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## ***Interactive comment on “Validation of Ozone Monitoring Instrument (OMI) ozone profiles and stratospheric ozone columns with Microwave Limb Sounder (MLS) measurements” by X. Liu et al.***

### **Anonymous Referee #2**

Received and published: 9 December 2009

#### **General:**

The authors present an intercomparison between OMI ozone retrievals and those of MLS with respect to total stratospheric ozone column amounts and stratospheric concentration profiles. Though a bit technical for ACP (AMT would be more appropriate), this is a thorough study demonstrating the quality of both instruments' stratospheric ozone products. Especially the very good co-incidences in time and location between the two instruments allow a degree of validation which is rarely met. My major comments refer to a lack of systematic error estimation for the OMI ozone data and a

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possible estimation of horizontal smoothing errors of the MLS profiles.

**Specific:**

*p. 24915, l. 6 and p. 24929, l. 15: 'and it demonstrates implicitly that tropospheric ozone column can be retrieved accurately from OMI or similar nadir-viewing ultraviolet measurements alone.'*

To support this conclusion, at least a reference to the validation of the total ozone column amounts has to be given.

*p. 24919, l. 1:*

The authors should also provide an estimation of systematic retrieval errors or at least a list of leading systematic errors for OMI.

*p. 24920, l. 23:*

Here, the horizontal smoothing errors in MLS data using OMI data as the truth should be discussed. MLS as a limb sounder has a much worse horizontal resolution than OMI and in principle the OMI horizontal profiles should be convolved with the horizontal averaging kernel of MLS. Could the authors give any quantitative information how this horizontal smoothing errors could affect the comparison?

*p. 24924, l. 6: 'In addition, OMI still shows some crosstrack position dependent biases.'*

Could you give a reference for this together with typical crosstrack error values?

**Technical:**

*p. 24923, l. 11:*

ca -> can

*p. 24923, l. 22:*

Latitude and SZA -> altitude and SZA

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*Figures 4,5:*

Units should be indicated.

*Figure 9:*

Please state the size of the area [ $x\text{DU} \times y\text{DU}$ ] on which the density is defined.

*Figure 10:*

diamonds -> squares

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 24913, 2009.

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