General Comments

The paper shows good scientific significance by promising results of an adapted established measurement system extended to total ozone columns and aerosol optical depth. There are some interesting features in the instrument, like the beam splitting and switching between two entrance optics and the fact that established double monochromator systems might be extended with such a setup. Furthermore, the time period presented of the measurements itself is of interest to be published.

The presentation quality is good but lacks a bit in the introduction part in not mentioning other recently developed new instruments for total ozone column and aerosol optical depth or other double monochromator systems already used for these measurements. This would be worth adding to connect it better to the scientific community, see later specific comments. In addition, the good scientific quality could benefit by extending the uncertainty part and the comparison to established systems and their measurement uncertainties.

I recommend to publish this paper at AMT but would recommend to add, even if just short, some of the specific comments mentioned.

Specific Comments

- Line 1: Maybe the brand of the double monochromator is not important in the title since also other double monochromators might be suited. Would be in the abstract sufficient or even in the measurement system description. Maybe instead of only the "use" the "adaption" is worth mentioning. Novel use of an adapted UV Double Monochromator for measurements of global and direct irradiance, ozone and aerosol.
- Around line 50: In order to connect the paper better to the scientific community it would be worth citing also other recent developments for AOD and TOC like, e.g.: https://doi.org/10.5194/amt-16-2889-2023, https://doi.org/10.5194/amt-15-1917-2022, https://doi.org/10.5194/amt-11-2477-2018, https://doi.org/10.1016/j.atmosenv.2018.02.036, https://doi.org/10.5194/amt-14-4915-2021
- Line 66: Is it possible to state the accuracy of this switch or in other words the reproducibility accuracy of this optical switching? Long term effects of the switching? Would also fit in chapter 4. This is of interest for readers since it seems a moving and maybe critical part which was, I guess, checked and optimized. Maybe even developed. A little bit more information would be beneficial also for the scientific community if somebody else would like to extend his double monochromator system and reproduce the science.
- Line 72: The reader might ask himself what kind of performance assessment this is?
- Chapter 2: Please state the measurement interval for TOC and AOD measurements and the scanning time. I guess as well 15 min all 15 min in the same SZA/airmass range?
- Line 101: Please state the traceability of this 45 W lamp to primary standard since it seems to be a working standard? Maybe state uncertainty wavelength dependent.
- Line 106: Please state as well the traceability and calibration uncertainty

- Line 144: Recommendation in order to find out if it is really the 45 W apparatus would be reproduction measurements to quantify this performance changes. Reproduction measurements on a short term in order to separate this from lamp changes. For next time.
- Line 198: In terms of structure Chapter 6. and 6.1 seems a bit strange without having a chapter 6.2. I would recommend to write 6 Ozone as main header and then directly 6.1 Retrieval description 6.2 Results. I would recommend the same for Aerosol and Irradiance to have some consistent structure.
- Line 242: As in chapter 3? Filtering is just there explained and not in chapter 6 as far as I have seen.
- Chapter 6: Since a full spectrum is measured also full spectral retrieval or spectral band retrievals could be used. Maybe cite other full spectrum or spectral band-based retrieval methods, see publications above. Maybe worth considering these methods for the future and compare them with the one used.
- Line 252: Beside calibration also a seasonal drift correction was applied? Please state clearer and cite reference method if available.
- Chapter 6: Can you discuss why the direct method is showing a higher offset compared to the global method?
- Chapter 6: Can you state the absolute measurement uncertainty of the Dobson reference used? A comparison of the absolute measurement uncertainty of the new system would be interesting. Also, SZA/air mass dependent. Maybe too much for this paper but worth considering. See publications like: https://doi.org/10.5194/amt-11-3595-2018
- Chapter 7: Some citations would be beneficial. There is a very new publication which might be helpful, see: https://doi.org/10.5194/amt-2023-105. It also gives measurement uncertainties, etc. which could be compared.
- Line 311: Please make clear what this 6 DU are. Difference measured to reference Dobson?
- Chapter 8: UV irradiance results are not summarized. Maybe worth a sentence.
- Chapter 8: In general, it would be good to compare the measurement accuracy or at least the deviation to reference instruments to other existing or rather newly developed systems such as array spectroradiometer-based devices or other double monochromator-based systems. See above mentioned publications. This would improve the scientific classification enormously and would connect it better to the scientific community.

Technical Corrections

- Line 70: I would recommend to delete the word “useful” since this is up the reader.
- Figure 3: Please use a finer scaling on y-axis. 20% increment is very rough and hard to read. Suggested +/- 35% instead of ~50% with 5% increment or at least 10% increment.
- Line 243: Typo, just one +- needed.
- Line 276: Typo, +/- instead of +=