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Interactive comment on “In-situ submicron organic aerosol characterization at a boreal forest research station during HUMPPA-COPEC 2010 using soft and hard ionization mass spectrometry” by A. L. Vogel et al.

Anonymous Referee #1

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Review for In-situ submicron organic aerosol characterization at a boreal forest research station during HUMPPA-COPEC 2010 using soft and hard ionization mass spectrometry by A. L. Vogel et al.

The paper describes a detailed and careful analysis of the organic aerosol composition collected during a field campaign at the boreal site Hyytiälä. A number of innovative on-line and of offline analyses techniques are presented to identify changes in the particle composition with changes in atmospheric conditions.

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The manuscript is very carefully written and clearly presents results and assumptions and limitations of the data interpretations. Thus, I recommend publication after a few minor comments listed below are considered.

p.17911, line 12. It is argued that the total ACPI-MS signal as shown in Figure 1 is due to carboxylic acids. Is the contribution of other compounds classes under all conditions during this field campaign negligible?

p.17916, line 13. Figure 4 compares ambient and lab mass spectra in the range $m/z < 240$. How did the laboratory generated mass spectra compare to the ambient above this mass range? How high were the terpene concentrations in the laboratory experiments?

p. 18916, line 23. The pattern of the mass spectrum of the gas phase is less clearly spaced as the mass spectrum of the particle phase. How is this interpreted?

p. 18916, line 25. It is argued that only very small amounts of nitrogen-containing compounds are present in the samples. However, the negative ionisation mode used for the analyses discussed here might have favoured a suppression of these compounds.

Several times in the manuscript possible artefacts of the APCI are discussed. How severe are potential cluster formation of (e.g., p.17919, line 14)? Could this partly explain the observation of high-mass compounds in the particle-phase mass spectra?

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 17901, 2013.

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