



Carbon monoxide and methane retrievals from TROPOMI onboard Sentinel-5 Precursor

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Carbon monoxide (CO) is an important atmospheric constituent affecting air quality and methane (CH₄) is the second most important greenhouse gas contributing to human-induced climate change. Detailed and continuous observations of these gases are necessary to better assess their impact on climate and atmospheric pollution. While surface and airborne measurements are able to accurately determine atmospheric abundances on local scales, global coverage can only be achieved using satellite instruments.

The TROPOspheric Monitoring Instrument (TROPOMI) onboard the Sentinel-5 Precursor satellite, which was successfully launched in October 2017, is a spaceborne nadir viewing imaging spectrometer measuring solar radiation reflected by and radiated from the earth in a push-broom configuration. It has a wide swath on the Earth's surface and covers wavelength bands between the ultraviolet (UV) and the shortwave infrared (SWIR) combining high spatial resolution with daily global coverage.

Abundances of atmospheric CO and CH₄ can be retrieved from TROPOMI's radiance measurements in the 2.3 μm spectral range of the SWIR part of the solar spectrum with high sensitivity to all altitude levels including the lowest atmospheric layers where the variability is largest. Due to the unprecedented wealth of detail of the global TROPOMI CO and CH₄ products, new fields of application are enabled. We present first results for both trace gases obtained using the scientific retrieval algorithm Weighting Function Modified DOAS (WFM-DOAS).