

# **BASIC KNOWLEDGE IN MARINE SCIENCES**

Edited by

Normawaty Mohammd-Noor



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## Chapter 15 Beach Profile

Shahbudin Saad

Institute of Oceanography and Maritime Studies, Kulliyah of Science, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, 25200 Kuantan

### Introduction

The morphology of a shoreline (beach) is a result of many individual sediment transport events caused by a succession of waves. In this sense, the shape of the beach and nearshore region may be thought of as representing a form of averaging over time (Reeve *et. al.*, 2004). The shape of a beach (its water depth as a function of distance offshore) is called the beach profile. It responds to the environmental conditions (waves and water levels) imposed upon it and if such environmental conditions are constant, the beach profile should remain relatively constant (equilibrium profile) (Kamphuis, 2000).

The beach extends from the low tide line landward across the generally unvegetated sediment to the next geomorphic feature in the landward direction, which may be a dune, a cliff or some other facet of human development (Fig.1). The nearshore environment, where the beach ends begins at the low tide line and extends to the outer limit of the bar and trough topography that typifies this innermost subtidal environment (Davis & Fitzgerald, 2004). Gently sloping beaches with wide intertidal zones have a longitudinal arrangement of ridges and runnels, or troughs. Steep beaches with narrow intertidal zones are characterized by prominent berms, which are usually built up from the constructive action of waves.

The beach profiling method is a simple surveying technique used to measure the contour of a beach. Beach profiles provide useful information for coastal monitoring studies and management processes (Andrade & Ferreira, 2006). The long-term beach profiling data could provide a good source of information in beach morphology study. The measurement of cross-