

Interactive comment on “Multi-sensor Aerosol Products Sampling System (MAPSS)” by M. Petrenko et al.

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Dear Reviewer,

we would like to thank you for the provided feedback. We propose the following answer to the posted question, that will be also added to the relevant section of the paper:

- >The only comment is in the Application section.
 - >The CALIPSO related paragraph (p.925 l. 22-29)
 - >provides one example of the effect of multiple
 - >layers on OMI and POLDER retrievals. Is there
 - >an explanation of this deviation? or are there
- C570

- >any references related with this effect to the
- >specific satellite sensor retrievals?

In part, this difference can be explained by the possibility that multiple layers in a column can indicate multiple aerosol types and a multimodal size distribution, in contrast to the single aerosol layer monomodal models assumed in the retrieval algorithms of these instruments (Deuzé et al., 1999; Torres et al., 1998). Also, the high sensitivity of the OMI algorithm to aerosol layer height and the low sensitivity of the POLDER algorithm to non-polarizing particles might further contribute to the observed phenomenon (Boucher and Tanre, 2000; Torres et al., 2007) .

Boucher, O. and Tanré, D.: Estimation of the aerosol perturbation to the Earth's radiative budget over oceans using POLDER satellite aerosol retrievals, *Geophys. Res. Lett.*, 27(8), 1103-1106, doi: 10.1029/1999GL010963, 2000.

Deuzé, J. L., Herman, M., Goloub, P., Tanré, D., and Marchand, A.: Characterization of aerosols over ocean from POLDER/ADEOS-1, *Geophys. Res. Lett.*, 26(10), 1421–1424, doi: 10.1029/1999GL900168, 1999.

Torres, O., Bhartia, P. K., Herman, J. R., Ahmad, Z., Gleason, J.: Derivation of aerosol properties from satellite measurements of backscattered ultraviolet radiation: Theoretical basis, *J. Geophys. Res.*, 103(14), 17099–17110, doi:10.1029/98JD00900, 1998.

Torres, O., Tanskanen, A., Veihelmann, B., Ahn, C., Braak, R., Bhartia, P. K., Veefkind, P., and Levelt, P.: Aerosols and surface UV products from Ozone Monitoring Instrument observations: An overview, *J. Geophys. Res.*, 112, D24S47, doi:10.1029/2007jd008809, 2007.

Thank you,

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