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Investigating Surface Urban Heat Island Characteristics over Abuja, Nigeria: relationship between land surface temperature and multiple vegetation indices

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Abstract

The study is aimed at investigating urban heat island over Abuja based on the relationship between land surface temperature estimated from Landsat 8 Thermal Infrared Sensor (TIRS) band and four vegetation indices from Landsat 8 Operational Land Imager (OLI) bands. The four vegetation indices considered are the Red Edge Normalized Difference Vegetation Index 705 (NDVI705), Modified Soil Adjusted Vegetation Index 2 (MSAVI2), Ratio Vegetation Index (RVI) and Normalized Difference Built-up Index (NDBI). A linear regression is generated to evaluate the correlation of Land Surface Temperature (LST) with the four vegetation indices. LST relationships with NDVI705 and MSAVI2 showed negative correlations and low correlation coefficients (R) values while the relationships with NDBI and RVI showed positive correlations with NDBI having R value of 0.84. Negative and near-negative values NDVI705

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