

We thank the editor and reviewer 2 for their helpful comments and suggestions. We have addressed the comments point by point below.

Reviewer #2:

The paper is much improved and the hygroscopicity distributions in Figures 2b and 4b are quite nice. Since the manuscript was uploaded in place of the supplementary material, I am unable to evaluate the supplementary material for this paper. I have only the following technical corrections to suggest:

1) In the instrumentation section, since D_{90} is used to denote diameter at 90%RH, using D_0 suggests diameter at 0%RH, which is not realistic. I suggest using the convention adopted in Figure 1- D/D_0 .

Response: We agree that this is confusing. We have replaced the denotation D_{90} with D throughout the manuscript.

2) The sentence "...identified at the site during (Crippa et al., 2014) on Pg. 13, Line 1 is unfinished.

Response: Thank you for noticing this. The sentence has been completed "... identified at the site during winter (Crippa et al., 2014)."

3) The kappa axis in Figures 1, 2a, and 4a do not look correct. Shouldn't kappa=0 when GF=1 as in Figure 3? I realize that negative kappas are non-sensical, but it can be noted in the text that these values are as such and are due to uncertainties associated with the DMA transfer functions.

Response: Thank you for the input. The kappa-axes were wrong indeed. We have now changed them in Figures 1, 2a and 4a. We have also added to section 2.3.1 that "Given the nature of Eq. (1), negative kappa values are non-sensical, but are in fact present in Figure 1 due to uncertainties associated with the DMA transfer functions"

Editor comments

p. 2, l. 3: Either 'Aerosol ...displays.' or 'Aerosols ...display...'

Response: Thank you, this has been changed to 'Aerosols... display'

p. 7, l. 27: Add charges to the ions: NO₃⁻, SO₄²⁻ and NH₄⁺

Response: Thank you, charges have been added to the ions.

p. 8, l. 3: The terpenes themselves are gases. It should be 'SOA formed from the terpenes...'

Response: This is correct, the sentence has been changed to 'SOA formed from the terpenes..'

p.11, l. 22: the authors did...

Response: Thank you, this has been corrected.

p. 13, l. 1: Did Asmi et al. really measure 'cloud activation' at pdD? Or did they characterize CCN properties?

Response: This was poorly written by us, they did of course characterize CCN properties. This has been corrected in the text.

p. 13, l. 18: Do you mean 'ammonium nitrate and/or other nitrates'?

Response: Yes, this has been clarified in the text.

p. 15, l. 21: Put years into parentheses.

Response: Thank you, the years have been put into parentheses.

p. 16, l. 19: Air masses are not hygroscopic

Response: This is of course true. The sentence has been changed to “the opposite trend is seen in oceanic modified air masses, in which particles are less hygroscopic in autumn and in winter”.

p. 17, l. 18: 'Kreidenweis' misspelled

Response: Thank you, the spelling has been corrected.

p. 18, l. 29: The hyphens are confusing. Maybe better: ...essential for comparisons of in-situ to remote sensing data.

Response: Thank you, the sentence has been changed to: “...essential for comparisons of in-situ to remote sensing data.”

Editor comment, following up on Reviewer#2's comment 3) above: I agree that the scaling of GF and kappa in the mentioned figures looks odd (it seems correct in Figure 5). According to your Equation (1), $\kappa = 0$ if $GF = 1$.

Response: You are absolutely right. The axes were wrong, and have been changed.