

Interactive comment on “Are sesquiterpenes a good source of secondary organic cloud condensation nuclei (CCN)? Revisiting β -caryophyllene CCN” by X. Tang et al.

Anonymous Referee #2

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This manuscript presents experimental data regarding the potential of one of the most important sesquiterpene emitted into ambient atmosphere (β -caryophyllene) as a source of secondary organic aerosol cloud condensation nuclei (CCN). This study focuses on the effects of hydroxyl radicals, light and the presence of isoprene for β -caryophyllene/O₃ SOA formation and Cloud Condensation Nuclei (CCN) characteristics. The authors use a series of experimental techniques to evaluate the chemical and physical parameters of the resulting SOA (CCN activity). The results and conclusions regarding the role of light, OH and isoprene on CCN activity of the SOA generated are presented. These results are of great interest to atmospheric scientists and are appropriate for ACP. In fact, this study represents a significant advance for biogenic hy-

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drocarbons emitted into the atmosphere and their global role as source of SOA CCN. However, I have some concerns with the organization and technical aspects of the paper.

It's important to emphasize that these conclusions are specific to this system and the presence for example of other compounds/oxidants with β -caryophyllene may lead to different conclusions. There may be hundreds or thousands of different HCs/oxidants present at the same time and their role on SOA CCN activity will be difficult to understand. It will be beneficial if some structural/quantitative information about some key compounds (e.g. β -caryophyllinic acid, methyltetrols or methyl glyceric acid) were identified and reported that may play a critical role in the β -caryophyllene SOA CCN activity. The role of ozone rate constant as reflected by Dr. McGillen comment should be addressed in the revised manuscript. There are several issues that I found and are also reported in comments made by referee #1. The authors need to address these comments. For example, HR AMS data need to be re-analyzed and addressed as suggested by referee #1. The paper needs to be carefully edited for errors, and to check for areas where some statements need references. As I said, the topic of this manuscript is of great interest and appropriate to ACP. The paper should be published after the authors address the comments raised above.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 8547, 2012.

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