

Imaging rupture transfer to another fault plane: the 2000 Western Tottori and the 2009 Sagami-bay earthquakes

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In this study, we analyze the P-wave portion before the S-wave arrival of the waveform records at local strong-motion stations relatively near the source area to investigate the initial stage of the rupture in the 2000 Western Tottori earthquake (Mjma 7.3) and the 2009 Suruga-bay earthquake (Mjma 6.5). Both earthquakes have multi fault planes of different geometry. Here we focus on the rupture transfer process from the first fault plane to the second fault plane. We scanned the source area during this initial rupture stage by using a source imaging technique (Takenaka et al., 2009) for mapping the radiated wave energy (called radiation strength) into a volume or onto planes at sequential time intervals. From the mapped radiation strength, it is found that for both earthquakes most of the strong radiation spots during the imaged rupture periods could be included in the connection area between the first and the second fault planes. It could be interpreted that the connection area worked as barriers at the initial rupture process, and was then ruptured at the beginning of the main rupture.

Acknowledgments: We used the strong-motion records of K-NET, KiK-net, F-net, JMA, and SK-net.

References:

Takenaka, H., Y. Yamamoto and H. Yamasaki, Rupture process at the beginning of the 2007 Chuetsu-oki, Niigata, Japan, earthquake, *Earth, Planets and Space*, 61(2), 279-283, 2009.

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