

## ***Interactive comment on “Internal consistency of the IAGOS ozone and carbon monoxide measurements for the last 25 years” by Romain Blot et al.***

### **Anonymous Referee #1**

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Romain Blot et al. presents an interesting internal consistency study for the IAGOS ozone and carbon monoxide measurements based on the analysis of co-located take-off/landing profiles from different instruments of the network. Overall the paper is well written and is scientifically sound, my only concern is related with the filtering criteria and how they affect the results. I recommend it to be published after the following minor comments are addressed.

Specific comments:

The authors explain that the filtering criteria (wind direction, time difference, etc.) is a compromise between the similarity of the ‘air masses’ and the number of points. It

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would be interesting to see what is the sensitivity of the analysis to some changes in these filtering parameters and how it affects the dispersion shown in, for example, Fig. 8. The ratio between the number of points within and outside the uncertainty as function of the change in the filtering criteria might help to understand what fraction of the observed measurements variability is actually due to differences in the sampled ‘air masses’.

Fig. 7c shows some points above 9km which are quite far apart and show a large difference in ozone and carbon monoxide despite being considered as matching. Wouldn’t it be good to add a distance criteria too? Would this dramatically affect the number of points?

Technical corrections:

When altitude is shown, please clarify if it is above sea level or above ground.

Fig. 7 looks messy. I would rearrange the panels/table to make it one figure and one table, and I would put all the captions in the figure caption instead of separate for each panel.

Fig. 9 and Fig. 10: You might want to reduce the size of the symbols (or make the legend larger) to avoid overlapping of the symbols.

L229-232: One sentence is repeated.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2020-462, 2020.

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