



Grain size and bulk friction properties in granular flows

Lydie Staron (1) and Jeremy C. Phillips (2)

(1) Institut Jean le Rond d'Alembert, CNRS-Université Paris VI, 4 place Jussieu, Paris 75252 Cedex 5, France, (2) School of Earth Sciences, University of Bristol, UK

Natural granular flows exhibit a wide range of grain sizes, from large boulders to fines. Although the use of model mono-disperse analog has proven a very useful tool, it is clear that the existence of different grain sizes plays a crucial role in the flow ability to spread and travel long distances.

The main question arising from the existence of different grain sizes is the occurrence of segregation patterns and the subsequent structuring of the flow. Another question that we raise here is the effect of grain size on the flow bulk properties. To address this problem, we perform discrete numerical simulations of bi-disperse granular flows, and analyse the flow mean behaviour in terms of bulk friction and velocity profiles. We show that changing the flow composition affects the bulk friction, the presence of large grains being unfavorable to the flow mobility.