



Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali (/jspui/)

/ Publications of IISER Mohali (/jspui/handle/123456789/4)

/ Research Articles (/jspui/handle/123456789/9)

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/2496>


Title:	Limitation of the Use of the Absorption Angstrom Exponent for Source Apportionment of Equivalent Black Carbon: a Case Study from the North West Indo-Gangetic Plain
Authors:	Garg, Saryu (/jspui/browse?type=author&value=Garg%2C+Saryu) Chandra, B.P. (/jspui/browse?type=author&value=Chandra%2C+B.P.) Sinha, V. (/jspui/browse?type=author&value=Sinha%2C+V.) Sinha, B. (/jspui/browse?type=author&value=Sinha%2C+B.)
Keywords:	Angstrom Black Carbon Gangetic Plain Apportionment
Issue Date:	2016
Publisher:	American Chemical Society
Citation:	Environmental Science and Technology, 50(2), pp. 814–824
Abstract:	Angstrom exponent measurements of equivalent black carbon (BCEq) have recently been introduced as a novel tool to apportion the contribution of biomass burning sources to the BCEq mass. The BCEq is the mass of ideal BC with defined optical properties that, upon deposition on the aethalometer filter tape, would cause equal optical attenuation of light to the actual PM _{2.5} aerosol deposited. The BCEq mass hence is identical to the mass of the total light-absorbing carbon deposited on the filter tape. Here, we use simultaneously collected data from a seven-wavelength aethalometer and a high-sensitivity proton-transfer reaction mass spectrometer installed at a suburban site in Mohali (Punjab), India, to identify a number of biomass combustion plumes. The identified types of biomass combustion include paddy- and wheat-residue burning, leaf litter, and garbage burning. Traffic plumes were selected for comparison. We find that the combustion efficiency, rather than the fuel used, determines α_{abs} , and consequently, the α_{abs} can be ~ 1 for flaming biomass combustion and >1 for older vehicles that operate with poorly optimized engines. Thus, the absorption angstrom exponent is not representative of the fuel used and, therefore, cannot be used as a generic tracer to constrain source contributions.
Description:	Only IISERM authors are available in the record.
URI:	https://pubs.acs.org/doi/10.1021/acs.est.5b03868?ref=VI-ESTairPollutionArticles (https://pubs.acs.org/doi/10.1021/acs.est.5b03868?ref=VI-ESTairPollutionArticles) http://hdl.handle.net/123456789/2496 (http://hdl.handle.net/123456789/2496)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format
Need to add pdf.odt (/jspui/bitstream/123456789/2496/1/Need%20to%20add%20pdf.odt)		7.9 kB	OpenDocument Text

[View/Open \(/jspui/bitstream/123456789/2496/1/Need%20to%20add%20pdf.odt\)](#)

Show full item record (</jspui/handle/123456789/2496?mode=full>)

 (</jspui/handle/123456789/2496/statistics>)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.