

Interactive comment on “Surface tensions of multi-component mixed inorganic/organic aqueous systems of atmospheric significance: measurements, model predictions and importance for cloud activation predictions” by D. O. Topping et al.

Anonymous Referee #3

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General comments:

In this paper, Topping et al. discuss various models for predicting the surface tension of binary to multicomponent organic and mixed organic/inorganic aqueous systems. The applicability of the models is discussed in detail. Further, the surface tension modelling techniques are tested in activation predictions. The authors concluded that using completely predictive technique for multicomponent systems leads to larger deviations

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in comparison with the experimental data, but the use of binary data or coupled thermodynamic model improves the predictions considerable. The surface tension for binary systems is well understood and defined, but the predictive methods for three or more components are still limited. Such methods are vital for the simulations of the processes characteristic for atmospheric sciences. The work presented in this paper represents a step forward, a contribution to modeling/predictiong the surface tension of multicomponent systems. I recomend this manuscript for publication after the authors have made the following (small) corrections:

Specific comments:

Pg. 12059, eq. (1): R and T appear here for the first time, so this should be the moment to define them, and not in eq. (2), although we all know exactly what they represent.

Pg. 12062/ line 19: the authors consider a maximum solute mass percentage of levoglucosan of 28%. It would be maybe nice to understand why the authors considered this specific percentage and not something else.

Pg.12063, line 13: The reference *Svenningsson et al (2006)* should be between brackets.

Pg. 12065, eq. (2): define Sigma_ws, remove the definitions for R and T that should be mentioned in eq. (1), give units for every quantity if it is the case.

Pg. 12067, eq. (5): Does psi_w have a name? Something like superficial volume fraction water at surface? also within the paragraph the psi_i should be mentioned: 'similar for psi_i' I would suggest...

Pg. 12069 line 25 and pg 12070, line 1: A typo, I presume: 'diving' should be 'dividing'.

Pg. 12087 line 24: Fig. 8b?

Pg. 12088 line 4: Do the authors refer to Fig 9 here? line 6: Figures 5.1-5.4 do not exist.

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