

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

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Received and published: 17 December 2010

The authors developed a new mode in the chemistry-climate model ECHAM5/MESSy for Atmospheric Chemistry (EMAC) which allows using EMAC as a quasi chemistry transport model. The authors describe how to use this quasi chemistry-transport model mode (QCTM) for own simulations by adjusting the switches in the namelists of the sub models H<sub>2</sub>O, HETCHEM, RAD4ALL and PSC and using offline climatologies for different gaseous substances. The authors explain the advantages of the QCTM comparing different performed simulations and show that by using this mode it is possible to suppress all model feedbacks between chemistry and dynamics.

The manuscript is structured very well and the description of the QCTM is absolutely understandable. The evident advantages of the QCTM are illustrated by the described

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simulations clearly. With the instructions in the manuscript it is in my opinion easy to perform own simulations using the QCTM.

Therefore I gladly recommend this paper for publication after some (very) minor revisions:

Page 2190, line 7: I would prefer “These using” or a similar expression instead “These are fed with”.

2190, 9-11: Please set (a), (b) and (c) at the start of the sentences.

2196, 8: I think instead “L\_COUPLE\_H2O=2” would “L\_COUPLE\_H2O=F” be correct.

2196, 17: CFC-I2 -> CFC-12

2197, 24: Please change “(b) and (a)” in “(b) and (c)”

2198, 16-17: I would skip the sentence “Here it is assumed that NAT nucleates on ice and that the ice forms in cases of supersaturation”. I think this sentence is mistakable. The assumption that NAT nucleates on ice and the supersaturation for ice has in my opinion nothing to do with the comparison between the equilibrium temperature of ice and NAT. Moreover the assumption that NAT nucleates on ice is only valid using the thermodynamical approach for NAT and the supersaturation for ice can be switched off in the PSC namelist.

2199, 5: Please exchange 3.2 and 3.1

2203, 3: This has to be Fig. 6a instead of Fig. 7a (see remarks below about the wrong captions in Fig. 6 and Fig. 7)

2203, 15: Fig. 6a instead Fig. 7a

2203, 21: Fig. 6b instead Fig. 7b

2204, 19: Fig. 7a and b instead Fig. 6a and b

2212, Table A1: - Why not EMAC version 1.10, as mentioned on page 2192, 25? - I

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would skip the . . . and the ” in the lines under &REGRID

2218-2219, Fig. 6, Fig.7: The caption of Fig. 6 should be the caption of Fig. 7 and the caption of Fig.7 should be the caption of Fig.6 (most likely the labels are also exchanged)

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Interactive comment on Geosci. Model Dev. Discuss., 3, 2189, 2010.

**GMDD**

3, C605–C607, 2010

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