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Interactive comment on “Climatology and comparison of ozone from ENVISAT/GOMOS and SHADOZ/balloon-sonde observations in the southern tropics” by N. Mze et al.

Anonymous Referee #2

Received and published: 17 March 2010

Review of the manuscript Mze et al. “Climatology and comparison of ozone from ENVISAT/GOMOS and SHADOZ/balloon-sonde observations in the southern tropics”

The paper presents the ozone profile data set of ENVISAT/GOMOS measurements covering 2002-2008 data over 6 SHADOZ balloon sondes stations in the Southern tropics. The profiles are compared to SHADOZ ozone profile observations between 15 and 30 km by comparing monthly means derived from the 11 year sonde dataset and the six and a half year GOMOS data set. For the 21-30 km there is a satisfactory agreement found between the two data sets and usage of GOMOS climatologies is recommended. The paper is carefully written and the approach to present a clima-

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tology with comparisons to ozone sonde observations is valuable. However, it fails to present a robust validation (by direct comparison of collocated measurements) of the GOMOS measurements for these stations. No comparison of direct collocated measurements is performed. In addition to that, I recommend to extend the climatology and validation to a global data set, using for the validation the global ground-based/balloon-borne data set used in Meijer et al. 2004, in order to reach a data set which is of use to a wider science community. The paper also misses a discussion of the results, especially on the usage of the presented GOMOS ozone climatology. Therefore in my opinion this manuscript needs major revision before it can be published in ACP. Some specific comments are listed below.

Specific comments: 1. Some typos: Page 1460, line 9: “In Fact” should be “In fact”. Page 1463, line 14: “Additionnaly” should be “Additionally”. Figure caption 2, 2nd sentence: change to “The GOMOS dataset has a global coverage for the time period 2002 to 2008, while the SHADOZ dataset covers the years from 1998 to 2008 and ...” 2. Page 1465, 2nd paragraph - to detail one of the above mentioned critique: For a robust validation each collocated ozone profile measurement pair of ozone sonde and GOMOS should be analysed for the absolute and relative difference, then over all comparisons at one collocations the mean and RMS should be calculated. By just using the mean values of monthly measurements a bias is introduced since both data sets cover different times and different amounts of data within the months are averaged (also different years are used for the same month). 3. Page 1466, last sentence first paragraph: The sentence is unclear. Do you mean that the results for GOMOS compared to SHADOZ at 20-30 km are representative for all monthly averages and stations? 4. Page 1466, line 20: At 27-30 km GOMOS is not larger at all sites!!! 5. Page 1466, 1st sentences and figure caption Fig. 6: “global” median is not the appropriate expression- this is rather the mean and median over all monthly comparisons! 6. Page 1466, 2nd paragraph: Please make clear what is the use of or outcome for analysing for median and mean of the differences. 7. Fig 4: The colour range for the 0-15% should have higher contrast in order to pronounce the different levels within this range. 8. Figure caption 5:

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Make clear that these differences are based on comparisons of monthly means.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 1457, 2010.

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