

Detailed velocity structure from the bottom of the source region of the Tokai Earthquake to the deep slow-slip regions

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Detailed knowledge about a deep transition zone from an unstable- to stable-slip regime is essentially important to understand the stress concentration process to the source region of the mega-thrust interplate earthquake. We have conducted a very dense seismic observation in the Tokai-region from the April to the August in 2008 through a linear deployment of 75 portable stations. The array extended from the bottom part of the source region of the Tokai earthquake to the slow-slip regions including numerous deep low-frequency earthquakes.

Here we present a high-resolution tomographic imaging of seismic velocities in this zone using first arrival data from the dense seismograph deployment. We manually picked the first arrivals of P- and S- waves from each waveform for about 700 earthquakes. Then, we applied the TomoFDD-code [Zhang and Thurber, 2006] to the arrival data set. It is found that a low velocity zone, which corresponds to the subducting oceanic crust, is clearly imaged. Especially, it is interesting that the long-term slow-slip region shows significant low velocity locally.

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