

Interactive comment on “Impacts of climate change and emissions on atmospheric oxidized nitrogen deposition over East Asia” by Junxi Zhang et al.

Anonymous Referee #2

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Review for “Impacts of climate change and emissions on atmospheric oxidized nitrogen deposition over East Asia”

Zhang et al., used the ensemble model outputs from ACCMIP to study the future spatial distributions of total NO_y deposition, including wet and dry NO_y. They discussed that under the future reductions of anthropogenic emissions, the fractions of the ship emissions, as well as lightning emissions will have relatively important role in contributing the NO_y deposition. The authors also estimated the marine primary production form the future NO_y depositions. The manuscript is well-written and designed. I suggest to be accepted by ACP with minor revisions.

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In the abstract, I suggest the authors to add the marine primary production projected in the future, as this could be one innovation distinguished from other studies. I will suggest move the sentences from line 61 to line 63 before the discussion of ship and lightning emissions.

In section 3, I suggest the authors also add the model evaluations for the NO_y deposition in East Asia sine Larmarque et al.,2013 focused on wet NO₃ only.

Also in reporting the future NO_y changes under the four scenarios (RCP4.5, RCP8.5, Em2000CI2030, Em2000CI20100), I would suggest the authors to add tables listing the standard deviations, considering the multi-model and multi-year averages.

P3 line 73-74: Split up these references so that they are associated with the specific impacts being discussed, rather than all placed at the end of the sentence.

P3 line 95: Should HNO₄ also included in the NO_y species?

P4 line 107-108: I fee the reference to the ship emissions are out of nowhere. I know the authors discuss heavily on the contributions of future lightning and ship emissions on NO_y deposition, but I do no think the authors did a very good job in summarizing the current literature on ship emissions. Instead, line 336-341 should be moved up to the introduction.

P6 line 173: captured to captures

In section 5: add a table discussing the emission changes in 2030s and 2100 from the ship and lightning from ensemble models, since the authors were arguing the these two emission sources will have import influence for NO_y deposition in the future.

In Fig 2: Adjust the vertical color bar to cover the plots on second to fifth rows. In row 1, add the region names BS, YS, and ES into the top left plot.

In Fig 7&8: I will suggest to change “emisnox” for ship to “emisnox”

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-917>, 2018.

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