

Preliminary report of KH-15-5 R/V Hakuho-maru cruise: Long-offset transform and ridge processes along the Central Indian Ridge 13-18°S

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KH-15-5 R/V Hakuho-maru cruise was conducted from 17th to 26th, January, 2016 along the Central Indian Ridge 13°-18°S. The objective of this cruise is to elucidate the contribution of long oceanic transform faults to global water flux and to explore the magmatic and hydrothermal activities along the ridge north of 18°45'S. During the cruise, we conducted geophysical mapping, deep-tow magnetic survey, rock samplings and CTD hydrocasts along the Marie Celeste transform fault, Argo transform fault and northern part of Seg-18 of the Central Indian Ridge under the collaboration with Mauritius Oceanographic Institute and Korean Institute of Ocean Science and Technology. The principal results of the cruise are summarized as follows.

1. Two deep-tow magnetic profiles across two active transform faults are done. A proton magnetometer and two three-component magnetometers were attached to the system. We succeeded to recover the variation of total magnetic field intensity along ~45km profiles.
2. Along the Marie Celeste transform fault, we conducted 3 dredge hauls and 3 CTD hydrocasts. We recovered various kinds of rocks constituting oceanic crust, gabbroic lower crust to basaltic lava. CTD profiles and water sampling were successfully done from 5000m water depth, mainly for deep-sea microbiological studies. A turbidity meter attached to the dredge wire detected anomaly near the bottom on the median ridge.
3. Along the northern part of the CIR-Seg18, we conducted 6 dredge hauls. Two sites are located at the neo-volcanic zone within ridge axial valley, where we recovered very fresh lava. Three sites are designed to collect samples from off-axis area and slightly altered basalt samples are recovered. Last dredge haul was done at the lower part of an oceanic core complex, where an altered gabbro was recovered.
4. Four CTD hydrocasts were done along the ridge axis of Seg-18. We detected turbidity and transmissometer anomalies, indicating the hydrothermal activity.

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