

UNIVERSITI TEKNOLOGI MARA

**SPATIAL CORRELATION OF DENGUE CASES
BASED ON CLIMATE CHANGE IN SELANGOR
FOR YEAR 2013 TO 2015**

**RABIATUL ADAWIYAH BT AB HALIM
2014473558**

Thesis submitted in fulfillment
of the requirements for the degree of
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Faculty of Architecture, Planning and Surveying

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AUTHOR'S DECLARATION

I declare that the work in this thesis 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 : Rabiatul Adawiyah Bt Ab Halim
Student I.D. No : 2014473558
Programme : Bachelor of Surveying Science and Geomatics (Hons)
Faculty : Architecture, Planning & Surveying
Thesis : Spatial Correlation of Dengue Cases Based on Climate Changes in Selangor for Year 2013 to 2015.

Signature of Student :

Date : January 2018

Approved by:

I certify that I have examined the student's work and found that they are in accordance with the rules and regulations of the Department and University and fulfils the requirements for the award of the Degree of Bachelor in Surveying Science and Geomatics (Honour).

Name of Supervisor : Dr. Noradila Rusli @ Ruslik

Signature :

Date :

ABSTRACT

Dengue fever is an infectious mosquito borne disease that places a heavy burden on global disease and also on public health systems in Malaysia as well as on most of the tropical countries around the world. Little is known the climate changing association of dengue disease. The aim of this study is to analyse the spatial correlation of dengue cases from year 2013 to 2015 based on climatic changing condition in Selangor using Geographic Information System (GIS). The correlation of dengue cases based on the calculation of temperature value in Selangor and it is then mapped based on monthly number of dengue cases for three years. Kernel Density estimation was used for hotspot analysis on dengue cases. Then, Landsat 8 OLI were used to extract the value of temperature to be correlated with dengue cases. Correlation in 2013 and 2014 are given with R^2 value is 10% decreasing from July to December. It shows that, temperature is less significantly contributing to dengue cases due to the inconsistently temperature during July to December. On the other hand, correlation between 2014 and 2015 from January to April are given with R^2 value is 15% increasing. Therefore, temperature is more significantly contributing to dengue cases during January to April. This is because, that most of cases were concentrated in the first half of the year, mainly in March and April, underlining the known seasonality of dengue fever. Then, the mean annual temperature for the period were 24°C and 29°C for monthly maximum temperature. The range of temperature around 24°C to 33°C is very conducive for mosquito breeding cycle as an increase number of times, that mosquito breeds will also increase the likelihood of emergence of dengue outbreak. In the conclusion, dengue cases positively correlated with climate changes in Selangor for year 2013 to 2015.

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