Supplement to the manuscript "Spectral Aerosol Optical Depth from Traceable Spectral Solar Irradiance Measurements to the SI" by Gröbner et al., 2023.

06-Sep-2022
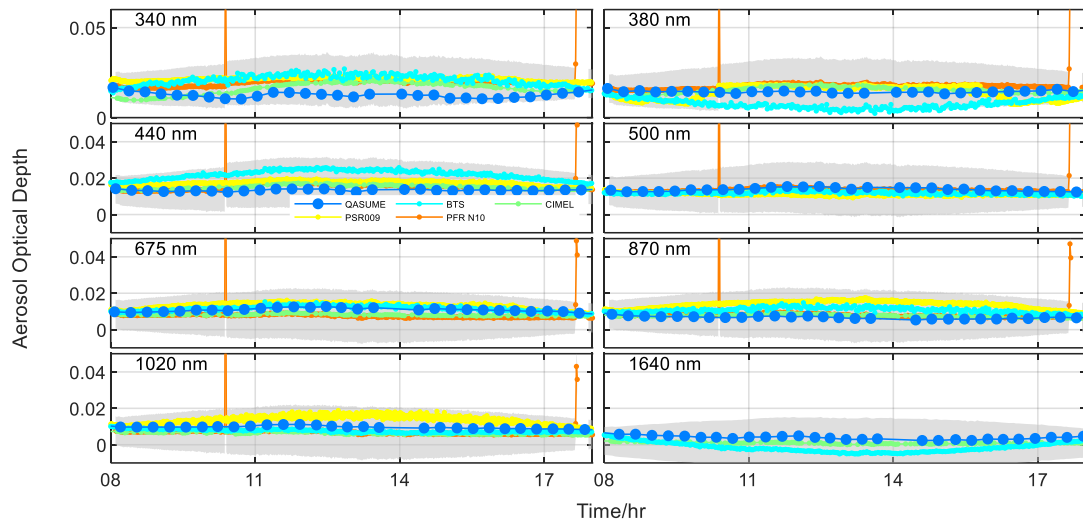
Figure S1 Diurnal variation of the AOD on 6 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.

07-Sep-2022
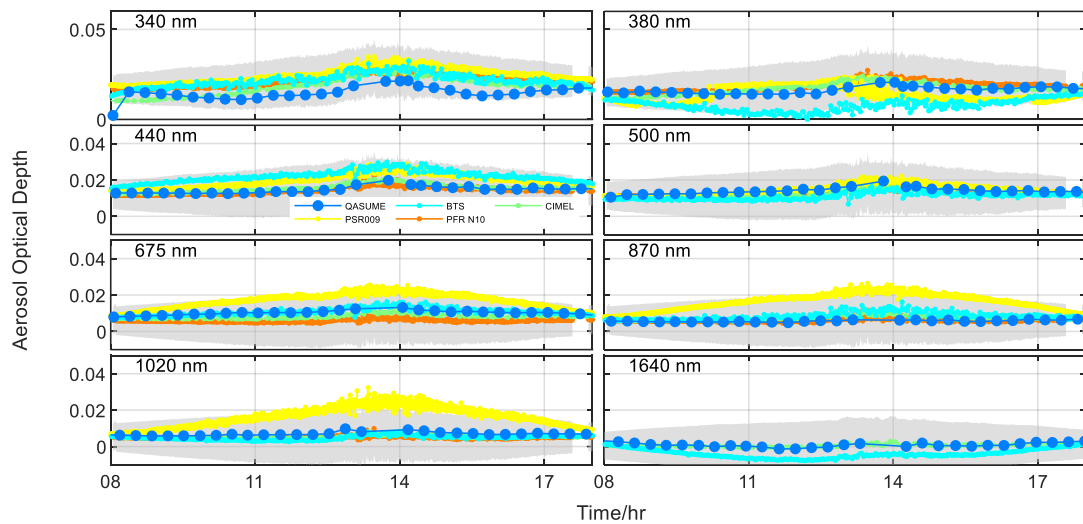
Figure S2 Diurnal variation of the AOD on 7 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.

08-Sep-2022
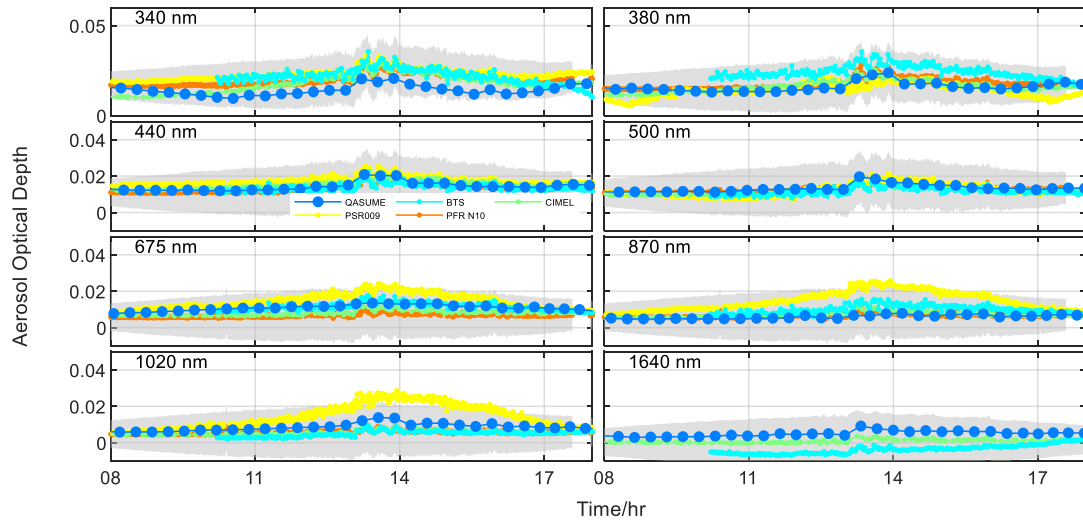
Figure S3 Diurnal variation of the AOD on 8 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.

09-Sep-2022
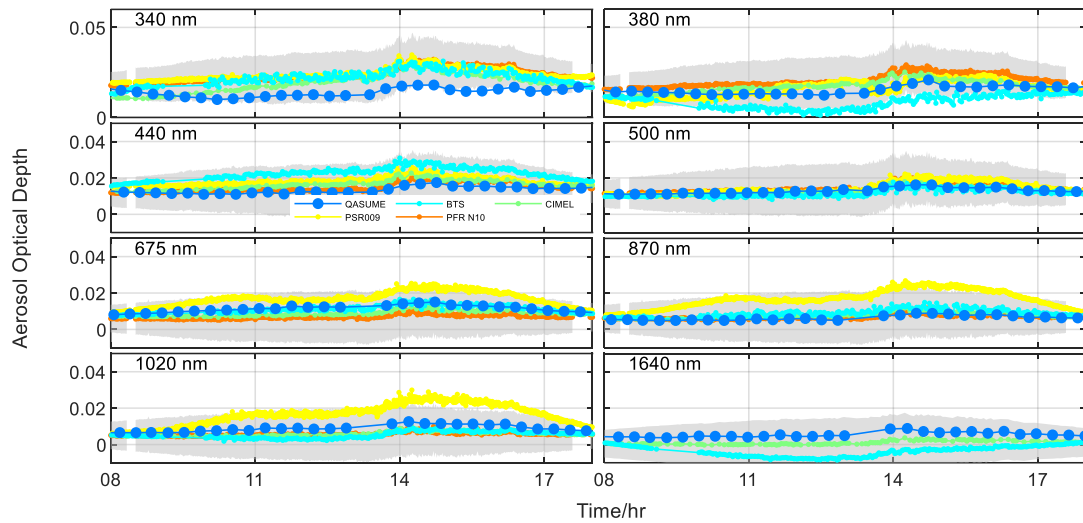
Figure S4 Diurnal variation of the AOD on 9 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.

10-Sep-2022
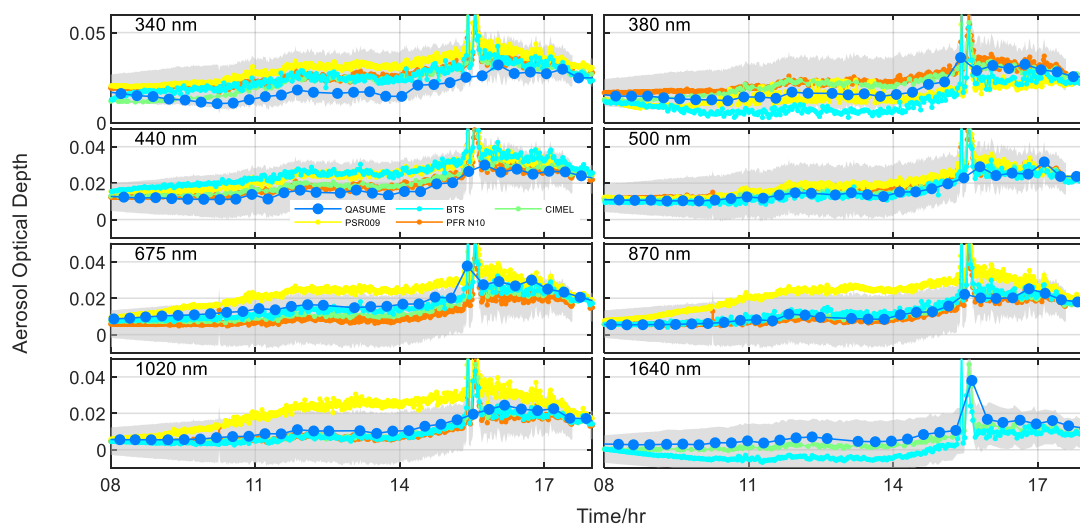
Figure S5 Diurnal variation of the AOD on 10 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.

14-Sep-2022
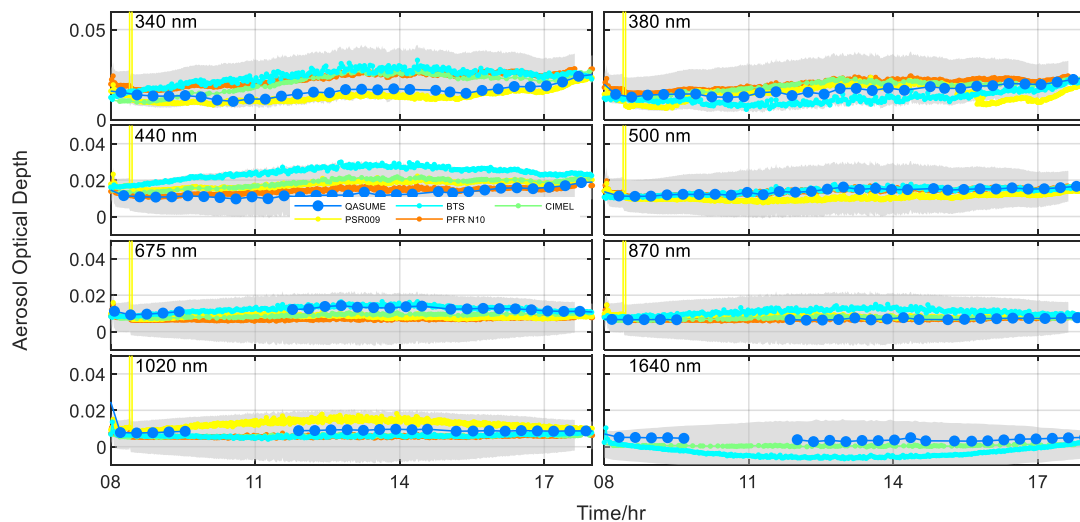
Figure S6 Diurnal variation of the AOD on 14 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.

15-Sep-2022
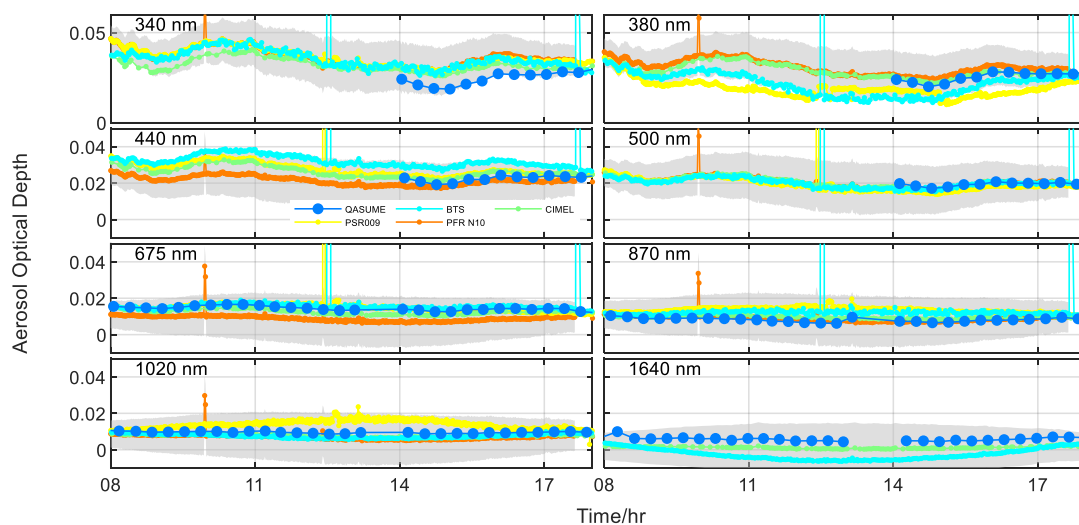
Figure S7 Diurnal variation of the AOD on 15 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.

17-Sep-2022
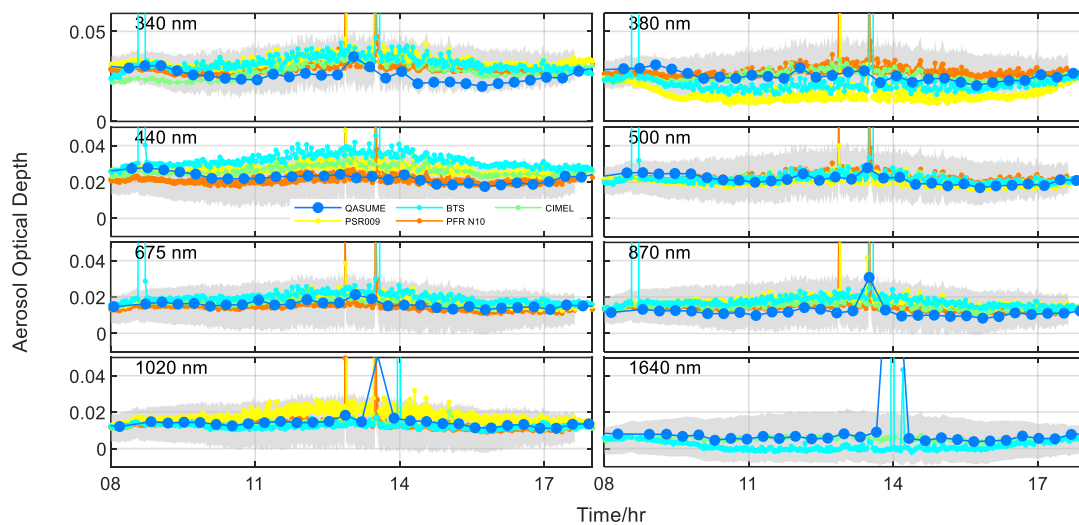
Figure S8 Diurnal variation of the AOD on 17 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.

Figure S6 Diurnal variation of the AOD on 22 September 2022 for the spectral channels of the CIMEL sunphotometer. The AOD from QASUME and QASUME-IR (blue dots), BTS (light blue) and PSR (yellow) are averaged over a 5 nm wide spectral band centered on the respective wavelength. The AOD from the PFR (orange) shown at 340 nm, 380 nm, and 440 nm were interpolated to the nearby spectral channels of the CIMEL sunphotometer (green) using the Ångstrom coefficients retrieved from its 4 spectral channels. The measurements of QASUME-IR and BTS at nominally 1640 nm were obtained from averaging their measurements at 1560 nm to avoid the trace absorptions at 1640 nm. The gray area represents the WMO limit in which the measurements between different instruments are assumed equivalent.