

BIOGEOLOGY AND SEDIMENTARY GEOCHEMISTRY: A CASE STUDY IN BATTICALOA LAGOON, SRI LANKA

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The knowledge of biogeochemical processes of recent sedimentation is a key to assess the paleoenvironments. Suspended sediments are useful probes to understand such environments as they are fine particles, which can adsorb many elements and are food for several organisms. Hence this study attempted to evaluate the quality and quantity of suspended sediments (SS) in the shallow peripheral environments of the Batticaloa lagoon, Sri Lanka. A total of 34 water samples were collected from the lagoon and physical parameters were recorded. Suspended sediments were extracted using 45 µm quartz fiber filters and measured on dry weight basis. The composition of the collected samples and SS were analyzed using X-ray fluorescence method. The peripheral environment of the lagoon water was characterized with low oxygenated (range: 0.4-21.3 mg/l, average: 2.4 mg/l) brackish water (salinity range: 0.1-28.8 ‰, average: 7.5 ‰) with an average pH of 7.32. Results suggested that the concentration of suspended sediments does not depend on the physical parameters of water in the lagoon peripherals. Higher concentrations for Zn, Cu, Ni, MnO and P₂O₅ were observed in SS with respect to the surface sediments. Principal component analysis indicated that the inorganic fraction of SS was mainly composed of weathering products of the country rocks. This implies that the micro-biological activities, especially planktons of tropical shallow marine environments can change the chemical compositions of SS.
