

Advanced PRocedures for volcanic and Seismic Monitoring FP7 project: Aphorism

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THEME: DISA Natural disasters monitoring, warning and response.

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ABSTRACT:

APHORISM project proposes the development and testing of two new methods to combine Earth Observation satellite data from different sensors, and ground data with the aim is to demonstrate that the integration of these data can provide new improved GMES products useful for seismic and volcanic crisis management.

The first method, APE – A Priori information for Earthquake damage mapping, concerns the generation of maps to address the detection and estimate of damage caused by a seism. The novelty of APE relies on the exploitation of a priori information derived by InSAR time series to measure surface movements, shake maps obtained from seismological data, and vulnerability information. This a priori information is then integrated with change detection map to improve accuracy and to limit false alarms.

The second method deals with volcanic crisis management. The method, MACE - Multi-platform volcanic Ash Cloud Estimation, concerns the exploitation of GEO (Geosynchronous Earth Orbit) sensor platform, LEO (Low Earth Orbit) satellite sensors and ground measures to improve the ash detection and retrieval and to characterize the volcanic ash clouds. The basic idea of MACE consists of an improvement of volcanic ash retrievals at the space–time scale by using both the LEO and GEO estimations and in-situ data. The standard ash thermal infrared retrieval is integrated with data coming from a wider spectral range from visible to microwave. The ash detection is also extended in case of cloudy atmosphere or steam plumes.

APE and MACE methods have been defined in order to provide products oriented toward the next ESA Sentinels satellite missions.

The project is funded under the European Union FP7 program and the Kick-Off meeting has been held 18th December 2013. The present contribution aims to present the first year results and achievements.