

## Urban not be cooled. Rural cannot become hot. -High Density Continuousness Observation of Urban Heat Island

# Isao Iizawa[1]; Kazuhiro Umetani[2]; Aya Ito[3]; Arata Yajima[4]; Kosaku Ono[5]; Noriyuki Nishi[6]; Satoshi Sakai[7]

[1] Environmental networks, Kyoto Univ; [2] Earth Dynamics ,Human and Environment ,Kyoto Univ; [3] Human and Environmental Studies, Kyoto Univ; [4] Env Man, Earth Env , Kyoto Univ.; [5] Human and Environ. Kyoto Univ; [6] Physical Climate, Sci, Kobe Univ; [7] Human and Environ. ,Kyoto Univ

### 1. Introduction

As for the heat island phenomenon, the deterioration of the living environment not only is caused but also the relation to the guerrilla downpour etc. is pointed out, and effective measures against the investigation and that of the cause are requested.

The difference of a local heat characteristic by the difference of the surrounding environment is paid to attention in a current research to clarify the grasp and the generation process of the realities of the heat island phenomenon. Moreover, there are a lot of researches on the dependency to the weather factor, too. However, when the ground temperature is observed, the movement observation is the main, and continuous data of the various place point is not obtained. As for the one to measure the ground temperature in a high density and continuously, the heat island observation that Tokyo set up doesn't obtain the data of a density and frequency enough as it can know a thermal response in a local heat characteristic and a short time though is only net (MET-ROS).

A high density, continuous temperature was observed in Kyoto in this research, and then, it especially paid attention to the heat revenue and expenditure balance and the response, and the clarification of the generation process was tried with the realities grasp of the heat island phenomenon.

### 2. Outline of observation execution

It went six times in a meteorological observation that was the Kyoto town and surrounding (south north 20km and 7km in east and west) at a different season.

38 point measurement frequency on October 30, 2004 - February 27, 2005 of the seventh November 27 point - May 10, 2005 of the 13th March 37 point - August 9, 2005 of the 25th May 36 point - October 9, 2005 of the 30th August 37 point - January 28, 2006 of the 23rd October 38 point - February 1  
2: It is measurement density for 1 minute or 2 minutes (average of sampling for one second): About 2km interval.

### 3. Outline of observation result

Strength of the heat island phenomenon had generated in Kyoto (temperature difference between the temperature and non-city part of the city part) was about 5 degree through year. Moreover, it is after the sunset that the temperatures fluctuate of the city part and suburbs grows most, and it has been understood to keep an almost constant difference afterwards. Additionally, it has been understood that strength of a fine heat island phenomenon rises more than cloudy.

It is shown to cause by the fact that the heat inertia of the heat island phenomenon in Kyoto to the heat flux at a short cycle is differing about the temperature decrease in the various place point by the radiational cooling especially larger than the heat inertia to the length cycle in the city part on that day.