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Influence of Nearby Plants and Artificial Structures on the Surface Air Temperature Statistics: An in-situ Measurement at Central Tokyo (Otemachi) throughout Years

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Abstract

In order to clarify the influence of obstacles on temperature measurement, two years' continuous observation was made in the meteorological enclosure of the Japan Meteorological Agency in central Tokyo (Otemachi), by installing an extra thermometer at a spot that was surrounded by trees and was 20 m distant from the thermometer for operational observation. In the early afternoon of the warm season, the temperature at the spot surrounded by trees was found to be higher than the operational temperature. The temperature difference at 15JST was about 0.5 degrees Celsius on the average, and was correlated with daily solar radiation with a correlation coefficient of over 0.7 from March to September. On the other hand, difference of nighttime temperature was generally small, so that the monthly mean difference of daily mean temperatures was less than 0.1 degree Celsius for all the months of the year.

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