



**AII 08 Monitoring the positional variations of coastline and shoreline of Western Seaboard of Sri Lanka using multi temporal satellite data**

Premaratne H.M.K.M., Alahakoon N., Kumara P.B.T.P.

*Department of Oceanography & Marine Geology, Faculty of Fisheries and Marine Sciences & Technology*

The positional variations of shoreline and coastline of Western seaboard of Sri Lanka were identified using Landsat imagery in comparison with 1956 shoreline and coastline as base line data. The Western coastal belt is well known for erosional problems since in ancient past. The severity of the issue during past 50 years was addressed by the study. The digital image processing for infrared Band 5 of Landsat TM of 1987, Band 4 of Landsat ETM<sup>+</sup> of 2000 and 2005 was carried out using ILWIS 3.3. Erosion and accretion along the western coast were identified and monitored using Arc Map 10.0. The study reveals that both shoreline and coastline were shifted seaward during 1987 and 2005 and moved landward during 2000 and 2012. Both boundaries showed increased changing rate from 1956 to 2012. The maximum rate of net change on coastline was detected during 2005-2012 (0.0144 km/Yr) and the shoreline changing rate on its maximum during 2005-2012 (0.00831km/Yr). The near shore bathymetry was modeled for 1998 and 2001 using Arc Info. A deepening of near shore waters observed from 1998 to 2001. Slope analysis reveals that a steep slope (13-18°) occurred adjacent to the coast during 1998. Bathymetry study provides clues for erosion events those hit the western coast between 1998 and 2001. The grain size distribution pattern of beach sands supported the erosion threat observed during 2012. The bathymetry modeling along with sieve analysis of beach sands substantiate the changes detected using Landsat imagery. Tidal data analysis for 1995 and 2000 suggested that the Western coast was a micro tidal coast and the coast was dominated by semidiurnal tides. The wind climate around Western coastal reaches was strong during south west monsoon season and comparatively light during other seasons.

**Keywords:** coastline, shoreline, landsat imagery, western coast, Sri Lanka