



## **Outdoor thermal comfort – experimental investigations on two recreational urban spaces in Szeged, Hungary**

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Due to the rapid urbanization people spend less and less time in the nature or even outside. This tendency enhances the role of public green areas (city parks and squares) in the recreation and outdoor activities of the city-dwellers. A human comfort project was carried out on two green areas in the inner city of Szeged (Hungary), consisted of questionnaire based human monitoring together with micrometeorological measurements on the site (environmental monitoring). The field measurements in early autumn (September and October) 2009 and late spring (April and May) 2010 resulted 967 filled questionnaires. Biometeorological conditions were quantified by the most popular human biometeorological comfort index, Physiologically Equivalent Temperature (PET), calculated from measured meteorological factors by the bioclimate model RayMan considering the personal parameters of interviewees.

This paper reports on significant relationships between the momentary thermal conditions and the visitors' subjective reactions manifests itself in their thermal sensation, weather perception, preferences for any changes of the several weather parameters, as well as behavioral adaptation. Influence of personal factors (sex, health conditions, fatigue, mood, nervousness, urban vs. open air attitude) on the above mentioned interactions is also discussed. Cross correlation coefficients (Spearman's rho) between the subjective thermal sensation, weather perception and preference revealed significant links in cases of each weather parameter ( $\alpha=0.00$ ). Thermal sensation showed stronger and positive relationships with air temperature perception ( $\rho=0.558$ ) and with solar radiation perception ( $\rho=0.502$ ), while the wind velocity and air humidity have negative (as well as weaker) impacts on the thermal sensation. Values of the correlation coefficients are all negative between perception and preference indicating that if a parameter is perceived as low or weak, then it is preferred to be higher or stronger. In the second part of the analysis the two investigated area were compared according to the interviewed visitors' assessments, who fell within the PET comfortable interval of 18-23°C (N=265). The most frequently used thermal sensation volte by these biometeorologically comfortable conditions was the slightly warm in both areas (ca. 40%), followed by the neutral (ca. 24%) in the one and the warm (ca. 22%) on the other square. The subjects rated more or less positively both sites in terms of satisfaction with the area design, pleasantness and appropriateness for outdoor staying.