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Granular flows in volcanic environment LUCIA CAPRA, Centro de Geociencias, UNAM, Campus Juriquilla — Volcaniclastic flows, which include from sediment-water to dry granular flow, are multiphase-system flows that involve some combination of solid, liquid and air. Their behavior in response to applied shear stress is a function of the proportion of these components, grain-size distribution and finally the physical and chemical properties of the solid components. They are generically classified as non-newtonian fluid, from pseudoplasic to dilatant with yield value (generically defined as Bingham fluid). Rheologic threshold can be defined on the base of grain-size distribution. Granular flows (i.e. debris avalanches originated from volcanic collapses) generally contain less than 10 percent in vol. of interstitial fluids which do not constitute a continuous phase in transporting solid fragments. Different mechanisms of granular fluidization have been achieved for such type of flows and particles collision/friction are dominant mechanisms acting during transport. For granular flows less than 1 km3 in volume, the mobility is not directly related with the mass volume and their runout depends on grain-size distribution, clast composition, and type of sliding surface. Textural and morphological characteristics of particles at different flow depths and their variation down-flow are important indicator of the mechanism of emplacement, which can vary from friction to collision-dominated regime. Several examples from Mexican active volcanoes will be here presented.

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