



Flying high: spectroscopic trace gas measurements on board the CARIBIC aircraft project

B. Dix (1), C. Brenninkmeijer (2), U. Friess (1), T. Wagner (1), and U. Platt (1)

(1) Institute of Environmental Physics, University of Heidelberg, Germany
(barbara.dix@iup.uni-heidelberg.de), (2) Max Planck Institute for Chemistry, Mainz, Germany

Atmospheric trace gases like halogen compounds and nitrogen oxides have a significant impact on the global ozone budget, for example stratospheric ozone depletion is caused by reactive bromine and chlorine compounds. It is therefore of great interest to investigate the global distribution of these species.

Within the framework of CARIBIC (Civil Aircraft for the Regular Investigation of the atmosphere Based on an Instrument Container), a new DOAS (Differential Optical Absorption Spectroscopy) instrument was built to measure BrO, HCHO, NO₂, O₃, and O₄. It collects uv-visible scattered sun light from three different viewing directions. With this Multi-Axis technique the separation of boundary layer, free tropospheric and stratospheric columns is possible.

This DOAS instrument is the only remote sensing instrument in a cargo container that comprises 21 instruments of 11 European institutions. The container was successfully put into operation on a new long-range Airbus (A340-600) of Deutsche Lufthansa and performs fully automated measurements once a month since May 2005.

We will present selected results from several measurement flights and show the potential of this unique DOAS data set, measured, to our knowledge, by the first DOAS instrument to be employed on a civil long-range aircraft.