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Accretion prism modeling using both OBS velocity models and MCS reflection data

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Ground motion simulations and predictions based on the source model and the underground velocity structure model are quite important for understanding the characteristics of strong ground motions and the related earthquake disasters. Recently, strong motion simulations using a heterogeneous source and realistic 3D underground velocity structure models became successful and quite popular in the research field of applied seismology and earthquake engineering. In [Iwata et al., 2008] a prototype of the basin and crustal structure model for the Kinki area is constructed for the simulation of strong ground motions of hypothetical crustal and subduction earthquakes. Its objective is the simulation of long-period ground motions. The general principle of crustal velocity modeling is to build a model from several layers with constant values of velocity, density, and quality factor Q within each layer. The model interfaces between the layers are 3D.

For shallow subduction zone earthquakes, e.g. Nankai-Tonankai earthquake, accretion prism, or the sedimentary wedge, play extremely important role for generation and propagation of the low-frequency surface waves. In [Iwata et al., 2008] we intensively use of the OBS velocity models for the accretion prism modeling. In this study, to increase minuteness of the accretion prism model we will try to combine abundant MCS profile data with the OBS models. Depth of the accretion prism can be estimated from the reflection data of MCS profiles, while internal velocity structure can be interpolated from the neighboring OBS velocity models. In order to test this approach we apply it to the area surrounding Kii peninsula.

Acknowledgement. We used seismic cross-section databases of JAMSTEC (Japan Agency of Marine-Earth Science and Technology) and ERI (Earthquake Research Institute, University of Tokyo).

Reference. Iwata T., T. Kagawa, A. Petukhin, Y. Ohnishi, Basin and crustal velocity structure models for the simulation of strong ground motions in the Kinki area, Japan, J Seismol., DOI 10.10 07/s10950-007-9086-7

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