



## **Canopy Urban Heat Island observations in Milano: methodological aspects and recent climatology.**

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The Milano-Brera historical time series is one of the longest meteorological record in the world. Nevertheless, a detailed description of Milano urban climatology (especially of its UHI) is lacking and actual knowledge relies on a few outdated papers, based on limited observational data base. Moreover, while the urban development in the last decades implies a change in the urban climatology, the urban observational capabilities have significantly improved in quantity and quality. In this paper use is done of a dedicated high quality urban meteorological network (Climate Network®), measuring at top of the urban canopy layer since 2011 with metrological criteria, both downtown and in the urbanized environment all around the city.

First of all, the adopted methodology is described and discussed taking into consideration recent critics to general UHI studies. Special attention has been paid to a correct and useful definition of urban reference temperature as well as to selection of suitable rural measurements: the adopted solution should guarantee a long-lasting reference also for future climatic studies and is proposed as general as possible for application to any type of urban environment.

The almost 7 years long database is then used to investigate the UHI phenomenon in Milano spatially as well as temporarily and in relation to the (meso-)synoptic situation: CUHI intensity maxima are observed at very high figures (not much less than 10°C), especially during heat waves.

Overall, the results represent a preliminary detailed Milano UHI short term reference climatology for the second decade of this century and a basis for urban climate services. A comparison to older climatological studies is also shortly discussed. Finally, some considerations are presented for further developments.