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Physical Characteristics and Distribution of Bottom Sediments from Kelantan River Delta towards South China Sea Continental Shelf, Malaysia

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The preponderance of sedimentological study in Kelantan River Delta onwards South China Sea shelf leads to the extensive work on the sediments distribution and characteristics. The sediments of the area vary from very poorly sorted to very well sorted containing a mixture of sand, silt and clay and can be divided in essence into three groups. Textural analyses of 65 surficial sediments showed that group 1 (silty) accounted for 65% to 85% of silt size, group 2 (silty sand) is dominated by sand ranging from 64% to 88% with the silt size varies between 12% to 23% and group 3 (sandy) is made up of 78% to 100% sand and 0% to 22% silt. Mineralogical analyses showed that the samples are dominated by polycrystalline sutured and straight boundaries quartz as well as monocrystalline quartz. Small amounts of feldspar, mica and lithic fragments are present with abundance amounts of organic materials. A semi-quantitative analysis of quartz grains surface texture and morphology was used to interpret the history of grains from which six types of grains have been recognized; (a) irregular shape with various angle; (b) irregular surfaces with fractured plate and long fragments shape; (c) well rounded, with V marks, oriented etches pits on surface and protruding edges; (d) irregular breakage with rough texture on planar surface, adhering particles with uneven grooves and V marks dimension of <2µm; (e) irregular shape with rounded protruding edges, rough surface with oriented etches pits and V marks with dimension <2µm and adhering particles with trail of abrasion; and (f) very rough surface with irregular shape and protruding edges, lots of cracks and detachment of small particles and etching holes, V marks > 2µm dimension. In term of distribution it can be divided into two sedimentological provinces according to the interrelationship between grain size, mineralogy, textural and morphology of sediment. Province A which covers the shallower part of water in the study area accumulated a large amount of silt and clay that could be originated from the nearby land areas brought down by the Kelantan River and deposited as recent sediments. While Province B which covers most of the outer part of the shelf area contained recent and relict materials with lesser amounts of inland sediments input. The relict sediments consist of oceanic sub-arkosic sand that were deposited circa 5000 yr. BP during the last sea-level low stand.

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