



## Measured and modeled ozone trends in the northern hemisphere

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In the framework of the NDACC (Network for the Detection of Atmospheric Composition Change) the IMK (Institute for Meteorology and Climate Research) operates together with the IRF and the University of Nagoya a ground-based Fourier-Transform Infrared Spectrometer (FTIR) in Kiruna (Sweden, 68°N, 20°E, 420m NN). Absorption spectra are recorded in the infrared spectral region using the sun as natural source of radiation. Based on these spectra profiles and column amounts of several stratospheric species such as O<sub>3</sub>, ClONO<sub>2</sub>, HCl, HNO<sub>3</sub> and HF are retrieved, which are relevant for ozone chemistry.

With a length of more than 10 years, these time series provide a good opportunity for the determination of trends. Different approaches (e.g. linear trend, bootstrap-method, and deseasonalisation) have been applied to estimate the uncertainty of the derived trend. These methods have also been applied to model calculations made with KASIMA (KARlsruhe SIMulation model of the Middle Atmosphere). The 3-D CTM (Chemistry Transport Model) KASIMA has been developed at the IMK with a full stratospheric chemistry scheme including processes on liquid aerosol and polar stratospheric cloud particles. The measured and modeled results have been compared and discussed with respect to the natural variability and signs of ozone recovery.