



Urban climate monitoring: the "Climate Network[®]" in Milano

Dr. Paganelli (1), Dr. Borghi (2), Dr. Frustaci (1), Dr. Lavecchia (1), and Dr. Pilati (1)

(1) CLIMATE CONSULTING S.r.l., Milano, Italy (c.lavecchia@climateconsulting.it), (2) Osservatorio Meteorologico Milano
Duomo, Milano, Italy (sergio.borghi@meteoduomo.it)

Milano is the largest and most industrialised urban area in the topographically peculiar Po Valley region (Northern Italy), but only a few studies describe its climate, mainly relating on data sources of different types and unequal quality.

Since 2011 a new meteorological network (the Climate Network[®]: CN) has been installed in Milano by Climate Consulting Srl as part of a nationwide programme on urban climate monitoring. Planned from the beginning with high homogeneity standards and for the production of high quality data for a variety of energy applications, it provides a unique opportunity for a continued, detailed and reliable monitoring of the urban climate.

In fact, the same automatic instrumentation and a well tested centralized control procedure have been chosen for all the already installed 19 sites in the roughness layer of the urban/suburban Milano canopy layer as well as for all the other cities (Rome and Florence, among several others, with a foreseen total of about 80 stations before 2015), each instrument (inclusive data logger) being regularly tested adopting strict "metrological" methods with special reference to the EURAMET Joint Research Project ENV07-MeteoMet.

The first Milan CN data sets have demonstrated their usefulness to characterize the present time urban climate and to investigate the Urban Heat Island effects with better resolution and higher reliability than previously possible, and with an established mean uncertainty as low as about $\pm 0.1^{\circ}\text{C}$ for temperature data, for instance. Comparison with former work shows a significant improvement in the description and monitoring capabilities by CN, suggesting and allowing useful applications for the urban wellness (as in the case of heat waves) and the energy sector, as well as the long term monitoring of the urban changing climate: in the last case, attempting to continue, improve and extend the relevant historical series in the city centres.