Vaisala Boundary Layer View Software BL-View

Online visualization of mixing layer height improves the accuracy of air quality forecasts.

Features/Benefits

- Independent data collection, storage, analysis, and reporting tool for use with Vaisala Ceilometers CL31 and CL51
- 24/7 visualization of MLH evolution and additional layers that may affect your local conditions
- Hourly average MLH
- Seamless integration of data for external applications, forecasting, and numerical model verification
- Provides easy understanding of current conditions to support faster and more reliable decision making

Vaisala Boundary Layer View BL-View is a software application for planetary boundary layer analysis and visualization. It is an independent data collection, storage, analysis, and presentation tool designed for use with Vaisala Ceilometers CL31 and CL51. This affordable package enables automatic 24/7 monitoring and visualization of the mixing layer height (MLH) in all conditions to improve air quality monitoring and forecasting.

Improved Decision Making with Accurate Boundary Layer Visualization

The planetary boundary layer height, also known as the mixing layer height (MLH), is a key parameter in the characterization of air pollution, together with urban emission source strengths, traffic emissions, and weather influences. Because emissions and other near-surface pollutants are diluted in a vertical direction within the planetary boundary layer, monitoring the MLH is critical for estimating the nature, transformation, and removal of pollutants. It is also a necessary parameter for the verification of numerical air pollution simulations.

BL-View generates an online visual representation of the MLH that provides you with an immediate understanding of local conditions. The MLH data can also be seamlessly integrated into numerical weather prediction models. You can view and analyze logged data while logging and displaying real-time data. The insights enabled by BL-View help to improve your air quality monitoring and forecasting.

Reliable Data Whatever the Weather

Vaisala Ceilometer measures the backscatter profile of the atmosphere and provides the profile for analysis on BL-View. The software features an automatic algorithm for online retrieval of boundary layer depth and additional residual structures. BL-View calculation is based on combined gradient and idealized backscatter methods and enables reliable automatic reporting of the convective mixing layer height. The algorithm also takes into account time of day and location in order to improve automatic reporting in all conditions.

The layer that is most relevant for air quality is reported as the mixing layer height. Under normal conditions this layer follows the convective layer. But in some cases if a strong additional layer forms inside the convective layer, that layer will be reported as the MLH due to the fact it traps all emissions and therefore is the most relevant for air quality. To ensure reliable reporting in all weather conditions, BL-View also uses an all-weather algorithm that takes into account possible precipitation and cloud events.

Fast Data Analysis

Vaisala BL-View is compatible with PCs running Microsoft Windows® and features a user-friendly graphical interface. Communication between the ceilometer and PC is via an Ethernet or serial line, and ceilometer messages are stored in netCDF format on the PC's hard drive. This format enables easy and fast data analysis and sharing. The automatically analyzed boundary layer data is stored in log files that can be easily transferred to other applications,

Ceilometers provide a vertical dimension to air quality monitoring by reporting the MLH. Typically, a low MLH indicates that the pollution level is high as the pollution is concentrated into a smaller volume.

for example as inputs to numerical weather prediction models.

Flexible User Interface

The ceilometer backscatter profile data is automatically analyzed by default parameters in order to report the convective MLH and other boundary layer structures such as residual boundary layer heights. In addition to real-time MLH reporting, the software also reports the hourly average MLH.

It is possible to run simultaneous operator-specific analyses with user-set algorithm parameters. The

stored profiles can be re-analyzed using any user-set parameters without interfering with the real-time data analysis and visualization.

The clear graphical user interface allows easy and convenient multiprocessing. Operators can zoom in on any point in a detailed analysis. The ceilometer and communication status is permanently displayed on the main screen so that possible operational warnings and alarms can be investigated. These warnings and alarms are also stored automatically to log files for easy retrieval.

Component	Minimum System Requirements
Computer	Ethernet port, serial port, or USB serial converter
Operating system	Windows 10 Pro
	Windows 10 Pro Enterprise
	Windows 7 Ultimate (32-bit or 64-bit) Windows 7 Professional (32-bit or 64-bit)
RAM	2 GB
Hard disk space	For BL-View installation: 600 MB
	For BL-View data files: 4 … 4.5 GB / year (typically)

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