

## Response to Editor's comment:

One aspect that should be clarified is how you quantified the concentration of metals using the SP-AMS in IR laser mode (Fig. 8). This would require some sort of calibration. Did you calibrate the SP-AMS for metals, or are you applying the calibration from a previous paper on the SP-AMS? This important detail will not be difficult to clarify in the text.

We added the following sentences in Section 2.2. Instrumentation, Section 3.3.3 Metals, and in the caption of Fig. 8:

p. 9 lines 6-7: "Default relative ionization efficiencies (RIE) were used for organics, inorganic species and rBC. RIEs for metals were taken from Carbone et al. (2015)."

p. 19, lines 16-21: "In this study, both laser and tungsten vaporizers were installed in the SP-AMS. The concentrations of metals were calculated from the signal values (in Hz) given by the SP-AMS by using the relative ionization efficiencies measured in the study of Carbone et al. (2015). Unfortunately, the size distributions were not obtained for the metals as the PToF data was saved only in UMR mode and the contributions of metals to the total signal measured at UMR  $m/z$ 's were very small." The last two sentences were removed at the end of Section 3.3.3.

Fig. 8 caption: "The concentrations of metals were calculated from the signal values (in Hz) given by the SP-AMS by using the relative ionization efficiencies measured in the study of Carbone et al. (2015)."