

Re-review of Taha et al. (submitted to AMT)

I congratulate the authors on improving the manuscript point-by-point. I am a bit surprised, with retrieval convergence only forced at 20 km, that the algorithm does so well at capturing the temporal and latitudinal variations at 25.5 km. While I believe this algorithm could easily be improved in this regard, the results speak for themselves. Here are some minor points:

L235: It is not physically correct to refer to O_2 - O_2 collision complex as the O_4 dimer. O_4 dimers only exist at pressures higher than found in Earth's atmosphere (~ 1 atm). I was OK with O_4 since, for a split second, it is a complex containing 4 oxygen atoms, but I am not OK with dimer.

L355: The positive bias for 510 nm aerosol extinction remains an unsolved mystery. I am fine with the hope that this may be resolved in the future. It is difficult to measure aerosol extinction at such a short wavelength from my experience because its contribution to the radiance becomes small relative to other variables such as ozone, and (pressure-dependent) Rayleigh scattering.

Figure 6: Just to clarify my comment from review: the differences are not symmetric about the 0% line in the southern mid-latitudes, whereas in the tropics, there is a wavelength-dependent bias with little altitude dependence and in the northern mid-latitudes, the results are very encouraging below 24 km with a wavelength-dependent bias only above that altitude.