

Interactive comment on “Modeling iodide – iodate speciation in atmospheric aerosol” by S. Pechtl et al.

Anonymous Referee #1

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This paper presents an interesting model scheme on the aerosol iodide-iodate speciation for remote oceanic locations. I complement the authors on reporting model calculations on the I-/IO₃- ratio in order to account for the observed iodide variability on marine aerosols. In addition, the paper deals with the possible role of dissolved organic matter (DOM) in modulating the I- content in atmospheric aerosols and the potential implications for the release of gas phase photolabile inorganic iodine compounds. The manuscript is well written and easy to read. This paper fits very well into the scope of ACP and I recommend publication after consideration of the general comment below:

General comment: The authors have raised an important issue by their linkage of the gas phase formation of HIO₃ (through reaction of OIO + OH) and the role in balancing

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the I⁻ content on marine aerosols, following heterogeneous uptake. I was missing a model run investigating the implications of the suggested aqueous phase mechanisms upon the overall gas phase iodine chemistry in remote oceanic environments. Since the observations (Baker , 2005) report higher levels of I⁻ than expected for marine aerosols, this paper would benefit from coupling the studied heterogeneous mechanism, in particular the role of DOM, to the rate release of interhalogen species and the impact on marine boundary layer iodine chemistry. The authors should also comment on the large uncertainties in the atmospheric iodine chemistry, in particular chemical reactions and photochemistry of OIO, which will potentially influence the rate of formation of HIO₃ and ultimately determine its role in the proposed aqueous chemistry scheme.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 10959, 2006.

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