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Atmospheric Chemistry and Physics Discussions

Interactive comment on "A three-dimensional model study of methanesulphonic acid to non sea salt sulphate ratio at mid and high-southern latitudes" *by* H. Castebrunet et al.

Anonymous Referee #1

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General:

This paper analyses the reasons behind the seasonal and spatial variation of MSA to non-sea salt sulfate ratio at high southern latitudes. The analysis relies on simulations made using an Atmospheric General Circulation model and observations taken from a number of field sites. The topic is very important for our understanding and interpretation of the past sulphur cycle. The paper itself is very well written, and it appears scientifically sound. I have only few minor suggestions for improvements that the authors might consider prior to publication in ACP.

Comments:

1. The specific aims of this study should be stated explicitly in the Introduction. The current text gives the wrong impression that this is simply a modeling exercise with a comparison to measurement. Clearly, this study is much deeper, providing new insight into DMS chemistry at high latitudes and related uncertainties.

2. Following the previous comment, I would like to see a short summary paragraph on atmospheric implication resulting from this study at the end of Conclusions section (What do these finding mean in terms of interpreting, for example, ice core data). Such an addition would definitely strengthen the paper.

3. I recommend that the authors use the term "model evaluation" rather than "model validation" throughout the text.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 14995, 2009.