

### **Response to Referee number 3**

23 April 2019

The authors thank Referee #3 for his/her expertise and valuable comments to further improve and clarify the MS. We adopted the requested alterations.

Line 447 states that H<sub>2</sub>SO<sub>4</sub> is estimated to 5E05 cm<sup>-3</sup> while on line it is claimed that that H<sub>2</sub>SO<sub>4</sub> contributes 12.3% to GR10. Now, 12.3% of a mean GR of 8nm/h is 1 nm/h. To reach a 1 nm/h growth rate at 10 nm size from H<sub>2</sub>SO<sub>4</sub> it needs a concentration of more than 2E07 cm<sup>-3</sup> (see e.g. Nieminen et al., Atmos. Chem. Phys., 10, 9773–9779, 2010. Please resolve this contradiction.

A note on the uncertainty of the scaling factor likely as a major source of the difference was added.

Line 706: “The role of H<sub>2</sub>SO<sub>4</sub> in the nucleation process and early particle growth is still determinant or relevant”. Where do you show that now? In an earlier version it said “could be”

The sentence was changed back to include the formulation “could be”.

### **Final message to the Co-Editor, prof. Xavier Querol and to Referees 1, 2, 3, 4 and 6 of the MS**

The authors wish to express their deepest acknowledgement for the devoted, thorough and high-level evaluation work, which helped us to improve and clarify the MS.

Imre Salma