



Emergency management of the 2010 Mt. Rotolon landslide by means of a local scale GB-InSAR monitoring system

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Between October 31st and November 2nd 2010 the whole Veneto region (north-eastern Italy) was hit by heavy and persistent rainfall, which diffusely triggered floods and slope failures. In this framework on November 4th 2010 a detrital mass, approximately 225.000 m³ in volume, detached from the lowermost sector of the Mt. Rotolon landslide cover (located in the Vicentine Pre-Alps, upper Agno River Valley), channelizing within the Rotolon Creek riverbed and evolving into a highly mobile debris flow. The latter phenomena, characterized by a 3 km travel distance, damaged many hydraulic works, putting at high risk bridges and local roads located along the creek banks, together with the population of both the town of Recoaro Terme and the villages of Maltaure, Turcati and Parlati. Starting from the beginning of the emergency phase, the Civil Protection system was activated, involving the National Civil Protection Department, Veneto Region and local administrations personnel and technicians, as well as research centers. On December 8th 2010 a local scale monitoring system, based on a ground based interferometric radar (GB-InSAR), was implemented in order to evaluate the slope deformation pattern evolution in correspondence of the debris flow detachment sector, with the final aim of assessing the landslide residual risk and manage the emergency phase. Accurate geomorphological field surveys were also carried out, in order to study the landslide morphological features as to improve the radar data interpretation. The radar system acquired in continuous GB-InSAR data, such as displacement maps and time series of 10 selected monitoring points, which were uploaded via LAN network on a dedicated Web-based interface, shared with the technical stakeholders and decision makers involved in the emergency management and allowing for a near real time data routine visualization. This paper describes the outcomes of a 2 years GB-InSAR monitoring campaign (December 2010-November 2012), reporting the various applications of GB-InSAR data for monitoring, mapping and emergency management activities, in order to provide a rapid and easy communication of the results to the involved technicians and civil protection personnel, for a better understanding of the landslide phenomena and decision making process in a critical landslide scenario.