Hydrology and Earth System Sciences Discussions

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
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Comment on hess-2021-449

Anonymous Referee #1

Referee comment on "Bias adjustment and downscaling of snow cover fraction projections from regional climate models using remote sensing for the European Alps" by Michael Matiu and Florian Hanzer, Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-449-RC1, 2021

This paper used a bias correction and downscaling method to estimate snow cover fraction from regional climate models. The method and results are difficult to follow. Comments and questions are below.

- Figure 1, the outline of the small study area is not clear. Please also give the description of the small study area. In Figure c and d, which data source does the snow cover duration come from?
- L95-100 belong to “Study Area”, rather than “Data”.
- Section 2.1 “Observed snow cover fraction from remote sensing”, in addition to pointing to referenced paper (Matiu et al., 20201), state how you obtained the daily cloud-free snow cover maps?
- Change “2.1 Snow cover fraction from regional climate models” to “2.2 Snow cover fraction from regional climate models”.
- L155-157, please provide more detailed information for the conversion from snow water equivalent to snow cover fraction. Snow cover fraction is a ratio, how did you use the threshold of 5 mm to get the snow cover fraction.
- L162ï¼□why use 19 GCM-RCM for RCP8.5 and 3 GCM-RCM for RCP2.6?
- L169-170, the full name of DC, QM, QDM have provided in the Introduction section, here just use DC, QM, QDM.
- How did you validate the estimated snow cover fraction?