

PS and SAR Interferometry for Risk Assessment Based on Different Radar Bands – a Case Study in Chilean Andes

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ABSTRACT:

Two major dams have been constructed for power supply within a tectonically active area in central Chile. These dams are filled by the river Bio Bio, which gives the complete region its name. This area has been affected by a M=6.1 earthquake in Dec 31, 2006, located 10 km below one of the dams. This event may be triggered by the Liquinofqui fault zone or by induced seismicity. Another reason can be the increased activity of the Callaqui volcano. Furthermore, heavy rainfall in the past years caused severe flooding, affecting the towns and villages along the rivers course including the capital of the region.

The objective of this case study is to investigate the capability of SAR interferometry (InSAR) and persistent scatterer interferometry (PSI) technique for risk assessment in an area of dynamic earth surface changes. For this purpose TerraSAR-X, Envisat and ALOS radar data were examined in dependence of the surface structure and kind of objects.

The combination of InSAR results of L-, C- and X-band data for this area give us the possibility to monitor the behaviour of the dam, to recognize and investigate subsidences and landslides close to two storage reservoirs, the volcano and its ice cap. First results of this longterm investigation will be presented