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Analysis of the Variation of Normalised Difference Vegetation Index (NDVI) Over Past Decade of Sri Lanka (2007-2017)

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Abstract

Satellite perceptions give a helpful and ground-breaking database for assessing the elements of the earthbound biosphere as a result of its worldwide inclusion and a short return to interim. The accessibility of the long term Normalised Difference Vegetation Index (NDVI) information got from the Moderate Resolution Imaging Spectroradiometer (MODIS) has spurred numerous researchers to ponder interannual varieties of vegetation exercises. The study presents Phenological monitoring of NDVI over Sri Lanka from 2007 to 2017 (Monthly NDVI images of 2007, 2012 and 2017, total of 72 images) of the decade with the use of Satellite Remote Sensing and statistical analysis. MODIS provides the best platform to monitor vegetation index over a country each month. In this study used the NDVI monthly product derived from MODIS. NDVI is the most widely used vegetation index of today's Remote Sensing which capable of analysing greenness, water, deforestation. NDVI image differencing, proportioning and post-classification methods were applied for the monitoring process. Then statistically, use the correlation, min-max values and standard deviation between monthly and mean NDVI of 2007, 2012 and 2017. In addition to that NDVI values evaluated according to the Landuse land cover types (Forest, Vegetation, Barren, and Water etc.), the climate zones (Arid, Dry, Intermediate and Wet Zone) and also cross-checked with randomly collected sample points of Forest areas, water bodies, vegetation patches and barren lands of Sri Lanka. Conferring to the results, Monthly and seasonal NDVI increased significantly in the country over the past decade, particularly in forest areas and vegetation patches. Moreover, the correlation of each mean NDVI of three years (2007, 2012 and 2017) get diminished with the time which provides an indication of reducing greenness of the country. In addition to that, the randomly selected forest and vegetation samples also confirmation the same pattern of reducing greenness over the country from 2007 to 2017. In conclusion, the NDVI was determined first at that point characterised to deliver vegetation maps pursued by measuring the changes. The outcomes demonstrated an extreme lessening in the thick, inadequate and moderate vegetation and interestingly, the non-vegetation class expanded. This implies the forest and planted zones were in danger of losing vegetation.

Keywords: Landsat, MODIS, NDVI, Post-classification, Vegetation

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