

Trace element geochemistry of Tambaraparni deltaic sediments, east coast of India

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Major (Al, Fe, Mn, Ti) and trace (Cu, Cr, Ni, Zn, Cd, Cr) elemental concentration were determined in both bulk samples and clay (< 2 μ size) fractions of sediments collected from 15 selected stations in the Tambaraparni River delta. Bulk samples show higher concentrations in all elements except Ti, Mn and Cr. Ti concentration is more in the riverine sediments and Mn concentration is meagre in the near shore deltaic sediments. Clay fractions in Deltaic environment show lower concentrations of Fe, Mn, Cu, Ni, Zn and Co. Higher values of Fe, Mn, Cu, Zn and Co are recorded in near shore environment. Interestingly, Cd and Cr are distributed in almost normal concentration in the study area. The interpretation of data shows that chemical constituents are mainly influenced by combination of several factors such as grain-size variation, Fe & Mn precipitation, composition and mineralogy of sediments and desorption of elements from the precipitates. This deltaic environment may act as a sink for the metals derived from marine and fluvial processes.

Geochemistry, mineralogy and micropaleontology of sediments from El Meleh lagoon, Tunisia

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El Meleh lagoon is a small coastal confined area (200 ha), close to Slimene, at NE of Tunis. The tidal regime of the Tunis gulf is very weak. The internal circulation of the water in the lagoon is very slow. No precipitation periods lead to exposure and desiccation of previously submerged sediments. This work contributes to estimate the anthropogenic input to the lagoon.

Three sediments sampling campaigns took place between 2001 and 2003 at surface and different depths. Analyses were done by INAA and ICP-OES, and XRD. Enrichment factors (EF) of trace elements are calculated after normalization to Al.

El Meleh sediments are mainly composed of quartz, calcite, clay minerals and minor amounts of aragonite, dolomite, halite and K-feldspar, associated to pyrite in the east part.

The marine channel samples present high EF's, mainly for As, Mn, Sb, Ni, Zn and Cr. Considering the granulometry and mineralogy of these sediments the enrichments found of those metals can be correlated with their concentration in carbonated organic debris. Anthropogenic inputs distribution observed in the lagoon can be explained as follows: a) those occurred in the western part are mainly due to the existence of a purifying station, the depository of urban solid wastes and the periodic discharges of small occasional streams ("so-called" oueds), passing through important villages, and b) those occurred at the eastern part are mainly derived from agricultural activities. Foraminifera and ostracode species agree with trace element distribution indicating different environmental conditions.