

4-05 The NO_y Budget above the Jungfraujoch: Long-Term Evolution, Family Partition, and Model Comparison

P. Demoulin*, E. Mahieu, R. Zander
University of Liège, Belgium

B. Rognerud, I. Isaksen
University of Oslo, Norway

and M. De Mazière
Belgian Institute for Space Aeronomy (IASB-BIRA), Brussels, Belgium

Based on high-resolution solar spectra recorded with FTIR instruments at the University of Liège laboratory located at the Jungfraujoch NDSC station (Swiss Alps, 46.5°N, 8.0°E, altitude 3580 m), the most important constituents making up the NO_y family have been measured consistently since the mid-1980s.

They include HNO₃, NO, NO₂, and ClONO₂, which are analyzed in terms of their vertical column abundances above the site. Related trends have been determined and assessed statistically. Among these, only ClONO₂ and NO₂ reveal significant long-term trends. The combined column evaluation of NO_y indicates a rate of change equal to $(0.1 \pm 0.2) \%$ /year, thus statistically undefined and barely consistent with the evolution of the source gas N₂O.

Trends derived from the observations will be compared critically with those deduced from a long-term run of a 2-D stratospheric model developed at the University of Oslo. The model includes full gaseous chemistry, PSCs and sulfate particles, which vary from year to year. Comparisons with similar data found in the literature are also discussed.

*Corresponding author: Philippe Demoulin, Institute of Astrophysics and Geophysics, University of Liège, 5 Avenue de Cointe, B-4000 Liège, Belgium. +32-4-254-75-85; +32-4-254-75-11 (fax); demoulin@astro.ulg.ac.be