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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 Lutz Gross,

Thank you for your remarks. Please find our answers and suggestions below.

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"As explained in https:// www.geoscientific-model-development.net/ about/ manuscript_ types.html GMD is expecting that authors upload the program code of models as a sup-

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Discussion paper

plement or make the code available at a data repository preferable with an associated DOI (digital object identifier) for the exact model version described in the paper. If for some reason your code cannot make available in this form as the code availability section in your paper suggests you need to state the reasons why the code is not available or access is restricted."

The repository (https://swrepo1.awi.de/) specified in the section 7. Code availability of the paper is accessible upon request to the authors. This repository contains the whole ATLAS CTM + SWIFT code. Our initial concern about making the entire ATLAS + SWIFT code publicly accessible was that we do not have the work power to offer support to potential users. However, we decided to make the SWIFT code (polar and extrapolar) available via a publicly accessible **Zenodo repository (https://zenodo.org/record/1020048)**.

This repository contains the version 2.0 of the Polar SWIFT model and the version 1.0 of the Extrapolar SWIFT model:

1. The MATLAB code for the SWIFT integration into the Chemistry and Transport Model (CTM) ATLAS. [`swift_MATLAB.tar.gz`]
2. The Fortran code for the SWIFT integration into a General Circulation Model (GCM), e.g. ECHAM 6. [`swift_fortran.tar.gz`].
3. (only Extrapolar SWIFT) The Polynomial functions stored as NetCDF-files [`swift_extrapolar_polynomials_v1.0.tar.gz`].
4. (only Extrapolar SWIFT) The data processing and fitting routines to determine the polynomial functions. Please refer to the included HTML documentation (./doc/index.html). [`swift_extrapolar_source_v1.0.tar.gz`].

Additionally the Zenodo repository offers a **DOI**: 10.5281/zenodo.1020048

"There seems to be a vital dependence to the ATLAS CTM code. Can you please clarify which version of ATLAS CTM is required and also how to get access to it?"

There are several aspects to this question:

1. The training and testing data sets for the polynomial approximation were compiled from ATLAS CTM simulations. After this data collection step the determination of the polynomials is entirely independent of the ATLAS CTM, i.e. the polynomials can be evaluated independently of a specific model frame work. In order to validate and optimize the polynomials we coupled the Extrapolar SWIFT model to the ATLAS CTM, using only its transport and trajectory mixing scheme. But we could have also coupled SWIFT to another model, as we started doing with the ECHAM 6.3 GCM.

2. In order to run the MATLAB SWIFT code (see Zenodo repository) the ATLAS CTM is required, since the routines and functions are interfacing with the ATLAS CTM code. For access and support to the ATLAS CTM code, please contact Ingo.Wohltmann@awi.de. The current ATLAS version in the repository is fully compatible with the SWIFT code. As mentioned before, we can not make the ATLAS code publicly accessible due to the lack of work power for the support of the model.