

Carbon monoxide total columns over Paris (Creteil-France): diurnal and seasonal variations and comparison with correlative MOPITT observations

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Ground-based Fourier-transform infrared (FTIR) solar absorption spectroscopy is a powerful remote sensing technique providing information on the concentration and vertical distribution of various trace gases. This study reports measurements of atmospheric carbon monoxide (CO), made by a medium-resolution (0.06 cm^{-1}) ground-based FTIR station from February 2009 to June 2013. This observatory, named OASIS for "Observations of the Atmosphere by Solar absorption Infrared Spectroscopy", has been installed in Paris suburbs, at Creteil University (48.8°N , 2.4°E , France). The spectra recorded with OASIS allow to perform atmospheric ozone retrievals (see Viatte et al., 2011, for details). We show here that the instrument is also suited for monitoring total columns of CO.

A daily comparison of the OASIS measurements with CO total columns over the Paris area observed by the MOPITT instrument shows a good agreement, demonstrating that a medium resolution instrument, such as OASIS, is able to monitor atmospheric CO with a good accuracy and measure its variability (Figure 1).

Using the large spectral domain of acquisition ($700\text{--}11000\text{ cm}^{-1}$), future perspectives to monitor also atmospheric HNO_3 , CH_4 and N_2O are discussed.

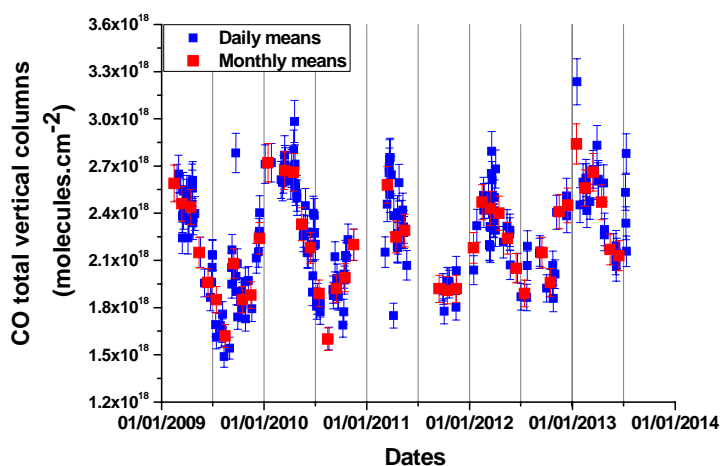


Figure 1 : Time series of CO total vertical columns measured by OASIS from February 2009 to June 2013. Blue lines and red lines represent respectively daily and monthly means. The plot shows the seasonal variability of CO at mid-latitude with a maximum in February/March and a minimum in August/September.

Viatte C., B. Gaubert, M. Eremenko, F. Hase, M. Schneider, T. Blumenstock, P. Chelin, J.-M. Flaud, and J. Orphal, Tropospheric and total ozone columns over Paris (France) measured using medium-resolution ground-based solar-absorption Fourier-transform infrared spectroscopy, *Atmospheric Measurement Techniques* **4**, 2323-2331, 2011.

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