

Development of Seismic Hazard Information Station for Japan

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Abstract

The Headquarters for Earthquake Research Promotion of Japan published the national seismic hazard maps for Japan in July 2009, which was initialized by the earthquake research committee of Japan (ERCJ) on a basis of long-term evaluation of seismic activity, and on a basis of strong-motion evaluation. The National Research Institute for Earth Science and Disaster Prevention, in the meantime, also promoted a special research project ‘National Seismic Hazard Mapping Project of Japan’ to support the preparation of the seismic hazard maps. Under guidance of ERCJ, we have carried out the study of the hazard map. The hazard maps consist of two kinds of maps. One is a probabilistic seismic hazard map (PSHM) that shows the relation between seismic intensity value and its probability of exceedance within a certain time period. The other one is a scenario earthquake shaking map (SESM). For the PSHM, we used empirical attenuation formula for strong-motion, which was followed the seismic activity modeling by ERCJ. Both of peak velocity on the engineering bedrock and on ground surface are evaluated for sites with approximately 0.25km spacing. The potential JMA seismic intensities on ground surface are also evaluated by using an empirical formula. For the SESMs, based on the source modeling for strong-motion evaluation, we adopted a hybrid method to simulate waveforms on the engineering bedrock and peak ground velocity. In this project, we developed an open web system to provide information interactively, and named this system as Japan Seismic Hazard Information Station, J-SHIS (<http://www.jshis.bosai.go.jp/>). We aimed to distribute a process of uncertainty evaluation and to meet multi-purpose needs in engineering fields. The information provided from J-SHIS includes not only results of the hazard maps but also various information required in the processes of making the hazard maps, such as data on seismic activity, source models and underground structure.