Depositional History of Sediments in Eastern Lagoons of Sri Lanka: Sedimentological and Mineralogical Evidences

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Characteristics of sediments and minerals are useful in identification of paleo-depositional environments. Specially, clay mineralogy shows the specific environmental conditions that are related to the marine or terrestrial environments. Present study used sedimentological and mineralogical characteristics of recent age sediments of Batticaloa lagoon and Kiran lagoon to interpret the depositional environments. Four sediment core samples with an average height of 1 m were collected from both lagoons and analyzed for temporal grain size distributions using mechanical sieving techniques. Vertical profiles of sand and clay mineralogy were investigated by grain counting technique, X-ray diffraction and Fourier-transform infrared spectroscopy. Medium size sediments are the dominant type indicating prevailed moderate energy conditions for the history. Several coarse grain events are recorded in cores which might be originated from storms. Statistical parameters of sediment grain size and Quartz-Feldspar-Lithic fragments triangular diagram of sands show matured riverine continental origin for the depositional history. Main clay minerals of the depositions include kaolinites, smectites, illites and chlorites. Clay mineral profile also confirms the continuous sedimentation history for the past centuries. The results of the study conclude that the recent history of the sediment depositions in eastern lagoons have not been affected by considerable environmental changes except some coarse events such as high energy storms.

Keywords: Clay mineralogy, Sediments, Eastern lagoon, Depositional history, Sedimentological