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**Geoscientific
Model Development
Discussions**

Interactive comment on "The atmospheric chemistry box model CAABA/MECCA-3.0gmdd" *by* R. Sander et al.

R. Sander et al.

sander@mpch-mainz.mpg.de

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We thank reviewer # 2 for her/his comments. Replies to the suggestions are embedded below.

> Firstly, I agree with the previous referee's comment number 3.

We have several ideas for code development in the future. As requested, we now mention some ideas in the summary.

> p 199 - line 22-23: Please highlight in some form how the acronym is formed, e.g. Simplified EMIssion and DEPosition. While this may be picky,

> it is not immediately obvious.

Changed as suggested, also for SAPPHO.

> p 200 - line 4 and line 9: The use of J for entrainment flux and photolysis rate coefficients is confusing. Please clarify.

The symbol J was not chosen by us. We also find it unfortunate that the same symbol is used for the entrainment flux and photolysis rate coefficients. To distinguish them, we use the subscript "e" for emissions.

> p 201 - line 14-16. If I may recommend rewriting this sentence as follows... "A comparison of the simulated short-lived species to their measured values yields insight into how well the reaction mechanism is understood.

Changed as suggested.

> p 201 - line 16-18. Unfortunately, I am not able to interpret the meaning of this sentence confidently enough to offer an alternative. Please rewrite.

Changed to make the contents more clear.

> p 201 - line 25-26. This sentence is not clear, and seems out of place. If the authors choose to keep it, I would recommend that they elaborate on its meaning and intent.

An additional explanation has been added.

p 202 - line 6. put the word "optionally" in parentheses, e.g. "(optionally)"

Changed as suggested.

p 202 - paragraph starting at line 9. Please rewrite this paragraph. I have tried to do so in order to assist through this interactive comment, but I am not confident that I was able to interpret the intent sufficient to preserve its original meaning.

The section about Lagrangian trajectories has been rewritten.

p 203 - line 5. General question: Were the authors unable, or had they attempted to force the system to work in the Windows environment using Cygwin?

I used the cygwin tools a long time ago. They allow Windows users to use the same powerful tools that are available under Linux/UNIX operating systems. Therefore I believe that it may be possible to run CAABA/MECCA under Windows after installing cygwin and other auxiliary programs. However, working with cygwin requires some knowledge. To allow Windows users with no or little experience with Linux/UNIX tools an easy introduction to modeling, we found that virtual machines provide a better solution.

p 204 - line 26. Please recommend another source for the Marsaglia polar method. Wikipedia is a fluid source of information and would not recommend using it as a source for peer-reviewed publication.

We have added the reference Marsaglia and Bray (1964).

p 205 - line 2. add commas, such that the sentence reads, "random numbers, z, from uniformly..."

This sentence has already been changed according to a suggestion from the other reviewer and does not contain this segment anymore.

p 207 - line 25 and elsewhere afterwards. It cannot be expected that a general reader knows how to interpret the wildcard asterisk '*' or regular expression symbols. It may be the case that standards are defined elsewhere in GMD/GMDD/COSIS which permit this. Of that I am not aware.

We changed the notation from “(*.cfg)” to “(suffix cfg)”.

p 208 - line 23. What integrators (new or otherwise) are available? If this is defined in the system's documentation, it would be sufficient to indicate this.

The new integrators are explained in detail by Sandu & Sander (2006), which is cited here.

p 216, Fig 3. I may insist that the Penguin in a small space-ship be a requirement in my future work! :)

We appreciate the reviewer's penchant for penguins :-)

Interactive comment on Geosci. Model Dev. Discuss., 4, 197, 2011.