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**Atmospheric  
Chemistry  
and Physics  
Discussions**

**Interactive comment on “Insights into dissolved organic matter complexity in rainwater from continental and coastal storms by ultrahigh resolution Fourier transform ion cyclotron resonance mass spectrometry” by R. N. Mead et al.**

**Anonymous Referee #2**

Received and published: 3 January 2013

This paper provides important new insights to the composition of dissolved organic matter in marine and near-coastal rainwater, using high-resolution mass spectrometry and van Krevelen / Kendrick analysis, providing interesting basis for comparison with other field studies. Evidence for oligomeric fatty acids, and moderately oxidized aromatics is found. This will be an interesting contribution to the literature, but I suggest the authors address a few comments about the manuscript:

Comments:

p. 31416 line 18: Last sentence of section 2.1, the sampling timing / strategy is unclear – the END of rain events initiated the sampling process? Does this mean the samples are not during rain events, but after?

Response: This section has been clarified to indicate the whole rain event was collected. The end of the rain storm was determined from real time precipitation maps and within 12 hours after precipitation stopped an analyst gathered the sample and brought it back to the laboratory for analysis.

p. 31420 lines 15-17: “Diagenetic processes . . . reactions.” Suggest either omitting this sentence, which alone doesn’t explain much if the reader doesn’t already know vK plots, or, explain more fully how these different processes are identified on the plot.

Response: The sentence has been removed as suggested.

In Implications section, you list classification of e.g. “lipids, amino sugars, proteins and cellulose.” – but nowhere else discuss amino sugars or proteins. And your analysis does include BC/aromatics, so shouldn’t that be included here?

Response: The amino sugars have been removed and BC/aromatics has been included.

Fig. 1: remove last sentence of caption – amino sugars not discussed

Response: Done as suggested.

In caption to Fig. 2, make clear that this shows data pre-sorted to be  $z^*=-10$

Response: Done as suggested.

technical suggestions:

p. 31414, line 8: suggest “formulas are unique to a single storm classification” to clarify

Response: Replaced as suggested.

p. 31419, line 8: suggest “and coastal storms where the air mass had a mixture of . . .”

Response: Edited as suggested.

p. 31419, line 17: 1.52-18.8 mm: not a volume unit?

Response: Changed volume to amount in text

p. 31419, line 26: add molecular weight units

Response: The units g/mol have been added.

p. 31421&2: Equations 1-3: why square brackets? Confusing.

Response: The square brackets have been replaced with parenthesis.

p. 31423, line 27: suggest spelling out yr bp

Response: I have changed yr bp to years before present.

p. 31426, line 14: suggest “models, especially”

Response: Edited as suggested.