

**Project entitled "Geoscientific studies in parts of West Bengal coast and offshore --- inundation vulnerability assessment and coastal hazard preparedness"**

(Sanctioned by Ministry of Earth Sciences vide order no MoES/16/37/10-RDEAS dated 08.06.2011)

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Fieldwork, cruise and follow up laboratory studies on different parameters were done towards the objectives of the project. The sediment character and its processes in the inner continental shelf off Henry to Sagar Island coast and adjoining coastal belt is controlled by morpho-bathymetric pattern of the sea bed, sediment source, topography of the coast and near shore circulation pattern. The sea bed is shallow, gently sloping with mostly sandy substrata. Selective submarine erosion appears to be an important process here. The eroded sediments have been transported northward by the tidal current and accumulated near the coast forming shoals. The coasts have experienced erosion and accretion sector wise in phases resulting fluctuation of shorelines. The ancient intertidal zone and part of back shore of the Henry Island coast which was characterized by very low lying swampy/ dense mixed jungle with a clayey bottom (Toposheet 1969) is now submerged under the sea. The modern sands from the near coastal water are now accumulating on the present intertidal zone. Palynological studies indicate that high salinity mangroves (*Rhizophora*, *Excoecaria*) were in the seaward side of the ancient Henry Island coast, whereas low salinity mangroves (*Sonneratia*) were present in the landward part. The shore parallel bar near the Bakkhali coast might have been formed by disposition and redistribution of offshore sediment load by long shore current. The sediments in this part of inner shelf are mostly fine to very fine sand and derived mainly from Ganga River system. Quartz, feldspars and mica are the dominant detrital minerals. Their distribution pattern indicates two proveniences like The Himalayan and nearby quaternary sediments. Studies indicate that inputs from Orissa offshore (sediments derived from peninsular rivers) are negligible. The micro textures of the quartz grains (under SEM) shows mechanical impact features, perhaps resulted from subaqueous collision in a high energy littoral environment. There are few benthic foraminifera (*Asterorotalia trispinosa*, *Elphidium incertum*, *Elphidium advenum* and *Valvulineria sp.*), recovered from the sandy substrata of inner shelf. These might have been transported from the clayey seabed of middle shelf.

Further fieldwork, laboratory studies and data processing are being continued.