

The Weather Data Archive and the Library of the CRA-CMA: a very interesting Italian wealth also for international meteorological and climatic studies

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In recent years the input data in climate modeling are generally represented by the values observed in the last 30 years. However, an information base longer (at least 50-100 years old) would allow refinement of the models, their greater reliability, and would therefore lead to an improvement in their results.

Research Unit for Agricultural Climatology and Meteorology of Agricultural Research Council (CRA-CMA) is one among the few institutions in the world that have centuries-old historical meteorological series. In addition of Italian weather data, it has also an important collection of great interest for the international scientific community, about historical meteorological data by the European and world stations corresponding, at the end of the XIX and the beginning of the XX century, with the ancient Royal Central Bureau of Meteorology (UCM), which is CRA-CMA's forfather.

CRA-CMA, in this framework, is the main historic repository of the Italian meteorological and geophysical tradition. In fact, the Royal Central Bureau of Meteorology, located at "Roman College" in Rome, started in 1876 a regular and continuous collection of meteorological data from numerous monitoring stations throughout the Italian country. Moreover, UCM was the first Italian Central Meteorological Service, which prepared and delivered daily forecast bulletins by telegraph through Europe. These original bulletins are still preciously kept at the CRA-CMA Library.

The Weather Data Archive consists of paper cards concerning the historical Italian meteorological stations, where the observers transcribed the daily measures. This Archive is a wealth of information, unique in Italy: it is composed of more 850 meteorological data series, whose 260 are more than thirty years old and 20 more than one hundred year old, for a total of over six million of data for each observed weather element.

Several historical series and the current meteorological data are stored in the National Agrometeorological Data Bank (BDAN), the CMA instrument for collecting and managing data, ensuring the necessary flow of input data to modeling agrometeorological for the CMA research and service activities.

We continue to enrich the Database with all data kept in the CRA-CMA Archive and not yet digitized, to enhance and improve the climatologic information base.

The CRA-CMA Library, known as the "Central Library of the Italian Meteorology", appears today as the largest one among the Italian collections specialized in Atmospheric Sciences and is the main memory of the historical tradition in the Italian modern Meteorology and Geophysics. Erected by Abbot Joseph Calandrelli, in 1782, the CMA Library has been enriched of numerous, valuable, important and interesting collections of books and periodicals on Earth Sciences, specially on Meteorology, Geophysics, Geology, as well Astronomy and Phenology. Library has now more than 15,000 historical texts concerning Meteorology.

Periodicals published by the Italian Central Meteorological Bureau and other international Weather Offices, as well the old overview maps (the second half of 1800), now kept in this Library, have a particular historic and scientific interest.

The large amount of daily weather data, collected in various publications, and bibliographic sources stored in the Library enable to make studies and researches on climate dynamics in a historical – comparative perspective as far

as Mediterranean Europe is concerned.

We hope to develop partnerships and opportunities to enhance this Library and make available the wealth of data and documents kept into it to the international scientific community, for studies and researches about climate change.

The main aims of such enterprise are:

- the creation of a historical meteorological and phenological Database, as useful input for calibration and verification of climatological and phenological mesoscale models.
- the spatialization of historical data for reconstruction of thermal and baric mesoscale fields.
- the identification of the main patterns of daily atmospheric circulation in their evolution (mean sea level and 500 hPa), at meso and sub-synoptic scales.