

Remote sensing for monitoring urban heat environment under impact of urban biophysical components

Tran Thi Van, Ha Duong Xuan Bao

*Ho Chi Minh City University of Technology, Vietnam National University Ho Chi Minh City
268 Ly Thuong Kiet Street, District 10, Ho Chi Minh City, Vietnam
E-mail: vanbaokt@yahoo.com, baofdha61@yahoo.com*

Abstract - Urban areas are the most dynamic region on earth. Under the urbanization the urban landscape has changed by replacing the green vegetated areas with the impervious surfaces (IS). Much of the solar energy coming to the land surfaces that could have been utilized to evaporate water from vegetation is instead transformed into sensible heat in the IS. This effectively raises the temperatures of these surfaces and of the overlying atmosphere in urban areas. This paper presents the research on application of remote sensing to detect the IS in reflective spectra and to retrieve the surface temperature of the urban objects in the thermal infrared spectra of 10-12.5 μ m from satellite images. A long term study for Hochiminh City, located in the South of Vietnam, was carried out on a mid scale level in stage of 1989-2010. The correlation of the urban temperature change and urban biophysical components (IS, vegetation and water) had been examined. It is found that the relationship of the temperature and impervious surface had the strongest correlation. These findings are helpful for understandings urban landscape as well as land use planning to minimize the potential environmental impacts of urbanization

Keywords: impervious surface, remote sensing, urban temperature, urban heat environment

Topic: Remote Sensing Applications - Urban monitoring

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