Surface Temperature Emissivity Assessment on Urban Land-Use in Minna, Niger State, Nigeria

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Abstract

The aimed of this research is to assess Normalized Difference Vegetation Index(NDVI)emissivity per pixel using Landsat TM and ETM+ satellite data for 2001,2006 and 2012 Landsat satellite data. Continuous monitoring of this parameter is likely to yield information about the suspected climate change. NDVI, vegetation condition index (VCI), and temperature vegetation index (TVX) have been widely used for determining temporal emission on Land surface Temperature (LST) changes and monitoring drought .This was estimated as narrow band emissivity at the satellite sensor in order to have the minimal error in the surface temperature evaluation. Corresponding correlations were obtained between high surface temperature and negative NDVI valuesNDVI,. refers to the difference ratio between land surface reflectance in the Near-infra red and Visible (Red) band. The study further showed that the built up area has expanded by 0.422% of the total land area of Minna in 2001 to 48.17in 2012, vegetation covers reduced from 46.30% to 22.15. The implication of this unprecedented growth is the resulting environmental and ecological problems associated with unplanned urban growth and development such as flooding, urban heat island, etc. Nevertheless greening and due adherence to development control were suggested as measures to control the impending environmental crisis.

Keywords: Urban Growth, Land use/ change, Agricultural and Emissivity