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Calibrate, Validate, collect parallel data with Black Carbon

Aethalometer® AE33 accessories

NEUTRAL DENSITY OPTICAL FILTER VALIDATION KIT

- NIST-traceable optical validation of Aethalometer® response.

AMBIENT METEOROLOGICAL SENSOR

- Temperature, Pressure and Relative Humidity sensor.

CO_2 SENSOR

- Determination of the BC Emission Factor of an individual source.

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Manufactured in Europe by
Aerosol d.o.o., Ljubljana, Slovenia

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Product Descriptions

NEUTRAL DENSITY OPTICAL FILTER VALIDATION KIT

The Neutral Density Optical Filter Kit is kit consists of four metal holders, each containing two elements of precision optically-absorbing glass. The glass is a stable, broad-spectrum absorbing material whose optical density is traceable back to primary photometric standards offered by national and international standards organizations, e.g. NIST (USA); NPL (UK); etc. Introducing these ND filters into the Aethalometer light path will reduce the transmitted intensity in a reproducible manner.
The Aethalometer real-time data is based on measuring the change in optical absorption due to the Black Carbon component of the aerosol collected on the tape spot. The response of the instrument to a difference in optical absorption may be verified by inserting two ND filters, one of zero optical density, the other of a darker density. Since the optically-absorbing glass is stable over time, consistency of the photodetector responses to the ND filters will validate the consistency of the Aethalometer measurement process. To cover the range of optical absorptions used by the Aethalometer, the ND Kit contains four units with progressively increasing absorption.
Software in the Aethalometer automatically prompts the user's actions, and calculates the result.

AMBIENT METEOROLOGICAL SENSOR

The Ambient Meteorological Sensor is a non-aspirated unit which measures air temperature, relative humidity and barometric pressure. It uses a Pt100 element for Temperature ; a compensated solid-state capacitive sensor for Relative Humidity; and a piezoresistive pressure transducer for Pressure. The sensing elements are protected by a UV-resistant polymer shield. A cable (supplied) connects the sensor to the AE33, and its data is automatically imported and merged with the Black Carbon measurements.

CO2 SENSOR

The CO_2 Sensor measures the CO_2 concentration in the air stream discharged from the AE33 Aethalometer, and its data is automatically imported and merged with the Black Carbon measurements. Analysis of the relationship between these two species of combustion origin provides valuable information on the BC Emission Factor of the sources impacting the sampled air mass.
CO_2 and BC are the First and Second listed leading contributors to forcing for global climate change. While CO_2 emissions may be calculated from fuel-use data, BC emissions are extremely variable and not well known

• High-time-resolution data (1 second) can be used to determine the BC Emission Factor of an individual source, such as a car or truck. This operating mode can also be used in direct testing of combustion sources such as vehicles, engines, and fires.

• Medium-time-resolution data (1 minute) can be used to determine the BC Emission Factor of a group or category of nearby sources, such as traffic on a highway. These in-situ measurements capture real-time data from real sources operating under real conditions: rather than selected sources operating under laboratory conditions. A very large number of data points can be recorded automatically by operation of a single equipment ensemble at a fixed location for a reasonable period of time: thereby acquiring data pertinent to a very large number of candidate sources.

• Low-time-resolution data (>10 minutes) can be used to study the co-relationship of combustion effluents in a variable plume from a distant source, such as a city.

Scan the code for more info

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