

## ***Interactive comment on “How to simulate radiative inputs in complex topographic areas, an analysis on 115 Swiss Alps weather stations” by Philippe Riboust et al.***

### **Anonymous Referee #2**

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The authors used data from over 100 weather stations with different aspect and altitude to develop more accurate long and short-wave radiation estimates from readily-available data such as temperature and geographic features. While I believe this to be a worthwhile task, the manuscript as written is hard to understand, and unclear in its major findings. Consequently, I recommend revisions to the paper before it can be published. First – it was hard to follow all your descriptions of the various parameters used. I’d suggest putting some of the detail in an appendix section, and simply providing the parameter formulations you ended up using in the main documentation. Also – I’d like to see clearer comparisons between the new model results and more established methodologies for estimating LW and SW radiation. The use of the KGE

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criterion is unclear – why not use Pearson correlations directly? If this criterion is indeed superior, please provide explanation of acceptable ranges and max/min values. In addition, it would be useful to see how the provided formulations compare to simply using the nearest weather-station values for LW and SW radiation, or reanalysis datasets – i.e provide some more broad comparisons for your methodology. In the end, it didn't appear that your calibrated models performed much better than the original models. For your conclusion - discuss conditions under which using these more complex formulations would be worthwhile.

Specific comments: P8L14: Semicolon needed P9L18: extra “?” P9L23: Check this equation, it doesn't seem correct in the form written, as it equates three measures of effectiveness similarly in the equation, even though one should be maximized, the others minimized. Table 4: What are JUN, KOP, and SAM? Please define the acronyms and their significance in the table caption (i.e. do these represent high altitude, mid, and low altitude stations?).

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-539>, 2017.

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