

## Sensitivity analysis and disaggregation of recent seismic hazard assessment in Egypt

A recent probabilistic seismic hazard analysis for Egypt is performed of the Peak Ground Acceleration (PGA) and Spectral Acceleration (SA) for 475 and 2475 years return periods. In the current study, an earthquake catalog of Egypt and its surrounding from 2200 BC to 2016 AD is used for identifying the seismic sources and calculating their seismicity parameters. Two de-clustering algorithms, three seismotectonic models, and four Ground Motion Prediction Equations (GMPEs) are implemented through the logic-tree framework to overcome the epistemic uncertainties. Sensitivity analysis shows that seismic hazard results of the cities located at the unstable shelf are highly affected with variation in the de-clustering algorithms. The sensitivity analysis of the used GMPEs shows wide variations of the values obtained by each model and this reflects the urgent need for evaluating the recent developed GMPEs using the Egyptian seismological database. The results of the disaggregation show that Newbie City is highly exposed to high levels of ground motion in 475 and 2475 years return periods and at the short and long spectral periods (1 sec.) but, cities located in the NW part of Egypt are highly affected by the long period seismic waves generated by earthquakes initiating at the Hellenic Arc.

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