Climate induced system status changes at slopes and their impact on shallow landslide susceptibility
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a concept

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Shallow landslides are gravitative mass movements triggered by long and intense precipitation. The processes considered are translational, slope parallel slides within the regolith layer with a maximum depth of 2 m. Shallow landslides typically occur at lower parts of slopes. Depending on the water content involved shallow landslides can turn into debris flows extending the affected area. Shallow landslide occurrence depends on the basic and variable susceptibility of a slope. The basic susceptibility is controlled by slope, topography, regolith characteristics, and hydraulics properties. Variable susceptibility depends on the system status of a slope regarding to water saturation, land cover and land use, vegetation period and meteorological conditions i.e. snow melt and precipitation patterns.

The aim of the project is to model the susceptibility of slopes regarding the occurrence of shallow landslides in location and time. In a first step a landslide database is set up in order to draw conclusions from past occurrence patterns. In further steps shallow landslide events are modeled and scenario analyses are applied to investigate the influence of climate change i.e. changes in temperature (snow melt) and precipitation patterns. Finally, socio-economic impact of shallow landslides is analyzed under changed triggering conditions. These analyses will help to update hazard maps and serve as input for decision support systems.

The project aims at using a high degree of automation by developing mapping and modeling tools integrating remote sensing data, field measurements, and ancillary geo-data of multiple sources. The project will contribute with its developments to existing open source initiatives.

[http://www.uibk.ac.at/geographie/lidar/c3s/c3s.html]