Spatial and Temporal Changes of the Urban Heat Island in Bangkok Metropolitan Region (BMR)

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Abstract

With the growing percentage of Earth's population living in urban environments, the research on cities and their.Environmental/climatological problems has become more and more important in recent years. The existence of urban surface heat islands has been documented many times for different cities in the recent past.The increased heat of cities increases discomfort for everyone, requires an increase in the amount of energy used for cooling purposes, and increases pollution. Each city's urban heat island varies based on the city structure and thus the range of temperatures within the island varies as well. Parks and greenbelts reduce temperatures while the Central Business District (CBD), commercial areas, and even suburban housing tracts are areas of warmer temperatures. Every house, building, and road changes the microclimate around it, contributing to the urban heat islands of our cities.

TERRA/MODIS was the main remote sensing data source for this study. In the analysis process all three modes of spatial resolution were utilized. – 250m, 500m and 1000m with 36 spectral bands. To examine the spatial and periodic changes, timeseries data have been selected considering two factors; data availability and a significant gap among data sets. It can be seen that there are considerable differences among spatial, periodic and seasonal distributions of the heat islands of the BMR. Also this study has been attempted to examine the relationship between some socio-economic parameters and temperature of the Bangkok

Metropolitan Area such as Population density, House Hole (Household?) Vehicle density, Rate of Urbanization and Land use and land cover.

Keywords: Urban, MODIS, heat, Bangkok