

Emission of particulate inorganic substances from prescribed open grassland burning in Hirado, Akiyoshidai, and Aso, Japan

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This is an article reporting the observations for the atmospheric concentrations of ionic elements and compounds found in airborne particulate matter (PM) during the prescribed open grassland burning in the western Japan. The size of PM was not segregated in this study. The analysis of water-soluble ion concentrations is trivially done in many air quality studies, however, studies focusing on the emissions at their sources are limited. In this report we focused on the measurements of cations (sodium, ammonium, potassium, magnesium, and calcium) and anions (chloride, bromide, nitrate, phosphate, and sulfate) water-extracts of PM collected from the prescribed domestic biomass burning at a variety of locations, compared the results with the literature values reported for the similar studies, and evaluated if the measured ions were emitted from the biomass burning, based on the correlations between the ions. The results demonstrated that the prescribed open fires can be significant local sources for particulate water-soluble inorganic components in the air.

