Characterization of fine particles using Aerosol mass spectrometer during intensive campaign in three different sites in Kanto basin in summer of 2011

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The atmospheric aerosols, especially fine particles, are known to have adverse health effects on human populations. Understanding the composition of fine particles is necessary to identify their sources and to predict their effect on various atmospheric processes. Although organic aerosols are major components of the fine particles in urban atmospheres, the composition, formation mechanisms, and seasonal variation of concentrations of organic aerosols (OA) are not well understood. To study the organic aerosol source apportionment, the AMS data has been used to chemically characterise the sources and evolution of OA at many worldwide (Zhang *et al*., 2007).

The Aerodyne AMS were operated at Saitama University (C-ToF-AMS), Center for Environmental Science in Saitama (Q-AMS), Gunma Prefectural Institute of Public Health and Environmental Sciences in Maebashi (H-ToF-AMS), Japan, from 23 to 30 July 2011, except for occasional periods of maintenance and calibration (Figure 1). PMF (PMF2 ver4.2 ; Paatero (2000)) and PET (Ulbrich *et al*., 2009) were used to analyze datasets for each organic aerosol mass spectra from three differnt site.

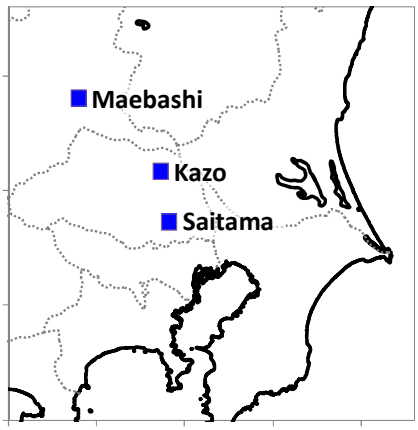

Figure 1. Sampling Sites

Organic aerosol (OA) was detected as major component in this sampling campaign. The organic aerosol mass spectra was divided into two types of OA components, oxygenated organic aerosol (OOA) and hydrocarbon-like organic aerosol (HOA), using positive matrix factorization (PMF) (Figure 2). The OOA was ubiquitous in various atmospheric environments, on average accounting for 44%, 49% and 55% of the total OA in Saitama (urban), Kazo (rural), and Maebashi (rural), respectively.

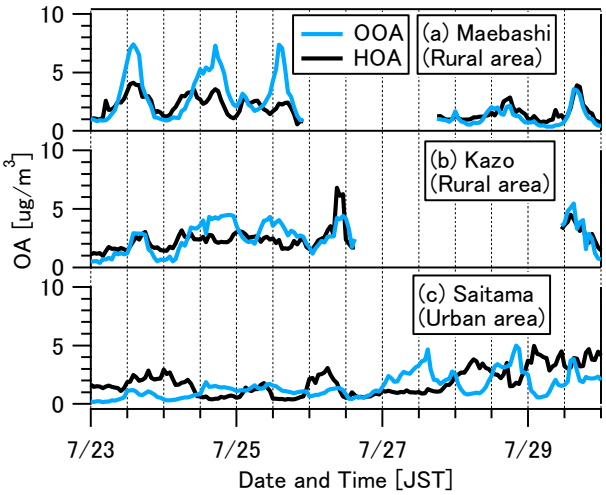

Figure 2. Variations of OOA (Oxygenated Organic Aerosol) and HOA (Hydrocarbon-like Organic Aerosol) concentration at Saitama, Kazo, and Maebashi, as 1 hour averages.

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