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## **IMPACT OF URBANIZATION ON URBAN HEAT ISLAND EFFECT BASED ON TM IMAGERY IN WUHAN, CHINA**

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### **Abstract**

As natural landscapes are increasingly replaced by impervious surface materials associated with urbanization, urban areas tend to experience higher surface temperatures when compared to rural areas, which is known as the urban heat island (UHI) effect. In this study the impact of urbanization on land surface temperature (LST) and the UHI effect were examined based on two Landsat Thematic Mapper (TM) imageries of 1987 and 2007. Results show that Wuhan experienced rapid urban expansion from 1987 to 2007, while the areal extent with higher temperatures did not always correspond to the urbanized area. The percent impervious surface area (ISA) was found to efficiently explain the LST variation in urban areas, especially in high-density ones. The normalized difference vegetation index (NDVI) was a sufficient indicator to express surface temperature variation only in natural context. These findings help urban planners and greening designers make appropriate decisions on urban planning and thermal management.

*Key words:* impervious surface area, land surface temperature, normalized difference vegetation index, remote sensing, urban thermal environment

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