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On the rapid and efficient divulgation of monitoring results in landslide emergency scenarios

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In last decades, the availability of several technological systems to monitor different physical parameters that can be used to control a landslide evolution recorded an exponential growth. In particular, surficial and deep-seated displacements of an instable area, as well as meteorological or hydrological parameters can be nowadays acquired with high spatial and temporal resolutions. As a consequence, the application of complex monitoring systems produces large amounts of data. While this can be considered an important progress in the field of landslide monitoring applications, the availability of large volumes of high resolution and multiparametric information implies important challenges. In this context, two main criticalities are: i) the integrated management of dataset produced by different monitoring systems and ii) the correct divulgation of monitoring results.
In this work, we present the results of a real case-study relevant to a complex emergency scenario, i.e. the Mont de La Saxe landslide, a large rockslide (with an estimated volume or more than 8 million of cubic meters) that threatens La Palud and Entrèves hamlets in the Courmayeur municipality (Aosta Valley, Italy). We developed a web-based system based on the ADVICE algorithm (Allasia et al., 2013) in order to manage several data sources. The system collects, analyzes and publishes the results obtained by monitoring instrumentations in near-real-time at each new measurement cycle. Moreover, by collecting all the data in an unique web-based platform reduces the problems of compatibility amongst different monitoring systems, which usually rely on customized software for the data processing, delaying the comparative analysis comparison amongst different data sources. This is indeed a crucial task for decision makers, in particular during the emergency phases. In addition, by using the developed web-based platform we aimed at coping with another important task, often not considered and/or underestimated, relevant to the landslide monitoring results, i.e. the divulgation. Starting from the analysis of different landslide scenarios, we identified and classified people belonging to emergency management teams into several categories according to their role, the level of knowledge of landslides, and/or of monitoring systems. Our aim is to define standards to share the monitoring results, in order to disseminate the information about the recent evolution of the landslide, as well as the level of criticality, within all the people involved (scientists, technicians, civil protection operators, decision makers, politicians, press, population). This task is particularly critical during the emergency phases, when a correct understanding of the situation is (in particular for the population) the first step for a successful emergency management.

References:
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