



HAL
open science

Minor species measurements below the clouds of Venus using VIRTIS-H/Venus Express data set.

Emmanuel Marcq, Bruno Bézard, Séverine Robert, Jean-Michel Reess, Pierre
Drossart, Giuseppe Piccioni

► To cite this version:

Emmanuel Marcq, Bruno Bézard, Séverine Robert, Jean-Michel Reess, Pierre Drossart, et al.. Minor species measurements below the clouds of Venus using VIRTIS-H/Venus Express data set.. Europlanet Science Congress 2022, Sep 2022, Granada, Spain. pp.EPSC2022-7, 10.5194/epsc2022-7. insu-03752738

HAL Id: insu-03752738

<https://insu.hal.science/insu-03752738>

Submitted on 17 Aug 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Minor species measurements below the clouds of Venus using VIRTIS-H/Venus Express data set.

Emmanuel Marcq¹, Bruno Bézard², Séverine Robert³, Jean-Michel Reess², Pierre Drossart^{4,2}, and Giuseppe Piccioni⁵

¹Université Versailles Saint-Quentin, IPSL, LATMOS, Guyancourt, France (emmanuel.marcq@latmos.ipsl.fr)

²CNRS, Observatoire de Paris PSL, LESIA, Meudon, France

³BIRA, Brussels, Belgium

⁴Sorbonne Université, CNRS, IAP, Paris, France

⁵INAF-IASF, Rome, Italy

From 2006 to 2014, the ESA *Venus Express* orbiter has provided a wealth of data that has not been fully analyzed yet. Here, using all available and suitable night side thermal spectra provided by the -H channel of the VIRTIS spectral imaging suite near 2.3 μm , we constrained the vertical profiles of various trace gases (CO, OCS, H₂O or HDO, SO₂) below the clouds in the 30-40 km altitude range. With the help of an updated version of the radiative transfer model used in our first study [Marcq et al., 2008], our preliminary results confirm previously reported findings [Marcq et al., 2008; Tsang et al., 2009; Arney et al., 2014], especially the latitudinal anti-correlation of CO and OCS. Such reanalyses of past data sets are relevant more than ever, since they provide background truth for designing future instruments on board recently selected missions towards Venus, such as the high-resolution IR spectrometer VenSpec-H onboard ESA's *EnVision*.

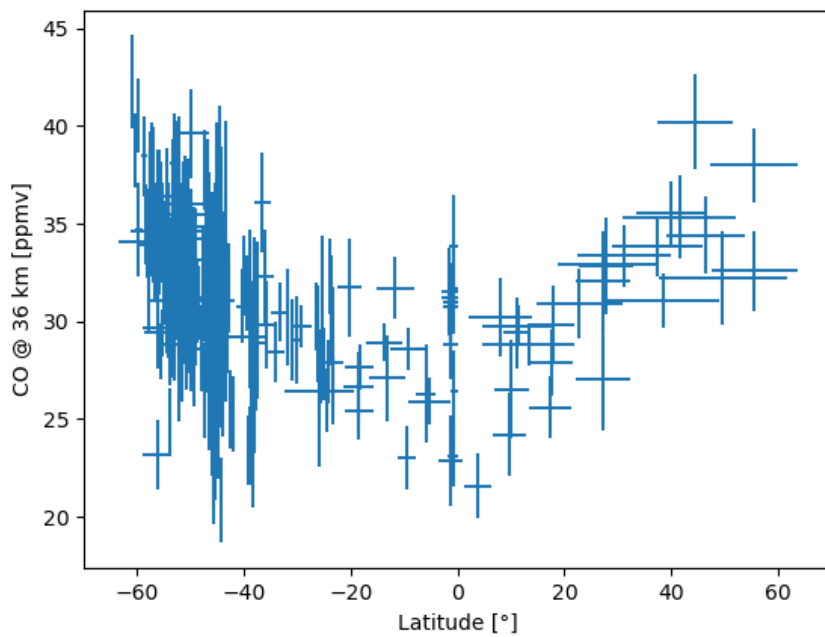
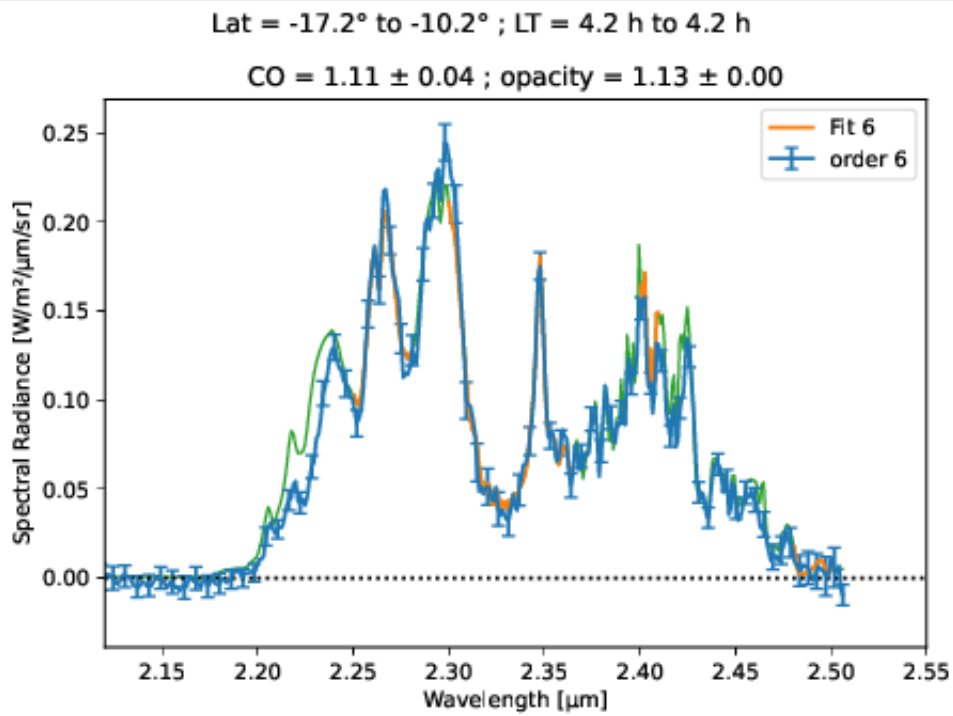


Figure 1 (left): Best CO and cloud opacity fit of a VIRTIS-H (order 6) spectrum acquired during orbit #277

Figure 2 (right) : Retrieved CO abundances (with 1σ error bars) near 36 km with respect to latitude.