

Assessment of the Urban Microclimatology using the Thermophysiological UTCI Method and on-site Measurements – some Case Studies

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In our everyday life, we spend a great deal of our waking time outside – between the buildings, during pedestrian or recreational use. The urban space is a scene for social interaction: Pedestrians walking down the street, people sitting on park benches, business people gathering around the bus stop or having a walk-and-talk meeting, couples sipping coffee on a café terrace, children playing at the playground. The character of life between the buildings changes from one social context to another, but architects, planners and engineers have defined a variety of criteria for the evaluation of the quality of urban space with regards to their different professional experiences. Urban climatology is an approach to the design of these urban spaces. Several studies have investigated how inhabitants interact with the urban space, but unfortunately, urban design has not been combined with climate-responsive design parameters this regulatory input is needed. The design of outdoor spaces requires an understanding of the local environment. This has traditionally been the role of planners and architects, who have relied on intuition, personal experience, and previously built projects.

With this project aims is to setup an approach to properly measure and analyze on public areas with regard to the UTCI scale; the parameters are limited to the local physical quantities of wind velocity, ambient temperature, mean radiant temperature, sky view factor, humidity etc. – all of which are constrained to the geometric properties of the studied areas.



The study cases are three well-known areas in the City of Copenhagen (Sluseholmen, Islands Brygge and recreational square at the Codan building). The method in order to do the assessment is a recollected data from Urban Environment Registration at the locations, measuring the microclimate of the area. The UTCI method is used to Cross-analyze in regards to recreational use of the areas. Wind tunnel studies and CFD simulations are useful in the performance of wind and irradiation in the area, providing more cross-analysis and information to reach a more substantial assessment.

The assessment is focus in simplifying the urban environment, to make a standardization of the microclimate parameters influencing the human comfort within an urban space quality.