

Interactive comment on “Direct-sun total ozone data from a Bentham spectroradiometer: methodology and comparison with satellite observations” by M. Antón et al.

Anonymous Referee #3

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Review of Direct-sun total ozone data from a Bentham spectroradiometer: methodology and comparison with satellite observations

The paper is a good discussion of an alternative to the Brewer spectrometer system. More information is needed concerning the fiber optic connection of the Bentham to the direct-sun viewing capability. From the description, it would appear that the fiber optic cable moves during the day. This would change the radiometric transmission of the fiber and affect the derived amount of O₃ and the afternoon Langley calibration. There are methods to minimize this effect, but the authors do not discuss such methods. In

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the absence of minimizing fiber effects, the observed apparent diurnal O₃ variation should not be discussed.

If the authors measured the slit function of the Bentham, this should be discussed. Use of a triangular slit function may be satisfactory, but may not, if the Bentham differs significantly from a triangle.

Use of the Bass and Paur cross sections is now known not to be optimum. Kerr derived a modification to the Bass and Paur cross sections using measurements from a double Brewer at Mauna Loa. These modifications make the modified Bass and Paur equivalent to the Daumont cross sections and other more recently measured cross sections.

The authors should discuss the omission of effects arising from omitted SO₂ and O₂:O₂ absorption in their derivation of TOC.

A variation of 40 to 50 DU attributed to diurnal O₃ variation in the lower troposphere is too large.

There are numerous minor suggestions and corrections embedded in the manuscript that should be addressed.

In its present form the paper rates as Good in Scientific Significance, Fair Scientific Quality. and Good in Presentation Quality. The scientific quality could be improved by the author's response to the above comments.

1.Does the paper address relevant scientific questions within the scope of AMT? YES
2.Does the paper present novel concepts, ideas, tools, or data? YES 3.Are substantial conclusions reached? YES 4.Are the scientific methods and assumptions valid and clearly outlined? NO 5.Are the results sufficient to support the interpretations and conclusions? NO 6.Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? YES 7.Do the authors give proper credit to related work and clearly indicate their own new/original contribution? YES 8.Does the title clearly reflect the contents

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of the paper? YES 9.Does the abstract provide a concise and complete summary? YES 10.Is the overall presentation well structured and clear? YES WITH MINOR CHANGES 11.Is the language fluent and precise? YES WITH MINOR CHANGES 12.Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? YES 13.Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? NO 14.Are the number and quality of references appropriate? YES 15.Is the amount and quality of supplementary material appropriate? NONE

Please also note the supplement to this comment:

<http://www.atmos-meas-tech-discuss.net/5/C3470/2013/amtd-5-C3470-2013-supplement.pdf>

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 8131, 2012.