

The impact of surface form on urban temperature using Remote sensing and GIS

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Heat island phenomenon has become one of the serious problems that have been developed due to the concentrations of human activities on urban areas. Therefore, it is necessary to account for the surface form over urban area in order to understand the mechanism of heat island phenomenon.

In this study, multiple linear regression analysis was applied between brightness temperature acquired from satellite images (Landsat/band6) and several urban area surface parameters that seem to affect the heat island phenomenon in the study area.

The parameters used in the analysis are as follows: thermal characteristic value, anthropogenic heat, ratio of green coverage, distance from north side of Tokyo Bay, elevation, and parameters of buildings form. The parameters of buildings form consist of height of building, building density and building roughness that are the main constituent of the urban area.

The result shows that during daytime, building density and thermal characteristic value increase temperature, whereas the ratio of green coverage decreases the temperature. During nighttime, all parameters of buildings form increase the temperature.