

## ***Interactive comment on “Potential permafrost distribution and ground temperatures based on surface state obtained from microwave satellite data” by Christine Kroisleitner et al.***

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Many thanks for your comments on the manuscript.

We would see the focus more on (i) (added value of ASCAT). Also with respect to suggestions of reviewer 1, we propose to restructure and extend the manuscript. Especially extended comparisons between the dataset with snowmelt/ without snowmelt (in relation to snow depth) will demonstrate the limitations. There are certainly land cover related issues as demonstrated in Bergstedt & Bartsch (2017). A differentiation needs to be made between forest, tundra and regions with abundant lakes.

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Discussion paper



Bergstedt, H.; Bartsch, A. Surface State across Scales; Temporal and Spatial Patterns in Land Surface Freeze/Thaw Dynamics. *Geosciences* 2017, 7, 65.

Regarding the use of the map by Brown et al.: We address this issue by also using the in situ temperature as alternative to this map. We agree that this should be discussed more in detail throughout the manuscript. We propose to address this issue already in the introduction, the data description section and to extent the last paragraph of the discussion which refers to this issue.

Regarding ZAA and coldest temperature depth: Also with respect to comments by reviewer 1 on this issue, we propose to include the comparison of MAGT at coldest sensor depth with GTN-P meta records into the paper instead of the discussion of results from Lachembruch and Marshall (1986).

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Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2017-162>, 2017.

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