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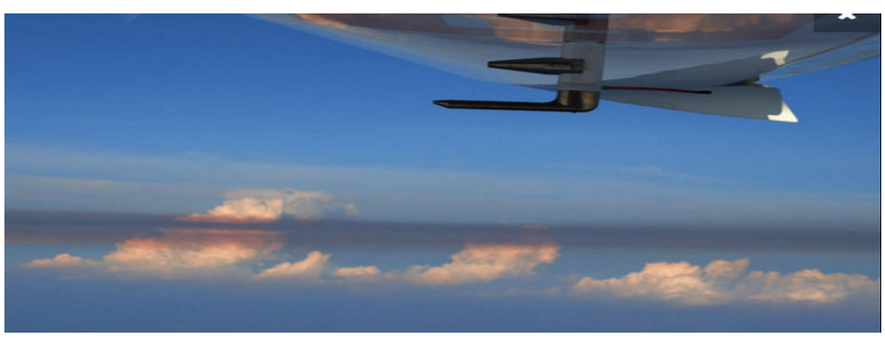
GLOBAL BLACK CARBON POLLUTION



APPLICATION NOTE

MOTIVATION

Black carbon (BC) has a unique and important role in the Earth's climate system because it absorbs solar radiation, infuences cloud processes, and alters the melting of snow and ice cover. BC is the second largest climate warmer, after carbon dioxide. A large fraction of atmospheric black carbon concentrations is due to anthropogenic activities. Concentrations respond quickly to reductions in emissions because black carbon is rapidly removed from the atmosphere by deposition. Thus, black carbon emission reductions represent a potential mitigation strategy that could reduce global climate forcing from anthropogenic activities in the short term and slow the associated rate of climate change.

Comparison with remote sensing observations indicates that global atmospheric absorption attributable to black carbon is too low in many global aerosol models. It is therefore important that measurements are done on a global scale.

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AROUND THE WORLD FLIGHT IN AN ULTRA-LIGHT PLANE

INSTRUMENTATION

- Using an ultra-light airplane over 42,000 km were flown in a month.
- Flying at 3000 m ASL with 230 km/h.
- Ultra-light version of Aethalometer was used.

RESULTS

Maximum BC concentrations were 1.5 mg/m^3.

- Hotspots were identified.
- Long range transport was detected over seas.
- Together with the total BC also fossil fuel and biomass burning contributions were measured.

Related aticles

- L. Drinovec et. al., „The filter loading effect by ambient aerosols in filter absorption photometers depends on the mixing state of the sampled particles“, Atmos. Meas. Tech. Discuss. (2016).

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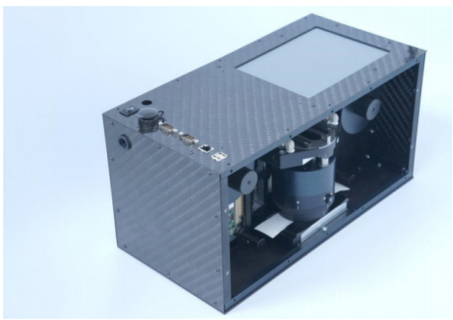

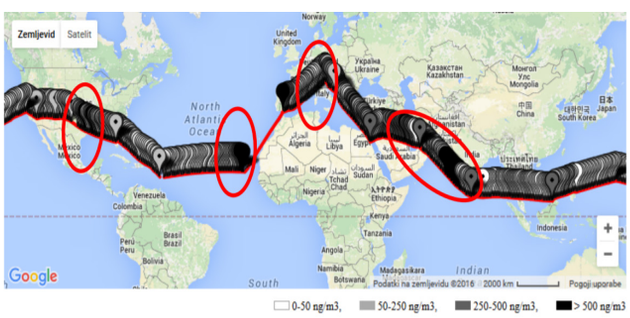

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Keeping an Eye on the Air