

Factor controlling the total exchangeable cation of estuaries and coastal sediment

ABSTRACT

A preliminary study on exchangeable cation of sediments was conducted at 56 sampling stations along the Straits of Malacca in order to examine the most significant factor that control the total exchangeable cations in estuaries and coastal sediments. Physico-chemical characteristics (pH, salinity, and electrical conductivity), and organic matter content were determined in the laboratory. Total exchangeable cations (Na^+ , K^+ , Ca^{2+} , and Mg^{2+}) of sediment samples were analysed using flame atomic absorption spectrophotometer. The pH (2.8567.97), electrical conductivity (8.92646.37 S/cm), salinity (4.97630.13 ppt), organic matter (2.34614.76 %), exchangeable sodium (23.986123.65 meq/100 g), exchangeable potassium (0.0563.08 meq/100 g), exchangeable calcium (3.42618.98 meq/100 g), and exchangeable magnesium (5.96624.12 meq/100 g) of estuaries and coastal sediments showed variations. Principal component analysis employed in this study clearly shows that exchangeable Na^+ was controlled by salinity which is mainly contributed from halite minerals (NaCl) and electrical conductivity. Thus, halite does play an important role in influencing the total exchangeable cations in estuaries and coastal waters.

Keyword: Coastal sediments; Exchangeable cations; Estuaries; Straits of Malacca