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Interactive comment on "Organic aerosol source apportionment by offline-AMS over a full year in Marseille" *by* Carlo Bozzetti et al.

Anonymous Referee #4

Received and published: 8 March 2017

This paper presents results from an offline analysis of aerosol samples collected in Marseille France using HR-AMS for the organic and other offline techniques for the inorganic, elemental carbon, and metals analyses. Using PMF, source apportionment was carried out and the results from the offline study were compared to PMF analysis of a smaller sample set of on-line AMS data. While the two time periods did not overlap between the offline and online data sets, good comparisons were observed for the different organic factors between offline and online AMS. The authors found increased BBOA in the winter and that OOA was dominant in the summer. The authors also observed changes in the levoglucosan:BBOC ratio over the course of the winter-spring months that was opposite what would be expected if it was driven only by changes in photochemical processing from the winter to the early spring. They attribute the observed change in the BBOC to changing sources with more domestic wood burning

in the cold winter months and more agricultural biomass burning in the early spring. Overall, the analysis is thorough and the conclusions are explained well and match previous studies in similar areas. I recommend publishing the manuscript after some minor revisions.

Specific Comments:

1. A blank was run between each sample with ultra-pure water to monitor memory effects. However, the minimum concentration needed to make aerosols that will dry down to a size observable in the AMS is relatively large. Thus, some material may be staying behind in the atomizer that would not be observed. Were any blanks with a clean salt solution ran to test for this carry-over between runs? Were the samples analyzed in any particular order or randomly?

2. Page 16, line 18 "The AMS-PAHs:HOA ratio was . . ." the text gets a bit confusing here. I think the same point is being made and supported with different pieces of data but I recommend breaking the text up into a few paragraphs to make the discussion clearer.

3. The analysis presented here used IC to measure the salts in the samples but the AMS also quantifies some of those ions. How do the measurements between the two techniques compare?

4. Figure 11 is very hard to read, both the colors used and the sizes of the markers should be adjusted.

5. Figure 6, change the black to grey in the pie chart or clarify in the caption.

6. Figure 6, the time series for BBOA is shown with acetosyringone but no mention of this is made in the text.

7. Figure 10 shows dates on the x-axis for 2012 but 2011 online AMS data is overlaid using the same axis. I suggest changing the axis labels to 10.02.20xx or just the month and day to highlight this difference in collection times.

8. Figure 10, give the colors for the two AMS data types in the text of the caption.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/acp-2017-54/acp-2017-54-RC4-supplement.pdf