Integrated Predictive Simulation System for Earthquake and Tsunami Disaster

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In October 2005 our project "Integrated Predictive Simulation System for Earthquake and Tsunami Disaster" has started as one of the CREST-type basic research projects funded by Japan Science and Technology Agency (JST). The aim of this project is to develop an integrated simulation system for predicting earthquake and tsunami disasters, which covers the entire multi-scale processes related to earthquakes, such as tectonic stress accumulation due to relative plate motion, earthquake generation, seismic wave/tsunami propagation, and artificial structure oscillation. For reliable prediction we need to combine advanced computer simulation with observed data from nation-wide seismic and GPS networks. The integrated simulation system consists of six basic simulation models for plate motion, tectonic loading, earthquake rupture, tsunami generation, seismic wave propagation and building oscillation and three data analysis programs for crustal movement, seismic activity and strong ground motion. In the first phase (2005-2008), integrating correlative basic models, we developed three combined simulation systems for earthquake generation, strong ground motion/tsunami generation, and artificial structure oscillation, and tested their validity and applicability through the comparison of simulation results with observations. We also developed a platform and data grid that support combined simulations and parallel data management. In the second phase (2008-2011), we integrate the three combined simulation systems into a unified total system, and make simulations for the prediction of earthquakes and tsunami disasters in realistic scenarios. The integrated simulation system will make a major contribution toward the reduction of earthquake and tsunami disasters.

JST-CREST Project (2005-2011)

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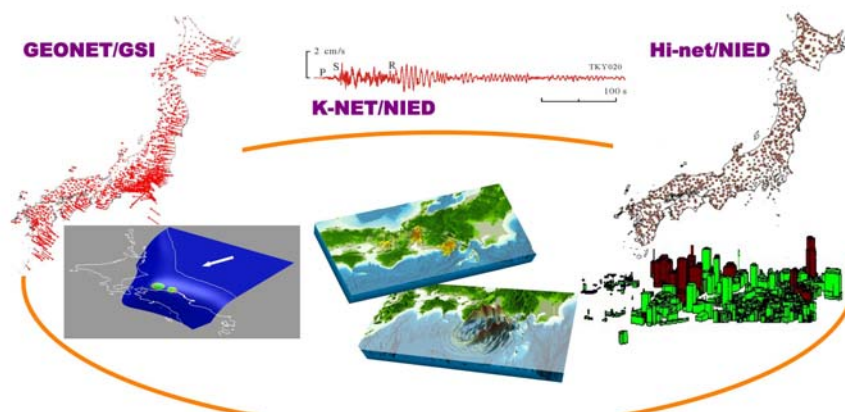
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