Geophysical Research Abstracts, Vol. 8, 08477, 2006
SRef-ID:

Low HCl column amounts as observed by ground-based infrared spectroscopy at Kiruna and Harestua in the winter of 2004/05

T. Blumenstock (1), A. Strandberg (2), M. Chipperfield (3), F. Hase (1), I. Kramer (1), J. Mellqvist (2), S. Mikuteit (1), and U. Raffalski (4)

(1) Institute of Meteorology and Climate Research, Forschungszentrum Karlsruhe and University Karlsruhe, Karlsruhe, Germany (thomas@blumenstock@imk.fzk.de), (2) Chalmers University of Technology, Gothenborg, Sweden, (3) Institute for Atmospheric Science, University of Leeds, Leeds, UK, (4) Swedish Institute of Space Physics, Kiruna, Sweden

In the framework of the NDSC (Network for the Detection of Stratospheric Change) ground-based FTIR (Fourier Transform InfraRed) spectrometers are operated continuously at the IRF Kiruna (Sweden, 68°N, 20°E) and at Harestua (Norway, 60°N, 11°E). Atmospheric absorption spectra using the sun as the source of radiation are recorded. Column amounts of several trace gases like O3, N2O, CH4, HF, HCl, ClONO2, ClO, NO, NO2, and HNO3 are derived. In addition, for strong absorbers some profile information are retrieved, too.

At Harestua and Kiruna HCl column amounts of less than 2.0 E15 molec/cm2 have been measured at the end of January 2005. These very low HCl column amounts correlate well with enhanced ClO column amounts at that time. The ratios of chlorine reservoir species to HF [(HCl+ClONO2)/HF] indicate a chlorine activation of more than 50%. These results are compared with model calculations made with SLIMCAT. Furthermore, comparisons with data from different winters will be shown, in particular of 1999/2000.