

## ***Interactive comment on “Aerosol microphysics modules in the framework of the ECHAM5 climate model – intercomparison under stratospheric conditions” by H. Kokkola et al.***

**Anonymous Referee #2**

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This is a very technical paper, well structured from a pure technical point of view and not deserving major changes in this perspective. However, I do not think it is appropriate for publication on a scientific journal, where new ideas should be presented and discussed with combined use of numerical model simulations and observations.

Specific comments.

1) This paper appears to be of some utility only for scientists in the “ECHAM5” community, discussing which aerosol microphysics module may be more appropriate in the context of this climate-chemistry model. In addition, the journal where the paper is sent for publication should primarily focus on model development: here, except for a rela-

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tive small part (section 3: “New time integration scheme of H<sub>2</sub>SO<sub>4</sub> processes in M7”, describing the development of a new time integration module), the whole discussion is made on the effects of three aerosol microphysics modules (already existing and tested) in the framework of ECHAM5. To me this is not enough for publication on a scientific journal available to the whole community of atmospheric scientists. As a more appropriate choice, I would suggest the authors to publish this material (more or less as it is) on an internal technical report (MPI of FMI), leaving the possibility, in a second moment, to use these aerosol modules for real atmospheric simulations with comparison to observed data (particle size distribution, extinction, optical depth, surface area density, etc.).

2) Some of the physical conclusions in section 6 (i.e. effects of radial resolution in sectional modules) are not new and were already discussed in previous papers in the literature (for example Weisenstein et al., JGR, 1998; Weisenstein et al., SPARC assessment, 2006; Larsen, DMI technical report, 1991).

3) References to other works appeared in the literature on the use of aerosol modules in global atmospheric models are missing (section 1: “Introduction”).

Typos:

1) Pag. 210 line 6: Microphycical model.

2) Pag. 212 line 23: An folding time.

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