Review of Taha et al. (submitted to AMT)

I have combined the scientific/major comments with some wording suggestions below. The work is certainly publishable after addressing some of the revisions, but I feel the method can be improved (see below) and wonder if improved results would follow.

L166: "h_n = the normalization tangent height = 40.5 km" -> "h_n, namely the normalization tangent height, set to a value of 40.5 km"

L169: Similar -> Analogous

L182-185: This is more constrained, not relaxed, on the low end (0.333 vs 0.2). Is "0.2" a typo?

L201: This is my first major criticism: stopping the retrieval based on convergence at one height is a mistake. This will mean poor low accuracy particularly below this tangent height but even at altitudes at/above this tangent height.

L227: "it" is not defined

L235: "by" -> "caused by"

L236: Sect 3.1 should state something more about SAGE III cloud detection if SAGE III data have been filtered for clouds in this paper. This becomes relevant with the statement at L395.

L258: Regarding "retrieve extinction", CALIPSO does not really retrieve extinction.

L261: retrieve -> obtain

L269: 30km -> 30 km (see also L344, L468)

L281: Where -> where

L288: What is a "cloud type flag" and how is this determined?

L305: "negative 1%" -> "-1% per degree"

L305: Why is "Junge" italicized?

L306: "in the northern hemisphere high latitude" -> "at northern high latitudes"

Figure 3: Why is there a wavelength dependence to this error? The wavelength dependence is obvious at 16.5 km. Are all months included here? Without doing any calculations, it seems that there should be some larger scattering angle differences when the sun is low (winter) for 60-70 degrees N. Why is the sign of the SSA dependence of the aerosol extinction difference changing (y-axis) between 25 and 16 km? I wonder if specifying the convergence criterion only at 20 km (see comment above) is partly responsible for the lack of SSA dependence at 20 km, while there is an obvious dependence at 25 and 16.5 km.

L316: Since at L290, the authors inform us that clouds are being removed, any differences in aerosol extinction between low and high R are therefore not expected differences in extinction due to cirrus, but rather point to cirrus being missed by the cloud flagging. I suppose this is difficult to avoid in the tropical tropopause region.

L322: Do the authors believe that the larger *R* (effective scene reflectivity) at higher latitudes is real or an artifact of the retrieval? If it is real, *R* should have a seasonal dependence, being higher in winter when there is snow covering the land at northern high latitudes.

Figure 4: This figure can be improved since the contours also look like dashed lines in certain spots.

L337: wavelength 869 -> 869

L343: Delete "wavelengths"

L344: Lack of sensitivity does not necessarily result in bias, in should result in larger noise. Can the authors say anything insightful about the bias (e.g. the sign of the bias)?

Figure 6: It seems a bit odd that the aerosol extinction bias relative to SAGE is higher at 600 nm than 510 nm for low latitudes at/below 18 km?

Figure 6: The retrieval clearly has a systematic error in the southern hemisphere. The behavior in the northern mid-latitudes is what one would expect and hope for….

L359: of -> to

L369: 10% is a bit optimistic, particularly at 30 km. Could "~10%" be written instead?

L374: instruments -> instruments'

L388: This sentence is unclear. The authors imply that the difference would be even less than 20% if the ASD model varied in space/time. This seems a bit speculative (i.e. unsupported).

Figure 9: This figure is very convincing of the high quality of the OMPS aerosol extinction profile product.

L405: Regarding "corrections", does this need to be plural?

L411: "Angstrom" -> "an Angstrom"

L434: "measurement" -> "magnitude of the measurement"

L439: "in general" -> ", in general,"

L439: is -> are

L441: "rather" -> "a rather"

L445: "different" -> "a different"

L455: shown -> show

L470: rage -> range

L482: Add "in the stratosphere"

L490: Remove "multiple"