

The Preliminary Rupture of the 2000 Western Tottori Earthquake

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Two clear phases P1 and P2 were identified on the seismograms for the 2000 Tottori-ken Seibu Earthquake. Large P2 phase very suddenly rose up, which suggests that the first rupture did not grow up continuously, but another big rupture newly started.

Hypocenters corresponding to these two rupture phases were determined using 14 stations within hypocentral distance of 60km. The first rupture started from the edge in the north of high seismic region where the earthquakes greater than M5 occurred five times from 1989. The hypocenter of the second large rupture was located at 1km deep and 5km south-east from the first rupture. It should be noted that the hypocenter of the second rupture was off the fault plane estimated from the mechanism solution of the first event. The averaged time interval of two phases was 2.5 second which satisfied the empirical relation of the magnitude and duration time for the preliminary rupture.

Aftershock activity was low around the hypocenter of the second large rupture. The shear stress might be completely and spatially released by large complex rupture around the second rupture. An earthquake bright spot proposed by Umeda(1992) should be formed in this small confined region.