Geophysical Research Abstracts
Vol. 20, EGU2018-14482, 2018
EGU General Assembly 2018

Seismic activity of mud volcanoes in the Marmara Sea, Turkey

Matteo Lupi (1), Mohammad Javad Fallahi (2), Adriano Mazzini (2), Alina Polonia (3), Antonino D'Alessandro (4), Giuseppe D'Anna (4), and Luca Gasperini (3)

(1) University of Geneva, Department of Earth Sciences, Geneva, Switzerland, (2) Centre for Earth Evolution and Dynamics, University of Oslo, Norway, (3) Institute of Marine Sciences, National Research Council, Bologna, Italy, (4) Gibilmanna Observatory, National Institute of Geophysics and Volcanology , Palermo, Italy

Mud volcanoes are geological systems often monitored to investigate possible precursors associated to pre-seismic enhanced fluid release. We present the seismic activity associated to an offshore mud volcano in the Sea of Marmara, Turkey, using four ocean bottom seismometers (OBS). The area is predicted to witness a large magnitude (M>7) earthquake in the near future. This event is suggested to occur close to the Istanbul Metropolitan region hosting approximately 12 millions inhabitants. In the framework of EC projects (i.e. MarmESONET and Marsite, among others), an intensive program of long-term monitoring of seismogenic faults was carried out using seafloor observatories deployed during several expeditions led by Italian, French and Turkish institutions. These expeditions included MARM2013, on board of the R/V Urania, of the Italian CNR, when the four OBS were deployed in the central part of the Sea of Marmara, at depths between 550 and 1000 m.

We also captured the May 24, 2014, Mw 6.9 strike-slip earthquake occurred in the northern Aegean Sea, about 250 km away from the deployed OBSs along the westernmost branch of the North Anatolian Fault. Effects of the passing seismic waves are clearly recognizable on the data recorded on the OBSs. Preliminary results show periodic changes of RMS and STD amplitudes, but do not show short- or long-term seismic precursors detected around the mud volcano.