

## ***Interactive comment on “Characterizing the nature and variability of avalanche hazard in western Canada” by Bret Shandro and Pascal Haegeli***

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The paper presents interesting approach of combination of "avalanche climates" and the snow avalanche hazard characteristics based on extensive database of the catalogued actual snow avalanches in western Canada. Results of similar "comprehensive" studies, going a bit further, were reported in past (i.e. Miagkov S.M. Kanaev L.A. (Eds.) *Geografiia lavin* [Geography of avalanches], Moscow: Izdatel'stvo Moskovskogo universiteta, 1992. 331p.). Also, there are several classifications of the snow avalanches produced in Russia, including the "genetic classification" of V.V.Dzuba presented in the book cited above, where the types of avalanches were related to meteorology and stratigraphy of snow cover, definitely related to the conclusions in the presented manuscript. But it was published in Russian, used different climatic parameters and

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was mainly focused on the territory of USSR. Any comparison would probably have purely academic value. The paper provides detailed review of the gradual development of the snow avalanche hazard assessment, not touching the risk evaluation side. In my view this should be expressed in the abstract and text more clearly. Risk is mentioned several times. Or, at least ideas on how different "avalanche problems" would affect the value of risk should be presented. There is such link in Statham et al. (2018) (the year in citations should be corrected), but that paper is only cited as a source of CMAH. Strange not to see citation and links to "A seasonal snow cover classification system for local to global applications" by Sturm et al. in the "avalanche climate types" discussion. Evidently different "classes of snow covers" should affect the avalanche hazard. Very interesting is the analysis of the seasonal (is not it inter-annual?) variability in the prevalence of various snow avalanches hazard situations (Figure 6). Not quite clear what the anomalies in percent means in Figures (Tables?) 7 and 8 for the comparison of different years though. Same applies to Figure (Table?) 10. Despite these notes the paper is really good and the presented approach can indeed be used for other regions, where such an extensive dataset on snow avalanches is available. And in my view this is the main limitation of the approach - suitable only for well-documented sites. My suggestion is to publish the paper as it is or with minor editions.

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