



Understanding the measure uncertainties of a urban meteorological network

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Since 2011 Climate Consulting is developing its own urban meteorological network CLIMATE NETWORK[®] (CN) at national level.

A hundred stations will monitor the climate of towns professionally supporting energy, finance, insurance, logistic and resource companies.

Planned from the beginning to comply the highest metrological standards and requirements, it provides a unique opportunity for a continued, detailed and reliable monitoring of the urban climate.

We took into account metrological traceability as a mandatory requirement after the signing of the CIPM-MRA by the WMO.

Metrological traceability is the property of the result of a measurement whereby it can be related to stated references, through an unbroken chain of comparisons with stated uncertainties.

Estimating calibration uncertainties became itself a mandatory requirement, but we have to estimate the final measure uncertainty. These concern many different aspects: comparability, homogeneity, reliability, representativity, completeness and traceability of the database as also a good knowledge of field conditions.

Comparability meets with traceability requirements: a calibration laboratory will manage thermometric calibrations internally using a standard thermometer calibrated by the national institute of metrology INRiM.

The homogeneity and representativeness of CN is guaranteed by using the same base HW/SW configuration in every station and using the same criteria for the stations positioning, taking into account the heat island effect and canopy layer characteristics.

Easy maintenance on field and redundancy of the thermometric sensors give CN a high level of reliability.

A complete and traceable database can be obtained by recording, every 10 minutes of integration time, the calibration parameters, the identification of sensors and raw data.

Climate Consulting designed some specialized stations: in these sites we can test different instruments with different principles of measure, to get field data and to improve our knowledge on measure.

The target is give to every single measure its proper uncertainty value, metrologically estimated.