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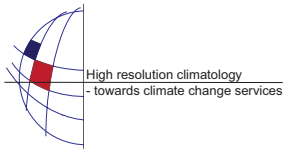

Spatial interpolation of atmospheric pressure observations from automatic weather stations in complex alpine terrain

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ARPA Lombardia is the environmental protection agency for the administrative region Lombardia and manages a high resolution meteorological network composed by hundreds of automatic weather stations. Among these, about one hundred are equipped with barometers.

The historical barometric dataset is however affected by many large systematic errors. Thus, an effort is done to recover information from such observations. A bias estimation technique is applied, based on a statistical comparison with the pressure vertical profiles measured by the Milan Linate soundings. Furthermore, pressure observations undergo several quality checks to ensure coherence in the data entering the analysis procedure.

The interpolation method is a model-independent implementation of Optimal Interpolation where background information is obtained by data detrending. A spatial consistency test based on the interpolation algorithm is performed to discard observations affected by occasional gross errors.

The outputs of all quality tests are integrated in the ARPA Lombardia data quality control system.