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Atmospheric Measurement Techniques Discussions

Interactive comment on "Development of an instrument for direct ozone production rate measurements: Measurement reliability and current limitations" *by* Sofia Sklaveniti et al.

Anonymous Referee #1

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The authors report the investigation of the performance of an instrument measuring ozone production. A very careful characterization of the instrument was done supported by model calculations. Although the conclusion is that potential biases are high so that an application for ambient air measurements is currently not possible, the paper gives valuable information about the difficulties of this measurement. The topic of this work well fits the scope of AMT. Publication in AMT is recommended after addressing the following minor points:

Abstract and later discussion: A clear motivation for the investigation of the OPR sensitivity to NO additions is missing. Some hint in the abstract and further explanation in

the text would help the reader to better understand the purpose of this investigation.

p8: How is the zeroing of the CAPS monitor done? How stable was the zero and what is the uncertainty of the NO2 measurement and the end of the P(Ox) measurement connected to this issue?

p14 l3: Is there an influence from the 4m long heated inlet line on the Ox concentration?

p14 l19: It is not clear what is meant by keeping the NO level constant for days for the NOx additions every 40 min.

p16 l6-8: Is there an influence from nighttime chemistry Ox losses (NO3/N2O5 chemistry) expected in the dark tube compared to the illuminated tube?

p22 / Fig. 5: Why is the NO still relatively high in the dark tube? If this is due to photolysis, why is sunlight not further suppressed? What is the impact of the residual NO on the P(O3) measurement?

Section 3.2.2: I was searching for the assessment of the impact in the sections before. Maybe the authors want to integrate the content of section 3.2.2 in the discussion of the results before.

Technical points:

p2 l5: disturbs instead of disturb

p12 l14: There is a double point after the equation that might not be necessary.

p12 l21: bias instead of Bias

p15 l25: subscript in Ox

p16 l3: subscript in P(Ox)

p17 l11: revealed instead of reveal

p29 l15: subscript in P(Ox)