CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Malaysia is known as one of Asian country which located near the equator that experience hot and humid climates throughout the year. Malaysia is mostly affected by the climate change that increased seawater levels, rainfall, flooding risks, and leading to extreme droughts.

There are two dominant monsoons wind season in Malaysia which are the Northeast Monsoon and Southwest Monsoon. The Northeast Monsoon is generally carried in more rainfall compared to the Southwest Monsoon. Thus, the Northeast Monsoon is normally addressed as wet season which starts from November to March while the Southwest Monsoon is addressed as dry season which starts from May to August.

In Malaysia, the seasonal wind flow patterns basically conjugated with the local topographic features which determine the rainfall distribution patterns over the country. The Peninsular of Malaysia experienced two seasonal changes which are Northeast monsoon known as wet season from November to March and Southwest monsoon known as dry season starting from May to August.

During Northeast monsoon, the east coast region of Peninsular Malaysia will experience heavy rainfall and storms together with strong wave condition caused by strong onshore wind which can contribute to a higher possibility of erosion rate at the beach area (Wong, 1981; Husain et al., 1997). This condition usually is correlated with
the increasing in the groundwater table level. During this season, which occurs annually from November to February, the waves are larger than normal due to the strong onshore winds and thus can cause comparatively more damage (Hill, 1996; Wong, et al., 1979).

However, during the dry season which occurs from May to August, it experienced lesser rainfall which contributes to a significant drop in groundwater table level and will enhanced the beach accretion process. Significantly, it is believed that the seasonal variations factor in Malaysia influenced the erosion during wet season and accretion during dry season.

1.2 PROBLEM STATEMENT

Johor is one of the coastal states in Malaysia with the longest coastline facing the South China Sea in the east, the Strait of Malacca in the west and the Strait of Johor in the south. Coastal resources are the main source of income towards industrialization and economic development in Johor especially along the coastal area. Tourism plays an important role in the state’s economy. Desaru is situated on the southeast coast of the district. It is located approximately 88 km east of Johor Bahru, on the South China Sea. Desaru is very close to the developing country, Singapore.

The seasonal variation experienced by Peninsular Malaysia has caused erosion and accretion to the beach morphology in Malaysia and Desaru beach is one of the highly affected coastal area along the shoreline. Among the significant factors that are suggested by many researchers are infiltration and exfiltration that occurs due to high or low condition of the beach groundwater.

During wet season which brings heavy rainfall it contributes to higher groundwater elevation and in this condition, the exfiltration occurs. This explains why the beach tends to erode when groundwater is high during the wet season. While during the dry season, the groundwater condition is low and infiltration occurs. This may lead to the beach accretion process. These two factors explain why the groundwater table with high or low level affect the erosion and accrete. This situation can be concluded
that beaches in Malaysia are likely to erode during the wet season and accrete during the dry season.

1.3 OBJECTIVES

The main purpose of this study is to determine the beach morphological changes during dry and wet season which was conducted at Desaru beach, Johor. The objectives of this study are:

i. To collect and analyse rainfall and temperature data at Desaru beach during wet and dry seasons.

ii. To identify the size and moisture content level of sandy beach at study area.

iii. To study the relationship between hydrological data and beach morphological changes.

1.4 SCOPE OF STUDY

The scope of study is mainly focused on the beach morphological changes during seasonal variations which are wet and dry seasons. The study was conducted at Desaru Beach, Johor. From the study area, the data was collected by field works which involves collecting rainfall and temperature data, sand samples from the site and the beach profile data during these two seasons. The collection of data was conducted from May 2014 until March 2015. Basically, from May 2014 to March 2015 the wet and dry seasons was occurred.

Then, after all the data and sample was obtained, the laboratory works was conducted to determine the moisture content of the samples taken from the site and the grain size classification of the sample of sand.

Table 1.1 shows the percentage, number, and length of eroded beaches experienced in Malaysia. Malaysia has 4,809 km long with 223 numbers of disturbed or undisturbed eroded beaches. According to DID (2012), Johor experience the highest