

## Preliminary report on the Hakuho-maru Cruise KH-07-4 Leg 2, Southwest Indian Ridge 34-40E

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The mid-ocean ridge process depends on a balance between spreading rate and melt supply. And the melt supply should reflect the physical and chemical character of mantle beneath the ridge. We target on the Southwest Indian Ridge 34-40E, because the spreading rate (ultraslow, ~15mm/yr) is the same along this long portion of the ridge. On the other hand, the eastern part of the area appears to have anomalously large melt supply maybe due to the proximity to the Marion hotspot, but this effect does not seem to reach the western segments where each ridge axis has an offset along a series of fracture zones. We conducted surface geophysical survey, marine magnetotelluric transect for imaging upper mantle structure, seismic survey for imaging crust structure, and dredge for rock sampling in this area to understand the contribution of mantle geochemistry to the structure and spreading style of mid-ocean ridges. The surface geophysical survey was focused on the ridge segment 35-39E and one third of the segments were covered by 11 survey lines with its length of 60 nautical miles. Seven OBEMs were deployed to carry out a marine MT transect across the Southwest Indian Ridge 37E. The MT transect across the spreading center will provide a image of the electrical conductivity structure beneath the spreading system after the recovery of the OBEMs during the other Hakuho-maru cruise in February, 2009. Seismic survey also targeted at the Southwest Indian Ridge, 37E to investigate seismic velocity structure. Ten OBSs, 48-channel hydrophone streamer, and two 20-liter air guns were used, and all the data were successfully obtained. Total 8 dredge hauls were performed along the Southwest Indian Ridge 34-40E to investigate a variation due to different ridge segments. Materials were successfully recovered at 6 sites. All these data sets and rock samples will provide geophysical and geochemical constraints for understanding diversity in spreading style and dynamics beneath the spreading system interacted with the hot spot.