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Impact of Landuse Change on Surface Temperature in Ibadan, Nigeria

Authors : Abegunde Linda, Adedeji Oluwatola

Abstract : It has become increasingly evident that large developments influence the climate within the immediate region and there are concerns that rising temperatures over developed areas could have negative impact and increase living discomfort within city boundaries. Temperature trends in Ibadan city have received minor attention, yet the area has experienced heavy urban expansion between 1972 and 2014. This research aims at examining the impact of landuse change on temperature knowing that the built environment absorbs and stores solar energy, the temperature in cities can be several degrees higher than in adjacent rural areas. This is known as the urban heat island (UHI) effect. The Landsat imagery were used to examine the landuse change for a time period of 42years (1972-2014) and Land surface temperature (LST) was obtained by converting the thermal band to a surface temperature map and zonal statistic analyses was further used to examine the relationship between landuse and temperature emission. The results showed that the settlement area increased by 200km2 while the area covered by vegetation also reduced to about 42.6% during the study period. The spatial and temporal trends of temperature are related to the gradual change in urban landcover and the settlement area has the highest emission of land surface temperature. This research provides useful insight into the temporal behavior of the Ibadan city.

Keywords : landuse, LST, remote sensing, UHI
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