

## ***Interactive comment on “ESOLIP – estimate of solid and liquid precipitation at sub-daily time resolution by combining snow height and rain gauge measurements” by E. Mair et al.***

**E. Mair et al.**

giacomo.bertoldi@eurac.edu

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We thank the three reviewers for their detailed and thoughtful comments, which provide useful indications on how to improve the paper, both from a formal and from a conceptual point of view.

We appreciate the fact that all three reviewers recognized that providing new and effective methods to improve precipitation estimation at sub-daily time scales in cold and mountain areas is a very important topic for many practical and scientific applications. This encourages us to go on with our research and to submit a revised version of the

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paper.

However, the three reviewer report several questions, mainly related to:

- quantify the uncertainty associated with data and instruments used for the validation of the approach (snow pillow and micro meteorological instruments) (R1 and R2);
- better evaluation of the effects on wind distribution and snow settling on the snow height data used as input in our approach (R1 R2, and R3);
- an improved analysis of the scaling issues associated with the proposed filtering of the snow height data (R1 R2, and R3);
- a better quantification of the uncertainties associated with the assumptions made in the algorithm (R1 and R2);
- a more accurate analysis of the impact of the mixed rain and rain on snow events on our method (R1 and R3);
- a reorganization of the paper structure and a reduction of its length (R1 R2 and R3).

We discuss those main issues in the following answer as well as in the in the revised paper that we aim to submit shortly.

Please look to the attached supplement which contains a detailed answer to all three Reviewer's comment.

Kind regards.

The Authors

Elisabeth Mair, Giacomo Bertoldi, Georg Leitinger, Stefano Della Chiesa, Georg Niedrist and Ulrike Tappeiner

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/10/C5287/2013/hessd-10-C5287-2013-supplement.pdf>

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