

UNIVERSITI TEKNOLOGI MARA

**EMPIRICAL MODELING OF TOTAL
SUSPENDED SOLIDS AND
TEMPERATURE USING LANDSAT
TM8 IMAGERY OF SELAT PULAU
TUBA, LANGKAWI, KEDAH**

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Thesis submitted in fulfilment 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 Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Water is the most important element in life. Monitoring the water quality is very important to maintain the stability of the environment and life. It is conducted to investigate the current level of temperature and total suspended solids in water samples, to estimate the current level of temperature and total suspended solids using Landsat imagery and explain the distribution of the level of temperature and total suspended solids based on the developed map. The study area that has been chosen for this research is the Selat Pulau Tuba, Pulau Langkawi, which located in state of Kedah, Malaysia. The latitude and longitude of this island is 6°14.5717 N, 99°50.6371 E of north-west coast of Peninsular Malaysia. The research was conducted using the Landsat data, in-situ and laboratory analysis of TSS and SST. Landsat imagery was used to explain the distribution of the level of temperature and TSS based on the developed map using Landsat TM 8 imagery and it can be detected using the model that been develop. The model for TSS is the combination between 3 OLI bands (SWIR1+Pan+SWIR2) the formula is $Y = -84.30747648 + B1*(X1) + B2*(X2) + BnXn$ and the model for the temperature was using single band TIRS2, the formula was $y = -0.2511x^2 + 154.23x - 23455$. The condition of the total suspended solid in the Tuba Strait was in the normal condition but the temperature slightly higher than the normal sea surface temperature because of the season changes. Overall the current quality of water around Selat Pulau Tuba in a good condition but required an extensive cleaning to improve it quality.

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