



## **Sediment transport from the shallow to the deeper shelf by tropical cyclones: an example of the Ganges-Brahmaputra Delta, Bangladesh.**

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Tropical cyclones massively impact the coast by mobilizing and redistributing sediments from the inner shelf and the outer coast. Part of the mobilized material is moved during frequent inundation onshore and further inland, another part is moved along the coastline or more frequent to deeper depocenters on the shelf. Here we report on the 357 cm-thick sequence of graded beds, which were deposited in the 270 m-deep shelf canyon off Bangladesh during the last 20 years. The graded beds in the canyon significantly differ from graded turbidite sequences as their subunits are not well sorted containing silt and clay even in the lower most units. The bad sorting of the graded beds and their draping of the canyon floor and flanks indicate a transport by hyperpycnal flows, which were generated in the zone of high turbulence of breaking waves. Driven by their higher density, they flow along the slope gradient and descend into the canyon.

High-resolution grain-size studies by laser diffraction analysis of 0,5 cm-thick continuous samples allow defining individual depositional events which can be related to the known sequence of frequent tropical cyclones. As expected, more intense cyclones produce thicker graded beds with a higher sand content than weaker or more remote cyclones. Depositional effects partly mask the correlation of cyclonic transport power with the qualities of the graded beds. The rapid accumulation in the canyon proves the massive power of tropical cyclones in transferring sediment from the shallow shelf into deeper compartments.