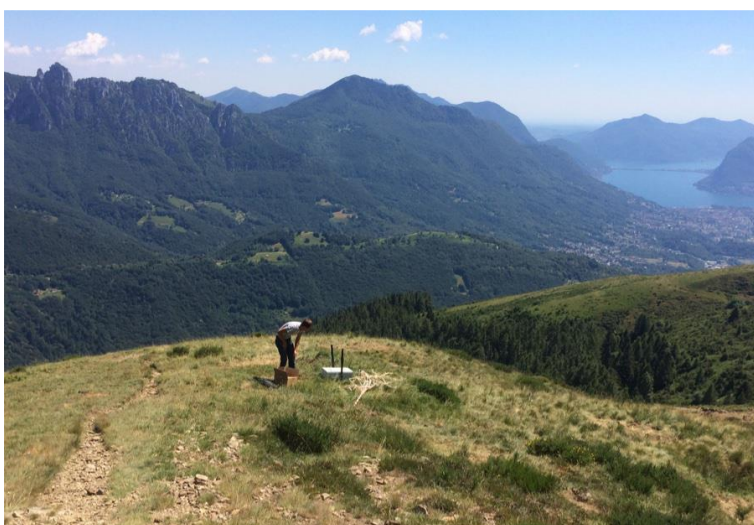


SUPSI

RASPLAN

New Radio Frequency Sensors for Predicting rapid Landslide Movements and Providing early Warnings



The problem

In mountain and hilly regions landslides are a major erosion hazard causing threats and extensive damage to people, animal and infrastructure. The knowledge of the ground moisture content is one of the essential parameters to obtain a correct susceptibility assessment.

The project

The goal of the project is to develop and produce a compact array of probes for the ground moisture measurement based on a radio frequency approach. This array can be inserted into boreholes allowing a continuous and autonomous logging of some ground's physical properties. Thanks to the specific algorithms developed, the measurement of the

signal propagation properties allows to determine a moisture profile as a function of subsurface depth in real time. This information, along with meteorological data and a local ground model, is used by specific artificial intelligence algorithms to detect the hazard index for shallow landslides.

The result

The continuous monitoring of hydrological ground conditions and the calibration of models related to surface landslides enable to estimate the hazard of triggering surface landslides and provide early warnings through special alarm modules.

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Research domain

1 Constructed environment, natural resources and safety
3 Innovative products and processes