

Source process of the 1946 Nankai earthquake estimated from inversion of teleseismic waveforms

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Several inversion analyses by using tsunami waveforms and geodetic data have been carried out for the 1946 Nankai earthquake and the slip distributions on the fault plane have been estimated. However, no paper has been published on the inversion analysis of this event by using seismic waveforms. There are only a few papers which estimate the location of subevents from the arrival time of P- and S-waves. Since the Nankai earthquake is anticipated to occur not in the distant future, the estimation of the slip distribution on the fault plane based on seismic waveforms is essential for the disaster measures. We attempt to invert strong motion data and teleseismic waveforms for the source process of the Nankai earthquake. We also plan to investigate tsunami waveforms and geodetic data.

In this study, we report the result of the teleseismic waveform inversion using the method of Kikuchi and Kanamori (2003). We used data of four P-wave vertical, three P-wave horizontal, five SH wave, and two S-wave NS components. In the conventional inversion method using the teleseismic waveforms, it is common to assume that the strike and dip angle of all subfaults are the same. In this study, the strike, dip and depth of each subfault are defined as different based on a model of the curved interface between the continental and the Philippine Sea plates. Moreover, we took into consideration whether reflecting points of pP and sP wave radiated from each subfault are the sea or the land.

The result of teleseismic waveform inversion showed that the location of subevents previously estimated from many waveforms correspond to asperities on the fault plane obtained in this study. We are going to perform waveform inversion using strong motion data.