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Title: Real-time Operation System for Earthquakes (ROSE)

Abstract:

Three kinds of nationwide seismic network have been established and operated by NIED after the 1995 Kobe, Japan, earthquake (M7.3): (1) The short period seismic network (Hi-net) consists of about 700 short period (1 Hz) borehole seismometers distributed over Japan with average station interval of 20 km.; (2) The strong motion network (K-NET and KiK-net) consists of about 1030 strong motion seismometers and about 660 strong motion borehole seismometers installed at the bottom and top of the Hi-net station.; And (3) the broad band seismic network (F-net) has about 70 broad band seismometers covering Japan with station interval about 100 km. Furthermore, NIED had established about 60 short period borehole stations (KT-net) in the Kanto-Tokai district, central Japan. Real time continuous data from Hi-net, F-net and KT-net and event data from K-NET and KiK-net are transmitted to the NIED by telephone link. Based on those data earthquake parameters including hypocentral locations, focal depths, magnitudes and focal mechanisms are automatically determined in the routine process of NIED data center. The real-time operation system for earthquakes (ROSE) developed in this program, automatically determine the moment tensor solutions, the fault plane solutions and the geographical distribution of strong ground motion (SGM; the maximum velocity and the intensity) for earthquakes with magnitude 4.5 or lager by using the earthquake parameters obtained in the routine process. The SGM map can be automatically revised with the increasing of the number and accuracy of earthquake information which was available soon after a large earthquake occurred. Using the SGM map, it will be possible to estimate the damage of structures and buildings, and to display all information together in the same map. We also had developed the real-time ground motion monitoring system, continuously renewing the maximum velocity's and intensity's maps in each 30 sec. The earthquake parameters and SGM maps are quickly notified through the home page which is also accessible by mobile phone.

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