Emission characteristics of particles and elemental composition of open burning experiment

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Abstract

To understand the impact of open burning of crop residues to the atmospheric particles, we burned crop residues (rice straw, wheat straw, barley straw, stem and leaf of red bean, and rice hull produced in Japan) in an outdoor chamber, and measured the particle mass and their composition (elemental carbon, organic carbon, elements, and ions) in the exhausts by particle size. Particulate emission factors differed among these residues a factor of five. Particulate compositions were also different among residues, especially for the rice hull that was firstly experimented. It was suggested that the ventilation air volume affects the particulate composition. Our $PM_{2.1}$ emission factors for rice straw and wheat straw were in the same order as the previously reported data, however, their compositions were somewhat different with them.