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FOREST FIRE BURNED AREA DETECTION AND BURNED SEVERITY ASSESSMENT AT KUALA LANGAT SOUTH FOREST RESERVE (KLSFR), SELANGOR

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Thesis submitted to the Universiti Teknologi MARA Malaysia
in partial fulfilment for the award of the degree of the
Bachelor of Surveying Science and Geomatics (Honours)

AUGUST 2023

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 Postgraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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Faculty	:	College of Built Environment
Thesis Title	:	Forest Fire Burned Area Detection and Burned Severity Assessment at Kuala Langat South Forest Reserve (KLSFR), Selangor
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Date	:	August 2023

ABSTRACT

The land surface of Malaysia is predominantly characterized by forest cover, which serves as a vital habitat for global biodiversity and plays a crucial role in maintaining a harmonious balance between the social and environmental spheres. Over the course of several decades, forest fires have emerged as a significant environmental concern, resulting in the substantial destruction of forested areas worldwide each year. It is imperative not only to detect burned regions but also to accurately differentiate the severity levels of soil damage, as this information is essential for effective post-fire land management and the successful regeneration of vegetation. Remote sensing techniques offer precise and efficient methods for both mapping burned areas and assessing the degree of burn severity. By leveraging remote sensing, valuable data that facilitates the identification of fire-affected zones and provides insights into the extent of damage can be derived. This study focused on forest fire burn area detection and burn severity assessment in Kuala Langat, Selangor, utilizing the Sentinel-2 satellite. The Normalized Burn Ratio (NBR) and Soil Adjusted Vegetation Index (SAVI) were employed to detect burn areas, while the Differenced Normalized Burn Ratio (dNBR) and Differenced Soil Adjusted Vegetation Index (dSAVI) were used to analyze burn severity. The results found that the burn severity ranges from low severity to high severity for dNBR and dSAVI ranges between low severity and moderate to high severity. Additionally, based on LULC result, the forest fire burned area occur on the peat swamp forest with the Kappa coefficient of 0.894 was obtained. Overall, this study contributes to the development of sustainable practices for forest management and conservation.

TABLE OF CONTENT