

Interactive comment on “Volatile organic emissions from the distillation and pyrolysis of vegetation” by J. P. Greenberg et al.

Anonymous Referee #1

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This paper discusses the measurement of VOC emissions from selected plants during the early stages of combustion. The paper is clear and well-written. I believe it is a worthwhile contribution to the science of emissions from fires. I have however a few questions and comments that should be addressed by the authors.

General comments

1. While there is a specific mention of the difference between the experiment with oxygen or nitrogen (page 9104), it was unclear how different the results would be if they were performed under ambient air conditions. In particular, in Figure 5, there seems to be a delay in the case of nitrogen; what is the reason for this delay? Does that tell us

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something about the chemistry happening during the pyrolysis?

2.The authors describe in section 4.4-4.6 some applications of their evaluation for VOC emissions. I understand that these sections are quite exploratory. I am however unclear of the value of those sections as they stand. I think that section 4.5 and 4.6 would benefit from including estimates for global numbers and/or comparison with the Andreae and Merlet emission factors, as this paper is the main reference for biomass burning emission estimates.

Specific comments

1.In section 3.2, it is mentioned that CO emissions at low temperature are higher than VOC emissions. Looking at Figure 2, this seems to me to be the opposite.

2.At the end of section 3.2, the mention of similar emission factors for woody tissue and leaf tissue does not seem quite accurate; from comparing Figures 4 and 2, I would state that the woody tissue emissions are smaller by 5-10 times the leaf tissue emissions.

3.On page 9108, line 10, is it possible that some of the additional CO/CO₂ in oxygen experiment comes from oxidation of VOCs instead of reaction with plant tissue?

4.The last sentence of section 4.6 is quite awkward; it needs to be rephrased.

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