



Remote sensing in the UTLS Region with CRISTA-NF

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CRISTA-NF (CRyogenic Infrared Spectrometers and Telescopes for the Atmosphere - New Frontiers) took part successfully in two tropical measurement campaigns in Darwin, Australia, November 2005 and in Ougadougou, Burkina Faso, August 2006. Mounted on the high altitude research aircraft M55-Geophysica CRISTA-NF measures thermal limb emissions in the mid infrared with 15 channels at about 4-15 micrometer wavelength. The signatures of several trace gases (e.g. CCl₄ CFCl₃, CO₂, H₂O, ...) are detected and cloud patterns derived.

Radiance measurements are taken during 22 individual flights covering a range of about 5-20 km with a field of view of a few 100 meter vertical extend and sampling. The horizontal sampling varies from 5 to 15 km depending on the measurement mode. This allows measurements in the UTLS (Upper Troposphere Lower Stratosphere) region with high vertical resolution.

Trace gas retrieval with JURASSIC (JUelich Rapid Spectral Simulation Code) are performed and the sensitivity of retrieved atmospheric parameters and their errors to different levels of sophistication of the radiative transfer model employed in the retrieval algorithm is tested. Resulting improved two-dimensional distributions of cloud patterns and trace gases along the flight track will be presented and discussed.