



Results from the first deployment of the MARSCHALS mm-wave UTLS limb-sounder in SCOUT-O3

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MARSCHALS is a multi-band, millimetre-wave spectrometer designed to remotely measure the distribution of different species in the lower stratosphere and the upper troposphere (UTLS). MARSCHALS is deployed from an airborne platform, from where it performs vertical scans of the atmospheric limb. The millimetre-wave region is well suited for observations in the UTLS because it offers a good vertical resolution and is much less sensitive to clouds than observations at shorter wavelengths, a very strong argument especially in the troposphere. The development of MARSCHALS is funded by ESA with the intention to a) simulate the future satellite implementation MASTER which is meant to operate at the same wavelengths and b) increase our understanding of chemical and dynamical processes within the UTLS by contributing to different scientific missions. The target molecules for the three currently implemented frequency bands are O₃ in band B, H₂O in band C and CO in band D, but there are also emission lines from O₂, N₂O and other minor species in the frequency ranges covered by MARSCHALS. We will report on the first scientific deployment of MARSCHALS on occasion of the tropical SCOUT-O3 campaign which took place in Nov/Dec 2005 in Darwin, Australia. The SCOUT-O3 campaign had the Russian M-55 Geophysica aircraft, prime carrier of the MARSCHALS instrument and capable of flying at stratospheric altitudes, operating in coordination with other, lower flying airborne platforms, satellites and balloon sondes with the aim of investigating tropical convection, stratosphere-troposphere exchange (STE) and the chemical composition of the tropical tropopause layer (TTL). MARSCHALS had two deployments in SCOUT-O3 on 25th Nov and on 5th Dec 2005. The flight of 5th Dec was specifically

to suit three remote sensing instruments MIPAS, CRISTA and MARSCHALS aboard the Geophysica. We will present a first look at the results obtained from this "remote sensing flight".