

Integrated observations for marine earth science in the Indian sector of the Southern Ocean: Preliminary results of R/V Hakuho-maru KH-19-1 cruise

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Integrated observations for marine earth science have been done in the Indian sector of the Southern Ocean during the KH-19-1 cruise by R/V Hakuho-maru in early 2019. Multichannel seismic (MCS) reflection and bathymetric survey were conducted at three sites on the Del Cano Rise and the Conrad Rise, and these site survey for IODP proposal 918 was successfully completed. We also obtained sediment cores from the proposed sites DCR-03A and DCR-02A, and sedimentary archives of a piston core DCR-2PC (at DCR-02A) show obviously glacial-interglacial cycles based on magnetic susceptibility and color reflectance. Various rock samples were collected by dredge observation at the Conrad Rise and the obtained materials to be used for understanding of origin of rise and tectonics in the southwest Indian Ocean. Sediment trap samples were also recovered from a site ECR-1, where is located under the biogenic silica belt south of polar front. Flux of settling particles was increased in summer, suggesting that typical seasonal change was occurred in the Southern Ocean. In addition, multichannel seismic (MCS) reflection and bathymetric survey were also done on the across transect of the deep-sea valleys off Cape Darnley, East Antarctica. By analyzing these materials and data, it is expected to advance the research leading to changes in the sedimentation process accompanying expansion and retreat of the Antarctic ice sheets and elucidation of the history of the Cape Darnley bottom water.

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