



## **Earth Observation for the investigating of landslides and unstable slopes**

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The availability of high resolution optical satellite imagery, the recent deployments of space RADAR platforms including new L-band satellite (ALOS-PALSAR) or sensors with shorter repeat cycles, higher spatial resolution (meters) and different wave polarizations (e.g. X-band SkyMed/COSMO and TerraSAR-X), as well as the upcoming launches of additional space-borne radar systems (e.g. C-band RADARSAT 2, scheduled for 2008), the continuous advancements in data processing methodology (e.g. multi-temporal differential interferometry), hold the premise for ever increasing use of remote sensing and Earth Observation (EO) data in landslide investigations. This work is focused on i) applications of high resolution satellite optical imagery and space-borne synthetic aperture radar differential interferometry (DInSAR) for the recognition and mapping landslides and unstable slopes; ii) long-term, regular DInSAR monitoring of unstable slopes and landslides that offers a unique possibility for detecting small pre- and post-failure deformations as well as trends in their velocity associated with the initiation of instability and potential landslide re-activation, and iii) interpretation difficulties that need to be overcome to exploit EO data most profitably. The ultimate goal is to provide an overview of some current challenges regarding the EO applications, as well as to discuss future perspectives in this field. The review is accompanied by several examples of successful applications of space-borne remote sensing to slope instability investigations and relative hazard assessments.