

Interactive comment on “Photoinduced oxidation of sea salt halides by aromatic ketones: a source of halogenated radicals” by A. Jammoul et al.

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Referee 2:

We have carefully read the reviewer's comments and provide some answers to them.

1) Can the trends observed with chloride (not strongly reactive), to bromide and iodide (very reactive) be used to comment on measurements in the environment?

As stated in the conclusion, the observed chemistry may be initiated by interactions between triplet state benzophenone and halide anions. We have measured the quenching rate constant of triplet BP by different sea salts; while chloride is not strongly reactive

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with the triplet state of BP, deactivation is very fast with iodide and somewhat less for bromide. The magnitude of the quenching rate constant follows a trend given by the values of the free energy for electron transfer. Thus electron transfer was shown to be the probable mechanism for the oxidation of sea salt anions by triplet BP. And the trend going from Cl⁻ to I⁻ is reasonably well established and translates into IO being the most readily produced radicals as currently observed in the field.

2) Are there field observations to suggest that halogenated compounds participate in new particle formation?

They have been indeed laboratory and field work showing that halogenated (and especially iodine containing compounds) may through photolysis lead to new particle formation (see for example O'Dowd, Nature, 632-636, 2002).

3) What have these experiments to say, if anything, about the effect of the water-air interface?

These experiments have been performed using a bulk phase laser photolysis experiment which cannot provide much information about interfacial processes.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 7681, 2009.

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