A METHOD FOR ESTIMATING SUSPENDED SEDIMENT CONCENTRATION FROM THEOS SATELLITE IMAGARY: A CASE STUDY IN THE COASTAL AREA OF PENANG ISLAND, MALAYSIA

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ABSTRACT: The critical importance of remote sensing technology since the last few decades has inspired the developing country within Southeast Asia region to embark this technology. Thailand Earth Observation Satellite (THEOS) is the first satellite observation of Thailand, was successfully launched. THEOS satellite capable of generating a high spatial resolution image pixel (15 m) with the effective range of wavelength from visible to infrared. This characteristic has enabled THEOS to be applied in monitoring ocean environment. Suspended sediment concentration (SSC) is one of parameter that commonly used to estimate turbid coastal waters. The primary objective of this study is to determine the relationship between SSC measurements and reflectance model of the THEOS data to estimate and map SSC in coastal area of Penang Island, Malaysia. Water samples were collected simultaneously with the THEOS satellite which overpasses the study area on the December 2009. Using the THEOS data, we developed multiple regression algorithms to estimate the SSC. The accuracy of these algorithms was determined based on values of correlation coefficient (R) and root means square error (RMSE). Finally, these regression algorithms were then used to map the SSC concentration over Penang, Malaysia