

Atmos. Chem. Phys. Discuss., referee comment RC2
<https://doi.org/10.5194/acp-2021-72-RC2>, 2021
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Comment on acp-2021-72

Anonymous Referee #2

Referee comment on "Measurement report: Indirect evidence for the controlling influence of acidity on the speciation of iodine in Atlantic aerosols" by Alex R. Baker and Chan Yodle, Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-72-RC2>, 2021

The authors report the results of quite detailed analyses of aerosol composition collected during a ship expedition on the Atlantic between England and the southern tip of South America. The main analyte is iodine, in particular the speciation of particle-bound iodine into four fractions (iodide, iodate, total iodine, soluble organic iodine). For the interpretation of the results a number of other components (e.g. trace metals) are also determined. The results of the sophisticated analysis are also evaluated with the use of back trajectories. Since different size fractions are always sampled, there is also particle size-relevant information, which in turn is used by the authors to interpret sources. One of the main conclusions is the influence of aerosol acidity on the chemistry and thus the occurrence of the different iodine species in atmospheric aerosol particles. The manuscript is well written, is based on an excellent data set, and the conclusions drawn are well justified. The topic is certainly relevant to ACP readers and therefore I recommend publication with only minor changes.

Page 5, line 94: missing word !?

Page 5, line 103: an "as" is missing

The authors discuss in several passages the iodine chemistry, e.g. the reactions of IO₃⁻ to HOI, SOI and I⁻ and quote from Baker 2005 and Pechtl et al. 2007. Since without any question the speciation is in the center of the work and also in the title the possible influence of the chemistry on the iodine species is pointed out, I would find it helpful for the reader to compile the central chemical reactions from Baker 2005 and Pechtl et al. 2007 for this paper. In doing so the understanding of the discussion would be simplified from my point of view.