

Comparisons of source characteristics among recent disastrous inland-crustal earthquake sequences in Japan

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We investigate seismic scaling relationship for recent M7-class inland earthquake sequences in Japan to discuss source characteristics inside and outside of tectonic zone. The 2004 Niigata-Ken Chuetsu earthquake, the 2004 South-Rumoi earthquake, the 2007 Noto-Hanto earthquake, the 2007 Niigata-ken Chuetsu-Oki earthquake, and the 2008 Iwate-Miyagi Nairiku earthquake occurred in the tectonic zone in Japan. Whereas, the 1997 Kagoshima-ken-Hokuseibu earthquake, the 2000 Tottori-ken Seibu earthquake, and the 2005 Fukuoka-ken Seiho-oki earthquake occurred in South-Western Japan where is smaller strain rate. We obtained stress drops of 286 events in eight earthquake sequences using S-wave coda spectra of nation-wide strong motion records. S-wave coda spectral ratio between large and small event records gives source spectral ratio. Most of source spectra obey omega-square source spectra and stress drops are estimated from the corner frequency and the seismic moment of observed source spectral ratio. We compare the stress drop of the mainshock, the maximum stress drop, the average stress drop of each earthquake sequence. Those of the 1997 Kagoshima-Ken-Hokuseibu earthquake are largest, and those of the 2000 Tottori and the 2004 Rumoi are smallest among eight event sequence. There are not obvious difference between stress drops of events in the tectonic zone and others.

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Keywords: active tectonic zone, inland crustal earthquake, source scaling, stress drop