



“Gheorghe Asachi” Technical University of Iasi, Romania



THE EFFECT OF FOREST COVER LOSS ON LAND SURFACE TEMPERATURE: A CASE STUDY OF KOCAELI PROVINCE

Özer Akyürek*

Kocaeli University, Department of Remote Sensing in Geomatics, Kocaeli, Turkey

Abstract

In recent years, large amounts of change have occurred in forest cover all over the world. The biggest reasons for the decrease in the forest cover areas were industrialization and conversion as rural settlements, urbanization, agricultural land, and forest cover thinning. Deforestation has various effects on the earth. One of the side effects of deforestation is the increase in Land Surface Temperature (LST). Remote Sensing (RS) and Geographic Information Systems (GIS) are some of the effective methods used for monitoring forest cover and LST change. However, accessing and processing satellite data is both time-consuming and costly. Therefore, the use of cloud technologies for this purpose is beneficial for rapid response. In the present study, the forest cover in the Kocaeli province boundaries and how much loss of this forest cover was investigated during the time period (2001-2020) with the help of the Google Earth Engine (GEE) platform, GIS and RS. Also, the change in LST due to forest cover loss was studied by Moderate Resolution Imaging Spectroradiometer (MODIS) data. In addition, the correlation relationship between forest loss and LST was also investigated. The amount of forest cover and total forest loss that has been computed on the GEE was 162196.84 and 10529.35 hectares (ha), respectively. Due to the loss of forest cover, LST values increased by 2.1 °C in the province.

Keywords: deforestation, GIS, Google Earth Engine, heat island, land cover, remote sensing

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* Author to whom all correspondence should be addressed: e-mail: ozer.akyurek@kocaeli.edu.tr; Phone: +902623033247; Fax: +902623033003