Atmospheric
Measurement
Techniques

Discussions

Interactive comment on "Tropical tropospheric ozone columns from nadir retrievals of GOME-1/ERS-2, SCIAMACHY/Envisat, and GOME-2/MetOp-A (1996-2012)" *by* Elpida Leventidou et al.

Anonymous Referee #3

Received and published: 9 March 2016

The paper presents measurements of tropical tropospheric ozone columns from nadir retrievals of GOME, SCIAMACHY and GOME-2 using the CCD technique. The paper is well structured and written and in principle can be accepted for publication after considering my comments below.

Page 3, lines77-88. What is the difference between the Valks et al., retrievals and the current ones, apart from including SCIAMACHY? Why the authors don't compare these later on or at least provide some relevant comments?

Page 4, line 108-117. To my understanding the application of WF-DOAS to each in-

strument is treated with a different cloud- algorithm. How this could affect the retrievals when applying the CCD technique?

Page 5, line 135-137. Are these thresholds consistent or independent from the cloud algorithm applied?

Page 5, line 148-149. How do the authors explain the difference in frequency of cloudy measurements for SCIAMACHY?

Page 5, line 163-165. Why the authors choose as a fixed level approximately 12km. Is this not low as an indicative tropopause height for the tropics? On which data/model is it based the climatological correction term?

Page 6, 188. What does "50 cloudy ozone measurements per latitude band" represent? Is it arbitrary?

Page 6, 191-193. Any justification for the limits of 10DU and 4DU?

Page 6, line 200. Correct to "above 200hPa at".

Page 7, line 203. How many data were available per month from the ozonesondes and how comparable is this number with the ACCO estimates used for averaging?

Page 7, line209-211. Figure 4b and its explanation is hard to follow. What we see apart from the overestimation is also a hemispherical difference. This figure will need more discussion.

Section 4. This section is not well written and confuses the reader how the author use the term error (random, systematic) and how the error terms have been identified and propagated.

Section 5.1. The authors should comment why GOME-2 shows a better correlation than the other two sensor when compared to the ozonesondes. They should also comment why the difference between TTCO and ozonesondes also shows some seasonality especially in Ascension. In general this section mixes two different issues

and confuses the reader. The authors discuss in parallel differences in tropospheric ozone between different regions and validation-comparison results. I would suggest to separate the discussion.

Section 5.2 This sections is poorly discussed in the context of the current paper and could raise more questions than provide evidence for the quality of TCCO using the CCD technique. I would suggest to omit this from the paper.

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