

Abstract No: BO-13

Change detection of vegetation cover in Kurunegala district by using remote sensing approach

Imbulana I. B. A. C.^{*}, Jayasinghe V. S., Peramune P. R. S. N., Samaraweera S. A. P. T. and Weerasinghe V. P. A.

Department of Zoology and Environmental Management, University of Kelaniya, Sri Lanka.
amayachamini@gmail.com^{*}

The amount of vegetation cover has reduced over time due to the rapid increase in population, expansion and intensification of agricultural activities, and unsustainable use of resources worldwide. This leads to significant negative impacts on the ecosystems. Although several studies have been carried out on vegetation change in Sri Lanka, there is little or no information available in Kurunegala District. Therefore, the objective of the present study was to assess the extent of changes in areas with healthy vegetation cover in Kurunegala District of Sri Lanka, through examining the Normalized Vegetation Index (NDVI) over a period of 10 years from 2013 to 2023. NDVI was employed to determine the growth condition of vegetation. Remote sensing data from Landsat-8 OLI/TIRS images were used to perform NDVI analysis. The area was classified into no vegetation and vegetation and the values above 0.3 were considered as the vegetation. The obtained NDVI maps were reclassified, and the resulting maps were converted to vector maps. The final values were used to compute the area under no vegetation and vegetation. The results of the present study indicated a significant vegetation cover change between 2013 and 2023. The results revealed a conversion of 1424.95 km² area from no vegetation to vegetation and a conversion of 550.57 km² area from vegetation to no vegetation. In addition, 669.98 km² of no vegetation area and 2253.35 km² of vegetation area have remained unchanged. The vegetation area, which was initially 2804.32 km² in 2013, had expanded to 3678.79 km² in 2023, reflecting a 31.18% transformation of no vegetation areas to vegetation areas. Thus, it can be concluded that the vegetation cover area in the year 2023 had increased compared to 2013. However, NDVI does not differentiate between various types of vegetation, such as agricultural crops and forests, which is a limitation of this study. Enhancing sustainable land management, strengthening environmental policies, promoting community involvement and continuous monitoring are crucial for further expansion of the vegetation cover in Kurunegala District.

Keywords: GIS, Kurunegala District, NDVI, Remote sensing, Vegetation change