Developments of strong motion prediction based on active fault information

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As one of the lessons from the 1995 Kobe earthquake, importance of active fault studies has been widely recognized for promoting earthquake-counter measures. The Headquarter of Earthquake Research Promotion established just after the earthquake have developed 'National Seismic Hazard Maps', integrating survey of active faults, long-term evaluation for earthquake activities, and evaluation of strong ground motion. The maps were made from two different approaches, probabilistic and deterministic. The probabilities for earthquake occurrences are estimated from earthquake histories of active faults for the probabilistic hazard map. The ground motions from earthquakes caused to specific active faults are evaluated based on fault models obtained from active fault information. The procedure of fault modeling for the prediction of strong ground motion are proposed as a recipe combining the active fault information with scaling relations of fault parameters from the waveform inversion of source processes using strong ground motions. This technique is introduced to Regulatory Guide for Aseismic Design of Nuclear Power Reactor Facilities revised in 2006 by the Nuclear Safety Commission of Japan. Further improvements of the fault modeling are required to predict more reliable evaluation of input ground motions for earthquake-safety designs of the nuclear power plants.