EMS Annual Meeting Abstracts
Vol. 16, EMS2019-2, 2019

An appraisal into the interdisciplinary integration of thermo-physiological aspects in local urban design and decision making in an era of climate change (Tromp Foundation Travel Award)

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Within the contemporary city, and perhaps further propagated by the developing synergetic relationship with the maturing climate change adaptation agenda, the significance of addressing local outdoor thermal comfort has simultaneously grown across numerous disciplines. Conversely and as already recognised by the international scientific community, the interdisciplinary cross-over between urban climatology with that of urban planning and design is, still, in its early stages. As a result, the assessment of atmospheric dynamics upon human beings is infrequently reflected in local urban policy or design decisions. As exemplified within contexts such as southern Europe which are susceptible to hot and dry Mediterranean summers, this interdisciplinary approach is argued to be paramount to aid non climatological experts: (1) to undertake more wholesome climatic appraisals of local human-biometeorological risk factors (namely through singular thermo-physiological indices); and, (2) to identify how such threats can be methodically approached through evidence based climate-responsive design.

Through this proposed analysis, the first segment focuses on how local singular atmospheric variables (e.g. air temperature) often reveal insufficient in evaluating wholesome thermo-physiological impacts upon the human body. In association, the second segment examines emerging bottom-up interdisciplinary practices of thermal sensitive urban design to attenuate local thermo-physiological stress levels in different urban contexts. The result of the analysis presents, the existing shortcomings, and opportunities, of such interdisciplinarity to confront: (i) already alarming urban thermo-physiological stress levels; and, (ii) the potential climate change aggravations upon these thresholds upon humans within the built environment by the end of the twenty first century.