

## ***Interactive comment on* “The IAGOS NO<sub>x</sub> Instrument – Design, Operation and First Results from Deployment aboard Passenger Aircraft” by Florian Berkes et al.**

### **Anonymous Referee #2**

Received and published: 23 February 2018

The submission by Berkes et al. presents a thorough description of a NO<sub>x</sub> instrument that has flown routinely on commercial aircraft as part of a larger package with several other instruments. The measurement is based on the chemiluminescent detection of NO and NO<sub>2</sub> (after photolysis to NO). The photolytic converter for NO<sub>2</sub> is a major improvement over prior instrumentation used in such flights. The instrument is thoroughly characterized, and some representative measurement results are presented. The paper can be published essentially as is, though some minor points should be addressed. Also, although perfectly clear, the English could be improved in spots. A few representative examples are noted below, but by no means complete.

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Minor points:

p.2, lines 4-5: please explain why production rate most favorable in the UT. Is this in regard to efficiency or total amount produced? Why not more favorable where heavily polluted? Rate is higher there.

p.4, line 22: NOD not yet defined.

p.5 line 25: Is the 18 kV AC or DC. If AC, what is frequency?

p.7, line 32: Would be useful to cite numerical value for sensitivity.

p.10, line 33: Better to say O3 concentration (in  $\text{cm}^{-3}$ ) rather than mixing ratio (dimensionless).

p.11, line 27: depending / change to dependent

p.11, line 30: An uncertainty in NO2 not acknowledged is that due to the use an NO value that is not simultaneous with NOx detection. NO2 error can be much larger if mixing ratios are varying, when NO is uncertain.

p.14, line 26: agree / change to agrees

P.14 line 28: “with to” / change to “by”, “by” / change to “from”

p.15, line 10: typo: “plum”

Fig. 12, the right side of the box for the plume could probably be shifted left about 15 minutes.

p.16, line 5: depending / change to dependent

p.16, Line 13: units of sensitivity?

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