**Geospatial Analysis of the Coastline Changes in the Southwestern Belt in**

**Sri Lanka.**

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***ABSTRACT***

Coastal morphological changes are a dynamic interplay between natural processes and human activities. The coastal area of Habaraduwa DSD, which belongs to the southwestern coast of Sri Lanka, has undergone morphological changes due to the main processes of erosion and sedimentation. The main objective of this research is to use geospatial techniques to identify coastal morphological changes of Habaraduwa DSD. In addition, other objectives are identifying spatial and temporal shoreline changes (2006-2022) and identifying the land use changes in Habaraduwa DSD from 2008 to 2023. Secondary data sources were mainly obtained from Google Earth Pro and LUPPD for this study. Digital Shoreline Analysis System (DSAS) version 5 software was used to identify shoreline changes based on NSM, SCE, and EPR parameters. The studies showed that the shoreline change from 2006 to 2023, according to the NSM parameter, had the highest erosion value of -42.08 meters. The maximum EPR value is 1.67 m/y, and the minimum is -2.63 m/y. Furthermore, an analysis of land use in the Habaraduwa DSD from 2008 to 2023 reveals a substantial increase in built-up areas. In 2008, the built-up area covered 17.83 square kilometres, accounting for 36.49% of the total land area. By 2023, this had expanded to 29.25 square kilometres, representing 59.86% of the total land area. This research shows that the coasts within the Habaraduwa DSD have experienced significant coastal morphological changes. In addition to coastal erosion, extensive changes in land use have been observed. The study highlights the potential areas that could be inundated in the future due to the rise of the global sea level. Consequently, these findings are crucial for the sustainable management of coastal regions.

**Keywords:** Coastal Dynamics, Coastal Erosion and Deposition, Land Use