

## ***Interactive comment on “Inferring snow pack ripening and melt out from distributed ground surface temperature measurements” by M.-O. Schmid et al.***

**Anonymous Referee #1**

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**General comments** Your paper is a valuable contribution to the existing knowledge of distributed, continuous time series of ground surface temperatures. I see its strength in the discussion of the intra-footprint variability of the recordings with respect to grid-based snow model validation, showing that even in a small area of 10 m x 10 m these recordings exhibit significant temporal variations of both MD and RD. However, could the intra-footprint variability influenced by meteorological conditions, snow drift and deposition be better predicted? The discussion of both the inter-footprint variability and the inter-annual MAGST variations does not provide new insight; it is generally known that MD is later with increasing elevation, northern slope aspects and less steep slopes. For the MAGST, it is clear that it mostly depends on the snow conditions, which in turn

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are highly variable from year to year due to the natural variability of the meteorological conditions. I would not include the aspect of a changing climate here.

**Specific comments** 564/19: "intuitive complementary measured" ... You probably mean measures, but please use more objective attributes 565/16-17: there are many newer grid-based snow modeling approaches available in the literature, including models for processes like wind-induced snow transport, snow-canopy interaction or heat conduction from the ground. Please update Your overview and indicate at which spatial resolution these models have been applied, and what implications You can provide from Your findings for these applications and their validation 566/17: MAAT cannot be measured, it is derived from the recordings 566/20: what is the 2010 period? Please specify exactly, even if the 2011 period is so already 567/10-12: is there no better way to determine these variables than from a resolution more than twice as coarse than the footprint size? 570/22: iButton ... is composed by gravel? You probably mean the ridge 577/13: "complimentary intuitive" measures? Please use a more specific expression for what You mean (see 564/13) Fig 4: explanation of this phenomenon is poor (572/15-17). Please either go into more detail (of the respective processes; is there a spatial pattern in the observation?), or skip the figure and explanation.

**Technical corrections** The manuscript text contains numerous punctuation and language weaknesses. It should be corrected by a native speaker prior to publication in TC.

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Interactive comment on The Cryosphere Discuss., 6, 563, 2012.

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