Minor revision of Tsivlidou et al. "Tropical tropospheric ozone and carbon monoxide distributions: characteristics, origins and control factors, as seen by IAGOS and IASI".

Letter to the Editor

Dear Editor,

We have addressed the comments of Reviewer #3.
Once again, thank you for your time and consideration.
We are looking forward to hearing from you regarding the final decision on the manuscript.
Sincerely,
Maria Tsivlidou

Answer to Referee#3 (blue in the text)

We thank Reviewer #3 for his/her comments and suggestions. Below we provide our answers to the comments and the details of the changes made to the revised manuscript.

I think the authors have greatly improved the manuscript and managed to enhance its readability and make it more concise and focused.
I have a few very minor comments left which I assume can easily be considered. Line numbers refer to version 4 of the manuscript as numbered by ACP.

L 11: the term 'clusters' has not been explained yet, so it should be 'location clusters' or similar.
This has been specified.

L 163: The definition of anomalies should be moved forward to occur prior to first mentioning of CO anomalies in the text.
We have moved the definition of the CO anomalies in line 154 of the revised manuscript. We adjusted line 153 as follows:

"SOFT-IO estimates the contribution to ~~CO anomalies~~ **anomalies in CO mixing ratios i.e.** CO emitted by primary sources during the last 20 days, while it does not calculate the background CO. The background CO can be emitted by primary sources older than 20 days, and by secondary sources such as oxidation of methane and non-methane volatile organic compounds. In our study, CO anomalies **(observed by IAGOS)** are defined as the positive difference between the observed and the background CO mixing ratio. The background CO mixing ratio represents a

reference value, not affected by surface emission or pollution events. For this reason, it is computed as the monthly climatological median CO of a remote area away from polluted regions, in the UTcruise (during the whole study period 2002-2020). Overall in the Tropics, depending of the month and region, a 80 ppb to 100 ppb background has to be added to SOFT-IO for direct comparison with IAGOS observations."

Figure 8: I understand the authors' argument for discussing the profiles in terms of absolute altitude, but it can easily be misinterpreted. Therefore I recommend to stress this point in the figure caption and the related text describing Figure 8.
We have modified line 393 as follows:
Figure 8 displays the annual maxima/minima of O3 (a) and CO (b) mixing ratios and their corresponding mean height **in terms of absolute altitude**.

We adjusted the caption of Figure 8 as follows:
"O3 (a) and CO (b) annual maximum (higher bar) and minimum (lower bar) mixing ratio observed over the tropical clusters. The annotated number on top of each bar indicates the **absolute** altitude (in km) of the observed annual maximum/minimum mixing ratio. The colour in the bar indicates the month of the maximum/minimum."