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Rough and rapid estimation of rupture area for gigantic earthquakes from seismic intensity distribution

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We are developing some rapid estimation techniques for rupture area roughly. Yokota and Kaida (2011) proposed a method for estimating rupture area for a big earthquake(Mw $>$ 8.0) from seismic intensity distribution. In their method, they estimate rupture area on the plate boundary with relationship between the shortest distance from source area and Mw. It is difficult to estimate rupture area especially near trench (far area from land) with this method. And it takes 10min after earthquake occurrence to analyze the source area, because small seismic intensity data are observed late due to travel delay.

In this study, we use only seismic intensity data of large values to estimate rupture area. By using only large intensities, we can analyze 3min after earthquake occurrence in the case of 2011 Tohoku-oki earthquake. Since large seismic intensities are observed at a short epicentral distance, we can estimate the outer rim of the source area.

We will report results for other large earthquakes.

Keywords: Rapid estimation of rupture area, seismic intensity distribution