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ABSTRACT

Erosion can cause a major problem and has impacted the livelihoods of residents that reside along the coastline zone. Coastal erosion is known as a permanent loss of land or habitat. The use of Geospatial Information System (GIS) to understand changes can provide large scale understanding of the coastal dynamic along Pahang coastline. Shortwave Infrared 1 (SWIR_1) from Sentinel-2 MSI in the delineation of shoreline has helped in providing changes for short-term shoreline analysis from 2018 to 2021. ENVI 5.1 has been used to extract the shoreline from the SWIR_1 Sentinel-2 band. The extracted shorelines were then processed using the Digital Shoreline Analysis System (DSAS) and the rate of changes were calculated statistically using Net Shoreline Movement (NSM), Endpoint Rate (EPR), Linear Regression Rate (LRR), and Weighted Regression Rate (WLR). The LRR results were fitted to determine the shoreline changes compared to other analyses. The normalized root means square errors were calculated for the study sites by comparing the coordinates taken along the shoreline with the coordinates from the Sentinel-2 Imagery 2021. The model results showed about 46.36% of the northern sector of Pahang coastlines are facing erosion while in the southern sector about 35.77% are experiencing erosion. The LRR results were compared with the previous study conducted by the Department of Irrigation and Drainage Malaysia for the National Coastal Erosion Study (2015). The highly impacted areas are listed and recommendations are made according to the decision matrix for each area, beneficial to policy-makers in future decision making.

Keywords:

Coastal Evolution, Shoreline Delineation, Sentinel-2, Digital Shoreline Analysis System

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