BENCHMARKING RECENT PSHA APPROACHES

Ilaria MOSCA[1], Susanne SARGEANT[2] and Roger M W MUSSON[3]

Seismic hazard analysis plays a crucial role in building design and informing decision making for the mitigation of seismic risk. In the last decades a large number of studies in probabilistic seismic hazard assessment (PSHA) have been published. Different criteria are used for characterizing the source zone model, for selecting the most suitable ground motion models for the study area, etc. Furthermore, different methods and software exist for computing hazard itself (e.g., FRISK of McGuire (1978), M3C of Musson (1999) and Musson et al. (2009), EqHaz of Assatourians & Atkinson (2013), OpenQuake of Pagani et al. (2014)). With this last point in mind, it is important to check whether the output of a seismic hazard study is compatible with the input, and to compare approaches and software used in PSHA.

The aim of the present study is to analyse two PSHA approaches and their associated software: 1) OpenQuake, produced by Global Earthquake Model initiative (Pagani at al., 2014; Silva et al., 2013), the most recent software for seismic hazard and risk assessment; 2) M3C (Musson, 1999; Musson et al., 2009) based on a Monte Carlo approach to calculate the hazard. In this study, the comparison is made in terms of computer performance of the software packages and the results themselves, including hazard curves and maps, uniform hazard spectra, disaggregation.

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[1] Dr, British Geological Survey, Edinburgh, imosca@nerc.ac.uk
[2] Dr, British Geological Survey, Edinburgh, slsa@bgs.ac.uk
[3] Dr, British Geological Survey, Edinburgh, rmwm@bgs.ac.uk