

Characteristics of Coastal Sediments of the West Coast of Sri Lanka; from Negombo to Colombo

Sachini Hetti Arachchi¹, Pathmakumara Jayasingha²

Abstract

This research paper discusses the characteristics of the sediments of the west coast of Sri Lanka with special reference to a coastal segment from Negombo to Colombo. The main objective of the study is to study the textural and mineralogical characteristics of the coastal sediments in the coastal zone between Colombo and Negombo. In addition, studying the relationship between the texture of the coastal sediments and sea waves have also been focused. Textual characterization of 60 samples of coastal sediments at high tide, low tide, and in between 20 locations along the study area was conducted while a mineralogical analysis to identify the mineral compositions was also done. Data received from the particle size analysis was further filtered by statistical analysis. According to the particle size analysis, it is observed that a similar size of the sediment particles at high tides was maintained, hence the energy of the waves at night times seems more or less equal everywhere along the study area. Comparatively coarse particles were recorded at low tide strand while showing high energy waves at day time. At Pitipana coast, the percentage of 2 mm grain size is higher than the other locations while Porutota and Jagawatta areas consist of sediments with a grain size of 0.125 mm. Further, it can be identified that 50 % of the sediments in all cases are composed of 2 to 0.5 mm grain sizes showing the coast to medium grain size distribution. It is well noted with the D50 values calculated as 0.60 at high tide, 0.68 at medium tide, and 0.71 at low tide. The calculated values of cumulative coefficient (CU: 3.3- 1.18) and Coefficient of Curvature (Cc: 1.75 – 0.93) show that the particles of the coastal sediments in the study area have been well sorted indicating further the influence of constant wave action. As per the mineralogical analysis, quartz is the dominant type of mineral followed by magnetite, rutile, biotite, ilmenite, and some bio clasts. With the present study, it can be concluded that there is a directly proportional correlation between particle size and wave energy.

Keywords: Coast, Sediments, Texture, Wave strength, Soil particles

¹ *Department of Geography, Faculty of Arts, University of Colombo; hesachi227@gmail.com*

² *Department of Geography, Faculty of Arts, University of Colombo; jpathma@geo.cmb.ac.lk*