

**Comments to the author: Dear authors, I am pleased to inform you that your paper is accepted for publication in ACP after consideration of the following technical corrections:**

We sincerely thank the Editor for these careful checks and comments, all of which we have addressed and incorporated as detailed here below.

**I have two comments to your responses to the referee 1 comments:**

**L75: To my knowledge, SLIMCAT is an abbreviation and I found the following long name in the web: Single Layer Isentropic Model of Chemistry And Transport (<https://catalogue.ceda.ac.uk/uuid/ba4dc1a5a1bbdecaeb99bf957db02dc3>)**

SLIMCAT should be treated as a name and not an acronym. The very first version of the model, in the mid 1990s, was a single level model and at that point the acronym made sense. However, the model quickly became a full 3D model and although the name remained unchanged the acronym was no longer relevant. Although the CEDA webpage quoted is an old one, it actually gives 3D model fields so actually the acronym is not relevant to the data stored there either. Please note that the main author of this manuscript has large experience using SLIMCAT and publishing corresponding work; and that the main developer of the SLIMCAT model is also among the authors of this manuscript. In almost all the hundreds of SLIMCAT papers that have been published since the late 1990s the word 'SLIMCAT' has been treated as a name. We would be grateful if the same practice could be followed here.

**L297-301: The biases in ECMWF are well documented. There are e. g several studies by Manney et al and other authors comparing re-analyses data sets. Currently, there is a paper by McCormack et al. in the ACP discussions. You could also have a look at the recently published SRIP report for a suitable reference.**

Yes, thanks, we have now also added a reference to the relevant study by Manney et al. (2008).

**Comments on the revised manuscript:**

**P1, L12 and 13: Add here also the time period for mid-range and long-range (thus “10 days” and “seasonal”, respectively)**

OK, we think it'd be better to include this clarifying information when we first mention medium and long range earlier in the abstract (line 4 instead of line 12). We have included it there now.

**P1, L14: Sentence correct? Should it rather read correlation of the NAO index?**

OK, now rewritten to make it clearer.

**P3, L75: see my comment above on the reply.**

Please see our answer to this comment above.

**P5, L124: Here you should a reference. The easiest solution would be to use the review paper by Tritscher et al. (2021) published in *Review of Geophysics* earlier this year**

**<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020RG000702>**

Thanks, we have now added here references to the Tritscher et al. (2021) review paper and to *Hanson and Mauersberger* (1988).

**P5, L126: Also here a reference should be added. Ad hoc I do not have the perfect reference, but check the paper by Wohltmann et al. or Nakajima et al. who had quite often their focus on chlorine activation.**

Thanks, we have now added here reference to *Nakajima et al.* (2016).

**P5, L143: Abbreviation ARPEGE not introduced -> Action de Recherche Petite Echelle Grande Echelle (<http://www.umr-cnrm.fr/spip.php?article121&lang=en>).**

Thanks, we have now spelled out the ARPEGE acronym.

**P6, L179: Since you introduced the abbreviation “CD” you could also write here “CD”.**

Thanks, we now use the abbreviation here.

**P6, L181: Sentence not clear. Do you mean “ Initialisation with data from .....”**

Yes, thanks, we have now rewritten the beginning of this sentence.

**P7, L189: model -> modelled**

Ok, done.

**P8, L217 and L222: write full names of the months**

Ok, done.

**P9, L265: of the hole -> of the ozone hole**

Done, thanks.

**P11, L313: Also here a reference is missing. I would suggest to use here again Tritscher et al.**

Ok, we have now added reference to Tritscher et al. (2021) here.

**P12, L357, L358 and L367: T -> temperature**

Ok, thanks, done.

**P13, L378: either write singular or plural, thus either “this types of ozone linear models are....”  
Or “this type of ozone model is.....”.**

OK, sentence was correct as it was but we have now rewritten it to make it clearer.

**P14, L412: three members -> three ensemble members**

OK, done.

**P15, L453: rephrase to “.....the new ECMWF seasonal system SEAS5.....”**

Ok, done.

**P15, L465: Rephrase sentence as follows: “Byrne and Shepherd found in their study, using ERA Interim that.....”**

OK, sentence rephrased.

**P18, 565: sentence not correct. Please correct.**

Ok, we have rewritten this sentence.

*New text: “The adaptability shown by the new BMS ozone scheme to very different meteorological conditions makes it an excellent candidate for future Earth System Reanalyses. Such reanalyses will need climate forcings and stratospheric feedbacks to be accurately included; thus, stratospheric ozone descriptions that realistically respond, and feedback to, changes in temperature and dynamics will be essential to correctly account for trends in stratospheric ozone depletion and recovery levels.”*

**P32, Figure 9 caption: DRMSE in capital letters?**

Done, thanks.

**P34, Figure 11 caption: same here and “cover 1-year period” should read “covers a 1-year period”**

DRMSE now capitalised.

The sentence is correct as is: “The model runs cover...” (plural).

**P41, Figure 18 caption: Darkest reds -> the darkest red colors**

Done, thanks