



Validation of Carbon Monoxide and Methane Vertical Column Densities Retrieved from SCIAMACHY Infrared Nadir Observations

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Carbon monoxide and methane are key species of Earth's atmosphere, highly relevant for climate and air quality. Accordingly, a large number of spaceborne sensors are observing these species in the microwave, thermal and near infrared.

For the analysis of short wave infrared spectra measured by SCIAMACHY aboard the ENVISAT satellite and similar instrument(s) we had developed the Beer InfraRed Retrieval Algorithm:

BIRRA is a separable least squares fit of the measured radiance with respect to molecular column densities and auxiliary parameters (optional: surface albedo, baseline, slit function width, and wavenumber shift). BIRRA has been implemented in the operational SCIAMACHY L1 to 2 processor for the retrieval of CO and CH₄ from channel 8 (2.3 μm) and 6 (1.6 μm), respectively.

Our tests are based on separate comparisons with existing space or ground-based measurements of carbon monoxide and methane column densities. In this poster intercomparisons of CO and CH₄ columns estimated from SCIAMACHY with coincident and co-located retrievals provided by ground-based Fourier transform infrared spectroscopy are provided. More specifically, we have used data from several NDACC (Network for the Detection of Atmospheric Composition Change) and TCCON (Total Carbon Column Observing Network) stations. Our strategy for quality check of these products and the selection of specific geographical areas will be discussed.