

Interactive comment on “A chemical probe technique for the determination of reactive halogen species in aqueous solution: Part 2 – chloride solutions and mixed bromide/chloride solutions” by C. Anastasio and B. M. Matthew

Anonymous Referee #1

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<General comments>

Anastasio and Matthew developed a new method of detecting photo-chemically formed reactive halogen (Cl and Br) species in solution and validated their technique by using computer calculations with known and estimated reaction rates. The study is an advance of the paper by Matthew and Anastasio (Part 1) and is very important to understanding complex halogen cycles in the troposphere, which affects various atmospheric aspects. Authors' techniques are unique, the results are interesting, and

the materials are presented in a well-organized manner. Studies of reactive halogen species are intensively conducted in the gas-phase but aqueous-phase formations and concentrations are not well-understood. I expect that the paper along with the Part I will stimulate more studies of complex reactions of reactive halogen species in the atmospheric liquid phase. I strongly recommend publishing this report in Atmospheric Chemistry and Physics.

<Specific comments>

1. Page 946, 27th line, A few lines of explanation would be helpful as to why the first approach described in Part 1 can not be used in Part 2.

2. Fig. 5. Although the concentration of Cl⁻ is 700 times higher than that of Br⁻, 3CPD formation rate is about 50 times slower than 3BPD. Given this fact, would it be reasonable to conclude that aqueous-phase reactive chlorine formation is negligible relative to reactive bromine formation? This would significantly simplify future aqueous-phase model studies.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 941, 2006.

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