Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SCG062-P01 Room:Convention Hall Time:May 26 16:15-18:45

Comparisons of source characteristics among recent disastrous inland earthquake sequences in Japan (2)

Kazuhiro Somei[1*], Kimiyuki Asano[2], Tomotaka Iwata[2]

[1]G.R.I., [2]DPRI, Kyoto Univ.

We have investigated seismic scaling relationship for recent M7-class inland earthquake sequences in Japan to discuss source characteristics between five sequences occurring in the high strain rate zone and three sequences occurring in others. There was no obvious difference between stress drops of them (Somei *et al*., 2010, JpGU, SCG088-P18). In terms of fault type of the sequence characterized by that of mainshock, however, those earthquakes which occurred in the high strain zone were reverse-faulting, whereas strike-slip faulting occurred in others. In this study, we investigate source characteristics for earthquake sequences in the high strain rate zone with strike-slip faulting (the 1995 Hyogo-ken Nanbu earthquake) to discuss different characteristics between fault-type and high strain rate zone, and we also investigate with other three earthquake sequences (the 1996 Miyagi-ken Hokubu earthquake, the Yamaguchi-ken Hokubu earthquake, the 2003 Miyagi-ken Hokubu earthquake).

Then, we obtain stress drops of 324 events (M_w: 3.1-6.9) in twelve earthquake sequences using S-wave coda spectra of nationwide 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. Stress drops are estimated by the corner frequency f_c from observed source spectral ratio and the seismic moment M_0 given by the moment tensor solution of F-net. In results, there is no obvious difference between stress drops of events in the high strain rate zone and others, and there are also no different source characteristics between strike-slip faulting type and reverse faulting type those are characterized by the fault type of mainshocks. However, f_cs for several large earthquakes as mainshocks are estimated out of the fitting frequency range. We should examine source spectral ratios and fcs for these earthquakes using F-net (Full range seismograph network) strong motion records. The other test is comparison of the crack size from f_c with total rupture area or combined area of asperity characterized by the slip model from waveform inversion. We also evaluate the effect of the station selection for f_cs that are estimated by source spectral ratio.

Acknowledgements

We would like to sincerely thank CEORKA, NIED (K-NET, KiK-net) for providing the strong motion data. The hypocenter information was providing by JMA and moment tensor by F-net of NIED. Prof. Kato permits us to use relocated hypocenter information of the 2007 Noto and the 2004 Chuetsu earthquakes.

Keywords: high strain rate zone, S-wave coda, source spectral ratio, corner frequency, scaling