

Interactive comment on “Some fundamentals of handheld snow surface thermography” by C. Shea and B. Jamieson

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This is an interesting paper that makes a significant contribution by introducing the fundamentals of handheld thermography to our field. The paper is clear and well organized, and brings up some important points to consider such as the effect of the observer on the snowpack temperature.

I only have a few minor comments.

On line 17 in Section 2 the authors state (and later show) that portions of the snow surface can re-equalize with the ambient air within minutes. However, Figure 1 shows a strong delineation between the cold bed surface and the surrounding snow of just 2.5 deg C still exists 5 minutes after the avalanche. Would the authors like to postulate why

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these temperature changes in the field appear to be slower than those they measured in some other parts of the paper?

I encourage the authors to expand (with perhaps only a sentence or two) on the debate regarding the location of the maximum daytime temperature in the snowpack (Section 6.1, line 6). It seems that it would depend on the individual situation that day. For example, you might expect quite a different result if you were comparing a cloudy day with warm air advection over a cold snowpack with a clear day with incoming solar radiation and outgoing longwave.

The Figure numbers are off in sections 7.1 (line 5, should be Figure 5 rather than Figure 8) and section 7.2 (line 10, should be Figures 6 and 7 instead of Figure 8).

In section 7.1, lines 16 and 17, the authors report on heat penetration into the snowpit wall, but do not give a time for that penetration. How much time did it take for the heat to penetrate those 10 to 18 cm into the pit wall?

Finally, I would also encourage the authors to expand on Section 7.3 with some additional discussion of applications and various research problems that could be pursued with this technology. Their Figure 8 brings to mind many possibilities, such as a careful quantitative investigation of temperature gradients around bushes to better explain the formation of faceted crystals around buried bushes.

Interactive comment on The Cryosphere Discuss., 4, 1467, 2010.

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