

## Three dimensional seismic velocity structure in the Hyuganada region, western part of Nankai Trough, Southwestern Japan, revealed by an integration analysis of inland and ocean-bottom seismic observation data

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In order to understand the preparation process and potential of interplate earthquakes, we need to reveal the characteristic of interplate coupling. The Hyuganada region is located at the western end of Nankai Trough, and the heterogeneity of interplate coupling has been studied by the analysis of small repeating earthquakes and slow slip events. In this study, we estimate three dimensional seismic velocity structure on the Hyuganada region by using both inland and ocean-bottom seismic observation data, and try to obtain the knowledge about the structure which controls the strength of interplate coupling.

We used the arrival time data and hypocenter locations of 675 earthquakes which were detected inland and ocean-bottom seismic observations. Three dimensional seismic velocity inversion was carried out by the double difference tomography method (Zhang and Thurber, 2003). The initial velocity model and station corrections used in the inversion were obtained by the Joint hypocenter determination method (Crosson, 1976). We evaluated the resolution of the result by the Checkerboard Resolution test (CRT; Grand, 1987).

Our results show that the subducting slab is high velocity and the mantle wedge is low velocity and high poisson' s ratio, which are common feature in the subduction zones. In addition, the results indicate the subducting Kyushu Palau ridge is relatively low velocity, and the poisson' s ratio in the slab seems to be decreasing with depth, which are possibly related with the interplate coupling distribution in this region estimated by Yamashita et al. (2012).

Keywords: seismic velocity structure, Hyuganada, interplate