

Interactive comment on “Reconciliation of essential process parameters for an enhanced predictability of Arctic stratospheric ozone loss and its climate interactions” by M. von Hobe et al.

M. von Hobe

m.von.hobe@fz-juelich.de

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First, I thank Susan Solomon for taking the time to provide such an elaborate review that contains some justified criticism and helpful suggestions for improving the manuscript. We will soon respond in detail to all the points raised, and also address them in a revised manuscript should the other reviewers and the editor grant us permission to submit one. However, I do not fully agree with some of the general criticism raised, and I want to briefly express my view on the value – or justification if you want to call it that – of a project overview paper such as ours. I do so in the hope that an open discussion may be useful for our paper and maybe future papers of similar scope.

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Because I did not yet consult all co-authors and hence cannot speak on their behalf, I deliberately file this as a short comment rather than an author comment.

The purpose of a project overview paper is, in my view, to put the many scientific findings and results made by the individual scientists and teams into wider perspective. Of course, all these results have been – or will soon be – published in individual papers, most of them following the standard format for a scientific paper. But often, taking such rather specific scientific results together makes it possible to draw wider conclusions and address further reaching implications than in the individual publications. This is particularly true for large research projects such as RECONCILE, where the different activities are planned and coordinated already at the proposal stage to reach some defined overarching objectives (note that RECONCILE was proposed almost exactly 5 years ago and that the mention of project objectives and activities in the paper does not serve the purpose of trying to propose the same science again in the future). Of course, this entails some peculiarities associated with these papers, and often a certain degree of review character. However, I still think that the RECONCILE overview paper follows the general format of a scientific paper:

- The introduction provides important background, leading up to the motivation for the work that led to the results presented. Work has been carried out and important results obtained on a range of open questions, so our introduction picks up a number of issues related to polar ozone loss. The structure of two introductory sections with Section 2 separated into subsections was adopted for easier accessibility, and the format of a brief historical overview for the general introduction was chosen because we see RECONCILE as following up in a long tradition of large and small projects and research efforts (we will make sure to mention the important contributions by some of the smaller projects, following Susan Solomon's reminder). It is not meant as a comprehensive review, and the reader is referred to more comprehensive reviews e.g. in the caption of Figure 1. In some places, our statements and selection of references to argue why certain

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issues are important and deserve attention led to some imbalance, but I feel that this can easily be resolved following the constructive suggestions in the review.

- Section 3 represents the “experimental” Section of the paper. While RECONCILE is not the first atmospheric research project that contains activities ranging from small scale measurements to global models, I still think that the fully integrated general approach of bridging laboratory experiments and field/satellite observations via a suite of different process analysis and modeling tools directly to a global model and evaluating the model results (I have to admit that there is some lack of specificity on the global modeling and evaluation part, and we will make efforts to improve this) is inventive enough to deserve the 7.5 line paragraph plus one figure that we have devoted to it. The description of the many project activities that follows may be tedious, but we thought it obligatory for a scientific paper to list and reference all the tools and methods that were used in obtaining the results given in Section 4. In some cases, several observational methods and modeling tools were used to generate one single result. If one looks at the number of lines or paragraphs alone, this does lead to an apparent imbalance between the results Section and the description of the way that these results were obtained. The information in this Section may also be useful for those colleagues who will use one of the most important results from RECONCILE, namely a comprehensive set of observations that will be made freely available to the wide community by early March of this year.
- The results section (Section 4) does not go into detail on all questions that are discussed, and we do not show all material to conclusively support some of the stated results/claims. But this is done in the individual papers, and those are referenced. And should an ACP version of our paper appear, we will take care that all these individual papers needed to support our claims will have been published or at least accepted for publication.

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- In Section 7, our conclusions, we summarize the important findings and discuss the implications. We try to convey, how RECONCILE has contributed to progress in the field of polar ozone over the past four years, and we do acknowledge in a very clear statement – although without going into too much detail – that others have made equally important contributions to this progress (and note that other recent studies are also referenced in the results Section, e.g. on the ClO dimer issue). With the claim that, by and large, we do understand the actual processes destroying ozone in the polar vortex to a sufficient degree of certainty, we felt it important to state that this does not mean that we fully understand the climate impact on polar ozone loss. I had first included one very short and rather general statement that processes in the tropics (i.e. wave forcing and vertical transport) may have a more important role in deciding future ozone holes and be much less well understood than dynamics, microphysics and chemistry inside the polar vortex. Some co-authors felt that, although nice and short, this statement wasn't completely accurate, and we decided to elaborate somewhat more on what we feel are the “great unknowns” with respect to Arctic Ozone after RECONCILE. Hopefully, future projects will pick this up and continue the tradition of research on polar ozone.

To summarize, I do not see that the format and contents of our paper are inappropriate for a scientific paper, and overview papers of research projects and/or special journal issues (to a large extent, the overview is about articles contained in the same special issue) have been presented in the past. Concerning references to institutions and funding programs, maybe there are a few too many, but removing them will probably not shorten the paper by more than a quarter page. And I can't see any harm being done by writing “EU project” instead of “project”: this has often been done by others, and in times when funding for basic research in general and atmospheric observations and monitoring in particular seems to be getting less, adding in scientific papers these tiny bits of visibility (beyond the mention in acknowledgements) for funding bodies and

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institutions providing data and support free of charge may even have some value (at least, that's my personal view on this).

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 30661, 2012.

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