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A parametric approach for the study of heat flow between street canyon and the atmosphere (Article)

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Abstract

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This paper presents the investigation results of the convective heat flow behaviour among the top of an urban street canyon and overlying atmosphere using a numerical model together with available field measurement data in variable geographical and meteorological conditions. It finds that the heat flow structure characterizes the street canyon have a strong relationship with narrowness index, outside wind velocity and latitude of the study area. The increase of the narrowness index and consequently, reduction of the sky-view factor leads to the diminution of heat flow exchange. The temperature of canyon surfaces in smaller narrowness index (n) decreases quickly to the lower degree than the temperature of the surface with larger (n) one. The increase of wind velocity outside of canyon makes this convective heat exchange flow higher, and cooler the street canyon. A parametric approach was established to evaluate this convective heat exchange flow based on the narrowness index, the latitude of the city and outside wind velocity. © 2018 by MIP.

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