

**Manuscript ID:** amt-2020-472

**Title:** Species Correlation Measurements in Turbulent Flare Plumes: Considerations for Field Measurements

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### **Response to Comments by Referee**

*The authors addressed all the specific comments and technical corrections by the reviewers and improved the manuscript accordingly. Some of their answers were supported with additional graphics and discussion. They included arguments in their response to clarify between their experimental technique and other experimental techniques (aircraft-based mainly), giving more context to their results.*

*An additional brief paragraph about the variability of BC/H<sub>2</sub>O and BC/CO<sub>2</sub> ratios was included, and they justify the development and main features of optical attenuation measurements to support the experimental technique. In addition, a brief paragraph related to crosswind conditions was included in the manuscript.*

*I recommend publication of the manuscript after addressing the following minor technical corrections.*

We thank the referee for their review of our manuscript and their acknowledgement of our strengthened discussion following comments from the reviewers. We have implemented the remaining technical corrections, as suggested.

#### ***Technical corrections***

*Figure 3. Please correct the Figure. qamb appears twice, and qcol is missing*

*Figure 8. Perhaps add “aggregated” in the Figure’s description to be in correspondence with the wording in Table 2.*

*Ln 219. Change “meant” to “means”*

*Ln 362. Change “minimum required samples size” to “minimum sample sizes”*

*Ln 383. Consider changing “interrogates” for another word*

*Ln 384. Change “etc” to something like “among others”*

*Ln 401. Consider removing “perfectly-”*