
[EJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-AS Atmospheric Sciences, Meteorology & Atmospheric Environment

[A-AS06] Atmospheric Chemistry

convener: Yoko Iwamoto (Graduate School of Biosphere Science, Hiroshima University), Tomoki Nakayama (Graduate School of Fisheries and Environmental Sciences, Nagasaki University), Sakae Toyoda (東京工業大学物質理工学院, 共同), Nawo Eguchi (Kyushu University)

Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

This session provides a forum for the presentation of the broad spectrum of tropospheric and stratospheric chemistry, including various research topics (e.g., dynamical processes, air quality and climate), approaches (modeling, field measurements, remote sensing, and laboratory studies), and species (gas and aerosol). This session also provides an opportunity for discussing possible future collaboration with other research fields relevant to atmospheric chemistry.

[AAS06-P14] Magnetic investigations of atmospheric aerosol particles in Noto region

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Certain type of atmospheric aerosol cause adverse health effects, and are of increasing environmental concern. SPM and PM_{2.5} are often used as the indicators of the aerosol health effects, but because these values are based only on bulk weight of all aerosol types, they do not necessarily reflect the amount of components that are of immediate health concern (e.g. Asian dust and smoke), but can be biased by those that are considered to be less harmful (e.g. sea salt). It is therefore, important to develop a better proxy that is directly linked to the causal components of the adverse health effects. However, offline analysis of filtered samples are labor intensive and requires time before the results are obtained, making continuous measurement impossible. In this study, we applied magnetic measurement on filtered samples to test its potential as a new and simple indicator of the aerosol health effects.

Magnetic measurement, is a rapid, non-destructive and cost-effective means to, identify the amount and mineralogy of magnetic particles often contained in anthropogenic pollutants. There are few studies which applied magnetic measurement on aerosol samples collected in polluted urban environments, however, it is unclear whether it can be applied also on samples collected in remote environments where pollution level is expected to be much lower. In Japan, it is often subject to transboundary air pollution accompanied by Asian dust (Kosa). Therefore, the purpose of this study was to apply magnetic investigations on the filter samples collected in Noto region directly under the influence of continental transboundary pollution, to acquire the basic dataset and verify the applicability of the magnetic data as an indicator of the health effect of the aerosol particles.

Magnetic properties of 93 samples collected between Aug, 2014 and Sep, 2016 at Noto region were investigated. In this presentation we report the results obtained by stepwise isothermal remanent magnetization acquisition experiment, stepwise alternating field demagnetization experiment and low-temperature magnetic measurement.