General Seismic Hazard Map covering the whole of Japan

Hirofumi Yokoyama[1]; Sadanori Higashi[1]; Masafumi Mori[1]

[1] MEXT

As a part of the comprehensive assessment of seismic activity, the Earthquake Research Committee created a 'General Seismic Hazard Map covering the whole of Japan' in March 2005, which is comprised of probabilistic seismic hazard maps of the whole of Japan and seismic shaking maps for specified seismic faults. In order to create the maps, related surveys and research have been conducted at survey, observation and research institutions. In particular (1) elucidation of the characteristics of inland and coastal earthquakes, and systematization of information, (2) elucidation of the characteristics of deep-sea earthquakes, and systematization of information, (3) long-term probability assessment of the occurrence of earthquakes, (4) improvement of methods of predicting strong tremors, and (5) underground structure surveys were promoted.

A probabilistic seismic hazard map shows the predicted likelihood of a strong ground motion occurring in a given area within a given period of time. The Earthquake Research Committee published trial reports for the limited area of Yamanashi Prefecture in 2002, Northern Japan in 2003, and Western Japan in 2004 (Subcommittees for Long-term Evaluations and for Evaluations of Strong Ground Motion, 2002, 2003, 2004). The probabilistic seismic hazard maps of the whole of Japan were made basically by the method used in the trial reports. The earthquakes in and around Japan are categorized into ten different groups depending on the location, size, type, and available information on the earthquakes. The probabilistic seismic hazards are evaluated at the sites with approximately 1 km spacing in the whole of Japan.

A seismic shaking map for a specified seismic fault shows the predicted strong ground motion in a given area due to a scenario earthquake. The Earthquake Research Committee has developed a 'recipe' for evaluating strong ground motions and published evaluation reports for 12 major earthquakes as of February 2005.