

## ***Interactive comment on “Study of suitability of cheap AvaSpec array spectrometer for solar UV field measurements” by I. Ansko et al.***

### **Anonymous Referee #2**

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#### Reviewer comments

In general, the paper makes a nice addition to the knowledge in the field of using simple low-cost array spectrographs in metrological applications. As may be anticipated, the results are not as good as with more complicated and expensive systems, but never the less, the agreement obtained may be satisfactory for certain applications. I recommend publishing the paper after considering the following suggestions for improvements and clarifications:

1. Title: I think word "cheap" should be deleted from the title. Elsewhere in the text, it could be replaced with "simple", "cost-effective", "low-cost" or some other more positive sounding word.

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2. Page 4200, line 19: The sentence starting from this line is hard to understand. Consider revising is e.g. as "The biases between the ratios of the UV-A/UV-B irradiances calculated by means of the LibRadtran package and measured with the AvaSpec were small at SZA below 70°."
3. Page 4202, Line 2: The start of the sentence is too complicated. Consider deleting something, e.g. "All supporting meteorological information, including the ..."
4. Page 4202, Line 23-26: The cosine response sounds quite poor to me. Why is that and has this been corrected to the measurement results?
5. Page 4203, Line 7: "... process is fully automated (Linux)."
6. Page 4203, Line 25 and Fig. 3: How has the presented change been calculated? Is it the change of measurement at certain wavelength, average over some wavelength region, somehow weighted or what?
7. Page 4203, Line 25: "The reason for the decrease of the responsivity during the first year of exploitation could be the condensation of water vapor on the optical surfaces within the instrument instead of decrease of the array sensitivity."
8. Considering the condensation: If the above statement is true, then why did the condensation end after the first year? Was something changed or is the device now full of water? Or did the water vanish somewhere?
9. Page 4204, Line 4 and Fig. 4: It is difficult to see the behavior of the stray light correction as a function of wavelength in the figure. Would it be possible to include a secondary y-axis that would plot the ratio of the two curves? The text could also discuss the wavelength dependence of the correction.
10. Page 4204, Line 18: Replace "40° C" with "40 °C" This is in quite many places in the text.
11. Page 4204, Line 26: The unit should be  $[V / (W m^{-2} nm^{-1})]$  or  $[V W^{-1} m^2 nm]$

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12. Page 4204, Line 27: The sentence starting on this line is too long and complicated. Consider dividing it into two sentences or deleting something.
13. Page 4205, Line 4: "...the CIE weighted response has been..."
14. Page 4205, Line 23: I don't understand what this "in tenths" means?
15. Page 4206, Line 20: Please give the magnitude of the difference in text.
16. Page 4206, Line 20 and Fig 5: In the right figure, the line does not seem to go to zero, but will cross  $x = 0$  at  $y = 134 \text{ Jeffm}^{-2}$ . Any reason for that?
17. Page 4206, Line 27: The sentence starting this line is too complicated to understand. Consider revising it e.g. as "Fig. 6 presents examples of the ratios of the measured UV Index to the UV Index calculated using LibRadtran. Results are shown separately for the two devices, AvaSpec and UV-set, as a function of the SZA. Measurements were done in clear-sky conditions." Also revise the figure caption.
18. Page 4208, Line 11: Revise e.g. as "At smaller SZA, the ratios between the values calculated and those retrieved from spectra are stable."
19. The above linguistic error is quite typical in several places of the text and makes reading difficult. Please proof read the text. Also avoid using long sentences with lots of information in them. The text becomes clearer with short sentences.

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 4199, 2008.

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