



## **Spaceborne SAR interferometry application for updating landslide inventory map**

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Landslide inventory database is a fundamental source for risk management purposes. It presents spatial distribution of past and current landslide and information about their type or state of activity. Many studies have shown the potential of Synthetic Aperture Radar Interferometry (InSAR) for mapping slow-moving landslides monitoring with a millimeter precision and refinement of landslide susceptibility maps.

The main objective of the presented study is to update pre-existing landslide inventory database in the area of the Flysch Carpathian Mountains in Poland. The region is known for its frequent landslide occurrence with approximately, at least one landslide in the area of 1 square kilometer. Landslide Counteracting Framework (SOPO) project was used as pre-existing landslide inventory database. The landslide activity located in the study area is mostly associated with hydro-geological conditions and a lot of landslides are covered by forest and therefore their identification and monitoring is very challenging.

Specifically, this study aims to identify the current activity state of existing landslides and to detect possible new phenomena by means of Persistent Scatterer Interferometry (PSI). For the PSI analysis, C-band SAR data acquired by European remote-sensing satellite (Sentinel-1) are utilized. The results are then integrated with additional thematic data such as geological maps to update the landslide inventory map of the study area.

Presented study was carried out in the area of the Flysch Carpathian Mountains in Poland. In the most cases, the results of PSI confirm the landslide activity status provided by SOPO data, but in some landslides small deformations can be observed in contrary to no-active status in SOPO.