

SCG059-P11

Room:Convention Hall

Time:May 27 10:30-13:00

New geophysical data obtained from the southern part of the West Philippine Basin and the Palau Basin

Tomohiro Sasaki^{1*}, Toshitsugu Yamazaki²

¹Graduate School of Tsukuba University, ²Geological Survey of Japan, AIST

The West Philippine Basin (WPB) occupies western part of the Philippine Sea Plate (PSP). The spreading history of WPB has not yet been well understood despite accumulation of studies since 1970s. The origin of WPB was first proposed by Uyeda and Ben Avraham [1972], which proposed that WPB was formed by entrapment of a segment of the Kula-Pacific Ridge in the middle Eocene. Hilde and Lee [1984] and Jolivet et al. [1989] supported the entrapment model. On the other hand, a backarc origin model of WPB was proposed by Lewis et al. [1982], Seno and Maruyama [1984], and Deschamps and Lallemand [2002]. Deschamps and Lallemand [2002] compiled bathymetry, paleomagnetic data, and seafloor age, and suggested that WPB is a back arc basin that had developed between two opposed subduction zones from about 54 to 30 Ma, and that rollback of these trenches provided the driving force for the spreading. They also suggested that WPB underwent a clockwise rotation through the opening, and that the direction of the spreading rotated counter-clockwise. However, the deficiency of the data south of spreading center (Central Basin Fault, CBF) hampered testing this mode.

In this study, we compile bathymetry and magnetic anomaly data of the southern part of WPB and the Palau Basin, which occurs to the south of WPB bordered by the Mindanao Fracture Zone. The dataset includes data from previous cruises of R/V Mirai, and newly obtained data during R/V Yokosuka YK10-14 cruise. The strike of abyssal hills near CBF in WPB is close to E-W, whereas that of the southern part near the Mindanao Fracture Zone is nearly NW-SE. This suggests that the spreading direction of WPB changed counter-clockwisely with time as suggested by Deschamps and Lallemand [2002]. Three component magnetic anomaly data in the Palau Basin suggest occurrence of magnetic lineations close to N-S in strike. Together with N-S trending abyssal hill morphology, it is considered that the Palau Basin was formed by seafloor spreading of an E-W direction.

Keywords: magnetic anomaly, seafloor spreading, Philippine Sea Plate, West Philippine Basin, abyssal hill