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Seismic hazard assessment for Madagascar

Seismic hazard assessment for Madagascar based on Probabilistic seismic hazard analysis (PSHA) method is carried out. An earthquake catalogue was compiled from data combined between two sets of bulletins by the MACOMO stations and NDC stations between 1989-2016. Duplicate events were removed and the catalogue was homogenized to moment magnitude (MW) scale before being declustered to remove dependent earthquakes. A seismotectonic model for Madagascar developed from recent studies was used for the delineation of seismic source zones. A total of seven areal source zones were identified in this study. Each zone was characterized in terms of its recurrence parameters and maximum magnitude using the homogenized catalogue. Seismic hazard calculations were performed for a grid spacing of 0.50 x 0.50 throughout the country. The logic tree formalization was implemented to account for uncertainties in the input parameters. The hazard values from 10 % and 2 % probabilities of exceedance for 50 years are estimated with the spectral accelerations for periods 0.5 s and 1.0 s. Relatively high hazard values were observed within the central regions of Madagascar.

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