Initial rupture process of the 2000 Tottori-ken Seibu earthquake

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The rupture process at the beginning stage of the 2000 Tottori-ken Seibu earthquake (Mw6.7) is investigated by analysis of P-wave records from local strong-motion stations. This earthquake occurred in western Tottori Prefecture on October 6, 2000. The focal area was located inland, and the ground motion was densely recorded near the focal area by local strong-motion stations of K-NET and KiK-net of the NIED and seismic intensity stations of the JMA. The P-wave records observed at the stations show nearly two or three seconds of small but increasing amplitude arrival, the so-called initial rupture phase, followed by the onset of the main energy release, the so-called main rupture phase. The sequence of the initial rupture and main rupture phases has also been observed from the local records of this earthquake by Hirata et al.(2002) and from teleseismic or local records of other earthquakes (e.g., the 1989 Loma Prieta earthquake: Wald et al., 1991; the 1992 Landers earthquake: Abercrombie and Mori, 1994; the 2005 West Off Fukuoka Prefecture earthquake: Takenaka et al., 2006; the 2007 Noto Hanto earthquake: Yamamoto and Takenaka, 2007). We measure the arrival times of the initial phase and the main rupture phase on the P records at the strong-motion stations, and locate the main rupture onset position. Eventually, the following were revealed. At 2.7 s after rupture initiation the subsequent main rupture started at a position of approximately 3.3 km away, southeastward and updipward from the hypocenter. We also apply a backprojection technique using P-wave part of the strong-motion records to this earthquake to image the first 5 seconds of the rupture process, and will show the results in the presentation.