

GEOSPATIAL TECHNIQUES TO IDENTIFY THE RELATIONSHIP AMONG NDBI, NDVI AND LAND SURFACE TEMPERATURE: CASE STUDY IN COLOMBO DISTRICT, SRI LANKA

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Sri Lanka has a high population growth and is urbanizing rapidly. Colombo is the most urbanized district. Colombo city is the commercial capital of the country and is the largest city in terms of population. According to census and statistics, the population of Colombo city represents 77.6% of the total urban population of the Western Province. Many studies have indicated that there is an impact of urbanization on the increase of atmospheric temperature. This case study was carried out to identify the relationship between *Land Surface Temperature (LST)* with *Normalized Difference Built-up Index (NDBI)* and *Normalized Difference Vegetation Index (NDVI)*. There are several indices for the analysis of built-up area and vegetation cover. The Colombo district's land use/land cover detection has been employed based on the NDVI ranges. Data was acquired using *Landsat 8 satellite images* on 13th January of 2017. *NDBI*, *NDVI* and *LST* maps were produced for the study area and compared the relationship. Pearson correlation coefficient results revealed a positive correlation between *NDBI* and *LST* ($r = 0.75454$) and a negative correlation between *LST* and *NDVI* ($r = -0.44302$). Therefore, it can be concluded that the *LST* values increased as the built-up environment increased with a less green cover. In contrast, the *LST* values were lower when the green cover was dense in the built-up environment of the Colombo District.

Keywords: Colombo District, Geospatial techniques, Land surface temperature, Urbanization