

## Seismic crustal structure of the Kyushu-Palau Ridge, paleo-island arc in the Philippine Sea plate

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We compiled 27 seismic profiles across the Kyushu-Palau Ridge (KPR), a remnant intra-oceanic island arc extending north-south at the center of the Philippine Sea plate. The seismic profiles consist of multi-channel reflection and refraction exploration and were carried out in 2004-2008 under the Japanese Continental Shelf Survey Project.

The maximum crustal thicknesses of the KPR vary from 8 to 23 km among the seismic lines and are roughly thicker in the north of the ridge than in the south. The thick crust is mainly attributed to the lower crust with P-wave velocity of 6.8-7.2 km/s. Pn velocities just beneath the KPR are less than 8 km/s, often accompanying with rather high Vp of 7.2 km/s at the base of the crust. Reflection signals observed in far offsets along several lines suggest some reflectors exist at the depths 23-40 km beneath the KPR.

The crustal structure of the eastern transition from the KPR to backarc basins of the Shikoku Basin and Parece Vela Basin is characterized by a thinner crust and slightly higher Pn velocity, which may relate to the rifting, breakup and early separation of the proto-island arc. The subducting thin crust of the transition was imaged beneath the Hyuganada, east of Kyushu, where corresponds to the western end of the expected large earthquake model in the Nankai Trough.

On the other hand, the crustal models of the western side of the KPR show large variety in the seismic lines. This is because that the tectonic setting of the western side is different from north to south, such as the Daito Ridges as paleo-island arcs and intra-arc basins in the north, the West Philippine Basin as a backarc basin and the CBF Rise as the spreading center of the West Philippine Basin in the south.

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