

## Probabilistic Seismic Hazard Assessment for the Eastern Caribbean Islands

A probabilistic seismic hazard analysis has been performed in order to compute probabilistic seismic hazard maps for the Eastern Caribbean region (10-19°N, 59-64°W), which includes in the north the Leeward Islands (from Anguilla to Dominica) and in the south the Windward Islands (from Martinique to Grenada), Barbados and Trinidad and Tobago. The analysis has been conducted using a standard logic tree approach which allowed taking into account systematically the model-based (i.e. epistemic) uncertainty and its influence on the computed ground motion parameters. Hazard computations have been performed using a grid of sites with a space resolution of 0.025 degrees covering the territory of the considered islands. Two different computation methodologies have been adopted: the standard Cornell (1968)-McGuire (1976) approach based on the definition of appropriate seismogenic zones and the zone-free approach developed by Woo (1996), which overcomes the ambiguities related with the definition of seismic sources. The interplay and complexities between shallow crustal, intraplate and interface subduction seismicity in the Caribbean region has been thoroughly investigated. By merging all available data set, a comprehensive and updated earthquake catalog for the region has been compiled. Also a thorough investigation has been undertaken to identify the most suitable ground motion prediction equations to be used in the analysis via comparison with strong motion recordings and compatible site-to-source distance definitions. Uniform hazard spectra have been calculated for the horizontal component of ground motion (rock and level site conditions), 4 return periods (95, 475, 975 and 2475 years) and 22 spectral accelerations with structural periods ranging from 0 to 3 s. Spectral accelerations at 0.2 s and 1.0 s for 2475 years return period have been calculated to allow the definition of seismic hazard in the region of study according to IBC (2009).

The seismic hazard maps have been peer-reviewed and being accepted for publication in the Bulletin of the Seismological Society of America within a joint collaboration project between the Seismic Research Centre at UWI, Trinidad and Tobago and the European Centre for Training and Research in Earthquake Engineering - EUCENTRE – Pavia, Italy.

### References

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