

# ***Interactive comment on “A Calibration Procedure Which Accounts for Non-linearity in Single-monochromator Brewer Ozone Spectrophotometer Measurements” by Zahra Vaziri Zanjani et al.***

## **Anonymous Referee #2**

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This paper deals with the very important topic of accounting for the errors introduced into stratospheric ozone measurements by the effects of stray light on the Brewer Ozone Spectrophotometer. The method described is novel and deals with the issue at source during the primary calibration by Langley Plot. The paper should be published with the following minor revisions:

There have been other studies into stray light effects which should be discussed in relation to this work and referenced. e.g. a co-author also contributed to:

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Karppinen, T., Redondas, A., García, R. D., Lakkala, K., McElroy, C. T., and Kyrö, E.: Compensating for the Effects of Stray Light in Single-Monochromator Brewer Spectrophotometer Ozone Retrieval, *Atmosphere-Ocean*, 53, 66-73, 2015.

Also the new European Brewer Network (EuBrewNet) is already applying stray light correction in its data processing algorithms. See:

Rimmer, J. S., Redondas, A., and Karppinen, T.: EuBrewNet – A European Brewer network (COST Action ES1207), an overview, *Atmos. Chem. Phys.*, 18, 10347-10353, 2018.

Redondas, A., Carreño, V., León-Luis, S. F., Hernández-Cruz, B., López-Solano, J., Rodríguez-Franco, J. J., Vilaplana, J. M., Gröbner, J., Rimmer, J., Bais, A. F., Savastiouk, V., Moreta, J. R., Boulkelia, L., Jepsen, N., Wilson, K. M., Shiroto, V., and Karppinen, T.: EUBREWNET RBCC-E Huelva 2015 Ozone Brewer Intercomparison, *Atmos. Chem. Phys.*, 18, 9441-9455, 2018.

Specific points:

P1 L16 An ozone column of 600DU would not be typical??

P1 L19 Primary calibrations are also performed at the Izana Observatory in Tenerife.

P2 L19 The ref 'Bais et al. 1996' refers to spectral UV measurements where measurements < 300nm suffer from stray light effects. Brewer ozone measurements are taken at fixed wavelengths longer than 300nm, as stated in the introduction, where you say the difference is insignificant. Some clarification is required here.

P3 L28 I think the paper would benefit from a better description of the application of weighting coefficients, or at least a reference such as:

Savastiouk, V. and McElroy, C. T.: Brewer spectrophotometer total ozone measurements made during the 1998 Middle Atmosphere Nitrogen Trend Assessment (MANTRA) campaign, *Atmosphere-Ocean*, 43, 315-324, 2005.

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P6 L1 Effects of deadtime could be referenced e.g.:

Fountoulakis, I., Redondas, A., Bais, A. F., Rodriguez-Franco, J. J., Fragkos, K., and Cede, A.: Dead time effect on the Brewer measurements: correction and estimated uncertainties, Atmos. Meas. Tech., 9, 1799-1816, 2016.

Technical:

P4 L17 There are no red dots in figure 2.

P4 L19 Shouldn't the slope of the Langley be  $+\alpha \cdot x$  ?

P5 L3 Delta  $F_i$  is substituted in eqn 2.7 not 2.8

Finally, there does not seem to be a reference to figure 6 in the text.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-157, 2018.

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