



## Sediment Characteristics of Tidal Deposits at Mandvi, Gulf of Kuchchh, Gujarat, India: Geophysical, Textural and Mineralogical Attributes

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### ABSTRACT

The textural and mineralogical characteristics of subsurface sediments along with Ground Penetrating Radar (GPR) data collected along the Western margin of India were used to understand the depositional environments and the provenance of sediments. Textural attributes such as mean, standard deviation, skewness and Kurtosis show fluctuations due to fluvio-marine interaction and it is well understood that the bottom sediments are enriched with muddy sand, which may be deposited by mean of tidal invasion. The abundance of very coarse silt to very fine sand indicates the prevalence of low energy environment. The Linear Discriminate Function analysis indicates the fluvio marine deposition of sediments under low energy condition. GPR data upto a depth of 5 m shows the stratigraphic sequences of very fine sands and coarse silt. Optically Stimulated Luminescence (OSL) dating of sediments implies that the tidal sediments had deposited between  $-30 \pm 1$  and  $-90 \pm 4$  years before Present. XRD studies results the dominance of K-feldspar and deficiency of clay minerals, indicating that most of the sediments are derived from hinterland. Studies indicate that the Provenance of sediments in the Mandvi area is not related to Indus delta even though a considerable part of Gulf sediments are deposited by the Indus River.

### KEYWORDS

Tidal Currents; Mandvi; Grain Size Analysis; XRD; GPR Data; OSL Ages

### Cite this paper

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