The Aegean - Anatolian region: insights on seismic hazard from geodetic and seismological observations

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Geodetic and seismic moment-rates comparison provides significant insights into the seismic hazard of regions subjected to relevant crustal deformation. We performed such a comparison for the Aegean-Anatolian region, marking the collision zone between the African, Arabian and Eurasian plates, and characterized by a complex tectonic evolution. First we provided an improved description of the ongoing crustal deformation field of the Aegean-Anatolian region, based on an extensive combination of novel observations rigorously integrated with the published GNSS-based geodetic velocities. Then, the geodetic velocity field is used as model input to estimate the 2D strain-rate and moment-rates fields over a geographic 1° x 1° grid. Second, we collected the historical and instrumental earthquake data in order to define the long-term moment release rate by adopting a truncated Gutenberg-Richter relation. Finally, the geodetic and seismic moment-rates comparison allowed to differentiate crustal deformation modality (seismic versus aseismic), as well as to highlight seismic cycle gaps over the investigated region.