Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., referee comment RC2
https://doi.org/10.5194/amt-2022-131-RC2, 2022

Comment on amt-2022-131

Anonymous Referee #2

Referee comment on "SAGE III/ISS ozone and NO_2 validation using diurnal scaling factors" by Sarah A. Strode et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2022-131-RC2, 2022

This is a very well written paper, and is a good fit for AMT. It demonstrates the utility of global chemistry-climate models to scale measurements of diurnally varying species for comparing or merging data sets. I would recommend the paper for publication after just a few minor details are addressed, as given below.

Line 18: What do you mean by "variability in the shape"? I think you can leave out "in the shape"

Lines 48-49: Please be more specific about the findings

Line 107: please give approximate altitudes

Section 2.1.4: Why is v3.6 of the ACEFTS data being used instead of the more current v4.2? Version 3.6 O3 exhibits a drift in the upper stratosphere, and there were biases between the two versions (https://doi.org/10.5194/amt-15-1233-2022)

Lines 133-135: does this mean that this is like a specified dynamics run?

Line 160: Undoubtedly, it would be important above 50 km as well. Should say something like "within the SAGE observation range it's only important between 40 and 50 km."

Figure 1: are these at a specific sza or averaged over all szas?

Line 197: please be more specific about the findings

Lines 221-230: please be more quantitative about previous findings

Section 3.2 in general: please be more quantitative in your descriptions

Section 4.1.1: Why was 35 km chosen to be shown? Seems like it might be more interesting to see closer to 40-45 km where amplitudes are largest.

Figs 5,6 captions: sza values are missing the degree sign

Line 295: It's a touch confusing. Would recommend something like "variability is largest at 60deg S"

Fig 7: These plots could very easily be made much more intuitive to read. Please color coordinate/use different line styles to group the plots. Like all OSIRIS comparisons could be one color but different line styles for different criteria, and the ACE could be a different color with the same line styles.

Line 361: The sentence "The sign of the difference switches with altitude." should either be elaborated on or deleted.

Line 367: abs(SZA) > 90º could be |SZA| > 90°