

## ***Interactive comment on “Climate trends in northern Ontario and Quebec from borehole temperature profiles” by C. Pickler et al.***

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This is a brief comment on 'Climate trends in northern Ontario and Quebec from borehole temperature profiles' by Pickler et al.

The authors incorrectly state that their sample sites are all located within the sporadic (10-50% of the land surface) to extensive discontinuous zones (50-90% of the land surface). In nearly every case the sampled sites are located within the isolated patches permafrost zone (<10% of land surface) according to maps produced by Heginbottom et al (1995), Payette (2001) and recent spatial numerical modelling of permafrost distribution for Labrador-Ungava (Way and Lewkowicz, 2016). Considering the more realistic permafrost extent, there is no discrepancy between the borehole observations and existing permafrost maps. A further point on a similar subject is that the temper-

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ature sampling methodology here is at too coarse a resolution (depth) to detect thin permafrost bodies if they were to exist. In the southern end of the discontinuous zone you would be more likely to find thinner permafrost bodies therefore this is a serious limitation of the study.

The article also does not present any indication of the land cover types encountered in the study area and correspondingly, does not consider how permafrost is distributed across the landscape (e.g. Shur and Jorgenson, 2007; Jorgenson et al., 2010). In northern Ontario and Québec, permafrost is largely absent from forested areas at the southern end of the discontinuous zones where snow accumulates while concurrently being present on wind exposed mountaintops (Brown, 1979; Ives, 1979; Allard and Séguin, 1987; Granberg, 1989; Ou et al. 2016a,b; Way and Lewkowicz, 2016). Ignoring these critical variables makes it untenable to draw large-scale conclusions on permafrost from the provided data.

In general, I believe that the discussion of permafrost in this article should be removed in its entirety as the methodology, discussion and interpretations presented are not appropriate for the analysis of permafrost distribution and history. Finally, the lack of consideration of the literature on permafrost in western Québec and northern Ontario must be addressed.

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