SEISMIC HAZARD COMPUTED FOR CENTRAL ITALY COMBINING BOTH PROBABILISTIC AND DETERMINISTIC APPROACHES

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In this study the seismic hazard is estimated for the Campotosto Lake area, adopting probabilistic (PSHA) and deterministic (DSHA) approaches. PSHA has been conducted according to the seismotectonic probabilism, in the software formulation of Crisis2015. A simple logic tree with only three branches has been considered to take into account of the epistemic uncertainty in the attenuation models applied. The new zonation presented in this study (narrow sources based on new and updated geological and seismological data) has been developed as a branch of the logic tree that will be used for the new Italian seismic hazard map (MPS19). In Italy, the strongest earthquakes releasable have ultra-millenary recurrence period. A probability of exceedance of 2% in 50 years, corresponding to the 2475 years return period, can therefore be considered reasonable to compute a reference UHRS for evaluating the representativeness of the MCE spectrum. The disaggregation of the probabilistic seismic hazard, computed for this return period, gives us the source (in terms of a magnitude-distance couple) that most influenced the seismic hazard of the considered study sites; this source is then parametrized with a pseudo-dynamic finite-fault model and used as input in the broadband deterministic simulations. In the DSHA the results are very scattered and the spatial variability of the ground motion is strong due to different inputs (e.g. various slip distributions) that influence the shaking computed for near field receivers placed close to each other. Our simulations highlight the importance of the vertical component that in the near field cannot be ignored because potentially affected by shaking values comparable or superior to horizontal components.

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