

RP2005

BEHAVIOURAL IMPACTS OF THE URBAN HEAT ISLAND EFFECT IN THREE AUSTRALIAN CITIES SYDNEY, MELBOURNE, ADELAIDE

Problem

Contemporary cities have emerging obstacles, including pronounced artificial heat in their urban environment, denoted the Urban Heat Island (UHI) effect. During summer heat waves, public spaces in Australian cities are frequently warmer than human thermal comfort zone, when such heat stress is amplified by the UHI effect. In addition to the increased air pollution and demand for energy consumption, urban heat stress increases the rate of mortality and heat-related diseases in cities.

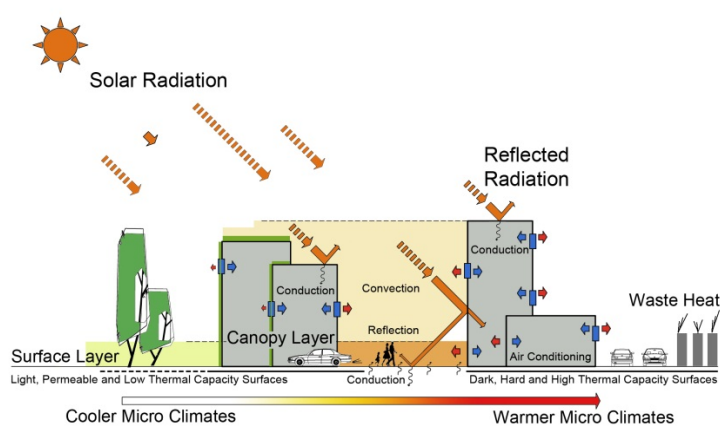


Figure 1. Mechanism of the UHI effect

Heat resilient cities can facilitate public life in out-of-comfort thermal conditions

Solution

This PhD research links urban microclimate research to liveability concepts of public space and public life, through the concept of heat resilience. Heat resilience is defined as the ability of space to maintain its normal activities during out-of-comfort hot temperatures.

Up-to-date results indicates that greener public spaces support their daily activities more effectively in higher temperatures and in many cases enhance their embodied activities in hotter scenarios, when hard-landscaped public spaces are non-functional (greener places also maintain the thermal conditions closer to human thermal comfort preferences in colder climates).

UHI mitigation should be calibrated for space participants

Benefits

UHI mitigation tools (cool surfaces, greenery and behavioural change) need to be analysed in a new perspective, which looks from the eyes of space participants. In this context, the current research delivers:

- A mixed method to collect appropriate urban microclimate data based on remote-sensing, contextual measurements and direct observation
- Advanced list of heat-sensitive behavioural patterns in public spaces of Australian cities
- Heat Resilience Index for public space



Figure 2. Some urban surfaces such as asphalt, concrete and hard paving store the heat in their thermal mass and make the public space a dangerous place to attend during heatwaves.

Please share your ideas about research promotion and pathways to utilisation.

Contact

Ehsan Sharifi

University of South Australia

email: ehsan.sharifi@unisa.edu.au

Twitter: @EhsanSharifi57