

## Variation in seismic structure of the Kyushu-Palau Ridge at 15-30 N

# Azusa Nishizawa[1]; Kentaro Kaneda[2]; Mitsuhiro Oikawa[3]

[1] Hydrogr. & Oceanogr. Dep., JCG; [2] HODJ; [3] JCG

The Kyushu-Palau Ridge (KPR) is one of characteristic seafloor features, extending north-south at the center of the Philippine Sea. KPR is considered as a remnant of the proto Izu-Ogasawara(Bonin)-Mariana(IBM)Island arc that was created by backarc spreading of the Shikoku and Parece Vela Basin in Late Eocene. Twenty-five wide-angle seismic refraction and multi-channel reflection profiles across the KPR were conducted to clarify the variation of the crust and upper mantle structure in 2004-2007 under the Japanese Continental Shelf Survey Project.

Water depth of the KPR varies along the ridge axis and the northern part is roughly shallower than southern part. The crustal thickness beneath the KPR also varies from 8 to more than 20 km along the ridge axis and is generally thicker in the north than that in the south. Besides, the KPR crust are always thicker than the neighboring oceanic crusts of the West Philippine Basin to the west and of the Shikoku Basin and Parece Vela Basin to the east.

The KPR upper crusts have P-wave velocities with less than 6.8 km/s with large velocity gradient and show large variation in thickness from place to place. Rather thicker layer with velocities of 6.0-6.5 km/s, indicating mid crust in the conjugate IBM island arc, exists in the limited area of the northern KPR. The P wave velocity in the lower crust is 6.8-7.2 km/s with a small velocity gradient. Thick KPR crusts are predominantly composed of the thicker lower crust. The upper mantle velocities in the most profiles are less than 8 km/s. Similar lower mantle velocities were also found beneath the IBM arc.

The sea bottom topography at the transition from the KPR to Shikoku and Parece Vela backarc basins is distinguished by sharp and steep scarps seemed to be formed by the initial rifting, breakup and early separation of the proto-island arc. A thinner crust and slightly higher Pn velocity characterizes structural models in the transition zone. The minimum crustal thickness is less than 4 km and especially oceanic layer 3 is very thin, which is different from the high velocity lower crust detected beneath the boundary regions between the West Mariana Ridge and Parece Vela Basin. The positions where the thick KPR crusts become thin to the same thickness of oceanic basins are not necessary located at the just below the submarine escarpments.