Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)
©2011. Japan Geoscience Union. All Rights Reserved.

SSS035-P32 Room:Convention Hall Time:May 25 14:00-16:30

A model of three-dimensional seismic structure in the source area of the Tokai-Tonankai-Nankai earthquake

Takeshi Nakamura[1*], Seckin Ozgur Citak[1], Narumi Takahashi[1], Yoshiyuki Kaneda[1], Michihiro Ohori[1], Toshitaka Baba[1]

[1]JAMSTEC

Previous studies with the seismic survey have shown that the seismic structure around the Nankai-Suruga Trough has a strong spatial heterogeneity, associated with the accretionary prism, plate boundary, subducting ridges, and mantle wedges (e.g., Kodaira et al., 2005). This means that we need to use a realistic three-dimensional structure model for seismic data analysis. We here construct the three-dimensional oceanic structure model around the trough, consisting of the accretionary prism, subducting oceanic layers 2 and 3, and oceanic mantle, mainly for the purpose of hypocenter determination, tomography, seismic wave propagation, and earthquake cycle simulation. We compile the geometry of each layer from the results of reflection and refraction seismic survey (e.g., Nakanishi et al., 2002), JMA hypocenter lists, and receiver function analysis (e.g., Shiomi et al., 2004), by using the gridding algorithm with continuous curvature splines in tension (Smith and Wessel, 1990). We also compile the recent results of seismic survey by the subproject 1 of the research on evaluating seismic linkage around the Nankai Trough into our model. The P wave velocity and the Poisson's ratio in each layer are provided referring to the JMA velocity model (Ueno et al., 2002), the classification of crustal type (Christensen, 1996) and the analysis results of the PPS converted waves (Takahashi et al., 2002). The model covers an area with the latitude of 28 to 37 degrees and the longitude of 128 to 142 degrees, which includes the source area of the Tokai-Tonankai-Nankai earthquake, and extends to a depth of 200 km. Our model is formatted with the netCDF type for each layer so that it is easy to edit and clip the data. In order to verify our constructed model, we simulate seismic wave propagation with the FDM (Nakamura et al., 2011) and compare synthetic data with observed one. In this presentation, we show the three-dimensional structure model and demonstrate it as a realistic one for seismic analysis.

Keywords: Nankai Trough, Tokai-Tonankai-Nankai earthquake, seismic structure model, seismic survey