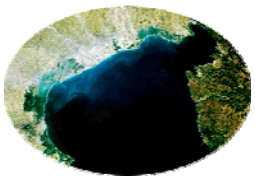

The climate in the Venetian and North Adriatic region: variability, trends and change

workshop

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TOPIC T1. Historical climatology and past climate

Recovery of the early period of long instrumental time series in North-Eastern Italy

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Short abstract:

The longest series of instrumental observations have a number of problems in the early period. This paper is focused to the recovery of the 18th century temperature observations in Padua and Bologna.

In Padua Poleni started with regular observations in 1716-18 outdoors, and then 1725-1764 indoors. The indoor readings were recovered within the EU project IMPROVE. However, two problems were left, i.e. (i) only one reading a day, (ii) the observations were made indoors. It was possible to assess the daily averages making a comparison between the early readings and the modern observations taken at the same hours. Indoor readings were transformed into outdoor observations thanks to the parallel observations by G.B. Morgagni, who also measured in Padua in the period 1740-1768. The very high determination coefficient allowed a precise indoor-outdoor transfer function. For a further validation the recovered data have been compared with the parallel Beccari observations in Bologna. The Padua series was continued by Toaldo and others, with outdoor observations already recovered.

The Bologna series is composed of the following observations. 1716-1774: Beccari and pupils made three observations a day i.e. 8 a.m., 14, 21. The first part of the series, till 1742, includes only indoor observations; after, both indoor and outdoor observations are reported. 1782-1792. i.e. the Mannheim period: Matteuci, Ranuzzi and some other observers. The main problems were: to understand the early thermometers used and their drawbacks, starting with a very obscure situation; to make clear the scale per each instrument (i.e. two Stancari, one Florentine, one Unknown, three Réaumur thermometers); to find the key to interpret the Unknown thermometer and to determine the unknown scale; to establish the same calibration levels and the same scales for all the instruments; to remove a trend due to an air leakage in the first Stancari thermometer; to transform indoor observations into outdoor ones by cross comparison between the two simultaneous readings, made in the same place. After a first homogenisation, the data were compared with the Padua series to find and remove minor discontinuities, if any. A number of different tests were performed.

After this recovery, the series of Padua and Bologna become exceptionally long, i.e. three centuries, starting both in 1716 and continuing unbroken, or with minor gaps, until nowadays.

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