

| Parameter              | Data source   | Fitting internal (nm) |                 |                |
|------------------------|---|-----------------------|-----------------|----------------|
|                        |   | NO <sub>2</sub>       | SO <sub>2</sub> | HCHO           |
| Wavelength range       |   | 338–368 nm            | 308–314 nm      | 336.5–359 nm   |
| NO <sub>2</sub>        | Vandaele et al. (1998), 220 K, 294 K, I <sub>0</sub> correction*<br>(SCD of 10 <sup>17</sup> molecules cm <sup>-2</sup> )     | ✓                     | ✓ (only 294 K)  | ✓ (only 294 K) |
| SO <sub>2</sub>        | Vandaele et al. (2009), 298 K   | ×                     | ✓               | ×              |
| HCHO                   | Meller and Moortgat (2000), 297 K   | ✓                     | ×               | ✓              |
| O <sub>3</sub>         | Serdyuchenko et al. (2014), 223 K, 243 K,<br>I <sub>0</sub> correction* (SCD of 10 <sup>20</sup> molecules cm <sup>-2</sup> ) | ✓                     | ✓               | ✓              |
| O <sub>4</sub>         | Thalman and Volkamer (2013), 293 K  | ✓                     | ×               | ✓              |
| BrO                    | Fleischmann et al. (2004), 223 K  | ✓                     | ×               | ✓              |
| Ring                   | Ring spectra calculated with QDOAS<br>according to Chance and Spurr (1997)  | ✓                     | ✓               | ✓              |
| Polynomial degree      |   | Order 5               | Order 5         | Order 5        |
| Intensity offset       |   | Constant              | Order 1         | Order 1        |
| Wavelength calibration | Based on a high-resolution solar reference spectrum (SAO2010 solar spectra); Chance and Kurucz (2010)                         |                       |                 |                |