



Variation of sediment distribution in the submarine delta of the Ganges-Brahmaputra - high and low sealevel situations

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Two depositional modes determine the dispersal and disposal of the huge mass of detritus transported by the Ganges-Brahmaputra from the Himalaya to the Bay of Bengal. During the recent high sealevel most of the annual fluvial fine-grained input of 109 t is deposited in the delta islands and the submarine delta. 20 - 30 % of the input has been deposited in the submarine foreset and bottom beds, 10 % are accumulating in the shelf canyon "Swatch of No Ground" (SONG) with very high sedimentation rate of 20 - 50 cm per year. Episodically a small portion is fed along discrete-channel to the deep-sea fan of the Bay of Bengal. The submarine delta annually progrades about 15 m southwards. Clay, silty clay and silt layers are deposited in almost perfect top, fore and bottom set beds arranged in a sigmoidal structure. The perfect structure is affected by creep mass movements probably due to earthquakes in 5, 25, 50, and 250 years ago. The SONG is rapidly filled by graded storm deposits with a recent annual (20 - > 50 cm) sedimentation rate resulting in a Holocene thickness of >1 km. At the centre of the channel floor a small 20 - 10 m deep channel indicates minor turbidite flows out of the SONG to deep-sea fan.

The high flux of the fluvial terrigenous material to the submarine delta indicates the urgent need for an integrated coastal management of southern Bangladesh. Concepts have to be developed to entrap more material passing through the southern delta to cope with the imminent submergence through the combined effects of the long-term tectonic subsidence, the mid-term of the compaction of the Holocene sediment, and

the recent anticipated rise in sealevel.

During the glacial sealevel low stands the sedimentary pattern had been drastically changed. The glacial coastal zone was almost sediment-starved. Terrigenous material was supplied in small quantities presumably from an eastern source of the Chittagong hills. The regressive sealevel was recorded by a 10 km broad sequence of oolitic beach ridges with the youngest ridge representing the lowest glacial sealevel at a present water depth of 125 m. Most of the sedimentary supply from the glacial rivers seems to be directly fed into the SONG. Mobilized by turbiditic currents this material was spread into the deep-sea fan. Especially the Early-Middle Holocene increasing intensity of the transport capacity of the monsoonal rivers is recorded in the rapid built-up of the mid-fan channel-levee complex. Along the rim of the glacial SONG sediments rich in biogenic carbonate accumulated documenting the function of the SONG as a direct transport funnel for the fluvial input to the deep-sea fan.