

# Characterized source model of the 2003 Tokachi-oki earthquake for broadband strong ground motion evaluation

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The 2003 Tokachi-oki earthquake ( $M_j=8.0$ ) was the first great inter-plate event since the strong motion observations by K-NET and KiK-net started. Many strong motion records observed during this event are valuable to study strong ground motions for large inter-plate earthquakes. In this study we construct a characterized source model of the 2003 Tokachi-oki earthquake for broadband (0.1-10Hz) strong ground motion evaluation using K-NET and KiK-net records.

Here we assume that the source model consists of some rectangular-shaped rupture areas (hereafter we call asperities) on a fault plane. The fault plane is set after Honda et al. (2004). We also assume that the rupture starts from the epicenter determined by Japan Meteorological Agency (41.78N, 144.08E), and propagates on the fault radially with a constant rupture velocity. Synthetic seismograms are synthesized by using the empirical Green's function method. Source parameters (location, area and stress drop of each asperity) are estimated by matching the synthetics with the observed strong motion records.

The total area of asperities obtained in this study is about 10 percent of whole fault area. This value is much smaller than that empirically estimated by Ishii et al. (2000) for large inter-plate earthquakes (about 35 percent). The stress drop of the asperity is estimated about 30MPa. For the location of the asperities, we cannot determine it accurately because it moves according assumed rupture velocity. We should examine other approach for this matter.