

**COMPARATIVE STUDY OF TOPOGRAPHICAL  
CHANGES OF EASTERN AND WESTERN COASTS  
OF SRI LANKA BY USING GIS AND REMOTE  
SENSING TECHNIQUES**



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by

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## ABSTRACT

Coastal zone plays a vital role in the country. Therefore, monitoring changes of coastal morphology is very important for its persistence with various types of impacts. Changes to this environment can happen as direct or indirect consequences of natural and anthropogenic activities. GIS and Remote Sensing are the most reliable methods to investigate coastal changes. This study aimed mainly to compare changes in coastal zones between eastern and western coasts of Sri Lanka. High resolution Google earth images were used to extract shoreline changes in the east coast and analysed the length of coastal protective structures. DSAS tool in ArcGIS was used to analyse shoreline changes during the time period by calculating End Point Rate (EPR) and Net Shoreline Movement (NSM). Sentinel images were downloaded from USGS site and used to detect vegetation changes by calculating Normalized Difference Vegetation Index (NDVI) value using ArcGIS. Study found, Ampara district had the highest average erosional value (-0.81 m/yr) while Batticaloa had highest accretional value (0.05 m/yr) in the east coast. According to Abeykoon et al 2021, Kaluthara district had highest average erosional value (-1.21 m/yr) and Modaragamaru had highest average accretional value (0.95 m/yr) in the west coast of the country. When compared shoreline changes between districts using ANOVA, the significance difference ( $P < 0.05$ ) shoreline changing rates were observed between different districts in both coasts. And the shoreline changes of the total eastern coast (-0.41 m/yr) and total western coast (-0.11 m/yr) was also significantly different ( $P < 0.05$ ). Vegetation changes were less in east coast and west coast. The length of coastal protective structures was greater in west coast than east coast. Study identified that the coastal changes are different between east and west coasts and better management measures are needed to enhance the protection of coastal zone.

Key words: Topographical changes, NDVI, GIS, Remote sensing, Sentinel