



Time-Dependent Seismic Hazard Assessment in the Dead Sea Fault Zone

Amir Hossein Hakimhashemi, Gottfried Gruenthal, Holger Schelle, and Christian Bosse
German Research Centre for Geosciences GFZ, Potsdam, Germany (hakim@gfz-potsdam.de)

Probabilistic Seismic Hazard Assessment (PSHA) has traditionally been based on time-independent earthquake occurrence rate. However, the Dead Sea fault zone (DSFZ) is an area, where the cumulative number of large earthquakes (with $M_w \geq 6$) shows two high and low activity periods. This indicates not only a time dependency of the earthquake occurrence rate but a temporal cyclic change in behaviour of the occurrence rate in the long term (so-called long-term temporal clustering behaviour). In this study statistical methods have been suggested to test the time-dependency as well as the multimodality (temporal clustering behaviour) of the earthquake occurrence rate and then to find the best statistical distribution to fit the earthquake inter-event times and occurrence rates respectively. The methods have been applied to the large earthquakes (with $M_w \geq 6$) along the DSFZ.