

## Ground Motion Modelling in Bangladesh Using Stochastic Method

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**Abstract :** Geological and tectonic framework indicates that Bangladesh is one of the most seismically active regions in the world. The Bengal Basin is at the junction of three major interacting plates: the Indian, Eurasian, and Burma Plates. Besides there are many active faults within the region, e.g. the large Dauki fault in the north. The country has experienced a number of destructive earthquakes due to the movement of these active faults. Current seismic provisions of Bangladesh are mostly based on earthquake data prior to the 1990. Given the record of earthquakes post 1990, there is a need to revisit the design provisions of the code. This paper compares the base shear demand of three major cities in Bangladesh: Dhaka (the capital city), Sylhet, and Chittagong for earthquake scenarios of magnitudes 7.0MW, 7.5MW, 8.0MW and 8.5MW using a stochastic model. In particular, the stochastic model allows the flexibility to input region specific parameters such as shear wave velocity profile (that were developed from Global Crustal Model CRUST2.0) and include the effects of attenuation as individual components. Effects of soil amplification were analysed using the Extended Component Attenuation Model (ECAM). Results show that the estimated base shear demand is higher in comparison with code provisions leading to the suggestion of additional seismic design consideration in the study regions.

**Keywords :** attenuation, earthquake, ground motion, Stochastic, seismic hazard

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