**Atmospheric
Measurement
Techniques
Discussions**

Interactive comment on "Carbon monoxide measurements onboard the CARIBIC passenger aircraft using UV resonance fluorescence" *by* D. Scharffe et al.

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The manuscript describes the CO measurements made aboard a commercial airliner within the CARIBIC project during a period of seven years. It documents the experimental setup and the data quality assurance. It serves as the reference document for an important dataset that is (and will be) widely used in the community. It is well written, and I recommend publication after some minor changes described below.

General comments:

A crucial aspect is the determination of the measurement uncertainty. Unfortunately, this is not treated sufficiently in the manuscript. A decent propagation of uncertainties

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resulting from the different factors involved in the measurement should be given. Apart from the noise resulting from counting statistics (which is included in the manuscript), this includes the drift in sensitivity and background signal during each flight (which an interpolation can only compensate for in an imperfect way), it further includes the calibration of the working standard against secondary or primary laboratory standards, but also possible drift of the CO amount within the working standard. All these factors should be taken into account in the uncertainty estimation. The suggested correction of CARIBIC phase 2 CO data from May 2005 to March 2010 represents a somewhat dangerous practice. A version with corrected data should be provided to the data base for use by other scientists to avoid confusion.

Other comments:

P 2682 Ln 11: Response time is usually given as the time passed until 90% or 63% of a step function change provided to the instrument is reached, 66% is quite unusual.

P 2687 L 17: I was wondering about the Ar/CO2 mixture to flush the optical path, was there no effect from photolysis of CO2 with subsequent absorption of the lamps radiation by CO observed? I would expect this to cause strong flow and pressure dependence.

P 2687 L 26: In what way was the heating of Sofnocat to 80°C useful? This should be mentioned.

P 2688 L 27: "The high stability of the photomultiplier" does this refer to the temperature dependencs of the PMT sensitivity of dark count?

P 2689 L 12: The performance should be compared to the Gerbig, 1999 instrument, which the Aerolaser instrument is based on.

P 2692 L 20: the authors problably meant "the lamp did not ignite"

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 2681, 2012.