

# Comments on Roy et al.: *Chemical ozone loss and chlorine activation in the Antarctic winters 2013–2020*

## General comments

The track changes document looks incomplete. There seem to be several new pieces of text which are not highlighted in it. In addition, omitted pieces of text are not included in the track changes. This makes the review of the revision complicate and makes it very difficult to judge if the concerns risen by the referees were considered. Please provide complete track change information on the next revision.

In the following, line numbers refer to manuscript version 3.

## Specific comments

- Referee#1 has asked about your mentioning of the influence of ozone depletion on precipitation. This is mentioned in the abstract, but it does not seem to be discussed in the introduction. Please add with references.
- I agree with the referee that your usage of the term "observed ozone loss" is confusing as you derive it from an observed and a modelled quantity. So there is no direct observation of ozone loss here. Please use a more appropriate term such as e. g. "derived" or "inferred".
- L 69: Please add the URL that you used in your response to the referee to the manuscript or a reference to a peer-reviewed publication to justify the values mentioned.
- L 202: check reference: the author's name in the text does not agree with the list of references. The citation is incomplete.
- Table 1: there does not seem to be a reference to the new Table 1 in the text. Please discuss the information presented in the table and reference it.
- Figure 4: In response to a comment from Referee#1 you omitted the tracer simulations up to 10 June 2018 and 20 July 2019 in the respective figure panels.

What was the reason for the choice of date? How about the initialisation phase for the other years? How about the year 2020 when ozone loss numbers presented in Fig 4 also looked very different at the beginning of the season? The new Figure 4 has a modified colorscale but this feature is still well visible but not commented on. What is the purpose of the isolines highlighted in black in the new version?

- Data availability statement: please add doi information or URL for all publicly available data
- I don't see where/how you addressed referee#2's question about mixing up MERRA-2 and ECMWF analysis data. In Lines 64/65 it is stated that MERRA-2 meteorology is used while lines 72/73 state that the REPROBUS model is driven by ECMWF operational analysis. Referee#2 has asked why you did use the meteorology that drives the model also for your analysis and I do not see that question answered, neither in your response nor in the revised manuscript.
- I don't see a sufficient discussion of the mixing up latitude with equivalent latitude raised by referee#1
- choice of words regarding "temperature growth" etc.: please provide an accurate track of changes made for assessment.