HakatteNannbo The Weather chapter KurabeteNannbo

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Introduction

A continuous observation of the temperature of Kyoto City was done by a group of Kyoto University in the autumn of 2004. In this observation result, a remarkable heat island was admitted. It has been understood that the temperature difference between the city part and suburbs begins to open around 15 o'clock before the sunset, and exists in the maximum in that around 18 o'clock after the sunset. This is a result that is the current and different from the report that the heat island phenomenon is remarkably seen in predawn.

To investigate this cause, the heat island is considered from two viewpoints (the difference of the thermal capacity of the city part and suburbs and the change in the radiation temperature in the sky) in this research. It experiments on the model, and moreover, the result is matched and considered.

Method

It observed it for about two weeks by choosing the point where the city part and suburbs were represented from the observation result of the autumn of 2004 respectively by two places, and setting up the thermometer and the radiation thermometer. The radiation thermometer set up aiming at the sky, and examined the change in the radiation temperature by the presence of the cloud. This data was collected, and the response of the temperature to the change in the temperature, the change in the radiation temperature by the movement of the cloud etc. , and the radiation temperatures was seen.

Moreover, a styrene foam splinter and a concrete splinter were put on the pavilion rooftop of Yoshidaminami 2goukann Kyoto University as a model experiment, and each surface temperature, the temperature, and the radiation temperature in the sky were observed.

Because shooting related to the temperature change in the observation in Kyoto City, the model experiment, and daytime on the day, the data at nighttime was mainly analyzed to examine only the influence of the radiation temperature in the sky on the temperature.

Result

In the suburbs part, it turned out that the ground temperature responded to the change in the radiation temperature in the sky that the ground temperature went up when the ground temperature greatly fell, the cloud appeared in the sky of which it cleared up, and the radiation temperature in the sky went up when the patch of blue sky appeared in the sky of cloudy weather and the radiation temperature in the sky fell sensitive. Such a response was not seen in the city part .

In the model experiment, the response of the ground temperature was seen for the change in the radiation temperature in the sky as well as the Kyoto city observation. Especially, the temperature change on the surface of the styrene foam was very large and was sensitive .

Summary

It was not seen in the city part at all though the influence on the ground temperature by the change in the radiation temperature of the movement of the cloud etc. was seen well in suburbs. A similar change greatly appeared to the surface temperature of the styrene foam in the model experiment.

Thus, it is small the thermal capacity of the ground level in suburbs, and possible that the difference appeared to the response of the ground temperature to the change in the radiation temperature in the sky in suburbs and the city part that the reason for the ground level in the city part is that thermal capacity is large. The ground level in suburbs forecasts a response enough for the change in a short time in the sky radiation temperature and it is forecast that possible Nets capacity is small.

The relation among thermal capacity, the temperature of the ground, and the radiation is scheduled to be calculated by using a numeric model in the future.