Monitoring Regional Differences in Forest Cover Changes in Sri Lanka

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Forests play a vital role in the ecosystem services provisions. There is a substantial loss in forest cover. In this context, the main objective of this study is to monitor the forest cover changes in Sri Lanka from 2001 to 2021 using remote sensing data. This forest data has been developed using the Landsat data at a 30-meter spatial resolution, which was published by Hansen et al (2013). Using JavaScript API, Those data have been analyzed through Google Earth Engine (GEE). The forest area and non-forest area of Sri Lanka were identified at the initial stage of the analysis. Subsequently, forest loss and gain which were identified from 2001 to 2021 through the transition from forest to non-forest and non-forest to forest were detected using GEE and GIS software packages. The results revealed a rapid loss in forest cover occurred during the period of postwar in the country (after 2009), driven by developmental activities in various sectors. Meanwhile, the highest forest loss was identified in 2016, which could be associated with policy changes following the establishment of a new government in 2015. The emergence of COVID-19 has slowed down deforestation during the pandemic period, the year 2019, which is connected to the decline in economic growth. According to the district-level analysis, the districts with the highest forest loss are located in the dry zone—Mullativu, Monaragala, Ampara, Polonnaruwa, Trincomalee, and Vavuniya. Those regions are widely known for their extensive utilization of agricultural land while experiencing limited growth in terms of economic development. In contrast, urban areas like Colombo, Gampaha, and Kaluthara showed low levels of forest loss as they have very little forest cover. The results highlight the urgency of protecting the forest ecosystem and the policy implementation necessity for sustainable forest management for the country.

Keywords: Forest loss, Sri Lanka, Remote sensing, Sustainable development, Forest management