

Interactive comment on “Technical note: Snow Water Equivalence Estimation (SWEE) Algorithm from Snow Depth Time Series Using a Snow Density Model” by Noriaki Ohara et al.

Seibert (Editor)

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Thanks for submitting this manuscript to HESS. We have received two excellent reviews. Both appreciate the work, but also raise important concerns and in the end recommend major revisions respective rejection. Based on the comments, and my own reading, the novelty of the presented work is not fully clear. The argument that the presented model might be more robust for applications in different regions is interesting and possibly reasonable, but this needs to be demonstrated. One might argue that the presented approach is more process based than some of the recent work on SWE estimation or snow density modelling (Kelly et al., 2003; Jonas et al., 2009; Sturm et

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al., 2010; Bormann et al., 2014; McCreight and Small, 2014), but the difference seems rather gradual. The presented approach is based on several assumptions that help to reduce the need for input data. While the latter has its clear value, this also means that the approach, in the end, might not represent the processes correctly after all. Therefore the question of the novel aspects of the presented work as raised by both reviewers is a very valid concern. The authors were apparently not aware of the paper by McCreight and Small (2014). This is unfortunate, but given the volume of publications, such things happen. However, I do not think that just adding a reference is making justice to this important comment by the reviewer. What is asked for is to relate the presented work to the model being presented by McCreight and Small (2014)!

An test using several sites as suggested by one of the reviewers and at least partly been presented in the authors' response would be a valuable addition to this work and make a good argument for the new model. It also seems that the structure is suboptimal with important information being hidden in the supplementary material.

Overall, I find the authors' responses a bit on the defensive side and would like them to consider the valuable reviewer comments in a constructive way in their revisions of the manuscript to make the best use out of these comments for improving this manuscript.

As a small note, the open review process in HESS allows posting responses directly when reviewer reports come in. In this case, an earlier response would have been good to allow for some discussion. Please also note, that the revised version should not be submitted as the authors' response, but after the discussion phase has ended and the editor has looked at the reviews and responses.

Best regards, Jan Seibert

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