Reply to comment by Markus Eckerstorfer on Avalanche Size Classification

Dear Markus,

Many thanks for your comment on avalanche size classification. As you mention, we refer to the Canadian Avalanche Size Classification (McClung and Schaerer, 2006), which does not include avalanche width and length, but refers to destructive potential. However, length and width are the measures most people refer to – rather than area.

Hence there were a number of attempts to indicate avalanche length (and width) for the different size classes. This is most straightforward for size 2 avalanches since those are commonly seen as the typical human-triggered avalanches. For this type of avalanche, length and width are often reported. For example, Schweizer and Lütschg (2001) reported the median length and width of human-triggered avalanches, as 150 m and 50 m, respectively. Fatal avalanche were larger with a median length of 310 m and a median width of 80 m.

Often the typical length of size classes 1 to 3 are described with 10 m, 100 m, 1000 m (Stethem et al., 2003). However, this numbers cannot easily be used. For example, in case of size 3 avalanches 1000 m is obviously rather the upper limit, whereas 10 m for size 1 avalanches is rather the lower limit. It seems clear that for size 1 and 2 avalanches the typical length is rather several ten or a few hundred meters – and several hundred meters for size 3 avalanches. Numbers in these ranges are, for instance, given on the website of the European Avalanche Warning Services (EAWS, 2019) or in Schweizer et al. (2015).

We have adapted these lengths values and added width as an additional criterion. The threshold values we use are given in Table 1 of our manuscript.

As for avalanche length, several different thresholds were used for mapping avalanche area into avalanche size. One version, as you mention, is shown in Bühler et al. (2019).

For our classification based on length and width, we have in addition provided the corresponding avalanche areas, which might be useful for future classification attempts based on area.

Jürg Schweizer.

References

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