

CONTROL ID: 1469880

TITLE: Three-dimensional model of plate geometry and velocity model for Nankai Trough seismogenic zone based on results from structural studies

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ABSTRACT BODY: In the Nankai Trough subduction seismogenic zone, the Nankai and Tonankai earthquakes had often occurred simultaneously, and caused a great 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. For a precise estimate of the rupture zone of the Nankai megathrust event based on the knowledge of realistic earthquake cycle and variation of magnitude, it is important to know the geometry and property of the plate boundary of the subduction seismogenic zone. To improve a physical model of the Nankai Trough seismogenic zone, the large-scale high-resolution wide-angle and reflection (MCS) seismic study, and long-term observation has been conducted since 2008. Marine active source seismic data have been acquired along grid two-dimensional profiles having the total length of ~800km every year. A three-dimensional seismic tomography using active and passive seismic data observed both land and ocean bottom stations have been also performed.

From those data, we found that several strong lateral variations of the subducting Philippine Sea plate and overriding plate corresponding to margins of coseismic rupture zone of historical large event occurred along the Nankai Trough. Particularly a possible prominent reflector for the forearc Moho is recently imaged in the offshore side in the Kii channel at the depth of ~18km which is shallower than those of other area along the Nankai Trough. Such a drastic variation of the overriding plate might be related to the existence of the segmentation of the Nankai megathrust earthquake. Based on our results derived from seismic studies, we have tried to make a geometrical model of the Philippine Sea plate and a three-dimensional velocity structure model of the Nankai Trough seismogenic zone. In this presentation, we will summarize major results of our seismic studies, and a preliminary version of the three-dimensional model will be shown. This study

is part of 'Research concerning Interaction Between the Tokai, Tonankai and Nankai Earthquakes' funded by Ministry of Education, Culture, Sports, Science and Technology, Japan.

KEYWORDS: [3025] MARINE GEOLOGY AND GEOPHYSICS / Marine seismics, [3060] MARINE GEOLOGY AND GEOPHYSICS / Subduction zone processes.

(No Image Selected)

(No Table Selected)

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