New seismological insights from the analyses of historical and recent earthquakes at Ischia Island (Southern Italy)

Stefano Carlino¹, Vincenzo Convertito¹, Anna Tramelli¹, Vincenzo De Novellis², and Nicola Alessandro Pino¹

¹INGV - Istituto Nazionale di Geofisica e Vulcanologia Sezione di Napoli Osservatorio Vesuviano
²IREA –CNR Istituto per il Rilevamento Elettromagnetico dell’Ambiente, Napoli

We report here a first comparative analysis between recent and historical earthquakes, occurred in the island of Ischia (Southern Italy), which produced heavy damages and thousands of fatalities. The island of Ischia is located in the Gulf of Naples, and represents a peculiar case of resurgent caldera in which volcano-tectonic earthquakes, with low magnitude, have generated large damages and catastrophic effects, as is the case for the 4 March 1881 (Iₘₐₓ 8-9 MCS) and the 28 July 1883 (Iₘₐₓ 10-11 MCS) events. Both the earthquakes struck the northern area of the island, similarly to the recent 21 August 2017 earthquake. The results allowed us to assess the location, as well as the possible dimension and the related maximum magnitude of the seismogenic structure, located in the northern sector of the island, and responsible of damaging earthquakes. Our results also provide an additional framework to interpret mechanisms leading to earthquakes associated with dynamics of calderas.