

## ***Interactive comment on “Variability of aerosol properties over Eastern Europe observed from ground and satellites in the period from 2003 to 2011” by A. Bovchaliuk et al.***

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Dear Referee #2

We appreciate your useful comment and proposed corrections. We added new text according your suggestions (see below).

Comment 1. Abstract. The last sentence should be made more specific in terms of what has actually been found out.

We replace the last sentence from Abstract

"The AOT and single scattering albedo retrieved by the algorithm over Kyiv were compared with the closest AERONET retrievals within two hour of satellite overpass time and the stable atmospheric conditions."  
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pared with the closest AERONET retrievals within two hour of satellite overpass time and the stable atmospheric conditions."

by more specific text:

"The comparison of AOT and single scattering albedo retrieved from POLDER/PARASOL observations over Kyiv with the closest AERONET data shows acceptable agreement of the aerosol dynamics. The correspondence of those data is observed even for extreme AOT440 value 1.14, which is caused by the forest and peat fires in August 2010."

Comment 2. Figure 5. Please give the corresponding STD and/or RSTD values for the POLDER vs. AERONET AOT comparisons and comment on the magnitude of those values.

Fig. 5 has been rearranged. The corresponding STD values for the POLDER vs. AERONET AOT comparisons are given in Fig. 5.

Correction of the text at page 2655 line 6 after words

"...Sevastopol sites."

will be inserted text:

"with STD less than 0.02 for AOT values variation between 0.01 and 0.25."

Comment 3. Final paragraph of Section 4. Please comment more specifically on the quantitative comparison of AERONET and POLDER SSAs. Is the agreement adequate from the standpoint of aerosol radiative forcing estimates or needs to be better?

Fig. 6 has been rearranged (see below) with data of STD for AOT and SSA.

final paragraph of Section 4 rewritten as:

"The comparison of AOT440, SSA440 (Fig. 6a) and AOT870, SSA870 (Fig. 6b) retrieved from POLDER/PARASOL observations over Kyiv with the corresponding val-

ues provided by AERONET in 2008–2011 are presented in Fig. 6. The variability SSA retrieved from PARASOL/AERONET data is in good agreement and shows the STD value less than 0.02. However for AOT comparison STD values are in the range 0.04–0.06. That is not adequate in full from the standpoint of aerosol radiative forcing estimates and needs to be better (Mishchenko et al., 2004). Large AOT440 STD values can probably be explained by sky inhomogeneity in PARASOL observed pixels. Note that AOT440 reaches the maximum value 1.14, which is caused by smoke aerosols from the forest and peat fires in August 2010 and can increase obtained STD value. It should be emphasized that we present preliminary results from those that can be provided by the new PARASOL algorithm. We expected to achieve retrievals of higher quality once the algorithm will be fully tuned and validated in operational PARASOL data processing."

Comment 4. In general, how do the reported POLDER–AERONET comparisons fit the framework of requisite satellite-retrieval accuracies formulated in Mishchenko, M. I., B. Cairns, J. E. Hansen, L. D. Travis, R. Burg, Y. J. Kaufman, J. V. Martins, and E. P. Shettle, 2004: Monitoring of aerosol forcing of climate from space: analysis of measurement requirements, *J. Quant. Spectrosc. Radiat. Transfer* 88,149-161.

in line 13 page 2657 after the words

"fires in August 2010."

will be inserted new text

"The results of the POLDER/AERONET AOT and SSA comparisons in general fit to requirements of satellite retrieval accuracies discussed in (Mishchenko et al., 2004). The calculated STD values for AOT fine mode comparison are less than 0.02, and for SSA is in the range 0.01–0.02 that is not exceed the accuracy assessed in (Mishchenko et al., 2004) where over land the measurement accuracy should be 0.04 for AOT and 0.03 for SSA."

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to Reference will be added:

Mishchenko, M. I., Cairns, B., Hansen, J. E., Travis, L. D., Burg, R., Kaufman, Y. J., Martins, J. V., and Shettle, E. P.: Monitoring of aerosol forcing of climate from space: analysis of measurement requirements, *J. Quant. Spectrosc. Radiat. Transfer*, 88, 149–161, 2004. 2657

Comment 5. The English is generally good but could benefit from another iteration.

We have made one more iteration to improve English of the manuscript.

All the best

On behalf of authors

Andrii Bovchaliuk

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 13, 2641, 2013.

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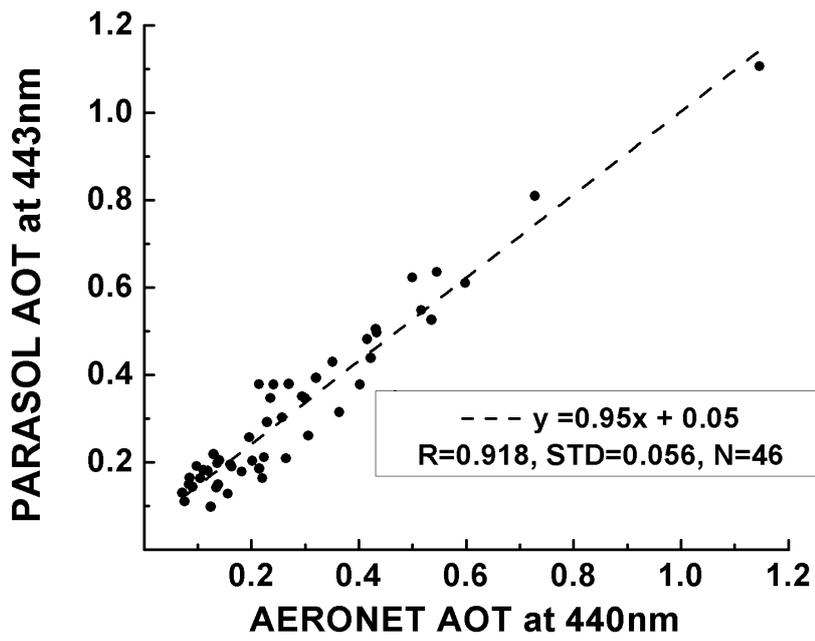


Fig. 1.

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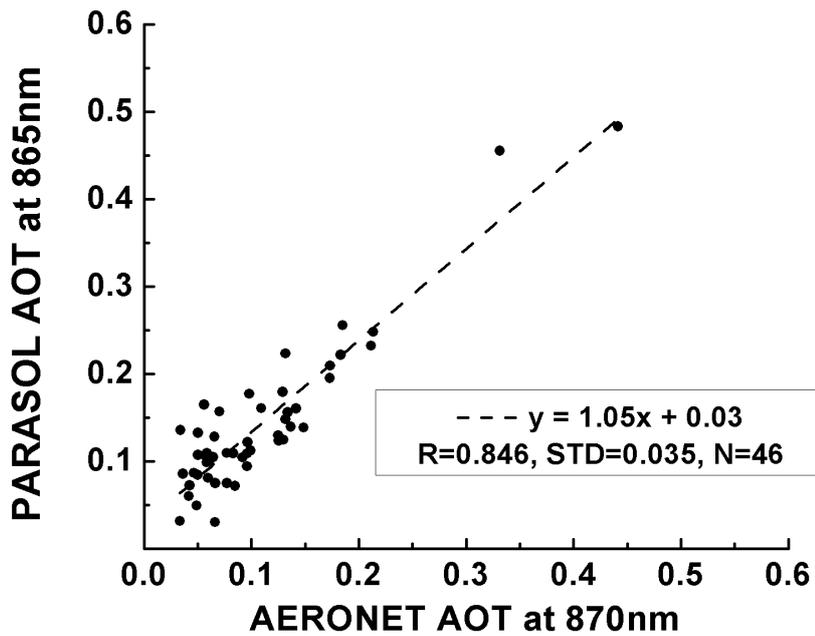


Fig. 2.

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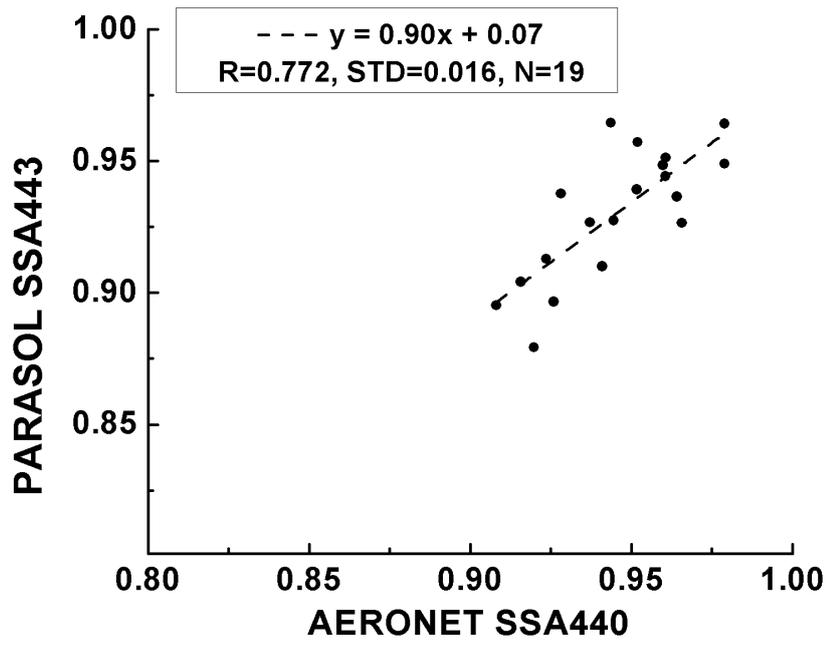


Fig. 3.

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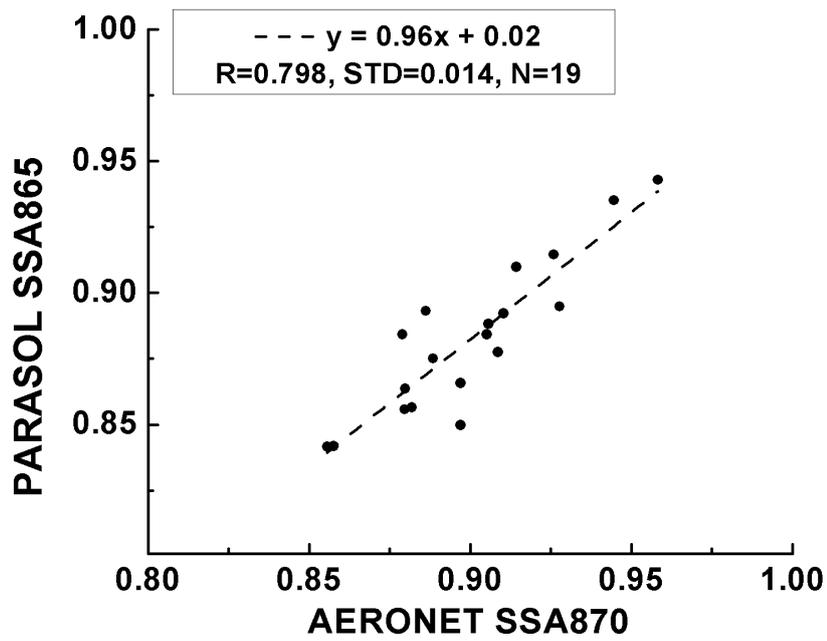


Fig. 4.

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