

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-791

Anonymous Referee #1

Referee comment on "Analysis of reduced and oxidized nitrogen-containing organic compounds at a coastal site in summer and winter" by Jenna C. Ditto et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-791-RC1>, 2021

Ditto et al. present detailed molecular speciation of aerosols sampled during the summer and winter times next to the Long Island Sound. These measurements cover gas and particle phase compounds. In addition, the authors present a novel technique for collecting and detecting polar gases such as alkylamines which are not typically amenable by GCMS techniques. Their results paint a very clear picture that aerosols found in this region have a high fraction of reduced nitrogen compounds. The sources of these compounds are diverse. In addition, winter-time composition reflects more liquid-phase processing compared to summer composition. Overall, the results are very interesting and useful for understanding how the composition of coastal aerosols differ from other regions.

The manuscript is very well written given the sheer amount of data presented. The paper fits well with ACP and should be accepted. Below are minor comments.

Line 81: organic gases and particles.

Line 138: what is the mass resolution of the TOF?

Line 144: would be slightly helpful to define QA/QC

Line 150: Did the authors observe compounds that show up in both positive and negative ion mode? Thus they would be "double-counted" when taking the combined ion signal from both polarities?

Line 167 (and this whole section+ SI section describing the PEEK collection technique): (This is more a comment.) This is a very neat method of collecting these polar gases and seems relatively straight forward for other groups to implement. The details provided in the SI would be enough to be a separate paper for AMT.

Line 276: It was not clear how the authors went from chemical formula to volatility. Did the authors use both the chemical formulae and functionalities in determining this? A few sentences (or a reference) explaining how they did this "conversion" would be helpful.

Figure 3: Are these fractions of total ion signal? It was not clear from the word enhancements. Enhancement over previous studies?

Line 608: What was the range of molecular weights of the gas-phase compounds detected by the LC-MS? It would be interesting to compare the amines/amides (and other reduced nitrogen compounds) observed here with gas-phase CIMS measurements conducted at other coastal areas. Knowing what the actual compounds/chemical formulae are the authors measured here would make the comparison to other studies easier for the reader.