

Crustal structure of the northern West Philippine Basin: seismic reflection study

Yasutaka Katagiri[1]; Yasuhiko Ohara[2]; Yukihoro Kato[1]; Azusa Nishizawa[3]; Kunishige Tonoike[4]

[1] Hydrographic and Oceanographic Dept. of Japan; [2] Hydrographic and Oceanographic Dept.of Japan; [3] Hydrogr. & Oceanogr. Dep., JCG; [4] none

The north of West Philippine Basin (WPB) is characterized by the Daito Ridges and Okinawa Rise. The Daito Ridges, which is composed of the Amami Plateau, Daito and Oki-Daito Ridge have oldest age (60Ma-30Ma) in the Philippine Sea plate. Okinawa Rise is located at the north of Central Basin Spreading Center (CBSC). Together with Benham Rise located at the south of CBSC, both plateaus had been formed by an excess volcanism at the spreading axis (Hilde and Lee, 1984). Japan Coast Guard performed a wide-angle seismic refraction/reflection experiment aiming to reveal the formation process of the north of WPB under the Continental Shelf Surveys Project. We will present the multi-channel seismic (MCS) survey results in this report. The specification of the MSC survey is as follows: the tuned airgun array with a total capacity of 8,040 cubic inch, which was consisted of 36 airguns with a capacity of 65-600 cubic inch each, was shot at 50m interval. The 480-channel hydrophone streamer was towed during the airgun shooting.

The characteristics of the MCS profiles are summarized below. We can trace horizontally an obvious horizon at the Minami-Daito Basin, and we interpret it as sill. Possible seaward dipping reflectors (SDR) around the west and south of the Oki-Daito Ridge were recognized. OIB basalt rocks were cored at the DSDP Site294/295, therefore these SDR indicate that the ridge had been affected by a hotspot-like activity during its formation process. At the Okinawa Rise, we can trace interfaces which can be interpreted as Moho. The Moho shallows around mid area of Okinawa Rise. Therefore the crustal structure of Okinawa Rise is divided into two parts around here.