

Detailed Product Description

TEMIS columnar CH₂O is made available in ascii files. The files contain CH₂O data for one orbit. The files have the name of the LV1 files with the extension “*.obs”. The files are formatted as followed:

Data files format:

First line:

Name	Description	exemple
hhmmssshmmss	time of the first and the last pixel of the pixels included in the file	004511012027
orbit number	number of the satellite orbit	026594
number of pixels	number of ground pixels included in the file	0003787

Columns :

Name	Description	Exemple
Col 1: Date	Date and time of the measurement (yymmddhhmmss)	20070402004511
Col 2: Lat1	Latitude of the first corner (x 10 ² °)	005810
Col 3: Lat2	Latitude of the second corner (x 10 ² °)	005787
Col 4: Lat3	Latitude of the third corner (x 10 ² °)	005831
Col 5: Lat4	Latitude of the fourth corner (x 10 ² °)	005809
Col 6: Latc	Latitude of the center of the pixel (x 10 ² °)	005809
Col 7: Long1	Longitude of the first corner (x 10 ² °)	015911
Col 8: Long2	Longitude of the second corner (x 10 ² °)	015892
Col 9: Long3	Longitude of the third corner (x 10 ² °)	015808
Col 10: Long4	Longitude of the fourth corner (x 10 ² °)	015790
Col 11: Longc	Longitude of the center of the pixel (x 10 ² °)	015849
Col 12: SCD	Slant column density retrieved by WINDOAS. (mol/cm ²)	-7.39147e+015
Col 13: SCD2	Slant column density corrected for the formaldehyde amount contained in the reference spectrum. (mol/cm ²)	-4.43178e+015
Col 14: SCD3	Slant column density corrected with the reference sector method (the remote Pacific Ocean). (mol/cm ²)	6.13242e+015
Col 15: VCD	Vertical column density. (mol/cm ²)	3.53708e+015
Col 16: AMF	Air mass factor. (no unit)	2.78
Col 17: Chi2	Chi square of the DOAS fit. (no unit)	1.15861e-006
Col 18: SZA	Solar zenith angle. (°)	54.350
Col 19: SAzA	Solar azimuth angle. (°)	165.354
Col 20: LoSZA	Viewing zenith angle. (°)	24.862
Col 21: LoSAzA	Viewing azimuth angle. (°)	112.807
Col 22: PT	Pixel Type	1
Col 23: CF	Cloud fraction. (no unit)	0.44
Col 24: CH	Cloud altitude. (km)	0.92
Col 25: SCDE_rand	SCD random error (mol/cm ²)	1.15884e+016

Col 26: SCDE_syst	SCD systematic error (mol/cm ²)	5.06911e+015
Col 27: AMFE	AMF error (no unit)	0.64
Col 28: PacCorE	Pacific correction error (mol/cm ²)	8.78621e+014
Col 29-68: AK	Averaging kernel (no unit)	0.25
Col 69-108: P	Pressure grid (hPa)	978.97

The total error can be calculated with the following expression:

$$VCDE^2 = \frac{1}{AMF^2} \cdot \frac{SCDE_rand^2}{N} + \frac{1}{AMF^2} \cdot SCDE_syst^2 + \left(\frac{SCD3}{AMF^2}\right)^2 \cdot AMFE^2 + PacCorE^2$$

Where N is the number of pixels taken to calculate the mean vertical column (1 if individual pixels are considered).