

Analysis and Forecast about spatial layout of extreme temperatures in Murcia city (Spain)

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The study of urban climate gets a higher relevance in climatology nowadays, as the highest percentage of the world's population live in cities. The city is the best example of the human impact on the environment.

Cities modify their natural climatic variables according to urban parameters like street orientation, density and height of buildings, etc. Each city produces its own meteorological anomalies, especially of temperature.

Temperature is one of the most important parameters determining the comfort and people's standard of living, especially in climate areas like the South-East of Spain, which are characterized by warm summers and heat waves.

The Health Authorities encouraged us to investigate the spatial behaviour of extreme temperatures in the city of Murcia, especially in summer months.

To carry out this study, we have designed a thermometric network in the city of Murcia, using sensors which measures temperature each ten minutes. These sensors were located in busy areas with different urban layout as well as in green spaces. We have done some urban transects to complete the information obtained from the network. At the same time, we installed some reference sensors in the city suburbs.

We have trained a forecast model for extreme temperatures in the city of Murcia from pedestrian areas to busy areas, using the Agencia Estatal de Meteorología (AEMET) database. The forecast model obtained depends both on the wind and the solar radiation.

We aim to obtain and to predict some climate comfort indexes, using the information of the thermometric network and the urban transect. In addition, we will incorporate wind and humidity data. Finally, we will try to develop a spatial distribution model of climate comfort in different areas for the city of Murcia.