Probabilistic Seismic Hazard Maps for Japanese Islands

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Probabilistic Seismic Hazard (PSH) maps are conducted by utilizing a new methodology for PSH that is called Parametric-Historic (PH) method since it combines the best features of the "deductive" (Cornell, 1968) and "historic" (Veneziano et al., 1984) procedures.

The seismic hazard maps are based on the compiled of a long-term earthquake history (599-1997) using the catalogs of Utsu's (1982), Usami's (1996) and JMA for the Japanese Islands. The analysis is based on the subdivision of the Japan into subregions at a grid size of 0.05 degree, for each of which peak ground accelerations, and uniform hazard acceleration response spectra for natural frequencies of 1, 3, 5 and 10 Hz are predicted and mapped to occur at 10 % probability in 50 years

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PH technique has been developed specifically for the estimation of seismic hazard at individual sites without the subjective judgment involved in the definition of seismic source zones, when specific active faults have not been mapped and identified, and when the causes of seismicity are not well understood. PH permits the combination of historical and instrumental data. The historical part of the catalogue contains only the strongest events, whereas the complete part can be divided into several subcatalogues, each assumed complete above a specified threshold of magnitude. Uncertainty in the determination of magnitude has also been taken into account. The maximum credible magnitude mmax is of paramount importance in this approach.

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