Defining thermal comfort boundaries for heating and cooling demand estimation in Iran's urban settlements

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Abstract

Iran has diverse climate variability, comfort boundaries for each geographic region must be defined in order to present current architectural design recommendations and proper mechanical systems design to meet building's heating and cooling energy demand. Therefore, two components of the temperature and relative humidity of 148 stations with the longest common statistical period of twenty years (1994–2014), which have been in daily scale were selected to calibrate and redefine the thermal boundary conditions in Iran. Givoni chart was used to define and visualize the bioclimatic conditions in buildings. The results of this study indicate that only 18% of the 148 station days fall in the bioclimatic thermal comfort conditions.

Keywords

Climate diversity; Bioclimatic chart; Heating and cooling degree days; Weather stations; Climate responsive design; Iran

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