Determination of estimating rupture-propagating direction and rupture area

Hiroe Miyake [1], Tomotaka Iwata [1], Kojiro Irikura [2]

[1] DPRI, Kyoto Univ., [2] Disas. Prev. Res. Inst., Kyoto Univ.

We propose a method of determining the rupture-propagating direction and rupture area from the rupture directivity effects obtained from seismic spectra. We examined seven crustal earthquakes using strong motion data by K-NET and CEORKA records at more than 20 stations located less than 50km from the epicenter. From the azimuthal and spatial variation of spectral shape, we can classify the rupture process into 3 cases. I.e., A: unilateral and horizontally long (L>=W) rupture, B: bilateral and horizontally long rupture, and C: vertically long (L<W) rupture. We confirmed that the source spectra are expressed as a function of the rupture-propagating

direction and rupture area after examining relationship between rupture area and corner frequency.