

Deformation structure obtained by high resolution multi-channel seismic reflection survey around Nankai Trough axis

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The big disaster earthquakes had often occurred in the Nankai Trough with a great Tsunami event. In order to reduce a great deal of damage to coastal area from both strong ground motion and tsunami generation, it is necessary to understand rupture synchronization and segmentation of the Nankai megathrust earthquake. We focus on the deformation structure around the Nankai Trough. However, there are few seismic survey lines in the trough axis in the Nankai Trough. Therefore, we planned new survey around the trough axis in the Nankai Trough in order to obtain the high resolution structure.

Japan Agency for Marine-Earth Science and Technology (JAMSTEC) carried out new high resolution multi-channel seismic reflection (MCS) surveys using portable system over 1,500 km of line length from off Kochi to Kii Peninsula during 2013-2014. The seismic source used was an G-gun cluster array of 4 air guns with total volume of 380 cubic inches (5.24 L). The hydrophone cable is ca. 1200 m long, having 192 channels at an interval of 6.25 m. The MCS data were processed through a standard seismic processing flow, which consists of noisy-trace editing, 20-200 Hz band-pass filtering, velocity analysis with every ca.313 m intervals picking, normal moveout, Common Depth Point (CDP) stacking, and poststack time migration.

We obtained 23 MCS profiles around the Nankai Trough. Clear frontal thrusts are imaged in the margin of Nankai Trough axis. We recognized distinct proto thrust zone in the south part of the frontal thrust. This results yield the possibility of extended rupture area in the Nankai Trough.

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