Atmos. Chem. Phys. Discuss., 1, S72–S73, 2001
www.atmos-chem-phys.org/acpd/1/S72/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Simulation of trace gas redistribution by convective clouds - Liquid phase processes" *by* "Y. Yin et al."

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Received and published: 29 October 2001

The paper by Yin et al. presents very interesting calculations of the vertical redistribution of (moderatly) soluble species in clouds. It is well written and the results are presented clearly. However, I suggest to consider the following points before the paper is published in Atmos. Chem. Phys.:

1) There seems to be a conversion factor missing in equation (4). Since the Henry's law coefficient is expressed in [mol dm^{-3} atm^{-1}] and the mixing ratio is dimensionless, the term $M_{d,i,r}/H_i^*$ has the unit [dm^3 mol^{-1} atm]. This term is subtracted from the product $V_r N_r P_i$ which represents a pressure. Thus the units do not match.

2) The maxima of the integrated species mass in Fig. 14 appear on isolated patches with the height approximately being equal to the source altitude. Why are these patches not connected? Is this a real phenomenon or is it a model artefact that arises from the

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discretization of the vertical axis?

3) Schwartz (1984) is cited as the reference for the Henry's law coefficient of NO_2. However, I was unable to find this value in that paper. Is the reference correct?

Interactive comment on Atmos. Chem. Phys. Discuss., 1, 125, 2001.

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