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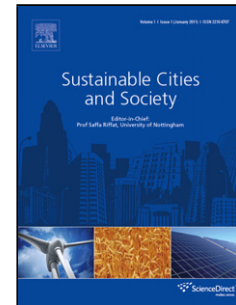
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Characterization of different heat mitigation strategies in landscape to fight against heat island and improve thermal comfort in hot-humid climate (Part II): Evaluation and characterization

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Abstract

This is Part II of the study, aiming at analyzing and characterizing the cooling potentials of heat mitigation strategy (HMS) in landscape from both combating urban heat island (UHI) and alleviating human heat stress, in terms of air temperature reduction ΔT_a and Physiological Equivalent Temperature reduction ΔPET respectively. Here, different HMSs for landscape design were investigated, including vegetation (Green-HMS), high albedo pavement (Grey-HMS), water body (Blue-HMS) and hybrid of trees and landscaping surface (Hybrid-HMS). Parametric study was conducted with a validated urban open space model developed from ENVI-met V4. Through ΔT_a and ΔPET , the cooling benefits of each HMS were evaluated with the area coverage ratio R_{HMS} and the corresponding parameters. Generally, larger R_{HMS} would have both higher ΔT_a and ΔPET in various HMSs, except Grey-HMS. Hybrid-HMS demonstrates the greatest heat mitigation potentials, followed by Green-HMS, Blue-HMS and Grey-HMS. Hybrid-HMS has further cooling benefits compared to the landscape design with singular HMS. For Grey-HMS or Blue-HMS, its heat mitigation potential evaluated by ΔT_a is different from that by ΔPET , so both aspects should be

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