



## **Chemical characterisation of the submicron aerosol composition in Old Delhi**

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Indian cities, and Delhi in particular, is subject to very high concentrations of particulate matter, especially in the autumn and winter, when a low boundary layer height and low turbulence coincide with increased emissions from biomass burning for heating, crop residue burning outside the city and pyrotechnical activity associated with festivities such as Diwali. A better understanding is required of the contributions of the various emission sources, to target emission abatement strategies. A joint UK-Indian research programme “Air Pollution and Human Health in an Indian Megacity (APHH-India)” is aimed at helping to address the need for a better understanding of the pollutant emissions in Delhi, the source apportionment of the aerosol and the associated health impacts and mitigation options.

As part of this programme, a major air chemistry supersite was established at the Indira Gandhi Delhi Technical University for Women near Old Delhi’s Kashmere Gate. Here, submicron aerosol composition was measured, with interruptions, from mid May (pre-Monsoon) to mid November (post-Monsoon) 2018 using an Aerodyne High Resolution Aerosol Mass Spectrometer (HRTOFAMS) for ammonium, nitrate, sulfate, chloride and organic aerosol mass, as well as an aethalometer for black carbon. This resulted in a total of about 100 days of data coverage. In addition, for the last two weeks of the campaign, the HRTOFAMS was used to measure aerosol emissions from a 33 m flux tower using the micrometeorological eddy-covariance flux measurement method.

Here we will be presenting the analysis of the submicron aerosol concentrations and their controls across the seasons, including a component analysis of the organic aerosol component, which at times exceeded 500  $\mu\text{g}/\text{m}^3$ , based on positive matrix factorisation.