



## **Electromagnetic perturbations detected by Swarm satellites and related to the first April 2014 M8.1 Chile**

Angelo De Santis (1), Mioara Mandea (2), George Balasis (3), Javier Pavón-Carrasco (1), Enkelejda Qamili (1), and Gianfranco Cianchini (1)

(1) INGV, Istituto Nazionale Geofisica e Vulcanologia, Roma, Italy (desantisag@ingv.it), (2) Centre National d'Etudes Spatiales, Paris, FRANCE, (3) Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing National Observatory of Athens, GREECE

Recent scientific literature has suggested that intense seismic activity might generate upward electromagnetic (EM) perturbations that can be detected by ground-based and low altitude spaceborne measurements. For example, very low frequency (VLF) wave observations detected by DEMETER satellite (2004-2010) pointed out a statistically significant decrease of the measured ionospheric wave intensity a few hours before large shallow earthquakes (EQs). This result would confirm the existence of a lithosphere-atmosphere-ionosphere coupling before the occurrence of an impending significant EQ. Swarm ESA constellation offers a great opportunity to study EM perturbations possibly related to seismic activity because it is a multi-satellite low Earth orbit (LEO) mission with a unique space-time configuration able to measure both electric and magnetic fields at various altitudes in the topside ionosphere. Swarm measurements shortly before and after the large shallow M8.1 Chile EQ in 1 April 2014 that occurred in the first year of the mission show some unexplained anomalies that can be related to this large EQ. We report some preliminary results of the analysis.