

## Seismic structure of the CBF Rise: junction area between the Kyushu-Palau Ridge and CBF Rift

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There are several major seafloor features on the Philippine Sea plate. One of the most characteristic features is the Kyushu-Palau Ridge (KPR), extending north-south at the center of the Philippine Sea plate and 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. The CBF (Central Basin Fault) Rift is also a characteristic bathymetric feature of a paleo-spreading center of the West Philippine Basin. At the eastern end of the CBF Rift, magnetic anomaly data indicate north-south spreading of the oceanic crust. There is, however, a bathymetric high with about 170 km long by about 130 km wide, named as the CBF Rise, at the junction between the KPR and CBF Rift. The CBF Rise consists of two deformed-rectangular-shaped shallower areas. The least depth is 3500 m, and the maximum relief is 2000 m. The crustal structure beneath the CBF Rise has not been fully understood.

About thirty wide-angle seismic refraction and multi-channel reflection profiles across the KPR had been conducted since 2004 under the Japanese Continental Shelf Survey Project. The seismic velocity structure for the KPR varies along the ridge axis and the crusts are generally thicker in the north than those 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. A common characteristic of the KPR upper crusts has P-wave velocities with less than 6.8 km/s with a large velocity gradient. On the other hand, the P-wave velocity in the lower crust is 6.8-7.2 km/s with a small velocity gradient. The thick KPR crusts are predominantly composed of the thicker lower crust. The uppermost mantle velocities in the most profiles show less than 8 km/s.

We carried out several seismic profiles across the CBF Rise using the same specification as the previous experiments in the KPR. The P-wave velocity structure of the CBF Rise shows the similar characteristics of the KPR: the CBF Rise crust is thicker than those of the neighboring backarc basins. It is mainly due to the lower crust and partially to the middle crusts with P-wave velocity of 6-6.8 km/s.