

U-Geohaz: Sentinel-1 to support geohazards early warning systems

Barra A ¹ , Monserrat O ¹ , Herrera G ² , Solari L ³ , González-Alonso E ⁴ , Béjar-Pizarro M ² , Bianchini S ³ , Sarro R ² , Fernández García A ⁴ , Reichenbach P ⁵ , Crosetto M ¹ , Catani F ³

¹ Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Barcelona, Spain

² Instituto Geológico y Minero de España (IGME), Madrid, Spain

³ Università degli Studi di Firenze (UNIFI), Firenze, Italy

⁴ Instituto Geográfico Nacional (IGN), Madrid, Spain

⁵ Istituto di Ricerca per la Protezione Idrogeologica (IRPI), National Research Council (CNR), Perugia, Italy

The aim of this work is to present the ongoing project “U-Geohaz, Geohazard impact assessment for urban areas”. U-Geohaz is a two-year project, started the 1st of January 2018, co-funded by the European Commission, Directorate-General Humanitarian Aid and Civil Protection (ECHO). The general aim of the project is to continuously assess the potential impact of geohazards on urban areas and critical infrastructures, using SAR images acquired by Sentinel-1 (S-1). The launch of the satellites S-1 A and S-1 B, in 2014 and 2016 respectively, granted an important improvement in the use of SAR interferometry for risk management and reduction. Ensuring a SAR acquisition every 6 days above the entire Earth and making the images available few hours after the acquisition without costs and limitations, S-1 represent a reliable and low cost tool for the remote monitoring of local to national-scale areas. These characteristics are improving the exploitation of SAR interferometry not only by the scientific community but also by administrative entities and Civil Protection authorities. U-Geohaz builds on the experience and the results obtained in the previous ECHO project SAFETY (2016-2017), and it makes a step forward by evolving from the periodically updated maps to a near-real time monitoring and mapping of geohazards. In particular, the project will provide tools to support early warning systems for landslide and volcanic geohazards and to evaluate the expected damage. The U-Geohaz consortium is composed of 18 partners, from 11 European countries, including 12 Geological Surveys and 3 Civil Protection Authorities that will support the implementation of tools to be operationally useful in risk management. The use of all the developed products will be implemented in the activities of the Civil Protection Authorities involved in the project. The first results achieved over the two test-sites, Canary Island (Spain) and Valle d’Aosta region (Italy), and the future steps of the project will be presented.