

SRI LANKA

**Coastal Morphodynamics of Natural Hazard: A Case Study of Oluvil
Area in Ampara District, Sri Lanka**

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The tidal action is one of the most significant forces of the littoral changes. This study mainly focuses on coastal morphodynamics which are caused by the natural phenomena. The objectives of this study are; (a) to identify the coastal morphodynamics caused by natural hazard in the study area and (b) to detect coastal morphodynamics using time series data from 1981 to 2015 and show the intensity of shoreline changes with the aid of Geo Spatial Technology. Shoreline change is an issue in coastal management. In Sri Lanka, coastal communities about 05 million depend on coastal ecosystems for their livelihood. Coastal erosion is evidenced by collapsed trees, buildings, and other structures, including breakwater. Sand layers from the area have been washed away by monsoon tides at a depth ranging from 30 to 90 cm, resulting in a shoreline retreat of 80m landward from the end of constructed break water in places like Oluvil beach. A widening of Kaliodai river mouth from 1981 to 2015 and erosion of the sandy beach at the base of village road side have also been recorded.

For this study, Quantification of the extent of coastal morphodynamic in Oluvil area was accomplished using aerial photographs from 1981, and satellite images from 2001 and 2015. All the data were subjected to the mapping analysis with GIS 10.5 software. Aerial photographs scaled 1:20,000 were acquired from Survey Department. Remote Sensing data covering the Oluvil coastline from Nochchiyadi (Nintavur) to Sinnapalamunai (Oluvil) was acquired from satellite image and Google earth on 2001 and 2015. The base map was prepared by using the Survey Department toposheet map Scaled 1:10,000. False color composite (FCC) of the study area was generated and the displayed image with the above was spectrally enhanced by the histogram which has real earth coordinates; data were geometrically intersection, canal-

road equalization method. To eliminate the effect of tidal influence in shoreline change, low tide satellite data were used. Though, there is a different resolution, edge detection technique gives exact demarcation of land and water boundary. The enhancement techniques improved feature exhibition and increased visual distinctions between features contained in a scene.

The coastal morpodynamics by natural hazards has caused the environmental and socio-economic effects of inhabitants of the study area. In Oluvil Harbor Northwards to Nochchiyadi, accretion was noticed at 1.25 ha, 0.22 during the period of 1981 to 2001, 2001 to 2015, respectively. Whereas, the erosion also observed at Oluvil Harbor Northwards to Nochchiyadi during the period of 1981 to 2001 and 2001 to 2015 was 4.07 ha and 5.16 ha. Overall, during the study periods, accretion activities are high compare to erosion in study area. However, erosion activities are not occurred in the southern part of harbor area.