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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-Gónzalez et al.

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Dear authors,

thank you for the interesting study and application of ICAR!

In our own study (Horak et al. 2019) that is referenced in your work as well we noticed a strong dependence of the amount and pattern of precipitation on the chosen model

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top elevation. To quote the relevant section in the discussion:

"The sensitivity studies leading to the choice of the model top at 4 km have shown that the model top elevation greatly influences precipitation amounts and, in turn, the mean squared errors obtained, see Fig. 2. It is not immediately obvious though why precipitation amounts decrease (not shown) and the MSEs deteriorates for higher model tops. Potential reasons are the influences of divergences in the forcing wind field on the ICAR wind field or numerical artifacts arising from the treatment of the model top in ICAR."

Did you examine your results with regards to their sensitivity to the model top elevation or was there no such dependence? While, with regards to the methodology employed in Horak et al. 2019, a model top set at 4.1 km above topography was seemingly best suited for the South Island of New Zealand, I would anticipate different results for other domains.

Thank you and with kind regards!

Reference: Horak, J., Hofer, M., Maussion, F., Gutmann, E., Gohm, A., and Rotach, M. W.: Assessing the added value of the Intermediate Complexity Atmospheric Research (ICAR) model for precipitation in complex topography, Hydrol. Earth Syst. Sci., 23, 2715–2734, https://doi.org/10.5194/hess-23-2715-2019, 2019.

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