



EXPLORE THE CLIMATE

CE376

COMPACT AUTOMATIC AEROSOL LIDAR



CE376 LiDAR



Air Quality / Climate Sciences / Meteorology / Aviation

OUR CE376 LIDAR

The CE376 is a unique dual-wavelength depolarization LiDAR, integrating cutting-edge technologies to provide high-precision atmospheric profiling under operational conditions. For optimal aerosol characterization, the system can be configured with up to three channels—green, near-infrared (NIR) and depolarization—enabling comprehensive analysis and enhanced detection capabilities.

The CE376 is a highly suitable solution to monitor industrial dust emissions, urban pollution, volcanic ash and other types of aerosol particles.


MEASUREMENT PRINCIPLES


LiDARs (Light Detection And Ranging) are optical remote sensing instruments providing atmospheric vertical profiles.

Pulsed laser light is emitted (single or multiple wavelengths) and sent to the atmosphere. The emitted light is scattered by the molecules, particles and clouds and part of it is backscattered to the LiDAR system.

This collected signal is then measured as a function of time and distance.

The analysis of the signal can provide information on the spatial distribution of the aerosol in terms of extinction, backscatter coefficient, volume concentration, mass concentration and much more for complex LiDAR instruments (temperature, water vapor, size distribution, shape, refractive index, type of aerosol).

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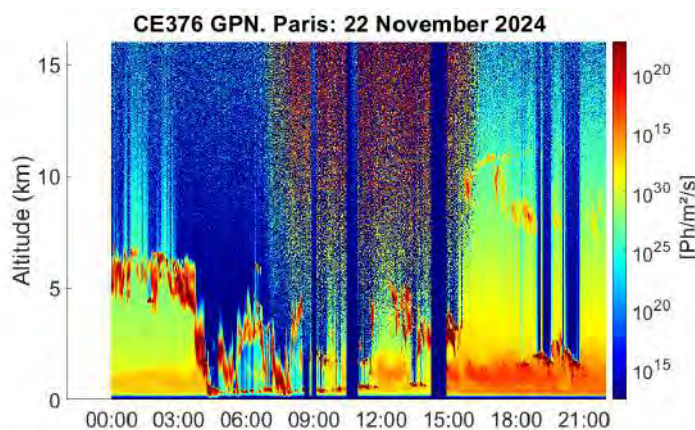
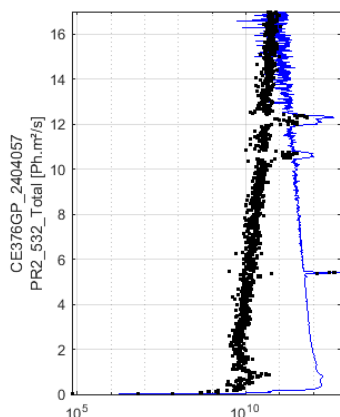
 cimel@cimel.fr

 www.cimel.fr

OUR MONITORING SOFTWARE: IAAMS

Integrated Automatic Aerosol Monitoring Software

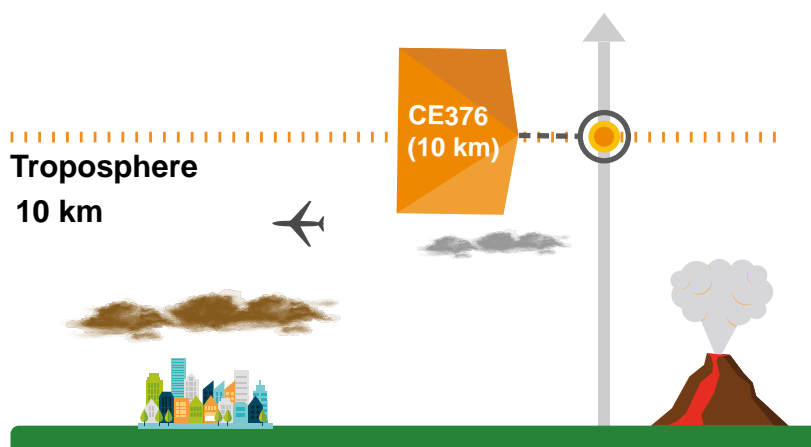
- ✓ Compatible with CE376 LiDARs & CE318-T photometers
- ✓ Data export (NASA - AERONET compatible)
- ✓ Data processing and synergy through advanced algorithms
- ✓ Dashboard & processing customization
- ✓ Unique & user-friendly interface



Quicklook of LIDAR PR² at 532 nm

APPLICATION FIELDS

- Air quality:
 - Anthropogenic pollution:
 - Urban pollution monitoring
 - Industrial emissions control
 - Natural events
 - Volcanic ash
 - Sand / dust storm
 - Forest fires
- Climate change
- Aviation
- Atmospheric sciences
- Aerosol & Cloud modelling



FEATURES & BENEFITS

- Aerosol vertical profiles up to top of the troposphere
- Automatic quantitative aerosol loading by coupling with our CE318-T photometers
- Eye safety: compliance with EN-60825/ANSI Z136 standard
- Easy transportation & suitable for field campaigns
- Very short blind zone (150 m)

Real time “quicklook” visualization

Automatic extinction & backscattering profiles

High stability and low maintenance

Aerosol layers characterization

PBL detection



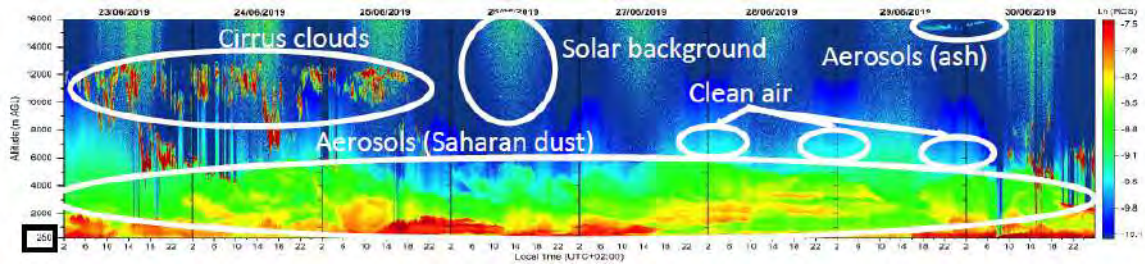
Synergy with our **CE318-T** multispectral photometer

SOME REFERENCES

COBIACC Campaign - 2019

For the entire month of July in Caillouël-Crépigny (France), scientists from the University of Lille, IMT and ATMO Hauts-de-France analyzed particles in the atmosphere and their impact on health in rural areas.

The goal was to understand the formation and the composition of particles and their precursors in the air in a rural environment during the summer period.

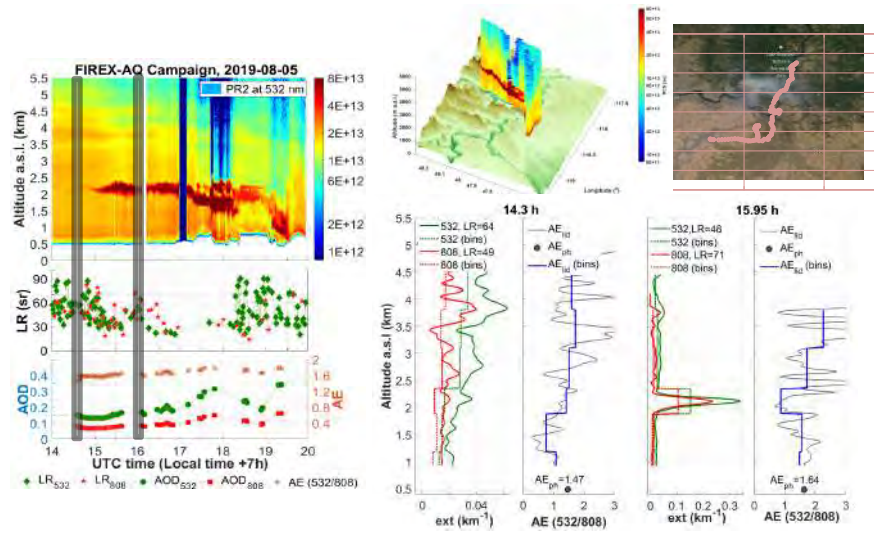


Range corrected signal (RCS) 532 nm - Customized CE376 LiDAR

FIREX-AQ Campaign - 2019

NOAA and NASA teamed up on a massive research campaign called FIREX-AQ that will use satellites, aircraft, drones, mobile and ground stations to study smoke from wildfires and agricultural crop fires across the Western U.S.

Cimel provided a CE376 micro-LiDAR as well as its network of CE318-T photometers through AERONET to have detailed measurements of aerosols emitted from wildfires and agricultural fires.



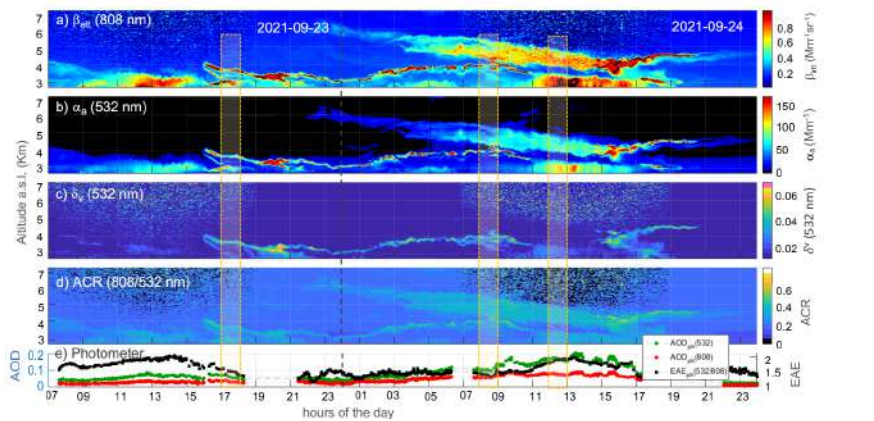
Sanchez Barrero et al.2024

La Palma eruption - 2021

The eruptive period of the Cumbre Vieja Volcano lasted 85 days (La Palma, Canary Islands, Spain from September 19 to December 13, 2021).

Continuous monitoring of the eruption was made possible by the collaborative efforts of scientific, private, and governmental organizations. At the beginning of the eruption, fresh volcanic emissions, including sulfuric emissions, were measured on the islands.

Our CE376 LiDARs tracked plumes of aerosols emitted by the volcanic eruption on La Palma.



Yenny Gonzalez et al.2024

Combining technology and science, CIMEL develops reference optical remote sensing instruments to monitor the atmosphere, land and oceans, contributing to a deeper understanding of the Earth system and helping human activities adapt to the environment

TECHNICAL SPECIFICATIONS

Power supply	100 -250 VAC 50/60 Hz
Typical power consumption	40 W
Maximum power consumption	200 W
Operating conditions	<u>Temperature</u> +18°C to +28°C (without thermal enclosure) -30°C to +55°C (with thermal enclosure) <u>Humidity</u> (without thermal enclosure): 5% to 45%
Dimensions	713 x 463 x 691 mm /
Weight	35 kg / 77 lbs
Overlap	700 m
Acquisition mode	Photon counting
Acquisition time	≥ 1 s
Maximum range measurement	30720 m
Minimum range measurement	50 m
Range resolution	15 m
Eye safety	Yes: compliance with IEC 60825-1
Detector	APD
Full FOV reception	Green: 550 µrad / NIR: 510 µrad
Full emission divergence	Green: 420 µrad / NIR: 450 µrad

Reference	Channels	Parameters
CE376-G	532 nm (Green laser)	- Vertical aerosols and clouds profile - PBL height - Extinction/Backscatter profiles
CE376-GP	532 nm (Green laser), depolarization	- Vertical aerosols and clouds profile - Depolarization profile (Particle shape) - PBL height - Extinction/Backscatter profiles
CE376-N	808 nm (NIR laser)	- Vertical aerosols and clouds profile - PBL height - Extinction/Backscatter profiles
CE376-GN	- 532 nm (Green laser) - 808 nm (NIR laser)	- Vertical aerosols and clouds profile - Angstrom exponent profiles (Particle size) - PBL height - Extinction/Backscatter profiles
CE376-GPN	- 532 nm (Green laser), depolarization - 808 nm (NIR laser)	- Vertical aerosols and clouds profile - Angstrom exponent profiles (Particle size) - Depolarization profile (Particle shape) - PBL height - Extinction/Backscatter profiles

Scan to see the datasheet



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