

Interactive comment on “Snowpack dynamics in the Lebanese mountains from quasi-dynamically downscaled ERA5 reanalysis updated by assimilating remotely-sensed fractional snow-covered area” by Esteban Alonso-González et al.

Anonymous Referee #3

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The paper presents an approach to downscale ERA5 reanalysis by using MODIS fSCA information. Even though the approach is not completely innovative, the research has a high relevance for the application in arid areas. Below detailed comments. p.3 line 107: please provide here a clear statement about the objectives of the work and the innovative part with respect to the current literature. Section 3..2.1. More detailed information about the processing of MODIS data need to be introduced here. please add the new adapted linear function that the authors found by using Theia data and the explanation

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why it differs from the Salomonson&Appel2004. How were MOD and MYD images merged? is there a cloud gap filling procedure? If the use of MYD produces a higher error why do not use only MOD? was a validation with ground measurements conducted? this can provide an independent source of information to better quantify the accuracy of the new proposed linear relationship. Moreover in the validation, a comparison of the new linear relationship with the one proposed by Salomonson&Appel2004 is advisable to understand the advantage of the new approach. p.9, line 320: as the density can change during the season, please justify the use of the value.

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