

Title: Sand piles study and rock avalanches and propagation experiment

Contact persons

Two people (one has to be professor/MER)

Prof. M. Jaboyedoff

Context

The granular material possesses a special behavior in the rock avalanches because they are propagating on a longer distance than the theory of friction predicts. The propagation can be described by the slope angle of the line joining the center of mass of the instability and the center of mass of the deposit. The observations indicate that this angle decreases with the volume. This can show experimentally but not easily.

Aims and Methods

It will consist in making experiments with very fine material in a vacuum, to avoid the air resistance, and using a special device to quantify the phenomenon, because often the material used is coarse. Rock avalanche geometry as well granular column collapse will be studied.

References

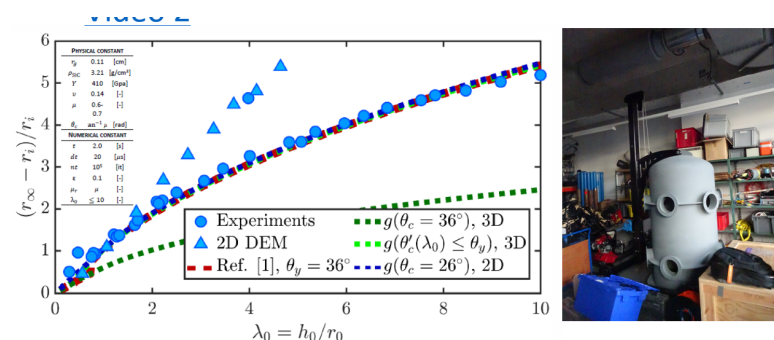
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Manzella, I. & Labiouse, V. 2013. Empirical and analytical analyses of laboratory granular flows to investigate rock avalanche propagation. *Landslides*, 10, 23-36, doi: 10.1007/s10346-011-0313-5.

Pedrazzini, A., Froese, C.R., Jaboyedoff, M., Hungr, O. & Humair, F. 2012. Combining digital elevation model analysis and run-out modeling to characterize hazard posed by a potentially unstable rock slope at Turtle Mountain, Alberta, Canada. *Engineering Geology*, 128, 76-94, doi: <https://doi.org/10.1016/j.enggeo.2011.03.015>.

Pedrazzini, A., Jaboyedoff, M., Loye, A. & Derron, M.-H. 2013. From deep seated slope deformation to rock avalanche: Destabilization and transportation models of the Sierre landslide (Switzerland). *Tectonophysics*, 605, 149-168, doi: <https://doi.org/10.1016/j.tecto.2013.04.016>.

1 image dimension H5.5cm x L8.5cm



Website

Prerequisite

Indicate if the student must take some course or module