
INVESTIGATING LAND SURFACE TEMPERATURE AND ESTIMATED RADIATION AS HUMAN HEALTH IMPLICATION IN EAST LONDON USING REMOTE SENSING AND GIS APPROACH

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Abstract

ABSTRACT Land surface temperature and estimated radiation of East London city in Eastern Cape Province of South Africa were produced from remote sensing data using GIS techniques from Landsat Thematic Mapper (TM) images for 1986, 1996, 2006, and Operational Land Imager (OLI), Thermal Infrared Sensor (TIRS) for 2016 spanning a period of 30 years. Dramatic increase in land surface temperature and area radiation have occurred, with their impacts on human health. Rapid urbanization in the study area contribute significantly to this drastic change in the natural surface characteristics, this includes increased land surface temperature and surface solar radiation. The analysis of Landsat images of the study area revealed that there is a decline in vegetation cover and increase in thermal characteristics, and these changes have forced the development of urban climate to have a significant effect on human health. The radiation extracted from Landsat images revealed that there is an increase in radiation and in all the years, the value exceeded the global solar radiation index and exposure to such ultra-violet radiation can result in heat stroke, skin cancer, and heart disease. Consequently, further research is therefore needed to understand the human health and its association with natural surface characteristics and epidemiological cases. This study illustrates the significance of remote sensing and GIS for this purpose.

Keywords: Land Surface Temperature, Radiation, Human Health, Remote sensing, Exposure.

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