

Seismic Hazard Assessment in the Aspropirgos area, Athens (Greece)

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The extensive damages and human life loss related to the September 7, 1999 earthquake in the Athens area (Greece) initiated an effort to re-evaluate seismic hazard in various regions around the capital. One of the target areas selected within the framework of the specially designed research project ESTIA was the industrial area of Aspropirgos, where the epicenter of the main shock was located. The multidisciplinary approach towards seismic hazard assessment included a microseismicity survey and detailed geological and tectonic studies in the area in order to delineate and define the recently activated seismic sources in the area. Initially a portable network, consisting of seventeen (17) digital seismographs was installed and operated for 2 months during the autumn of 2004. A total of five hundred forty five (545) earthquakes ($M < 3$) have been recorded. The results of the geological survey in the region, were summarized in two maps compiled at a scale of 1:5,000 and 1:25,000, respectively. These data sets were combined with all the available historical and instrumental seismological data and a revised seismic source zone model was defined for the broader area and subsequently used for hazard assessment calculations. The results were presented as maximum expected peak ground acceleration and velocity distribution maps for 475 and 949 years return period or 90% probability of NBE for the next 50 and 100 years respectively. Finally in order to facilitate the implementation of the above results according to the current Greek Aseismic Code the required distribution for the 3 different soil types was mapped using the results of the geological survey. By combining the above types of data the engineer is able to calculate specific design spectra for every site while combination with available vulnerability estimates could lead to more realistic seismic risk calculations.

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