

UNIVERSITI TEKNOLOGI MARA

**CHANGE DETECTION IN MANGROVE FOREST
USING LANDSAT NDVI AND LST**

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Thesis submitted in fulfillment
Of the requirements for the degree of
Bachelor Science of Geomatics

Faculty of Architecture, Planning and Surveying

JANUARY 2018

AUTHOR'S DECLARATION

I declare that the work in this thesis/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Mangroves are a group of trees and shrub that live in the coastal intertidal zone and it is an important ecosystems that will support wide variety of coastal species. Nowadays mangrove forest are among the most threatened habitats in the world and most of the mangrove area are decreasing. One of the possible factor could be due to rising temperature which is also affected by global warming. The identification of mangrove and temperature can be derived from remotely sensed vegetation index and LST respectively. Thus, the aim of this study is to identify mangrove changes based on NDVI and LST between year 1999 and 2015 at Matang Mangrove Forest, Perak using Landsat images. This study consists of three objective; (i) to determine mangrove changes using spectral band combination and classification method, (ii) to identify mangrove changes based on NDVI and (iii) to determine the effect of LST to mangrove changes. The NDVI results show the value for year 1999 range from -0.55 to 0.56 meanwhile for year 2015 it is range from -1 to 0.96. NDVI values of 0.25 to 0.56 are observed as the mangrove area. The comparison of histogram that represent the pixel value of NDVI shows that the NDVI are decrease. The decreasing of NDVI shows that the mangrove are changed. Area of mangrove decreases about 29% from 35003.74 ha to 29074.53 ha from year 1999 to 2015. For relationship between LST and mangrove changes, the result show that the $R^2 = 0.20$ for year 1999 and for year 2015 it is $R^2 = 0.39$. Therefore, the temperature does not give much effect to the mangrove changes. This study shows that the mangrove at study area are experience changes from year 1999 to 2015 but the changes is not affected by temperature. For future work, it is should implement other variables such as rainfall and sea level to see the effect towards mangrove changes.

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