

Spatial layout of forecasted extreme temperatures in the city of Murcia (Spain)

E. Hernandez

AEMET Spain (ehernandezg@aemet.es)

The extremely warm summer of 2003 encouraged the development of a “Heat wave Warning System.” The health authorities issued extreme temperature warnings to the population using extreme temperatures that were forecasted for the provincial capitals.

The forecast of extreme temperatures is elaborated from the post-process of EPS from ECMWF. For the Region de Murcia, the heat wave warnings are generated using extreme temperatures from the Observatory Murcia/Guadalupe, which is located in the suburbs of the city of Murcia.

However, under this warning system, some uncertainties were noticed regarding the difference in temperatures in the city and in rural areas. Therefore we designed a thermometric network in the city of Murcia as well as those rural areas.

The thermometric network consisted of sensors taking measurement every ten minutes. Sensors were installed in points of the city with different urban layout, following the WMO assessments.

We have detected urban thermal singularities and we have developed some tools based on Perfect Prog for forecasting’s extreme temperatures in the city of Murcia.

The development of this tool is expected to allow the prediction of extreme temperatures in summer for each part of the city of Murcia, based on the Sky View Factor (SVF) and meteorological parameters.

The method will require the values of forecasted extreme temperatures and the values of meteorological parameters by the EPS from ECMWF. Furthermore, the method will need the values of Sky View Factor in the city of Murcia. We have obtained the values of SVF in the streets of the city of Murcia using a GIS application and 3DSkyView extension, which was described by Souza et al. (2003).

We have designed an automatic process that incorporates the forecasted meteorological variables and the values of SVF to work out forecasted extreme temperatures in the city of Murcia.

We have generated thermometric maps for each day, which show the spatial layout of extreme temperature in the city, using a GIS application.

The final objective is uploading daily thermometric maps to a web server, in order to show the spatial layout of extreme temperatures in the city of Murcia to users.