

Modelling Seismic Risk in Greece – Methodology, Applications, Perspective

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Abstract

During the last six years, our working group elaborated intense work on seismic risk assessment in several Greek cities, targeting site-specific models and allowing for tailor-made management actions in case of a crisis. In this paper we will present the main framework and the outcome of the applied methodologies on several case studies, indicating pros and cons, and highlighting future perspectives. Our approach includes: (a) Probabilistic and deterministic seismic hazard assessment based on comprehensive investigation of an area's seismotectonics and site effects. To this, new data concerning the location, geometry, and the seismic potential of faults, together with free-field ambient noise recordings have been collected through numerous field surveys; (b) Vulnerability assessment of elements at risk informed by newly created observed damage databases and in-situ observations; (c) Development of physical risk models including structural damage, and economic loss for several ground motion excitations scenarios. Future improvements that fall in with, and/or are beyond the current state-of-the-art, include: (a) Implementation of technological capabilities of remote sensing towards buildings' inventory and vulnerability assessment; (b) Socioeconomic impact analyses towards the mitigation of risk, enhancement of preparedness and resilience of the social and economic fabric, and (c) Applications for near real-time damage assessment by implementation of state-of-the-art open-source software (e.g. RASOR; OpenQuake).