



Integrating the hydrological dynamic information in a “timeless” landslide susceptibility map

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The landslide susceptibility maps are fundamental data for the landslide risk analysis and more generally for the territory management. Although their utility and diffusion, they lack by construction of the temporal representation of the processes. The aim of this work is a geographical representation of the landslides susceptibility which includes the knowledge of the hydrological and mechanical dynamic as estimated by a physically based model. We focus to shallow landslides in clay soil. In these type of soils, the landslides triggering is unlikely correlated only to a time independent critical threshold, but the time dependency play a key role and therefore needs to be included in the analysis aimed at assess the landslide hazard. Instead of the traditional safety factor, we propose as a slope instability index some functions of the time persistency in critical state. The time persistency in critical state is processed by coupling the hydrological model TOPKAPI with the infinite slope stability criteria. We compare the maps obtained with the susceptibility indexes with surveyed data in order to search for the most reliable function of the time persistency of critical state.