

Interactive comment on “Optimization of over-summer snow storage at mid-latitude and low elevation” by Hannah S. Weiss et al.

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Interactive comment on “Optimization of over-summer snow storage at mid-latitude and low elevation” by Hannah S. Weiss et al. Anonymous Referee #2 Received and published: 6 May 2019

Author responses are located below referee comments.

The paper, which summarizes a small field test of snow storage in Vermont, US, is concisely and nicely written. Different types of thermal insulation were tested and evaluated by careful measurements of temperature and melting at two test plants, which both contained 200 m³ snow. Similar tests have previously been carried out in e.g. Sweden, Austria and Japan. Still I think it is a good paper since it suggests the most

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appropriate thermal insulation for a climate where such snow storage technology would be applicable. This paper has valuable information for future snow storage projects and should be accepted for publication in The Cryosphere.

Minor comments: SI units are generally used. There are some examples where it is not (80 cal g⁻¹) (g m⁻³) and these could be changed. Author Response: Thank you for catching this inconsistency and non-SI units will be changed in the revised manuscript.

Page 1, Line 31 says: Earth’s climate is warming in response to the addition of CO₂ and other greenhouse gasses to the atmosphere (Steffen et. al.,2018). Suggested revision: Earth’s climate is warming (Steffen et. al.,2018). Author Response: Thank you for this concision suggestion and the suggested change will be made.

Page 5, section 1; The maximum rate of precipitation is given. I miss the mean annual precipitation, which should be added. Author Response: Thank you for this suggestion. We will include mean to provide additional context.

The paper refers to research done in Sweden, Austria and Japan but there is no reference to Ed Morofsky, who was involved in ice and snow storage research in Canada? Author Response: Thank you for the researcher suggestion – we will cite Morofsky in the revised manuscript.

I also miss that they did not do any calculations of the heat transfer through the thermal insulation. Author Response: Thank you for this note – we did not include heat transfer calculations as the models were not ready at the time of publication, and the inhomogeneous wood chip layer and melt pattern rendered calculations less valuable. We hope to include heat transfer calculations in future publications when we have more consistent data.

Please also note the supplement to this comment:

<https://www.the-cryosphere-discuss.net/tc-2019-56/tc-2019-56-AC1-supplement.pdf>

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