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Development of cooperative system of EEW and GRiD MT

Hiroshi Tsuruoka[1*]

[1]ERI, Univ. Tokyo

The Earthquake Early Warning (EEW) system provides advance announcement of the estimated seismic intensities and expected arrival time of principal motion. In addition, EEW provides earthquake origin time, location and magnitude. Using this information, we developed a trigger mode system of GRiD MT (Tsuruoka et al., PEPI, 2009) which determines moment tensors of earthquakes EEW provides. The GRiD MT system currently in use continuously monitors long-period seismic wavefield at a period of 20-50s and automatically and simultaneously determines the origin time, location and seismic moment tensors within 3min of the event occurrence without earthquake information. The locations and origin times are usually obtained within 3s and 20km away from the earthquake catalog values determined by the Japanese Meteorological Agency (JMA). To monitor all of Japan area we need multiple-PC processing. In contrast, a trigger mode system of GRiD MT only use one PC. The algorithms are as follows: When this system get EEW information such as location, we set the virtual sources +- 0.3 degree in horizontally (grid size 0.1 degrees) and +- 18km in vertically (depth, grid size 9km) around EEW's location. Then we run the same GRiD MT procedure to the waveform data which saved on disk. This system is currently in test operation at the Earthquake Research Institute. And we are now checking the results with other system's output such as F-net and AQUA.

Keywords: realtime, moment tensor, EEW