Stepwise implementation of siting classification on a high-resolution mesoscale meteorological network of automatic stations

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Lombardia's Regional Weather Service manages an automatic high resolution meteorological network distributed over complex terrain, both in orography and in land use. For historical reasons, station sites are not optimized for mesoscale meteorology and observations are differently affected by representativity errors: measurement sites and instrumentation differ substantially, coming from the union of subnetworks installed for different purposes.

In order to improve compliance with WMO specifications, in the past years effort has gone in harmonization and standardization of the meteorological network through sensor relocation and substitution. Furthermore, a siting classification according to CIMO Guide XIII edition- Annex1.B has been planned to increase knowledge on siting characteristics and effective representativity of the network.

Since Lombardia's Weather Service has limited resources, a stepwise approach is more efficient than sequentially performing the measurements required to classify over 250 sites. A first screening is performed in order to identify class 5 sites for each parameter (air temperature, humidity, precipitation, wind, solar radiation) using information from remote sensing (lidar maps, air surveys, high resolution DEM and land-use maps) and every available metadata. Priority can then be given to correcting/discontinuing class 5 sensors, while work for further refining the classification of classes 1 to 4 can progress in further subsequent steps.

In this poster the proposed methodology is described by applying it to a sample station measuring all the parameters. The overall results on the network are then reported.