CHAPTER 1

INTRODUCTION

1.1 Introduction

The main challenge in land use and land cover changes using the remote sensing data which how to provide the accurate and timely geospatial information. Urban growth has been long considered a sign of regional economic vigor, but its benefit are increasingly gave negative impacts, to ecosystem, environment, also including about the road traffic, air quality, loss of farming area, social fragmentation and infrastructure cost. Natural Resource Management, Planning and Monitoring programs depend on accurate information about the land cover in a region.

The growing of population and the increasing of socio-economic had create pressure on land use/land cover which lead to unplanned and uncontrolled changes in LULC (Seto, K.C.,2002). Its also give a big impact in biodiversity loss, global warming, and increase the percentage of natural disaster-flooding can be happen. Available data on LULC changes can provide critical input to decision making of environment management and planning the future more better (Seto K.C.,2002,Prenzel, B, 2004).
Methods for monitoring vegetation change range from intensive field sampling with plot inventories to extensive analysis of remotely sensed data which has proven to be more cost effective for large regions, small site assessment and analysis. Satellite remote sensing is an evolving technology with the potential for contributing to studies for land cover and change detection by making globally comprehensive evaluations of many environmental and human actions possible.

Satellite image data enable direct observation of the land surface at repetitive intervals and therefore allow mapping of the extent and monitoring. This problems lead to using classification detection by using optical remote sensing data, assess the accuracy of multi temporal classification and change detection and then, analyze urban growth patterns of the study area. The study area of this research will be Kuantan City, Pahang Darul Makmur.

1.2 Problem statement

In an urban environment natural and human-induced environmental changes are of concern today because of deterioration of environment and human health. The study of land use/land cover (LU/LC) changes is very important to have proper planning and utilization of natural resources and their management. Remote sensing has become an important tool applicable to developing and understanding the global, physical processes affecting the earth. The first challenge in remote sensing on how to derived land use map by using optical satellite image data. In order to classified the image, it will using the optical remote sensing data that capture the desired image and easy in developing to the tools.

A variety studies may have addressed to identified the accuracy of land use map, but in this study, one of the method been selected for to determine the accuracy. Other than that, problems that might be faced are on how to calculate the accuracy of derived land use map. By using remote sensing data, there some of algorithm that can be used to provide accurate and timely geospatial information of image being captured. By
histogram equalization that also can improve the image quality and achieve better classification accuracy.

Lastly, that might be a issue in this research are how to calculate land use changing of multi temporal optical satellite image data on Kuantan City. There will cause some errors in the classification of the land use changing.

1.3 Objective

The aim of the project is about research on land use / land cover classification and change analysis by multitemporal remote sensing data. The aim will be supported by 3 objectives. the objectives are:

- To derive land use map from optical satellite image using classification method.
- To access the accuracy of derived land use map.
- To calculate land use changing by using multi temporal optical satellite image.

1.4 Scope

In this research, have its own scope that can be the limitation. My research area are Kuantan city, Pahang Darul Makmur. Classification method that been used only are optical satellite data. The urban growth analysis are just only between two land use data.

1.5 Thesis Organization

This thesis consists of six (6) chapters. Chapter 1 will discuss on introduction to system/research.