

## ***Interactive comment on “Snow Avalanche Detection and Mapping in single, multitemporal, and multiorbital Radar Images from TerraSAR-X and Sentinel-1” by Silvan Leinss et al.***

### **Anonymous Referee #1**

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**General comments** The paper describes various approaches for the systematic mapping of occurred avalanches in order to improve the information provided by avalanche bulletins. It analyzes three different strategies to process radar images (from two different satellites) and cross compares the results. It compares also the mapping results with manual mapping on optical satellite, too. The paper is interesting and well organized. The studied topic is of high interest for the scientific community but also for ski resort manager and local administrator as its application can improve safety management in the area of interest. The only flaw, honestly declared by the authors, is the lack of a real comparison with a ground truth which in the studied case is practically impossible. A minor issue of the dataset is also the revisit time of the analyzed satellites that,

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obviously, is not synchronized with main avalanche event but it is widely balanced by the possibility of carrying out an avalanche mapping of entire country like Switzerland (Figure 9 is really impressive when zoomed).

**Specific comments** The experiment was carried out in a zone featuring a high avalanche activity. It would be interesting, at least at discussion level, to evaluate the performance of the proposed approach in a low frequency area, i.e. to test the capability to detect few sparse events. Figure 2 is really interesting and deserves an improvement for the sake of readability. As the investigated time span is only a fraction of the plotted graph maybe a zoomed plot could be added beside the current one. In the main plot only the AAI and the avalanche type time series should be plotted. In the second, zoomed, one also satellites acquisitions should be added, possibly on a secondary x-axis on top of the plot. Line 134. I guess the topographic relief map is the same used for orthorectification, i.e SwissAlti3D. It would be better to specify it.

**Technical corrections** In figures 4-8,11, A2, A3 the scale bar is too close to its outline, please increase the distance. In figure 6-8,11, A2, A3 the line fill masks the readability of detected avalanches. Line 18. moasic →mosaic Line 101. scatters →scatter Line 367. reduces →reduced

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