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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Oxidation photochemistry in the Southern Atlantic boundary layer: unexpected deviations of photochemical steady state" *by* Z. Hosaynali Beygi et al.

Anonymous Referee #2

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The NO_x catalyzed production of tropospheric ozone is the main trigger for photochemical processes in the boundary layer. Its understanding is crucial for atmospheric chemistry models. From my point of view the athors rise doubts that this mechanism is fully understood under clean air conditions that cannot be ignored. The article is well structured and in general comprehensive, the main findings clearly carved out.

However, for me there are some inclarities about the calibration of the CLD instrument. Was it a one point calibration? I have some doubts whether it is applicable to calibrate the instrument with a standard of 2ppbv for measurements in the pptv range. The authors describe that they determined the LOD "based on the reproducibility of the SA

measurements carried out on a daily basis ...". Is this a common procedure? (One could determine the LOD as zero gas + 3 σ.) n σ is not the confidence level, but the confidence level depends on n. IUPAC recommends 3 σ for a confidence level of 0.99 in case the measured values are normally distributed. Why do the authors use 2 σ? As the authors are interested in concentrations (and not only whether the chemicals can be detected or not) it might be reasonable to determine the limit of quantification (LOQ).

p 7052 line 8: It is not possible to compare measured values to a standard deviation. To decide whether two expected values are equal one can use e.g. the F-test.

In table 2 values are listed that are below of the indicated LOD. This does not make sense.

Technical notes:

p 7050 line 11: I suggest to leave away the hint to chlorophyll plots (unless they are important for the here presented study).

p 7052 line 27: "relatively highest": erase "relatively" because highest can only be relative to something else.

p 7054 line 19: x in Ex and δEx should be subscripts.

p 7063 line 9 and p 7065 line 3: the singular of species is also species

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 7045, 2011.