Geoscientific
Model Development
Discussions

Interactive comment on "Prediction of cloud condensation nuclei activity for organic compounds using functional group contribution methods" *by* M. D. Petters et al.

Anonymous Referee #2

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This work represents an important advance in linking chemical components of particles to cloud drop activation. Similar codes have been developed previously but this one is unique and important as it is 1) freely available for research and teaching 2) compared to comprehensive data 3) well documented 4) providing insight on the types of functionality that are/not simulated. For these reasons, I fully support publication of a revised manuscript. However, there are several issues that I think would much improve the quality of this paper.

Here are the issues that I think would improve this manuscript. 1) Evaluation of the need for ternary parameters 2) Evaluation of the usefulness of the group contribution approach. 3) Evaluation of the predictive capability (if any) of the model beyond inter-

polation between measurements. 4) Consideration of the extension of a group-based approach to surface tension prediction.

Section 2.7 – is reference to "UNIFAC" here to the generic modeling approach or to this specific ("MDP") implementation of it? Since the performance is dependent on the parameters used, likely the latter is meant.

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