

# Hakatte Nanbo(the weather volume)Flying V

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## Introduction

As a solid structure model of a heat island, Oke (1976) advocated the following. When a grounding inversion layer is formed in the suburbs at night, an inversion layer is formed from the sky in the city part. Then it is surrounded by the stable layer in the city part, and it is going to be heated. This model was verified by many researchers by present, and has gained support. However, there is little actual observation data which supports this. the main reason is that many expense and labors are required, and that it become a big deal,in order to especially carry out continuous observation. Although there is an example of observation in a country part and the place which land opened mostly, it makes it difficult to carry out in a city part. Then, in Kyoto-city, it set it as the purpose of this research that it was shown that temperature perpendicular continuation observation can be realized on a low budget in a city part by observing a perpendicular temperature distribution continuously. In perpendicular observation, although a mooring balloon is often used, it is common that it uses putting helium gas in the airship type balloon called kytoon whose volume is it about  $24\text{m}^3$  three that it is small. However, at this, difficulties are taken to be large, to be hard to treat, to use a helium upwards so much, and to secure the storage place of a balloon. Then, it examined using the cheap and small advertising balloon which can be treated comparatively easily.

## Observation

In October to December, 2004, temperature was observed simultaneous and continuously by six points from which the height from the ground to 100m differs within the enclosure of the Kyoto University Yoshida south. The spotter plane machine was installed in the ground and the Yoshida south No. 2 hall roof, and the spotter plane machine was further installed in every 20m four points using the advertising balloon with a diameter of 1.8m from this roof. It applied at once on two to the 4th, and six periods of them were performed. At the time of a strong wind, observation was not performed in case of rainy weather. observation was boiled in general, was set and was successful.

## Consideration

The following analyses were performed from the observation result. First, on the whole, the changes on the first of perpendicular temperature were caught, the formation process of an inversion layer has been grasped, and it discovered that sky temperature shook greatly at night etc. Next, the potential temperature slope of night and daytime was computed and the altitude of the inversion layer formed from there was presumed. Moreover, the simulation was performed based on the observation result and the feature of the heat style of daytime and night was caught. Finally, comparison of inversion intensity and heat island intensity was performed, and the solid structure model of the heat island described above was verified. Thereby, the perpendicular thermal structure in Kyoto-shi has been grasped roughly. As mentioned above, the purpose of this research was able to be attained in general. A future subject is raising the accuracy of observation, carrying out more detailed analysis, performing the same observation as this time simultaneously in a city part and the suburbs moreover, and solving the solid structure of a heat island.