

## ***Interactive comment on “Gaseous, PM<sub>2.5</sub> Mass, and Speciated Emission Factors from Laboratory Chamber Peat Combustion” by J. G. Watson et al.***

### **Anonymous Referee #1**

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Emission factors from combustion are very important to emission inventory and air quality modeling studies. The authors carried out a series of experiments and reported the gaseous, PM<sub>2.5</sub> mass and speciated emission factors from peat combustion. Overall, the experimental methods are reasonable and the data are robust. After the following questions have been well addressed, it is suitable for publishing.

1. Although the authors simply described the apparatus including the combustion chamber and the instruments used in this work. More details should be given, in particular, the characterization details about the combustion chamber. One of my most important concerns is the wall loss for these gaseous and particle phase pollutants in the chamber. Did you consider the wall loss correction when calculating the emission factors?

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2. As for C2-C6 VOCs, HCN and NH<sub>3</sub> measurements with FTIR, the IR bands for quantifying each species and the details about the quantification methods should be described in the text and tables. It is better to show the typical IR spectrum for these species in the supplement materials. As for NH<sub>3</sub>, it is a sticky molecule and easily interfered by human activity as pointed out by the authors (line 350). How did you consider these factors on NH<sub>3</sub> measurement? In addition, it is necessary to do uncertainty analysis to all of the measured EFs.

3. Most of these results were shown in tables. It is somewhat difficult to follow. For example, when discussing the influence of aging and the moisture of peat on the EFs, it is more easy to understand their differences if showing in figures. In addition, when comparing the measured EFs with the literature results, it is better to discuss the reasons why you obtained a different value. For example, the measured EF(CO<sub>2</sub>) from this work is lower than that in literature. Some objective comments should be given in the text.

4. Even for the same pollutant, EF varied obviously among different samples. Was there a quantitative relationship between the EFs and the element composition in the peat samples or combustion conditions?

5. For OFP experiments, did you consider the OH suppression?

6. In the introduction, the previous relevant researches before this work should be well reviewed.

7. Table S7 was missed.

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