

Observations of Anomalously High Black Carbon Mass Absorption Coefficients in Fresh Smoke Plumes from Wildfires

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Summary

- quantifying and reducing uncertainty in its radiative effect.
- bare BC ($6.25 \pm 1.0 \text{ m}^2/\text{g}$ at 660 nm, Bond and Bergstrom 2006).
- during the SEAC⁴RS study in 2013.
- States sampled during the FIREX-AQ study in the summer of 2019.

 - BC mass measurement.

- and smoke processes including several airborne and ground-based sampling platforms.
- aloft, 0.5 5 hours downwind of wildfires.

- Aerosol absorption was measured by a NOAA instrument.
- Soluble BrC absorption was measured by offline analysis of soluble extracts from filter samples.







- absorption is enhanced by clear coatings.
- of the bulk absorption coefficient and the bulk BC mass concentration, and can be compared directly to MAC measured in laboratory settings; however, the sampled smoke is complex and is composed of organics aerosol, inorganic
- 660 nm.
- Theoretical models suggest an enhancement of 2.5 times as an upper limit.
- the red portion of the spectrum.
- to BC and the coating enhancement.



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MAC = 6.25 m ² /g
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