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A first appraisal of the European Ground Motion Service

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Satellite interferometry (InSAR) is a reliable and proven technique to monitor and map geohazards over wide areas. In the last years, InSAR is increasingly becoming an everyday tool for geoscientific and applicative analyses; many different users, ranging from academia to the industry, work and rely on InSAR products.

The European Ground Motion Service (EGMS) was conceived and is being implemented as a direct response to growing user needs. The EGMS is implemented under the responsibility of the European Environment Agency in the frame of the Copernicus Programme. The EGMS products are part of the portfolio of the Copernicus Land Monitoring Service. The EGMS provides consistent, regular, standardized, harmonized, and reliable information regarding natural and anthropogenic ground motion phenomena over the Copernicus Participating States and across national borders, with millimeter accuracy. The EGMS distributes three levels of products: (i) *basic*, i.e. line of sight (LOS) velocity maps in ascending and descending orbits referred to a local reference point; (ii) *calibrated*, i.e. LOS velocity maps calibrated with a geodetic reference network (a velocity model derived from thousands of global navigation satellite systems time series is used for calibration so that measurements are no longer relative to a local reference point) and (iii) *ortho*, i.e. components of motion (horizontal and vertical) anchored to the reference geodetic network. The products are generated from the multi-temporal interferometric analysis of Sentinel-1 images in ascending and descending orbit at full resolution. The data is available and accessible to all and free of charge through a dedicated viewer and download interface.

The accessibility to EGMS accurate and validated interferometric data offers the geoscientific and

professional communities the opportunity to study geohazards at the European level, including difficult-to-reach areas or where the availability of ground motion data has so far been scarce or null. The EGMS provides, for example, information useful for the identification and monitoring of slow-moving landslides, natural subsidence, or subsidence due to groundwater exploitation or underground mining activities and volcanic unrest. In addition, the Service establishes a baseline for studies dedicated to localized deformation affecting buildings and infrastructure in general. This presentation will offer a first evaluation of the EGMS products under geoscientific aspects. Case studies from different European environmental contexts will be shown to demonstrate how the EGMS products can be successfully used for geohazards-related studies.