

Geosci. Model Dev. Discuss., referee comment RC2
<https://doi.org/10.5194/gmd-2022-129-RC2>, 2022
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Comment on gmd-2022-129

Anonymous Referee #2

Referee comment on "Operational water forecast ability of the HRRR-iSnobal combination: an evaluation to adapt into production environments" by Joachim Meyer et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2022-129-RC2>, 2022

This manuscript presents a nice contribution to the snowpack modeling community, through a robust assessment of the operational capability of the HRRR-forced iSnobal model to reproduce observed snow depths (point-based measurements from snow telemetry stations and lidar snow depth maps) and stream gauge discharge in the East River Watershed (Colorado). I am, however, left a bit disappointed by the lack of in-depth evaluation of the iSnobal model versus its current operational alternative, namely the temperature-based index model SNOW-17. In the introduction, the reasons for evaluating HRRR-iSnobal are very well presented, but I find that after reading the paper, the benefits of using HRRR-iSnobal over SNOW-17 are not made clear enough. I also do not understand why the authors use such a fine resolution (50 m) for the iSnobal model even though most of the relevant processes at these scales (such as interactions between snow, wind and vegetation) are not currently represented in the model. Justification for downscaling the model to such a fine scale is currently not clear to me. Apart from these two general comments, I have only minor comments, highlighted below. I therefore recommend publication of this manuscript once both my general comments and these minor comments have been addressed.

Minor comments:

- To me, the use of the word "coupling" is incorrect, as in this work iSnobal is simply forced by HRRR data.
- l. 30: the full stop is missing at the end of the sentence.
- l. 42: "require" should be plural.
- l. 72: please consider revising the citation to: "in Havens et al. (2019)".
- l. 143: "and is available".
- l. 196: the term "ASO" has not been defined yet.
- l. 247: there is a word missing here: "and positive at Upper Taylor".
- Figure 4: please consider enlarging the figure, as currently, the labels and text inside the figure are too small. For example, the two sub-figures could be placed on top of each

other instead of side by side.

- l. 293: there is a word missing: "across all sites in 2020".