

## ***Interactive comment on “Aqueous phase oxidation of sulphur dioxide by ozone in cloud droplets” by C. R. Hoyle et al.***

**Anonymous Referee #1**

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This manuscript demonstrates the first application of the CLOUD chamber for the study of aqueous chemistry in cloud droplets. The authors present low temperature (-10 C and 10 C) measurements of aerosol formation by SO<sub>2</sub> and O<sub>3</sub> under simulated cloud conditions in the chamber, and detailed model analysis of the results. The main result is the confirmation of previously published rate data at these temperatures. I recommend publication of this manuscript in ACP after minor revisions. For the most part my technical comments echo the statements of Reviewer #2 so I will not repeat them.

- Did the authors compare the E-AIM predictions for NH<sub>3</sub> closure with those of another thermodynamic model, such as ISORROPIA?
- This manuscript contains an overload of data and information. My recommenda-  
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tion is that technical figures that go towards characterizing the chamber rather than experimental data, such as figures 1 and 2, be moved to an online supporting information document. Tables 4 and 5 likewise contain far too much information and could be moved to the SI. A shorter table could be presented that highlights only specific experiments which are discussed in the modeling section.

- Finally, the glyoxal experiments presented here are an afterthought, serving more as a proof of concept rather than providing new insight. It is my assessment that they should be removed from this manuscript, expanded upon, and published separately.

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Interactive comment on Atmos. Chem. Phys. Discuss., 15, 33843, 2015.