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Discussions

Interactive comment on "Validation of 10-year SAO OMI Ozone Profile (PROFOZ) Product Using Ozonesonde Observations" *by* Guanyu Huang et al.

Anonymous Referee #1

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Overview:

The authors have produced a carefully determined retrieval of ozone profiles, SOCs, and TOCs for over 10 years from an OMI profile retrieval algorithm (SAO). They compared retrieved SOC, TOC, and profile measurements extensively with global ozonesondes. These ozonesonde comparisons included filtering the OMI measurements for nearly clear-sky scenes, SZA < 75 degrees, and cross-track positions least affected by OMI row anomaly. The authors show from differences between pre- and post-row anomaly periods that the current 10-year profile product (and derived columns) does not appear to be useful for evaluating decadal trends; however, the product at shorter timescales including daily from the analyses appears to be a useful

science product, particularly from the tropics to mid-latitudes. The paper appears good in current form and publishable with mostly just a few small comments that are listed below.

General comments:

* Lines 116-118: You might include in this reference list the paper by Yang et al. [2007] which used OMI and MLS to derive tropospheric ozone columns:

Yang, Q., D. M. Cunnold, H. –J. Wang, L. Froidevaux, H. Claude, J. Merrill, M. Newchurch, and S. J. Oltmans, Midlatitude tropospheric ozone columns derived from the Aura Ozone Monitoring Instrument and Microwave Limb Sounder measurements, J. Geophys. Res., 112, D20305, doi:10.1029/2007JD008528, 2007.

* Line 165: Were the NCEP tropopause pressures for getting TOCs and SOCs determined from a PV-theta definition, or a lapse rate definition, or something else?

Section 4.1.3.: Is your derivation of cloud optical centroid pressure and your effective scene pressure the same as Joiner et al. (2009, ACP)? Is there any major difference with your effective cloud fraction and their radiative cloud fraction for determining effective scene pressure? Is effective scene pressure determined the same?

Joiner, J., M. R. Schoeberl, A. P. Vasilkov, L. Oreopoulos, S. Platnick, N. J. Livesey, and P. F. Levelt (2009), Accurate satellite-derived estimates of the tropospheric ozone impact on the global radiation budget, Atmos. Chem. Phys., 9, 4447-4465, doi:10.5194/acp-9-4447-2009.

* Line 257: This appears to be a dead link.

* Line 274: There are more error sources than just the pump efficiency for the ozonesondes, but correct that pump efficiency errors are largest in higher altitudes.

* Where "SOC" is first mentioned (including the Abstract) it might be useful to state clearly that SOC is not the generally inferred total stratospheric ozone column but in-

stead the ozone column from the tropopause up to balloon burst pressure. In your second submitted joint validation paper that uses MLS, "SOC" probably refers to total stratospheric ozone column?

* Line 343: Should be "...stratosphere (UTLS)..."

* Many of the figures, if intended as single column will have figure text that will be too small to read. The authors might specify to the journal that these figures should be printed double column, or perhaps instead increase some of the figure text.