

Interactive
Comment

Interactive comment on “Cluster analysis of the organic peaks in bulk mass spectra obtained during the 2002 New England Air Quality Study with an Aerodyne aerosol mass spectrometer” by C. Marcolli et al.

Anonymous Referee #5

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The paper by Marcolli et al. applies cluster analysis to data collected by an Aerodyne Aerosol Mass Spectrometer (AMS) on a ship cruise off the coast of New England during the New England Air quality study (2002). I understand this manuscript as an explorative, methodological study, which tries to categorize the potential origin and folded, the chemical processing of the organic aerosol component. It is another important attempt to get hold on the complex organic matrix in particulates before detailed speciation. Moreover, the organic matrix in this case is represented by broken down fragment patterns for experimental reasons. The message of the paper is twofold, the

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analysis succeeded with some certainty, e.g. in attributing biogenic origin to categories 3-5. The analysis "failed", because it could not resolve the issue of anthropogenic vs. biogenic for the most abundant category 1. Based on the explorative and methodological aspects, I think this is an excellent paper, which is carefully written. It surely brings the treatment of the organic particulates methodologically forward. It could be published in ACP as it is, but the many suggestions made already by the co-referees will clearly improve is already very good manuscript.

Would it possible to find subcategories within category 1 by analyzing certain smaller m/z ranges, e.g. $m/z > 90$, or m/z around 44 etc. ?

p. 4614 line 3ff. It looks as if cat. 4,5 basically represent ozonolysis products of biogenic emissions. Since obviously these are also formed during dark, they arise supposedly from plants that have pools and substances which are stored in pools, thus monoterpenes ?

p.4614 line 17 and p.4616 line 6 How certain is the categorization of aerosol components as anthropogenic via isopropylNitrate? If the isopropylNitrate argument fails, is then the sum of evidence still sufficient that cat. 1 and total organic mass arise mostly from anthropogenic origin?

p. 4614 line 23 What exactly is meant by "secondary anthropogenic processes" ?

p.4618 line 21 The organic nitrate argument is vague. There are significant contributions to $m/z30$ in SOA formation in total absence of NOX and NOY.

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