

Interactive comment on “Merits of novel high-resolution estimates and existing long-term estimates of humidity and incident radiation in a complex domain” by Helene Birkelund Erlandsen et al.

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Thank you for the thorough and positive review as well as constructive comments regarding the work and its potential improvements. The implementation of your suggested minor corrections, particularly those concerning the figures, are of great use and will improve the readability of the revised manuscript.

The suggestion of including a (partial) test of the various forcing data-sets presented in a hydrological model is well considered; and is something we authors have debated in

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the earlier stages of the project. We did, however, arrive at the conclusion to introduce the constructed data-set in a separate data-set journal, and to apply the data in another study. This is because a single application might derail the reader, since there are many possible applications of the data-set, for instance that of acting as historical reference data. The other aspect we have considered is that - if the application should have a significant value - the design of the experiment and interpretation of its result require a thorough treatment and thus, we would argue that it should be presented as a separate study.

Applying the different data-sets in a hydrological model would entail choosing (1) whether or not to run the hydrological model at the scale of the forcing data, (2) how to up-scale the SeNorge data or how to down-scale the coarse scale humidity and radiation data in Norway's complex terrain, (3) whether scale itself should be considered when analysing the results (particularly given the influence of snow in Norway, which has a non-linear sensitivity to temperature/the surface energy balance), and (4) if the model should be calibrated separately for each of the different data-sets of humidity and radiation and possibly for the different scales it would be run at. We will highlight the testing of the various forcing data-sets in a hydrological model as a valuable future study in the revised version of the manuscript.

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