

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN INDIA

May 1st, 2021 to April 30th, 2022

Various research activities under the Indian GEOTRACES program are being pursued vigorously in India. Last year no new sampling was done. However, the samples collected in previous oceanographic research cruises in the Indian Ocean are being analyzed for trace elements and isotopes. Major stress is being given to understanding the sources of key trace elements in the Indian Ocean to assess their role in various processes operating in the region.

New results:

Dissolved Mn in the Indian Ocean

Biogeochemical cycling of dissolved Mn has been studied in the Indian Ocean, the Arabian Sea and the Bay of Bengal, the Andaman Sea and the southern Indian Ocean. Atmospheric dust deposition, riverine discharge, shelf sediments and hydrothermal sources seem to contribute significantly to the Mn budget of the Indian Ocean whereas Mn-oxy hydroxides, particle scavenging and biological uptake through biology and their export are important sinks of dissolved Mn.

Benthic Fluxes of Trace elements in the Indian Ocean

The importance of benthic fluxes to dissolved trace element budgets in the Indian Ocean has been evaluated by studying their distribution in the bottom and pore waters. Abundances of some of the trace elements are significantly elevated and controlled by redox conditions. The benthic fluxes of some of them are significantly higher in the central Indian Ocean.

New GEOTRACES or GEOTRACES-relevant publications (published or in press)

- ND Singh, SK Singh, Distribution and cycling of dissolved aluminium in the Arabian Sea and the Western Equatorial Indian Ocean. *Marine Chemistry* 243, 104122, 2022
- V Chinni, SK Singh, Dissolved iron cycling in the Arabian Sea and sub-tropical gyre region of the Indian Ocean. *Geochimica et Cosmochimica Acta* 317, 325–348, 2022
- V Goswami, SK Singh, R Bhushan, VK Rai, Spatial distribution of Mo and $\delta^{98}\text{Mo}$ in waters of the northern Indian Ocean: Role of suboxia and particle-water interactions on lighter Mo in the Bay of Bengal. *Geochimica et Cosmochimica Acta* 324, 174-193, 2022.
- Damodararao K., Singh S.K., Substantial Submarine Groundwater Discharge in the Estuaries of the East Coast of India and Its Impact on Marine Strontium Budget, *Geochim. Cosmochim. Acta*, 324, 66-85, 2022.

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