# The Rüdlingen landslide experiment

A large scale field experiment was conducted on a steep 38° forested slope with preliminary field monitoring of sensors installed at depths from 15 to 150 cm, including tensiometers, TDRs, piezometers, rain gauges, pressure cells, acoustic sensors and deformation probes, prior to triggering a landslide by means of artificial rainfall. The project was designed to enhance the understanding of triggering processes and initiation mechanisms by replicating the effects of a heavy rainfall event in May 2002, in which 100 mm rain fell in 40 minutes, causing 42 surficial landslides. Geotechnical, and hydrological characterisation was carried out on the overlying colluvial silty sand, with bedrock at depths between 0.5 m and 5 m. Percolation of groundwater into the underlying bedrock was observed from test pits. Remote sensing of displacements was also carried out continually during the field experiments, through a photogrammetric monitoring system. It was deduced that the slope would fail during an extreme rainfall experiment that would lead to saturation of the soil overlying the bedrock. The failure mechanism was more or less as predicted, with vegetation reinforcement playing a role. Triggering occurred earlier than expected in March 2009, incorporating about 150 $m^3$ of debris, which was safely retained in a protection net at the base of the slope.

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