

Interactive comment on “Combined effects of grain size, flow volume and channel width on geophysical flow mobility: 3-D discrete element modeling of dry and dense flows of angular rock fragments” by Bruno Cagnoli and Antonio Piersanti

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Comments and answers are provided here below. The Line and Page numbers refer to the new version of the manuscript.

(1) COMMENT: I know you can obtain the gravity center through importing the three dimensional shape into CAD. But how do you obtain the three-dimensional shape of the deposit especially in a real rock avalanche with volume of more than 1 million m³?

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Actually some scientists including the reviewer conducted the statistics on relationship between u/l and possible influencing factors, but they used top point of the scar and distal point of the deposit to calculate the u/l because it is hard to obtain distribution of deposits of rock avalanches since it is complicated.

(1) ANSWER:

> The best way to obtain the 3D shape of the rock avalanche in the field is to compute the difference between the digital elevation model of the ground surface after the landslide and that before the landslide. A digital elevation model can be obtained by means of satellite data (radar data for example) or a more traditional land survey (total station).

(2) COMMENT: In answer (6), it not true to say “This generates an inverse correlation between flow volume and mobility when this mobility is measured by considering the front of the deposit.” Actually, they obtained the inverse relationship between volume and u/l if calculated using the front of the deposit.

(2) ANSWER:

> Yes, sorry, this is only a typo in the rebuttal letter. In answer 6, we are of course talking about the inverse correlation between flow volume and the apparent coefficient of friction u/l , such as that shown by Scheidegger 1973 (we have attached his figures). We have now cited Scheidegger 1973 on Page 8, Line 9. Thank you.

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/se-2016-79/se-2016-79-AC2-supplement.pdf>

Interactive comment on Solid Earth Discuss., doi:10.5194/se-2016-79, 2016.

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