

Deep circulation and property distributions in the Bay of Bengal and Arabian Sea

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Silica, nutrients and helium data from WOCE cruises I7N, I9N, I8N and I1 in the Northern Indian Ocean along with hydrographic data from the same cruises are used to examine the circulation below 1500 m and the distributions of these tracers in the Bay of Bengal and Arabian Sea. Preliminary examination of property maps along selected isopycnals suggest a cyclonic circulation pattern for the deep Bay of Bengal with relatively oxygen-rich, nutrients and silica-poor deep water entering through the West Australian Basin and exiting through the Central Indian Basin. Silica and nutrient values are higher in the western Bay of Bengal and dissolved oxygen concentration correspondingly lower there. In the Arabian Basin two previous surveys across the Carlsberg Ridge during subsequent monsoons in 1987 revealed the presence of a highly variable southeastward flowing boundary current supplying bottom water to this basin. While it was clearly present during the NE monsoon period of 1986-87, its presence was ambiguous during the weak SW monsoon of 1987. New data from two cruises (I1W and I7N) show the presence of this current in the bottom water during the SW monsoon period of 1995. The available data suggest a southeastward flowing boundary current supplying relatively cold, oxygen-rich, nutrients and silica-poor bottom water to the Arabian Basin from the Somali Basin during normal monsoon regimes.