



Cloud observations via infra-red limb sounding: a comparison of the MIPAS and OSIRIS instruments

J. Greenhough (1), J.J. Remedios (1), A.E. Bourassa (2), D.A. Degenstein (2), E.J. Llewellyn (2)

(1) University of Leicester, UK (jg113@le.ac.uk, jjr8@le.ac.uk), (2) University of Saskatchewan, Canada (adam.bourassa@usask.ca, degenstein@osirus.usask.ca, edward.llewellyn@usask.ca)

Limb sounding observations over recent years have provided new and interesting information on sub-visible cirrus clouds in the upper troposphere and on polar stratospheric clouds. The Michelson Interferometer for Passive Atmospheric Sounding (MIPAS), launched on ENVISAT in March 2002, measures the infra-red limb emission of such clouds at high spectral resolution (0.025 cm⁻¹ unapodised) and vertical resolutions of 3 km. We discuss the current cloud detection method at 12 microns used operationally by MIPAS, and present global cloud occurrence frequencies on monthly timescales during 2003 using level 1b data (calibrated emission spectra) that were reprocessed during the latter half of 2004. The Optical Spectrograph and Infra-Red Imaging System (OSIRIS), launched on the Odin spacecraft in February 2001, collects limb images of sunlight (1.53 microns) scattered from the upper troposphere and lower stratosphere with 1 km vertical resolution. A neural network algorithm is applied to identify radiance enhancements due to cloud. While MIPAS and OSIRIS cloud detection techniques operate at different wavelengths and with differing sensitivities to cloud optical depth and microphysical properties, we show that their respective cloud distributions are quantitatively similar.