

Early aftershock activity of the 2011 off the Pacific Coast of Tohoku earthquake and the 2004 Chuetsu earthquake

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The early aftershock activity provides information about the mainshock rupture process that affects the whole aftershock sequence. Most aftershock studies utilize earthquake catalogs. However, the catalogs are incomplete, in particular, for the early stage of aftershock activity due to overlapping of codas of preceding earthquakes on P-wave first motion. We have investigated the early aftershock activity of recent large earthquakes by manually picking events from continuous seismograms. Our aim is to clarify the rate of expansion of aftershock zone, which is important to assess the true size of mainshock fault and to know the factors to control the expansion. The one event is the 2011 off the pacific coast of Tohoku (Tohoku-oki) Earthquake. We found that aftershock activity of Tohoku-oki Earthquake migrated to the north with a velocity proportional to the logarithm of elapsed time from the mainshock. The other target is the 2004 Chuetsu earthquake. We determined much more events than the JMA catalog. However, we need to improve location accuracy by, for example, using template events.