

***Interactive comment on “Detection of carbon monoxide pollution from megacities and wildfires on regional and urban scale: The benefit of CO column retrievals from SCIAMACHY 2.3  $\mu\text{m}$  measurements under cloudy conditions” by Tobias Borsdorff et al.***

**Anonymous Referee #1**

Received and published: 20 February 2018

Comments on “Detection of carbon monoxide pollution from megacities and wildfires on regional and urban scale: The benefit of CO column retrievals from SCIAMACHY 2.3  $\mu\text{m}$  measurements under cloudy conditions”

Generally, the paper discusses an important subject as we lose high percent of data due to cloud screening. However, the paper needs to be more clear as it is ambiguous at many places and also it might be good if the English is edited by professionals.

The following are examples of the parts that need to be clarified:

1-The authors need to explain why they chose the following oversampling size?

“The SCIAMACHY data are averaged over an area with a radius  $r = 90$  km and subsequently oversampled with a longitude/latitude sampling distance of  $\delta = 0.5$  degree”

2- The following parts need to be rephrased to be more clear

Page 2, line 13

Please rephrase to be more clear

“Obviously, this assumption does not hold for optically thick water clouds shielding the atmosphere below. Therefore, Buchwitz et al. (2007); Gloudemans et al. (2009); de Laat et al. (2012) used the retrieved CH<sub>4</sub> total column and model vertical profiles of CH<sub>4</sub> and CO to compensate for the shielding effect by clouds on the estimated total column of CO.”

Page 2, line, 29

Please rephrase to be more clear

“This aspect is particularly interesting in the light of upcoming future missions with improved radiometric and spatial sampling performance.”

Page 2, line 30 I think the following reference needs to be updated because it is 2012, and TROOMI launched in 2017.

“October 13, 2017 the Tropospheric Monitoring Instrument (TROPOMI) was successfully launched on the Sentinel-5 Precursor Mission (S-5P) (Veefkind et al., 2012). “?

Page 3, line 8 Please rephrase to be more clear

“light path enhancement”

Page 9, line 29 Please rephrase to be more clear

Printer-friendly version

Discussion paper



The following have repeated statements, please delete one of them. “a higher spatial resolution of up to  $7 \times 7$  km<sup>2</sup>, and improved spatial sampling”

Page 8, line, 28 Please rephrase to be more clear

“For Tehran and Los Angeles the temporal and spatial sampling of low cloud observations improved the spatial coincidence of the CO enhancement and the MODIS urban area product compared to the clear sky CO product.”

Page 9, line, 3 Please rephrase to be more clear

“The analysis of the CO pollution from megacities from SCIAMACHY soundings with medium-high clouds indicated a significant reduction in the CO enhancement for the three cities.”

Page 9, line 14 “open op new”, replace op with up

The following figures have very small font so please increase their size:

Figures 2,4,,6,7,8

---

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2017-423, 2017.

Printer-friendly version

Discussion paper

