

Spatial distribution of F-net moment tensors for the 2005 East Off Miyagi Prefecture Earthquake

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The National Research Institute for Earth Science and Disaster Prevention (NIED) was established with a dense and homogeneous distribution all over Japan.

F-net, the broadband seismograph network of NIED installed at intervals of 100 km in Japan (Okada et al., 2004) (Fig. 1). A three-component broadband seismometer (STS-1/2) and a three-component strong motion velocity-type seismograph (VSE-355G2/G3) have been respectively installed at each station.

We have been routinely analyzing earthquakes of magnitude greater than 3.5 based on the unified hypocenter catalog maintained by the Japan Meteorological Agency (JMA) (Fukuyama et al., 1998). All results of the moment tensor analysis using surface wave are available or accessible through the Internet (<http://www.fnet.bosai.go.jp/>). In our routine analysis, different band-pass filters are used according to the magnitude, estimated by the JMA. Variance reduction (VR), which indicates the fit between observed and synthetics, We select moment tensors whose VR is greater than 50%. The fixed epicenter locations are taken from the unified JMA hypocenter catalog. The horizontal distance from the epicenter to the station is rounded to the nearest interval of 5 km. The variance reduction approach has also been applied to focal depths from 5 km with an interval of 3 km.

The 2005 East Off Miyagi Prefecture Earthquake (Mj7.2) that occurred at on August 16, 2005 is the first M7-class earthquake after the 1978 East OFF Miyagi Prefecture Earthquake. In this study, we thoroughly investigate almost all the spatial distribution of moment tensors of the main-shock, aftershocks, and earthquakes occurred from January 1997 until August 15, 2005 through the extended method of the NIED F-net routine processing. In this analysis, our new approach differs from that of the NIED F-net routine in the following respects:

(a) The horizontal distance to the station is rounded to the nearest interval of 1 km. (b) The variance reduction approach was also applied to focal depths from 2 km with an interval of 1 km.