

GEOTRACES (India)

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The Ministry of Earth Sciences (MoES), India accepted the nine proposals submitted under GEOTRACES (India) programme from various laboratories and universities. The ministry has approved a total of Rs. 20 crores (US\$ 4 million) for these projects for five-year duration. Majority of the funding will be utilised in buying clean sampling system and establishing a shore based state of the art laboratory to analyse TEIs in the water and sediment samples. In addition to this budget, the ministry will provide us the ship time required for sampling during this programme. The National Joint Scientific and Technology Advisory Committee (October 28, 2009) has identified the Oceanography Research Vessel *Sagar Kanya* to house the proposed clean sampling system to be procured under GEOTRACES (India) and first cruise with the clean sampling system for the GEOTRACES (India) will be carried out onboard ORV *Sagar Kanya* during January 15 – February 13, 2011 in the Arabian Sea following with a cruise in the Bay of Bengal during March April, 2011. Committee has allotted four cruises during 2010 for coastal research pertaining to GEOTRACES onboard Coastal Research Vessels *Sagar Poorvi* and *Sagar Paschimi*. One of the coastal cruises in western coast of India in the Arabian Sea is concluded recently (May 3 –May12, 2010). In addition, two geotracerers from India participated in the Japanese cruise Hakuho-Maru during November, 2009- January, 2010 in the Indian and Southern Oceans.

As discussed earlier, sampling related to GEOTRACES studies were done in the Arabian Sea, the Bay of Bengal and the Southern Ocean onboard *Sagar Sampada* and *Boris Petrov* during the expedition carried out during November – December, 2008 and January- March 2009 respectively. The sampling was done on the cruise track finalised in the Indian Basin Planning workshop. Dissolved Nd isotope compositions in the three vertical profiles in the Arabian Sea (Fig. 1) were measured showing significant variation.

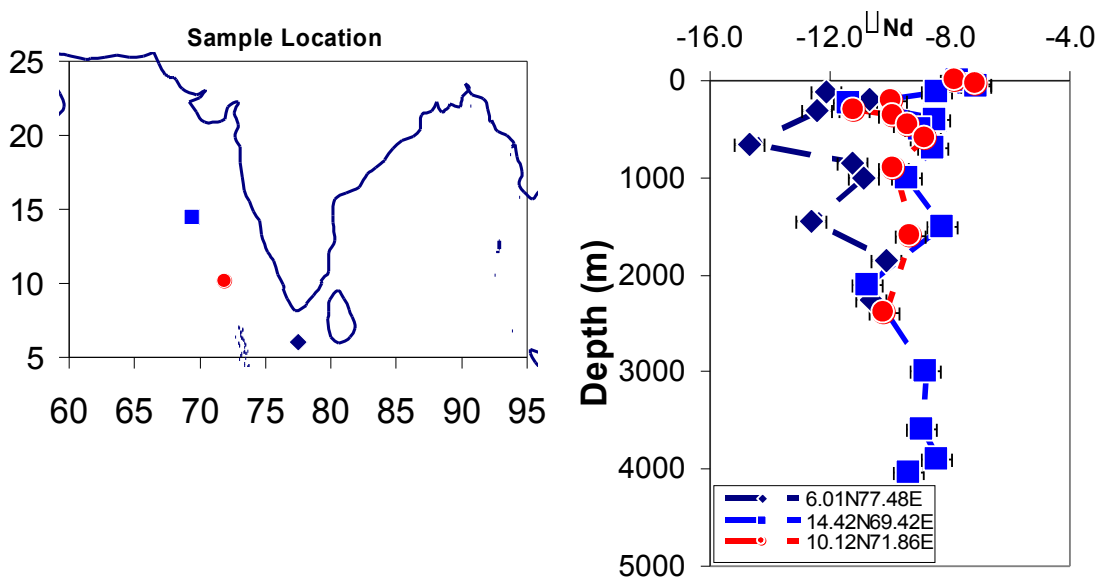


Fig. 1: Sampling location and dissolved Nd isotopic composition ϵ_{Nd} in the Arabian Sea water profile.

Dissolved Mo was analyzed in four Indian estuaries i.e. the Narmada, Tapi, Mandovi and the Hooghly, falling into the Arabian Sea and the Bay of Bengal respectively. Among these four estuaries, Mo shows nonconservative mixing in the Hooghly (Fig. 2) and the Mandovi with its significant removal in lower salinity ranges (0 to 15‰). Mo seems to be removed due to the local anoxia resulting from the widespread mangrove swamp. Available data on Mo supply ($2.0 - 2.6 \times 10^8$ mol/y) to the ocean and removal ($1.1 - 1.7 \times 10^8$ mol/y) from the ocean indicate a significant missing sink of Mo if it is in steady state with respect to input/output. The current study provides an estimate of an additional Mo sink in the range of 0.4 to 3.1×10^8 mol/y caused by the presence of mangrove swamps in the worldwide oceans.

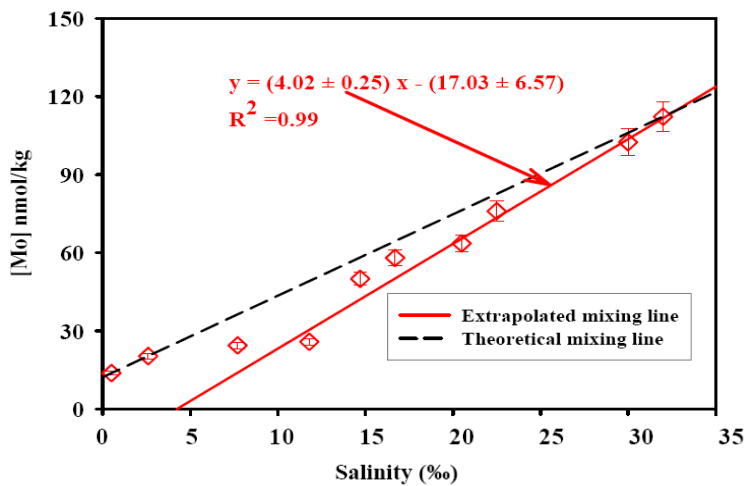


Fig. 2: Mo vs salinity in the Hooghly Estuary and the Bay of Bengal.

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