

Interactive comment on “The UV-A and visible solar irradiance spectrum: inter-comparison of absolutely calibrated, spectrally medium-resolution solar irradiance spectra from balloon- and satellite-borne measurements” by W. Gurlit et al.

Anonymous Referee #1

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The text clearly explains what is the aim of the article. I express again my initial positive opinion for publication in ACP.

I have some questions and suggestions:

1) Before flight/after flight performances: have you noticed any change concerning the instrument responsivity once the instrument was returned in the laboratory?

2) Flatfield:

Many instruments have a flatfield dependence of their responsivity. Is this effect could remain despite using the Sun tracker? It is unclear for me if the mirror reflectivity was measured for all angles of incidence as met during the flight? If not, how the reflectivity is taken into account?

3) Linearity of the detection

The use of lamps allows calibration of the instrument, that is to say determination of its responsivity. Signal from calibration lamps is usually smaller than the signal from the Sun. Have you verified the linearity of the detection system?

4) About Table 1

What is contained in “calibration procedure”, and what uncertainty is originating from the counting (generally when calibration lamps are used due to the low signal).

5) Wavelength scale

Have you compared the position of some Fraunhofer lines of your spectrum with position given for example by Kurucz (1984)?

6) Table 3

I have calculated the energy from 325 to 650 nm for your spectrum, Kurucz and SOLSPEC. The difference Kurucz to SOLSPEC is small (1.6 W/m^2), but greater with your spectrum. This suggests (as well as Table 3) a greater irradiance in the visible range. Could you explain/comment this result, in particular taking into account a better precision in that domain as given in Table 1?

7) Summary of differences between spectra

In the abstract, you give the differences between the spectra that you have considered in this study. A Table summarizing these differences would be welcome at the end of

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the paper. This would allow to examine if the reported differences are consistent with the quoted accuracy of each spectra used for comparison.

8) About the range 325–370 nm, a 5% difference is found by SCIAMACHY and DOAS (as well as with Neckel and Labs, 1984) with respect to MODTRAN and SOLSPEC. However, the same difference is shown with data taken from space by SSBUV and SOLSTICE with respect to Neckel and Labs. You also report that such a difference exists with the recent Harrison's spectrum (2003). This spectrum is obtained from ground, and in the range 325–370 nm, corrections are important and may induce some error. This is why this spectrum may contain similar features as Neckel and Labs (1984). This point should be discussed as well as the SSBUV and SOLSTICE results. About recent spectra, SOLSPEC has been up dated in 2003 and 2004.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 8439, 2004.

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