**Geoscientific
Model Development
Discussions**

Interactive
Comment

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

Anonymous Referee #2

Received and published: 21 March 2011

The paper describes an update to version 3.0 of the CAABA/MECCA atmospheric chemistry box-model. The developments include an integration of several ongoing, broadly-aimed features of the system that make it a more robust and interpretive tool for investigating atmospheric chemistry in multiple phases.

The text is reasonably well organized, but there are several substantial textual corrections that I would like to recommend - which will be very simple to integrate into the text in its present form. With this, though, I wholeheartedly recommend this for immediate publication in Geoscientific Model Development and look forward to its use by the community as well as future developments.

Specific comments/recommendations:

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

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.

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

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.

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.

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.

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

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.

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?

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.

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

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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.

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.

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

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