



## **DOAS on board: spectroscopic trace gas measurements on CARIBIC flights**

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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 has been built. It measures UV-visible scattered sun light from three different viewing directions to detect various trace gases. With this multi-axis technique the separation of boundary layer, free tropospheric and stratospheric columns of BrO, HCHO, HONO, NO<sub>2</sub>, O<sub>3</sub>, and O<sub>4</sub> is possible. Thus for example anthropogenic and natural sources of NO<sub>2</sub>, such as industry and (natural) forest fires can be studied. The oxygen dimer O<sub>4</sub> has a known vertical profile, therefore it can be used to determine light paths through the atmosphere and to investigate the influence of clouds and aerosols on the radiative transfer.

The CARIBIC instrument container comprises 21 instruments of 11 European institutions, and was successfully put into operation on a new long-range Airbus (A340-600) of Deutsche Lufthansa in December 2004. Since May 2005 monthly flights with fully automated measurements are performed.

We will present selected results from various flights that include tropospheric HONO measurements as well as biomass burning events and other pollution plumes.