

## 3D velocity structure and configuration of the Philippine Sea slab beneath central and SW Japan estimated by DD-tomography

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Many great, interplate earthquakes have occurred along the Nankai Trough, but little is understood on the detailed 3D velocity structure of the Philippine Sea slab.

In this study, we investigated 3D seismic velocity structure in and around the subducted Philippine Sea slab beneath central and southwestern Japan. The study area covering from Kanto to Kyushu districts was divided into six regions, and for each region the Double-Difference Tomography method (Zhang and Thurber, 2003) was applied to arrival-time data recorded at 691 stations from 12,849-21,178 earthquakes. The total number of arrival-time data used in the inversions ranges from 200,000 to 450,000 for P wave and from 210,000 to 410,000 for S wave. Horizontal grid nodes were set up in the model space with intervals of 10-15 km parallel to the subduction direction of the Philippine Sea plate and 30-40 km perpendicular to it. Vertical grid nodes were spaced at intervals of 5-10 km.

Obtained results show a clear low  $V_s$  and high  $V_p/V_s$  layer shallowly dipping toward the subduction direction of the Philippine Sea plate with a thickness of several kilometers. Comparison with the location of the upper surface of the Philippine Sea slab estimated from seismic refraction surveys at four survey lines shows this low  $V_s$  and high  $V_p/V_s$  layer corresponds to the crust of the Philippine Sea slab. Based on the presently obtained location of the low  $V_s$  and high  $V_p/V_s$  layer and hypocenter distribution of relocated intraslab earthquakes, we propose a configuration of the upper surface of the Philippine Sea slab subducting beneath central and southwestern Japan.