

Balloon-borne Soundings of Water Vapor, Ozone and Temperature in the Upper Troposphere and Lower Stratosphere as Part of SOLVE II

Principal Investigator: Holger Vömel
CIRES, University of Colorado, Boulder, Colorado

Co-Investigator: Samuel J. Oltmans
NOAA Climate Monitoring and Diagnostic Laboratory
Boulder, Colorado

CMDL Frostpoint Hygrometer With Ozonesonde and Radiosonde



Launch of a Balloon Package From South Pole



Science Goals

- Provide water vapor profiles for comparison with SAGE III water vapor retrievals (validation)
- Investigate dehydration of the Arctic stratosphere and the relationship to PSC formation
- Carry out comparisons with other water vapor instrumentation participating in SOLVE II

Planned Measurements

- Measurements from Sodankyla

Six water vapor and ozone profiles in conjunction with SAGE III overpasses between December 2002 and March 2003. In January coordinated launches with those from Kiruna are planned particularly if dehydrating conditions are anticipated. Holger Vömel is currently in Sodankyla training Finnish Meteorological Institute (FMI) personnel to do the soundings. FMI will do the launches after the training. Personnel from the Alfred Wegner Institute (AWI) are also being trained and will do soundings from Ny Alesund.

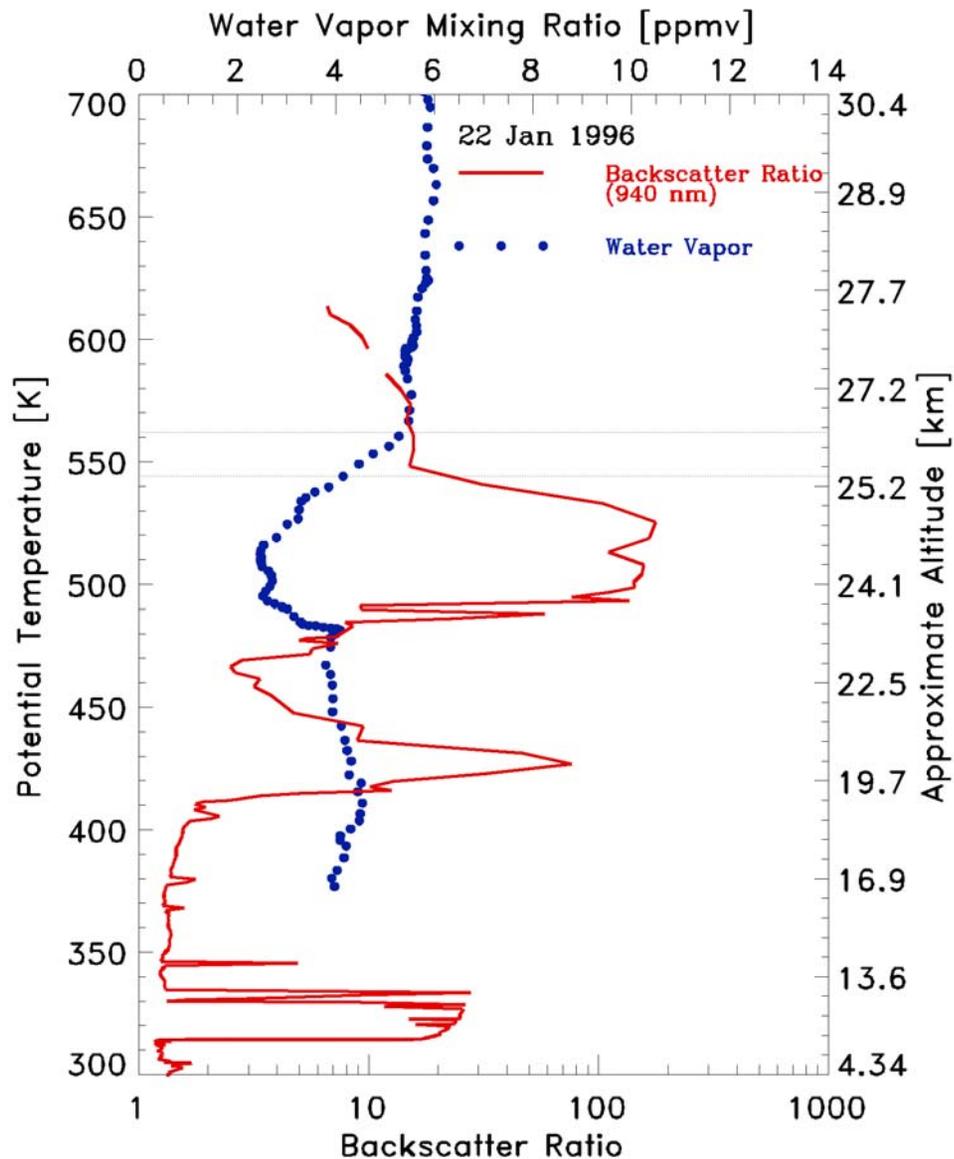
- Balloon flights from Kiruna

Three water vapor soundings between January 12-25, 2003 in conjunction with SAGE III overpasses, flights of the DC-8, and the launches of other balloon packages measuring PSC properties.

- Water vapor profiles from Lauder

Three water vapor profiles from Lauder, New Zealand in March and November 2003 in conjunction with SAGE III overpasses.

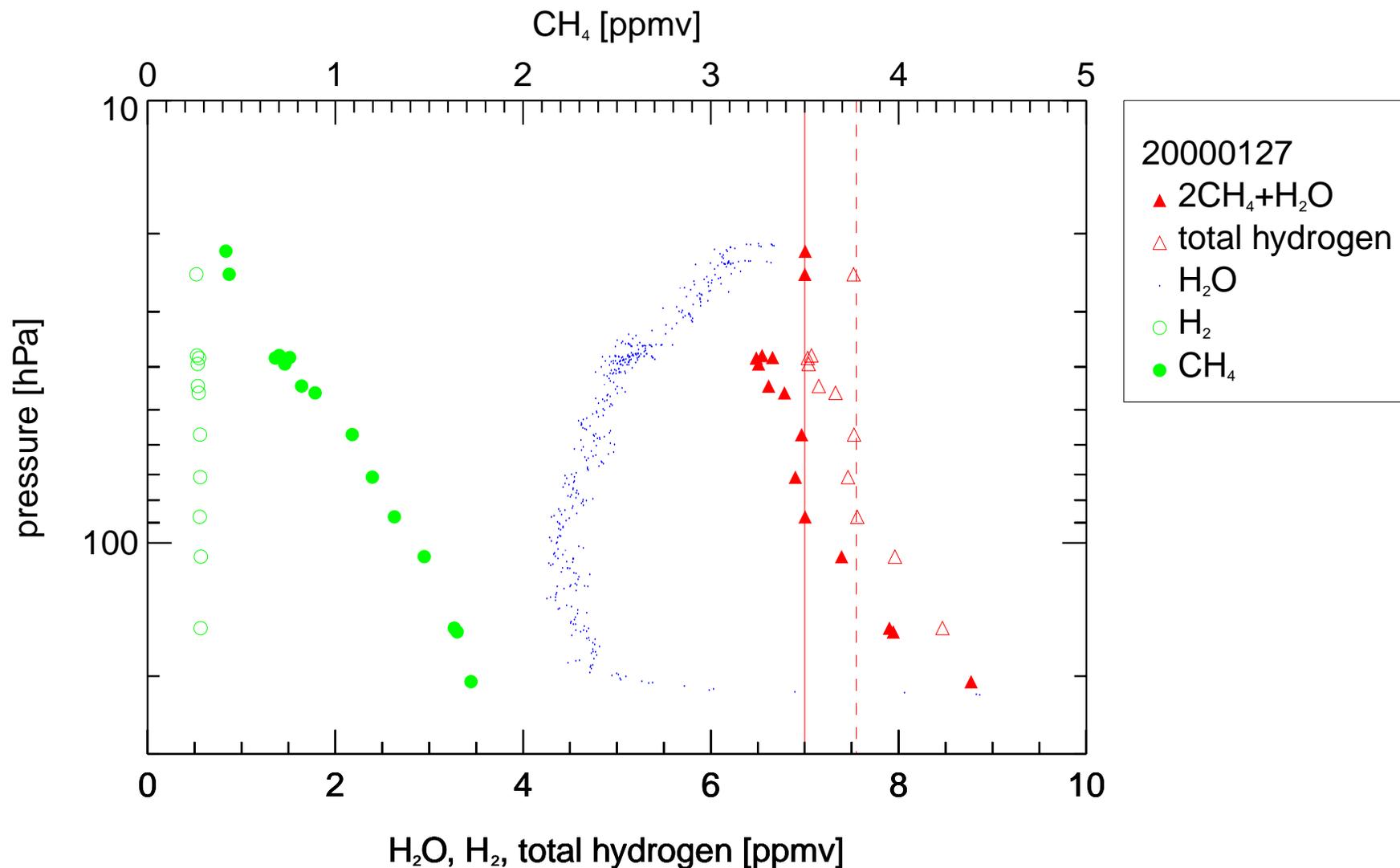
Water Vapor and Backscatter Sonde Measurements at Sodankyla, Finland in January 1996 Showing Strong Dehydration in the Presence of PSCs



Comparison of in situ water vapor profiles from balloon
measurements made during SOLVE/THESEO in 2000
(from Schiller et al., 2002).



Profiles of water vapor, methane and hydrogen measurements showing dehydration at 40 hPa on January 27, 2000 (from Schiller et al., 2002).



Profiles of water vapor, methane and hydrogen measurements showing dehydration at 40 hPa on March 1, 2000 (from Schiller et al., 2002).

