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Responses to Reviewer's Comments and Suggestions
(Responses are shown in blue.)

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Review comments on ESSD-2021-83

Yohua Ran et al. present a raster data collection of permafrost related ground quantities, these are the GCOS Essential Climate Variables ECVs: Mean Annual Ground Temperature (MAGT) that the authors refer to at the Zero Annual Amplitude (ZAA), and Active Layer Thickness (ALT) and permafrost probability and added the detailed information on the training and validation ground data, the sources, and the depth range of the measurements.

The detailed table adequately provides the overview on the ground data that were used as training data, the table provides the sources, the depth ranges of the measurements, number of input data and the time window.

In their edited new version, the authors added this information as supplement. I strongly recommend to integrate this table as table text within the manuscript itself, e.g. within the appendix, as it is of high informative value and may be underused by the readers if it will be provided as supplement only.

A further minor correction. The authors added new text "The European Space Agency (ESA) Climate Change Initiative (CCI) also provide permafrost products including MAGT, ALT and permafrost probability that are derived from a remote sensing-driven CryoGrid model (Obu et al., 2021). The annual ALT and ground temperature at various depths during 1997-2019 with 1-km resolution are uniquely available for the permafrost and climate science communities, although broad validation is needed, especially for ALT products." please change the statement 'although broad validation is needed' accordingly as the validation is always an official part of ESA CCI programs and validation reports on all ESA CCI products are regularly updated and available, this means this also applies to the ESA CCI permafrost products.

Response: Thank you. We have added the table in the appendix according to your suggestion. The statement 'although broad validation is needed, especially for ALT products.' was changed also.