

Interactive comment on “Revising short and longwave radiation archives in view of possible revisions of the WSG and WISG reference scales: Methods and implications” by Stephan Nyeki et al.

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Referee No. 1: Comments and Corrections

Referees comment: 1. Page 1, line 26: Add a reference for the mentioned shortwave range $\sim 0.3\text{-}3\ \mu\text{m}$?

Reply: The wavelength ranges for the shortwave and longwave regions are “broadly defined”. Although we have used the word “broad” in the text, we have included a general reference (Petty, 2006) on lines 26 and 31.

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Referees comment: 2. Page 1, line 27: Add a reference for the WSG spectral range. I believe that the WSG spectral range is from less than 200 nm to larger than 50 μm ; this is mentioned in Reda et al., "Reducing Broadband Shortwave Radiometer Calibration-Bias Caused by Longwave Irradiance in the Reference Direct Beam", Atmospheric and Climate Sciences Vol. 7 (1) January 2017 pp. 36-47. Link: http://file.scirp.org/pdf/ACS_2017011315344478.pdf

Reply: We have added this reference to line 27, and to the reference list, and revised the wavelength range. The sentence now reads:

“The latter is broadly defined as covering the wavelength range $\sim 0.3 - 3\ \mu\text{m}$ (Petty, 2006) while the WSG pyrhemometers cover the range from less than 0.2 to above 50 μm (Reda et al., 2017)”.

Referees comment: 3. Page 7, line 35&36: For the BSRN deployed pyrhemometers, change text “virtually all pyrhemometers are believed to be traceable to the WSG” to the following text “virtually all shortwave pyrhemometers are believed to be traceable to the WSG”.

Reply: This has been changed as recommended.

Referees comment: Then authors might need to elaborate on why WSG (with a broader spectral range) are used to calibrate shortwave pyrhemometers (with a limited spectral range). Or just open this discrepancy for a discussion within the solar irradiance community/manufacturers.

Reply: This statement was made twice in the original manuscript. The first instance was on Page 2 Line 20 (this is still Page 2 Line 20 in the new manuscript), where we have also added the word “shortwave” as recommended by the Referee. In answer of the comment regarding a mis-match of the spectral ranges, we have added the

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following sentence on Page 2 Line 23: “Although the WSG, with its broader spectral range, is used to calibrate shortwave pyrheliometers with their limited spectral range, the spectral mismatch is small in terms of energy. The longwave component is in fact considered to be proportional to the shortwave component for the purpose of the calibration.”

Referees comment: 4. Page 14, Figure 2: the light and dark gray are not distinguishable in the figure, change to two different colors.

Reply: The light and dark shades of grey are now more clearly visible.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2017-41, 2017.