



## **Characterization of the composition, the structure and the seasonal variations of the mixing layer above the extratropical tropopause revealed by MOZAIC measurements.**

**J. Brioude** (1), J. P. Cammas(1), O. R. Cooper (2), P. Nédélec (1)

(1) Laboratoire d'aérodynamique Toulouse France, (2) NOAA Earth System Research Laboratory Boulder (CO) USA (contact: brij@aero.obs-mip.fr)

Many studies have started considering the tropopause as a mixing or transition layer (Fisher et al., 2000, Brunner et al., 2001, Hoor et al., 2004) rather than a barrier acting at a single altitude. We use several years of MOZAIC observations (Measurements of Ozone, Water Vapour, Carbon Monoxide and Nitrogen Oxides by In-service Airbus Aircraft, <http://www.aero.obs-mip.fr/mozaic/>) to investigate the composition and the seasonal variations of the mixing layer above the tropopause. Using baroclinic and potential vorticity diagnoses derived from ECMWF meteorological analyses, coherent sub-datasets are built according to the location of measurements in baroclinic waves. The Flexpart dispersive model is also used with backward simulations to get Lagrangian evolutions of observed samples. The main characteristics of the mixing layer are discussed by analysing tracer-tracer variations of coherent sub-datasets. The vertical extension and the seasonal variations of the mixing layers are analysed.