

## ***Interactive comment on “Derivation and analysis of a high-resolution estimate of global permafrost zonation” by S. Gruber***

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I am grateful to Anonymous Referee #1 for the effort in evaluating and commenting this manuscript. Below, those parts of the Referee Comment that can be answered have been extracted and are marked “RC”. The author response is marked “AR”.

### (1) PLEISTOCENE PERMAFOST

RC: There are large areas in the Northern Hemisphere underling by Pleistocene permafrost, which now does not in compliance with modern climate in terms of permafrost temperature and thickness. Presented model does not take into account long-term history of permafrost formation and as a result it is allow as seeing potential areas of permafrost formation under modern climate only.

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AR: Yes, this is true and acknowledged in the original manuscript: “Deep permafrost and the influence its presence or absence due to Pleistocene glacial and thermal conditions has on near-surface conditions today are not represented by the model.”

### (2) PERMAFOST EXTENT AND PROBABILITY

RC: A permafrost zonation index method used in this research does not provide actual extent or probability of permafrost location.

AR: Yes, this is true. And, it is true for all other studies of permafrost zonation at similar scales because the modeling of permafrost over large areas is challenged by sparse data and scaling issues. In the present manuscript this is communicated openly: “Because the accuracy of estimated PE cannot be demonstrated and many relevant fine-scale processes have to be neglected at the global scale, model results are interpreted as a permafrost zonation index (PZI) that serves to represent spatial patterns but that does not provide actual extent or probability of permafrost at a location.”

### (3) REFERENCES

RC: References are not complete.

AR: I would like to improve this and have asked for more concrete feedback via the editor.

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Interactive comment on The Cryosphere Discuss., 5, 1547, 2011.

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