

***Interactive comment on* “Estimating the impact of natural and anthropogenic emissions on cloud chemistry: the influence of organic compounds” by L. Alfonso and G. B. Raga**

Anonymous Referee #1

Received and published: 15 March 2004

Review of the ACPD paper by Alfonso and Raga:

This paper claims to estimate the impact of natural and anthropogenic emissions and of organic compounds on cloud chemistry. However, the results are very specific, representing maritime conditions that are natural rather than anthropogenic. In fact, I doubt that the high SO₂ concentrations would be observed with these low cloud droplet number concentrations. If the authors remain true to their title, a true scenario with high cloud droplet number concentrations should be done. If the model cannot handle cloud droplet number concentrations larger 200 cm⁻³, then the error in the model should be corrected and the simulations should be repeated once the problem with the model is solved.

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper

Secondly, assuming only 10% soluble inorganic matter and 90% insoluble material for the classical inorganic case does not agree with a maritime aerosol either. How did the authors decide to use such a small ammonium sulfate fraction? If that's based on observations, these need to be referenced. Also, the number of dissociated ions in most organics is less than 3, more on the order of 1 and most organics have a higher molecular weight than 90 g/mole. In summary these assumptions seem to represent a very specific case, that may not be representative for atmospheric conditions as claimed in the title. Therefore, I recommend that these simulations be repeated with more realistic conditions before this paper should be accepted for publication.

Minor comments:

p. 593: The reference to the paper by Barth et al. (2000) does not seem to be relevant to this paper as you are not looking at ice clouds. Thus, I suggest to delete that paragraph and streamline the introduction more towards your paper.

p. 595: I am not sure that I understand the necessity for the additional grid for small droplets, please explain that more clearly.

Please explain the symbols after they are first use, i.e. immediately after equation 1 rather than after equation 7.

p.598, line 7: g_{dslIOC} is used twice.

p.602: The results in Table 1 are not new, they are qualitatively the same as found by Mircea et al. 2000, or not? If so, please refer to them.

p.610: It seems as if the curves in figure 8 are mislabeled. I don't see a decrease in S(IV) concentration with radius for droplets larger 80 μm , but rather an increase.

p.610, line 10: What explains the behavior for drops larger than 1 mm?

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 591, 2004.

[Full Screen / Esc](#)[Print Version](#)[Interactive Discussion](#)[Discussion Paper](#)