Susceptibility map of triggering landslides due to rainfall forecast as a part of innovative inspire compliant cloud based infrastructure - InGeoCloudS

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Slovenian area is relatively highly exposed to slope mass movement processes due to its geological and morphological settings. Intense short and less intense, but long duration rainfall events are primary causes of shallow landslides' occurrence that are predominant type of slope mass movements in Slovenia. Past studies show that the total proportion of exposed area to slope mass movement processes is roughly one quarter of Slovenian territory. Although landslides are very locally related problem, the 15-years average landslide damage represents 7.6% of total damages due to disasters in Slovenia (and 0.03% of GDP). In the past 15 years more than 10 people have been killed in landslide events. Yet, consequences (and the loss of lives) could be mitigated, in some cases even prevented with a reliable near real-time landslide hazard forecast system that would continuously draw information from three data/model pillars: the precipitation forecast model, the landslide susceptibility model and the rainfall triggering values for landslide occurrence. Consequentially a project has been set up by the Administration of the Republic of Slovenia for civil protection and disaster relief and the Ministry of Defense of the Republic of Slovenia to tackle the minimization of the landslide hazard potential with a goal to develop a near real-time online publicly available regional landslide forecasting system. The system is fully operational from September 2013, yet due to the testing phase of hazard model prediction the results need to be treated with care and within their reliability.

The system is designed and built in a cloud infrastructure (InGeoCloudS) and provides an efficient, flexible scalable and in all ways innovative infrastructure for Geodata services. It is fully automated systems which automatically pushes data in to the cloud and execute GIS modelling for calculating the landslide susceptibility map and creating WMS or WFS map services using open-source tools.

The system is based on near real-time online modelling of landslide hazard level based on the weather (rainfall) forecast and location-based rainfall triggering levels for landslide occurrence. The system uses rainfall data input from the system Aladin (High Resolution Numerical Weather Prediction Project), which is instantly overlaid with the landslide susceptibility map and with the map of the triggering threshold values for each individual cell resulting in a simple five level warning display. The forecast's aim is to warn users of potential hazard in their region and to serve as a preparedness enhancement tool.