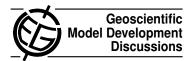
Geosci. Model Dev. Discuss., 3, C621–C624, 2010 www.geosci-model-dev-discuss.net/3/C621/2010/ © Author(s) 2010. This work is distributed under the Creative Commons Attribute 3.0 License.



# Interactive comment on "A quasi chemistry-transport model mode for EMAC" by R. Deckert et al.

# A. Lauer (Referee)

lauera@hawaii.edu

Received and published: 23 December 2010

## General comments

The authors present a method to use the chemistry climate model EMAC in a chemistry-transport mode without having to change or recompile the source code. They also provide an example for the application of this new mode as well as a comparison with the fully coupled mode of EMAC. The detailed description is well suited to allow other users of EMAC to use the model system in quasi chemistry-transport mode.

The manuscript is written well and clearly. I suggest publishing in *Geoscientific Model Development* after addressing the minor comments and suggestions given C621

### below.

## Specific comments

- p. 2190, l. 6: I suppose by "the signal follows" you mean "the signal is calculated from"? I also recommend replacing "reference and sensitivity" by "a reference and a sensitivity simulation".
- 2. p. 2190, I. 7-8: "...as a substitute of the feedbacks between chemistry and dynamics:" This is of course not true as the offline fields simply replace the online fields, which in turn might cause feedback between chemistry and dynamics. Please consider a more precise formulation.
- 3. p. 2190, I. 14: "...from a non-QCTM simulation of the reference setup." This sounds odd. I recommend to replace "of" by, for instance, "using" and "reference setup" by "setup of the reference simulation".
- 4. p. 2190, l. 17-18: "...prescription of water vapor tendencies." Do you mean chemical water vapor tendencies? If so, please say so.
- 5. p. 2192, l. 9-10: What do you mean by "...breaking the feedback between chemistry and dynamics"? Turning chemistry-dynamics feedbacks off?
- 6. p. 2192, l. 12: Replace "discrepancy" with "difference".
- 7. p. 2194, I. 1-3: What do you mean by "two blocks in North-South direction"? I suppose you mean two blocks at the same longitude and the same latitude, with one block being in the Northern and the other in the Southern Hemisphere? Please clarify.

- 8. p. 2196, l. 8: The namelist switch L\_COUPLE\_H2O appears to be a variable of the kind logical. The value "2" seems therefore out of place and is inconsistent with its value given in Table A1.
- p. 2200, Section 4: I am missing a brief summary of the model setup. This
  description should at least include horizontal model resolution, number of vertical
  levels, chemistry mechanism, nudging data, simulated time period, and a list of
  submodels used.
- 10. p. 2200, l. 13: To my knowledge, the word "percental" is written without a hyphen. I would also recommend to simply use e.g. "relative difference" instead.
- 11. p. 2203, I. 3, 15, 21: References to Figure 7 should be Figure 6.
- 12. p. 2212, caption of Table A1, "EMAC version 1.11": Do you mean "EMAC version 1.10"? If not, please update the manuscript accordingly.
- 13. p. 2212, caption of Table A1, "...triggering as the timed import". Do you mean "triggered"?
- 14. p. 2215, caption of Figure 3: The information on the model setup should rather be given in Section 4 and removed from the figure caption.
- 15. p. 2215, 2216, Figures 3 and 4: I find the labeling of the contour lines confusing. Do they have to be multiplied by the number given in brackets above the plots? Please give the contour lines simply in %.
- 16. p. 2217, caption of Figure 5: What do you mean by "mean annual-mean"? Zonally averaged annual mean? Please clarify.
- 17. p. 2217, 2218, Figures 5a and 6a: The labels of the contour lines are overlapping in a way that makes them illegible. Please consider optimizing the figures in this respect.

C623

18. p. 2218, 2219: The captions of Figures 6 and 7 are mixed up.