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# Distribution and trend estimation of MIPAS ESA V7 carbon tetrachloride data and preliminary results of variability of new species derived with MIPAS ESA V8 processor

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MIPAS on ENVISAT performed almost continuous measurements of atmospheric composition for approximately 10 years, from June 2002 to April 2012.
ESA processor, based on the algorithm ORM (Optimized Retrieval Model), originally designed for the Near Real Time analysis, is currently used for the reanalysis of the full MIPAS mission. Version 7 of the full mission data was released in 2016, but further improvements have been recently performed in ORM V8 to be used in next full mission reanalysis. For these latest releases (V7 and V8) L1 data corrected for reducing the instrumental drift are used. The instrumental drift is due to MIPAS photometric detectors nonlinearities that change with time due to the ageing of the instrument.
Numerous species are retrieved from MIPAS measurements. Among them, CCl4 has been recently studied. This species has received increasing interest due to the so called "mystery of CCl4”, since it was found that its atmospheric concentration at the surface declines with a rate significantly smaller than its lifetime-limited rate. Indeed there is a discrepancy between the atmospheric observations and the estimated distribution based on the reported production and consumption. MIPAS products generated with Version 7 of the L2 ESA algorithm were used to estimate CCl4 distributions, its trend, and atmospheric lifetime in the upper troposphere / lower stratosphere (UTLS) region. The trends derived by these observations between 2002 and 2012 as a function of both latitude and altitude confirm the decline of atmospheric mixing ratios, in agreement with ground based observations. Stratospheric trend derived from the MIPAS data are non-uniform, with some positive trends even being found in the middle stratosphere, mainly at high altitudes in the Southern Hemisphere. The variability in stratospheric trends reflects the impact of variability in stratospheric transport on trace gases and their temporal evolution.

In addition to CCl4, some preliminary results obtained with the latest version of the processor (V8), that performs the analysis of a larger number of species and takes into account horizontal inhomogeneities, will be shown.