



Impacts of Green Roofs on Urban Microclimate: Focusing on Building Layouts

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During the last decades, the urbanization process has accelerated the deterioration of the urban ecological environment and the accumulation of heat in urban space, which has led to urban heat island (UHI) effect. Green roofs have been proposed as one of effective approaches to mitigate the UHI effect. This study presents the impact of green roofs on urban microclimate in different building layouts of roof greening in which, temperature, relative humidity and reflected short-wave radiation were considered. The most common building layouts of row and column layout (layout 1), enclosed layout (layout 2) and net point layout (layout 3) were applied for building greening in residential community. The distribution of regional thermal environment was analyzed by simulation results from the ENVI-met model. As results, it was found that the layout 1 could contribute to the improvement of the thermal environment rather than other two layouts with the lowest maximum temperature, relative humidity and average value of the reflected short-wave radiation. It could potentially help improve the green roofs design in urban areas with respect to human thermal comfort.