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High resolution meteorology
- applications and services

Comparison of the Mixing Layer Height determined by ceilometer and Optical Particle Counter and simulated by MM5 model

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The atmospheric aerosol is often used as a proxy for the determination of the Mixing Layer Height (MLH). The ceilometer, measuring the aerosol backscattering cross section, is a powerful instrument for determining the MLH, thanks to its high spatial-temporal resolution and the possibility of continuous unattended operation. An automated algorithm for MLH determination has been developed and tested under different conditions. MLH retrieval through the analysis of the aerosol numerical concentration is possible by Balloon Borne Optical Particle Counter (BBOPC) installed aboard a tethered balloon.

During summer 2007 and winter 2008, ceilometer and BBOPC data were collected in the Milan urban area (Milano Bicocca), within the framework of the Quitsat project (<http://www.quitsat.it/>www.quitsat.it). Observations are compared with the planetary boundary layer height as predicted by the PSU/NCAR mesoscale model (MM5, v3 r3-6) with four-dimensional data assimilation (FDDA), using two different schemes for the boundary layer parameterization: the Gayno-Seaman (GS) and non-local Medium Range Forecast (MRF).