Interactive comment on "Automatic classification of manual snow profiles by snow structure" *by* F. Techel and C. Pielmeier

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This paper provides a method to automatically assess the snow cover stability starting from snow stratigraphy properties, which are commonly analyzed with fairly subjective methods. The proposed automatic snow profile classification (SNPKindex) is a remarkable approach because it takes into account not only the properties of a single layer (i.e. weak layer) but also the characteristics of the whole snowpack for providing an indication of its stability. Moreover, in this work a handy method to summarize and visualize the information obtained by the automatic stability classification is suggested providing a very useful tool for avalanche forecasters.

SPECIFIC COMMENTS 1) Since two factors on three of the proposed method are

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based on the threshold sum approach, which was developed to assess persistent instabilities, it should be stressed the SNPKindex is mostly suitable for this kind of issues. 2) SNPKindex is based on three variables depending on stratigraphy variables, which are accounted for the snow structure classification (SNPKmanual) as well. Assessing the correlation between SNPKindex and SNPKmanual provides an indication about the agreement of the two methods but does not show the real capability of the SNPKindex in forecasting the snowpack stability. I think showing a comparison between SNPKindex and an independent snow stability indication (e.g. rutschblock score + rutschblock release type) would be useful to better understand the capability of the SNPKindex in providing snow stability information.

TECHNICAL COMMENTS 7454_13-19: don't you think snow density could be an important parameter for obtaining information on snowpack structure? E.g.: a less dense layer will facet faster than a denser one. Moreover density is one of the few parameters are not estimated but measured. 7457_20-25: maybe a weibull distribution as the one proposed by (Mitterer, 2008) could be suitable to better standardize this parameter. 7458_14-15: I think it would be really interesting to characterize the misclassified profiles (stable, fair or unstable).

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