

Seismic Hazard Analysis for a Multi Layer Fault System: Antalya (SW Turkey) Example

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Abstract : This article presents the results of probabilistic seismic hazard analysis (PSHA) for Antalya (SW Turkey). South west of Turkey is characterized by large earthquakes resulting from the continental collision between the African, Arabian and Eurasian plates and crustal faults. Earthquakes around the study area are grouped into two; crustal earthquakes (D=0-50 km) and subduction zone earthquakes (50-140 km). Maximum observed magnitude of subduction earthquakes is $M_w=6.0$. Maximum magnitude of crustal earthquakes is $M_w=6.6$. Sources for crustal earthquakes are faults which are related with Isparta Angle and Cyprus Arc tectonic structures. A new earthquake catalogue for Antalya, with unified moment magnitude scale has been prepared and seismicity of the area around Antalya city has been evaluated by defining 'a' and 'b' parameters of the Gutenberg-Richter recurrence relationship. The Standard Cornell-McGuire method has been used for hazard computation utilizing CRISIS2007 software. Attenuation relationships proposed by Chiou and Youngs (2008) has been used for 0-50 km earthquakes and Youngs et. al (1997) for deep subduction earthquakes. Finally, Seismic hazard map for peak horizontal acceleration on a uniform site condition of firm rock (average shear wave velocity of about 1130 m/s) at a hazard level of 10% probability of exceedance in 50 years has been prepared.

Keywords : Antalya, peak ground acceleration, seismic hazard assessment, subduction

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