

## WATER AND SEDIMENT QUALITY ASSESSMENT IN A TROPICAL MANGROVE ESTUARY

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The Hugli estuary is situated in the western part of the Sunderban gangetic delta and is a classical example of tide-dominated sink for contaminants coming from industrial and aquacultural wastes, domestic sewage, agricultural chemical applications, soil erosion, marine traffic and runoff from upstream mining sites. Physicochemical variables of water (temperature, salinity, dissolved oxygen, pH, turbidity, alkalinity, hardness, ammonia nitrogen, nitrate nitrogen, conductivity, total dissolved solids Biological oxygen demand and chemical oxygen demand) as well as sediments (organic carbon, pH and grain size) were also considered and correlated them with the level of contaminants.

The distribution of heavy metals in surface waters and sediments reveals a wide range of fluctuations, both intermetallic and seasonal. These variations can be affected by a number of physical and chemical processes, including vertical mixing, atmospheric fallout as well as wide variations in different environmental parameters. The descending order of the total concentration of metals in sediment and water is as follows : Fe>Zn>Mn>Cu>Cd>Cr>Pb>Hg with few exceptions while Co and Ni values were below the detection levels in majority of the cases. An elevated level of Fe in the sediments might be attributed to the presence of floating old rusty and stranded bergs. These bergs are major sources of particulate Fe which settles down and mixes with bottom. The highest concentration of Fe, Hg and Pb was recorded during the monsoon months (September-October) a period characterized by low salinity and relatively low pH of water. Such a seasonal variations in water and sediments was perhaps due to anthropogenic activities and land runoff during the monsoon floods. Phytoplankton activity might have also facilitated the seasonal variations of Fe as this metal is an essential one for the phytoplankton. Levels of dissolved metals registered a seasonal pattern, with an increase during late monsoon months (September-October), a period characterized by low salinity and relatively low pH of the water.