

Interactive comment on “The Extrapolar SWIFT model (version 1.0): Fast stratospheric ozone chemistry for global climate models” by Daniel Kreyling et al.

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Dear Referee 1,

Thank you for your positive feedback and your remark on volcanic activity.

“It would be useful / interesting (to show) how this sub-model responds over say the 1990-1994 period, which encompasses the Mt. Pinatubo eruptions. Since volcanic eruption and subsequent ozone change are important part of historical record and do have a climatic impact this would (in my opinion) add value to this work.”

As an outlook to Extrapolar SWIFT we wish to include an even wider range of strato-

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spheric conditions in the training data sets, e.g. perturbed meridional circulation or a reduction of the chlorine load. Including years with strong volcanic activity should definitely be considered as well.

In the current version of the ATLAS CTM, the background aerosol is based on a fixed climatology based on SAGE II. However, volcanic eruptions are not included in this fixed climatology. The impact of volcanoes on the ozone layer is currently only partly included via the meteorological fields, from e.g. ECMWF ERA-Interim.

However acquiring and incorporating aerosol fields including volcanic activity of the past decades is possible (e.g. CMIP6-Forcings).

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2017-134>, 2017.

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