

We would like to thank Reviewer #2 for his/her comments and have responded to each specific point raised below. The original review text is in italics.

Note that since the original submission, one additional modeling group (CICERO) has provided the necessary fields to be part of this analysis. We are therefore including them in the revised paper (with no significant changes to the multi-model mean fields). In addition, we have included additional co-authors in relation to the ice-core data we are using in this analysis.

Unfortunately as the authors mention there is an issue with the NH₃ emissions over China (page 6257, line 7 and page 6259, lines 3-4). That would be very useful to provide a clear message on how this problem in the re-gridding of NH₃ emissions over China affects the accuracy of the deposition fields. In this respect in page 6257, line 23, a number is needed for clarity.

There is a mention on page 6257 line 11 that this error introduces a bias of approximately 30%. There are not many data points to fully evaluate the impact of this error. We will however slightly expand this discussion to mention differences in regional patterns of deposition.

While Tables are very informative and figures of good quality, the text of the manuscript is descriptive and rather vague. At several places it is lacking of concrete statements on the accuracy of the simulations. Words like similar performance (line 19 page 6257), minor change (page 6258, line 10), relative increase (line 12), small observed decrease (line 17), ..., not as large as observed (page 6259, line 20), rather well (page 6260, line 4) and several similar statements at other places in the manuscript, would be more informative if quantified.

We will rephrase those statements to be more quantitative wherever possible.

Specific comments: Units are not uniform. For instance Fig 3 is using ha while in figure 4 m² are used.

This is actually a typo in the figure caption as the figures are correctly using consistent units. We're sorry about leaving this typo. The document and supplement were thoroughly checked to remove inconsistencies in units.

Figures 2 explain what are the dotted lines. Correlation statistics could be also provided in the figure.

The dotted lines indicate $\pm 50\%$. We will add that information in the caption. We will include some statistical information in the figure in order to make it not too busy.

Figures 5 would be more informative by providing the absolute deposition only for a reference time-slice (for instance 2000) and the other as absolute or percent change from this reference.

We would like to keep Figure 5 as is but will include the suggested figure (we will include the absolute difference to avoid areas where deposition amounts are small) in the supplement.

Page 6249, line 18 define RCP

Will do.

line 25: explain why 'novel' : Mention here that it provides past and future simulations in time-slices

The main novel aspect is the use of multiple models to describe deposition under the RCPs. We will replace novel by state-of-the-art. We will mention the time-slice aspect of the study.

page 6250, line 16: in addition to reduced compounds like amines, oxidized compounds like organic nitrates can be part of organic nitrogen.

We will include organic nitrate in the sentence.

page 6251, lines 16-18: To increase readability please provide brief information on the range of horizontal and vertical resolution of the models.

We will only include limited information since this is available in Table S1.

page 6253, line 22: If there is no information available it is not reasonable to assume that S budget in the models is correct !

We will remove the term "reasonable" and rewrite the sentence to make it clear that this is an assumption based on standard estimates.

page 6254, line 2: fields found

Agreed.

page 6256, line 12: set of models

Agreed.

page 6256, line 16: remove 'NO3'

Agreed.

page 6258, line 6: must

Agreed.

line 9: provide range of computed reductions

Will do.

page 6259, line 23: may be better

Will remove “much”.

page 6261, lines 23-24: were calculated for RCP... These lines requires link to the projected emissions. The authors could discuss deposition/emission ratios for instance.

Information on the emissions over the same regions is already available in the supplement (we will make this link more clear). It is already well known that there is a strong correlation between regional emission and deposition fields so we will leave the text mostly unchanged.

page 6264, line 7: overestimation

Agreed.