

## ***Interactive comment on “Tropospheric CO vertical profiles measured by IAGOS aircraft in 2002–2017 and the role of biomass burning” by Hervé Petetin et al.***

### **Anonymous Referee #2**

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The article "Tropospheric CO vertical profiles measured by IAGOS aircraft in 2002–2017 and the role of biomass burning" is very well written and clear; its scientific significance is certainly high as it seems to be the first effort on this scale to quantify the biomass burning vs anthropogenic origin of CO plumes. The authors show a very good grasp of the IAGOS dataset, and how to use it for extreme events; they are careful not to draw general conclusion when the number of events/observations is too small. The paper is well structured and very informative.

In short, I have no major comment and I think this paper can be published nearly as is. The only few questions remarks that I have are:

- In Figures 6 to 11, perhaps density plots (ie scatterplots with a different color code depending on the density) could show better the information with such a number of observations.

- Figure 12 is intended as an example to show how SOFT-IO provides the anthropogenic and biomass-burning contribution of CO concentration. The sum of the two is however very much below the observed profile, even at a low altitude. Surely the difference cannot be entirely explained as secondary CO or CO that was emitted more than 20 days ago (especially close to the surface)? If possible, an explanation would be welcome.

- The legends of Figures 15 and 23 are not on the same page as the Figures themselves.

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Discussion paper

