



Small scale tests on slope failures on different surfaces

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This paper reports on laboratory experiments that were designed to investigate the evolution of slopes under rainfall and on different surfaces. Small models are constructed and rainfall is applied to them by wetting the slope crest through a rainfall simulator device that is designed to provide steady and uniform rainfall and is placed directly above the slope. The moisture content and the suction of the soil during the tests are monitored by soil moisture sensors and tensiometers respectively that are buried inside the slope model during the construction phase and the behaviour of the slope is recorded through a high resolution camera. After a short time of rainfall, cracks appear in the slope model with significant vertical deformations developing until failure occurs. Two different surfaces were examined to explore the difference on debris propagation and its effect on the evolution of the slope. The slope model characteristics and the rainfall intensity were kept the same while the surface below the slope was either made of the container material allowing the failed mass to slide away along the bottom of the container or a thin layer of soil particles was glued to the floor of the container to create friction and to inhibit direct sliding of the slope base along the soil - container interface. The experimental results demonstrate different debris propagation and deposition, and how this difference can affect the stability of the remaining slope and thus the evolution of the slope in time.