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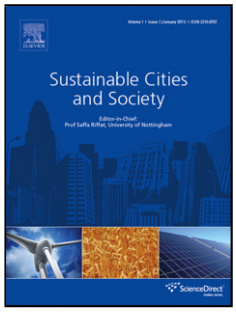

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Impact of Land use Change and Urbanization on Urban Heat Island in Lucknow City, Central India. A Remote Sensing Based Estimate.

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ABSTRACT

In this paper, the negative impact of Urbanization over a time and its effect on increasing trend of temperature and degradation of urban ecology was assessed using the Landsat thermal data and field survey of Lucknow city, India. Land surface temperature (LST) estimation has been carried out using Mono-window algorithm, temporal land use change map, assessment of vegetation cover through Normalized Difference Vegetation Index (NDVI), and ecological evaluation of the city was carried out using the Urban Thermal Field Variance Index (UTFVI). Results indicated that the spatial distribution of the land surface temperature was affected by the land use- land cover change and anthropogenic causes. The mean land surface temperature difference between the years 2002 and 2014 was found is 0.75ºC. The observed results showed that the central portion of the city exhibited the highest surface temperature compared to the surrounding open area, the areas having dense built-up displayed higher temperatures and the areas covered by vegetation and water bodies exhibited lower temperatures. Strong correlation is observed between Land surface temperatures with Normalized Difference Vegetation Index (NDVI) and UTFVI. The observed LST of the area also validated trough the Google Earth Images. Ecological evaluation of the area also showed that the city has worst ecological index in the highly urbanized area in the central portion of the city. The present study provides very scientific information on impact of urbanization and anthropogenic activities which cause major changes on eco-environment of the city.