



Characterisation of breccia structure at the base of large landslides: a necessary step for modelling.

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The high mobility of large landslides is still a problem hotly discussed and the physical processes at the base of such large volume movements are not yet fully understood. One contribution that is necessary to improve our understanding is to adequately describe the structure and texture of basal layers. Within such layers, in their structure and texture, should lie the evidence for the processes of mobility. We have been focussing on volcanic landslides, using basal exposures of the Perrier rockslide-debris avalanche from the Mr Dore volcano in Central France. The Landslide occurred about 2 million years ago, and a wealth of basal contacts are exposed at the Perrier site. We describe the methodology used to characterise the deposit, using sedimentological and civil engineering methods of textural description, as well as structural description. The characterisation shows several important features that constrain the physical process that are operating. 1, the basal layer was developed by mixing substrate and landslide material; 2, the basal layer was a dense particle mix, that preserved structural events; 3, the basal layer became incorporated into the body of the landslide, by thrusting, preserving early formed examples of the base, that are similar to the final basal state. 4, fragmentation was strong at the base, but was less important in the avalanche body, except along discrete fault zones; 5, there are discrete microscale melting events due to localised strong friction; 6, the basal deposit is structured and ordered allowing us to determine sequences of events, for example where local impacts reorganise the matrix. This ordering and structure, allows us to start characterising the kinematics and to start constraining the dynamics that can then be used as data for constraining any model of large scale landslide mobility.