S07p-S07p S07 Seismic Hazard and Risk

Abstract: S07p-327

Seismic hazard maps for the Maltese archipelago (Central Mediterranean)

S. D'Amico[1], F. Panzera[2], A. Akinci[3], P. Galea[1], G. Lombardo[2], M. Agius[1]
[1]University of Malta, Physics Department, Msida, Malta
[2]Universita' di Catania, Dipartimento di Scienze Biologiche- Geologiche e Ambientali, Catania, Italy
[3]Istituto Nazionale di Geofisica e Vulcanologia, Sezione Roma1, Rome, Italy

In the present study we attempt to construct seismic hazard model and produce probabilistic seismic-hazard assessments for the Maltese Islands in terms of Peak Ground Acceleration (PGA) and Spectral Acceleration (SA) at different periods within the archipelago boundaries. So far very few investigations have been carried out on seismicity around the Maltese islands and no maps of seismic hazard for the archipelago are available. Seismic hazard has been computed using the two earthquake source models relying on different assumptions and providing full description of earthquake activity. The first one is the zonation model: seismotectonic and geological data are used coupled with earthquake catalogues to identify seismogenic zones within which earthquakes occur at certain rates. In this study we used several seismogenic zones and include in computation few seismogenic area close to the Maltese islands never considered before. The second one is the spatially smoothed seismicity approach based on the historical and instrumental seismicity generalized using exponential magnitude distributions with regionally determined b-values. It does not take into account any geological and tectonic observations. In order to determine the ground motion parameters related to a specified probability of exceedance, the earthquake source models are combined with ground motion prediction equations (GMPEs). The ground-shaking hazard calculated based on the two source models and appropriate GMPEs through the logic tree approach for a 10% exceedance probability in 50 years for PGA shows values ranging between 0.09-0.18g.