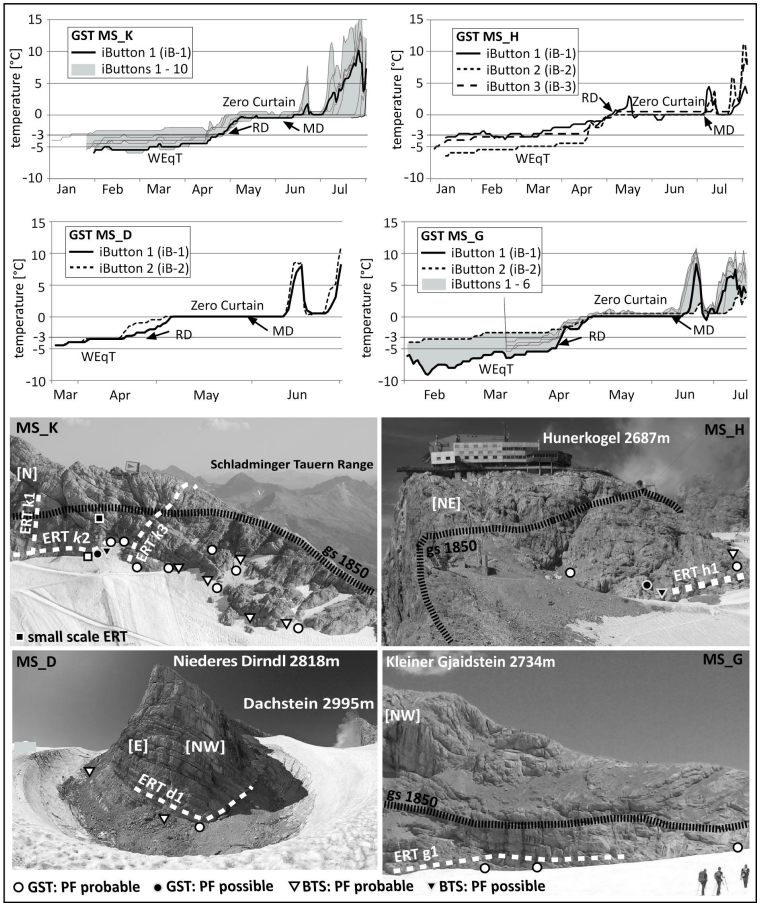

Fig. 2. Figure 5: GST measurements from January 2013 to July 2013 and measurement locations of the different techniques at the studied rockwalls including interpretation of results of the GST and BTS measurem