Supplement of

Temperature dependence of the Brewer global UV measurements

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**Temperature correction methodology**

The corrected irradiance \(I(\lambda)\) at each wavelength \(\lambda\), is derived by dividing the measured signal \(I_m(\lambda)\) with the provided correction factor \(cf(\lambda)\):

\[
I(\lambda) = \frac{I_m(\lambda)}{cf(\lambda)}
\]

(S1)

For the three different TRs (TR1, TR2, TR3), different correction factors are used (\(cf_1(\lambda)\), \(cf_2(\lambda)\) and \(cf_3(\lambda)\) respectively). Assuming that the limit that separates TR1 from TR2 is \(T_{12}\) and the limit that separates TR2 from TR3 is \(T_{23}\), that the reference temperature \(T_r\) is above \(T_{12}\) and that the measured temperature is \(T\), the correction factor for each TR is calculated as follows:

**If T is in TR3:**

\[
 cf_3(\lambda) = 1 + c_3(\lambda) \cdot (T - T_r)
\]

(S2)

**If T is in TR2**

\[
 cf_2(\lambda) = 1 + c_2(\lambda) \cdot (T_{23} - T_r) + c_3(\lambda) \cdot (T - T_{23})
\]

(S3)

**If T is in TR1**

\[
 cf_1(\lambda) = 1 + c_2(\lambda) \cdot (T_{23} - T_r) + c_3(\lambda) \cdot (T_{12} - T_{23}) + c_3(\lambda) \cdot (T - T_{12})
\]

(S4)

The factors \(c_i\) represent the slopes of the linear fits that describe the change of the response relative to its mean value at 25°C. For TR1 and TR3 the slopes are considered to be equal, thus \(c_1 = c_3\). The slopes are calculated using the 2nd degree polynomials of the form:

\[
 c_i = a_0 + a_1 \cdot \lambda + a_2 \cdot \lambda^2
\]

(S5)

Where \(\lambda\) is in nm.

For each of the eight Brewers the coefficients \(a_i\) are listed in Table S1:

**Table S1:** Polynomial coefficients for the calculation of the factors \(c_i\)

<table>
<thead>
<tr>
<th>Brewer</th>
<th>(a_0)</th>
<th>(a_1)</th>
<th>(a_2)</th>
<th>(a_0)</th>
<th>(a_1)</th>
<th>(a_2)</th>
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