



## **The SPARC water vapour assessment II: Quality assessment of stratospheric $\delta\text{D-H}_2\text{O}$ observations from satellite**

Charlotta Högberg (1), Stefan Lossow (2), Ralf Bauer (3), Kaley A. Walker (3), Patrick Eriksson (4), Donal P. Murtagh (4), Sylvia Kellmann (2), Andrea Linden (2), Michael Kiefer (2), Norbert Glatthor (2), Gabriele Stiller (2), and Qiong Zhang (1)

(1) Stockholm University, Department of Physical Geography, 106 91 Stockholm, Sweden, (2) Karlsruhe Institute of Technology, Institute for Meteorology and Climate Research, Hermann-von-Helmholtz-Platz 1, 76344 Leopoldshafen, Germany, (3) University of Toronto, Department of Physics, 60 St. George Street, Toronto, Ontario M5S 1A7, Canada, (4) Chalmers University of Technology, Department of Earth and Space Sciences, Hörsalsvägen 11, 41296 Göteborg, Sweden

Within the framework of the second SPARC (Stratosphere-troposphere Processes And their Role in Climate) water vapour assessment (WAVAS-II), the quality of satellite observations of the isotopic ratio between HDO and H<sub>2</sub>O ( $\delta\text{D-H}_2\text{O}$ ) is evaluated based on data obtained by Odin/SMR (Sub-Millimetre Radiometer), SCISAT/ACE-FTS (Atmospheric Chemistry Experiment-Fourier Transform Spectrometer) and Envisat/MIPAS (Michelson Interferometer for Passive Atmospheric Sounding). The evaluation uses a set of profile-to-profile and climatological comparisons from the upper troposphere to the lower mesosphere.

We find clear quantitative differences in the isotopic ratio. This concerns primarily the comparisons to the SMR data set, caused by issues both in HDO and H<sub>2</sub>O. The MIPAS and ACE-FTS data sets agree rather well in most of the comparisons. Exceptions are found below 100 hPa and in the upper stratosphere which is the upper altitude limit where comparisons between these data sets are possible.