UNIVERSITI TEKNOLOGI MARA

MAPPING OF SEDIMENT EROSION AND DEPOSITION AT SUNGAI KILIM USING SENTINEL-2A SATELLITE

MOHAMAD DANIEL BIN MOHAMED ESA

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of the requirements for the degree of
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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	:	Mohamad Daniel Bin Mohamed Esa
Student I.D. No.	:	2017442686
Programme	:	Bachelor of Science (Hons.) Marine Technology AS254
Faculty	:	Applied Sciences
Thesis Tittle	:	Mapping of Sediment Erosion and Deposition at Sungai Kilim
Signature of Student	:	…….
Date	:	January 2020

ABSTRACT

Sungai Kilim is a major attraction for the tourism and research sector of Pulau Langkawi. Since it was declared by UNESCO in 2007 and known as Kilim Geoforest Park. This tourist attraction has slightly changed the physical environment of the river. Monitoring the river is very important but will cost a lot of money and one of the most cost-effective techniques is using satellite surveillance. There have been numerous studies using paid and non-paid satellite services that have been conducted to identify the effects and developments of erosion and sedimentation processes that have occurred in the river. Among the major factors contributing to this change is anthropogenic activity. Priority monitoring of this river erosion and sedimentations may help in identifying and protecting shallow river areas that will have an impact in the future. In this research, the resulting changes were applied using the Stumpf algorithm and the identification of river depths was supported using the bathymetry method. It turns out that the use of Sentinel-2A Satellite with highly-produced images has proven to be a promising development and save time in acquiring data. The result of this experiment is to identify the highest percentage of erosion and deposition that occurred from the years of 2016 until 2019. Identify which area could have an impact the most from this sediment erosion and deposition then determine the depth of Sungai Kilim. The highest percentage of erosion was recorded is 99.85% and the lowest percentage of erosion is 34.31%. The highest percentage of deposition is at 91.47% and the lowest is at 3.35%. Mostly area with the highest deposition is at boat point, Kilim jetty and highest erosion are the main ways of traveling boat for eco-tourism activity and the narrow channel (estuary) of Sungai Kilim. The depth was recorded is at 18 m deepest and shallowest at 1 m. The conclusion from this research is anthropogenic activity has made the sediment erosion and deposition in the river bed.

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