

Abstract of thesis presented to the Senate of Universiti Malaysia Terengganu  
in fulfillment of the requirements for the degree of Master of Science

**SEAFLOOR MORPHOLOGY AND SEDIMENTOLOGICAL  
CHARACTERISTICS OF THE KUALA TERENGGANU NEARSHORE  
AREA**

**MOHAMAD ANAS BIN MOHAMAD ANNUAR**

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The Kuala Terengganu nearshore area has been studied in order to gain insight of the seafloor bathymetry dynamics. The seabed profile, textural properties and depositional process of the surface sediment were determined during pre- and post-Northeast monsoon periods at three distinct environments. The seabed is heavily influenced by the Northeast monsoon season which alters the profile gradients and induces accretion and erosion at several parts of the nearshore. Meanwhile, grain size trend analysis of the grain size distribution of the nearshore seafloor sediments at these various sites show varied nature in their mean grain size as well as values of sorting and skewness. Based on this evidence, the statistical parameters of grain size distributions thus allowed recognition of dissimilar environments. Furthermore, grain size trend analysis also shows that the grain size distribution was significantly affected by the monsoon season which is

characterized by strong winds, huge waves and heavy rainfall. The monsoon increases the dynamism, thus inducing greater sediment movement and profile modification in the nearshore. During the post-Northeast monsoon, the sediments were coarser after facing higher amplitude of forces such as waves and currents. The beach sediment was eroded for the duration of this season and transported seaward. Sediments were better sorted and seaward-fining textural gradient were obvious. In general, transportation and deposition of sediment suggest that sediment characteristics at each environment are reflected by the difference in energy condition (waves, currents and wind action) of the coastal environment.

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**MORFOLOGI DASAR LAUT DAN CIRI SEDIMENTOLOGI KAWASAN  
PESISIRAN PANTAI KUALA TERENGGANU**

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Kawasan pesisir pantai Kuala Terengganu telah dikaji untuk mendapatkan gambaran mengenai dinamik dasar laut. Profil dasar laut, ciri-ciri tekstur dan proses pegenapan sedimen permukaan dikaji sebelum dan selepas musim monsun Timur Laut di tiga persekitaran yang berbeza. Dasar laut adalah amat dipengaruhi oleh musim Monsun Timur Laut yang mengubah kecerunan profil dan mendorong pertambahan dan hakisan di beberapa bahagian pesisir pantai. Sementara itu, persampelan dan analisis kecenderungan taburan saiz butiran sedimen dasar laut berhampiran pantai menunjukkan variasi pada nilai saiz butiran dari segi min, susunan dan kepencongan. Berdasarkan bukti ini, parameter statistik taburan saiz butiran membuktikan bahawa persekitaran yang berbeza mempunyai nilai taburan yang berbeza. Analisis kecenderungan saiz butiran juga menunjukkan bahawa taburan saiz butiran amat dipengaruhi oleh musim tengkujuh yang melanda kawasan ini. Musim tengkujuh dicirikan oleh angin yang kuat, ombak besar dan hujan lebat. Peningkatan faktor- faktor

fizikal ini menyebabkan pergerakan sedimen dan perubahan profil dasar laut. Sebelum musim Monsun Timur Laut, sedimen adalah kasar selepas menghadapi ombak dan arus pada kadar yang lebih kuat. Sedimen pantai juga terhakis sepanjang musim ini dan dibawa oleh arus ke kawasan laut dalam. Penyusunan sedimen menjadi lebih baik dan kecerunan tekstur adalah lebih halus ke arah laut. Secara umumnya, pengangkutan dan pemendapan sedimen menunjukkan bahawa ciri-ciri sedimen di setiap persekitaran ini ditunjukkan oleh perbezaan keadaan tenaga (ombak, arus dan tindakan angin) di kawasan sekitar pantai.