

Interactive comment on “In situ observations of meteorological variables and snowpack distribution at the Izas Experimental Catchment (Spanish Pyrenees): The importance of high quality data in sub-alpine ambients” by Jesús Revuelto et al.

Anonymous Referee #2

Received and published: 6 July 2017

This paper presents a set of 23 terrestrial laser scans of snow distribution patterns in the Izas Experimental Catchment in the Spanish Pyrenees acquired over 5 consecutive years. This dataset is ideal to study snowcover dynamics at very high spatial resolution. Data from a well-equipped weather station further enable complementary snow model simulations.

This dataset may fall short of the requirements for the special issue of ESSD, which are

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listed as "at least 5 years of continuous data with hourly sampling intervals for meteorological data, daily precipitation and streamflow". Precipitation data is only available for 2 years, and streamflow data is missing entirely. In particular the lack of precipitation data for 16 out of 23 TLS datasets is very unfortunate. Nevertheless I suggest to accept the data assembled as sufficient and relevant enough for inclusion in this special issue. However, I urge the authors to add data from WY 2017 (if measurements were continued) so that at least three seasons of complete data become available.

Anyway, the paper requires a thorough revision. First of all, I second the opinion of the first reviewer who stated that the English requires significant editing and recommended that the authors seek help from a language professional. Furthermore, we are provided with data that are mostly unprocessed. While I personally prefer to work with raw data straight from the data logger, others may find negative values for snow depth or shortwave radiation disturbing. Either way, a critical review of the data quality should be mandatory. As an example, the record from the SR50 obviously shows vegetation growth in the summer (Figure 4: SD + IR), which could be misinterpreted as snowfall. Such issues have to be addressed in the paper. Finally, the data files need to be reworked. Important information is missing, the file headers contain errors and feature acronyms that require guesswork. In particular:

- A) The TLS data is organized in different formats. Some files feature 6 columns, others only 4 columns. The header is not explained in either type of file. Obviously "C2M_signed_distances" is the snow height. But does the Z coordinate refer to the bottom or to the top of the snowpack? And how to interpret intensity readings?
- B) A separate DTM file is missing (even though it could be derived from the TLS data if we knew what "Z" was).
- C) Is there no runoff data available?
- D) The AWS dataset features a column with the header "ALBEDO_avg", however the respective data is obviously reflected shortwave radiation, not albedo. What sampling

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scheme was used to determine wind gust speed, if this is what WS_Max is supposed to be? And where is the longwave radiation data (c.f. P1/L21)?

E) Section 4.1 suggests TLS data to come as a 1x1m grid ("The final products are snow depth distribution maps with grid size of 1x1 m"). But this clearly is not the case. The same applies to Section 4.2 suggesting SCA data to be available as ortho-rectified grids. Again this is not the case. Speaking of which, I would appreciate if these processed datasets could become available as well.

Further comments / suggestions (P = page / L = line)

- 1) Title: Remove the second part of the title. This paper is not on the "importance of high quality data in sub-alpine ambients". And what are sub-alpine ambients?
- 2) Abstract: P3/L4-8 presents a nice summary of the datasets. A similar description should be given in the abstract too, starting P1/L19.
- 3) P1/L30: I would, somewhere in the introduction, expect a short overview about those studies to demonstrate what these datasets have already been used for.
- 4) P2/L17: I don't think the term "boreal" applies here .
- 5) P3/32: What exactly reaches 40%, a single front, the fronts in autumn, or the highest monthly averages?
- 6) P6/L6: Since this is a data paper you should describe your "automatic quality-control checks for removing outliers". Why are SR50 readings limited to values ≥ 0 , while this is not the case for shortwave radiation data?
- 7) P9/L5 "consistent data" seems to imply that at least some data also exist for before July 2014. Please clarify.
- 8) P12/L17: You may want to mention INARCH here.
- 9) Links to webpages: Note that these links may become unavailable in a few years'

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time. Consider a more permanent way to provide respective information.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2017-43>, 2017.

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