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Discussions

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Comment on nhess-2021-319

Franck Bourrier (Referee)

Referee comment on "Full-scale experiments to examine the role of deadwood in rockfall dynamics in forests" by Adrian Ringenbach et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-319-RC1, 2022

This paper presents very interesting experimental results of block propagation in forested slopes aiming at assessing the protective role of deadwood. The paper is globally well written although one can note typos or mistakes (a thourough check of typos and mistakes is necessary, in my opinion). In addition, the methodology is sound and well described. The results obtained are very interesting and globally well discussed. For all that reasons, I recommend publication provided that the following comment is mandatorily taken into account.

The masses of the block used are very small. The conclusions raised are highly depending on that (in particular, the fact that the blocks are too small induces that there is no breakage of the trees). This point is briefly discussed but it should be more clearly stated, discussed both in the abstract and conclusion. In addition, the fact that the applicability of the results is limited to small rock masses should be clearly written both in the abstract and the conclusion. Indeed, if it is not done, practitioners may build inadequate recommendations from these results. This comment also applies for the simulations. It should be more clearly emphasized that the way of modelling deadwood is only adapted in the case where the block do not break the trees.

I have additionnal comments that may be taken into account :

1) p.2 l. 44, 45 : I don’t understand the sentence.

2) p.3 l. 63 : the reference is strange

3) p.3 l.71-73 : how were the SDE, SDEla and SDEsa calculated ?

4) p.3 l.71-73 : given that the distribution of the deposit is not gaussian, can you justify the use of the SDE indicators instead of "limits of a given percentile of the distribution of the deposited blocks in 2D (X,Y)" ?

5) p.3 l.81-82 : I don't understand the sentence.

6) Table 1 : It can be interesting to discuss more the discrepancies between the experiments and simulations in terms of velocities for ORG and CLR and rotational velocities

7) p.6 l.123 : " the surpass the DW" : missing word ?

8) p.7 l.125 -126 : Could you present more details about these results (quantitative comparisons between simulations for different values of the parameters, for example) ?

9) p.8 l. 146 – 149 : in my opinion, the differences with the results from Bourrier et al . (2012) are mainly due to the sizes of the blocks used in the simulations. In Bourrier et al., the blocks were large enough to break the trees which completely changes the processes as well as the efficacy of the protective measure.

10) p.8 l. 151 : "Olmedo (2015)" - it can be useful to cite also "Olmedo, I., Bourrier, F., Bertrand, D., Berger, F., Limam, A. Dynamic analysis of wooden rockfall protection structures subjected to impact loading using a discrete element model (2020) European Journal of Environmental and Civil Engineering, 24 (9), pp. 1430-1449."

11) p.9 l. 168 : "underline" instead of "underlines" ?

12) p.9 l. 169 : "The here" - missing word ?

13) p.9 l. 168-184 : this section is not clear : it can be improved,

14) p.9 l. 182 : "m. s-2" instead of "m.s-1"

15) p.10 l. 202-204 : I don’t understand

16) p.10 l. 215 : “trees Bourrier et al. (2012)” : typo ?