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# 1Compiling an earthquake catalogue for the Arabian Plate, Western Asia

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## Abstract

The Arabian Plate is surrounded by regions of relatively high seismicity. Accounting for this seismicity is of great importance for seismic hazard and risk assessments, seismic zoning, and land use. In this study, a homogenous earthquake catalogue of moment-magnitude ( $M_w$ ) for the Arabian Plate is provided. The comprehensive and homogenous earthquake catalogue provided in the current study spatially involves the entire Arabian peninsula and neighboring areas, covering all earthquake sources that can generate substantial hazard for the Arabian plate mainland. The catalogue extends in time from 19 to 2015 with a total number of 13156 events, of which 497 are historical events. Four polygons covering the entire Arabian Plate were delineated and different data sources including special studies, local regional and international catalogues were used to prepare the earthquake catalogue. Moment magnitudes ( $M_w$ ) that provided by original sources were given the highest magnitude type priority and introduced to the catalogues with their references. Earthquakes with magnitude differ from  $M_w$  were converted into this scale applying empirical relationships derived in the current or in previous studies. The four polygons catalogues were included in two comprehensive earthquake catalogues constituting the historical and instrumental periods. Duplicate events were identified and discarded from the current catalogue. The present earthquake catalogue

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