



## **HDO measurements with MIPAS**

**J. Steinwagner** (1), T. Röckmann (1), G.P. Stiller (2), N. Glatthor (2), M. Höpfner (2), T. von Clarmann (2)

(1) Institute for Marine and Atmospheric Research Utrecht, University Utrecht, The Netherlands, (2) Institut für Meteorologie und Klimaforschung, Universität Karlsruhe/Forschungszentrum Karlsruhe, Germany (j.steinwagner@uu.nl / Phone: +31 30 253 2984 )

Although water is the most important trace species in Earth's atmosphere little is known about processes that transport water from the troposphere to the stratosphere and vice versa. Also the source and sink processes for water in that atmospheric region and above are not yet fully known nor understood. Remote sensing by satellite borne instruments provides us with insights in processes on a global scale. Due to the vast amount of single measurements the quality of the results is sufficient to examine variations of stable isotopes of trace species like water. Because every relevant atmospheric process that is connected to temperature changes leaves an isotopic 'fingerprint'. This makes it possible to examine the atmosphere with respect to isotopic variations and finally obtain information about the origin of the water that is transported to the stratosphere. We present the described method applied to measurements of the satellite borne version of MIPAS. There are indications that the tropical tape recorder effect is visible in the isotopic composition. Applications of the results, like hydrogen mass balance calculations on a global scale, are given. Comparisons with other current space borne instruments show well agreement. We conclude that space borne examinations of isotopic variations provide a powerful tool to answer open questions in atmospheric sciences.