City environmental measurement using ping-pong balls

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City temperature has a tendency higher than the temperature of the suburbs because the radiation from the side of a building is larger than the suburbs in a city. But there are few examples of studies which measure radiation of a city and the suburbs and there is no observation of high resolution which draws the distribution of radiation of a city and the suburbs. Therefore, we observed the globe thermometer which enables observation of high resolution.

A globe thermometer is a copper ball with a diameter of 15cm and it is dim and black. This can be assumed to be black body. The amount of radiation can be estimated from a difference of temperature because black body absorbs radiation of all wavelength belts. Moreover, the form of a ball can obtain the radiant quantities of all the directions.

Not only temperature but the amount of radiation contributes to the heat which man feels. It turns out that heatstroke has the influence of radiation. Now, the globe thermometer is mainly used in an indoor high temperature work place and an indoor school and it is used as an index of the danger of becoming heatstroke.

But we considered whether the globe thermometer could be used as a measuring instrument which measures the amount of radiation. The existing radiation meter is not suitable for measuring city environment because it has directivity and the characteristic of a wavelength belt. However, the globe thermometer is suitable for thermal balance. Moreover, it turned out that a globe thermometer depends for me on a size and the globe thermometer was made from the ping-pong ball with a diameter of 4cm. We could make them a lot and measure the amount of radiation by high resolution.

We were able to improve the globe thermometer made with the ping-pong ball. The results are also announced...