## Geochemical investigation of the Meghna River basin sediments in Bangladesh

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The Meghana River basin is located in the eastern part of the Bengal Basin of Bangladesh. Geochemical composition of recent sediments from the Meghna River in Bangladesh has been investigated to evaluate maturity, source-area weathering and provenance. Major oxide and trace element concentrations normalized to the upper continental crust (UCC) show that the sediments are depleted in Na<sub>2</sub>O, CaO, MgO, K<sub>2</sub>O, Fe<sub>2</sub>O<sub>3</sub>T, Sr, and Ba, while enriched in Zr, Th, Ce, and Y comparatively to the UCC. Depletion of these mobile elements indicating destruction of plagioclase and K-feldspar during progressive chemical weathering pathways. Enrichment of these high field strength elements is mainly control by heavy minerals. The Meghna River sediments are characteristically low geochemical and mineralogical maturity, and classified as litharenite, shale and wacke. The Chemical Index of Alteration (CIA) and Plagioclase Index of Alteration (PIA) values ranging from 61 to 71 and ~62 to 75, respectively, suggesting moderate degree of chemical weathering in the source rocks. Chondrite-normalized REE distribution patterns display high LREE enrichment, almost flat HREE segment ( $La_N/Yb_N = 7.62$  to 8.73;  $Gd_N/Yb_N = 1.55$  to 1.74), and negative Eu anomaly ( $Eu/Eu^* = 0.49$  to 0.69) reflecting a felsic provenance. Discriminating diagrams also suggest that the studied sediments were mainly derived from felsic detritus, and the compositions are very close to the average rhyolite, granodiorite, granite, and UCC. Geochemical characteristics of the Meghna River sediments indicate active continental margin and passive margin depositional setting.

Keywords: Geochemistry, Recent sediments, Source-area weathering, Provenance, Meghna River, Bangladesh