UNIVERSITI TEKNOLOGI MARA

GEOSPATIAL ANALYSIS OF HEAT CONCENTRATIONS IN URBAN RESIDENATIAL AREA OF SHAH ALAM

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MSc

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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.

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ABSTRACT

Shah Alam is one of the regions which has a dense population and high level of urbanization in Malaysia. The study is based on the resulting increase of temperature from high urbanization activities, particularly in the residential areas. The aim is to analyse the heat concentrations map of selected urban residential area in Central Zones (CZ) Shah Alam using geospatial data. The objectives for the study are to create land use land cover (built-up) using indices and classification from remote sensing definition, to analyse Land Surface Temperature (LST) for three different years (1997, 2007 and 2017) and quantify the relationship between LST with built-up and vegetation area/green area, and to evaluate the percentage of green area provided in selected residential area of Shah Alam with the requirement of the green area guidelines. The study used Geographical Information System (GIS) and Remote Sensing software to process satellite imagery data (i.e. Landsat 5 TM, 7 ETM+, 8 OLI). Built-up area was processed using Principal Component Analysis (PCA) from Landsat 8 OLI while the land use land cover was processed using Supervised Classification method. The results were analyzed using linear regression analysis in Statistical Package of the Social Science (SPSS) to quantify the relationship between LST with built-up area and vegetation area. The highest LST distribution is recorded as 35.717°C in 2017. This indicates that built-up area gives more impact to the increasing of LST despite NDVI having the significant relationship as shown by the values of R^2 which are 0.557, 0.533 and 0.585 for year 1997, 2007 and 2017 respectively. The land use land cover for built-up area (i.e. residential and industrial area) have increased from year 1997 to 2017. In year 1997, the percentage of built-up area is 36.69% and it has increased to 44.36% in year 2017. The percentage of green area in residential area is more than 10% as stated in guidelines Federal Department of Town and Country Planning (FDTCP) which is 25.662% in Year 1997. The study can conclude that urban built-up is one of the major factors in the increasing of LST.

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