

Interactive comment on “Speciation of organic aerosols in the Saharan Air Layer and in the free troposphere westerlies” by M. Isabel García et al.

Anonymous Referee #2

Received and published: 28 March 2017

General comment: This manuscript presents a substantial and comprehensive speciation of organic aerosols transported in the SAL and in the North Atlantic free troposphere westerlies. The sampling methods and analysis methods are valid. The Multivariate Curve Resolution Alternating Least Squares (MCR-ALS) model was applied to present sources of organic aerosol. The scientific results are presented in a well-organized way. Atmospheric particulate matter on secondary inorganic species, organic species, elemental composition, chemical composition and 40 organic tracer species were analyzed, which provides possible sources of organic aerosol. Source apportionment method also gives the contributions of total organic aerosol from different sources, such as biomass burning (BB), combustion POA, and organic dust. Overall, this manuscript is publishable in Atmospheric Chemistry and Physics with the following minor comments are addressed.

C1

Minor comment:

1. What is “ddmmm” in Figure 1?
2. A large fraction of OM was not determined under FT-SAL, BL-SAL and BBE in Figure 4 or Figure 7. Can authors explain the difference of undetermined fraction between FT-SAL and FT-WES? Is this due to method limitation or the size cut-off of collected particles for dust-associated compounds?
3. P.4 Line 25: Please define “SIM” mode.
4. Can authors explain the “score factor” in the method or in Figure 5?
5. The author wrote the correlations of total concentration of SOA ISO and total concentration of SOA PIN exhibits two distinct trends in Figure 2, and the correlation between SOA ISO and NO₃⁻ presents three tendencies. The explanation for these biogenic SOA sources is not clearly discussed and supported by significant evidence. The ratio of isoprene to NO_x, and the daytime photooxidation process and nighttime nitrate chemistry can be discussed.

Technical correction:

1. P.16 Line 18: “wad” should be “was”.
2. P.6 line 21: Some species “shows” should be “show”.
3. P.13 line 9: “represents” should be “represent”.
4. P.2 line 14: “ An important factor” should be “ Some important factors”.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2017-108, 2017.

C2