# Distribution of Redox Sensitive Elements (U, Mo, Re) in Bay of Bengal

SATINDER PAL SINGH[1*], SUNIL K. SINGH[1] and RAVI BHUSHAN[1]

[1]*Physical Research Laboratory, Ahmedabad*

** satinder@prl.res.in*

Bay of Bengal (BoB) receives ~1000 $km^3$ fresh water, ~$130\times10^9$ kg dissolved material and $2\times10^{12}$ kg suspended load annually from Ganga -Brahamaputra. Large fresh water supply to the Bay to Bengal gives rise to permanent stratification of surface seawater preventing the vertical mixing. Dissolved oxygen decreases up to 3µmol/l in the intermediate water depths due to stratification, creating an oxygen minimum zone (OMZ) in the water column. In this study, impact of OMZ on the distribution of redox sensitive elements such as U, Mo and Re have been investigated. Water samples were collected in seven depth profiles at ~ $2^o$ interval along ~ $87^o$ E transect from $5.8^o$ N to $21^o$ N along with some shallow depth profiles near the coast as shown in figure.1, during November, 2008. Suboxic conditions in top ~ 200 - 500 m range were found only north of $11.3^o$ N where oxygen content becomes less than 10 µmol/l. In surface waters, salinity, D.O., U, Mo and Re values vary from 24.5 ‰, 254.5µmol/l, 11 nmol/kg, 81.3 nmol/kg and 29.7 pmol/kg at ($88.1^o$ E, $20.6^o$ N) to 33.5 ‰, 218.8 µmol/l, 13.5 nmol/kg, 109.4 nmol/kg and 39.4 pmol/kg at ($87^o$ E, $5.8^o$ N), respectively. North - South gradient of U, Mo and Re contents in surface waters are due to the mixing of fresh water with sea water. Whereas results in the seven vertical depth profiles from open ocean conditions show U, Mo and Re concentration varying from 12.9 to 14.2 nmol/kg, 103.2 to 116.3 nmol/kg and 37.2 to 42.5 pmol/kg over the salinity and dissolved oxygen range of 32.1 to 35.1 ‰ and 3.2 to 218.3 µmol/l respectively, similar to those reported for other oceanic basins [1, 2]. These results indicate conservative behavior of U, Mo and Re in BoB water column without any dependence on oxygen content.

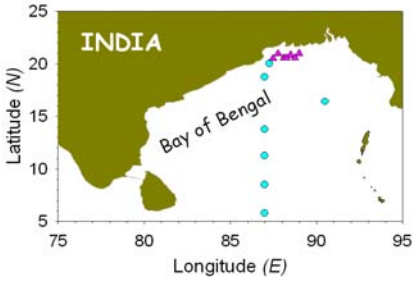


Fig.1: Sampling locations along ~ $87^o$E transect.

Keywords: Bay of Bengal; BoB; Arabian Sea; OMZ; U; Mo; Re; Suboxic; Salinity.

References:

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