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## Application of Positive Matrix Factorization to Data of Organic Mass Concentration Obtained by Aerosol Mass Spectrometer

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Due to long-range transport of air pollution from neighbor countries, monitoring air quality in our environment is a public concern. Particularly, understanding of level and composition of airborne particulate matter (or so called aerosols) is very important due to its possible link to climate change and adverse health effect. We have carried out ambient measurements by Aerodyne's aerosol mass spectrometer (AMS) for analysis of chemical composition of aerosols (sulfate, nitrate, ammonium, chloride, and organics) at Fukue island, Nagasaki where long-range transported aerosols from other eastern Asian countries may directly impact the air quality. This time, we analyze the mass spectra data obtained in the spring 2009 by Positive Matrix Factorization for quantitatively better understanding of organic aerosols.

The PMF analysis showed that the observed data are reasonably solved with the factors between two and five. Although the results from the five factorial solution were indicated as "best fit" according to Q-value evaluations, comparison with reference mass spectra indicates that the five factorial solution seemed to unnecessarily break down physically meaningful mass spectra patterns into patterns that were resembled each other. Based on the combination of the Q-value evaluation and the comparison of reference mass spectra, we concluded that a 3 factorial solution is plausible to explain the observations: factors of oxygenated organic aerosol, hydrocarbon-like organic aerosol, which were well correlated with ozone and carbon monoxide respectively, and another which has not been reported to date.

Keywords: AMS, PMF, Aerosol, SOA