EGU21-15606, updated on 17 Oct 2021
https://doi.org/10.5194/egusphere-egu21-15606
EGU General Assembly 2021

Combining static and dynamic environmental factors at various scales to predict shallow landsliding in South Tyrol, Italy – The Proslide project

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Shallow landslides in alpine environments can constitute a serious threat to the exposed elements. The spatio-temporal occurrence of such slope movements is controlled by a combination of predisposing factors (e.g. topography), preparatory factors (e.g. wet periods, snow melting) and landslide triggers (e.g. heavy precipitation events).

For large study areas, landslide assessments frequently focus either on the static predisposing factors to estimate landslide susceptibility using data-driven procedures, or exclusively on the triggering events to derive empirical rainfall thresholds. For smaller areas, dynamic physical models can reasonably be parameterized to simultaneously account for static and dynamic landslide controls.

The recently accepted Proslide project aims to develop and test methods with the potential to improve the predictability of landslides for the Italian province of South Tyrol. It is envisaged to account for a variety of innovative input data at multiple spatio-temporal scales. In this context, we seek to exploit remote sensing data for the spatio-temporal description of landslide controlling factors (e.g. precipitation RADAR; satellite soil moisture) and to develop models that allow an integration of heterogeneous model inputs using both, data-driven approaches (regional scale) and physically-based models (catchment scale). This contribution presents the core ideas and methodical framework behind the Proslide project and its very first results (e.g. relationships between landslide observations and gridded daily precipitation data at regional scale).