UNIVERSITI TEKNOLOGI MARA

ANALYZING LAND SURFACE TEMPERATURE IN RESPONSE TO MASSIVE URBANIZATION BY USING SINGLE WINDOW ALGORITHM IN PENANG ISLAND

AINNA NAEEMAH BINTI ZAINAL ABIDIN

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

Faculty of Architecture, Planning and Surveying

July 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.

Name of Student	:	Ainna Naeemah Binti Zainal Abidin
Student I.D. No.	:	2015831564
Programme	:	Bachelor of Surveying Science and Geomatics (Honours) – AP220
Faculty	:	Architecture, Planning & Surveying
Thesis/Dissertation Title	:	Analyzing Land Surface Temperature (LST) in response to massive urbanization by using Single Window Algorithm in Penang Island
Signature of Student	:	.....
Date	:	July 2018

ABSTRACT

Large scales of human activities are continuously increasing the area which can be term as urban. Rapid urbanization indirectly may cause significant changes especially in Land Use Land Cover of particular area. Consequently, as cities been developed, changes may occur not only in term of physical landscape but also caused changes in building, road and other infrastructures which then will take over the area of open land and vegetation. When development of cities took place, consequently will increase the concentration of carbon dioxide in the atmosphere which in turn affecting the surface energy budget and indirectly may affect in global climate. Land Surface Temperature is one of the key parameters in order to estimate the surface energy budget assessing massive urbanization (Srivastava, Majumdar, & Bhattacharya, 2010). Thus, this study has been conducted for the purpose of analyzing the relationship between Land Surface Temperature due to massive urbanization in Penang Island. In order to achieve the aim, several objective must be carried out which are including the classification process in order to identify urban area in Penang Island in both image. Next will be the extraction of Land Surface Temperature (LST) by using Spectral Radiance Model and Single Window Algorithm through the satellite imagery. Last objectives will be the analysis on the relationship between the dependent and independent variables that be made through the correlation coefficient analysis. This study involved the Landsat 5 TM and Landsat 8 OLI satellite imagery to be used as data to achieve the aim. Apart from classification process, Normalized Difference Built up Index (NDBI) is also been used for the aim of detecting urban area. Through the value obtained in regression analysis, strong positive relationship exist between Land Surface Temperature (LST) as it is proved it might be affect by massive urbanization in Penang Island.

TABLE OF CONTENT