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The effects of vegetation in thermal comfort amelioration

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The present study deals with the investigation of the effects of vegetation in human thermal comfort conditions in an urban public area of a Mediterranean city (Athens) during the warm period of the year. Two urban scenarios with different coverage of vegetation were suggested in order to ascertain the effects of vegetation in various proportions. In the initial design, the under study public square was covered by a 10% of vegetation whereas in 'Scenario I' and 'Scenario II' a number of plants were added so as the total coverage of vegetation to reach the 30% and the 50%, respectively. In addition, the paving materials inside the park are mostly concrete and paving blocks that were replaced with planted bricks with light colour and bare soil. Based on previous research that defined the acceptable environmental conditions for the citizens of the Mediterranean climate, the goal of this paper is to evaluate the differences in human thermal sensation resulted by the number of trees added in the three urban designs. To this purpose, the biometeorological index PET (Physiologically Equivalent Temperature) was chosen to access the human thermal sensation using the modified scale with respect to the Mediterranean climate. Results showed that both scenarios resulted in improving the human thermal sensation, but especially in Scenario II, the predicted thermal sensation conditions approached the acceptable comfort range for the Mediterranean climate.