

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2  
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## Comment on nhess-2021-127

Anonymous Referee #2

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Referee comment on "Multiscale effects caused by the fracturing and fragmentation of rock blocks during rock mass movement: implications for rock avalanche propagation" by Qiwen Lin et al., Nat. Hazards Earth Syst. Sci. Discuss.,  
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The paper entitled "Multiscale effects caused by the fracturing and fragmentation of rock blocks in rock mass movement: Implications for rock avalanche propagation" reports a study on the relation between fracturing and fragmentation of sliding blocks and the propagation features of rock avalanches. The work is scientifically interesting; nevertheless, I have some criticism as commented in the following.

First of all, I suggest some corrections pertaining to the use of the English language.

I also suggest the authors to describe rock avalanches in a more "geomorphic" way in *Ch. 1 - Introduction*; in this regard I suggested some literature references.

Anyhow, the major issues concern the adopted methodology. In particular, I suggest to better explain some steps (e.g. line 152 – *The gravitational acceleration ( $g'$ ) is enhanced to 1962 m/s<sup>2</sup> (200 g) to mimic the real stress field*) based on literature data or other sources you considered. In this way, the comprehensibility of the whole work would surely be enhanced.

I also suggest to give a more detailed explanation concerning the relation between the number and spacing of fractures and the distance reached by blocks involved in the avalanche, since given explanation doesn't sound accurate enough.

Finally, figures' layout should be improved by applying a different colours palette and by indicating regressions equations and plots where available.

Please find suggested corrections and comments in the attached pdf file.

Based on these considerations, I do not suggest the publication of this paper before major revisions.

Regards

Please also note the supplement to this comment:

<https://nhess.copernicus.org/preprints/nhess-2021-127/nhess-2021-127-RC2-supplement.pdf>