

Review of the revised version of Aerosol microphysics simulations of the Mt. Pinatubo eruption with the UKCA composition-climate model by Dohmse et al

The paper has substantially improved in comparison to the original version. The discussions are more elaborated and the figures are clearer. The additional sensitivity study with an initial injection of 10 Tg SO₂ is a very valuable addition. It is good to know that the authors could detect and solve a model bias.

In general, I would like to recommend publication in ACP now. However, to broaden the perspective I would like to see a somehow critical assessment of the UKCA model results with other Pinatubo simulations. It would be good to mention in the final discussion and conclusion section at the end that other models capture observed quantities after the Pinatubo eruption with a twofold higher sulfur emission. A short paragraph about the necessity of a global aerosol model inter comparison for the Pinatubo episode as planned in the SSIRC model inter comparison study and lead by one of the co-authors would in my opinions be a very valuable addition.

Minor comments

Page 17, line 23 -27 The role of three times higher stratospheric aerosol background load in the UKCA model as one of the possible reasons for the high volcanic aerosol load remains unclear

Page 24 line 10 *“Before the eruption (May 1991), the 10 model captures the observed SAD very well with a hemispherical symmetric distribution in the lower stratosphere in the range 0.5 to 2 μm²cm⁻³”*

I would not write that the model captures the observations well, because we see in the satellite data an almost clean UTLS region while in the model the SAD is throughout the UTLS > 1 μm² cm⁻³. This has certainly consequences for the particle growth.

Figure / color bar missing

Figures 4, 8 Please put the colorbar below the four panels