

Interactive comment on “Microtopographic control on the ground thermal regime in ice wedge polygons” by Charles J. Abolt et al.

Anonymous Referee #1

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Overall a well written paper about the subsurface temperature dynamics in an ice wedge environment. The evaluation of snow depth effects on winter temperatures is relevant for the future of the tundra ecosystem. However the thermal contraction cracking is not only induced by the ice wedge temperature, but also by the temperature of the center of the polygon to supply the forces needed to pull the ice wedge apart. The wave of temperature change in time and depth causes the crack to form and propagate. It is therefore not clear whether the temperatures simulated in this study are relevant to the processes of cracking. The model however seems very capable of simulating this temperature dynamics and this by itself sufficient for this paper. Deep borehole data is referred to in the paper (this should however be Romanovsky's Franklin Bluffs site, not Clow for the region of your study) however the data are not used in the model to

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show the bottom boundary is simulated correctly. It was very amusing to me that Noah “estimated land surface model output...” I think it should be NOAA?

Specific: P1L28 “~4 5” maybe “4 to 5” P9L5 “the” can be removed from “the phase change” Figure 2 and 6 need clarification, the lines are crowded.

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2018-2>, 2018.

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