

Review by Editor

I would like to thank the authors for comprehensively addressing all points raised by the Reviewers. I have added this additional, minor review, to pick up a few remaining typos, mis-labelling issues, and a few areas where additional clarification would help the reader.

These comments are not in order of priority, but roughly go in order through the paper.

Page 3 line 24: contribute, not contribution

Page 3 line 29, I suggest citing also e.g. Ariya et al., *Tellus* 56B, 397-403, 2004, which is specifically a mercury paper

Page 3 line 31: I suggest including reference to Sipilä M, et al. (2016) Molecular-scale evidence of aerosol particle formation via sequential addition of HIO₃. *Nature* 537:532–534, which also has some polar results, as opposed to the other references cited, which are mid-latitude.

Page 4 line 4: O'Dowd, not O'dowd

Page 4 line 9: "...hydrometeors which is hypothesized.." i.e take out the "has"

Page 5: in the description of the SP-AMS, please give a size range for the particles measured. Later in the paper (e.g. p21) there is discussion re sub-micron, but I cannot find mention of the size range captured by the instrument anywhere. Also please state whether the AMS is size-segregated or not (I believe it is not, but it would help the reader to clarify).

Page 10 line 26: normally mirabilite is referred to as Na₂SO₄·10H₂O (not "X 10H₂O") – please amend

Page 12 line 8: "falling on both sides...", i.e. remove the "and on"

Figure 2 – please sort out the caption and legend and make them consistent e.g. there are no red symbols...; spring/summer 2014 are gold, not blue; winter/spring 2015 are blue... Also, please state in the caption that winter/spring is 2015 to keep things consistent.

Page 14 line 8: HYSPLIT is Fig S4 not S3.

Page 16 line 15 to 16: the statement "From Fig 6 it is clear that there are no statistically significant differences in Chl:Na_{AMS}, neither inter- nor intra-seasonally" should be backed up by some numbers – please give the ratios and explain what basis you use to define statistically significant differences. Further, Spring 2015 Primary continental ratio seems very different to all the others – indeed in the opposite direction – and actually a careful look suggests that there are differences between other ratios as well (e.g. 2015 primary marine vs 2014 primary marine, or vs 2014 mixed, etc...). Additional clarification to support the statement made is needed here.

Page 16 line 17 and 18: As above, the authors need to provide additional information to support their statement that "Related to this is that there are no intra-seasonal differences in any of the other aerosol species, with the exception of summer (2014) continental sulfate concentrations compared to marine or mixed concentrations". Again, please provide numbers with which this

statement can be supported, and explain the basis of the statement (i.e. how do you define a “difference”). Again, a careful look suggests there are a number of differences, including for sulfate in 2015, and also for organics. Please review/clarify.

Page 18 line 8: please add “within a season” to the statement about chloride increasing at high winds only, i.e. “first, that within a season, the absolute amount of chloride...” – because e.g. low wind in 2015 had more chloride than high wind SE in 2014...

Page 18 line 10, referring to Fig S6 – Ammonium in summer 2014 almost seems to be anti-correlated with wind speed... Suggest some refinement to wording.

Page 18 line 23 – Section 3.1.3 should presumably say Section 3.1.2

Page 19 line 16: presumably the authors mean Fig S6?

Page 20 line 4: given the comments above, I’d suggest changing the first sentence in Section 3.6 to read: “The previous section demonstrated that, for a given season, overall mass of chloride and sodium are dependent...”

Fig S8, please add in the caption what are the solid green and dashed blue lines (presumably sea water, and seawater mirabilite-depleted, respectively) – this would help the reader.

Fig 7 and Fig S8 – please remind the reader that NW = marine and SE = continental air

Page 21 line 16: the Maffezzoli et al (2017) reference is irrelevant of the discussion here if they did not show iodide (and can therefore not contribute to the discussion here about bromide to iodide ratios); please remove the reference.

Conclusions – please review in light of above suggested changes to make sure everything is consistent.

Fig 4 – please state in the figure caption that the Laser-disdrometer measurements were made at 5m above the snow surface.