2nd Review

“The S2M meteorological and snow cover reanalysis over the French mountainous areas, description and evaluation (1958 – 2020)”

by Matthieu Vernay et al.

Comments

I really appreciate that the authors addressed snow cover duration in Figure 6d in their revised version of the manuscript! However, I still see some points that could be improved:

- The literature review has been improved and the statement on limitations is important here. Thank you! However, it still does not reflect early work in modelling snow cover with the concept of hydrological similar units, or more specifically “snow cover units” (SCU). I would recommend to replace the references in line 90 (in the track changes document) by more related earlier work referring to the SCU concept (even though more related to remote sensing of snow): Seidel et al. (1983) and Ehrler et al. (1997).

We thank Kristian Förster for suggesting additional references concerning snow cover units, they have been added on line 90.

- The Section 3.1.1 on Metadata is not really helpful in its present form. I suggest to add few more details: What means “metadata” in the first column of Table 2? The definition of the dimension “number_of_points” is still missing. However, it would really help people to get in touch with your very useful dataset. I tried to follow your example (enumeration of details in Sect. 3.1.1). Please accept my apologies if I missed something but I still find it hard to put your example into practice. I took me some time and several lines of Python code to unravel your example by defining a selection which refers to the dimension “number_of_points”. I think a few more technical details would be helpful to get started with the data. Maybe you could add a few lines of example code to the appendix or at least some pseudocode to better explain data usage (see my example, which indeed could be improved)? Maybe there are better ways to apply your example I am not aware of ☺

We thank again Kristian Föster for testing the manipulation of the S2M dataset. More details have been added on section 3.1.1, especially the first column of Table 2 has been renamed “Geometry variables” to be more specific. The provided python code has been slightly modified in order to retrieve simulation data corresponding to the example in section 3.1.1 (plot of the full temporal series and extract the value for one specific date) and we added few lines of code to deal with the massif shapefiles in order to plot maps. The resulting code has been added as supplement.

The paper has a very high quality and I would suggest technical revisions to better reflect the literature on hydrological similar units and to improve the details on the nc files. I am looking forward to your final published paper!

Best wishes.