

Laboratory biomass burning experiments to investigate the dependence of emissions of volatile organic compounds on burni

INOMATA, Satoshi^{1*}; TANIMOTO, Hiroshi¹; PAN, Xiaole²; TAKETANI, Fumikazu²; KOMAZAKI, Yuichi²; MIYAKAWA, Takuma²; KANAYA, Yugo²

¹NIES, ²JAMSTEC

Biomass burning is one of major sources of primary fine carbonaceous aerosols and organic compounds.¹ A field observation campaign in a rural area of the Yangtze River Delta, China, was carried out during the harvest season in June of 2010 and air masses of open crop residue burning were frequently observed. It was found that the emission ratios of elemental carbon (EC) and organic carbon (OC) to CO were enhanced during the biomass burning episodes compared with those in urban pollution.² In addition, oxygenated volatile organic compounds were predominantly emitted during the biomass burning.³ To investigate the emission properties of aerosols and organic compounds under controlled conditions, we carried out biomass burning experiments in the laboratory. Two types of crop residues, wheat straws and oilseed rapes, which were actually burned during the campaign, were used as the sample. We will mainly show the dependence of the emission ratios of volatile organic compounds to CO on burning conditions and compare with the field observation.

References

- 1) Akagi et al., Atmos. Chem. Phys. 11, 4039-4072, 2011.
- 2) Pan et al., J. Geophys. Res. 117, D22304, 2012.
- 3) Kudo et al., submitted to J. Geophys. Res., 2013.

Keywords: Biomass burning, Volatile organic compounds, Crop residue, Combustion efficiency, PTR-MS, SP2