maps, georeferencing of remotely sensed data were performed until the root mean square error (RMSE) resulted in <1 pixel. Image enhancement using histogram equalization was conducted for satellite data in order to increase the interpretability of features. In addition, different band combinations were tested in relation to specific targets to be mapped. It was found that bands 4, 5, 2 for the TM and ETM+ and bands 4, 5, 7 for MSS were particularly useful to detect the changes in river morphology. For ASTER, we used only VNIR that includes bands 1, 2, 3. A detailed analysis of the spectral signatures of terrain features added some important elements both to geometric and textural characteristics of the landform units. The subsequent systematic interpretation was performed by visually interpreting features present across the river basin. Three types of information were identified based on features color, tone and texture as active course, sandbar and vegetation bar, and finally on-screen digitization was performed to generate vector-based datasets. These vector datasets were edited and leveled with ArcGIS (9.2), and afterwards converted to raster to evaluate river shifting, erosion and accretion patterns. Mean daily discharge data were processed to mean monthly values and correlated with the morphological information. The analysis showed that river shifting, channel widening in terms of lateral erosion and narrowing became the major geomorphic characteristics across the Ganges in recent years. In some places channel widening became acute resulting in the rapid loss of floodplains. The sinuosity index showed that the river became wandering in response to low flow during dry season. Accretion and erosion statistics indicated that during 1977-1989, 26,465 ha areas were eroded and 10,648 ha were accreted. In contrast, between 1989 and 2000, total eroded lands were 11,433 ha, meaning that the erosion was reduced during this period. Similarly, accretion was also reduced. Between 2000 and 2007, significant reduction in eroded lands was observed, only 5,619 ha. However, 30 years changes in erosion and accretion patterns showed that 33,209 ha of lands were lost due to erosion and 10,954 ha of lands were deposited, illustrating the lost of lands due to erosion was higher than that of accretion. Mean monthly discharge analysis showed that after the construction of Farakka barrage in India, the hydrological regime has been changed drastically leading to the considerable decrease in the dry seasonal flow. The result of the study should have substantial implications as the changes in river morphology and sediment flux would influence the delta building process in the active part of the Ganges basin in Bangladesh.

The initiation, development and degradation of Indus delta through time

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The Indus River and Delta system was formed shortly after the collision between the Indian and Eurasian Plates prior to 45 million years ago. During, the Holocene, vast deltaic complex in southern Sindh experienced abandonment of several creeks due to frequent natural channel avulsions. Abandoned Indus delta channels have been reworked by tides all along the coast into dendritic tidal creeks. The tidal creek network appears to be most extensive and mature east of the present mouth of the Indus. The lobate delta of the Indus formed under arid climatic conditions under highly variable river discharge, a moderate tidal range, extremely high wave energy, and a strong monsoonal wind system. A stronger wave influence along this part of the coast compared to conditions further east is suggested by the frequent occurrence of drumstick-shaped barrier islands, characteristic of island systems significantly influenced by both waves and tides. Because of the high sea-level stand, the impact of fluvial sediment is not strong enough to maintain a supply of coarse sediment to the deep-sea. The delta extends to the east into the Great Rann of Kutch, a vast mudflat area that is invaded by storm surges during the summer monsoon.

Seaward of its delta, the Indus is transformed into a complex and spectacular distributory system which has created the world's second largest submarine fan in the Arabian Sea. The recent multi beam and seismic data collected from offshore delta shows some exciting results about the lateral and vertical extend of the vast distributary system even in areas where they were least expected. It appears that the seismic events in addition to flesh floods are some how responsible for the architecture of the distributary system.