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Holocene Sea Level Change and Geochemistry of Sediment Cores Collected from the Estuary and Tidal Zones Between Cuddalore and Odinur, East Coast, Tamil Nadu, India.

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Five sediment cores were collected from the tidal flats and estuaries along the East Coast between Cuddalore and Odinur, Tamil Nadu, at about 50 cm water depth. The length of the sediment cores recovered is about 100 to 215 cm. Down core variations in organic matter, calcium carbonate, sediment texture, major metals (Fe, Mg) and trace metals (Co, Cr, Zn, Ni, Cu, Cd, Mn, Pb), have been analysed to understand the behaviour of trace metals and their probable source. The minerals are largely represented by quartz, feldspar and moderately rounded to well round garnet rich sand in all cores except for the (core IV) collected from Marakkanam, which are largely fine-grained. Cuddalore (core II, II and III) sediments are coarse grained and while those from Odinur (Core V) vary in sediment texture from coarse sand to silty sand to clay. Montmorillonite, Kaolinite and dehydrated Illite Vermiculite occur as clay minerals. The results reveal that Cr, Zn, Cu, Mn, Ni, Pb are high in concentration in all the sediment cores while the Co and Cd are higher in Cuddalore (core III), Marakkanam (core III) and Odinur (core V). These elements are in low amounts in the sediment cores of Cuddalore (core I, II). Higher Fe concentration in Odinur (core V) and Cuddalore (core II) sediment may be due to the variability of source rock exposed in this region. High Zn and Cu concentration were seen in Odinur (core V) and this is probably due to metal inputs from anthropogenic and sediment diagenetic sources.

Radiocarbon dates on shell, organic carbon at the base and intervals of the cores from Marakkanam (core IV) and Odinur (Core V) are 8200±230, 9170±290, 5540±430 yrs BP respectively. Data on sediment texture, mineralogy, organic matter content and supplemented by radiocarbon dates indicates that the deposition in the tidal flats and estuary has taken place in phases since the early Holocene period. High sea level during the Early Holocene period coupled with probable neotectonic activity brought about the coastal configuration changes. A comparison of radiocarbon dates from other sites along the East Coast, Tamil Nadu is also presented.