

Interactive comment on “Composition and origin of PM_{2.5} aerosol particles in the upper Rhine valley in summer” by Xiaoli Shen et al.

Anonymous Referee #2

Received and published: 18 July 2019

This paper describes a six-week ground-based study of aerosol chemistry in the Rhine Valley, near Karlsruhe. Both LAAPTOF and AMS were deployed and the field data is interpreted in conjunction with COSMO-ART model. This paper is well written, and it is a valuable contribution to ACP. While the paper is somewhat closely related to the author's previous paper, I think that there is enough new material to merit publication. I have some concerns about how AMS data is used, so I recommend some major revisions before publication.

Major comments:

There are some outstanding questions about source apportionment (for example, the biomass burning class identified by LAAPTOF). I think running PMF analysis on AMS data would help answer those questions and make the analysis more complete. There

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is certainly enough data to do so and it is an odd choice not to include such analysis.

To add on to the above, a unique feature of this study is that SPMS and AMS are deployed together. It would be nice to see a bit more synergy in data analysis as well. Currently, it seems like the details focus on SPMS. For example, for marine-influenced air masses, did high resolution AMS spectra show typical AMS marine markers, such as MSA?

Minor comments:

Page 4, line 118: "...deployment of a laser ablation aerosol particles time-of-flight mass spectrometer (LAAPTOF; AeroMegt GmbH)" Pretty sure this should be "particle" instead of "particles"

Page 5, line 138: Acronym TSP shows up for the first time and has not been defined.

Page 6, line 180: "behaved anti-correlated" is an odd turn of the phrase. Would revise to "were anti-correlated"

Page 6, line 182: should this read "...for particles larger than 2.5 μm measured in this study. . ." instead of 2.5 nm?

For Figure 2 and associated discussion, are these averages over the entire campaign?

Page 8, line 246: averaged -> average

Page 8, line 248: organics -> organic

Figure 4 caption: extend -> extent

In Figure S9, it is hard to tell visually that LAAPTOF m/z 129 and AMS organonitrate are correlated. There are quite a few instances where they are not. Can you plot these against each other and give the R²?