Goldschmidt 2022 Abstract
https://doi.org/10.46427/gold2022.11908

Inter-estuarine and seasonal cycling of particulate REEs in the Gulf of Cambay

ABUL QASIM, SATINDER PAL SINGH, SHIVAM SAHU AND ARYA A

Indian Institute of Science Education and Research Bhopal

Presenting Author: abul16@iiserb.ac.in

Particulate rare earth elements (REEs) provide a tool to understand sedimentary processes and sources in watersheds. To explore seasonal and inter-estuarine variability, concentrations of trace elements and REEs were measured in suspended sediments (>0.45μm) collected from surface and sub-surface waters of the Narmada and the Tapi estuaries during different seasons of 2016-2017. The overlapping ranges of σREEs in surface and sub-surface samples of each estuary negate grain size effects in the water column. Interestingly, non-monsoonal samples of both estuaries show a significant depletion of σHREEs owing to inter-seasonal mineral sorting as suggested by the La-Th-Zr and Ti-Cr-Ni plots [1]. Similar chondrite-normalized distribution patterns of LREEs>MREEs>HREEs and a mild negative Eu anomaly during different seasons indicate no seasonality in sediment provenance for each estuary. A mixed sediment signature of Deccan Basalt and UCC type materials is indicated by the La-Th-Sc plot. Further, the absence of Ce anomaly confirms that silicate fractions, rather than Fe-Mn (oxy)hydroxide coatings, are major carriers of particulate REEs in these estuaries.

References:

[1] Qasim, A., Singh, S. P., Ahmad, N., Argal, J., & Chandrashekhar, A. K., (2022). Inter-estuarine and seasonal to decadal variations of heavy metal pollution in the Gulf of Cambay, India. Environmental Monitoring and Assessment, 194, 1-22.