

The E-PROFILE network of automatic lidars and ceilometers for cloud and aerosol/ash profiling

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Hundreds of instruments measuring aerosols and clouds



- 24/7 instruments
- Up to 15km above ground
- Data centralization

154 instruments in 14 countries, and growing...

20 member states:



And partners:



Real-time, Calibrated and Quality-controlled



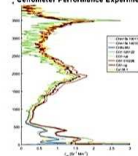
$$C_L = \frac{\bar{P}(r)}{\beta(r)} e^{-2 \int_0^r \alpha(r') dr'}$$

Molecular calibration
[Fernald 1972, Wiegner and Geis, 2012]

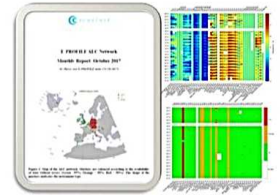
$$C_L = \frac{1}{B + 2\eta S}$$

Liquid cloud calibration
[O'Connor et al., 2004]

CeiLinEx2015



Validation during CeiLinEx
~25% difference after calibration



Monthly reports

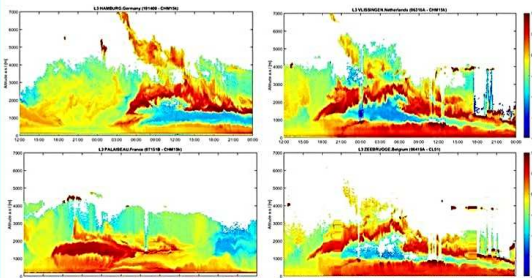


On-line real-time visualisation:
<http://eumetnet.eu/alc-network>

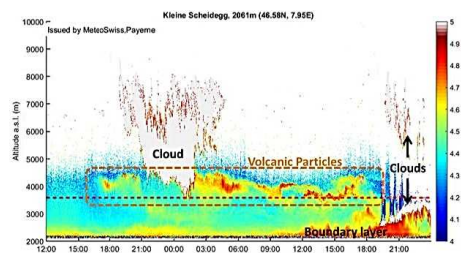
Screen shots of E-PROFILE website on 30/10/2017



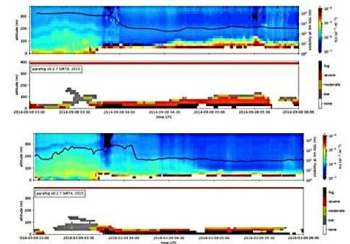
Applications



Smoke detection in France, Germany, Netherlands and Belgium during the major Portuguese fires (October 2017). Several planes landed in emergency due to this smoke.



Volcanic particles detection in the Swiss Alps during the Etna eruption in December 2015



Fog anticipation at Vienna and Munich (Courtesy of M: Haeffelin, Q. Laffineur and the ToPROF community)