

## ***Interactive comment on “Simultaneous Retrievals of Polar Mesospheric Clouds (PMCs) with Ozone from OMI UV measurements” by J. Bak et al.***

### **Anonymous Referee #1**

Received and published: 9 November 2015

#### General comment

The paper deals with an error analysis of OMI nadir ozone profile retrievals due to the effect of PMCs, consisting of small light scattering particles at an altitude of 80–85 km. MLS ozone profiles are used as the truth to evaluate the effect of PMCs on OMI ozone profile retrievals. The work is presented well, and the text is well-written. The paper includes an improvement of OMI ozone profile retrievals for this PMC effect.

#### Main comments

(1) My main comment is that the relative importance of this PMC light scattering effect for OMI is not made clear. It is not clear from the paper how often this PMC effect occurs, and if there is any trend. Only two months from the entire OMI 11-year time

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series are considered. It is not clear how representative these two months are. Please provide more information and more statistics on the PMC effect for OMI, and preferably provide also a trend.

(2) Missing are references to the PMC work done with the SCIAMACHY nadir and limb modes by Von Savigny, Burrows, et al.

(3) Please also provide altitude in km when giving pressure levels. E.g. in the abstract, line 7: "... above 6 hPa ...": this is an unclear formulation: do you mean pressures higher than 6 hPa, or do you mean altitudes above the altitude level where the pressure is 6 hPa? Please give also a height range. In Figs. 1, 2, 6 and 9, please give also an y-axis with altitude in km.

(4) Please change the formulation "BUV radiances" into "OMI radiances" or just UV radiances, since BUV was also a satellite instrument. This acronym with the word "backscattered" does not add any information. For example, change the title of sect. 3.2.

(5) Conclusions: please say more about the importance of the PMC effect for OMI, and possibly other instruments, like GOME-2 or OMPS.

#### Textual corrections:

- often the article "the" is missing.

p. 25908, l. 10: wavelength

p. 25910, l. 12: 550 > 500

Please provide here a reference to Levelt et al., 2006 for the OMI instrument and level-1 calibration.

p. 25913, l. 22: "for with/without": please reformulate

p. 25914, l. 24: that > who

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Figures:

Fig. 2: explain N, give the years/months.

Fig. 5: is this figure really needed? You could summarize the information into a few sentences.

Fig. 9: it is unclear what the relation is between the numbers indicated with # in the legend and the numbers given in the caption.

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Interactive comment on Atmos. Chem. Phys. Discuss., 15, 25907, 2015.