

Off-Grid Black Carbon monitoring



Motivation

Carbonaceous aerosols are particulate matter (PM) produced by the incomplete combustion of fuels. 'Black' Carbon (BC) is typically produced by high-temperature combustion such as engine exhaust and industrial processes. 'Brown' Carbon (BrC) is typically produced by lower-temperature biomass combustion such as domestic cooking and heating stoves, forest fires, agricultural waste burning etc.

Both BC and BrC absorb light very strongly, leading to radiative forcing for climate change when suspended in the air; incorporated in cloud droplets; or deposited on formerly-reflecting surfaces such as snow and ice – leading to accelerated melting. Carbonaceous aerosols are second only to CO₂ in their effect on climate change.

Carbonaceous aerosols can act as condensation nuclei and alter the properties of clouds and their potential for precipitation.

Carbonaceous aerosols contain toxic and carcinogenic materials, and have serious adverse effects on human health, animal, and agricultural productivity.

It is necessary to monitor carbonaceous aerosols at both **local** and **remote** locations, to assess these negative impacts. The **Model AE43 Portable Aethalometer**[®] is a rugged, field-proven instrument with automatic, continuous, multi-wavelength analysis and our patented DualSpot[®] technology.

Methodology

The **Magee Scientific Model AE43 Aethalometer**[®] operates from DC power (12 ~ 16 V) with a low consumption (15 ~ 25 W). It starts automatically upon power-up and provides continuous data for long periods of time with no operator attention required. This provides great operational flexibility:

Off-Grid

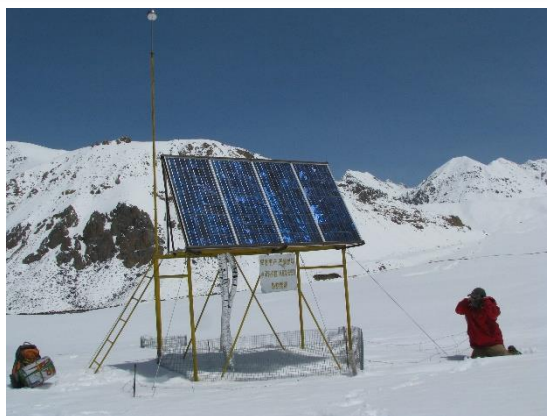
- The AE43 may be operated from an array of solar photovoltaic panels and storage batteries.

Remote Locations

- If aerosol concentrations are low, the AE43 can operate for several months unattended, using one roll of filter tape.

Unreliable AC line power

- The AE43 can use its matching compact battery pack to provide up to 16 hours continuity for uninterrupted data in locations where the main AC line power is unreliable.



Instrument

The **Magee Scientific Model AE43 Aethalometer**[®] is constructed to the same standards of ruggedness and reliability as the **rack-mount Model AE33**.

The **Model AE43** offers all of the analytical features of the AE33, including in-field analytical performance validation, stability, and internal tests.

The **Model AE43** brings the reference-standard performance of the **AE33** to the most remote locations.



GENERAL INQUIRIES:

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