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First results on methane retrievals from TROPOMI short-wave infrared measurements

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The Tropospheric Monitoring Instrument (TROPOMI) was successfully launched on October 13th, 2017 aboard ESA's Copernicus Sentinel-5 Precursor satellite, and it is currently in the commissioning phase. The spectrometer measures sunlight reflected by the Earth's surface and atmosphere in the ultraviolet, visible, near and short-wave infrared spectral range from which concentrations of key atmospheric species are determined for monitoring air quality, climate and the ozone layer on a global daily basis. In this work, we present the first results on methane retrievals using TROPOMI measurements in the short-wave infrared band around 2.3 microns. We retrieve the column averaged dry air volume mixing ratio of methane while accounting for atmospheric scattering with the RemoTeC algorithm that employs the so-called full-physics approach. This algorithm was developed by SRON as the operational methane retrieval algorithm for TROPOMI. We compare our results with the proxy methane product from the Japanese GOSAT sattelite, that SRON delivers in the context of the Copernicus Atmospheric Monitoring Service (CAMS). Although different spectral ranges and retrieval methods are used, we find in general good agreement between the methane product obtained from the two satellites. Our preliminary results capture the latitudinal gradient and show expected enhancements in Asia.