Natural Hazards
and Earth System
Sciences

Discussions

Interactive comment on "Rockfall modelling in forested areas: the role of digital terrain model spatial resolution" *by* Barbara Žabota et al.

Anonymous Referee #1

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This contribution is a sensitivity analysis of the code Rockyfor3D for various DEM grid cell sizes, and forest vs no-forest cover. A case study in Slovenia is used to calibrate / compare the simulations. Several indexes of "goodness of fit" are used to compare the actual propagation area to the modeled ones (in binary mode).

In the present form, this paper is more a technical report about some parametric tests made with Rockyfor3D than a research paper. As Rockyfor3D is widely used in the rockfall community, some results may be of interest, however not bringing a significant contribution to the understanding of rockfall processes or even to this specific numerical model.

Some important points are missing: - There is no proper description of the site, no profile of the slope, no indication of the source area, and a map of the soil types. Figure

1 is of very bad quality, with a large map of Eastern Europe and a small "unreadable" picture of the site. - There is no link between Rockyfor3D parameters and rockfall physics. One could expect some in the method or discussion parts. The relationships between soil type, restitution coefficients and rg coefficient are not discussed. A soil type = 3 is selected for the whole area (including the source ?), but the Rg coefficients seem to better correspond to a type 4. However, as the site is not really described, it's not possible for the reader to have a clear view on that. Discussion is also limited to "what if" questions (what if DEM resolution increases...), but no explanation are provided about the reasons / mechanisms. The relation (ratio) between the block size and rg coefficients is a critical point in Rockyfor3D and should have been discussed. - There is a so-called calibration procedure of rg coefficient done on the 1m resolution DEM (even if Rockyfor3D was not made to work with such high resolutions). There is no explanation about the range of values selected. Finally, the best set of parameters corresponds to the smallest values of the range. This is NOT an optimization (line 270) and we don't understand why not trying smaller values.

For all these considerations, I would not recommend this contribution to be published in NHESS. Even if people working specifically with Rockyfor3D may find some hints, the overall scientific content is too poor for a scientific journal.