

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1  
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## **Comment on nhess-2022-32**

Anonymous Referee #1

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Referee comment on "Delimiting rockfall runout zones using reach probability values simulated with a Monte-Carlo based 3D trajectory model" by Luuk Dorren et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-32-RC1>, 2022

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The manuscript presents relevant work that will contribute standardization of rockfall hazard analyses. The work provides insight into the runout distances that can be considered plausible for delineation of hazard zones on the basis of field investigation and Monte Carlo simulations of rock fall trajectories. The work is well constructed from problem statement, to hypothesis to methods, results and discussion.

It would be beneficial for the readers to include a discussion on the influence of having different approaches for mapping SW in utilizing the aggregated results for general recommendations. Particularly, those rockfall deposits mapped which originated from multiple rockfall sources.

The values for damping ( $R_n$ ) are referenced for different soil types. It is not clear if those correspond to one of the references cited earlier in the paper. Please clarify the choice of these ranges in light of the multiple calibrations for energy restitution for rockfall trajectories in the literature.

You excluded SW that did not fit the modelled results, under the assumption that those belonged to larger blocks. Although plausible and a very small number, was there any real evidence of these blocks belonging to larger ones? This point is critical for the validity of interpreted.

The work aims at developing a standard approach for delimiting rockfall hazards zones, and a probabilistic approach is presented. It is recommended in the discussion and conclusion sections that field validation and expert judgement needs to complement the models. I fully agree and I suggest this should be expanded to include what aspects of the results, input parameters or field validation should be evaluated through experience and what can be a process that becomes part of a standard.

