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Comment on nhess-2022-44

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Community comment on "What weather variables are important for wet and slab avalanches under a changing climate in a low-altitude mountain range in Czechia?" by Markéta Součková et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-44-CC1>, 2022

On a general point of view, this paper is interesting because it concerns two types of snow avalanches and a quite long record to perform nice analysis. However, I recommend some corrections, which could be done quite rapidly considering my point of view.

The first sections are good, but I propose a major reworking of the results and the discussion sections. First of all, the results of the PCA did not convince me about the importance and necessity to present these results. Secondly, I recommend to present separately the two types of snow avalanches in two different sections clearly identified Wet snow avalanches and Dry slab avalanches. Thirdly, in the Discussion section, each of these types of avalanches should be discussed separately about the best predictive variables and their significance on a statistical point of view, but also on physical process for triggering of SA and all the literature review concerning both types of avalanches.

The last section of the discussion should concern the limitations of the modeling processes and I recommend to use, for example some specific points as follow:

- Limitations related to the avalanche database (validity of the observations in time, etc.)
- Limitations related to the weather variable (number of stations, location, interruption, etc.)
- Limitations related to the modeling processes used: DT and RF models
- Limitations and validity of the results about climate change (comparison with scientific literature depending of the geographic location, trends in Europe or elsewhere, challenges to better cope with the changing climate, etc.)
- Recommendations at various scales: for the Mountains studied, government for weather monitoring, snowpack records, avalanche expert in modeling, climate change adaptation, snow avalanche hazard assessment, etc.

In addition, please see my several comments on the pdf version of the manuscript. Some relationships between weather variables and wet or slab avalanches need to be improved on the basis of the physical process that governs the release of avalanches.

Some figures could be improved, but most of them are useful, the tables are useful and the literature cited is sufficient and pertinent. Finally, my recommendation concerns more a reworking of the structure of the paper and a deeper discussion than remodeling wet and slab avalanches with weather variables. The work that have been done appears

sufficient for publication, but the presentation of the results and their discussion could be improved.

Hope my opinion and comments will help the authors to improve their interesting paper about snow avalanche modeling.

Good luck

Please also note the supplement to this comment:

<https://nhess.copernicus.org/preprints/nhess-2022-44/nhess-2022-44-CC1-supplement.pdf>