

Error source	Parameter uncertainty	Estimated uncertainty on HCHO SCD	Evaluation method – reference
Measurement noise	$S/N = 800\text{--}1000$	1×10^{16} molec cm ⁻² (random)	Value derived for individual observations by uncertainty propagation (De Smedt et al., 2015)
HCHO cross-section error	Based on alternative cross-section datasets, offset and polynomial orders	9 %	Mean values derived from sensitivity tests using GOME-2 and OMI data. (De Smedt et al., 2008, 2015; Hewson et al., 2013; Pinardi et al., 2013)
O ₃ cross-section error		5 %	
BrO cross-section error		5 %	
NO ₂ cross-section error		3 %	
O ₄ cross-section error		2 %	
Ring correction error		5 %	
Choice of offset order		7 %	
Choice of polynomial order		7 %	
Instrumental slit function and wavelength calibration	Based on alternative calibrations	10 %	Mean value derived from sensitivity tests using GOME-2 and OMI data
Choice of wavelength interval	Based on alternative wavelength intervals	10 %	Mean value derived from sensitivity tests using GOME-2 and OMI data (Hewson et al., 2013)
Temperature dependence of the HCHO XS	$0.05 \% \text{ } ^\circ\text{K}^{-1}$	2 %	Mean value derived from sensitivity tests based on Meller and Moorgat (2000)