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Comment

Interactive comment on “Size distribution of alkyl amines in continental particulate matter and their online detection in the gas and particle phase” by T. C. VandenBoer et al.

Anonymous Referee #1

Received and published: 13 November 2010

General Comments: This manuscript presents chemical measurements of amines in continental areas in both the gas and aerosol phases. The paper devotes considerable attention to the techniques used to identify and quantify amine species. The important contribution of this work is adding to the growing database of measurements of amines in both the particulate and gas phases, and this study does so for the first time with size-resolved chemical measurements in continental samples. The relative importance of amines relative to ammonium is shown to be largest for the diameter range between 320–560 nm. The conclusion reached (outside of just reporting ambient amine concentrations) is that bulk measurements and assumptions of internal mixing may not be appropriate.

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While more substantial contributions scientifically would be preferred with the field measurements, the paper does present valuable amine measurements that should be of interest to the aerosol community. The methodology and experimental methods used are explained clearly and in great detail. The paper is written fairly well, but I feel that Section 2 can be shortened and organized better. Currently I feel there is too much detail related to ion chromatography (which seems to be repeating a bit of what has been discussed in past work). The conclusions reached in this work are supported by the measurements. I recommend publication of this manuscript after comments below are addressed.

Specific/Technical Comments: In general, the introduction is written well with a sufficient amount of references to past work.

Page 27440, Line 2-5: write out the instrument names as opposed to just the acronyms.

Section 2 in its current form does not flow well. For example, the background details of using the IC technique in Section 2.2 should be placed at the beginning of Section 2 before getting into the details of the specific IC methodology used in this work. In addition, it seems as though many of the details and issues of using ion chromatography to speciate the targeted amines have been raised in previous studies that are cited. I suggest that the authors consider removing or shortening their Sections 2.1-2.2 (or merge them). Also, perhaps the authors should consider whether Figures 1-4 and Tables 1-2 are really necessary.

Pg. 27441, Line 29: Should it be “equivalent air concentrations of ng m^{-3} ” or “ ng ”?

Pg. 27443, Line 15-18: “..but not for the variety of species investigated in this study”. Murphy et al. (2007) and Facchini et al. (2008) note in their methods sections that these species were targeted in those studies.

Pg. 27445, Line 15: can the authors delete “on the absolute amount of ammonia..”?

Section 2.2: Were denuders employed for the MOUDI sampling to account for artifacts

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from the gas phase?

Pg. 27450, Line 23: change “was” to “were”

Pg 27457, Line 16: Why is it written as C-ToF-AMS here and differently on Line 3 of Pg 27440? It should consistently be “C-ToF-AMS”.

Pg. 27452, Line 23: Other relevant studies that should be cited include. . .

Miyazaki, Y., K. Kawamura, and M. Sawano (2010), Size distributions of organic nitrogen and carbon in remote marine aerosols: Evidence of marine biological origin based on their isotopic ratios, *Geophys. Res. Lett.*, 37, L06803, doi:10.1029/2010GL042483.

Sorooshian, A., et al. (2009), On the link between ocean biota emissions, aerosol, and maritime clouds: Airborne, ground, and satellite measurements off the coast of California, *Global Biogeochem. Cycles*, 23, GB4007, doi:10.1029/2009GB003464.

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