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Seismic Hazard Assessment for Jordan and Neighboring Areas

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Abstract: Seismic hazard in Jordan and neighbouring areas was assessed following the standard probabilistic approach. Eighteen seismic sources have been identified and characterized using appropriate seismic parameters. Two ground motion models, were used and their results were compared to explore the hazard sensitivity. The hazard results are given in the form of maps of PGA and SA (at 0.1, 0.2, 0.3, 0.5, 1.0 and 2.0 s), for a 10% probability of exceedance in 50 years for rock sites. Maximum PGA values within Jordanian territory range between 0.25 and 0.30 g. Maximum SA values at 0.2 s and 1.0 s range between 0.6-0.7 g and 0.15-0.20 g, respectively. A comparison of PGA values for two cities in Jordan (Amman and Aqaba) shows that the influence of the ground motion model is negligible for the probability levels of engineering interest. Results of the seismic hazard analysis were used to develop a new macrozonation map for Jordan as well as an associated suite of elastic response spectra applicable for the different seismic zones. In this map, Jordan is divided into three seismic zones with values of the seismic zone factor ranging between 0.06 and 0.15.