



An integrated system for rainfall induced shallow landslides modeling

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Rainfall induced shallow landslides (RISL) cause significant damages involving loss of life and properties. Predict susceptible locations for RISL is a complex task that involves many disciplines: hydrology, geotechnical science, geomorphology, statistic. Usually to accomplish this task two main approaches are used: statistical or physically based model.

In this work an open source (OS), 3-D, fully distributed hydrological model was integrated in an OS modeling framework (Object Modeling System). The chain is closed by linking the system to a component for safety factor computation with infinite slope approximation able to take into account layered soils and suction contribution to hillslope stability. The model composition was tested for a case study in Calabria (Italy) in order to simulate the triggering of a landslide happened in the Cosenza Province.

The integration in OMS allows the use of other components such as a GIS to manage inputs-output processes, and automatic calibration algorithms to estimate model parameters. Finally, model performances were quantified by comparing modelled and simulated trigger time. This research is supported by Ambito/Settore AMBIENTE E SICUREZZA (PON01_01503) project.