

The authors have included an illustration of a spectral fit which strengthens this paper.

My main remaining question is whether it is fair to compare profiles at SZA=95° to nighttime ones. I would recommend SZA>97° (or more) is necessary based on Figure 1 of McLinden and Haley. But then this begs the question of whether the statistics are affected (e.g. <20 collocations for Fig. 5?).

There are many occurrences of small grammatical errors that will be listed below.

I suggest writing "nitrogen trioxide" into title or abstract.

"...in tropics..." -> "...in the tropics..."

"...extremely quickly destroys NO₃..." -> "...destroys NO₃ extremely quickly..."

"...only nighttime..." -> "...only during nighttime..."

"...the vertical structures of..." -> "...their vertical distributions in..."

"...chemical data..." -> "a chemical data..."

"In the study of Marchand et al. (2004)" -> "In the study of Marchand et al. (2004),"

"In our understanding..." -> "To our knowledge, ..." Hopefully, a literature search has been completed by the authors.

I assume that the spectral fitting window covers almost the entire spectral range (~250~680 nm) of the UV/visible band.

It is not clear whether "sampling resolution" refers to the sampling of tangent heights or the increment of the altitude grid in the radiative transfer model.

"poleward of 60 degrees latitude" -> "in polar regions (|latitude|>60°)". I assume you mean both hemispheres.

"...absorption by ... aerosols." "extinction by ... aerosols."

"...gas species line of sight concentrations..." -> "...line-of-sight column densities of gas species..."

"...the SAGE III ATBD team (2002)." -> "...SAGE ATBD team (2002)."

"...5, 28, 9..." -> "...5, 28, and 9..."

"...in time..." -> "...during a time..."

"...148 matches." -> "...148 matches instead of 42".

x-axis for Figure 7: "NO₃ local density in cm³..." -> "NO₃ local density in cm³..."

"...slightly deviating towards the poles..." -> "slightly deviating at northern high latitudes"