Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2018-346-RC2, 2018

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Aerosol distribution in the northern Gulf of Guinea: local anthropogenic sources, long-range transport and the role of coastal shallow circulations" *by* Cyrille Flamant et al.

Anonymous Referee #2

Received and published: 15 June 2018

Synopsis: This paper presents a day in the life of the airborne Dynamics-Aerosol-Chemistry-Cloud Interactions in West Africa project. Conclusions are drawn regarding the role of both synoptic and mesoscale meteorological features as well as the contributions nature of different sources on the aerosol environment. Overall, it is a reasonable analysis, but given it is really a one day analysis, it is difficult to support their findings in general. I myself use "a day in the life" sorts of papers to describe various phenomenon in a region in detail. But, such papers are always in a context of subsequent papers that then generalize. Here, the single day is used to generalize, which almost

Printer-friendly version

Discussion paper

by definition leads to unsupportable overall conclusions. e.g., can you really say a city's emissions are unimportant at some point based on a single day's analysis? This particular flight was pretty much parallel to the coast, such that the real littoral transition was never observed. I strongly recommend that the paper be reworked such that this one demonstrates key features. Showing a day in the life of the role if individual cities or meteorological phenomenon is worthy of publication if framed that way. But, generalization will need to happen with the support of a much more comprehensive airborne, satellite and modeling study of the entire field campaign to determine. As is I am not sure what to make of the paper or how it will be used by the community. Most of the work here is wordsmithing, so I do not think it is an overly onerous task to reframe in this way.

I pretty much agree with the other reviewer on specifics, where again a lot of generalization is made on a single observation. Here are a few more minor comments to consider.

On using AAE to speciate-line118: I am a bit concerned about using the AAE to say what the makeup of particles are given that by the analysis here there is often a mixture of aerosol species. This is further complicated for dust, which from aircraft inlets have a low penetration efficiency.

CAPS and Nephelometer-line 203: Again, the authors need to be mindful of dust particle penetration efficiencies and what that does to the interpretation of their results? I bring this up because based on the sounding of of figure 4 this level is in an area of some wind shear.

Figure 3 and 6. Instead of using time as an x axis, can you please use distance or perhaps longitude (given the aircraft track) so we can get a spatial perspective.

Figure 5-F. As well as number, can you please provide a profile of aerosol volume? It is much easier to interpret.

Figure 9. What happens if you have a minor change in altitude of release? This will show you how sensitive your system is.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-346, 2018.