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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Simulation of Fragmental Rockfalls Detected Using Terrestrial Laser Scans from Rock Slopes in South-Central British Columbia, Canada" *by* Zac Sala et al.

Zac Sala et al.

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Thank you for taking the time to review our paper. We appreciate the feedback, and appreciate the kind words about our manuscript. We agree that Dr. Corominas provided excellent feedback, and intend to follow his advice on the manuscript.

-The small arrow at the bottom of the figures showing the 3D point cloud and/or mesh data is the orientation of the 3D object in space. It is not critical to the figure, but is a default feature in Cloud Compare, the point cloud manipulation software being used.

-Thank you for pointing out the missing reference, this will be fixed. Similarly we can

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Discussion paper

add the suggested references Matas et al. and Ruiz-Carulla et al. at the end of the introductory discussion of fragmentation.

Suggested Change – Include additional references from Reviewer 2 and fix inconsistencies between reference list and in-text references

-The 0.3 m (30cm) point resolution listed is for the Airborne Laser Scans (ALS). This scanning technique typically yields lower resolution datasets when compared to the terrestrial methods used to collect the 6-10 cm point clouds for the case studies of the five individual rockfall events. This difference in resolution between the techniques is due to a number of factors including the lidar unit used to collect the data, stationary vs. mobile data collection, and the distance between the scanning platform and the slope. -A detailed description of the model was left out for concision as it exists in the full master's thesis document (Sala, 2018). A brief description of the input parameters in table 1 (friction coefficient, restitution coefficient, viscoplastic ground drag coefficient) and high level overview of the model could be included here for clarity, similar to the recommendation by Dr. Corominas.

Suggested change – Provide a brief overview of the model physics including a description of each of the model parameters

-I agree that Figure 23 could be included earlier in the manuscript when initially discussing the Voronoi fragmentation technique used for running these simulations. I think this would help the reader visualize what is happening, and provide more context for the discussion to come.

Suggested change – Move Figure 23 up to Page 17, likely between lines 10 – 15 for additional clarity on the Voronoi process earlier in the paper

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