

Interactive comment on “Technical Note: SWIFT – a fast semi-empirical model for polar stratospheric ozone loss” by M. Rex et al.

Anonymous Referee #1

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This paper describes a semi-empirical model (SWIFT) which estimates the ozone loss during polar winters. The main motivation of this work is to provide a very fast stratospheric chemistry scheme which might be coupled to GCMs while maintaining the physical and chemical properties of the key processes. In this first version, the model simulates the vortex-averaged evolution of the species driving ozone depletion on one specific potential temperature surface. This involves introducing parameters for the chemical processes that are trained on the observations of the atmosphere during an Antarctic and an Arctic winter. Finally, it is shown that the model can successfully reproduce the ozone loss as derived from observations during other winters.

The paper is very well written, clear, concise, and well structured, which reflects the quality of the work itself. As far I am concerned, no fundamental questions remain

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unanswered. Figures also are clear and suitable for publication. The results obtained by the current version of the model are fairly good. As a consequence, given its remarkable computational rapidity, it is expected that the final version of SWIFT would be quite valuable for future climate change modelling studies. I therefore recommend this paper for publication in ACP after answering the question below.

Question:

p. 31622-31623: "In principle, most of these parameters can be linked to the underlying reaction kinetic parameters that are determined from laboratory measurements." Have you tried to check the consistency between this technique and the one adopted in this work? If so, how far are they consistent?

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 31607, 2013.