

Interactive comment on “The spatial variability of snow water equivalent” by T. Skaugen

Anonymous Referee #2

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In general, the paper is good from mathematical viewpoint (at least to the extent which seems to be clear for the reviewer), and not so good in terms of how it is written. In the title and elsewhere throughout the text, the scale of the study is not mentioned. In fact, there are numerous studies on the spatial variability of snow cover on continental scale, and they are done with absolutely other approaches. Also, the studied region should be mentioned in the title, as the snow cover specifics in Norway mountains could be different from other parts of the world (say, plains in continental climate of Canada or Siberia). The title could be modified, for example, this way: “The spatial variability of snow water equivalent on catchment scale in alpine South Norway”. The catchment scale of the study should be emphasized in the text too. There are many places where the author is not so accurate with the language and/or terminology. For example, page 14: “correlation between ablation events and SWE” - the author probably means NUMBER of ablation events? Then, the term “ablation” includes all decrease of the snow

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and ice mass, including evaporation. The author here probably means the melting only. In many cases he also uses expressions like “positive correlation”, “negative correlation”, not explaining what parameters are correlated. Every time it should be expressed explicitly, otherwise readers can understand the conclusions in a different way. If necessary, the author could introduce abbreviations like, say, PCSM (“Positive Correlation between SWE and number of Melting events”), although I would prefer explicit description of the characteristics. Another example of inaccurate language (page 14): “It is interesting to note that also the correlation between ablation events and SWE prior to melting turns out to be positive. Similar findings are reported by Pomeroy et al. (2004) who found positive correlation on the catchment scale (>10 km²). For the particular study of Pomeroy et al. (2004), negative correlations between pre-melt SWE and melt where found for scales smaller than the catchment scale.” Without additional comments, the last sentence confuses the reader: in the first two sentences, the author was speaking about correlation between number of melting (as I suppose) events and SWE on catchment scale, and suddenly he switches to another pair of parameters, and to another scale. Here, it is also unclear what is “melt” in the last sentence: intensity of melting? Total amount of melt water? On the next page, one can read “melt and pre-melt SWE” - once again, the terms should be explained more clearly, as the first impression is that the author speaks about two kinds of SWE: before melting and during it. In some cases, like in the abstract, the meaning of conclusions becomes unclear due to this inaccurate language. It would be nice to demonstrate the positive and negative correlations in figure(s). Figure 9 is not referred to in the text. There are numerous typing errors in the text (‘montoring’, ‘SWE trough’, ‘could be reproduce’, and many others).

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