

## **Reply to referees for the manuscript “Early evolution of the ozone mini-hole generated by the Australian bushfires 2019-2020 observed from satellite and ground-based instruments”, review stage two**

Dear Editor, dear anonymous Referee,

Many thanks for your constructive criticism and your very useful further comments. Based on these comments, we have revised our manuscript. Please find more details and a point-by-point reply to the Referee’s specific comments in the following (Referee’ comments are in black and our replies in blue). We think that, thanks to your comments and suggestions, the present version of the manuscript is improved with respect to the previous version.

Thank you very much,

Redha Belhadji on behalf of all co-authors

### **Referee comments**

1) Abstract (lines 24–26): It may help to add that 30–40% ozone depletion is observed immediately after the event in the partial stratospheric column. This would emphasize the large values and help readers understand the contrast with the situation at the end of January and in the total column.

Done

2) Page 2, lines 50 and 53: Replace who with which.

Done

3) Page 2, line 52: Replace in his way with in its way.

Done

4) Page 2, line 42: As RC1 suggested, Solomon et al. (2022) is a strong reference describing chemical perturbations on chlorine and ozone. I suggest using it as a second reference. For the unprecedented magnitude of the event, however, the Sakai et al. (2025, JGR) paper may be more suitable: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2024JD041329?af=R>

Done

5) Page 2, line 58: Replace where also performed with were also performed.

Done

6) Figures (Page 6, Fig. 1; Page 11, Fig. 6): The text refers to panels a and b, but these labels are not shown in the figures. Adding them would improve clarity.

Done

7) Page 6, line 159: use within instead of with. For example: “vertical evolution of the ozone mini-hole formed within the smoke vortex.” Is the meaning intended to be: vertical evolution of the ozone mini-hole formed within the smoke vortex?

Done

8) Page 8, line 174: Replace 22th January with 22nd January.

Done