



High-resolution size distributions of organic aerosol sources at two sites in Delhi National capital region (NCR) in Indo-Gangetic Plain

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Delhi National Capital Region (NCR) is a well-known aerosol hotspot in the world, located in the western Indo-Gangetic Plain (IGP). Understanding the size and evolution of organic aerosol (OA) sources at NCR in winter period is very important due to their complexity in origin and processing. High-Resolution Particle Time of Flight (HR-PToF) size distribution analysis is performed on the HR-ToF aerosol mass spectrometer (AMS) derived data at two sites, i.e., Indian Institute of Technology, Delhi (IITD) and Manav Rachna University, Faridabad (MRU) in NCR region to understand the size distribution and evolution of OA. Proxies of UMR sources of Hydrocarbon OA (m/z 57), Biomass burning OA (m/z 60), Semi volatile OA (m/z 43) and Low-volatile oxygenated OA (m/z 44) are selected to understand the size distribution of the isobaric high-resolution fragments at these proxies. The HR size distribution of primary and secondary fragments at these organic proxies shows relatively distinct mass distributions at lower and higher size bins. The diurnal variation of the mean modal diameters (MMD) of the HR fragments indicates that the $C_4H_9^+$ (Hydrocarbon OA proxy) shows much diurnal variation in both the sites than the other proxies, where CO_2^+ shows the least variation.