Geophysical Research Abstracts, Vol. 7, 02327, 2005
SRef-ID: 1607-7962/gra/EGU05-A-02327

SCIAMACHY CO and CH4 measurements compared to MOPITT and TM

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The near-infrared spectra measured by SCIAMACHY in nadir mode on the ENVISAT satellite enable us to retrieve total columns for CH4 and CO, from which global maps can be constructed. Since these trace species play an important role in air pollution and global climate change, such a global knowledge on their distribution is a prerequisite to fully understand their role in atmospheric chemistry and climate.

A scientific retrieval algorithm has been developed at SRON that makes use of the calibration and characterization of the near-infrared detectors, which have been performed in-house. Such a detailed characterization appeared to be necessary due to the growth of an ice layer on the IR detectors.

Despite these difficulties, there is clear evidence that SCIAMACHY is sensitive to the distribution of lower tropospheric CO and CH4. For a few months in 2003 and 2004 CO and CH4 data from SCIAMACHY have been validated. Retrieved CH4 columns compare well with results of the TM3 atmospheric chemistry transport model. Similar model results have been compared to total column CO. The latter species has also been compared with data from the satellite instrument MOPITT, which measures CO in the thermal infrared.