



EGUsphere, referee comment RC2  
<https://doi.org/10.5194/egusphere-2022-1260-RC2>, 2023  
© Author(s) 2023. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## **Comment on egusphere-2022-1260**

Anonymous Referee #2

---

Referee comment on "The future ozone trends in changing climate simulated with SOCOLv4" by Arseniy Karagodin-Doyennel et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-1260-RC2>, 2023

---

The MS: "The future ozone trends in changing climate simulated with SOCOLv4" deals with ozone evolution in the "middle-of-the-road" (SSP2-4.5) and "fossil-fueled" (SSP5-8.5) scenarios in the troposphere and middle atmosphere. As the authors have already presented the results from their historical simulations and comparisons to measurements in another paper, this study concentrates only on the future changes.

As expected, ozone is increasing in the stratosphere and decreasing in the lower stratosphere and troposphere. However, the mesospheric part is interesting as there are not many analyses for this region. This is a well-written MS and I have only some minor comments on this.

Major:

I thought a comparison between the previous RCP scenarios with the latest SSP scenarios is needed in the discussion. There are some studies based on CIMIP 5 ozone results. This should be in the modelling point of view. You have mentioned some in Introduction, but a discussion of the ozone results from both CMIP5 and CIMP6 are needed.

Minor:

L6: "and upper and middle"

L9: speed up of BDC?

L11-12: increase of UV in the tropics or mid latitudes?

L20: element? You need a better word here

L31: The following studies should also be mentioned here

<https://doi.org/10.5194/acp-18-7557-2018>

<https://doi.org/10.1038/s41612-018-0052-6>

L38: GHG was first mentioned in L23

L84: space after full stop

L89: decrease (Keeble et al., 2021).

L102: what is "slightly" comparable;?

L115: Hue et al. (2016)

L119: CCMi campaigns? Sounds a field campaign, not modelling experiments

L168: respectively (Zhao et al., 2020)

L192: indices

L241, 245: delete content, use amount or concentration instead

L248: signs of increase

L251-252: how NO<sub>x</sub> produces ozone in the lower stratosphere?

L253: do not start a sent with AND

L260: These increases of 0.13 and 0.27 DU are significant?

L269: Can you please give another reference for this. It is known long before, not in 2021

L299: as expected

L369: delete the "expected"

L382: it barely changes? Then you write a change of -4DU/decade? Delete "barely"