Starting an effective Climate Service for urban applications: the ClimaMi Project in Milan.

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Resilience plans to cope with climate change are of particular relevance in cities, because of the large and still increasing percentage of population living in urbanized environments. Urban adaptation implies general planning, but reflects also in single and limited urbanistic, engineering and architectural projects, in which local authorities as well as professionals and practitioners are directly involved.

The basic concept of ClimaMi (www.progettoclimami.it), a locally funded but easily replicable project for the city of Milan and immediate neighborhood (a densely populated and industrial area in the western-central part of Po valley in northern Italy), relies on the need to provide, bottom-up, updated and useful climatological information to agencies and personnel directly involved in public and private enterprises and management practices, which have immediate impact in present and future urban climate and citizens wellness. The 3 years Project was therefore developed as an interdisciplinary activity, directly involving not only climatologists but also local professional organizations, and producing as a first result a common basis of knowledge and technical language among different disciplines.

A second fundamental task has been the creation of an as much as possible complete database of 7 essential climatic variables and relevant derived indexes (94 in total) for specific applications, representing an updated and detailed description of the urban environment in the most recent climate. Relating mainly on a high-quality and metrologically managed climate network of urban automatic weather stations (CN by OMD), and integrating data from stations of third-party networks according to accurate selection criteria for homogeneity and reliability, a 6 years DB for 19 selected points and 6 different time windows is now openly available to professionals for direct and immediate use in their activities.

A further development has been the production of interactive GIS-based maps of air temperature distribution at medium-high resolution (100 m) in the Project area: a climatological and geostatistical methodology has been in this case applied to optimally integrate near surface measurements and space-borne observations of land skin temperature. The result is an Atlas of mean thermal fields in selected typical weather situations of specific relevance for resilience applications, for instance in case of enhanced Urban Heat Island and Heat Wave episodes. In the third and last Project year (2021), a DB and Atlas update is planned, while similar methodologies are specifically applied to precipitation.

In order to make the Project results as effective as possible with real impacts on planning and project activities, numerous capacity building courses have also been planned and activated, involving hundreds of officials and professionals. Furthermore, practical laboratories and case
studies were performed in order to evaluate the real effects in the aware and informed use of updated climatological information in adaptation projects.