Geophysical Research Abstracts
Vol. 21, EGU2019-9962, 2019
EGU General Assembly 2019

Attenuation relationships for the peak ground acceleration and velocity for the central Mediterranean area

Sharon Pace (1), Sebastiano D'Amico (1), Pauline Galea (1), Gianluca Valentino (2), Reuben Farrugia (2), and Aybige Akinci (3)

(1) Department of Geosciences, University of Malta, Msida , Malta , (2) Department of Communications & Computer Engineering, University of Malta, Msida, Malta , (3) Istituto Nazionale di Geofisica e Vulcanologia, Italy

The Central Mediterranean region is one of the most seismically active region within Europe. The Maltese islands lie in the centre of this tectonically active region which is characterized by numerous complex geological processes. However the islands have been negatively affected by the number of registered earthquakes in the past. Most of the larger earthquakes were occurred in Eastern Sicily, the Sicily Channel and even as far as the Hellenic arc.

In the present study, strong motion data from earthquakes in Southern Italy, Sicily, the Sicily Channel and moderate to large earthquakes in the Hellenic Arc are used to determine the attenuation relationships for the peak ground acceleration (PGA) and peak ground velocity (PGV) in order to assess the seismic hazard and risk in the central Mediterranean area. To do so we used more than 10,000 values of PGA and PGV from earthquakes of magnitude ranging from Mw 3 to 6.8 and distances in the range 0.4 – 1000km to develop the region specific predictive ground motion equations in the region. Ridge regression was used for this purpose. The GMPEs derived are then validated by using data recorded in the area, but not used in the regression, and compared with other available attenuation relationships. An attempt on the same data set is done in order to apply a Neural Network approach to derive an attenuation relationship for PGA and PGV.