



## **The relationship between the age and depth of the oceanic crust in the central South China Sea**

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South China Sea (SCS) is the largest marginal basin in the western Pacific. The onset of seafloor spreading in the central part of the SCS was suggested at 32 Ma. After a ridge jump around 25 Ma, the southwestern sub-basin started to open. The spreading of the entire basin ended at  $\sim 16$  Ma, then a phase of post-magmatic seamount formation occurred (eg., Taylor and Hayes, 1983; Briais et al., 1993; Barckhausen et al., 2014). In this study, we want to find the relationship between the age and depth of the oceanic crust in the central SCS. We will also study a fracture zone trending NW-SE near to Manila trench and to understand how did the fracture zone affect the development of the SCS. We have analyzed five reflection seismic profiles collected by R/V Ocean Researcher 1 during the cruise ORI-1115. We have correlated the age of seismic strata in the central SCS by comparing to the seismic phase of profile MCS1115-7 that has crossed the IODP drilling site U1431. To understand the characteristics of the fracture zone, we have also applied the analytic signal and Euler deconvolution methods to the gravity and magnetic anomalies related to the fracture zone. We suggest that the fracture zone was formed in order to accommodate the spreading in the east sub-basin. However, this fracture zone is somewhat curved concave southwestward. According to the collision-extrusion model of Tapponnier et al. (1982), the formation of Indochina is followed with the constitution of Ailao Shan-Red River Shear Zone. We suppose that the formation of the fracture zone in this study is similar to the Ailao Shan-Red River Shear Zone. The fan-shaped crustal fabric is distinct in the younger portions of the oceanic basin. Both Ailao Shan-Red River Shear Zone and the fracture zone in northeastern SCS may share the same rotation pole. Furthermore, we have tried to find a relationship between oceanic crust depth and age in this area. The preliminary result shows that the relationship between depth and age in the SCS is different from North Pacific and Northwest Atlantic (Crosby, McKenzie and Sclater, 2006). We also use the relationship to understand the difference between both sides of the fracture zone.