

Anonymous Referee #1

The authors well addressed the reviewers' comments/suggestions and well revised the draft.

Only one small suggestion, please give the meaning of "BS" and "No_BS" in the caption of figure 1. Are the abbreviation of "Blowing snow" and "No Blowing snow"? If this could be added, the manuscript could be final published.

Response: Thank you very much for your time to review our manuscript and providing so many valuable comments and suggestions. The following content has been added to describe the meaning of "BS" and "No_BS".

BS and No_BS denotes with and without blowing snow occurrence, respectively.

Anonymous Referee #2

The authors have carefully revised the manuscript based on the comments raised during the first round of review. Therefore, the manuscript had been made clearer and improved in many respects. I would like to thank the authors for this work. I have listed some minor and technical comments that should be addressed prior to publication.

Response: Thank you very much for your time to review our manuscript and providing so many valuable comments and suggestions. All the technical comments have been addressed.

The page and line numbers below refer to the revised version of the paper in Track Change mode.

- Specific comments:

P 2 L 71: The revised sentence proposed by the authors is somehow confusing. Indeed, it suggests that the SPC is an acoustic sensor, which is not the case. I recommend the authors to reformulate this sentence. Maybe: "..... the optical sensors deployed in the Antarctic and Alps (Snow Particle Counters, SPC; Sato et al., 1993; Nishimura and Nemoto, 2005; Vionnet et al., 2013), "

Response: Corrected.

P2 L 83-84: at which height above the snow surface are these values of the threshold wind speed valid?

Response: The following modification has been made to present the height of the threshold wind speed.

Threshold wind speed [at the height of 10 m](#) was found to be 9.9 m s^{-1} for wet snow and 7.7 m s^{-1} for dry snow, and a formula expresses the threshold wind speed as a function of air temperature has been proposed based on field observations from the Canadian Prairies (Li and Pomeroy, 1997a).

P 7 L 203-205 and Fig. 2 on P 6: it is not clear how is defined the frequency of blowing snow occurrence shown on this figure. Is it the ratio between the number of occurrences of blowing snow for a given atmospheric condition divided by the total number of

occurrences of this atmospheric condition?

Response: Yes. The following text has been added to the caption of Figure 2 to clearly state the blowing snow occurrence.

The blowing snow frequency denotes the ratio between occurrences of blowing snow for a given atmospheric condition divided by the total number of occurrences of this atmospheric condition.

P8 L 250-255: The authors should define the meaning of the acronym MR and should explain in the next paragraph what is measured by MR as already done for the other metrics (see P 9 L 270-278).

Response: Thanks very much for pointing this out. The following sentence has been modified to explain the meaning of MR.

The FAR measures the fraction of forecasted events that did not actually occur and the MR denotes the proportion of blowing snow events that actually occurred but not captured by the DTM model (both range from 0 to 1, with optimal performance of 0)

- Technical comments:

P 5 L 154 and throughout the text: consider using the notation $m s^{-1}$ instead of m/s for the units of the wind speed.

Response: Corrected.

P 9 Table 4: do the authors mean “dry snow cover” and “wet snow cover” instead of “dry snow covered” and “wet snow covered”?

Response: Corrected.

P 22 L 647: the authors could refer here to Table 2 that describes the different tests

P 26 L 791: the sentence “ ... with downscaled by SAFRAN ...” is not clear. I guess “with should be removed.”

Response: Corrected.