

In “The IAGOS NO_x Instrument – Design, Operatio and First Results from Deployment aboard Passenger Aircraft”, Berkes et al. describe the NO_x instrument deployed on a Lufthansa aircraft and provide details about the measurement technique and limitations. The authors carefully step through the various calibration and zeroing techniques, as well as data reduction steps. The details provided will be extremely helpful to scientists looking at any IAGOS generated NO_x data in the future.

Overall, the paper is scientifically solid. It would benefit from some rewriting for clarity and addressing the following issues:

Major points:

Calibrations and corrections for vertical profiles: All calibrations are done at 250 hPa inlet pressure, but data is presented from vertical profiles. No analysis was presented justifying whether this calibration should hold at the higher pressures during the landing approach. The same holds for the instrument response characterization. The authors should either show why neither of these factors change with altitude, or should account for those changes in the error analysis and present a pressure dependent error.

Total uncertainty: The total uncertainty does not account for uncertainty in some of the corrections applied to the data. Perhaps most importantly, the authors state on p11, L1 “the ozone correction is very sensitive to the ozone mixing ratio”, but don’t account for ozone mixing ratio in the total error analysis. If the correction is that sensitive, there needs to be more discussion about the ozone measurement. What is the error of that measurement? Also, are the instruments perfectly synchronized in time or could there be a small offset altering that correction? This is also an issue with the instrument drift during deployment. The authors show the drift is linear, but show two different linear fits. It is not clear which of those linear fits is actually used during analysis and how much it might matter if the other fit was used.

There are some writing and organization issues that make the paper difficult to read. I have noted several in the “minor points” below, but a more thorough editing would be beneficial.

Minor points:

P2,L8. “whereas” does not make sense here

P2,L12. The list is presented unclearly and the sentence should be rewritten

P2,L26. “Despite the progress...” should start a new paragraph

P2,L33-38. This paragraph is unclear.

P5,L36. It is unclear what the sentence beginning with “However” is actually about (e.g., conversion efficiency?).

P6,L4. Change to “90 cm long PFA tube with a diameter...”

P6,L10. “trough” should be “through”

P6,L18. O₃ needs subscript

P8,L5. Change with to within

P10. Move these correction to before the steps on P9 that use them.

P11,L15-16. It is not clear what the second LOD numbers, presented in parentheses, are.
Section 4.3. Throughout this section there are percents presented, but it is not clear whether those are percent of the measured NO or percent of the interfering species (e.g., HONO).

P13,L3. The concentrations are “too small” for what?

P14,L3. It reads that NO has a “variation” of 25 ppt, but it looks much larger on the graph. Do you mean a standard deviation?

P14,L37-39. It is not clear which NO₂ peak is referred to here. Is this what is in the black box on the figure? Most of this paragraph is confusing.

P15,L2. O₃ reaches over 350 ppbv in the figure presented. Not just 200 ppbv.

P15,L10. Correct plum to plume.

P15,L32. Correct averaged to average

P15,L33. NO₂ is in parentheses after NO, but no NO₂ data are presented.