

Interactive comment on “Automated snow avalanche release area delineation – validation of existing algorithms and proposition of a new object-based approach for large scale hazard indication mapping” by Yves Bühler et al.

Anonymous Referee #2

Received and published: 11 October 2018

General comments:

The research article ‘Automated snow avalanche release area delineation – validation of existing algorithms and proposition of a new object-based approach for large scale hazard indication mapping’ by Bühler et al. presents an improved approach to delineate hazard indication maps for larger areas. This is of high relevance to improve risk assessment but also to deepen our knowledge of on-site processes (when evaluating these hazard indication maps with at least some observations). It is always highly appreciated to improve large-scale ‘modelling’ in order to provide necessary funda-

C1

mentals for vulnerable areas regarding a specific hazard - facilitating more targeted on-site assessments. The reasoning why an improved approach has to be developed is convincing and also the quality of the outcome. Of course, testing the approach for a broader range of influencing factors (topography, snow volume, and meteorological factors) would be necessary to verify the mentioned transferability to regions all around the world. Nevertheless, this would be a follow up for this article and I highly encourage the authors to keep track of spatially explicit modelling approaches and to steadily improve the presented approach.

Specific comments:

- I would appreciate a very short discussion whether this approach is only usable for snow slab avalanches or – to a certain degree – also for glide avalanches? Although the processes leading to the release of the avalanches are different, predisposition concerning (1) terrain, (2) snow volume, (3) meteorological factors are partly overlapping...probably. This aspect is shortly addressed on page 2, lines 1-4 but should be revisited in the discussion section.

- For the ‘Input Parameter Setting’ you have set one parameter to a ‘Default Value’ when changed systematically the other parameters. Why not changing all parameters for a specified range (using parameter sets instead of fixing numerous and changing one – as this could have interference effects). I assume that this was not done because of the enormous effort to implement parameter optimization routines (e.g. dream algorithm) and to link with the tested algorithms...but it should be addressed shortly in the discussion section if this could further improve your approach. Applying such types of adaptive Monte Carlo simulation could also lead to ‘equifinality’ of parameter sets and therefore this aspect, does not question the high quality of your approach and validation results but should be seen as another motivation to further work on the improvement of your approach.

- what were your criteria setting the default value? There might be some educated

C2

guess, but please state (this comment is to a great extent linked to the comment above, asking myself if a different fixed default value would influence parameter optimization routine.

- Conclusions and Outlook section, line 25: put 'potential release areas (PRA)' in the first sentence and come up with PRA only at this point. It is nice to have the abbreviation PRA explained again this section, but at the very beginning.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2018-124>, 2018.