Thermal environmental designs of living street canyons in the hot and humid area of China

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The living street canyon is the space enclosed by the living street and its surrounding buildings. The living street canyon is a basic form of a city, a main space for pedestrians' activities and a space that people, buildings and climate interact intensively.

Methods:
- Field measurement (On July 14, 2013)
- Numerical simulation (ENVI-met)

Types:
- Branch 1 (30m)
- Brand 2 (40m)
- Trunk (56m)

Conclusions:
- The design characteristics were summarized.
- Street orientation has a larger contribution on SET*, the southeast-northwest oriented street canyon is the best.
- Height-width ratio has a large contribution on SET*. The bigger height-width ratio is better, and the street canyon with buildings in uniform height is better than non-uniform height.
- Greening has a large contribution on SET* at noon and has a small contribution in the morning and at night.
- Surface albedo and the interactions between various design factors have only small contributions on SET* of living street canyons.
- The optimal design of living street canyon is the one with a bigger height-width ratio and southeast-northwest orientation, and to shield solar radiation and to promote natural ventilation are the most effective ways of optimization.
- Design strategies and guidance on the thermal environments of living street canyons in the hot and humid area of China are provided to urban designers in a practical and quantitative way.

![Fig. The factor effects of the design factors](image_url)