

Interactive comment on “A low-cost method for monitoring snow characteristics at remote field sites” by Rosamond J. Tutton and Robert G. Way

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General comments

This paper fulfils all the criteria for publication and I would be happy to see it published given a few minor changes. The background, prior work and fieldwork methodology are all explained clearly. The main issue that I would like to see addressed is that the authors lead the reader to expect the presentation of a method that combines the measurements of both light intensity and temperature to produce a snow depth measurement. The abstract promises “a new method termed snow characterization with light and temperature”, but while both parameters are measured, they are then analysed separately and the results from each approach compared. The temperature

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sensor is used in the light intensity method but only to determine snow-free days for the baseline calibration. The authors do acknowledge that they intend to develop a technique that incorporates both kinds of measurements in future work, but it would be good to clarify this up front.

Specific comments

Introduction, line 30: “Unlike its liquid counterpart, snow is . . .” – I presume by this you mean by comparison with rain? If that’s the case, I think it would be better if you revised the sentence and explicitly compared snowfall with rainfall.

Introduction, line 35. I would suggest also making reference to the fact that snow does not lie evenly because of the effects of topography and wind (snowdrifts, sastrugi, etc), so extrapolating local or regional levels of snow cover from a single point measurement is very prone to errors. The development of a low-cost technique potentially allows multiple instruments to be deployed within a region of interest to get a more representative measurement of snow cover.

Data processing and analysis, line 134. On my first read-through, I struggled to understand whether the interpolation discussed here between loggers on a single stake, or was interpolation in time between logger readings. The explanation (it’s between loggers on a stake) doesn’t come until some time later at the start of section 4.3, so it is worth a clarification here.

Results, line 183: “The first, which used changepoint analysis, showed small increases in snow accumulation from late-October to late-January. . .” – I presume that these “small increases” were relative to the non-interpolated method, but it would be good to have this clearly stated.

Congratulations on your paper, it’s a very creditable piece of work!

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