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Sedimentary Characteristics of Offshore Sediments in Maggona to Induruwa, South-Western Region of Sri Lanka

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Abstract

Particle size is a fundamental property of any sediment which can provide important clues on its provenance and the mode of transport. During depositional process the particle size is characterizing with the energy conditions of the environment. A study on grain size distribution, textural and statistical parameters of the south western region: Maggona to Induruwa was carried out to interpret the sediment deposition and energy dispersion status of the area to understand the relationship between them. Twenty eight surface sediment samples were collected using Van-veen grab .Sieve analysis was done using mechanical sieve shaker at 1/2 phi intervals and statistical parameters were obtained using “GRADISAT” software following Folk and Ward (1957) method for classifications. The visual observations revealed that majority of the sediments are typically light yellow to olive green in color and contain 5-20% biogenic carbonates with exception of six samples which composed of totally shell fragments. Sediments grabbed around Bentota Ganga inlet are sub rounded to rounded in shape while the majority of other locations are of rounded to sub angular grains. Larger and angular sediments close to rocky islands show that they are younger sediments and perhaps derived from nearby rocks. The mean grain size of the sediments range between 1.55-4.36phi with an average of 3.52 phi, indicative of very coarse silt to medium grained sand. The sediments fall under fine sand to very fine sand (50% of total samples) are localized near areas where the bottom is rough and rocky. Among the analyzed samples, 45.5% are well, 22.72% moderately, 18.18% moderately well and 9.09% poorly sorted. The ~68% of samples are exhibited unimodal distribution and all samples of bimodal distribution are poorly or moderately sorted and it probably due to debris of organic origin mixed with the normal bottom sediments. Majority of the sediments (~54%) are negatively coarse skewed and are localized opposite headlands. It indicates the selective removal of fine grains by the action of high energy waves which dissipate on headlands. The Kurtosis varies from 0.56 to 2.95 phi. Kurtosis of the inlet face of Bentota Ganga shows mesokurtic to platykurtic nature indicating high energy and wide distribution of sediments. Moreover, the sediments in north-south (towards south) direction shows leptokurtic nature except near headlands, which indicates the moderate energy conditions toward south.

Keywords: Statistical parameters, Sediment distribution, Skewness, Kurtosis