



IODP Expedition Report

Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

Submission Date : 08/04/14

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Institution (Position) : JAMSTEC (Scientist/Researcher)

Type of application	Exp.349 South China Sea
Exp. #	Expedition 349
Period (incl. travel)	25/01/14 ~ 31/03/14
Destination (City)	Hongkong to Keelung, Taiwan
Role on board	Petrologist (例 Sedimentologist)
<p>Outcome of the Expedition</p> <p>I boarded the JR Resolution in Hongkong on the 26th of January. During the three-day port call, the Science Party received orientation lectures on the Science objectives, methods, core flow, post cruise deliverables, and proper conduct for the duration of the expedition. We departed for the first site, U1431 (proposed site SCS-3G), on the 29th of January and reached it on the 31st of January. During the short transit, we continued to have lectures on the operations, including safety on board by the Captain and Doctor, followed by shipboard laboratory orientation for the different tasks on board by the different IODP Staff members. The Science Party members also introduced themselves and their research, and worked on the Methods sections of their respective laboratory groups. We finished drilling the last Site, U1435 (proposed site SCS-6C), on March 27th and arrived in Keelung, Taiwan on March 30th. In total, we recovered 1602 meters of cores, including 78 meters (average of 40% recovery) of oceanic basement at three sites, U1431E, U1433B (SCS-4B, and U1434A (SCS-4E). These sites were located close to the fossil spreading centers at the East Sub-basin (U1431) and at the Southwest Sub-basin (U1433B and U1434A). The other two sites, U1432 (SCS-6A) and U1435, located in the Northern basin are near the continent/ocean boundary. Downhole geophysical logging was conducted at the two deepest sites, U1431E and U1433B. Technical difficulties prevented logging down to the bottom 400 meters at Site U1431E but it was completed at Site U1433B. Furthermore, although the casing was successfully installed down to 800 m depth at Site U1432B, we failed to reach the main objective of reaching basement due to problems encountered during the cementing process.</p> <p>The main scientific outcomes of Expedition 349 are 1) oceanic ridge basements (mid-ocean ridge basalts) were recovered for the first time, which can give better temporal control on the end of spreading in the South China Sea, 2) the cessation age of the spreading in both East and South sub-basins appear to be within a small range from 16-20 Ma, based on shipboard age determination from brown pelagic clays overlying the oceanic basements at Sites U1431E and U1433B, 3) determination of the nature of the basement high at Site U1435, where a ~33 Ma sharp, possibly rift unconformity indicated by a change from shallow marine to deep marine environment of deposition, was recovered. This gives indirect evidence for the onset of seafloor spreading at ~33 Ma. In addition, 4) the post spreading seamount volcanism could be examined from the lithologic successions at Sites U1431E and U1433B by further geochemical and geochronological analyses onshore, and 5) the past environmental, climatic, and oceanographic conditions related to the tectonic evolution of the South China Sea can be gleaned from onshore studies of the 1524 m of sediments and sedimentary rocks recovered from all sites.</p>	

Remarks	Overall, it was a successful expedition and has opened a lot of potential collaborative studies among the members of the Science Party. Interesting results are expected to come from the geochemical and geochronological studies of volcanic rocks, as well as the variation in post-spreading paleoceanographic conditions linked to the tectonic evolution of the South China Sea from the comprehensive studies of sedimentary successions.
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