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In field and laboratory water tracer tests on clay-rich landslide material

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Groundwater and pore-water distribution play a key role in the activation and evolution of landslides. Define correctly the groundwater flow path, identify the existence of preferential groundwater flows or the presence of hydrological confined layers, characterized by pore-water overpressure, are important to understand the landslide's triggering and how to design correctly drainage mitigation systems.
The current research shows the first results about: a field amino-G-acid (AGA) tracer test, conducted on a large landslide rich in clay and located in north Apennine; multi-laboratory tracer tests (Fluorescein, AGA, Eosine) performed on material collected from the same landslide and tested using a permeameter apparatus. The aim of the field tracer test was to define the groundwater flow properties, such as flow velocity and the main flow direction. To reach this objective, AGA tracer was injected in an open standpipe piezometer drilled inside a clay rich landslide and, in the same time, two continuous field fluometers were installed in two deep drainage wells and one continuous sampler was installed along the final collector of a deep drainage system. Both monitoring points were 100 m down slope from the injection point. Laboratory tests were performed to evaluate the propagation of the different tracers (Fluorescein, AGA, Eosine) inside the saturate landslide material.