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PROBABILISTIC SEISMIC GROUND MOTION HAZARD ANALYSIS: A TOOL FOR DISASTER RISK MANAGEMENT

Henremagne C. PEÑARUBIA

Philippine Institute of Volcanology and Seismology (PHIVOLCS)
Department of Science and Technology (DOST), Philippines
henre07@yahoo.com

Abstract: The seismic design of civil engineering structures and infrastructures in the Philippines is generally controlled by the base shear derived from the design ground motion. Recent instrumentally-recorded disastrous earthquake events reveal more intense acceleration values than the design ground motion even at relatively lower magnitudes and greater distances. The Department of Science and Technology -Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS) recently published the Philippine Earthquake Model (PEM) Atlas, a probabilistic seismic ground motion hazard analysis of the Philippines. The PEM Atlas provides site-specific maximum probable ground motion hazard, expressed as a fraction of acceleration due to gravity, g from all possible seismic sources in the vicinity, at relevant return periods. It exposes the potential vulnerability of structures in its lifetime. The estimated acceleration values may be used in calculating for the design base shear and thereby improve the resilience of structures to earthquakes. Strict implementation of the minimum seismic design requirements may be enforced at high-hazard areas and high-risk communities and localities may be identified for disaster reduction and risk management.

Key Words: probabilistic seismic hazard analysis, base shear, high-hazard areas