



INTERUNIVERSITY PHD COURSE
“SUSTAINABLE LAND MANAGEMENT”
Cycle XXXVI

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Title of the Research Project	SUSTAINABLE SOLUTIONS FOR THE MITIGATION OF CLIMATE-INDUCED LANDSLIDE ACTIVITY THROUGH INTELLIGENT VEGETATION
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Summary of the Research Project

A deterministic approach based on the analysis of thermo-hydro-mechanical processes in a slope system is required to fill the lack of predictions when dealing with weather-induced landslide mechanisms, too often resulting in expensive emergencies.

This research is aimed at developing sustainable solutions for the mitigation of weather-induced landslide activity, with particular reference to clayey slope systems.

The project will provide the adoption of advanced modelling methods in thermo-hydro-mechanical field of the slope system and the implementation of relevant multidisciplinary features available in the literature, accounting for both traditional fields of reference when dealing with such mechanism, such as the geological, the geotechnical and the hydraulic ones, as well as the ones referring to agricultural and botanical sciences.

The modelling will deal with the hydro-mechanical characterization of the cover slope, location of the soil-vegetation-atmosphere interaction processes, with the purpose to build a reference procedure to design practical mitigation measure application, such as for example, the Landslide Early Warning System (LEWS).

Furthermore, the effect of the seeding of selected deep-rooted vegetation on the hydro-mechanical state of the soil in clayey slopes, even at depth, possibly resulting in an increase of the stability condition, will be explored. Therefore, in-site monitoring and laboratory testing will be carried out in the context of a field test-site in which peculiar deep-rooted and highly transpirative vegetation have already been seeded.