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Preliminary report of the R/V Hakuho-Maru KH-10-7 cruise, Southern Ocean

Yoshifumi Nogi^{1*}, Minoru Ikehara², Shigeru Aoki³, Sohiko Kameyama⁴, Hiroshi Sato⁵, Yasuyuki Nakamura⁶, Hakuho-maru KH-10-7 cruise scientific party¹

¹National Institute of Polar Research, ²Kochi University, ³Hokkaido University, ⁴Hokkaido University, ⁵Senshu University, ⁶JAMSETC

The Antarctic Ocean is a key area to understand global environmental changes. Role of Antarctic Ocean is considered to be very important in the Earth system, but data coverage is still poor and further observations are required. The research cruise KH-10-7 by the R/V Hakuho-Maru of Japan Agency for Marine-Earth Science and Technology was conducted in the Indian Sector of the Antarctic Ocean from 17 December, 2010, to 17 January, 2011. The main objectives of the cruise are as follows.

- 1) Antarctic Cryosphere evolution based on marine geological observations in Conrad Rise and off Lutzow-Holm Bay: Site survey for new drilling proposal.
- 2) Studies on tectonic history of the Conrad Rise.
- 3) Quantitative estimation of cyclonic gyre and Antarctic Bottom Water transport in the Australia-Antarctic Basin.
- 4) Changes of ecosystem due to global warming and/or acidification in the Southern Ocean and following responses of biogenic trace gases in surface seawater.

The R/V Hakuho-Maru left Port Louis, Mauritius, on 17 December, 2010, and arrived at Fremantle, Australia, on 17 January, 2011, after multi disciplinary observations in the Southern Ocean. CTDs, water samplings, sediments sampling, rock sampling and multi channel seismic observations as well as underway observations were carried out during the cruise to attain these objectives. We will present the outline of KH-10-7 cruise and the topics concerning tectonic history of the Conrad Rise briefly.

Keywords: Southern Ocean, Cryosphere, tectonics, sediment, Antarctic Bottom Water, global warming