



## **Integration of InSAR results from TerraSAR-X with ALOS (PALSAR) data for landslide area, case study from Sachkhere region, Georgia.**

Elena Nikolaeva and Thomas R. Walter

Helmholtz Centre PotsdamGFZ German Research Centre for Geosciences, Germany (elena@gfz-potsdam.de)

Landslides are complex phenomena. Each zone within the landslide may have a different behavior, especially if the landslide extends several hundred meters or more. Interferometric Synthetic Aperture Radar (InSAR) is a good technique to detect deformation that covers areas of several kilometers. 2-pass interferometry, persistent scatterer interferometry (PS-InSAR) and the small baseline subset (SBAS) approaches were used in this work to study landslide behavior in more detail. In our work, we used two different types of SAR (ALOS and TerraSAR-X) imagery to identify the stability of landslide-prone areas. Interferograms from TerraSAR-X imagery may detect faster ground movements easier due to the short repeat cycle (11 days) with a higher accuracy, because of the short wavelength (3.1 cm) and the high spatial resolution (1m). L-band InSAR generates better results in vegetated areas due to the long wavelength (23.6 cm) and has a good ability to form long-term interferograms. Interferograms from descending TerraSAR-X imagery (observations are made from the east) show one part of the landslide, which moves several centimeters per month. By stacking ascending ALOS data (observations are made from the west) of a long time interval (2007-2010), we detect a different part of the same landslide moving at several millimeters per year. We observed that the combination of imagery with different wavelength and different methods, provide a wide picture of the velocity field in different parts of the landslide.