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# A Probabilistic Risk Analysis for Taipei Seismic Hazard: An Application of HAZ-Taiwan with its Pre-processor and Post-processor

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This paper employs probabilistic risk analysis to estimate exceedance probability curves, average annual loss (AAL) and probable maximum loss (PML) for seismic hazards. It utilizes an event-driven loss estimation model, HAZ-Taiwan, and develops its pre-processing and post-processing software modules. First, the pre-processing module establishes a set of hazard consistent scenarios. Then, HAZ-Taiwan model estimates hazards, vulnerabilities and economic losses for each scenario. Finally, the aggregate and occurrence exceedance probability curves for losses and their confidence intervals are simulated using the Monte Carlo simulation method in the post-processing module. The methodology is then applied to analyze seismic risks in Taipei. It finds that the exceedance probability of an aggregate loss of NT$ 40.398 billion is 0.001. This amount of loss is approximately 2.78% of the total stock of buildings in Taipei. Its 5%-95% confidence intervals are NT$ 37.41-43.12 billion. The average annual loss of buildings in Taipei is 1.06 billion, approximately 0.07% of the total stock.