



The Safety project: Sentinel-1 for Civil Protection geohazards management

Oriol Monserrat (1), Gerardo Herrera (2), Silvia Bianchini (3), Elena González-Alonso (4), Roberta Onori (5), Paola Reichenbach (6), Innocente P. Carralero (7), Anna Barra (1), Rosa María Mateos (8), Lorenzo Solari (3), Sergio Ligüérezana (9), Paola Pagliara (5), Francesca Ardizzone (6), Roberto Sarro (2), Michele Crosetto (1), Marta Béjar-Pizarro (2), Sandro Moretti (3), Carmen Lopez (4), Laura Garcia-Cañada (4), and María Á. Benito-Saz (4)

(1) Centre Tecnològic de Telecomunicacions de Catalunya (CTTC/CERCA), Geomatics Division, Castelldefels, Spain (anna.barra@cttc.es), (2) Geological Survey of Spain (IGME), Geoscience Research Department, Madrid, Spain, (3) University of Firenze, Earth Sciences Department, Firenze, Italy, (4) Instituto Geográfico Nacional (IGN), Observatorio Geofísico Central, Madrid, Spain, (5) Italian Civil Protection Department, Rome, Italy, (6) Istituto di Ricerca per la Protezione Idrogeologica (IRPI), National Research Council (CNR), Perugia, Italy, (7) Dirección General de Seguridad y Emergencias, Consejería de Política Territorial, Seguridad y Sostenibilidad, Gobierno de Canarias, Spain, (8) Geological Survey of Spain (IGME), Granada, Spain, (9) Centro Nacional de Información Geográfica, Instituto Geográfico Nacional, Madrid, España

This work is aimed at presenting the ongoing project SAFETY (Sentinel for Geohazards regional monitoring and forecasting). The use of Differential SAR Interferometry (DInSAR) in Natural Risks management is becoming more and more exploitable thanks to the experienced growth of the techniques. On one hand, since the DInSAR technique was proposed for the first time (1989) a wide number of data processing, analysis tools and methods have been developed, on the other hand the satellite data availability has increased and provides sensors with different characteristics of sensitivity and spatial and temporal resolutions. Nowadays, DInSAR allows to have a systematic overview about the spatio-temporal activity of a natural deformation phenomena, which is an important information for the risk management in terms of prevention, emergency response and post-emergency intervention. Specifically, Sentinel-1 (A and B) satellites data show two favourable characteristics: the wide covered area and the short revisit time (6 days). The last one, if compared with the other C band available sensors, results in a reduced temporal decorrelation, particularly in non-urbanized areas, in more robust processing results (due to the higher number of images) and in an higher temporal sampling i.e. a better monitoring and activity characterization. In this context, the European project SAFETY is focused on developing tools and implementing a methodology in order to better exploit Sentinel-1 data in the Civil Protection activities of natural risks prevention. The project is aimed at providing Civil Protection Authorities (CPA) with the capability of periodically evaluating and assessing the potential impact of geohazards (volcanic activity, earthquakes, landslides and subsidence) on urban areas. The first results over the two test-areas in Spain and Italy (respectively Canary Islands and Volterra Municipality) will be presented.