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Initial results from mipas cirrus retrievals

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An optimal estimation retrieval scheme (known as McClouds_RT) has been developed to retrieve cirrus macro and micro-physical properties from infrared limb emission spectra measured by the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS) which is part of the core payload of ENVISAT.

The retrieval method uses a forward model (McClouds_FM) which combines a 3D Monte Carlo transfer model with line-by-line radiative transfer in order to explicitly account for the effects of multiple scattering by clouds into and out of the line-of-sight.

Initial results are presented for retrieved effective radius and cloud top height as well as a derived cloud optical thickness.

Also, an initial comparison of the MIPAS results with cloud retrievals from co-located AATSR (Advanced Along Track Scanning Radiometer) images is presented. AATSR also flys onboard ENVISAT and in the tropics the nadir images are made approximately 7 minutes before the MIPAS limb measurement overpasses the same region. The comparison shows the greater inherent detection sensitivity of limb measurements compared to nadir with respective to measuring thin cirrus.