



## **On the importance of a correct divulgation of monitoring results for an efficient management of landslide emergencies**

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In the last decades, technological evolution has strongly increased the number of instruments that can be used to monitor landslide phenomena. Robotized Total Stations, GB-InSAR, and GPS are only few examples of the systems that can be used for the control of the topographic changes due to the landslide activity. These monitoring systems are often merged in a complex network, aimed at controlling the most important physical parameters influencing the evolution of landslide activity. The technological level reached by these systems allows us to use them for early warning purposes. Critical thresholds are identified and, when overcome, emergency actions are associated to protect population living in areas potentially involved by landslide failure. The use of these early warning systems can be very useful for the decision makers, which have to manage emergency conditions due to a landslide acceleration likely precursor of a collapse. At this stage, every instrument has a proper management system and the dataset obtained is often not compatible with the results of the others systems. The level of complexity increases with the number of monitoring systems and often could generate a paradox: the source of data are so numerous and difficult to interpret that a full understanding of the phenomenon could be hampered. Nowadays, a correct divulgation of the recent evolution of a landslide potentially dangerous for the population is very important.

The Geohazard Monitoring Group of CNR IRPI developed a communication strategy to divulgate the monitoring network results based on both, a dedicated web page (for the publication in near real time of last updates), and periodical bulletins (for a deeper analysis of the available dataset). To manage the near real time application we developed a system called ADVICE (ADVanced dIsplaCement monitoring system for Early warning) that collects all the available data of a monitoring network and creates user-friendly representations of the recent landslide evolution. The system is also able to manage early warnings based on pre-defined thresholds (usually related to the analysis of displacement and/or velocity) sending emails and SMS. Starting from the same dataset, the representations are different if the information has to be delivered to the population or the technicians involved in the landslide emergency. Our communication strategy considers three different levels of representations of the acquired dataset to be able to communicate the results to the different stakeholders potentially involved in the emergency. This communication scheme has been achieved over time, thank to the experience acquired during the management of monitoring networks relevant to different case studies, such as: Mt. de La Saxe Landslide (Aosta Valley, NW Italy), Ripoli landslide (Emilia Romagna region, central Italy), Montaguto landslide (Campania region, south Italy). Here we present how the correct and user-friendly communication of the monitoring results has been an important added value to support decision makers and population during emergency scenarios.