



Four years of NO_y measurements in the UTLS by MOZAIC aircraft

K. Petzoldt (1), H.-W. Pätz (1), Karin Thomas (1), Andreas Volz-Thomas (1), Jean-Pierre Cammas (2), Philippe Nedelec (2), Valerie Thouret (2)

(1) Institut für Chemie und Dynamik der Geosphäre II: Troposphäre, Forschungszentrum Jülich, Wilhelm-Johnen-Strasse, D-52425 Jülich (k.petzoldt@fz-juelich.de), (2) Laboratoire d'Aérologie Observatoire Midi-Pyrénées, 14 av. E. Belin, F-31400 Toulouse (camjp@aero.obs-mip.fr)

In 2001, a small autonomous instrument for the measurement of total odd nitrogen (NO_y) was installed on one of the five MOZAIC aircraft. During the past four years the instrument has now delivered data from more than 2000 long-haul flights from Europe mainly to North America, but also to East Asia and the Middle East.

The poster will present the climatology of NO_y derived from these flights in terms of average concentrations and variability on different spatial and temporal scales. Separation between lower stratosphere and upper troposphere is achieved by means of potential vorticity. In the LS, a good correlation is observed between NO_y and O₃. Both species exhibit a seasonal maximum in spring. In the UT, the seasonal maximum is shifted to summer. In winter, NO_y concentrations in the UT are very low, usually well below 0.5 ppb, whereas relatively high concentrations of several ppb are observed in spring and summer, in particular over the western North Atlantic but also over Europe and the Arabian Peninsula.

The potential influence of convection and lightning on the variability of NO_y in the UT is investigated with the help of the covariance with carbon monoxide, which is measured aboard the MOZAIC aircraft since 2002.