Geosci. Model Dev. Discuss.,
https://doi.org/10.5194/gmd-2017-308-RC2, 2018

Geoscientific Model Development Discussions

Interactive comment on "The Interactive Stratospheric Aerosol Model Intercomparison Project (ISA-MIP): Motivation and experimental design" *by* Claudia Timmreck et al.

Anonymous Referee #2

Received and published: 11 February 2018

This paper motivates and describes the experimental design of ISA-MIP, the Interactive Stratospheric Aerosol Model Intercomparison Project, which is part of the SPARC-SSiRC initiative.

I found ISA-MIP very well motivated and structured. It builds on four experiments that are designed to tackle different processes involved in the formation and development of stratospheric aerosol. ISA-MIP has a strong orientation toward comparison of the model results with instrumental observations and promises to deliver key information to improve our understanding of the stratospheric aerosol layer.

The paper certainly fits the scope of GMD. It is well written and the technical description

of the four experiments is overall clear and precise in its different aspects. I have a few suggestions and requests for clarification that do not detract from the fact that I recommend this paper for publication.

My only comment regarding the protocol concerns the TAR experiment "db1". This is a mandatory (Tier 1) experiment that uses preferably tabulated point sources or, optionally, 3D data. However, the latter option is given an own identification in the protocol and a different priority (Tier 3). There may thus be a conflict, as a mandatory experiment is optionally bypassed by performing a low-priority experiment. If the two experiments are equivalent alternatives, they should be given the same priority, or even appear as the same experiment with the selected option to be reported in the metadata. I recommend some clarification.

As a general note, an expanded description about potential synergies and links with other ongoing MIPs would better highlight the value of ISA-MIP for the broader climate modelling community.

Specific comments on the manuscript:

Line 78: please check, the acronym OCS seems to be only introduced in line 164

Line 186: "compared to moderate eruptions"

Line 295: Across?

Line 321: the nudging period for the QBO is 1980-2000 (21 years) but the experiment only consists of 20 years. It seems that to include the year 2000 at the end of the simulation, the nudging period should start in 1981.

Paragraph 3.3.3: It appears from Tables 5 and 6 that "VolcDB*" identify the datasets, whereas the experiment names are "TAR_db*/TAR_sub". It seems that the text in this paragraph mixes the two (for instance in lines 374-376)

Lines 432-438: this is certainly an interesting goal, but in this short description this

appears at the edge or even slightly out of the scope of ISA-MIP itself. Can you expand on this?

Table 1: some of the information provided is not clearly described. For instance, are the numbers in parentheses in the “Total years” column the recommended integration years? This seems not to hold for the PoEMS where the numbers seem to refer to the number of perturbed parameters. The description of the number of specific experiments for PoEMS also seems to lack clarity.

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2017-308, 2018.