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Cross quality control about daily extreme temperatures recorded by traditional and automatic instruments: the case of the Collegio Romano series in Rome

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CRA-CMA has its headquarter in Rome at the Collegio Romano building, where the historical meteorological observatory (TO) of Rome has been operating since 1786. In the second half of 1999, electronic sensors of the automatic weather station (AWS) have been installed very close to the TO and the two measurement systems operate side by side.
At the TO extremes temperatures are measured by minimum and maximum glass thermometers (and also by a thermo-hygrograph adjacent to thermometers) and then handwritten on observation cards; at the AWS by PT100 sensor and automatically stored in the Agrometeorological Data Base (BDAN) managed by CRA-CMA. Also TO measures are stored in BDAN. Before the storage, AWS measures are subjected to standard automated quality checks and each record is joint to a flag indicating the result of the validation controls. Range controls are performed on TO measures.
Our aim is to investigate differences between daily extreme temperatures recorded by the two different measure systems.
We performed a comparison between the two datasets related to period 2000-2012 and several discrepancies are detected regarding to both maximum and minimum temperatures series. We investigated these differences by metadata and we can ascribe several of them to the distinct recording time windows.
We present some results in order to evaluate divergences between the two series and consider the opportunity of applying correction techniques to joint them.