



## The climate in the Venetian and North Adriatic region: variability, trends and change

workshop

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### TOPIC T1. Historical climatology and past climate

#### Projecting North East Italy temperature and precipitation secular records onto a high resolution grid

M. Brunetti (1), G. Lentini (2), M. Maugeri (2), T. Nanni (1), J. Spinoni (2)

(1) Institute for Atmospheric Science and Climate, National Research Council, Italy

(2) Department of Physics, University of Milan, Italy

##### *Short abstract:*

A large dataset of Italian secular temperature and precipitation records has been recovered, quality controlled, homogenised and analysed in the frame of a ten-year research programme developed by the Institute for Atmospheric Science and Climate (ISAC-CNR) and the Department of Physics of the University of Milan. Such a research programme resulted in obtaining anomaly records covering the whole of Italy for the last two centuries.

Ongoing research focuses, in particular, on the construction of monthly high resolution (1 km<sup>2</sup>) temperature and precipitation climatologies (1961-1990), this step being fundamental for completing the information arising from anomaly fields and for obtaining secular records in absolute values.

The temperature climatologies are obtained by a step-wise Multiple Linear Regression (MLR) geographical model: this model aims at capturing the physical relationships between temperature and geographical variables for each area, by studying the residuals obtained for each station after performing the multiple linear regressions for each geographical variable.

The precipitation climatologies are obtained by a precipitation vs. elevation weighted linear regression model: such a model aims at capturing the complex interactions between precipitation and elevation, by providing the physical relationships for each area. The weights calibrate the contributions of precipitation stations to the construction of neighbouring grid-point records on the basis of radial distance and difference in slope orientation (facet) and steepness.

After obtaining the temperature and precipitation climatologies, the high-resolution version of the secular records is easily obtained by gridding the secular anomaly records and by superimposing the resulting anomaly records to the temperature and precipitation climatologies.

The presentation will summarize the ongoing research activities being performed with the aim of projecting the Italian secular temperature and precipitation records onto a high resolution grid and will present some results for the North-Eastern area.