

Crustal structure of the southern Kyushu-Palau Ridge: Preliminary report of a seismic reflection study

Yasutaka Katagiri[1]; Azusa Nishizawa[2]; Yukihiro Kato[1]; Tomoyuki Tanaka[3]

[1] Hydrographic and Oceanographic Dept. of Japan; [2] Hydrogr. & Oceanogr. Dep., JCG; [3] JCSS

The Kyushu-Palau Ridge (KPR) runs through the middle of the Philippine Sea from Huuga-nada to Palau Islands. It divides the Philippine Sea plate into the western area and eastern area. The eastern area is characterized by the KPR and Izu-Ogasawara (Bonin) Arc, the Shikoku and Oki-no-Tori-shima (Parece Vela) Basin. These are considered as volcanic and back-arc basins that were formed as the results of the westward subduction of the Pacific plate beneath the Philippine Sea plate. Therefore, to understand the formation process of the Philippine Sea, it is important to study the crustal structure of these arcs and back-arc basins. However, the crustal structure of the KPR has been poorly understood.

A wide-angle seismic refraction/reflection experiment was performed under the Continental Shelf Surveys Project (Nov-Dec, 2004). In this report, we will present the preliminary result of the multichannel seismic (MCS) survey result which was performed in the southern part of KPR. To understand the variation of crustal structure between the West Philippine Basin and Oki-no-Tori-shima Basin, four seismic lines were set across the southern part of KPR. The specification of the MSC survey is followings. The tuned airgun array with a total capacity of 8,040 cu.in., which was consisted of 36 airguns with a capacity of 360-600 cu.in. each, was shot at 50m interval. The 480-channel hydrophone streamer was towed during the airgun shooting. At the West Philippine Basin, the sea bottom topography has gentle structure and we can see thick sediments with thickness of 1.0-0.5sec (T.W.T.) which are consisted of pelagic and volcanoclastic sediments. On the other hand, at the Oki-no-Tori-shima Basin, the sea bottom topography has complex structure and many faults are distributed. Sediments are not accumulated enough. Only thin sediments can be seen in the small depressions.